# Workshop Manual

## Fabia II 2007 ➤ , Fabia II 2009 ➤ , Fabia II 2011 ➤ , Octavia II 2004 ➤ , Octavia II 2010 ➤ , Rapid 2011 ➤ , Rapid NH 2013 ➤ , Rapid NH 2014 ➤ , Roomster 2006 ➤ , Superb II 2008 ➤ , Superb II 2011 ➤ , Yeti 2010 ➤ , Yeti 2011 ➤

| 1.5/77; 1.6/55; 66; 77 kW TDI CR engine | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Engine ID | CAY A | CAY B | CAY C | CLN A | CWX B | | | | |

Edition 05.2014

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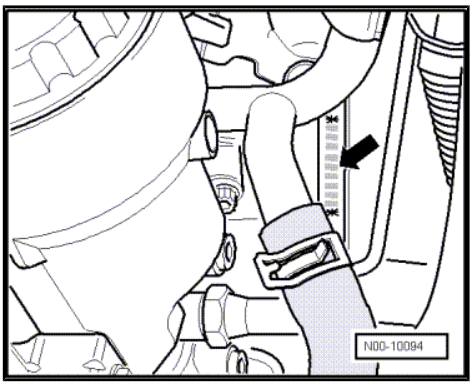
# 00 – Technical data

## 1 Identification

(SRL000691; Edition 05.2014)

⇒ “1.1 Engine number, engine data”, page 1

### 1.1 Engine number, engine data




The engine number (“engine identification characters” and “serial number”) is located in the front at the engine/gearbox joint -arrow-.

In addition, a sticker with the “engine identification characters” and “serial number” is affixed to the timing belt guard.

The engine identification characters are also indicated on the vehicle data sticker.

**Vehicles with four-digit engine identification characters**

- The engine identification characters have 4 digits starting with the letter “C”.
- The first 3 digits of the engine identification characters refer to the displacement and the mechanical construction of the engine. They are type-punched in the cylinder block including the serial number.
- The 4th digit refers to the output and torque of the engine and depends upon the engine control unit.

| Engine identification characters | | CAYA | CAYB | CAYC | CLNA | CWXB |
|---|---|---|---|---|---|---|
| Manufactured | Fabia II | 03.2010 ► | 03.2010 ► | 03.2010 ► | ---- | ---- |
| | Roomster | ---- | 03.2010 ► | 03.2010 ► | ---- | ---- |
| | Octavia II | ---- | ---- | 06.2009 ► | ---- | ---- |
| | Superb II | ---- | ---- | 09.2010 ► | ---- | ---- |
| | Yeti | ---- | ---- | 11.2010 ► | ---- | ---- |
| | Rapid India | ---- | ---- | ---- | 09.2011 ► | 08.2014 ► |
| | Rapid NH | ---- | 08.2013 ► | 07.2012 ► | 02.2013 ► | ---- |
| Exhaust limit values conforming to | | EU5 | EU5 | EU5 | EU4/BS4 | BS4 |
| Displacement | l | 1598 | 1598 | 1598 | 1598 | 1498 |
| Power output | kW at rpm | 55/4000 | 66/4200 | 77/4400 | 77/4000 | 77/3500 |
| Torque | Nm at rpm | 195/1500...2000 | 230/1500...2500 | 250/1500...2500 | 250/1500...2500 | 250/1500...2500 |
| Bore | ∅ mm | 79.5 | 79.5 | 79.5 | 79.5 | 77.0 |
| Stroke | mm | 80.5 | 80.5 | 80.5 | 80.5 | 80.5 |
| Cylinder / valves per cylinder | | 4/4 | 4/4 | 4/4 | 4/4 | 4/4 |
| Compression ratio | | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 |
| Firing order | | 1-3-4-2 | 1-3-4-2 | 1-3-4-2 | 1-3-4-2 | 1-3-4-2 |

| Engine identification characters | CAYA | CAYB | CAYC | CLNA | CWXB |
|---|---|---|---|---|---|
| Catalytic converter | yes | yes | yes | yes | yes |
| Exhaust gas recirculation with radiator | yes | yes | yes | yes | yes |
| Turbocharging | yes | yes | yes | yes | yes |
| Charge air cooler | yes | yes | yes | yes | yes |
| Diesel particle filter | yes | yes | yes | no | no |
| Balancing shaft module | no | no | no | no | no |

# 2 Safety instructions

⇒ "2.1 Regulations concerning safety precautions when working on the fuel system", page 3

## 2.1 Regulations concerning safety precautions when working on the fuel system

**WARNING**

- *The fuel or the fuel lines in the fuel system can become very hot (risk of scalding)!*
- *The fuel system is under pressure!*
- *Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel.*
- *Place cleaning cloths around the connection point before detaching cable connections. Reduce pressure by carefully removing the wiring.*

*For reasons of safety the current supply to the fuel pump must be interrupted before opening the fuel system. Otherwise the fuel pump is activated when opening the driver's door. One of the following options must be used to interrupt the current supply:*

- *Disconnect battery*

*or*

- *Take out fuse for fuel pump relay - J17-*

*or*

- *Disconnect the plug on the flange of the fuel delivery unit.*

**WARNING**

*When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *Ensure that there is adequate free access to all moving or hot components.*

**Caution**

*In order to avoid the high pressure pump to run dry and to achieve a quick engine start after parts are replaced, the following points must be observed.*

- *If parts of the fuel system were removed or replaced, it is necessary to initiate the basic setting "check fuel pump" in order to vent the fuel system ⇒ Vehicle diagnostic tester.*
- *If the fuel pump, fuel line or fuel filter were removed or replaced, the basic setting "check fuel pump" must be initiated »once« before the first engine start.*
- *If the high pressure pump is removed or replaced, the initial fuel filling of the high pressure pump must be carried out before the first engine start ⇒ page 382 .*
- *If the high pressure system was opened, it must be checked for tightness ⇒ page 406 .*

**When removing and installing the fuel gauge sender or the fuel delivery unit from a full or partly filled fuel tank, pay attention to the following points:**

- The extraction hose of an exhaust extraction system which is switched on, must be positioned close to the assembly opening of the fuel tank in order to extract the released fuel vapours, even before the work is commenced. If no exhaust extraction system is available, a radial fan (motor not in air flow of fan) with a delivery volume of more than 15 $m^3$/h must be used.
- Avoid skin contact with fuel! Wear fuel-resistant gloves!

**If test and measuring devices are required during test drives observe the following:**

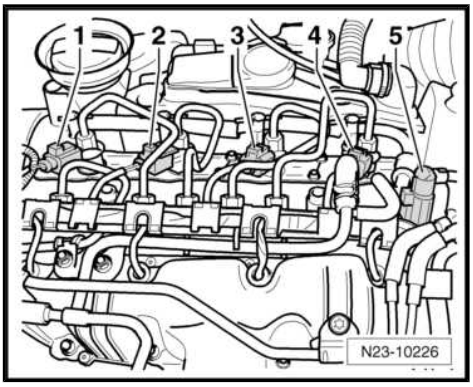
- Always secure the test and measuring devices on the rear seat and have a second person operate them there.

If the test and measuring devices are operated from the passenger seat, the passenger can be injured by the release of the passenger airbag in the event of an accident.

**WARNING**

*Secure the diagnostic device to the rear seat and operate from that position.*

**Observe the following points to prevent injury to persons and/or damage to the injection and preheating system:**




- People, who have a heart pacemaker implant, should not bend over the engine compartment when the engine is running, as the injection units generate an output high voltage pulse.
- No fuel lines must be opened when the engine is running.
- Disconnect and connect wires of the preheating and injection system as well as measuring device wires when the ignition is switched off.
- Do not carry out engine wash unless the ignition is switched off.
- If the engine must be operated at starter speed, without it starting, unplug the connector -5- at the fuel pressure regulating valve - N276- .
- Before disconnecting the battery determine the code of the radio fitted with anti-theft coding.
- Always switch off the ignition before disconnecting and reconnecting the battery. Otherwise the engine control unit may be damaged.
- After connecting the battery, carry out certain additional operations ⇒ Electrical System; Rep. gr. 27 .

# 3 Repair instructions



## 3.1 Rules of cleanliness



### 3.1.1 Regulations concerning cleanliness when working on the fuel supply/fuel injection system

Carefully observe the following “rules” for cleanliness when working on the fuel supply/injection system:

- Thoroughly clean the connection points and their surroundings before releasing.
- Place removed parts on a clean surface and cover. Use only lint-free cloths!
- Carefully cover or close opened components if the repair is not completed immediately.
- Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box).
- When the system is open: Avoid using compressed air whenever possible. Avoid moving the vehicle.
- Also make sure no diesel fuel runs onto the coolant hoses. If this is the case clean the hoses immediately. Contaminated hoses must be replaced.

### 3.1.2 Regulations concerning cleanliness when working on the exhaust gas turbocharger

Carefully observe the following “rules” for cleanliness when working on the exhaust gas turbocharger:

- Thoroughly clean the connection points and their surroundings before releasing.
- Place removed parts on a clean surface and cover. Use only lint-free cloths!
- Carefully cover or close opened components if the repair is not completed immediately.
- Only install clean parts: Remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box).

- When the system is open: Avoid using compressed air whenever possible. Avoid moving the vehicle.

## 3.2 Foreign bodies in the engine

To prevent the penetration of foreign bodies, open channels of the inlet connection and exhaust tract must be sealed with suitable plugs during assembly works on the engine, for example from the screw plug set for engine - VAS 6122- .

## 3.3 Contact corrosion

The use of unsuitable connection elements causes contact corrosion (screws, nuts, washers, …).

This is why only connection elements with a special surface coatings are fitted.

Therefore, the rubber or plastic parts and the adhesives are made from electrically non-conductive materials.

If you have any doubts about the suitability of parts, please use new parts in general ⇒ Electronic Catalogue of Original Parts ETKA .

## 3.4 Cable routing and securing

- To ensure the original installation position, e.g. lines for fuel, hydraulics, vacuum, activated charcoal filter system lines or electric cables must be marked before removal. Make sketches or take photographs if necessary.
- Sufficient clearance from all moving or hot components must be ensured in the engine compartment due to its cramped construction. This prevents damage to lines.

## 3.5 Assembly of radiators and capacitors

The radiator, capacitor and charge air cooler may have minor indentations on the fins, even if assembly is correct. This is not a case of damage. Radiator, capacitors or charge air cooler must not be replaced because of these indentations.

## 3.6 General instructions for charge air system

**WARNING**

*When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *Ensure that there is adequate free access to all moving or hot components.*

**Caution**

*In case a mechanical damage to the exhaust gas turbocharger is found, for example, damage to the compressor wheel, it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, perform the following tasks:*

- *Clean all oil lines.*
- *Change engine oil and oil filter.*
- *Check air filter housing, air filter element and charge air pipes as well as charge air hoses for soiling.*
- *Check all the air guides and the charge air cooler for foreign bodies.*

*If foreign bodies are detected in the charge air system, the complete charge-air routing must be cleaned and if necessary the charge air cooler must also be replaced.*

- The charge-air system must be tight, check ⇒ page 372 .
- Replace the gaskets, the sealing rings and the self-locking nuts.
- Hose connections and hoses of the charge air system must be free of oil and grease before being installed. The gasket ring and the sealing surface must be slightly oiled only for push-fit couplings ⇒ page 372 .
- Observe markings on the hoses and components.
- All hose connections of the charge air system are secured with spring strap clamps or push-fit couplings.
- Only install approved clamps for securing the hose connections ⇒ ETKA - Electronic Catalogue of Original Parts .
- Use pliers for spring strap clamps to fit the spring strap clips.
- Install hose connections with screw clamps ⇒ page 372 .
- Before screwing down the oil feed line, fill the exhaust turbocharger via the connection fitting with engine oil.
- After installing the turbocharger, run engine at idling speed for about 1 minute to ensure that oil is supplied to the turbocharger.

## 3.7 Supplementary instructions and assembly work on vehicles with an air conditioning system

**WARNING**

*Do not open the refrigerant circuit of the air conditioning system.*

**Note**

*In order to avoid damage to the condenser as well as to the refrigerant lines and hoses, ensure that the lines and hoses are not over-tensioned, kinked or bent.*

Steps which should be taken in order to remove and install the engine without opening the refrigerant circuit:

– Unscrew the holding clamp(s) on the refrigerent lines.

– Remove V-ribbed belt ⇒ page 63 .

– Remove AC compressor from the bracket for auxiliary units ⇒ page 57 .

– Mount the air conditioning compressor and the condenser in such a way that the refrigerent lines/hoses are not under tension.

# 10 – Removing and installing engine

## 1 Removing and installing engine



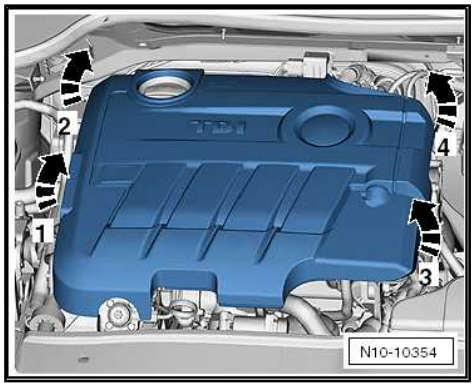
### 1.1 Removing and installing engine trim panel

**Caution**

*The brackets of the engine cover on the cylinder head cover can break off when they are incorrectly removed.*

- *It is therefore necessary to remove the engine cover according to the following instruction.*

– Successively slacken the engine cover in the marked sequence -1 ... 4- from the fixing points. To do so, grip the engine cover from underneath as far as possible in the area of the -arrows- and pull it upwards out of the attachment.

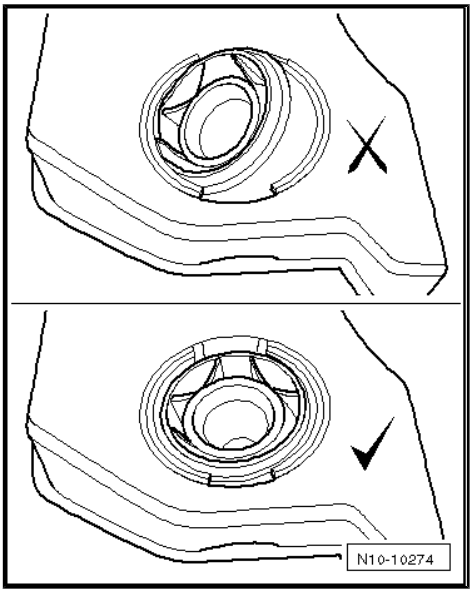



**Install**

**Caution**

*Before installing the engine cover, check the correct fitting position of the 4 fixing elements (ball sockets), if necessary move them into the correct position. Otherwise this can lead to damage to the engine cover.*

– If necessary, press the ball sockets of the engine cover into the correct position.
– Position the engine cover onto the fixing points and press it in at the corners until it clicks into place.




## 1.2 Removing engine

⇒ "1.2.1 Remove engine (Fabia II, Roomster, Rapid India, Rapid NH)", page 11

⇒ "1.2.2 Remove engine (Octavia II, Superb II, Yeti)", page 19

### 1.2.1 Remove engine (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Engine mount - T10012-
- Engine/gearbox jack , e.g. -V.A.G 1383 A-
- Catch pan , e.g. -VAS 6208-
- Step ladder
- Pliers for spring strap clamps

**Note**

- *If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Position -2- ⇒ page 388 .*
- *The engine is removed downwards together with the gearbox.*
- *All cable straps that have been loosened or cut open when the engine was removed must be attached again in the same location when the engine is installed again.*
- *Collect drained coolant in a clean container for proper disposal or reuse.*

**Caution**

***When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .

– If present, take the adapter for the anti-theft wheel bolts out of the luggage compartment.

– Remove front wheels ⇒ Chassis; Rep. gr. 44 .

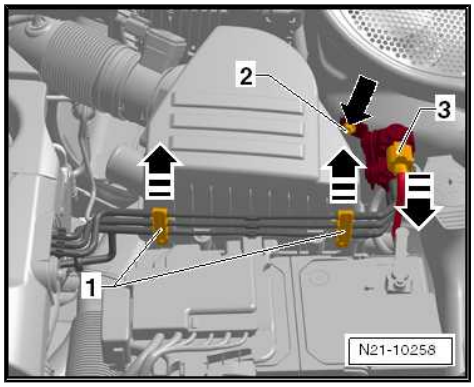
– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System; Rep. gr. 27 .

– Remove engine cover ⇒ page 10 .

– Remove air filter housing with air mass meter - G70- and intake hose ⇒ page 426 .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Release plug -3- from charge pressure control solenoid valve - N75- .




– Unscrew charge pressure control solenoid valve - N75 - with fixture -2- and place it on the engine.

– Remove shift mechanism from gearbox ⇒ Gearbox; Rep. gr. 34 .

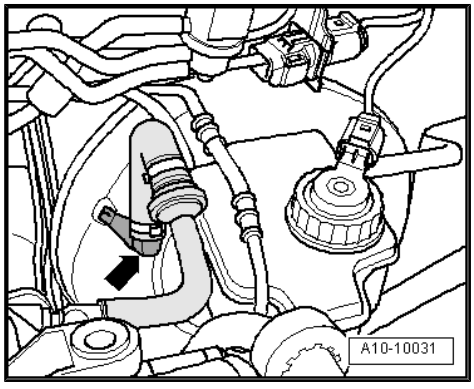
– Remove the clutch slave cylinder from the gearbox ⇒ Gearbox; Rep. gr. 30 .

**Caution**

***After removing the slave cylinder, do not depress the clutch pedal.***

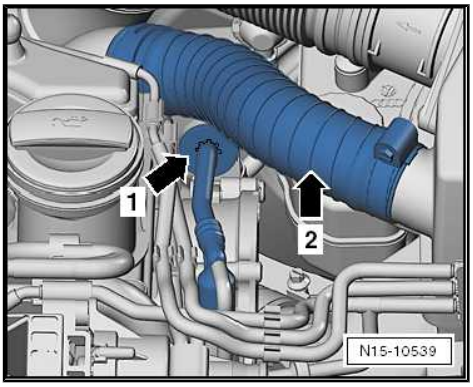
**For vehicles Fabia II, Roomster**

– Remove the vacuum hose -arrow- from the brake servo unit.



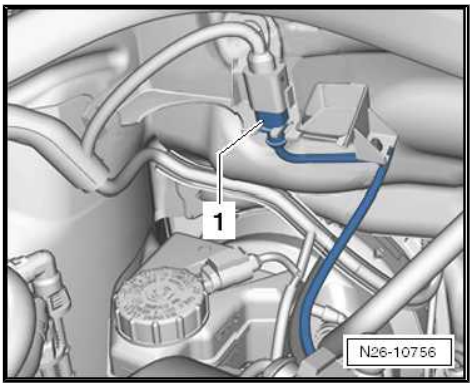

**For vehicles Rapid India, Rapid NH**

– Disconnect vacuum line behind the holder at the cylinder head -arrow 1-.




**For Rapid India vehicles**

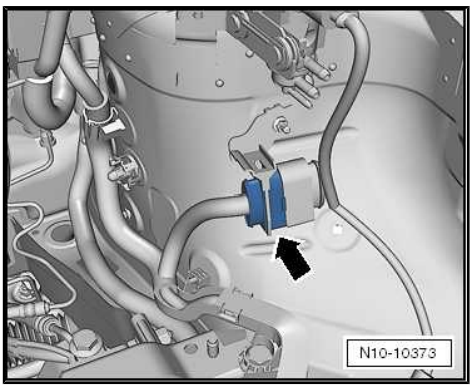
– Disconnect the plug connection -1- for the exhaust gas temperature sender 1 - G235- and loosen from the bracket.




**Continued for all vehicles**

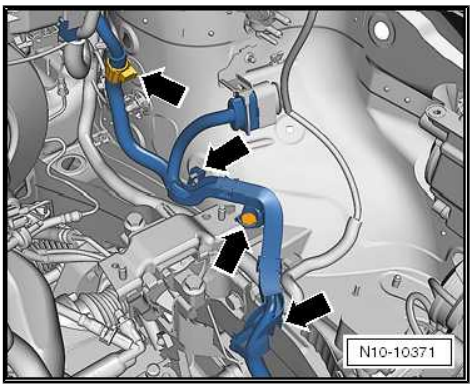
– Unlatch the fuse and disconnect the front plug from the engine control unit ⇒ page 430 .

– Disconnect plug connection -arrow-.

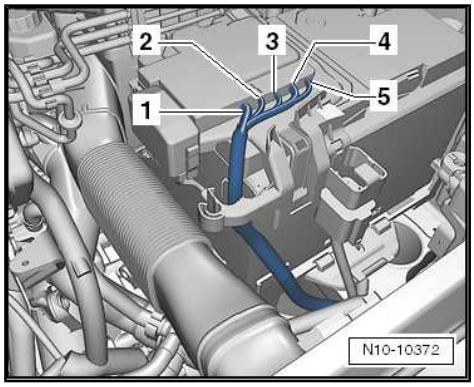



– Carefully slacken the engine wiring harness on its fixing points -arrows-.

– Place the engine wiring harness on the engine.



– Unscrew the positive cable to the generator -1-, unclip and place on the gearbox.
– Unscrew the cable from the starter and the gearbox and remove it.




– Screws -1 ... Unscrew screw 3- and remove pendulum support.

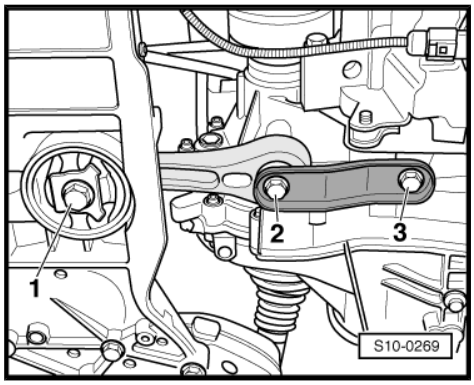
**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

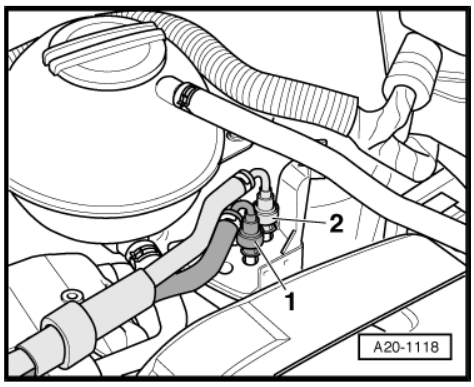
– Remove pre-exhaust pipe with catalytic converter, while doing so remove the assembly carrier ⇒ page 457 .

**Continued for all vehicles**



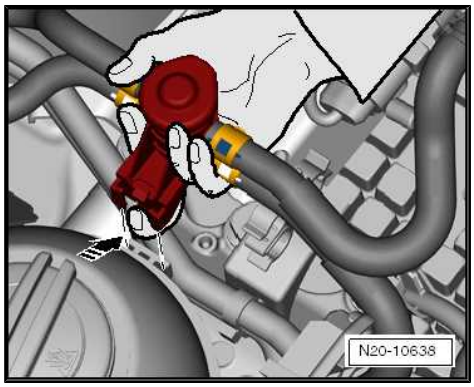

– Separate fuel feed line -2- and fuel return-flow line -1-, to do so press the release buttons. Unlock the quick coupling and disconnect ⇒ page 303 .
– If necessary, collect the fuel which flows out with a cloth.

**For vehicles Fabia II, Roomster, Rapid NH**

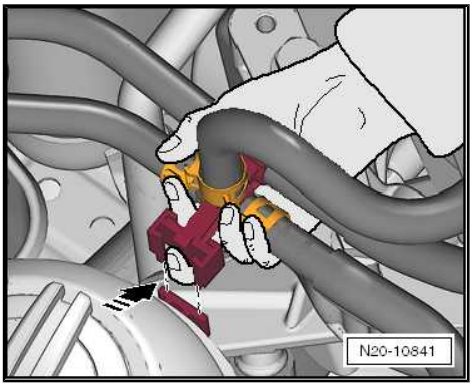



– Unlock the catch peg with a finger and pull the fuel preheating valve upwards out of the guide of the coolant expansion bottle.

**For Rapid India vehicles**

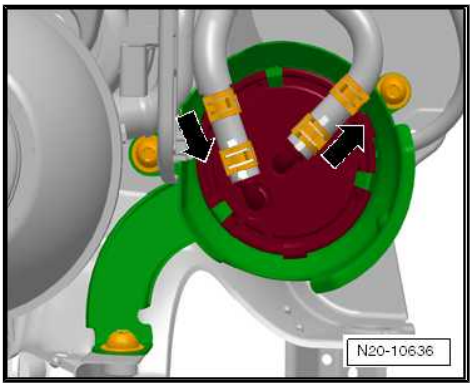


– Unlock the catch peg with a finger and pull the T-piece upwards out of the guide from the coolant expansion bottle.

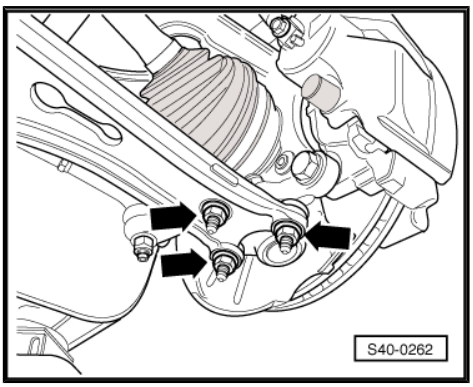



**Continued for all vehicles**

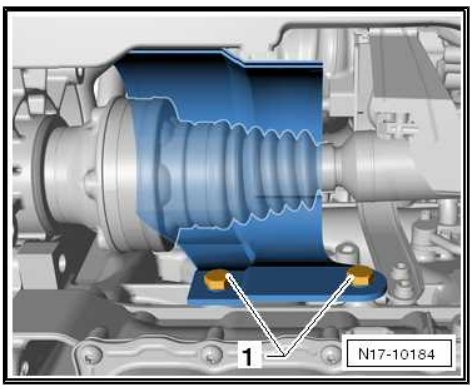
– Push the catch pegs up and remove the fuel filter towards the top.
– Place the fuel filter and the fuel hoses together with the fuel preheating valve on the engine.
– Remove fuel filter bracket.
– Remove the right and left wheelhouse liner ⇒ Body Work; Rep. gr. 66 .



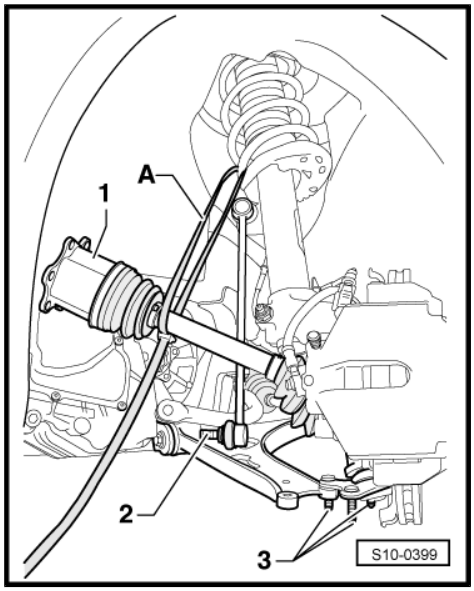

– Unscrew the nuts from the right steering joint -arrows- and press the steering joint out of the suspension arm.



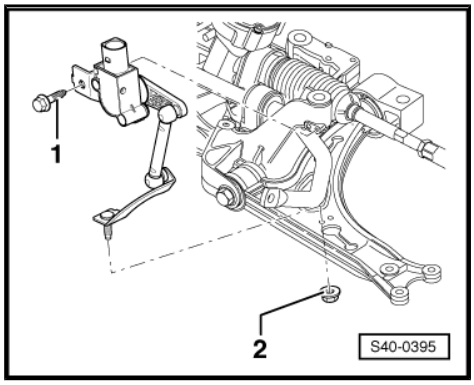

– Unscrew screws -1- of protective plate for right drive shaft, if present.
– Remove right drive shaft from gearbox and secure with wire ⇒ Chassis; Rep. gr. 40 .
– Remove left drive shaft from gearbox ⇒ Chassis; Rep. gr. 40 .



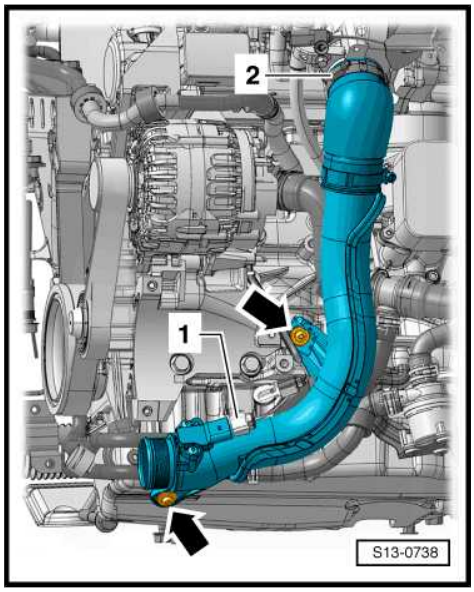
– Unscrew the nut from the left coupling rod -2- and press off the coupling rod from the anti-roll bar.
– Unscrew the nuts from the left steering joint -3- and press the steering joint out of the suspension arm.



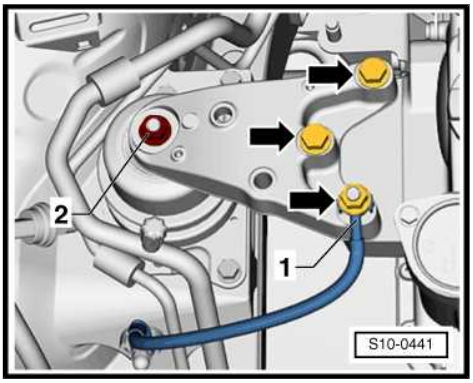

– Unscrew the nut -2- from the front left track control arm on installed front left vehicle level sensor -G78- .
– Turn the wheel bearing housing to the left up to the stop.
– Swivel the steering joint outwards and secure the drive shaft -1- with a band -A- in the wheelhouse.
– Remove right charge air hose.




– Release screws -arrows-.
– Loosen hose clamp -2-.
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.
– Drain coolant ⇒ page 223 .
– Remove the remaining coolant hoses from the radiator.



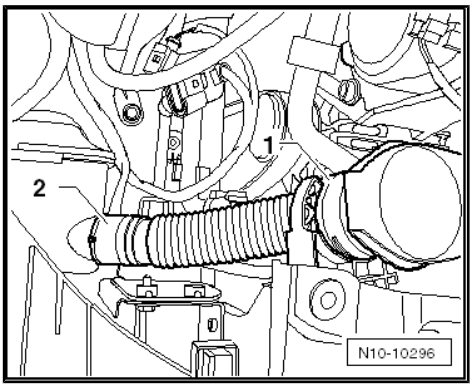
– Remove the earth connection -1- from the assembly bracket.
– Remove coolant expansion bottle and place on the engine.




– Unclip the filler neck of the windshield washer reservoir -1- and lay to the side.

**On vehicles with air conditioning**

– Remove alternator ⇒ Electrical System; Rep. gr. 27 .




**WARNING**

*Risk of injury through refrigerant.*

- *Do not open the refrigerant circuit of the air conditioning system.*

**Caution**

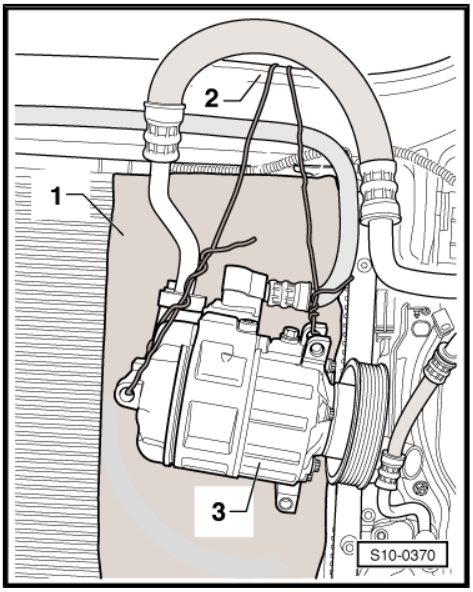
*Risk of damaging the condenser as well as the refrigerant lines and hoses.*

- *Do not over-tension, buckle or bend refrigerant lines and refrigerant hoses.*

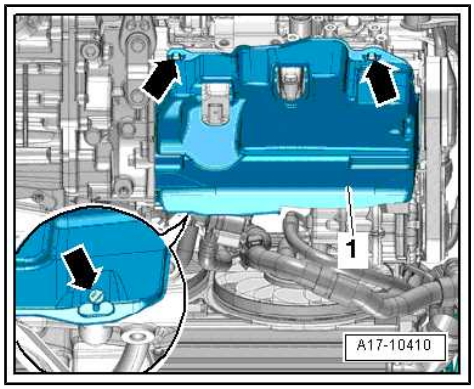
– Remove the AC compressor from the bracket for auxiliary units ⇒ Heating, Air Conditioning; Rep. gr. 87 .

– Attach the AC compressor -3- e.g. behind the lock carrier as shown in the figure. As protection put a sheet of cardbord -1- on the radiator wall.

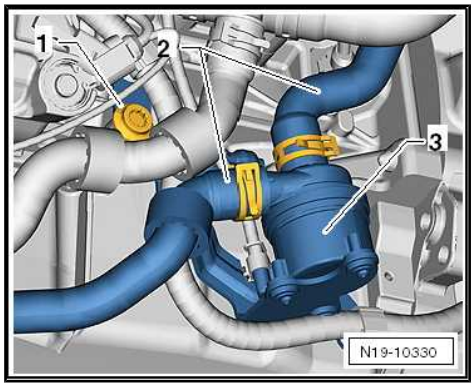
**Continued for all vehicles**



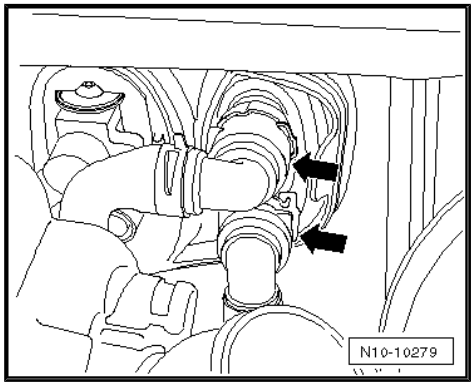
– Remove noise insulation of oil pan -1-, to do so slacken the fixing parts -arrows-.




– Unscrew screw -1- and press recirculation pump 2 - V178- -3- (if present) to the side.
– Disconnect further necessary plug connections at the engine and gearbox or line connections to engine and gearbox.




– Separate the quick couplings -arrows- at the heat exchanger.
– Unclamp all remaining connecting, coolant, vacuum and suction hoses from the engine.
– Release all remaining plugs at engine and gearbox and lay aside the relevant lines.

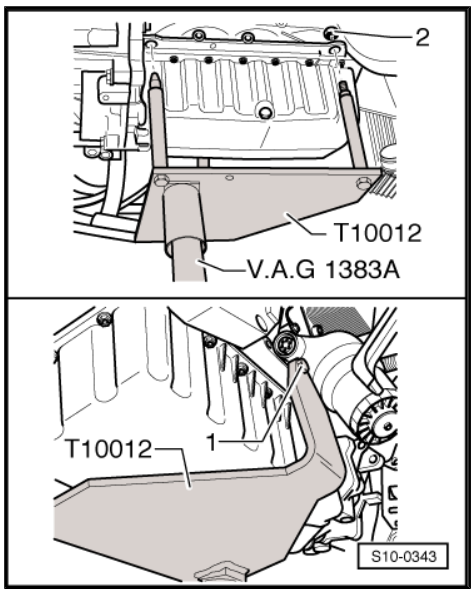



– Screw engine mount - T10012- to the cylinder block with nut -2- and screw -1- to 20 Nm.
– Insert engine/gearbox jack - V.A.G 1383 A- in the engine mount and slightly raise.

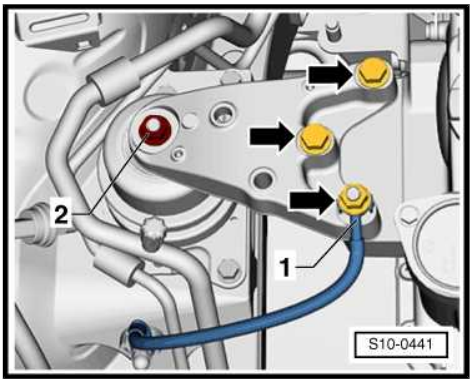
**Note**

*Use double ladder to release the screws for the engine/gearbox mounting.*

**For vehicles Fabia II, Roomster, Rapid NH**

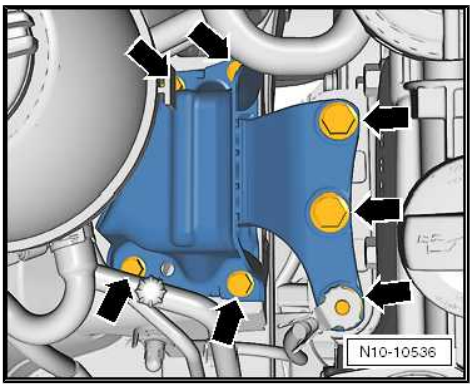


– Release the screws which connect the engine mount with the engine support -arrows-.



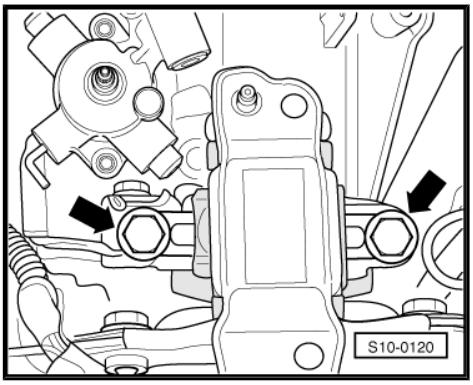

**For Rapid India vehicles**

– Unscrew engine mounting and remove completely -arrows-.




**Continued for all vehicles**

– Remove the assembly bracket at the gearbox. Release screws -arrows-.




**Note**

- *Check whether all hose and line connections between engine, gearbox and body are released.*
- *When lowering carefully guide the engine with the gearbox, in order to avoid damage.*
- *Ensure the necessary space for lowering the assembly by pressing off the assembly carrier.*

– Carefully lower engine with gearbox. During this procedure, turn or move the engine with the gearbox depending upon the constriction.

– Remove the gearbox from the engine.

## 1.2.2 Remove engine (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Removal tool for inner lining of the door panel - MP 8-602/1-
- Engine mount - T10012-
- Engine/gearbox jack , e.g. -V.A.G 1383 A-
- Catch pan , e.g. -VAS 6208-
- Step ladder
- Pliers for spring strap clamps

**Note**

- *If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Position -2- ⇒ page 388 .*
- *The engine is removed downwards together with the gearbox.*
- *All cable straps that have been loosened or cut open when the engine was removed must be attached again in the same location when the engine is installed again.*
- *Collect drained coolant in a clean container for proper disposal or reuse.*

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .

– If present, take the adapter for the anti-theft wheel bolts out of the luggage compartment.

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System; Rep. gr. 27 .

– Remove engine cover ⇒ page 10 .

– Remove air filter housing with air mass meter - G70- and intake hose ⇒ page 426 .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Unplug the following plug connections at the bulkhead:

2 - Exhaust gas temperature sender 4 - G648-

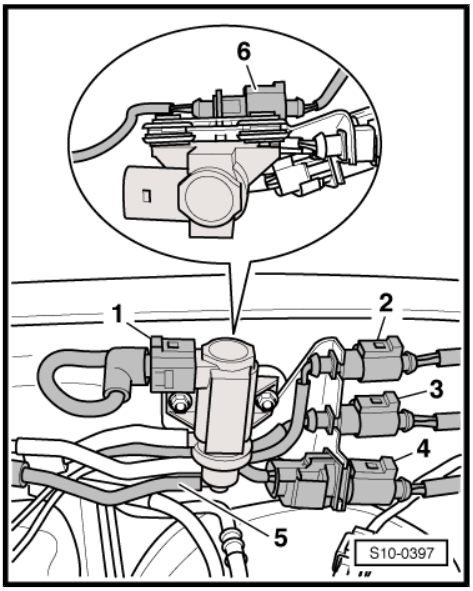
3 - Exhaust gas temperature sender 1 - G235- ( Temperature sender upstream turbocharger - G507- )

4 - Lambda probe - G39-

6 - Exhaust gas temperature sender 3 - G495- ( Temperature sender downstream particle filter - G527- )

– Pull off the vacuum hose -5- from the charge pressure control solenoid valve - N75- .

– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

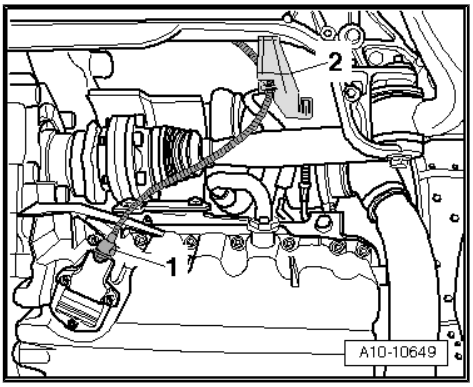



– Disconnect plug -1- at the oil level and oil temperature sender - G266- .

– Remove bracket -2- for the wiring harness of the oil level and oil temperature sender - G266- from the assembly carrier and place down on the assembly carrier.

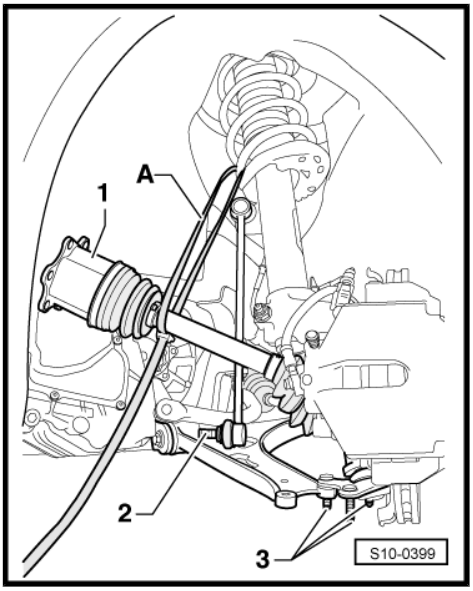
– Remove the right and left wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .

– Unscrew the left drive shaft from the flange shaft of the gear-box.

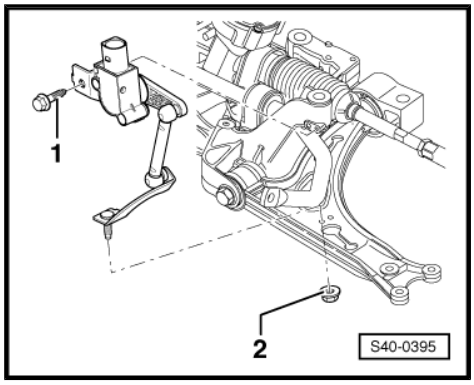



– Unscrew the nut from the left coupling rod -2- and press off the coupling rod from the anti-roll bar.

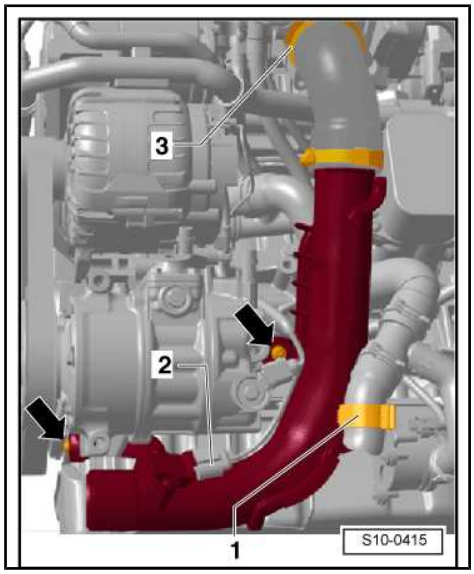
– Unscrew the nuts from the left steering joint -3- and press the steering joint out of the suspension arm.



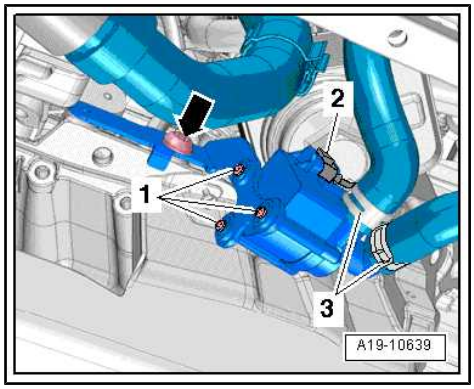
– Unscrew the nut -2- from the front left track control arm on installed front left vehicle level sensor -G78- .
– Turn steering to full left lock.
– Swivel the steering joint outwards and secure the drive shaft -1- with a band -A- in the wheelhouse.
– Insert a pin screw in the suspension arm in order to stabilise the steering joint.
– Remove radiator ⇒ page 262 .



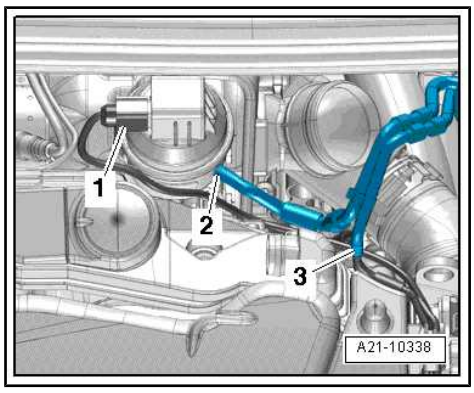

– Release screws -arrows-.
– Expose coolant hose -1-.
– Loosen hose clamp -3-.
– Disconnect the plug -2- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.



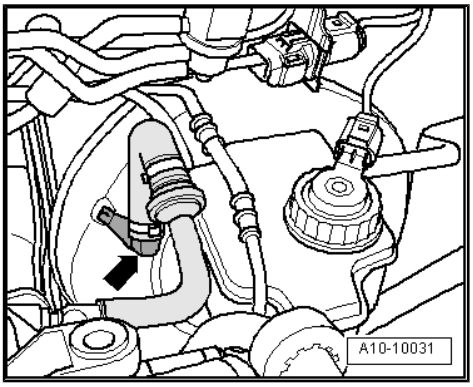

– Unscrew screw -arrow- and push the coolant recirculation pump 2 - V178- to the side.



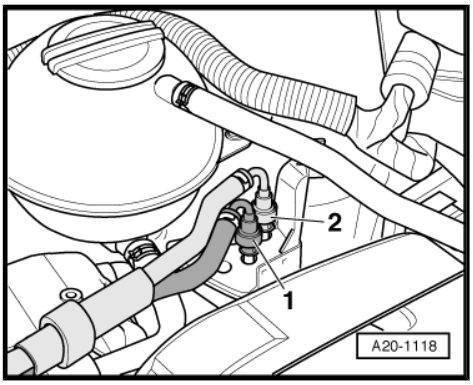

– Remove vacuum hose -2- from vacuum setting element of exhaust turbocharger.
– Disconnect vacuum hose -3-.



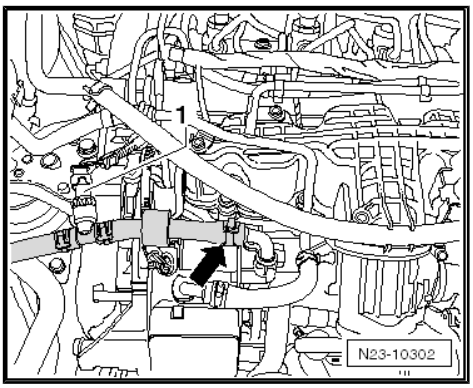
– Remove the vacuum hose -arrow- from the brake servo unit.



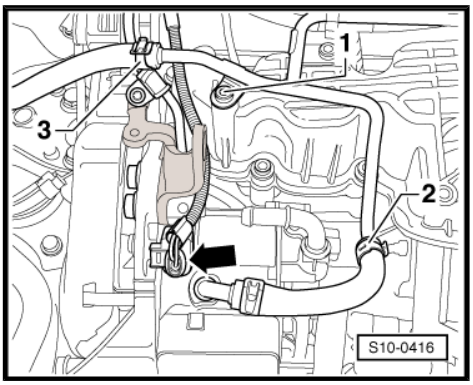

– Detach fuel feed line -2- and fuel return-flow line -1-, to do so press in securing ring. Unlock the quick coupling and disconnect ⇒ page 303 .



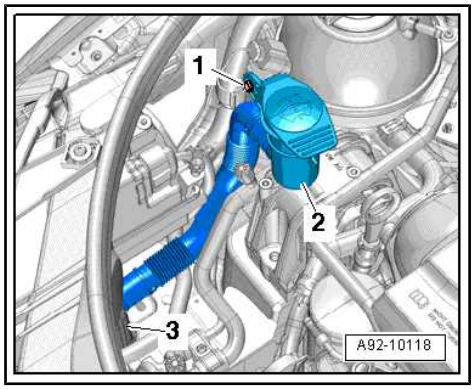

– Disconnect plug -1- at fuel temperature sender - G81- .
– Separate the fuel feed line and pull it off, to do so slacken the hose clamp -arrow-.



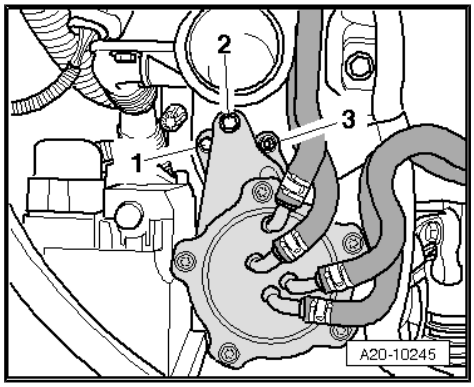

– Separate the fuel return-flow line and pull it off, to do so slacken the hose clamp -3-.



– Unscrew bolt -1-.
– Push the filler tube with the filler neck -2- for the washer-fluid reservoir to the side.




– Release screw -1- by two turns.
– Release screw -2- and nut -3-.
– Unclip bracket for coolant line at fuel filter.
– Remove the fuel filter with the hoses connected and the bracket together with the additional fuel pump - V393- .
– Remove V-ribbed belt ⇒ page 57 .




**On vehicles with air conditioning**

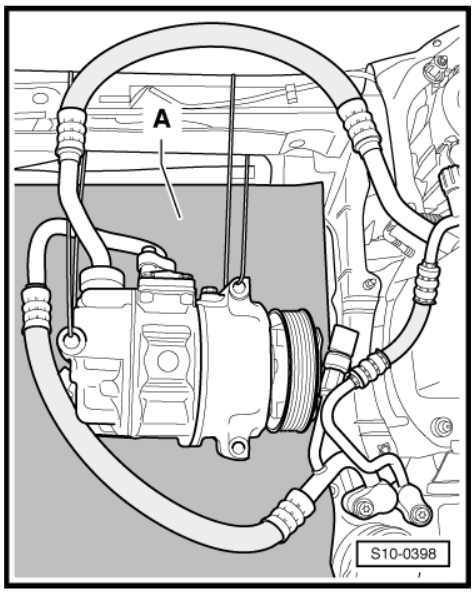
**WARNING**

***Do not open the refrigerant circuit of the air conditioning system.***

**Note**

*In order to avoid damage to the AC compressor as well as to the refrigerant lines and hoses, ensure that the lines and hoses are not over-tensioned, kinked or bent.*

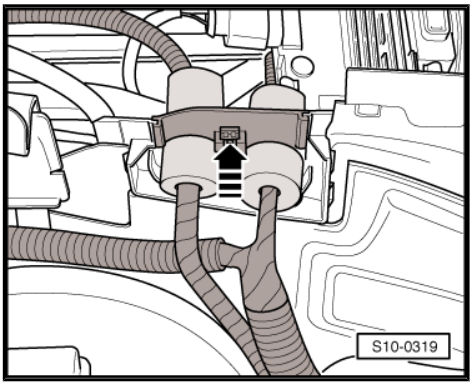
– Remove the AC compressor from the bracket for auxiliary units, place a cardboard -A- underneath the charge air cooler for protection and secure the AC compressor with connected refrigerant hoses to the lock carrier.



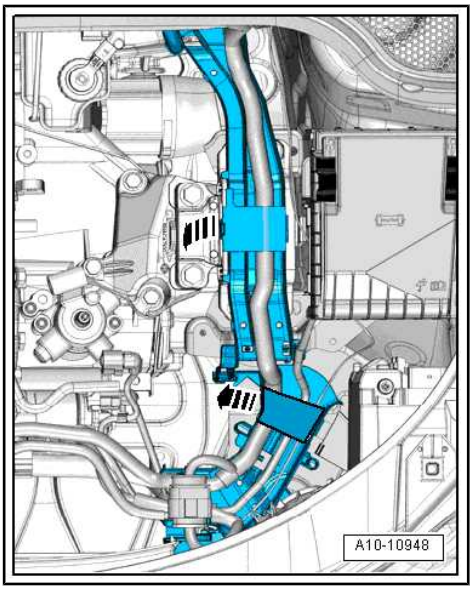

**Continued for all vehicles**

– Unlatch the fuse and disconnect the front plug from the engine control unit ⇒ page 430 .

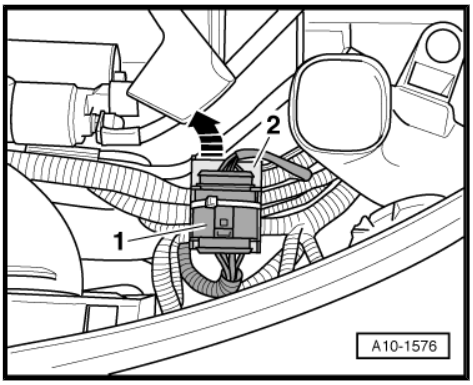
– Release duct for engine wiring harness -arrow- and pull out upwards.




– Open the cable guides -arrows-, remove the engine wiring harness and place down to the side.



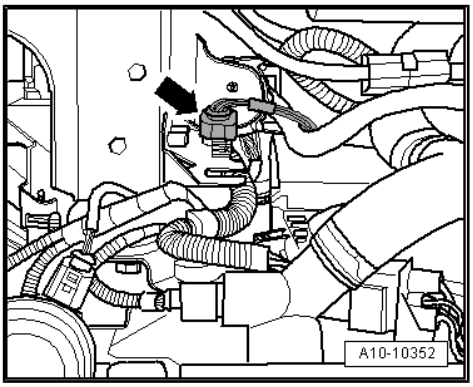

– Expose the plug connection -1- and disconnect it.
– Open the bracket -2- lying below the cable guide.
– Remove the wiring loom to the engine control unit from the cable guide using the removal tool for inner lining of the door panel - MP 8-602/1- and lay it on the engine.



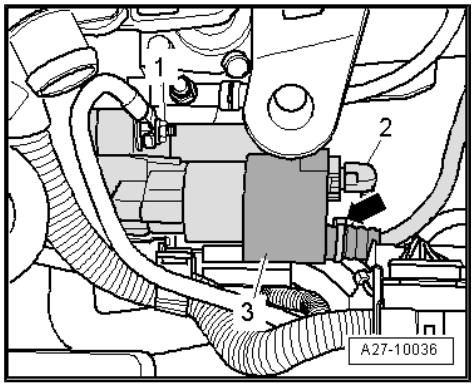

– Disconnect plug connection -arrow- at the bottom left frame side rail.

**Note**

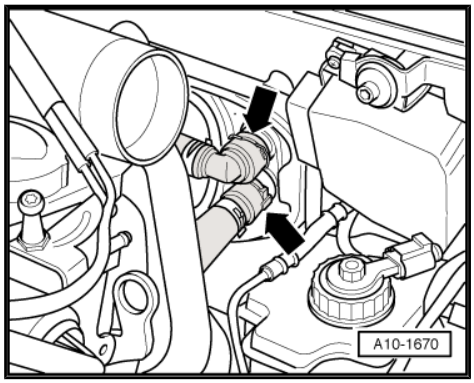
*For purposes of presentation, the fitting position is shown from below.*



– Remove the cable strap for -arrow- protective collar if present.
– Unscrew earth strap -1-.
– Unplug connector -2-.
– Pull back the protective collar and unscrew the B+ cable from the bracket of the solenoid switch for the starter.
– Disconnect further necessary plug connections at the engine and gearbox or line connections to engine and gearbox.




– Separate the quick couplings -arrows- at the heat exchanger.
– Pull off coolant hose from the top and bottom of the coolant expansion reservoir.




**Vehicles with auxiliary heating**

– Disconnect coolant hoses at auxiliary heating system.

**Vehicles fitted with a manual gearbox**

– Remove shift mechanism from gearbox ⇒ Gearbox; Rep. gr. 34 .
– Remove pressure line from breather/slave cylinder ⇒ Gearbox; Rep. gr. 30 .

**Caution**

*After separating the hydraulic line, do not operate the clutch pedal.*

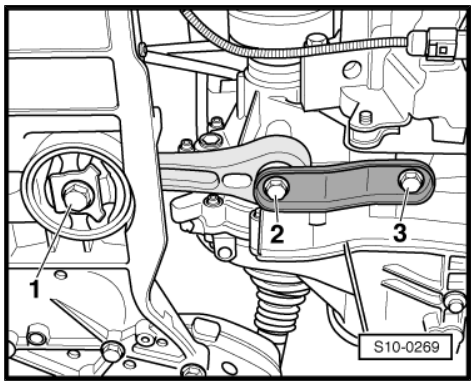
**Vehicles with automatic gearbox**

– Remove shift mechanism from gearbox ⇒ Automatic Gearbox; Rep. gr. 34 .

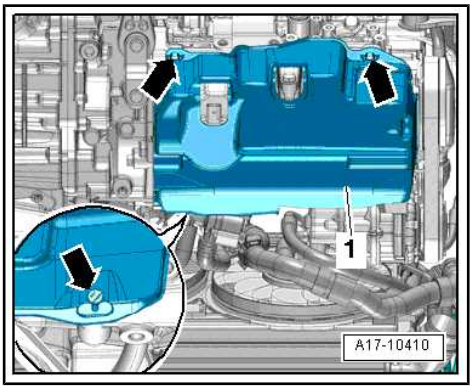
**Continued for all vehicles**

– Unclamp all remaining connecting, coolant, vacuum and suction hoses from the engine.
– Release all remaining plugs at engine and gearbox and lay aside the relevant lines.

– Unscrew screw -1- and remove pendulum support.



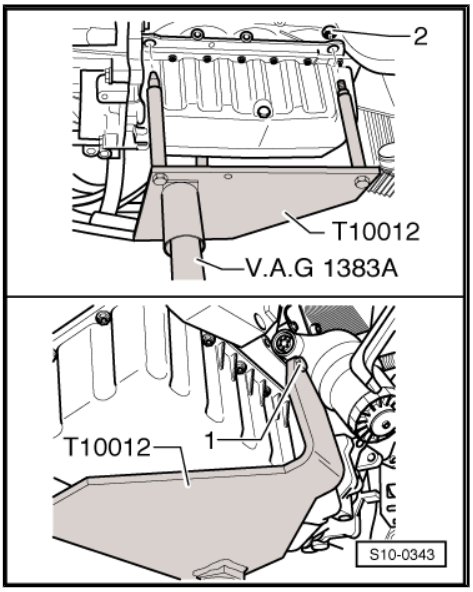
– Remove noise insulation of oil pan -1-, to do so slacken the fixing parts -arrows-.




– Screw engine mount - T10012- to the cylinder block with nut -2- and screw -1- to 20 Nm.
– Insert engine/gearbox jack - V.A.G 1383 A- in the engine mount and slightly raise.

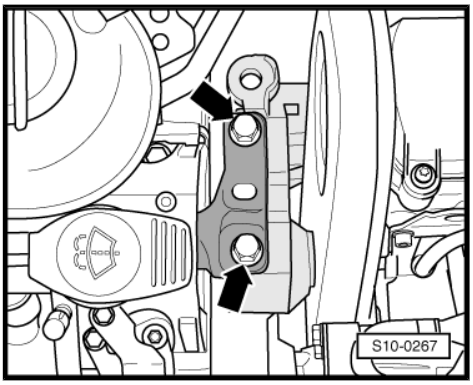
**Note**

*Use double ladder to release the screws for the engine/gearbox mounting.*

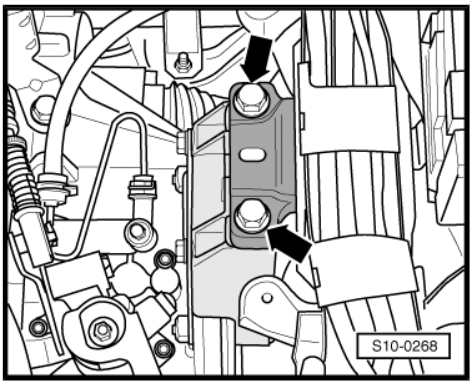



– Successively release screws for engine mount -arrows-.

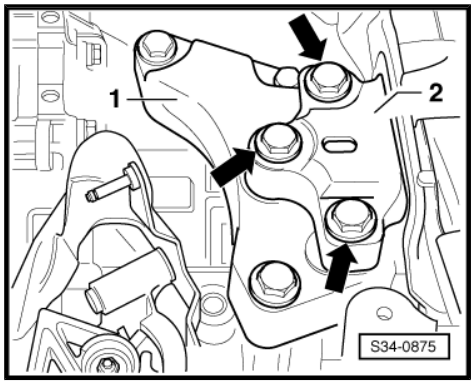
**For the vehicles Octavia II**




– Successively unscrew screws for gearbox mount at gearbox 0A4 -arrows- or ...

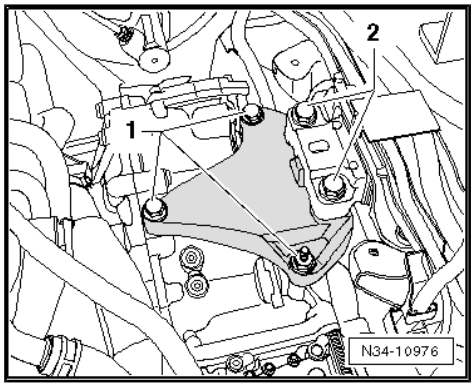


– ... at gearbox 02Q -arrows- or ...



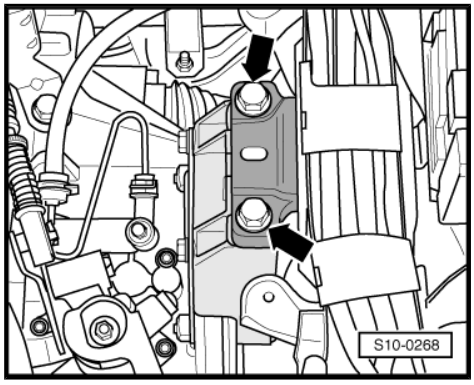

– ... at gearbox 0AM -2-.

**For the vehicles Superb II, Yeti**




– Successively release screws for gearbox mount -arrows-.

**Continued for all vehicles**




**Note**

- *Check whether all hose and line connections between engine, gearbox and body are released.*
- *When lowering carefully guide the engine with the gearbox, in order to avoid damage.*

– Carefully lower engine with gearbox. During this procedure, turn or move the engine with the gearbox depending upon the constriction.

– Remove the gearbox from the engine.

## 1.3 Securing the engine to the assembly stand

**Note**

*The engine and gearbox support - VAS 6095- or assembly stands - MP 9-101- with engine mount - MP 1-202- for the attachment.*

**Attachment to engine and gearbox mount - VAS 6095-**

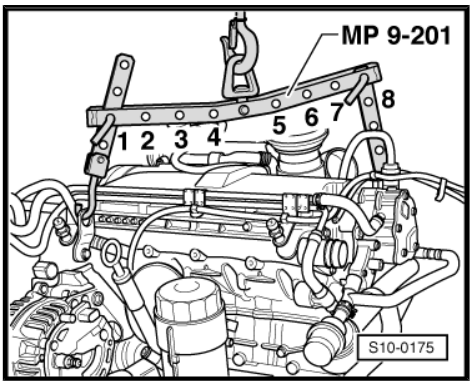
**Special tools and workshop equipment required**

- Workshop crane , e.g. -VAS 6100-
- Engine and gearbox support - VAS 6095-
- Lifting device - MP 9-201 (2024A)-

**Precondition**

- Separate engine from gearbox.

– Attach lifting device - MP 9-201- at engine and at workshop crane e.g. -VAS 6100- .




**On the belt pulley side:**

♦ 2. Hole of the attachment in Position 1

**On the flywheel side:**

♦ 4. Hole of the attachment in Position 8

**Note**

*The illustration shows a pump injector engine. The attachment for the Common Rail engine occurs in the same way.*

**WARNING**

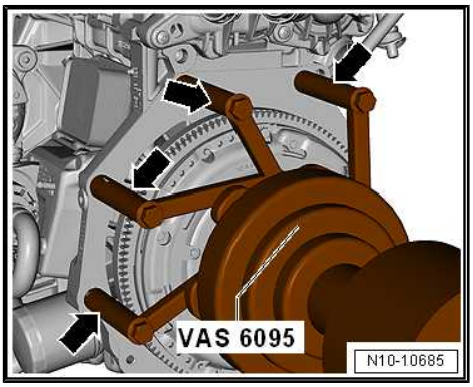
***Use securing pins on the hooks and rig pins to prevent release.***

***Use securing pins on the hooks and rig pins in order to avoid injuries and damage to the engine.***

– Lift off engine with installed engine mount - T10012- with workshop crane from engine/gearbox jack.

– Remove engine mount - T10012- .

– Secure engine using bolts -arrows- to the engine and gearbox mount - VAS 6095- .




## 1.4 Installing engine

⇒ “1.4.1 Install engine (Fabia II, Roomster, Rapid India, Rapid NH)”, page 29

⇒ “1.4.2 Install engine (Octavia II, Superb II, Yeti)”, page 33

## 1.4.1 Install engine (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

♦ Grease - G 000 100- for manual gearbox

**Precondition**

- Fit engine and gearbox using engine mount to the engine/ gearbox jack .

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .*
- *When undertaking assembly replace self-locking nuts and screws which have been tightened to a torquing angle.*
- *Always replace gasket rings and seals.*
- *All cable straps should be fastened again in the same place when installing.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

**Caution**

***When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:***

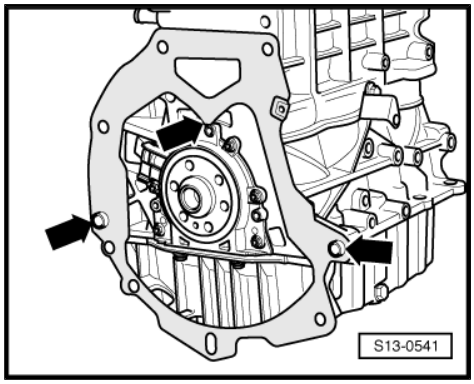
- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

**Note**

- *Clean the serration of the drive shaft and if the clutch disc has been used clean the hub serration, remove corrosion and only apply a very thin layer of grease - G 000 100- on the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Always remove excess grease.*
- *After installing the coupling, check the centering of the clutch disc ⇒ Gearbox; Rep. gr. 30 .*
- *Check the clutch release bearing for wear. Replace release bearing if worn ⇒ Gearbox; Rep. gr. 30 .*

– Check whether the dowel sleeves for centering the engine/ gearbox are present in the cylinder block; insert if necessary.

– Ensure that the intermediate plate has been inserted on the sealing flange and is pushed onto the dowel sleeves -arrows-.

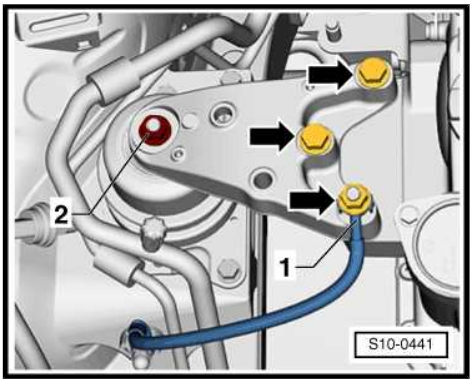



– Screw on gearbox to engine ⇒ Gearbox; Rep. gr. 34 .

– Insert engine with gearbox into the body.

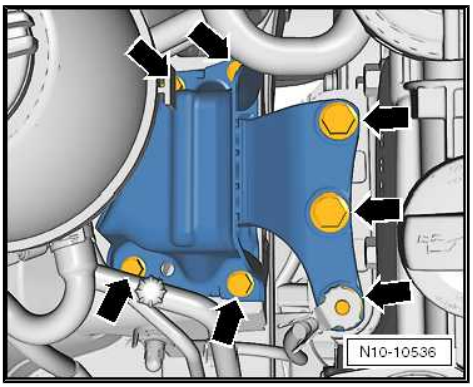
**For vehicles Fabia II, Roomster, Rapid NH**

– Successively screw in screws for engine mounting -arrows- by hand.



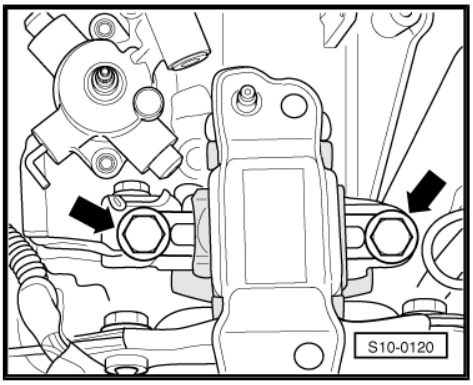

**For Rapid India vehicles**

– Successively screw in screws for engine mounting -arrows- by hand.




**Continued for all vehicles**

– Successively screw in by hand the screws for gearbox mount -arrows-.




– Remove engine mount - T10012- from engine.

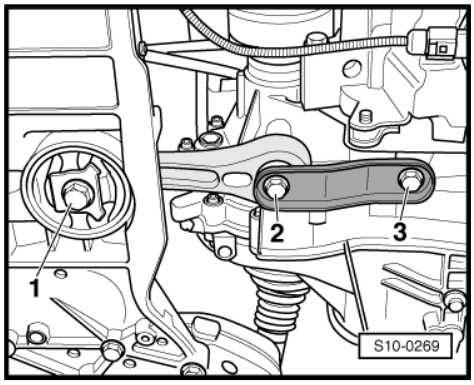
**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

– Install pre-exhaust pipe with diesel particle filter ⇒ page 457 .

**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

– Install exhaust pipe with catalytic converter ⇒ page 457 .

**Continued for all vehicles**




- First tighten pendulum support with new screws -2- and -3- at gearbox and then tighten with new screw -1- at assembly carrier.
- Install the left as well as the right drive shaft ⇒ Chassis; Rep. gr. 40 .
- Install the slave cylinder, if necessary bleed the clutch control ⇒ Gearbox; Rep. gr. 30 .
- Attach shift mechanism to gearbox and adjust ⇒ Gearbox; Rep. gr. 34 .
- Install AC compressor at the bracket for auxiliary units ⇒ page 57 .
- Install alternator ⇒ Electrical System; Rep. gr. 27 .
- Install poly V-belt ⇒ page 63 .
- Connect all hoses to the engine.
- Connect electrical connections and attach cables ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Carry out cohesive work when reconnecting the battery ⇒ Electrical System; Rep. gr. 27 .
- Top up coolant ⇒ page 223 .
- Checking the oil level:

♦ ⇒ Maintenance ; Booklet Fabia II .
♦ ⇒ Maintenance ; Booklet Roomster .
♦ ⇒ Maintenance ; Booklet Rapid Indie .
♦ ⇒ Maintenance ; Booklet Rapid NH .

- Install the left and right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .
- Install the noise insulation ⇒ Body Work; Rep. gr. 50 .
- Filling and bleeding the fuel system ⇒ page 382 .
- Check fuel system for tightness ⇒ page 406 .
- Perform a test drive.
- Query all fault memories, rectify any faults and delete fault memories ⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

### Tightening torques

| Component | | Nm |
|---|---|---|
| Screws or nuts | M6 | 10 |
| | M7 | 15 |
| | M8 | 20 |
| | M10 | 40 |
| | M12 | 70 |
| Engine/gearbox connecting screws ⇒ Gearbox; Rep. gr. 34 | | |

## 1.4.2 Install engine (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Grease - G 000 100- for manual gearbox
- High temperature grease - G 052 133 A2- for automatic gearbox

**Precondition**

- Fit engine and gearbox using engine mount to the engine/ gearbox jack .

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .*
- *Always replace self-locking nuts.*
- *Replace screws which have been tightened to torquing angle.*
- *Always replace gasket rings and seals.*
- *All cable straps should be fastened again in the same place when installing.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

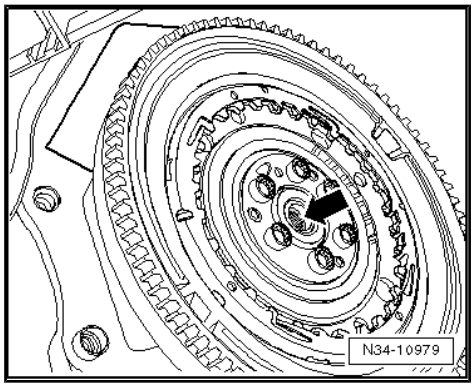
**For vehicles with manual gearbox**

**Note**

- *Clean the serration of the drive shaft and if the clutch disc has been used clean the hub serration, remove corrosion and only apply a very thin layer of grease - G 000 100- on the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Always remove excess grease.*
- *After installing the coupling, check the centering of the clutch disc ⇒ Gearbox; Rep. gr. 30 .*
- *Check the clutch release bearing for wear. Replace release bearing if worn ⇒ Gearbox; Rep. gr. 30 .*

**For vehicles with automatic gearbox DSG**

– Replace the needle bearing -arrow- in the crankshaft ⇒ page 128 .



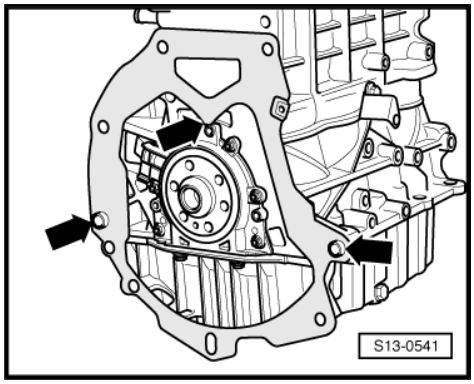

**Note**

*Lubricate needle bearing and drive shaft pin with a thin layer of high temperature grease - G 052 133 A2- . Do not grease the serration of the drive shaft.*

**Continued for all vehicles**

– Check whether the dowel sleeves for centering the engine/ gearbox are present in the cylinder block; insert if necessary.

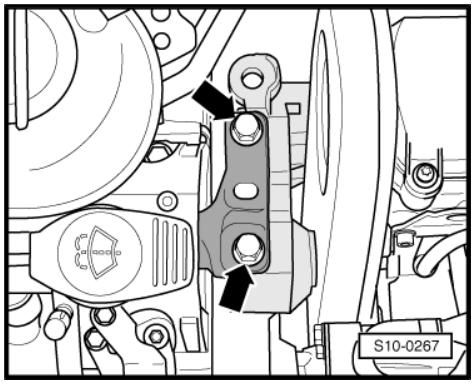
– Ensure that the intermediate plate has been inserted on the sealing flange and is pushed onto the dowel sleeves -arrows-.




– Screw on gearbox to engine ⇒ Gearbox; Rep. gr. 34 .

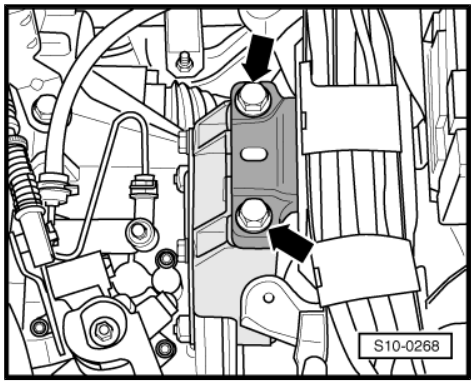
– Insert engine with gearbox into the body.

– Successively screw in by hand the screws for engine mount -arrows-.

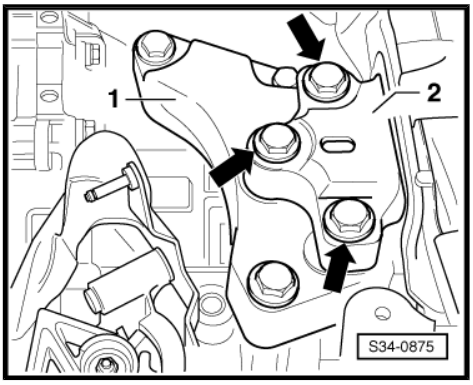



**For the vehicles Octavia II**

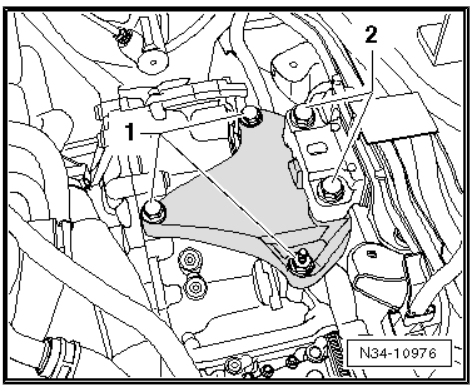
– Successively screw in by hand the screws for gearbox mount -arrows- at gearbox 0A4 -arrows- or ...



– ... at gearbox 02Q -arrows- or ...

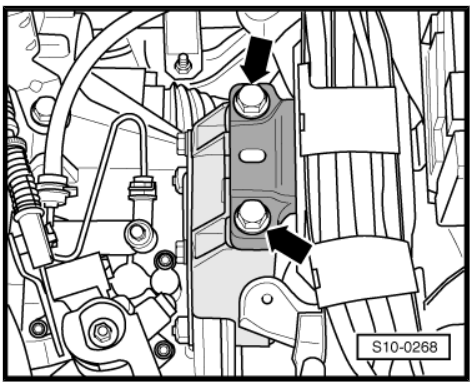



– ... at gearbox 0AM -2-.




**For the vehicles Superb II, Yeti**

– Successively screw in by hand the screws for gearbox mount -arrows-.




**For all vehicles**

– Align engine and gearbox mount and tighten screws:

♦ Octavia II, Yeti ⇒ page 43 .

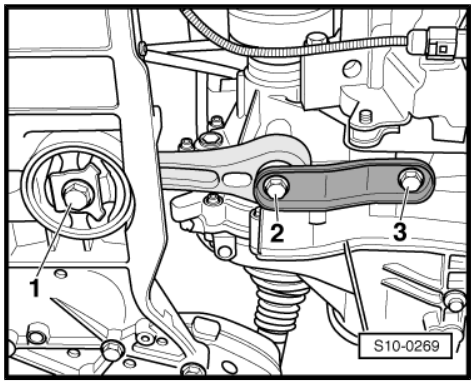
♦ Superb II ⇒ page 41 .

– Remove engine mount - T10012- from engine.

– Install pre-exhaust pipe with diesel particle filter ⇒ page 457 .

– First tighten pendulum support with new screws -2- and -3- at gearbox and then tighten with new screw -1- at assembly carrier.

– Install the left as well as the right drive shaft ⇒ Chassis; Rep. gr. 40 .




**For vehicles with manual gearbox**

– Connect hydraulic line to breather/clutch slave cylinder and bleed the clutch hydraulic ⇒ Gearbox; Rep. gr. 30 .

– Attach shift mechanism to gearbox and adjust ⇒ Gearbox; Rep. gr. 34 .

**For models with automatic gearbox**

– Attach the shift mechanism to the gearbox ⇒ Automatic Gearbox; Rep. gr. 34 .

**Continued for all vehicles**

– Install AC compressor at the bracket for auxiliary units ⇒ page 57 .

– Install poly V-belt ⇒ page 63 .

– Install radiator ⇒ page 262 .

– Install fan shroud with radiator fans ⇒ page 259 , to do so ensure adequate clearance of the blower motors.

– Connect all connecting, fuel, cooling fluid, vacuum and suction hoses to the engine.

– Connect electrical connections and attach cables ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Carry out cohesive work when reconnecting the battery ⇒ Electrical System; Rep. gr. 27 .

– Install bulkhead plenum chamber and plenum chamber cover ⇒ Body Work; Rep. gr. 66 .

– Install wiper arms ⇒ Electrical System; Rep. gr. 92 .

– Top up coolant ⇒ page 223 .

– Checking the oil level:

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

– Install the bottom part of the right and left wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

– Install the noise insulation ⇒ Body Work; Rep. gr. 50 .

– Filling and bleeding the fuel system ⇒ page 382 .

– Check fuel system for tightness ⇒ page 406 .

– Perform a test drive.

– Query all fault memories, rectify any faults and delete fault memories ⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

**Tightening torques**

| Component | | Nm |
|---|---|---|
| Screws or nuts | M6 | 10 |
| | M7 | 15 |
| | M8 | 20 |
| | M10 | 40 |
| | M12 | 70 |
| Engine/gearbox connecting screws ⇒ Gearbox; Rep. gr. 34 | | |

## 1.5 Assembly bracket

⇒ "1.5.1 Assembly mountings (Fabia II, Roomster, Rapid NH)", page 37

⇒ "1.5.2 Assembly mountings (Octavia II)", page 38

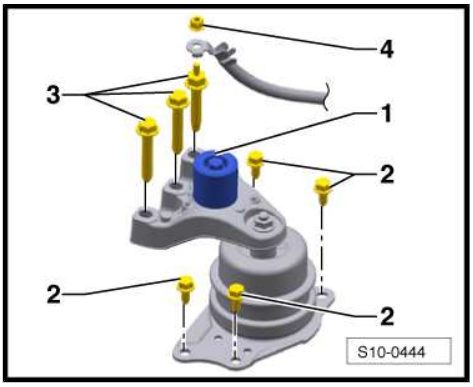
⇒ "1.5.3 Assembly mountings (Superb II, Yeti)", page 39

⇒ "1.5.4 Assembly mountings (Rapid India)", page 40

### 1.5.1 Assembly mountings (Fabia II, Roomster, Rapid NH)

**Tightening torques**

**Engine mount**



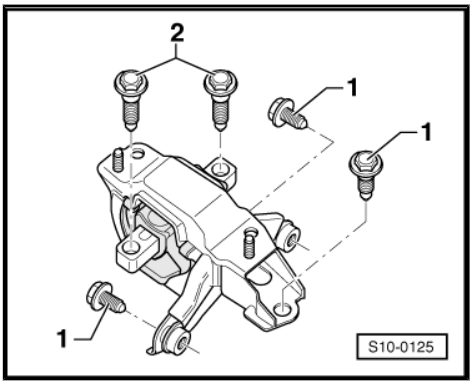

1 - not fitted on this type of engine

2 - 20 Nm + torque a further 90° (1/4 turn) - replace

3 - 30 Nm + torque a further 90° (1/4 turn) - replace

4 - 16 Nm

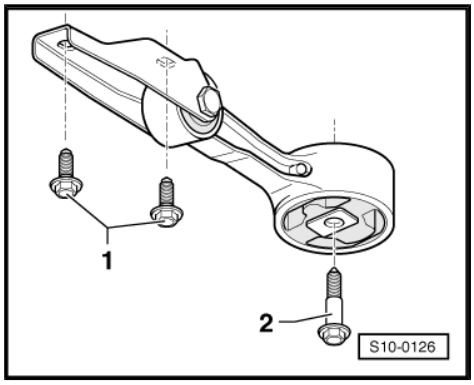
**Gearbox mount**




1 - 50 Nm + torque a further 90° (1/4 turn) - replace

2 - 40 Nm + torque a further 90° (1/4 turn) - replace

**Pendulum support**




**Note**

*Position the screws -1- in the elongated holes of the pendulum support in such a way that there is maximum distance between the gearbox and the assembly carrier.*

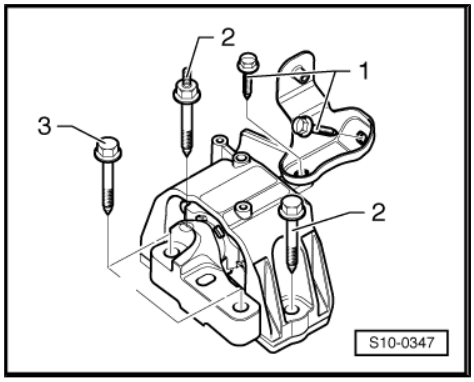
1 - 30 Nm + torque a further 90° (1/4 turn) - replace

2 - 40 Nm + torque a further 90° (1/4 turn) - replace

## 1.5.2 Assembly mountings (Octavia II)

**Tightening torques**

**Assembly bracket**

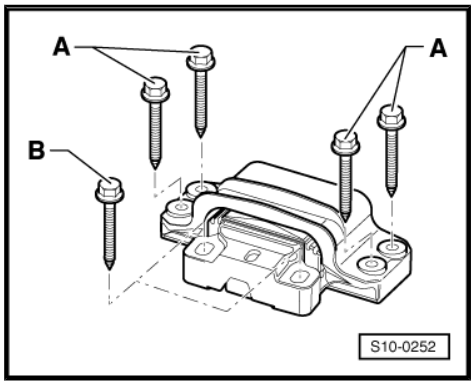



1 - 20 Nm + 90° (1/4 turn) - replace

2 - 40 Nm + 90° (1/4 turn) - replace

3 - 60 Nm + 90° (1/4 turn) - replace

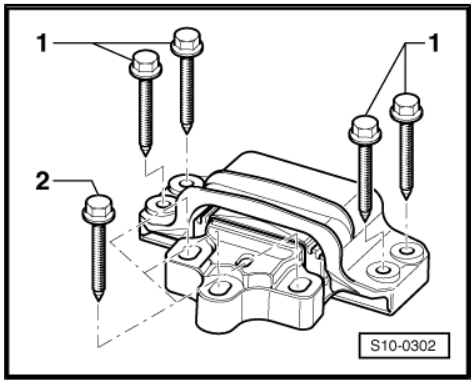
**Assembly bracket gearbox 0A4 and 0AM**




A - 40 Nm + 90° (1/4 turn) - replace

B - 60 Nm + 90° (1/4 turn) - replace

**Assembly bracket gearbox 02Q**




1 - 40 Nm + 90° (1/4 turn) - replace

2 - 60 Nm + 90° (1/4 turn) - replace

**Pendulum support**

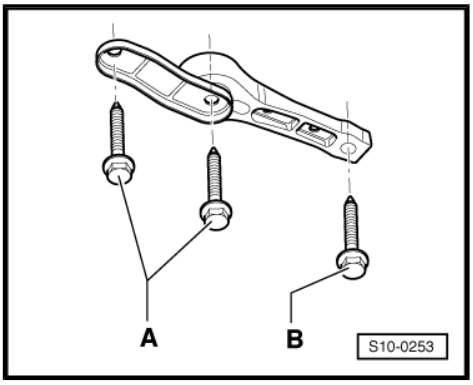
A - strength class 8.8 - 40 Nm + 90° ($^1/_4$ turn) - replace

A - strength class 10.9 [1] - 50 Nm + 90° ($^1/_4$ turn) - replace

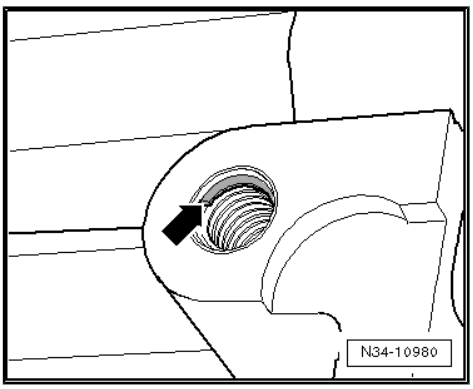
B - 100 Nm + 90° ($^1/_4$ turn) - replace

Removing: First unscrew screw -B-, then screw -A-.

Installing: First tighten screw -A-, then screw -B-.




[1] On manual gearbox MQ350 (02Q), only use the screws with the strength category 10.9 if threaded inserts have been installed (e.g. HeliCoil) -arrow-.




## 1.5.3 Assembly mountings (Superb II, Yeti)

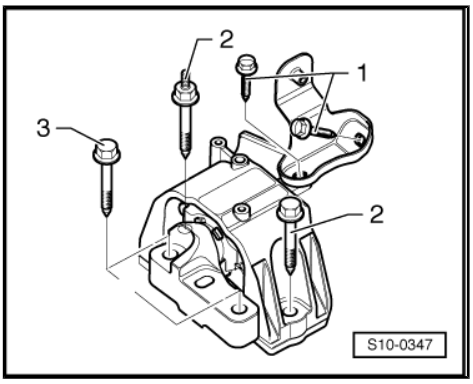
**Tightening torques**

**Assembly bracket**

1 - 20 Nm + 90° ($^1/_4$ turn) - replace

2 - 40 Nm + 90° ($^1/_4$ turn) - replace

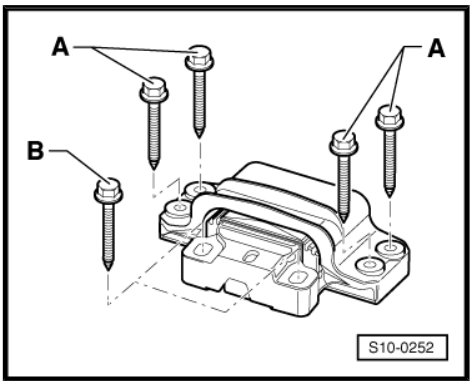
3 - 60 Nm + 90° ($^1/_4$ turn) - replace




**Unit mounting for gearbox**

A - 40 Nm + 90° ($^1/_4$ turn) - replace

B - 60 Nm + 90° ($^1/_4$ turn) - replace



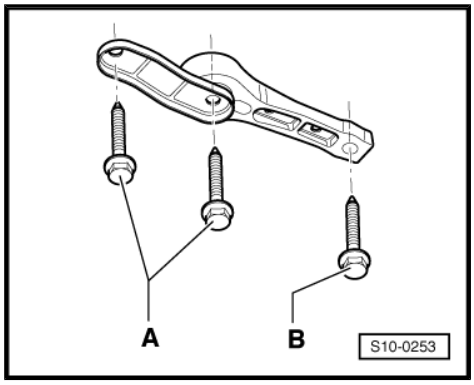
**Pendulum support**

A - strength class 8.8 - 40 Nm + 90° ($^1/_4$ turn) - replace

B - 100 Nm + 90° ($^1/_4$ turn) - replace

Removing: First unscrew screw -B-, then screw -A-.

Installing: First tighten screw -A-, then screw -B-.



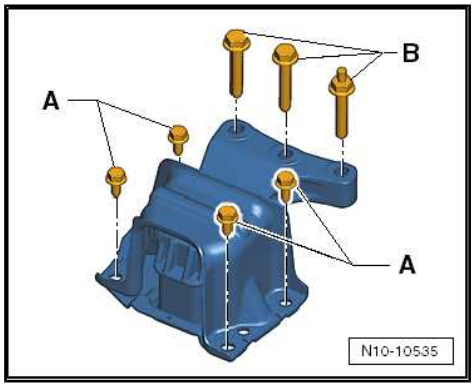

## 1.5.4 Assembly mountings (Rapid India)

**Tightening torques**

**Engine mount**

A - 20 Nm + torque a further 90° ($^1/_4$ turn) - replace

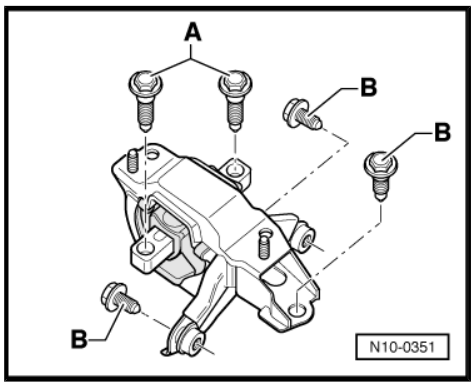
B - 30 Nm + torque a further 90° ($^1/_4$ turn) - replace




**Gearbox mount**

A - 40 Nm + torque a further 90° ($^1/_4$ turn) - replace

B - 40 Nm + torque a further 90° ($^1/_4$ turn) - replace




**Pendulum support**

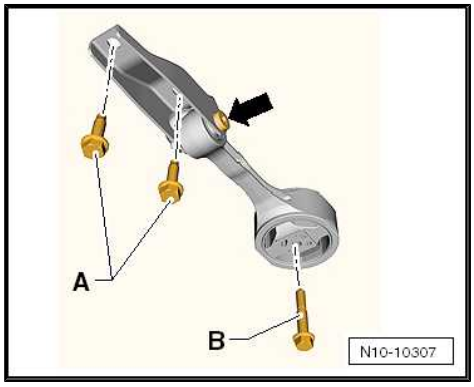
**Note**

*Position the screws -A- in the elongated holes of the pendulum support in such a way that there is maximum distance between the gearbox and the assembly carrier.*

A - 30 Nm + torque a further 90° ($^1/_4$ turn) - replace

B - 40 Nm + torque a further 90° ($^1/_4$ turn) - replace

-arrow- - the screw must not be loosened



## 1.6 Checking and adjusting the assembly bracket

⇒ "1.6.1 Checking and adjusting the assembly bracket (Superb II)", page 41

⇒ "1.6.2 Checking and adjusting the assembly mounting (Octavia II, Yeti)", page 43

## 1.6.1 Checking and adjusting the assembly bracket (Superb II)

**Special tools and workshop equipment required**

- Supporting device - MP9-200 (10-222A)-
- Adapter - MP9-200/3 (10-222A/3)-
- Wing plates - T10311-

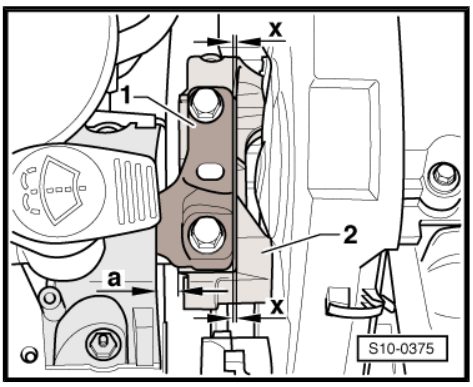
or

- Engine mount - T10012-
- Engine/gearbox jack , e.g. -V.A.G 1383 A-

**Checking the assembly bracket**

Check dimensions on the right hanger for engine/gearbox unit:

- Between engine bracket and engine support there must be a distance -a- of 10...13 mm.
- The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.




**Note**

*The distance -a- can be checked, for example with suitable round bars.*

**Only if there is an acoustic complaint (engine or gearbox knock on the frame side rail when cornering) and the dimension -a- is not 10...13 mm:**

– Adjust the assembly bracket ⇒ page 41 .

**Adjusting the unit mounting**

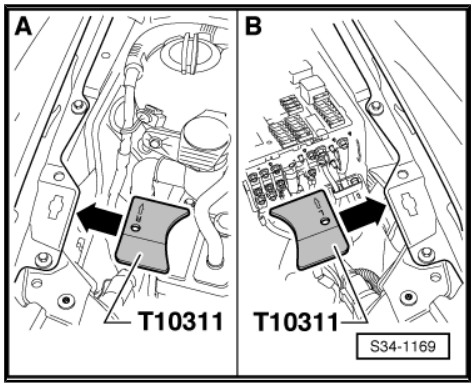
**Precondition**

- Engine with gearbox supported with supporting device - MP9-200 (10-222A)- and adapter - MP9-200/3- or engine with gearbox supported with engine mount and engine/gearbox jack .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Remove the front stop buffers for the front flap from both upper edges of the wings at the front.

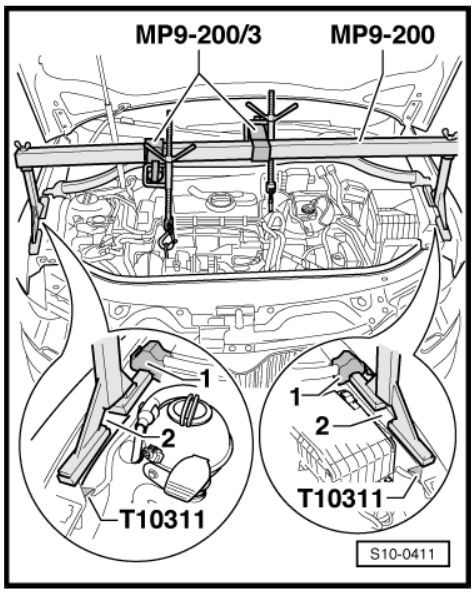
– Insert the wing plate - T10311- on the right vehicle side -A- in -the direction of the arrow- up to the stop. When doing this, the -arrow R- on the wing plate - T10311- points to the rear.
– Also insert the wing plate - T10311- on the left vehicle side -B- in -the direction of the arrow- up to the stop. When doing this, the -arrow L- on the wing plate - T10311- points to the rear.



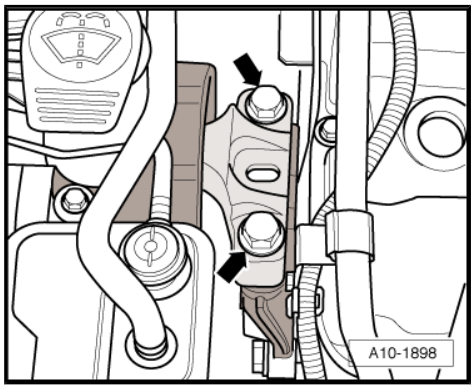

**Note**

*The wing plates - T10311- ensure that the wings do not get damaged through the weight of the engine/gearbox unit.*

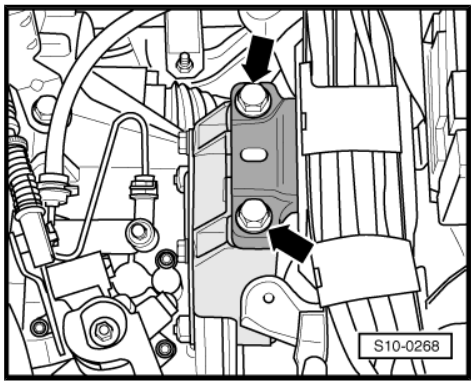
– Position the supporting device - MP9-200- with the adapters - MP9-200/3- and support the engine/gearbox unit in its installed position.
– The feet of the supporting device - MP9-200- must be pushed as shown in the illustration up to the stop buffers -1- and placed on the wheelhouse frame side rail at the top -2-.
– Uniformly pre-tension the engine/gearbox unit with both spindles, but do not raise.




– Release the screws -arrows- of the assembly bracket at the engine.

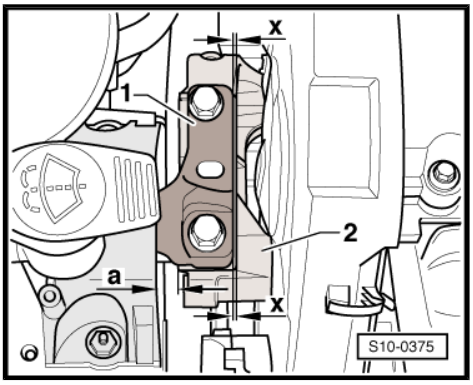



– Slightly loosen the screws -arrows- of the assembly bracket at the gearbox (less than 1 revolution).
– Successively replace all the screws of the assembly bracket (as long as it has not already been performed when installing the engine) and insert these loosely.



– Move the engine/gearbox assembly with an assembly lever between engine support -2- and supporting arm -1- for engine mount until the following dimensions are set:

- Between engine bracket and engine support there must be a distance -a- of 10 mm.
- The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.




**Note**

*The distance -a- = 10 mm can be checked e.g. with corresponding round bars.*

– Tighten screws for engine assembly bracket ⇒ page 39 .

Further installation occurs in reverse order.

## 1.6.2 Checking and adjusting the assembly mounting (Octavia II, Yeti)

**Special tools and workshop equipment required**

- ♦ Supporting device - T30099-
- ♦ Surface - T30099/1-
- ♦ Adapter - MP9-200/3 (10-222A/3)-

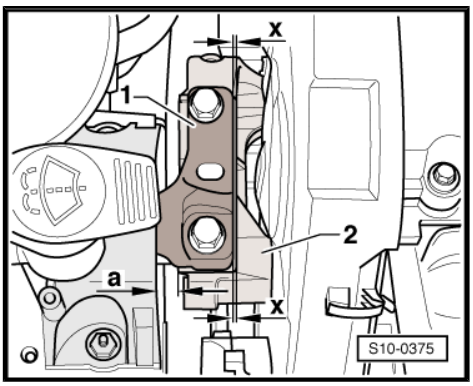
or

- ♦ Engine mount - T10012-
- ♦ Engine/gearbox jack , e.g. -V.A.G 1383 A-

**Checking the assembly bracket**

Check dimensions on the right hanger for engine/gearbox unit:

- Between engine bracket and engine support there must be a distance -a- of 10 mm.
- The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.




**Note**

*The distance -a- can be checked, for example with suitable round bars.*

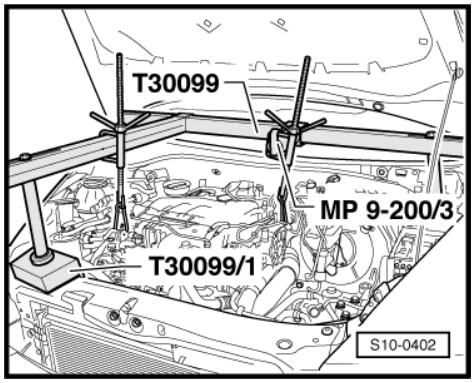
**Only if there is an acoustic complaint (engine or gearbox knock on the frame side rail when cornering) and the dimension -a- is not 10 mm:**

– Adjust the assembly bracket ⇒ page 43 .

**Adjusting the unit mounting**

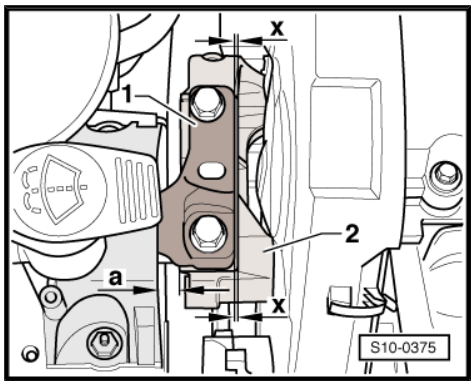
**Precondition**

- Engine with gearbox supported with supporting device - T30099- , base - T30099/1- and adapter - MP9-200/3- or engine with gearbox supported with engine mount and engine/ gearbox jack .




The following dimensions -a- and -x- must be maintained:

- Between engine bracket and engine support there must be a distance -a- = 10 mm.
- The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.




**Note**

*The distance -a- = 10 mm can be checked, for example with suitable round bars.*

**Tightening torques of the assembly bracket:**

- ⇒ “1.5.2 Assembly mountings (Octavia II)”, page 38 .
- ⇒ “1.5.3 Assembly mountings (Superb II, Yeti)”, page 39 .

## 1.7 Removing and installing engine support

⇒ “1.7.1 Removing and installing engine support (Fabia II, Roomster, Rapid India, Rapid NH)”, page 44

⇒ “1.7.2 Removing and installing engine support bracket (Superb II)”, page 49

⇒ “1.7.3 Removing and installing engine support bracket (Octavia II, Yeti)”, page 53

### 1.7.1 Removing and installing engine support (Fabia II, Roomster, Rapid India, Rapid NH)

**For vehicles Fabia II, Roomster, Rapid India**

**Special tools and workshop equipment required**

- Supporting device - MP9-200 (10-222A)-

**For vehicles Rapid NH**

**Special tools and workshop equipment required**

- Supporting device - T30099-
- Surface - T30099/1-
- Adapter - MP9-200/3 (10-222A/3)-

## Removing

**Caution**

*When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.*

**Note**

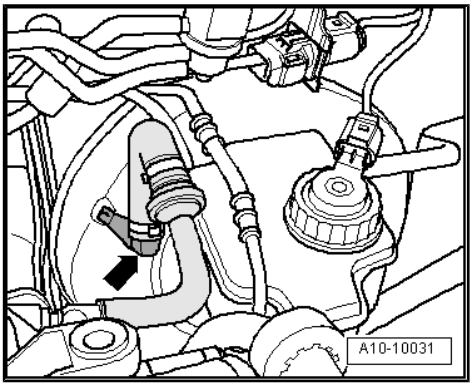
- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Switch off ignition and pull out ignition key.

– Remove engine cover ⇒ page 10 .

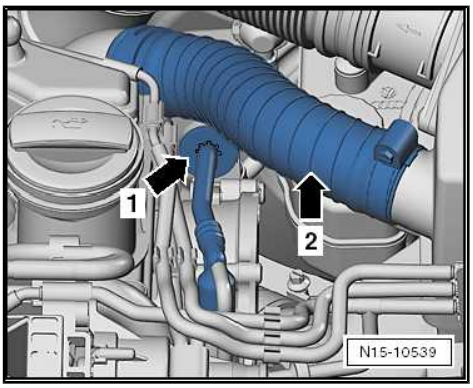
**For vehicles Fabia II, Roomster**

– Remove vacuum line from brake servo unit -arrow-.



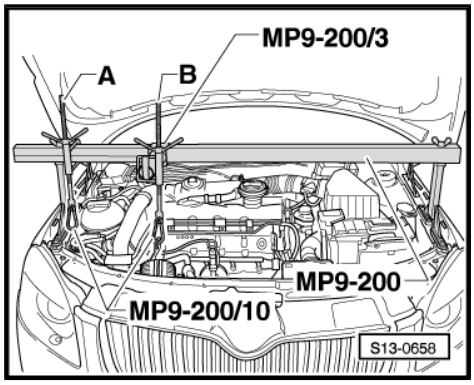

**For vehicles Rapid India, Rapid NH**

– Disconnect vacuum line behind the holder at the cylinder head -arrow 1-.




**For vehicles Fabia II, Roomster, Rapid India**

– Install supporting device - MP9-200 (10-222A)- and support the engine with spindle -B- in fitting position. Allow spindle -A- to hang loosely.



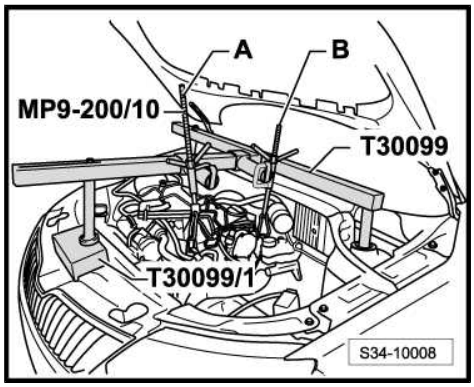

**Note**

- *The assembly bracket must only be removed if the engine is supported with the supporting device - MP9-200 (10-222A)- !*
- *Only release the engine support if the assembly bracket is removed.*

**For vehicles Rapid NH**

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 50 .

– Position the supporting device - T30099- with the base - T30099/1- and the adapter - MP9-200/3- and support the engine with spindle -A- in its installed position. Allow spindle -B- to hang loosely.




**Note**

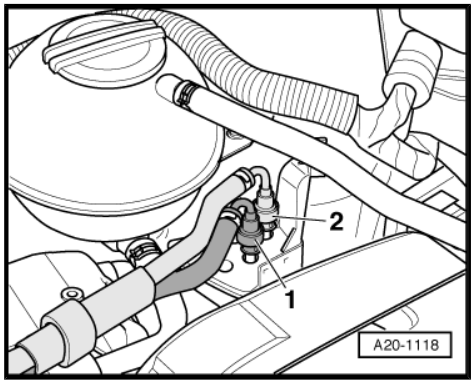
- *The assembly bracket must only be removed if the engine is supported with the supporting device - T30099- !*
- *Only release the engine support if the assembly bracket is removed.*

**Continued for all vehicles**

– Remove the front right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

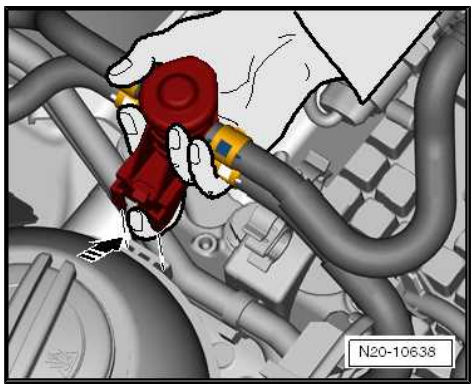
– Separate fuel feed line -2- and fuel return-flow line -1-, to do so press the release buttons. Unlock the quick coupling and disconnect ⇒ page 303 .

– Collect the fuel which flows out with a cloth.



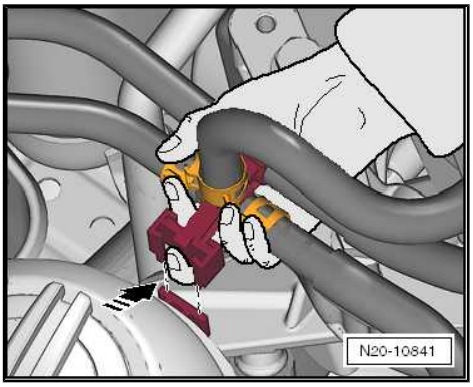

**For vehicles Fabia II, Roomster, Rapid NH**

– Unlock the catch peg with a finger and pull the fuel preheating valve upwards out of the guide of the coolant expansion bottle.




**For Rapid India vehicles**

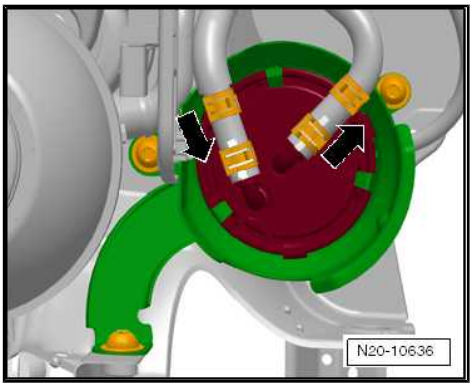
– Unlock the catch peg with a finger and pull the T-piece upwards out of the guide from the coolant expansion bottle.




**Continued for all vehicles**

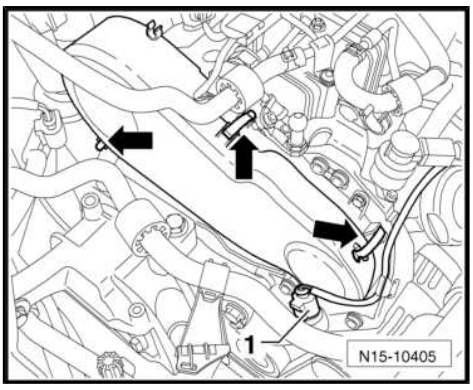
– Unclip the fuel line from the plastic holders.

– Push the catch pegs up and remove the fuel filter towards the top.
– Place the fuel filter and the fuel hoses together with the fuel preheating valve on the engine.
– Remove fuel filter bracket.
– Slacken the coolant expansion bottle in such a way that there is sufficient space for the removal of the engine support.



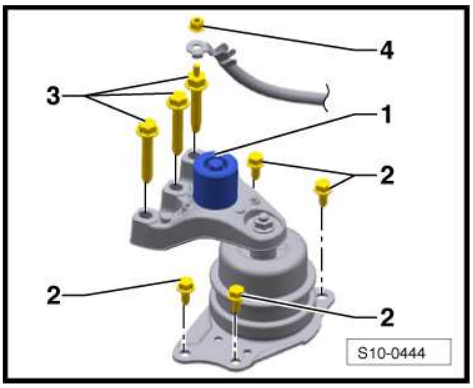

– Remove top part of toothed belt guard; to do so release retaining clips -arrows-.
– Remove the earth connection from the assembly bracket.

**For vehicles Fabia II, Roomster, Rapid NH**

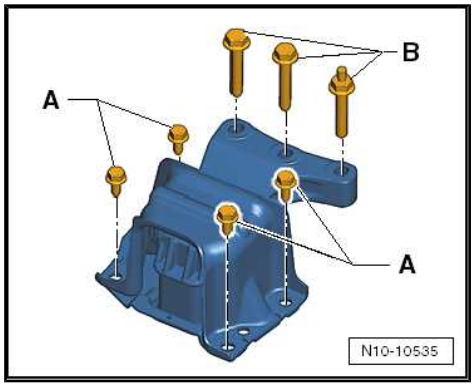



– Release fixing screws of assembly bracket/engine support -3-, assembly bracket/body -2- and remove the complete assembly bracket.

**For Rapid India vehicles**

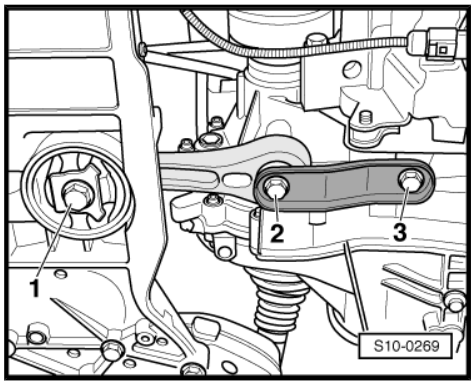


– Release fixing screws of assembly bracket/engine support -B-, assembly bracket/body -A- and remove the complete assembly bracket.




**Continued for all vehicles**

– Screws -1 ... Unscrew screw 3- and remove pendulum support.



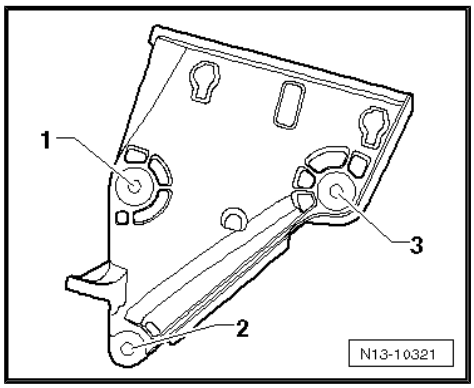

**Caution**

***Make sure that no components/hoses are damaged, overstretched or torn off when lifting and lowering the engine with the supporting device - MP9-200 (10-222A)- if necessary -T30099- .***

– Pull the engine as far as possible towards the radiator.

**Note**

- *Remove the fixing screw -1- together with the engine support.*
- *Raise engine and, using the spindles of the support bracket -MP9-200 (10-222A)- if applicable -T30099- in such a way that the screws -2- and -3- can be loosened and removed.*




– Unscrew the fixing screws for the engine support in the sequence -3-, -2- and -1-

– Remove the engine support upwards.

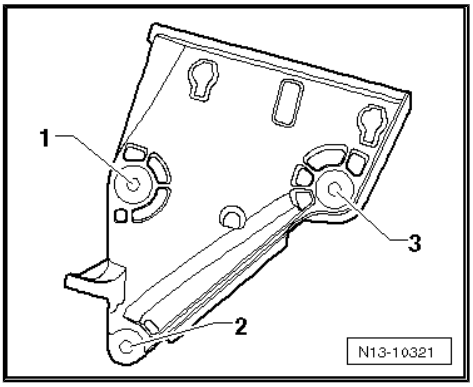
**Install**

**Caution**

***The tightening order and the tightening torque of the fixing screws for the engine support must definitely be respected. Otherwise engine support tensioning may occur, resulting in engine support breakage.***

Installation is carried out in reverse order. However, pay attention to the following:

– Place the engine support from the top.




**Note**

- *Install the fixing screw -1- together with the engine support.*
- *Raise engine and, using the spindles of the support bracket - MP9-200 (10-222A)- if applicable -T30099- in such a way that the screws -2- and -3- can be inserted and tightened.*

– Tighten screws in two stages in the following sequence:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1-, -2-, -3- | 7 Nm |
| 2. | -1-, -2-, -3- | 40 Nm + 180° ($^1/_2$ turn). |

– Install engine mounting with new screws.

– Tighten screws for engine mount.

Further installation occurs in reverse order. However, pay attention to the following:

- Make sure the fuel lines fit tightly.
- Do not mix-up the feed line and the return-flow line (the return-flow line is blue or has a blue marking, the feed line is black).

**Tightening torques**

- ⇒ “1.5.1 Assembly mountings (Fabia II, Roomster, Rapid NH)”, page 37 .
- ⇒ “1.5.4 Assembly mountings (Rapid India)”, page 40 .

## 1.7.2 Removing and installing engine support bracket (Superb II)

**Special tools and workshop equipment required**

- Supporting device - MP9-200 (10-222A)-
- Adapter - MP9-200/3 (10-222A/3)-
- Wing plates - T10311-

**Removing**

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

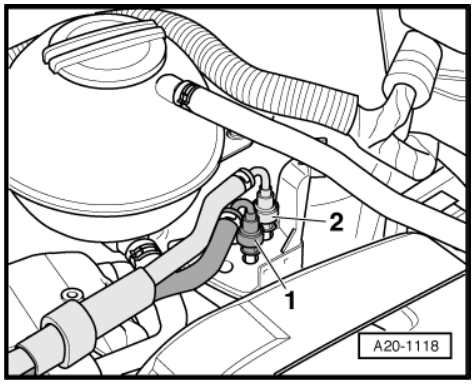
**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Switch off ignition and pull out ignition key.

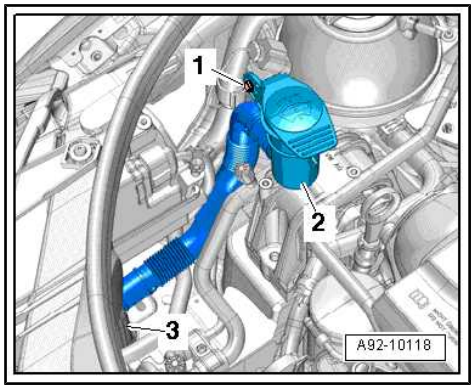
– Remove engine cover ⇒ page 10 .

– Detach fuel feed line -2- and fuel return-flow line -1-, to do so press in securing ring. Unlock the quick coupling and disconnect ⇒ page 303 .

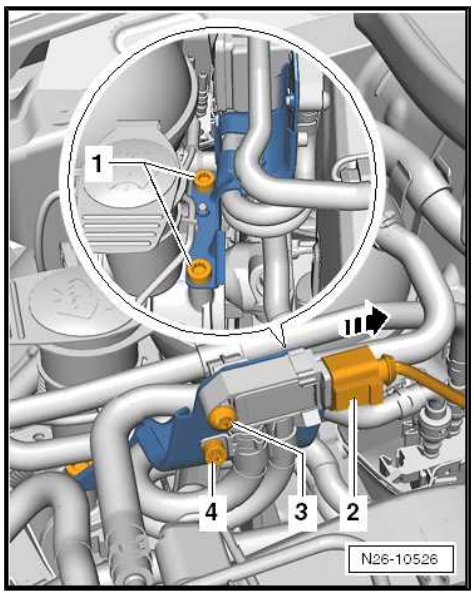



– Unscrew bolt -1-.

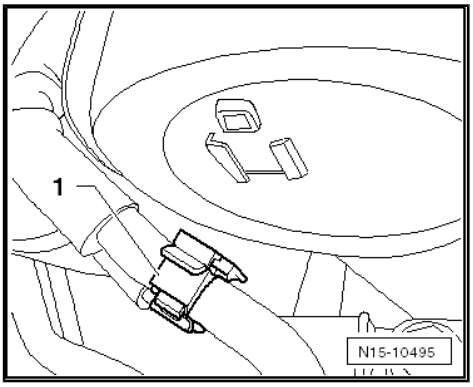
– Push the filler tube with the filler neck -2- for the washer-fluid reservoir to the side.




– Disconnect the plug from the differential pressure sender - G505- and unscrew the fixing screws -1-.



– Slacken line -1- for differential pressure sender - G505- with bracket from top timing belt guard.
– Remove the bracket with the differential pressure sender - G505- and place it to the rear.



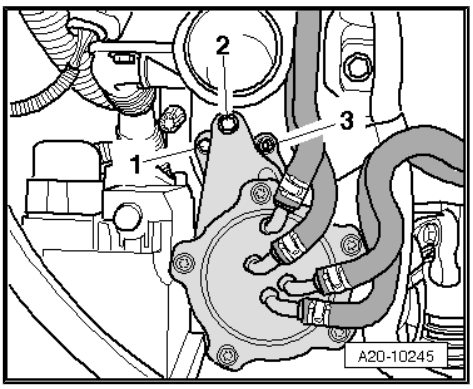

**Caution**

*Risk of damage!*

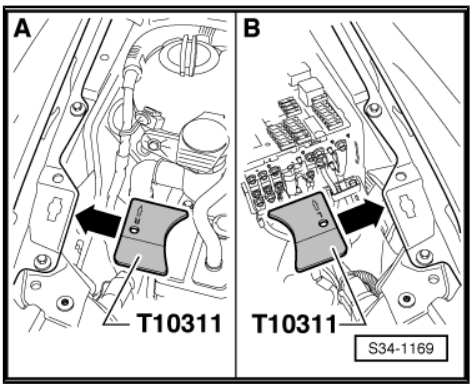
- *The differential pressure indicator - G505- is very sensitive and must not touch somewhere when laying it down with the bracket.*

– Unplug connector from compensation bottle.
– Unscrew screw for compensation bottle.

– Release screw -1- by two turns.
– Release screw -2- and nut -3-.
– Unclip bracket for coolant line at fuel filter.
– Lay the compensation bottle with the hoses connected and the fuel filter with the hoses connected onto the engine.
– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .



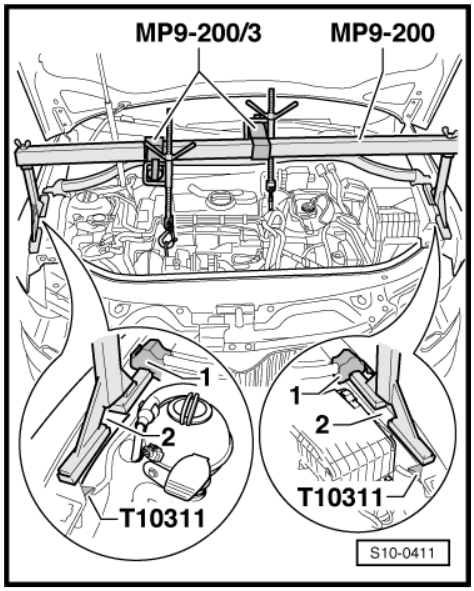

– Insert the wing plate - T10311- on the right vehicle side -A- in -the direction of the arrow- up to the stop. When doing this, the -arrow R- on the wing plate - T10311- points to the rear.
– Also insert the wing plate - T10311- on the left vehicle side -B- in -the direction of the arrow- up to the stop. When doing this, the -arrow L- on the wing plate - T10311- points to the rear.




**Note**

*The wing plates -T10311- ensure that the wings do not get damaged through the weight of the engine/gearbox unit.*

– Position the supporting device - MP9-200- with the adapters - MP9-200/3- and support the engine/gearbox unit in its installed position.
– Uniformly pre-tension the engine/gearbox unit at both spindles, do not raise.
– Remove engine mounts.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .
– Remove the coolant pipe from the engine support.

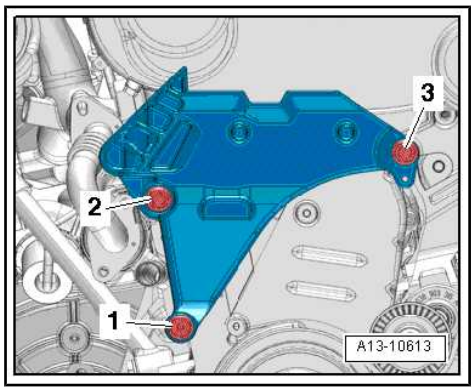



**Caution**

***Make sure that no components as well as hoses are damaged, overstretched or torn off when lifting and lowering the engine with the supporting device - MP9-200- .***

**Note**

*The fixing screw -1- is accessible through the hole in the wheelhouse. If necessary, raise or lower the engine via the spindles of the supporting device - MP9-200- so that the screws -2- and -3- can be removed.*




– Unscrew the fixing screws for the engine support in the sequence -3-, -2- and -1-
– Remove engine support upwards.

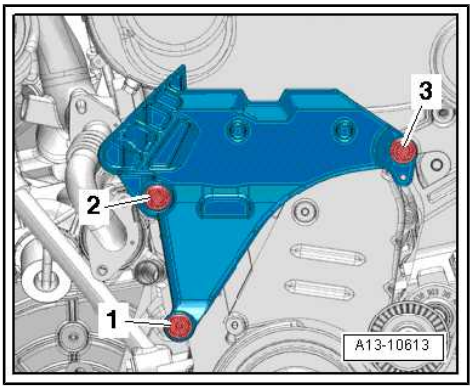
**Install**

**Caution**

***The tightening order and the tightening torque of the fixing screws for the engine support must definitely be respected. Otherwise engine support tensioning may occur, resulting in engine support breakage.***

Installation is carried out in reverse order. However, pay attention to the following:

– Insert engine support from above.




**Note**

*The installation of the fixing screw -2- is possible through the hole in the wheelhouse. If necessary, raise or lower the engine via the spindles of the supporting device - MP9-200- so that the screws -1- and -3- can be inserted.*

– Tighten screws in two stages in the following sequence:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1-, -2-, -3- | 7 Nm |
| 2. | -1-, -2-, -3- | 40 Nm + 180° ($^1/_2$ turn). |

– Install engine mounting with new screws.

– Check the setting of the assembly bracket at the engine ⇒ page 41 .

– Tighten screws for engine mount.

Further installation occurs in reverse order. However, pay attention to the following:

- Make sure the fuel lines fit tightly.
- Do not mix-up the feed line and the return-flow line (the return-flow line is blue or has a blue marking, the feed line is black).

**Tightening torques**

- ⇒ “1.5.3 Assembly mountings (Superb II, Yeti)”, page 39

## 1.7.3 Removing and installing engine support bracket (Octavia II, Yeti)

**Special tools and workshop equipment required**

- Supporting device - T30099-
- Surface - T30099/1-
- Adapter - MP9-200/3 (10-222A/3)-

**Removing**

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

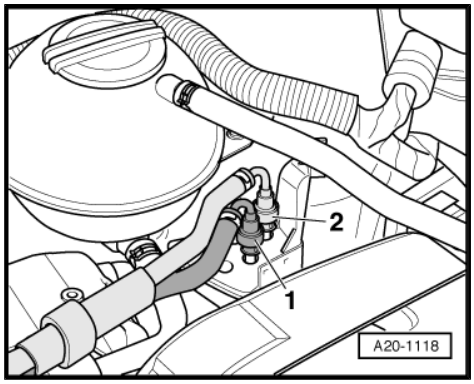
**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Switch off ignition and pull out ignition key.

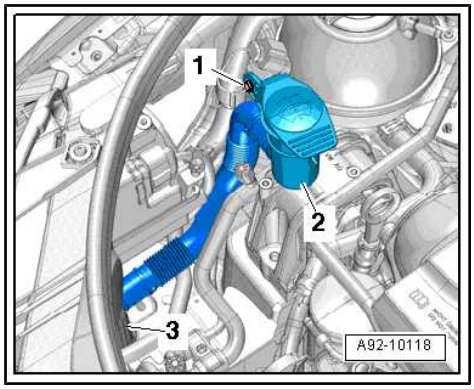
– Remove engine cover ⇒ page 10 .

– Detach fuel feed line -2- and fuel return-flow line -1-, to do so press in securing ring. Unlock the quick coupling and disconnect ⇒ page 303 .

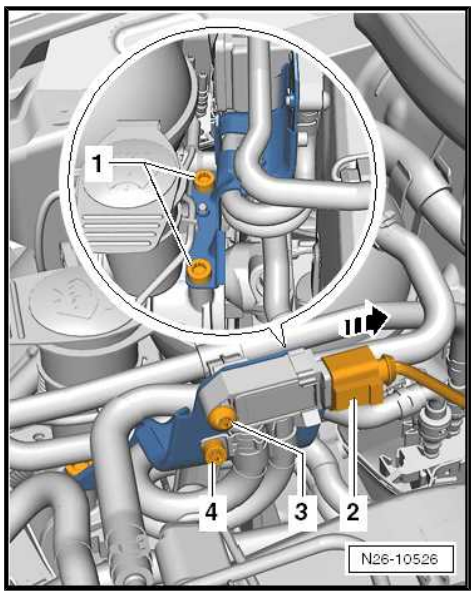



– Unscrew bolt -1-.

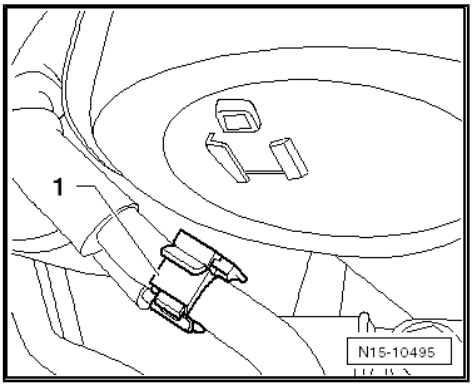
– Push the filler tube with the filler neck -2- for the washer-fluid reservoir to the side.




– Disconnect the plug from the differential pressure sender - G505- and unscrew the fixing screws -1-.



– Slacken line -1- for differential pressure sender - G505- with bracket from top timing belt guard.
– Remove the bracket with the differential pressure sender - G505- and place it to the rear.



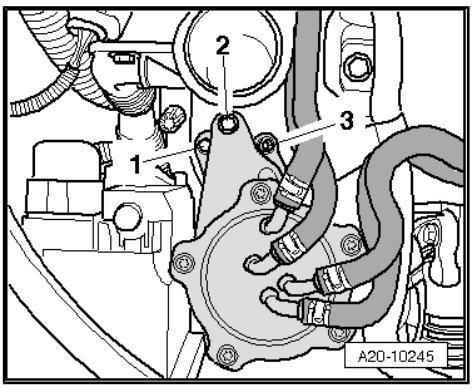

**Caution**

*Risk of damage!*

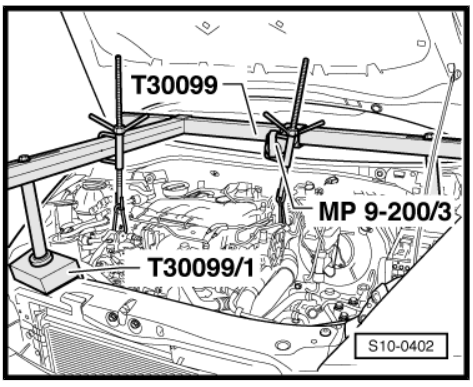
- *The differential pressure indicator - G505- is very sensitive and must not touch somewhere when laying it down with the bracket.*

– Unplug connector from compensation bottle.
– Unscrew screw for compensation bottle.

– Release screw -1- by two turns.
– Release screw -2- and nut -3-.
– Unclip bracket for coolant line at fuel filter.
– Lay the compensation bottle with the hoses connected and the fuel filter with the hoses connected onto the engine.
– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

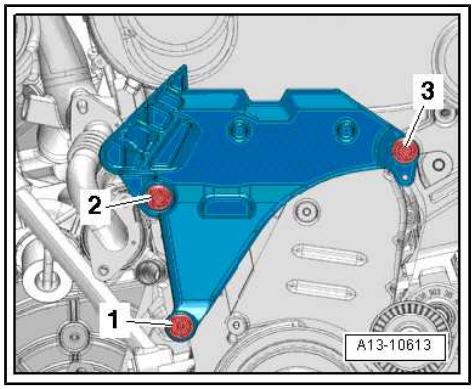



– Position the supporting device - T30099- with the base - T30099/1- and the adapter - MP9-200/3- and support the engine in its installed position.
– Uniformly pre-tension the engine/gearbox unit at both spindles, do not raise.
– Remove engine mounts.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .
– Remove the coolant pipe from the engine support.




**Caution**

*Make sure that no components as well as hoses are damaged, overstretched or torn off when lifting and lowering the engine with the supporting device - T30099- .*




**Note**

*The fixing screw -1- is accessible through the hole in the wheelhouse. If necessary, raise or lower the engine via the spindles of the supporting device - T30099- so that the screws -2- and -3- can be removed.*

– Unscrew the fixing screws for the engine support in the sequence -3-, -2- and -1-

– Remove engine support upwards.

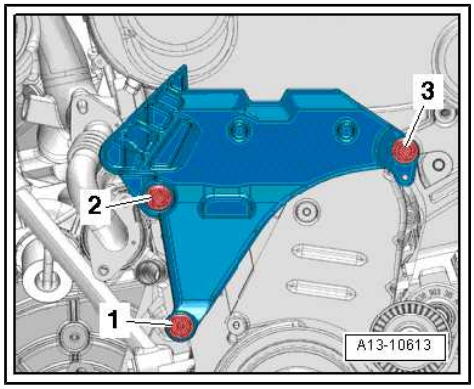
**Install**

**Caution**

***The tightening order and the tightening torque of the fixing screws for the engine support must definitely be respected. Otherwise engine support tensioning may occur, resulting in engine support breakage.***

Installation is carried out in reverse order. However, pay attention to the following:

– Insert engine support from above.




**Note**

*The installation of the fixing screw -2- is possible through the hole in the wheelhouse. If necessary, raise or lower the engine via the spindles of the supporting device - T30099- so that the screws -1- and -3- can be inserted.*

– Tighten screws in two stages in the following sequence:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1-, -2- , -3- | 7 Nm |
| 2. | -1-, -2- , -3- | 40 Nm + 180° ($^1/_2$ turn). |

– Install engine mounting with new screws.

– Check the setting of the assembly bracket at the engine ⇒ page 43 .

– Tighten screws for engine mount.

Further installation occurs in reverse order. However, pay attention to the following:

- Make sure the fuel lines fit tightly.
- Do not mix-up the feed line and the return-flow line (the return-flow line is blue or has a blue marking, the feed line is black).

**Tightening torques**

- ⇒ “1.5.2 Assembly mountings (Octavia II)”, page 38 .
- ⇒ “1.5.3 Assembly mountings (Superb II, Yeti)”, page 39 .

# 13 – Crankshaft group

## 1 Removing and installing a V-ribbed belt and a toothed belt



### 1.1 Assembly overview - Poly V-belt



#### 1.1.1 Summary of components - Vehicles without air conditioning

**1 - Crankshaft-belt pulley**

- ❑ with vibration damper
- ❑ pay attention to correct installation position ⇒ page 58
- ❑ removing and installing ⇒ page 67

**2 - Screw**

- ❑ 25 Nm

**3 - Alternator**

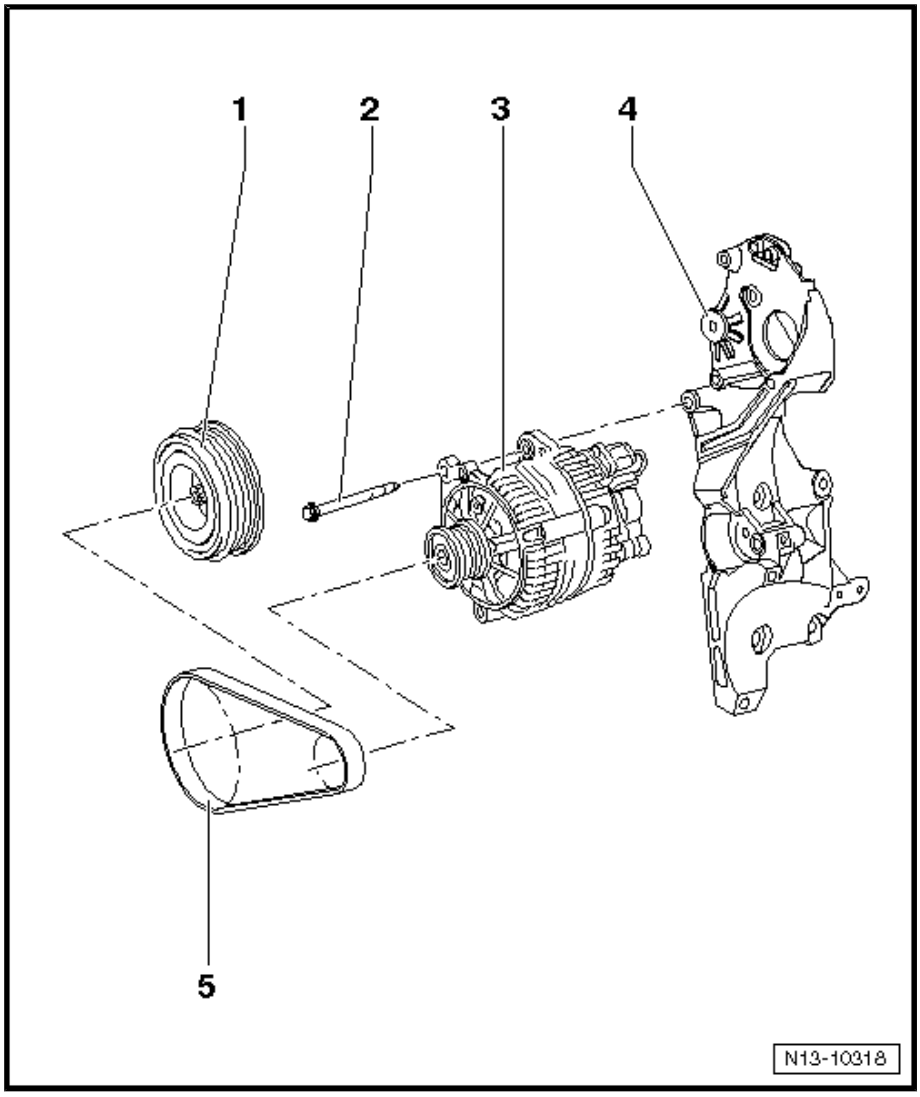
- ❑ removing and installing ⇒ Electrical System; Rep. gr. 27

**4 - Bracket for auxiliary units**

- ❑ wymontowanie i zamontowanie ⇒ page 75
- ❑ kolejność dokręcania ⇒ page 59

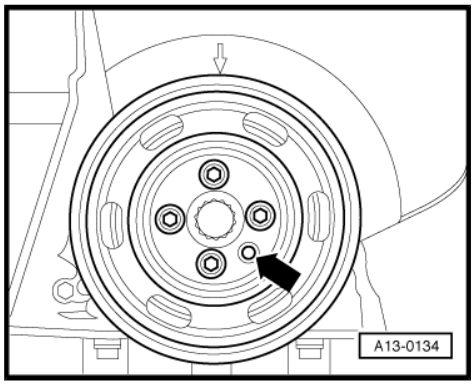
**5 - V-ribbed belt**

- ❑ wymontowanie i zamontowanie ⇒ page 63
- ❑ pay attention to the correct position on the belt pulley when installing it




**Fitting position of the crankshaft belt pulley**

- The hole -arrow- in the crankshaft belt pulley must be positioned above the peg on the crankshaft timing belt sprocket.



**Bracket for auxiliary units - tightening order and tightening torques**

- A dowel sleeve must be located between the bracket for auxiliary units and the cylinder block in the area of the screw hole -6-.

– Insert new fixing screws for the bracket for auxiliary units as follows:

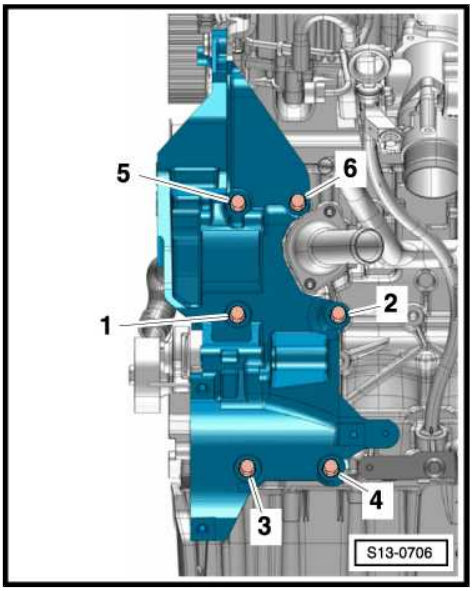
♦ Screws -1- and -2- M10 x 52

♦ Screws -3- and -4- M10 x 30

♦ Screws -5- and -6- M10 x 60

– Tighten securing bolts for bracket for auxiliary units step by step in the following order:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1 … 6- | by hand as far as the stop |
| 2. | -1 … 6- | 40 Nm |
| 3. | -3- and -4- | 45° (torque a further 45° ($^1/_8$ turn) |
| 4. | -1-, -2-, -5- and -6- | 90° (torque a further 90° ($^1/_4$ turn) |




## 1.1.2 Summary of components - Vehicles with air conditioning and guide pulley

**1 - V-ribbed belt**

- ❑ wymontowanie i zamontowanie ⇒ page 63
- ❑ check for wear
- ❑ mark the direction of rotation with chalk or a felt-tip pen before removing
- ❑ do not kink
- ❑ pay attention to the correct position on the belt pulley when installing it

**2 - Guide pulley for V-ribbed belt**

- ❑ wymontowanie i zamontowanie ⇒ page 63

**3 - Crankshaft-belt pulley**

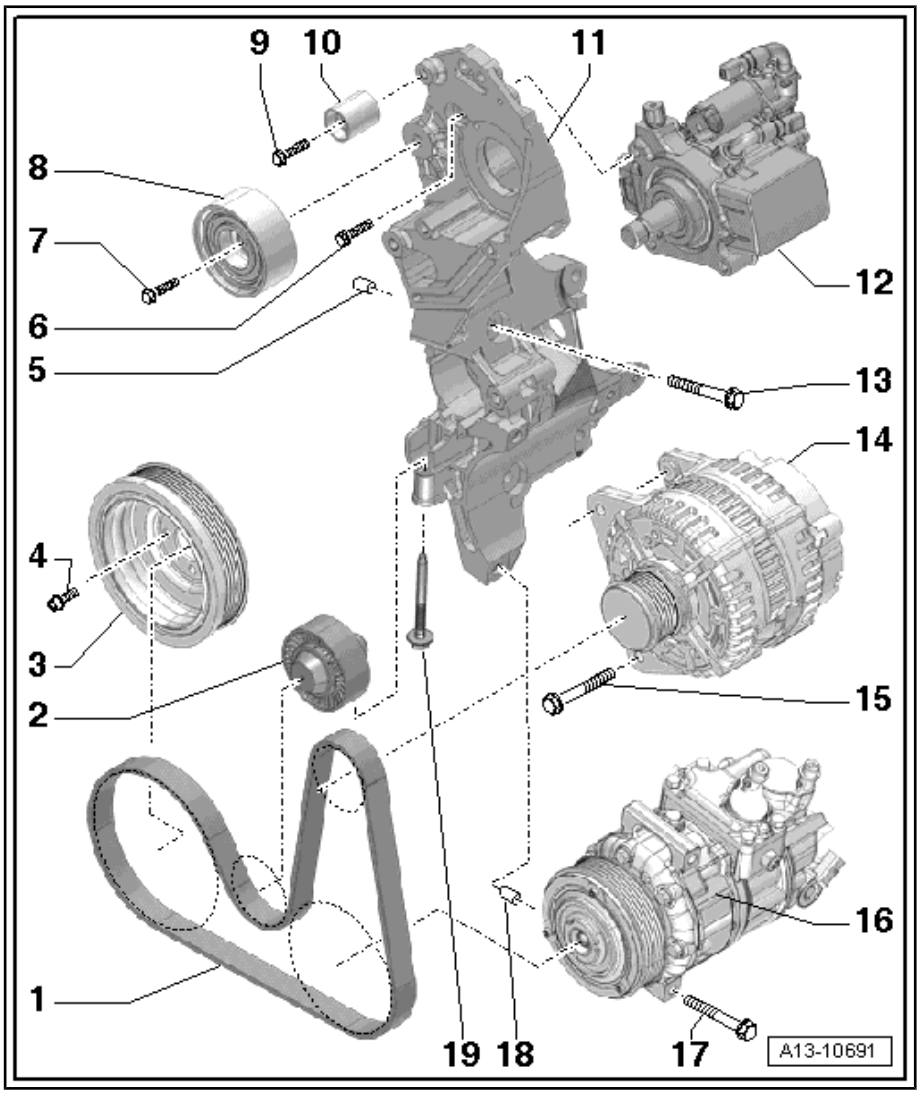
- ❑ with vibration damper
- ❑ pay attention to correct installation position ⇒ page 60
- ❑ removing and installing ⇒ page 67

**4 - Screw**

- ❑ replace
- ❑ 10 Nm + torque a further 90° ($^1/_4$ turn)

**5 - Fitting sleeve**

- ❑ pay attention to correct fit in the bracket for auxiliary units
- ❑ The dowel sleeve is located in the top right



screw hole ⇒ page 61

**6 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**7 - Screw**

- ❑ replace
- ❑ 50 Nm + torque a further 90° ($^1/_4$ turn)

**8 - Guide pulley**

- ❑ for toothed belt

**9 - Screw**

- ❑ 15 Nm

**10 - Guide pulley**

- ❑ for toothed belt

**11 - Bracket for auxiliary units**

- ❑ wymontowanie i zamontowanie ⇒ page 75
- ❑ kolejność dokręcania ⇒ page 61

**12 - High pressure pump**

- ❑ wymontowanie i zamontowanie ⇒ page 400

**13 - Screw**

- ❑ kolejność dokręcania ⇒ page 61

**14 - Alternator**

- ❑ removing and installing ⇒ Electrical System; Rep. gr. 27

**15 - Screw**

- ❑ 25 Nm

**16 - AC compressor**

- ❑ removing and installing ⇒ Heating, Air Conditioning; Rep. gr. 87

**17 - Screw**

- ❑ M8 = 25 Nm
- ❑ M10 = 45 Nm

**18 - Fitting sleeve**

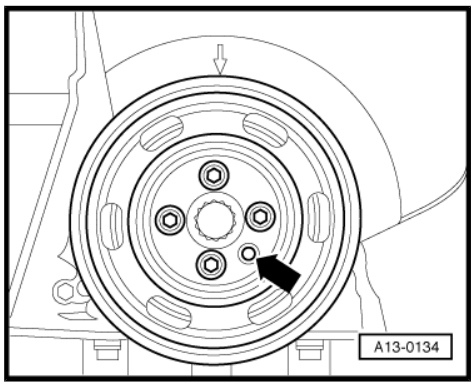
- ❑ pay attention to correct fit in the bracket for auxiliary units
- ❑ The dowel sleeve is located in the bottom right screw hole ⇒ page 61

**19 - Screw**

- ❑ Tightening torque ⇒ page 63

**Fitting position of the crankshaft belt pulley**

- The hole -arrow- in the crankshaft belt pulley must be positioned above the peg on the crankshaft timing belt sprocket.



**Bracket for auxiliary units - tightening order and tightening torques**

- A dowel sleeve must be located between the bracket for auxiliary units and the cylinder block in the area of the screw hole -6-.

– Insert new fixing screws for the bracket for auxiliary units as follows:

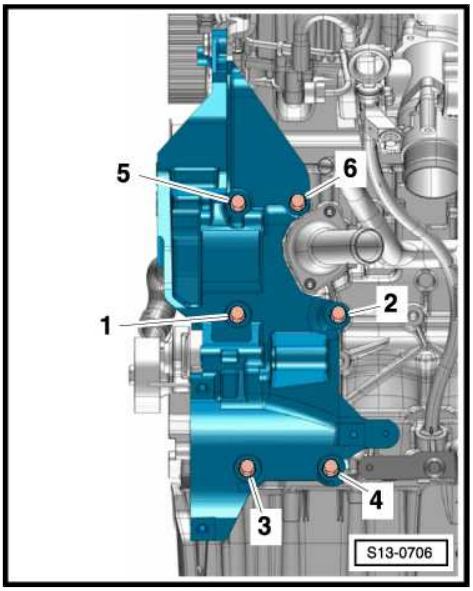
♦ Screws -1- and -2- M10 x 52

♦ Screws -3- and -4- M10 x 30

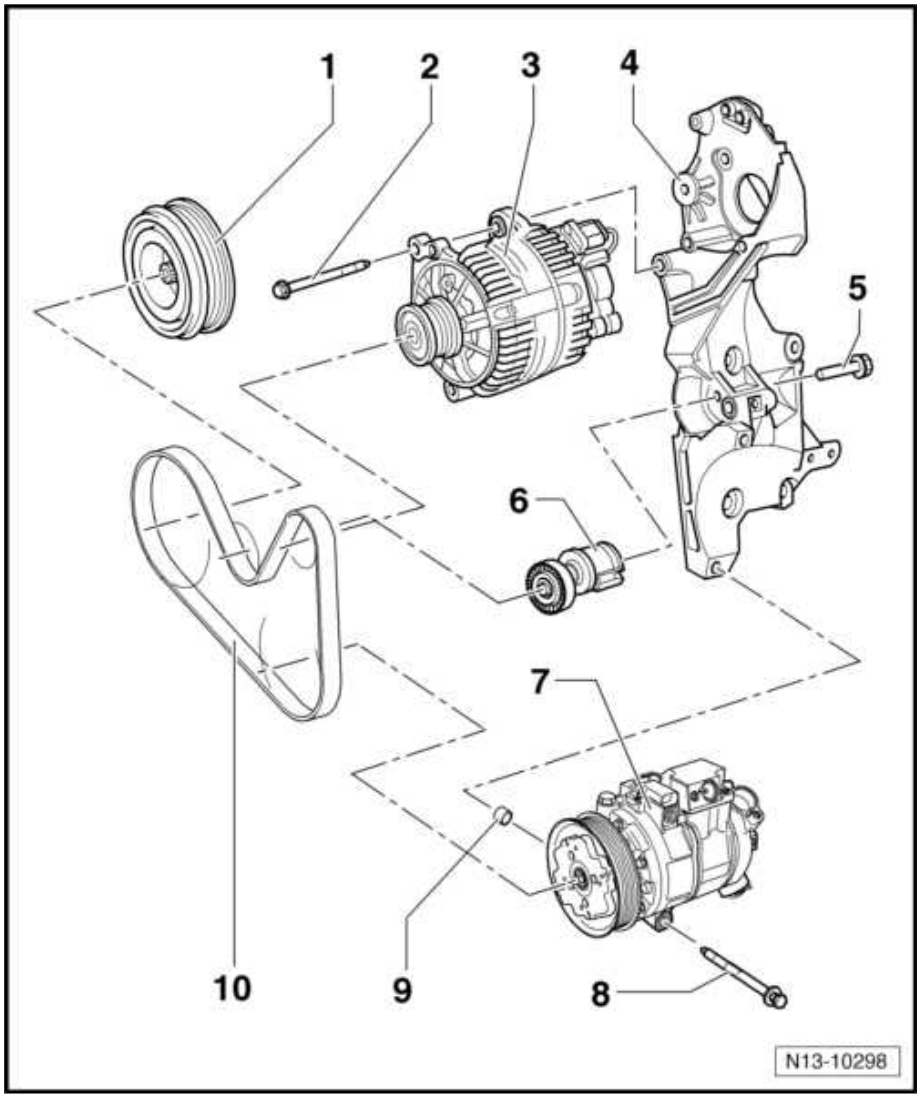
♦ Screws -5- and -6- M10 x 60

– Tighten securing bolts for bracket for auxiliary units step by step in the following order:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1 … 6- | by hand as far as the stop |
| 2. | -1 … 6- | 40 Nm |
| 3. | -3- and -4- | 45° (torque a further 45° ($^1/_8$ turn) |
| 4. | -1-, -2-, -5- and -6- | 90° (torque a further 90° ($^1/_4$ turn) |




## 1.1.3 Summary of components - Vehicles with air conditioning system and tensioning element




**1 - Crankshaft-belt pulley**

- ❑ with vibration damper
- ❑ pay attention to correct installation position ⇒ page 62
- ❑ removing and installing ⇒ page 67

**2 - Screw**

- ❑ 25 Nm

**3 - AC generator**

- ❑ removing and installing ⇒ Electrical System; Rep. gr. 27

**4 - Bracket for auxiliary units**

- ❑ order of tightening ⇒ page 63

**5 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 180° ($^1/_2$ turn)

**6 - Tensioner for V-ribbed belt**

**7 - AC compressor**

- ❑ removing and installing ⇒ Heating, Air Conditioning; Rep. gr. 87

**8 - Screw**

- ❑ M8 = 25 Nm
- ❑ M10 = 45 Nm

**9 - Dowel sleeves**

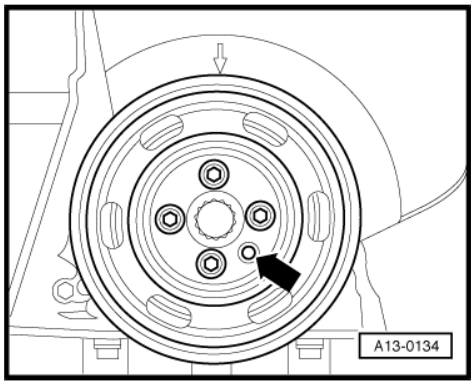
- ❑ pay attention to correct fit in the holder

**10 - V-ribbed belt**

- ❑ wymontowanie i zamontowanie ⇒ page 63
- ❑ check for wear
- ❑ mark the direction of rotation with chalk or a felt-tip pen before removing
- ❑ do not kink
- ❑ pay attention to the correct position on the belt pulley when installing it

**Fitting position of the crankshaft belt pulley**

- The hole -arrow- in the crankshaft belt pulley must be positioned above the peg on the crankshaft timing belt sprocket.



**Bracket for auxiliary units - tightening order and tightening torques**

- A dowel sleeve must be located between the bracket for auxiliary units and the cylinder block in the area of the screw hole -6-.

– Insert new fixing screws for the bracket for auxiliary units as follows:

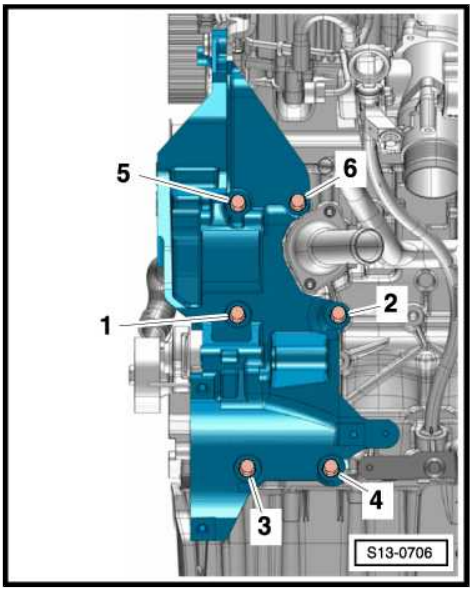
♦ Screws -1- and -2- M10 x 52

♦ Screws -3- and -4- M10 x 30

♦ Screws -5- and -6- M10 x 60

– Tighten securing bolts for bracket for auxiliary units step by step in the following order:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | -1 … 6- | by hand as far as the stop |
| 2. | -1 … 6- | 40 Nm |
| 3. | -3- and -4- | 45° (torque a further 45° ($^1/_8$ turn) |
| 4. | -1-, -2-, -5- and -6- | 90° (torque a further 90° ($^1/_4$ turn) |




## 1.2 Removing and installing V-ribbed belt

⇒ “1.2.1 Removing and installing V-ribbed belt for vehicles without air conditioning system”, page 63

⇒ “1.2.2 Remove and install poly V-belt for vehicles with air conditioning unit and guide pulley (Fabia II, Roomster, Rapid NH, Octavia II, Superb II, Yeti)”, page 64

⇒ “1.2.3 Removing and installing V-ribbed belt for vehicles with air conditioning system and tensioning element”, page 65

### 1.2.1 Removing and installing V-ribbed belt for vehicles without air conditioning system

**Note**

*The repair kit includes the V-ribbed belt, the assembly tool -T10367- and an illustrated work sequence ⇒ ETKA - Electronic Catalogue of Original Parts .*

**Removing**

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .

– Cut through V-ribbed belt.

**Install**

Installation is performed in the reverse order, pay attention to the following points:

– The following work procedure is described in the illustrated work procedure from the repair kit.

– Start engine and check ribbed V-belt run.

## 1.2.2 Remove and install poly V-belt for vehicles with air conditioning unit and guide pulley (Fabia II, Roomster, Rapid NH, Octavia II, Superb II, Yeti)

**Removing**

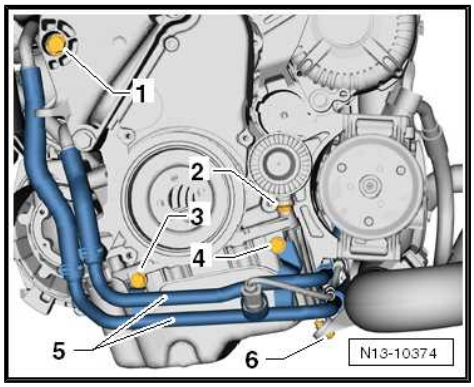
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

**For vehicles Fabia II, Roomster, Rapid NH**

– Removing the right wheel-well inner panel ⇒ Body Work; Rep. gr. 66 .

– Unscrew screws -3-, -4- and -6-.

– Carefully push the coolant line -5- to the side so that there is adequate space for loosening the screw -2- for the guide pulley of the V-ribbed belt.




**For vehicles Octavia II, Superb II, Yeti**

– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .

**For all vehicles**

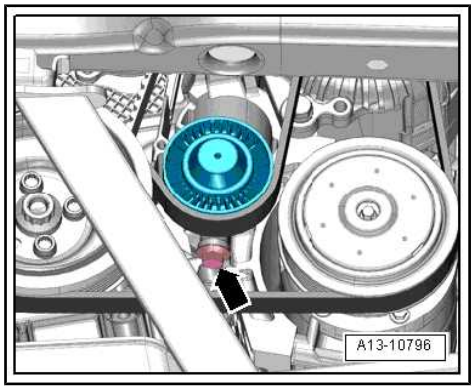
**Caution**

*Risk of damage through reversing the rotation direction of an already used V-ribbed belt.*

- *If it is intended to re-install the V-ribbed belt, mark the direction of rotation with chalk or a felt-tip pen before removing it.*

– Slacken the screw for the guide pulley/V-ribbed belt -arrow- until the V-ribbed belt can be easily removed.

– Remove the V-ribbed belt.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Before fitting the V-ribbed belt make sure that all assemblies (generator and AC compressor) are securely mounted.*

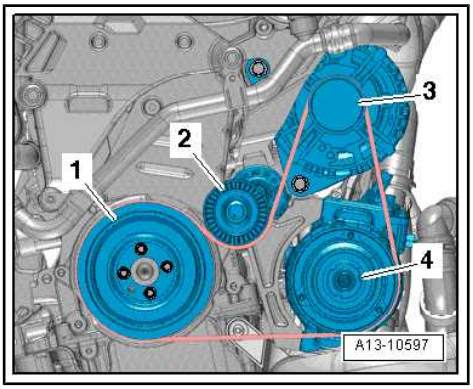
– First position the V-ribbed belt on the belt pulleys of the crankshaft and AC compressor and last on the belt pulley of the generator.

1 - Crankshaft-belt pulley

2 - Guide pulley

3 - AC generator

4 - AC compressor

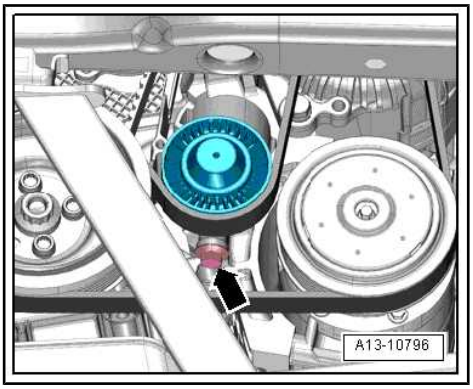



– Coat the guide surfaces for the guide pulley with the grease G 052 751 A1 .

– Guide the guide pulley with the bolt into the guide in the bracket for auxiliary units.

– Screw in the screw for the guide pulley -arrow- until the bolt of the guide pulley is located at the stop (this tensions the V-ribbed belt).

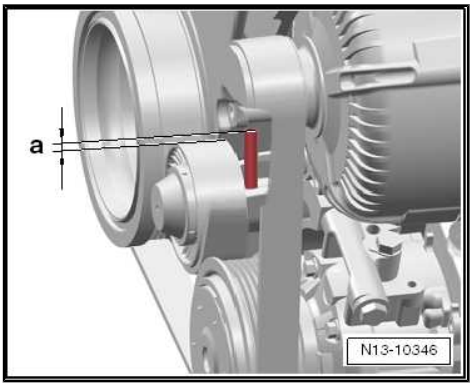
– Subsequently slacken the screw -arrow- again by 1/4 turn, tighten again to 30 Nm + torque a further 90° (1/4 turn).




– Check whether the end of the screw for the guide pulley/V-ribbed belt protrudes beyond the contact surface of the guide pulley. Dimension -a- = approx. 2.5 mm.

– Check correct positioning of the V-ribbed belt.

– Start engine and check ribbed V-belt run.




## 1.2.3 Removing and installing V-ribbed belt for vehicles with air conditioning system and tensioning element

**Special tools and workshop equipment required**

♦ Locking pin - T10060 A-

**Removing**

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

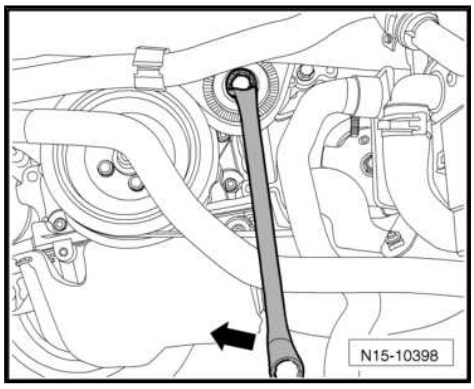
– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .

**Caution**

*Risk of damage through reversing the rotation direction of an already used V-ribbed belt.*

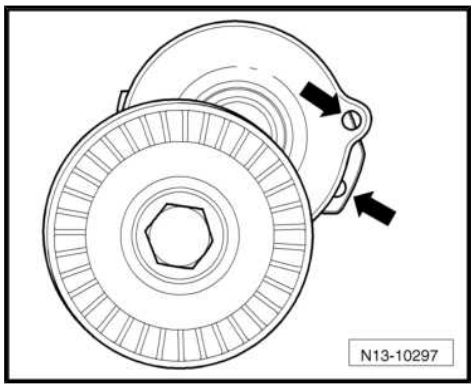
- *If it is intended to re-install the V-ribbed belt, mark the direction of rotation with chalk or a felt-tip pen before removing it.*

– Swing the tensioning element in -the direction of the arrow- detension the V-ribbed belt.




– Align the holes -arrows- and lock the tensioning element using the locking pin - T10060 A- .

– Remove the V-ribbed belt.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Before fitting the V-ribbed belt make sure that all assemblies (generator and AC compressor) are securely mounted.*

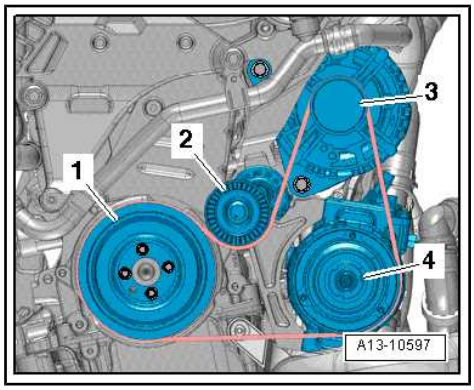
– Lay the V-ribbed belt onto the V-ribbed belt pulleys.

1 - Crankshaft

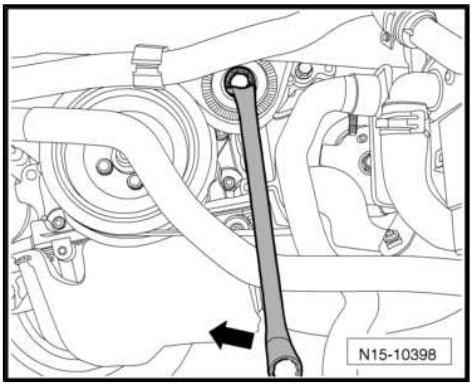
2 - Tensioning element

3 - AC generator

4 - AC compressor



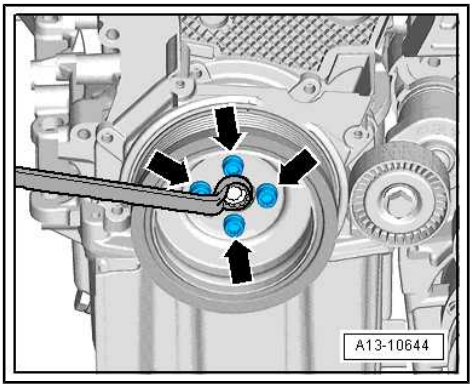
– Hold the tensioning element with the ring spanner and pull out the locking pin - T10060 A- .
– Release the tensioning element.
– Check correct positioning of the V-ribbed belt.
– Start engine and check ribbed V-belt run.



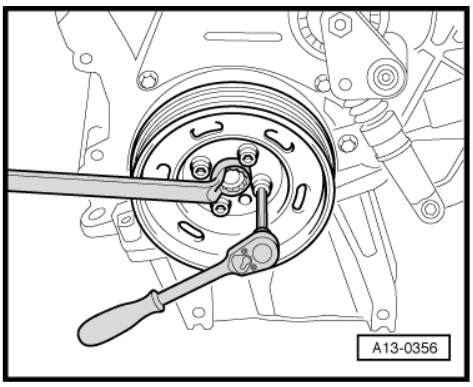

## 1.3 Removing and installing crankshaft-belt pulley

### Removing

– Remove V-ribbed belt ⇒ page 57 .
– Loosen the screws -arrows- of the crankshaft belt pulley, to do so hold the screw for the crankshaft timing belt sprocket using the ring spanner.




– Release screws and remove crankshaft-belt pulley.




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Pay attention to the fitting position of the crankshaft belt pulley ⇒ page 62 or ⇒ page 58 .*
- *Replace the screws of the crankshaft belt pulley.*

### Tightening torques

- ⇒ “1.1 Assembly overview - Poly V-belt”, page 57

## 1.4 Removing and installing tensioning element for V-ribbed belt

⇒ “1.4.1 Remove and install tensioner link for Poly V-belt (Fabia II, Roomster, Rapid NH)”, page 68

⇒ “1.4.2 Remove and install the tensioner link for poly V-belt (Octavia II, Superb II,Yeti)”, page 70

⇒ “1.4.3 Removing and installing tensioner link for poly V-belt (Rapid India)”, page 71

### 1.4.1 Remove and install tensioner link for Poly V-belt (Fabia II, Roomster, Rapid NH)

**For vehicles Fabia II, Roomster**

**Special tools and workshop equipment required**

- Supporting device - MP9-200 (10-222A)-

**For vehicles Rapid NH**

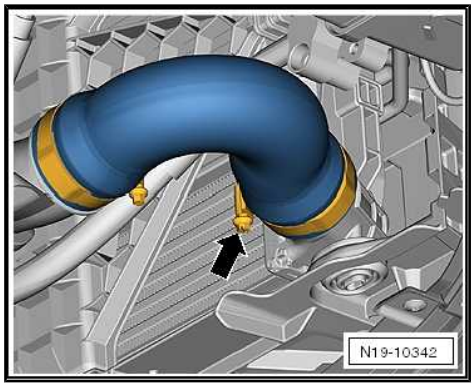
**Special tools and workshop equipment required**

- Supporting device - T30099-
- Surface - T30099/1-
- Adapter - MP9-200/3 (10-222A/3)-

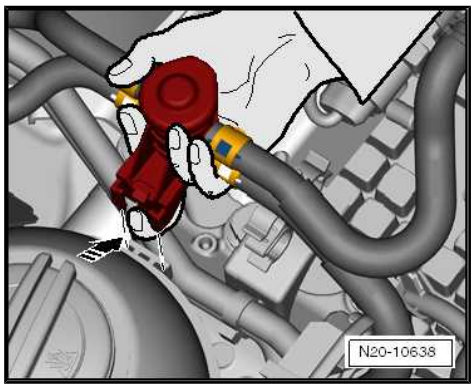
**Removing**

– Remove V-ribbed belt ⇒ page 63 .

– Remove right charge air hose.

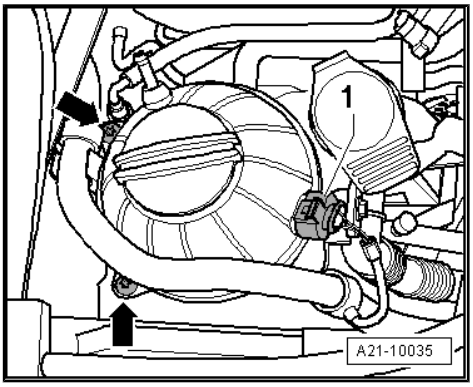



– Unlock the catch peg with a finger and pull the fuel preheating valve upwards out of the guide of the coolant expansion bottle.



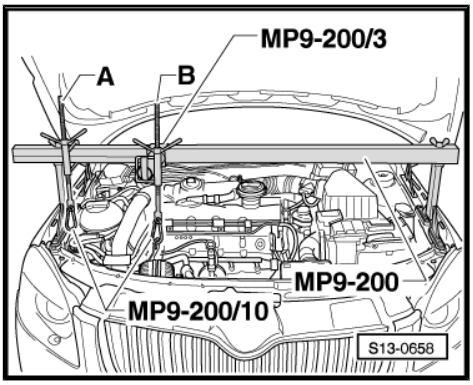
– Unscrew the screws of the coolant expansion bottle -arrows-.

– Disconnect the plug -1- from the expansion bottle and remove the coolant expansion bottle and place it on the engine.




**For vehicles Fabia II, Roomster**

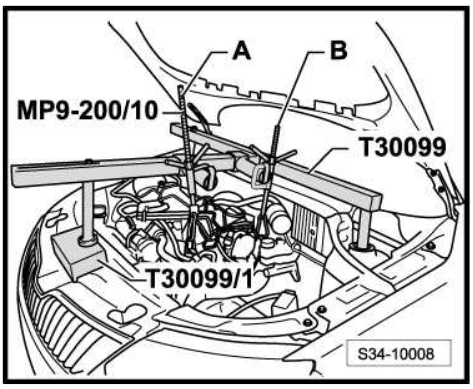
– Install supporting device - MP9-200 (10-222A)- and support the engine with spindle -B- in fitting position. Allow spindle -A- to hang loosely.




**For vehicles Rapid NH**

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 50 .

– Position the supporting device - T30099- with the base - T30099/1- and the adapter - MP9-200/3- and support the engine with spindle -A- in its installed position. Allow spindle -B- to hang loosely.

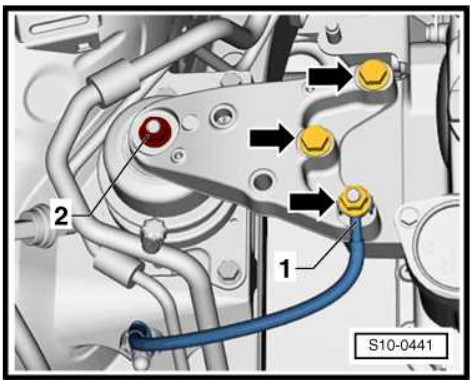



**Continued for all vehicles**

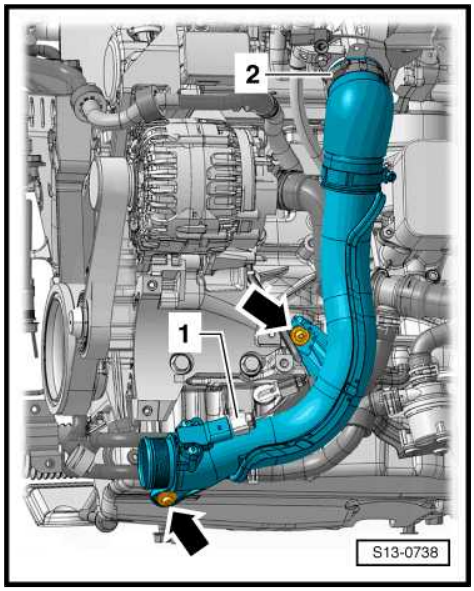
– Remove the earth connection -1- from the assembly bracket.

– Remove the screws -arrows- of the assembly bracket ⇒ page 44 .

– Carefully lower the engine sufficiently so that the tensioning element can be taken out.



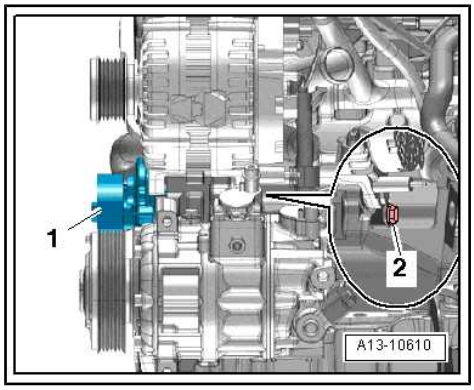
– Release screws -arrows-.
– Loosen hose clamp -2-.
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.




– Unscrew screw -2- and remove tensioning element -1- from V-ribbed belt.

**Install**

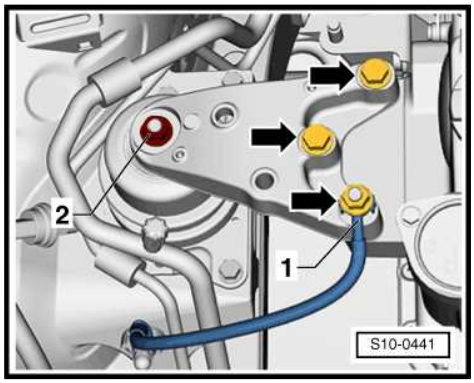
Installation is performed in the reverse order, pay attention to the following points:




– Install the screws -arrows- of the assembly bracket ⇒ page 44 .
– Replace the screw of the tensioning element for the V-ribbed belt.
– Install poly V-belt ⇒ page 63 .

**Tightening torques**

◆ ⇒ “1.1.3 Summary of components - Vehicles with air conditioning system and tensioning element”, page 61

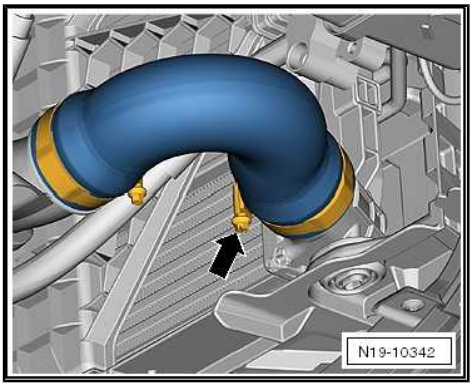



## 1.4.2 Remove and install the tensioner link for poly V-belt (Octavia II, Superb II,Yeti)

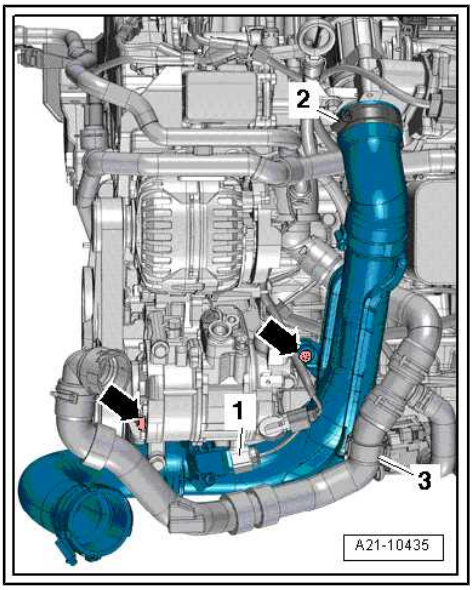
**Removing**

– Remove V-ribbed belt ⇒ page 63 .

– Remove right charge air hose.
– Remove fan shroud with radiator ⇒ page 259 .




– Release screws -arrows-.
– Expose coolant hose -3-.
– Loosen hose clamp -2-.
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.




– Unscrew screw -2- and remove tensioning element -1- from V-ribbed belt.

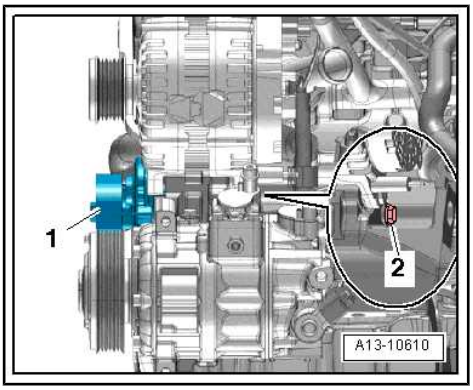
**Install**

Installation is performed in the reverse order, pay attention to the following points:

– Replace the screw of the tensioning element for the V-ribbed belt.
– Install poly V-belt ⇒ page 63 .

**Tightening torques**

◆ ⇒ “1.1.3 Summary of components - Vehicles with air conditioning system and tensioning element”, page 61

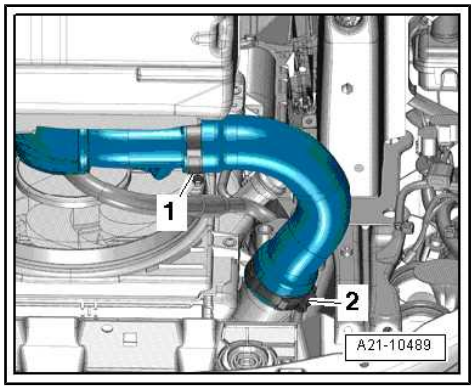



## 1.4.3 Removing and installing tensioner link for poly V-belt (Rapid India)

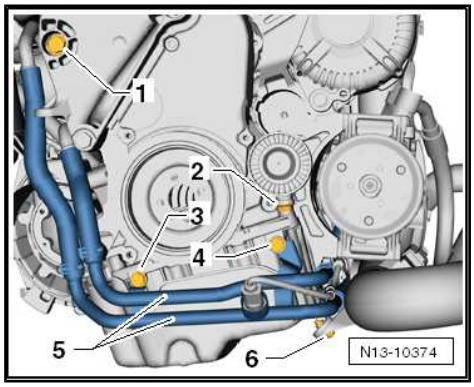
**Removing**

– Remove V-ribbed belt ⇒ page 63 .

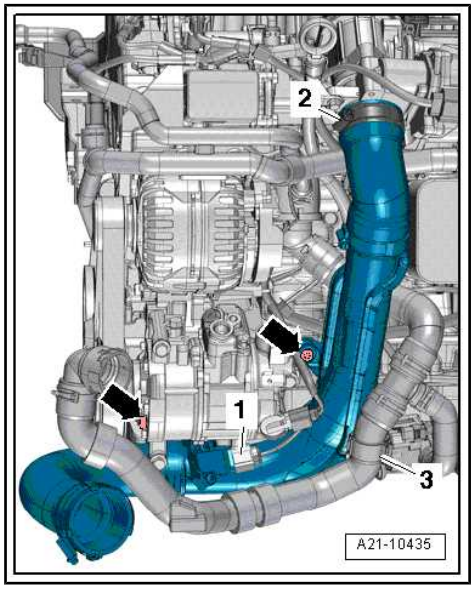
– Slacken clamps -1- and -2- and remove the charge air hose.



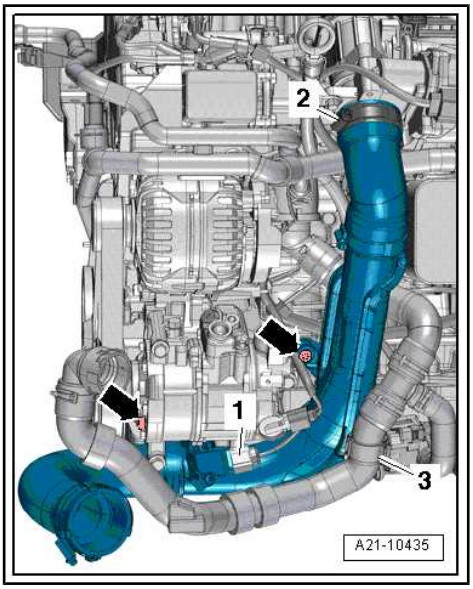

– Unscrew screws -3-, -4-, -6-.
– Carefully press off the coolant line -5- to the side.



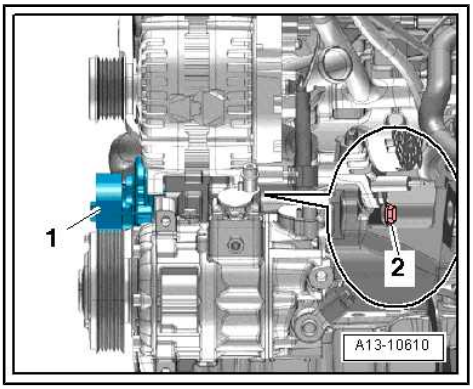

– Unscrew the fixing screws -arrows- from the charge air pipe and disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- .



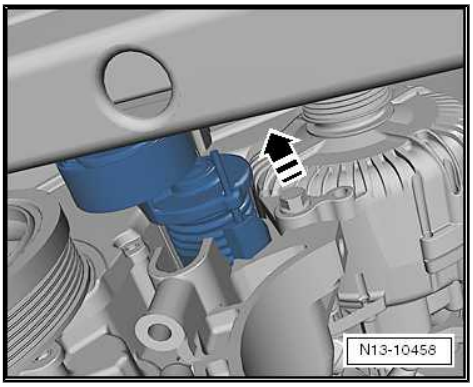
– Open the clamp -2-, expose the coolant hose -3- and remove the charge air pipe.
– Remove AC compressor, do not loosen the coolant line at the AC compressor.
– The refrigerant circuit remains closed.
– Hang the AC compressor at the body using suitable auxiliary tools ⇒ Rep. gr. 87 ; Removing and installing AC compressor .



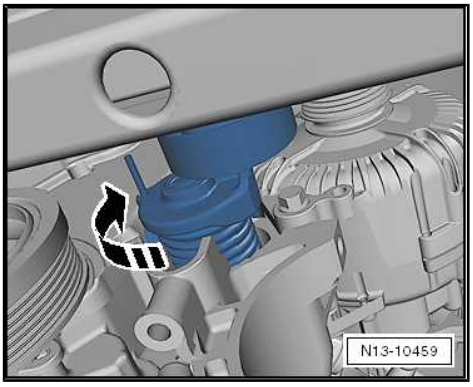

– Release fixing screw -2-.



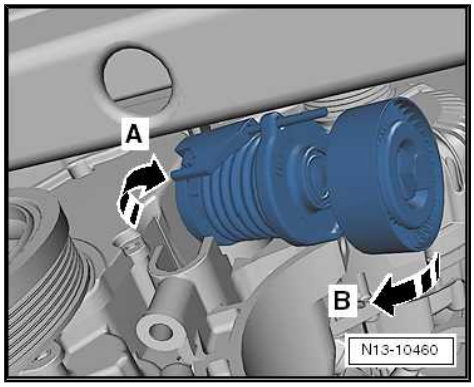

– Push the tensioning element slightly forwards.




– Rotate the tensioning element 180° clockwise.



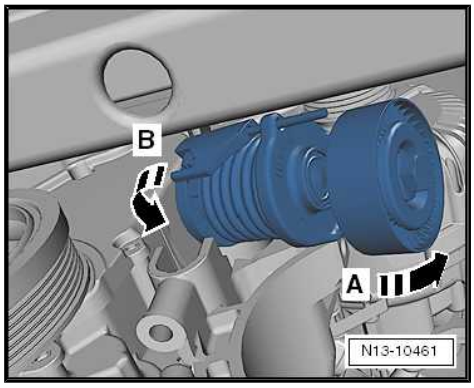
– Pull the tensioning element below the AC generator obliquely towards the bottom out of the support.



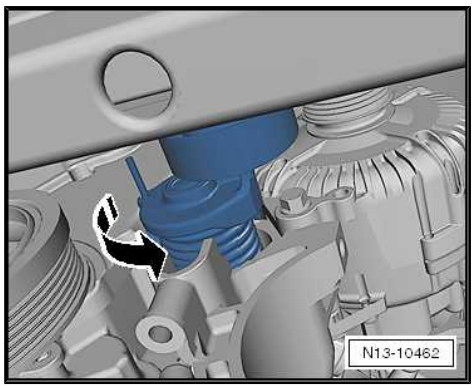

### Install

The installation of the tensioning element occurs in reverse order. Pay attention to the following:

– Rotate the tensioning element below the AC generator in its support.

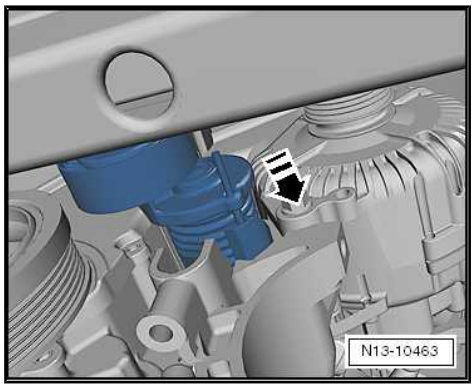



– Rotate the tensioning element 180° clockwise.




– Insert the tensioning element in its support.

♦ Replace the screw for the tensioning element.

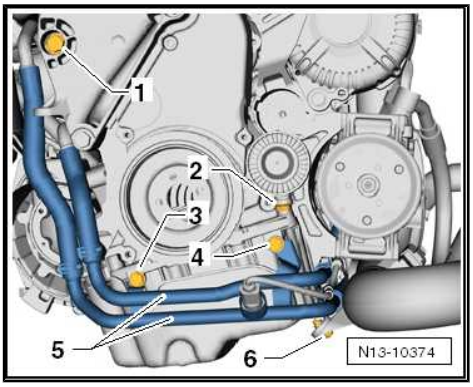


– Bring coolant line -5- back into the fitting position, tighten screws -3-, -4-, -6- to the following tightening torque: 8 Nm.

– Install poly V-belt ⇒ page 63 .

**Tightening torques**

◆ ⇒ “1.1.3 Summary of components - Vehicles with air conditioning system and tensioning element”, page 61




## 1.5 Removing and installing bracket for auxiliary units

⇒ “1.5.1 Removing and installing bracket for auxiliary units (Fabia II, Roomster, Rapid India, Rapid NH)”, page 75

⇒ “1.5.2 Removing and installing bracket for auxiliary units (Octavia II, Yeti)”, page 77

⇒ “1.5.3 Removing and installing bracket for auxiliary units (Superb II)”, page 80

## 1.5.1 Removing and installing bracket for auxiliary units (Fabia II, Roomster, Rapid India, Rapid NH)

**Removing**

– Remove alternator ⇒ Electrical System; Rep. gr. 27 .

– Wymontować pompę wysokociśnieniową ⇒ page 400 .

**On vehicles with air conditioning**

**WARNING**

*Risk of injury through refrigerant.*

◆ *Do not open the refrigerant circuit of the air conditioning system.*

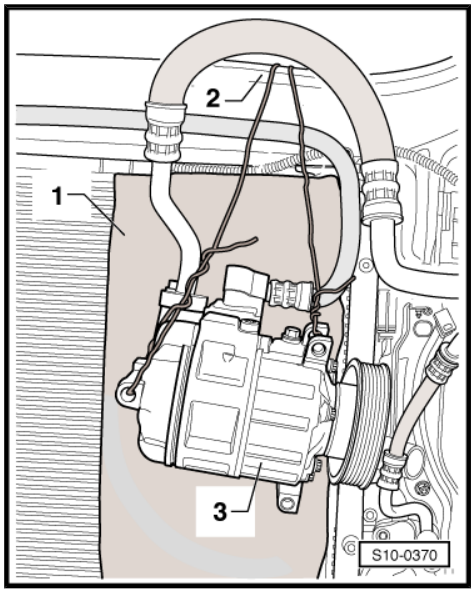
**Caution**

*Risk of damaging the condenser as well as the refrigerant lines and hoses.*

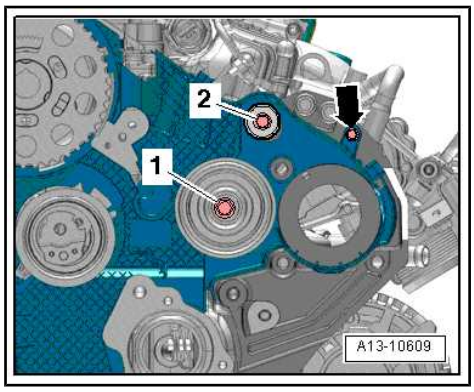
◆ *Do not over-tension or buckle refrigerant lines and hoses.*

– Remove the AC compressor from the bracket for auxiliary units ⇒ Heating, Air Conditioning; Rep. gr. 87 .

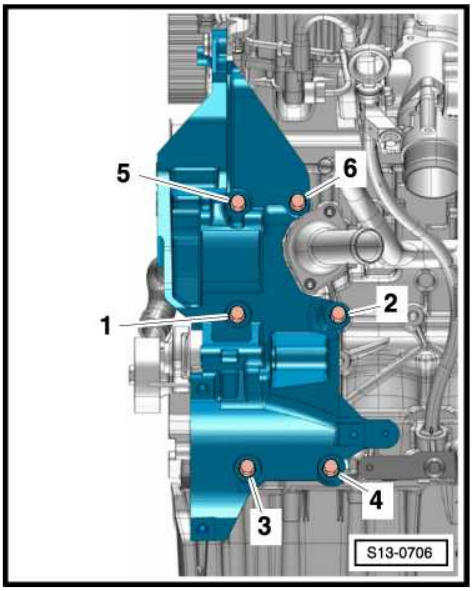
– Attach the AC compressor -3- e.g. behind the lock carrier as shown in the figure. As protection put a sheet of cardbord -1- on the radiator wall.




– Release screw -arrow-.
– Release screws -1- and -2- and remove toothed belt camshaft drives.



– Release screws -1 ... 6- and remove bracket for auxiliary units.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace screws which have been tightened to a torquing angle.*

– If no dowel sleeves are present on the top right between the bracket for auxiliary units and the cylinder block, insert dowel sleeves.
– Tighten the fixing screws for the bracket for auxiliary units.
– Install high pressure pump ⇒ page 400 .
– Installing the timing belt ⇒ page 95 .
– Install engine support and engine mount ⇒ page 44 and ⇒ page 37 .
– Install alternator ⇒ Electrical System; Rep. gr. 27 .

**On vehicles with air conditioning**

– Install AC compressor at the bracket for auxiliary units ⇒ page 57 .
– Filling and bleeding the fuel system ⇒ page 382 .
– Check fuel system for tightness ⇒ page 406 .

**Tightening torques**

♦ ⇒ “1.1 Assembly overview - Poly V-belt”, page 57

## 1.5.2 Removing and installing bracket for auxiliary units (Octavia II, Yeti)

**Special tools and workshop equipment required**

♦ Supporting device - T30099-
♦ Surface - T30099/1-
♦ Adapter - MP 9-200/3 (10-222/3)-
♦ Ring bolt - 3368-
♦ Collar nut M10

**Removing**

– Remove alternator ⇒ Electrical System; Rep. gr. 27 .
– Wymontować pompę wysokociśnieniową ⇒ page 400 .

**On vehicles with air conditioning**

**WARNING**

***Do not open the refrigerant circuit of the air conditioning system.***

**Note**

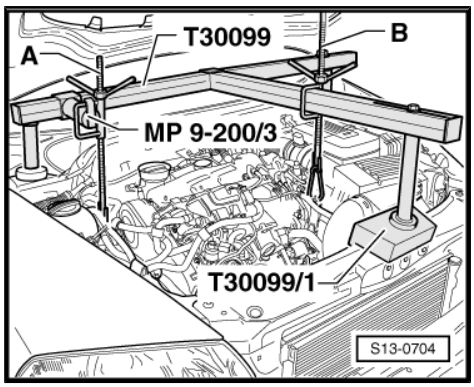
*In order to avoid damage to the AC compressor as well as to the refrigerant lines and hoses, ensure that the lines and hoses are not over-tensioned, kinked or bent.*

– Remove the AC compressor from the bracket for auxiliary units and attach to the lock carrier.

**Continued for all vehicles**

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Insert the supporting device - T30099- with the base - T30099/1- and the adapter - MP9-200/3- and attach the spindle -B-.




**WARNING**

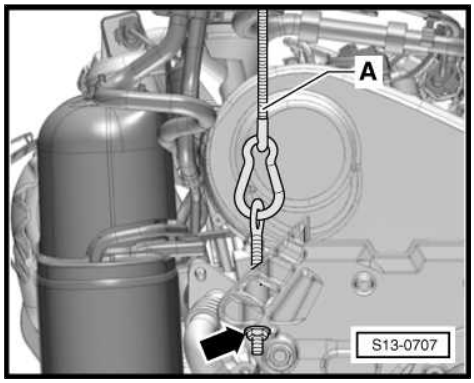
***Risk of accident due to loosened screwed connection.***

- ***The collar nut must be screwed in by at least 6 turns so that the ring bolt - 3368- is held securely.***

– Tighten the ring bolt - 3368- with the collar nut M10 or the nut with the washer -arrow- at the engine support, as shown in the illustration.

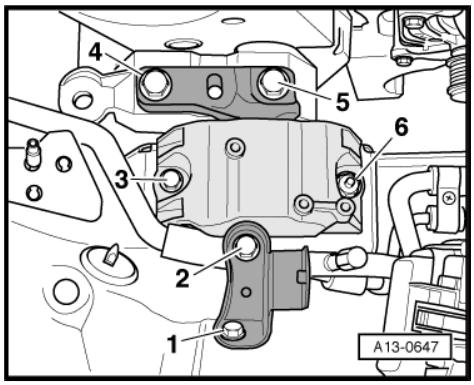
– Hook spindle -A- onto ring bolt - 3368- .

– Uniformly pre-tension the engine with both spindles, but do not raise.

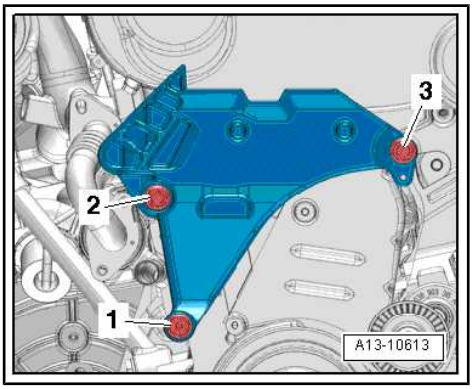



– Release screws -1- and -2-, remove connecting stud.

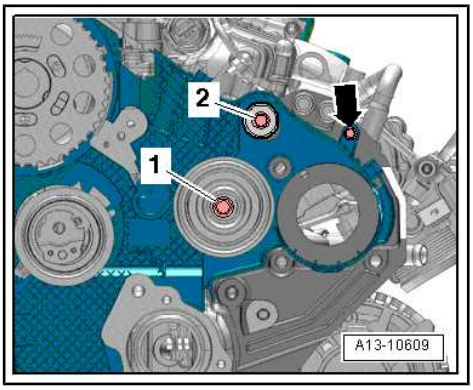
– Release screws -3...6- and remove engine mounting.



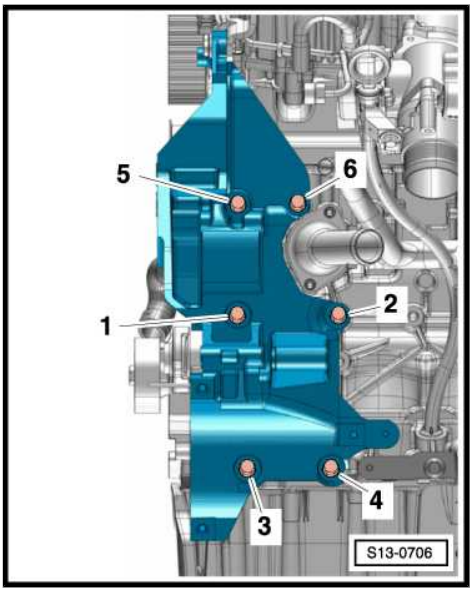
– Release screw -3- on engine support.




– Release screw -arrow-.
– Release screws -1- and -2- and remove toothed belt camshaft drives.




– Unscrew screws -1 ... 6- and remove bracket for auxiliary units.




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace screws which have been tightened to torquing angle.*

– If no dowel sleeves are present on the top right between the bracket for auxiliary units and the cylinder block, insert dowel sleeves.
– Tighten the screws for the bracket for auxiliary units.
– Install engine support and engine mount ⇒ page 44 and ⇒ page 37 .
– Install high pressure pump ⇒ page 400 .
– Installing the timing belt ⇒ page 90 .
– Install alternator ⇒ Electrical System; Rep. gr. 27 .

### On vehicles with air conditioning

– Install AC compressor at the bracket for auxiliary units ⇒ page 57 .
– Filling and bleeding the fuel system ⇒ page 382 .
– Check fuel system for tightness ⇒ page 406 .

### Tightening torques

◆ ⇒ “1.1 Assembly overview - Poly V-belt”, page 57

## 1.5.3 Removing and installing bracket for auxiliary units (Superb II)

**Special tools and workshop equipment required**

- Supporting device - MP9-200 (10-222A)-
- Adapter - MP 9-200/3 (10-222A/3)-
- Wing plates - T10311-
- Ring bolt - 3368-
- Collar nut M10

**Removing**

– Remove alternator ⇒ Electrical System; Rep. gr. 27 .

– Wymontować pompę wysokociśnieniową ⇒ page 400 .

**On vehicles with air conditioning**

**WARNING**

***Do not open the refrigerant circuit of the air conditioning system.***

**Note**

*In order to avoid damage to the AC compressor as well as to the refrigerant lines and hoses, ensure that the lines and hoses are not over-tensioned, kinked or bent.*

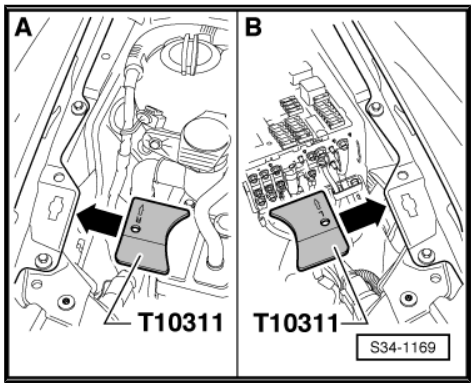
– Remove the AC compressor from the bracket for auxiliary units and attach to the lock carrier.

**Continued for all vehicles**

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Insert the wing plate - T10311- on the right vehicle side -A- in -the direction of the arrow- up to the stop. When doing this, the -arrow R- on the wing plate - T10311- points to the rear.

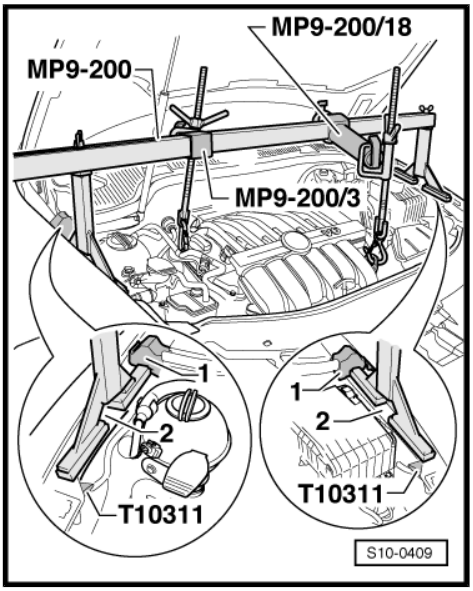
– Also insert the wing plate - T10311- on the left vehicle side -B- in -the direction of the arrow- up to the stop. When doing this, the -arrow L- on the wing plate - T10311- points to the rear.




**Note**

*The wing plates -T10311- ensure that the wings do not get damaged through the weight of the engine/gearbox unit.*

– Position the supporting device - MP9-200- with the adapters - MP9-200/3 - and support the engine/gearbox unit in its installed position.




**WARNING**

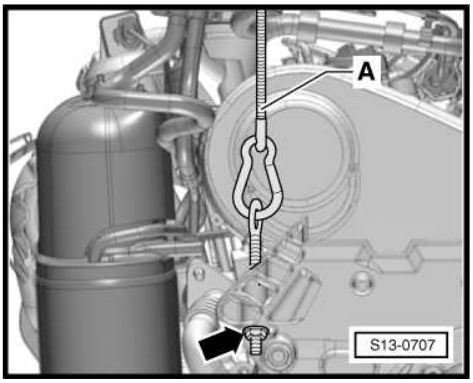
*Risk of accident due to loosened screwed connection.*

- *The collar nut must be screwed in by at least 6 turns so that the ring bolt - 3368- is held securely.*

– Tighten the ring bolt - 3368- with the collar nut M10 or the nut with the washer -arrow- at the engine support, as shown in the illustration.

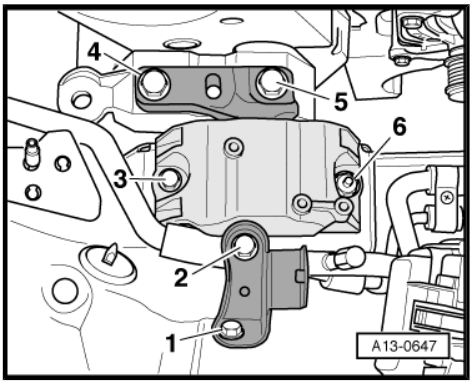
– Hook spindle -A- onto ring bolt - 3368- .

– Uniformly pre-tension the engine with both spindles, but do not raise.

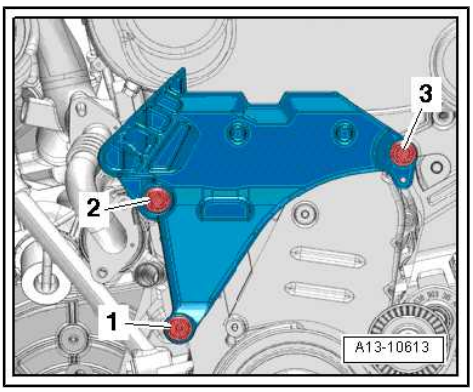



– Release screws -1- and -2-, remove connecting stud.

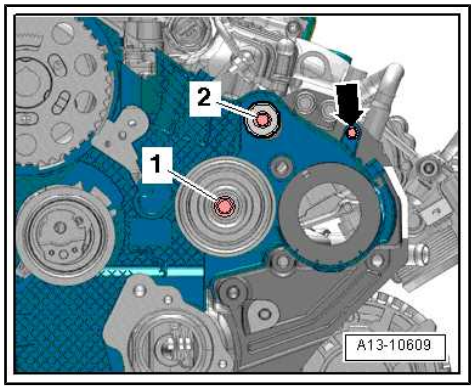
– Release screws -3...6- and remove engine mounting.



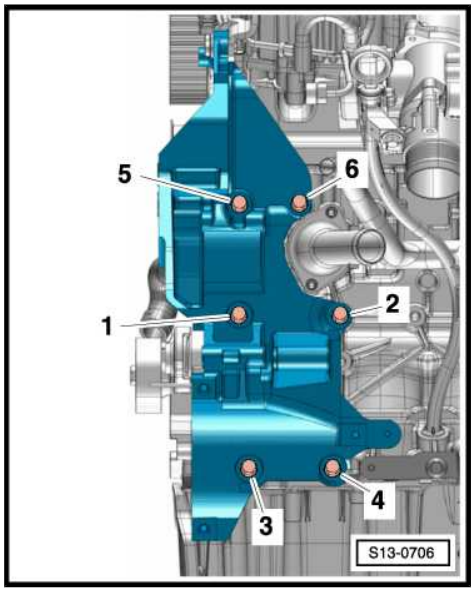

– Release screw -3- on engine support.



– Release screw -arrow-.
– Release screws -1- and -2- and remove toothed belt camshaft drives.




– Unscrew screws -1 ... 6- and remove bracket for auxiliary units.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace screws which have been tightened to torquing angle.*

– If no dowel sleeves are present on the top right between the bracket for auxiliary units and the cylinder block, insert dowel sleeves.
– Tighten the screws for the bracket for auxiliary units.
– Install engine support and engine mount ⇒ page 44 and ⇒ page 37 .
– Install high pressure pump ⇒ page 400 .
– Installing the timing belt.
– Install alternator ⇒ Electrical System; Rep. gr. 27 .

**On vehicles with air conditioning**

– Install AC compressor at the bracket for auxiliary units ⇒ page 57 .
– Filling and bleeding the fuel system ⇒ page 382 .
– Check fuel system for tightness ⇒ page 406 .

**Tightening torques**

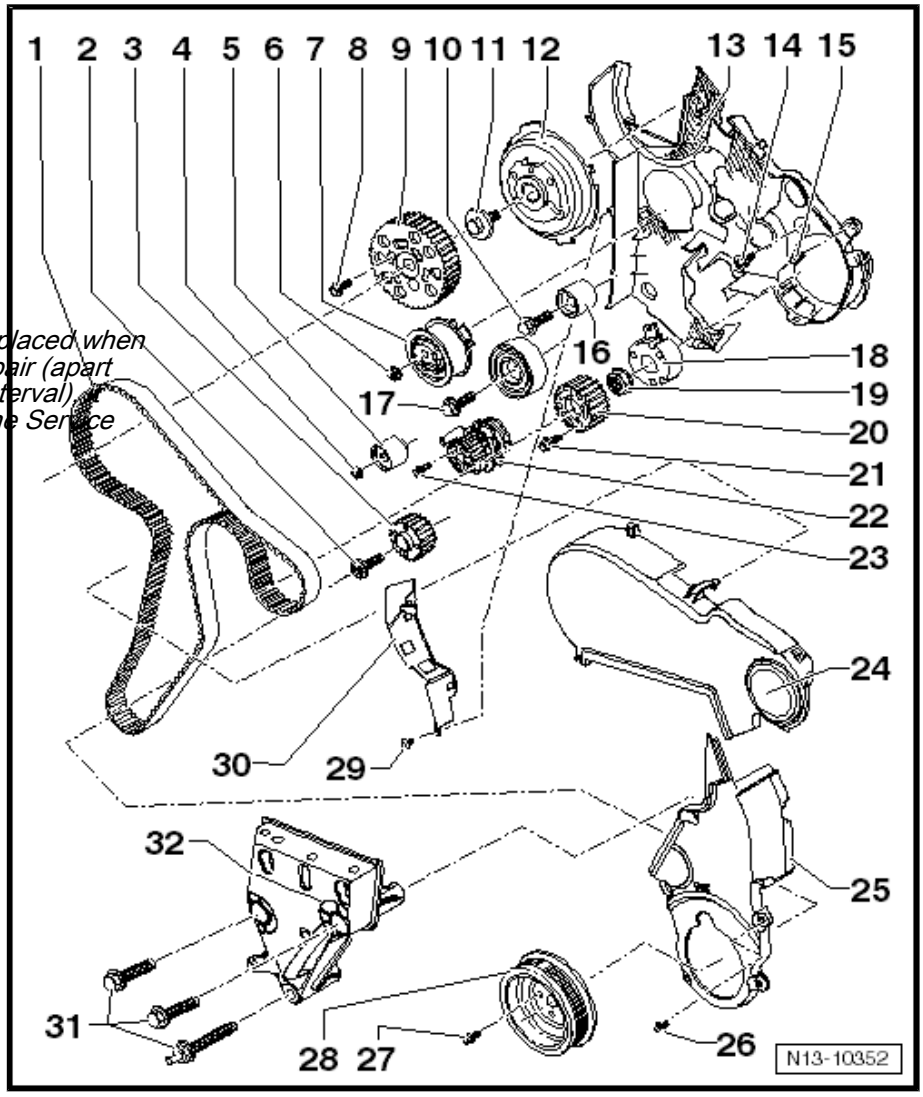
◆ ⇒ “1.1 Assembly overview - Poly V-belt”, page 57

## 1.6 Assembly overview - toothed belt drive

⇒ “1.6.1 Summary of components - Toothed belt drive (Fabia II, Roomster, Rapid India, Rapid NH)”, page 82

⇒ “1.6.2 Summary of components - Toothed belt drive (Octavia II, Superb II, Yeti)”, page 86

### 1.6.1 Summary of components - Toothed belt drive (Fabia II, Roomster, Rapid India, Rapid NH)




**1 - Toothed belt**

- ❑ before removing mark running direction
- ❑ check for wear
- ❑ do not kink
- ❑ wymontowanie i zamontowanie ⇒ page 90

**Note**

*If the toothed belt is replaced when carrying out engine repair (apart from regular change interval), should be entered in the Service Schedule!*

**2 - Screw**

- ❑ replace
- ❑ to release and tighten use counterholder - 3415-
- ❑ Neither oil nor grease thread or collar

Tighten in three stages as follows

- ♦ 1. stage 180 Nm
- ♦ 2. Continue to turn stage by 90° ($^1/_4$ turn)
- ♦ 3. Continue to turn stage by 45° ($^1/_8$ turn)

**3 - Crankshaft - toothed belt sprocket**

**4 - Nut**

- ❑ 20 Nm

**5 - Guide pulley**

**6 - Nut**

- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**7 - Tensioning pulley**

- ❑ pay attention to different versions ⇒ page 85
- ❑ for removing and installing, remove engine support ⇒ page 44

**8 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**9 - Camshaft sprocket**

**10 - Screw**

- ❑ 15 Nm

**11 - Screw**

- ❑ to release and tighten use counterholder - T10051-
- ❑ 100 Nm

**12 - Hub**

- ❑ for camshaft

- ❑ to release and tighten use counterholder - T10051-
- ❑ to remove use extractor - T10052-
- ❑ wymontowanie i zamontowanie ⇒ page 178

**13 - Rear toothed belt guard**

**14 - Screw**

- ❑ replace
- ❑ Attach high pressure pump
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**15 - Screw**

- ❑ replace
- ❑ 10 Nm

**16 - Guide pulley**

**17 - Screw**

- ❑ replace
- ❑ 50 Nm + torque a further 90° ($^1/_4$ turn)

**18 - Hub**

- ❑ for high pressure pump
- ❑ to release and tighten use counterholder - T10051-
- ❑ to remove use extractor - T40064-
- ❑ wymontowanie i zamontowanie ⇒ page 400

**19 - Nut**

- ❑ 95 Nm

**20 - Toothed belt gear on the high pressure pump**

**21 - Screw**

- ❑ replace
- ❑ 20 Nm

**22 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**23 - Screw**

- ❑ 15 Nm

**24 - Timing belt guard - top part**

**25 - Timing belt guard - bottom part**

- ❑ wymontowanie i zamontowanie ⇒ page 86

**26 - Screw**

- ❑ 9 Nm

**27 - Screw**

- ❑ replace
- ❑ 10 Nm + torque a further 90° ($^1/_4$ turn)

**28 - Crankshaft-belt pulley**

- ❑ with vibration damper
- ❑ Assembly only possible in one position, holes offset
- ❑ removing and installing ⇒ page 67

**29 - Screw**

- ❑ 5 Nm

**30 - Protection plate**

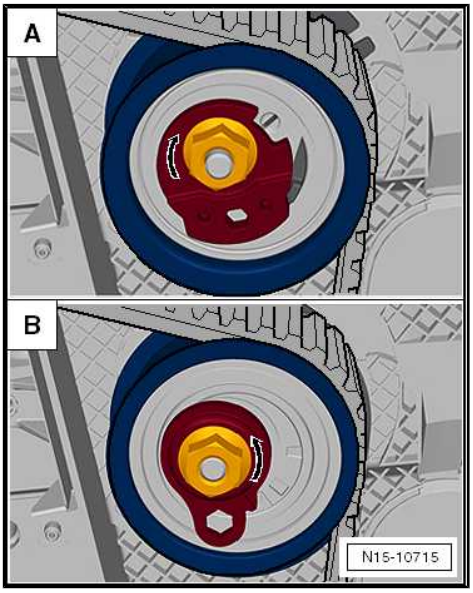
**31 - Screw**

- ❑ replace
- ❑ wymontowanie i zamontowanie ⇒ page 85
- ❑ 40 Nm + 180° ($^1/_2$ turn).

**32 - Engine support bracket**

- ❑ removing and installing ⇒ page 44

### Different versions of tensioning pulleys




**Note**

- *There are 2 versions of tensioning pulleys installed, which can be exchanged.*
- *The versions differ by the reverse direction of rotation when tensioning. During adjusting work, first check which version of tensioning pulley is installed and then ensure the correct rotation direction of the eccentric element when tensioning the belt.*

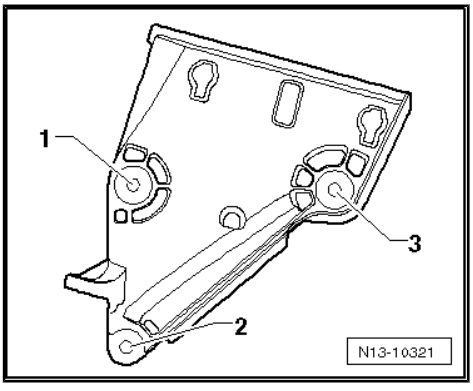
**Tensioning pulley A**

- Use the rig tool - T10265- for installing.
- When installing, ensure that the peg of the base plate of the tensioning pulley is correctly positioned in the opening in the rear timing belt guard.
- Tensioning the timing belt is carried out by turning the eccentric element of the tensioning pulley »clockwise«.

**Tensioning pulley B**

- It is not necessary to use a rig tool for installing.
- The tensioning pulley does not have a peg on the base plate and is not tied up at the opening in the rear timing belt guard (its fitting position is free).
- Tensioning the timing belt is carried out by turning the eccentric element of the tensioning pulley »anti-clockwise«.

### Secure the engine support




**Note**

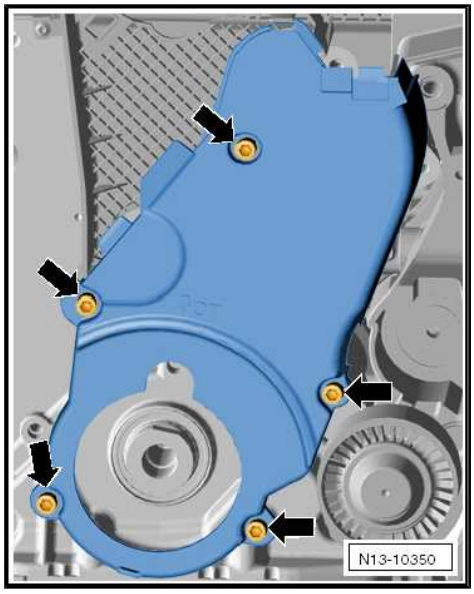
*Replace screws for engine support.*

– Tighten screws in 3 stages in the following sequence:

| Stage | Bolts | Torque/torquing angle |
|---|---|---|
| 1. | -1 … 3- | 7 Nm |
| 2. | -1 … 3- | 40 Nm |
| 3. | -1 … 3- | 180° ($^1/_2$ turn) |

**Attach toothed belt guard - bottom part**

– Tighten screws -arrows-: 9 Nm.




## 1.6.2 Summary of components - Toothed belt drive (Octavia II, Superb II, Yeti)

**1 - Toothed belt**

- ❑ before removing mark running direction
- ❑ check for wear
- ❑ do not kink
- ❑ wymontowanie i zamontowanie ⇒ page 90

**Note**

*If the toothed belt is replaced within the scope of engine repair (apart from change intervals), it should be entered in the Service Schedule!*

**2 - Screw**

- ❑ replace
- ❑ to release and tighten use counterholder -3415-
- ❑ Neither oil nor grease thread or collar

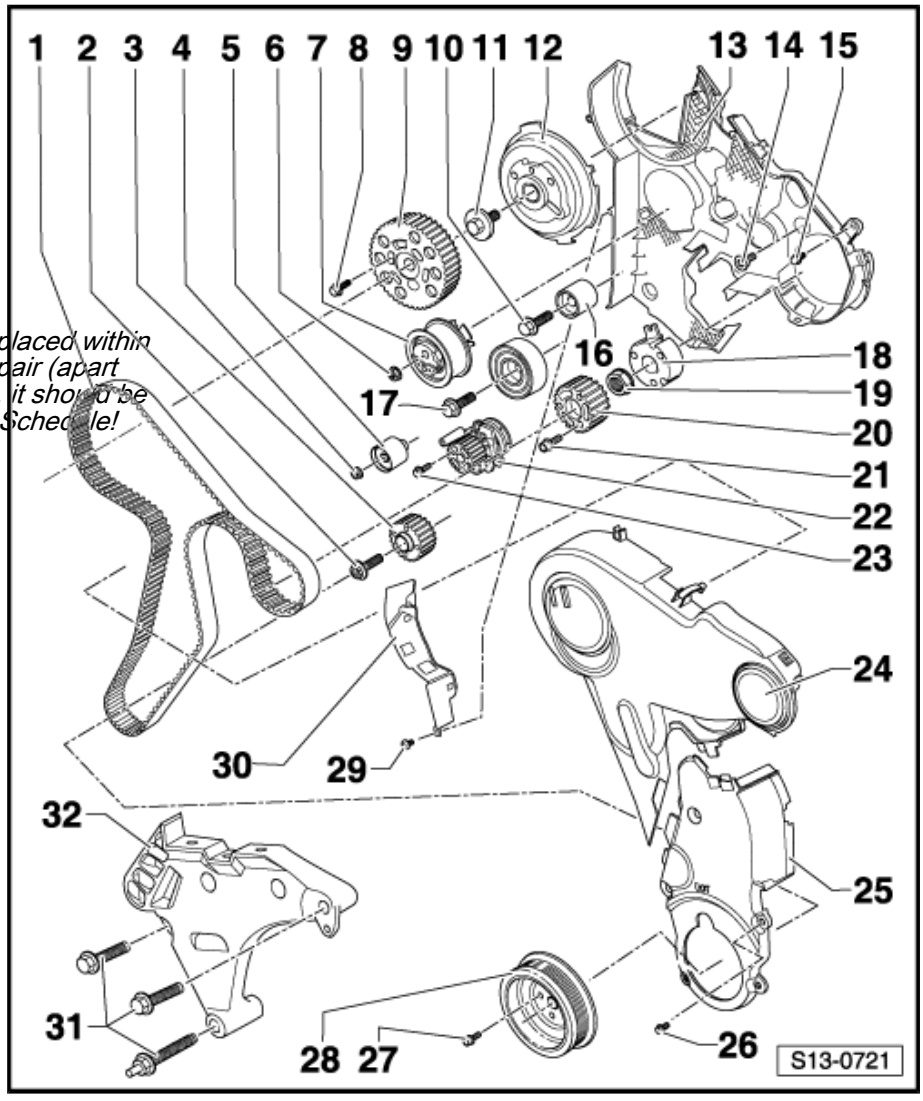
Tighten in three stages as follows

- ◆ 1. stage 180 Nm
- ◆ 2. Continue to turn stage by 90° ($^1/_4$ turn)
- ◆ 3. Continue to turn stage by 45° ($^1/_8$ turn)

**3 - Crankshaft - toothed belt sprocket**

**4 - Nut**

- ❑ 20 Nm



**5 - Guide pulley**

**6 - Nut**

- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**7 - Tensioning pulley**

- ❑ pay attention to different versions ⇒ page 89
- ❑ for removing and installing, remove engine support:

- ♦ Octavia II, Yeti ⇒ page 53
- ♦ Superb II ⇒ page 49

**8 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**9 - Camshaft sprocket**

**10 - Screw**

- ❑ 15 Nm

**11 - Screw**

- ❑ to release and tighten use counterholder - T10051-
- ❑ 100 Nm

**12 - Hub**

- ❑ for camshaft
- ❑ to remove use extractor - T10052-
- ❑ wymontowanie i zamontowanie ⇒ page 178

**13 - Rear toothed belt guard**

**14 - Screw**

- ❑ replace
- ❑ Attach high pressure pump
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**15 - Screw**

- ❑ replace
- ❑ 10 Nm

**16 - Guide pulley**

**17 - Screw**

- ❑ replace
- ❑ 50 Nm + torque a further 90° ($^1/_4$ turn)

**18 - Hub**

- ❑ for high pressure pump
- ❑ to release and tighten use counterholder - T10051-
- ❑ to remove use extractor - T40064-
- ❑ wymontowanie i zamontowanie ⇒ page 400

**19 - Nut**

- ❑ 95 Nm

**20 - Toothed belt gear on the high pressure pump**

**21 - Screw**

- ❑ replace
- ❑ 20 Nm

**22 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**23 - Screw**

- ❑ 15 Nm

**24 - Timing belt guard - top part**

**25 - Timing belt guard - bottom part**

- ❑ wymontowanie i zamontowanie ⇒ page 90

**26 - Screw**

- ❑ 9 Nm

**27 - Screw**

- ❑ replace
- ❑ 10 Nm + torque a further 90° ($^1/_4$ turn)

**28 - Crankshaft-belt pulley**

- ❑ with vibration damper

**29 - Screw**

- ❑ 5 Nm

**30 - Protection plate**

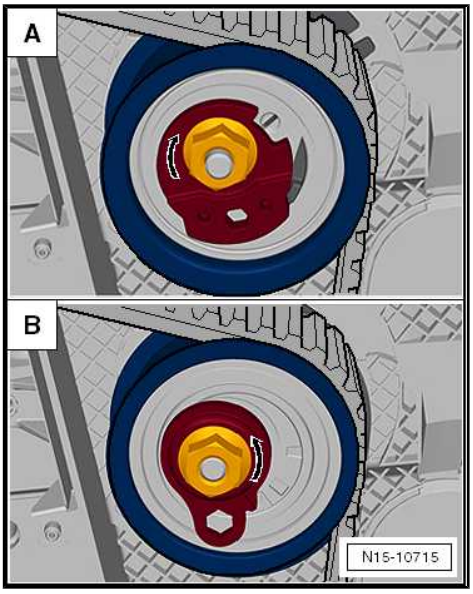
**31 - Screw**

- ❑ replace
- ❑ wymontowanie i zamontowanie ⇒ page 89

**32 - Engine support bracket**

- ❑ wymontowanie i zamontowanie ⇒ page 44

### Different versions of tensioning pulleys




**Note**

- *There are 2 versions of tensioning pulleys installed, which can be exchanged.*
- *The versions differ by the reverse direction of rotation when tensioning. During adjusting work, first check which version of tensioning pulley is installed and then ensure the correct rotation direction of the eccentric element when tensioning the belt.*

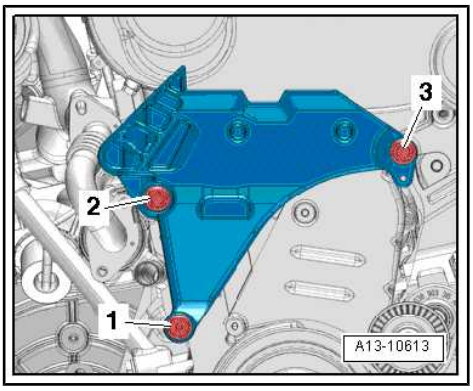
### Tensioning pulley A

- Use the rig tool - T10265- for installing.
- When installing, ensure that the peg of the base plate of the tensioning pulley is correctly positioned in the opening in the rear timing belt guard.
- Tensioning the timing belt is carried out by turning the eccentric element of the tensioning pulley »clockwise«.

### Tensioning pulley B

- It is not necessary to use a rig tool for installing.
- The tensioning pulley does not have a peg on the base plate and is not tied up at the opening in the rear timing belt guard (its fitting position is free).
- Tensioning the timing belt is carried out by turning the eccentric element of the tensioning pulley »anti-clockwise«.

### Secure the engine support




**Note**

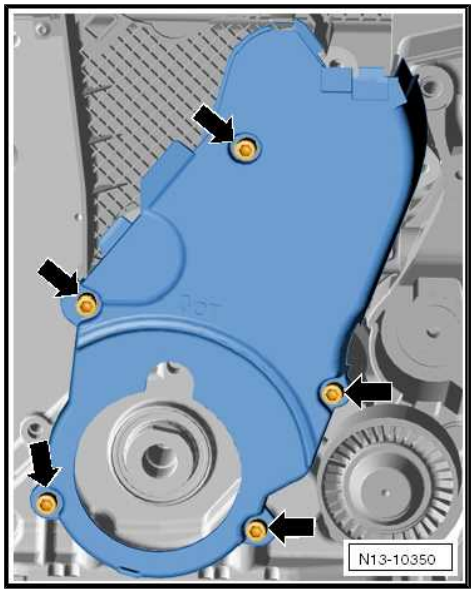
*Replace screws for engine support.*

– Tighten screws in 3 stages in the following sequence:

| Stage | Bolts | Torque/torquing angle |
|---|---|---|
| 1. | -1 … 3- | 7 Nm |
| 2. | -1 … 3- | 40 Nm |
| 3. | -1 … 3- | 180° ($^1/_2$ turn) |

**Attach toothed belt guard - bottom part**

– Tighten screws -arrows-: 9 Nm.




## 1.7 Removing and installing toothed belt

⇒ “1.7.1 Removing and installing toothed belt (Fabia II, Roomster, Rapid India, Rapid NH)”, page 90

⇒ “1.7.2 Removing and installing toothed belt (Octavia II, Superb II, Yeti)”, page 101

### 1.7.1 Removing and installing toothed belt (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Rig pin - 3359- (2x)
- Crankshaft arrester - T10050-
- Locking pin - T10060 A-
- Counterholder - T10172- with stud - T10172/4- and stud - T10172/9-
- Offset screwdriver - T10264- (tensioning pulley A)
- Rig tool - T10265- (tensioning pulley A)
- Offset screwdriver - T10409- (tensioning pulley B)
- Socket insert XZN 10 - T10385-
- Pliers for spring strap clamps

## Removing

**Caution**

*When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:*

- *If the toothed belt is replaced when carrying out engine repair (apart from regular change interval), it should be entered in the Service Schedule!*
- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.*

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Put the shift lever into Neutral in order to turn the crankshaft.

– Switch off ignition and pull out ignition key.

– Remove engine cover ⇒ page 10 .

– Remove V-ribbed belt ⇒ page 57 .

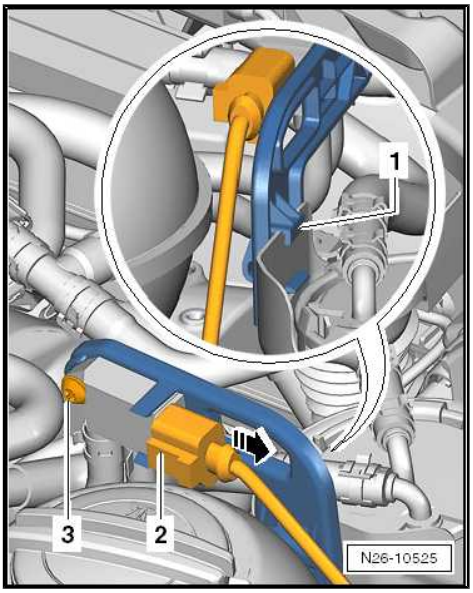
**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

– Disconnect the plug connection -2- at the differential pressure sender - G505- .

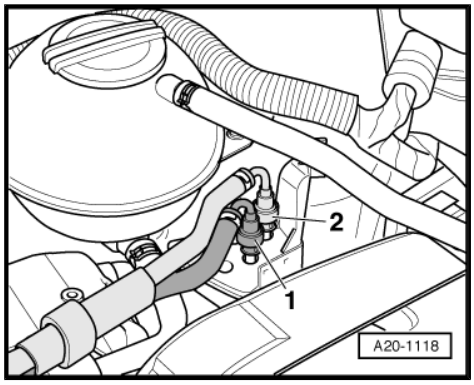
– Release screw -3- and remove differential pressure sender - G505- from bracket.

– Place the differential pressure sender - G505- with line to the rear.

**Continued for all vehicles**

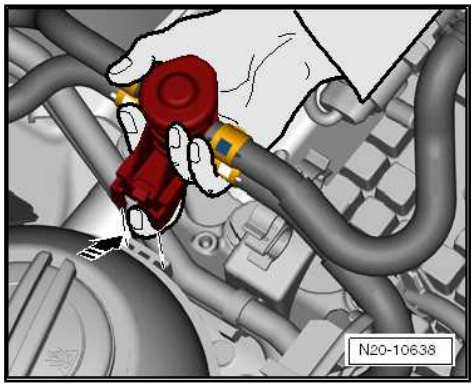


– Separate fuel feed line -2- and fuel return-flow line -1-, to do so press the release buttons. Unlock the quick coupling and disconnect ⇒ page 303 .
– Collect the fuel which flows out with a cloth.



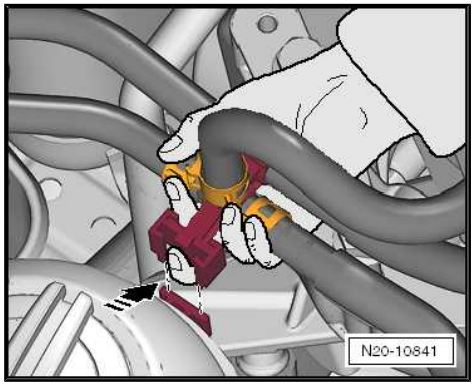

**For vehicles Fabia II, Roomster, Rapid NH**

– Unlock the catch peg with a finger and pull the fuel preheating valve upwards out of the guide of the coolant expansion bottle.



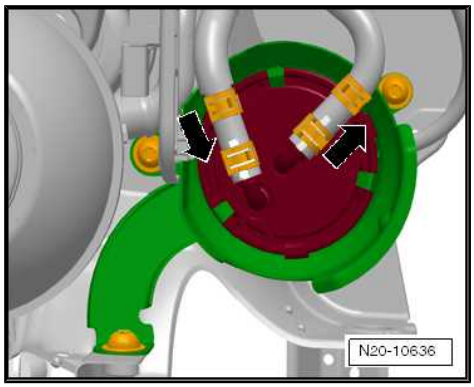

**For Rapid India vehicles**

– Unlock the catch peg with a finger and pull the T-piece upwards out of the guide from the coolant expansion bottle.

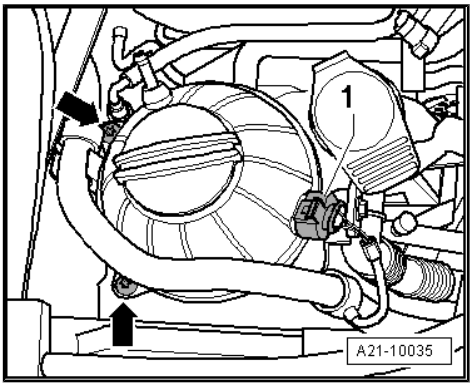



**Continued for all vehicles**

– Unclip the fuel line from the plastic holders.
– Push the catch pegs towards the outside and remove the fuel filter towards the top.
– Place the fuel filter and the fuel hoses together with the fuel preheating valve on the engine.
– Remove fuel filter bracket.



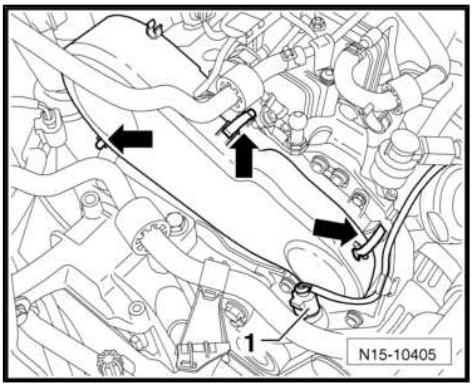
– Unscrew the screws of the coolant expansion bottle -arrows-.
– Remove the plug -1- from the expansion bottle and push the expansion bottle to the side.




– Remove top part of toothed belt guard; to do so release retaining clips -arrows-.
– Remove crankshaft-belt pulley ⇒ page 67 .

**Note**

*Do not lock tensioning element for V-ribbed belt.*

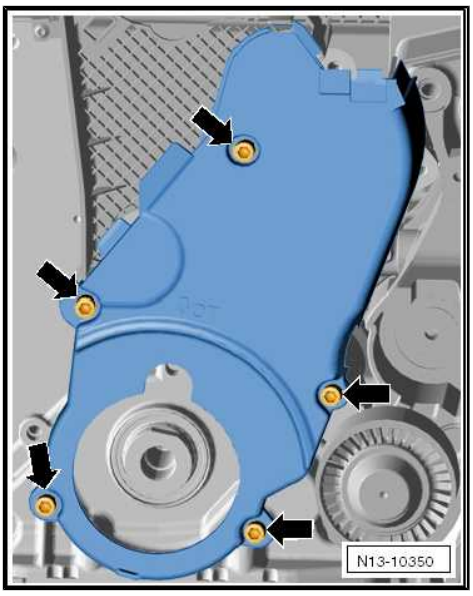



– Release screws -arrows-.
– Remove bottom toothed belt guard.
• Remove the engine support before exchanging the tensioning pulley and removing and installing the toothed belt.

**Note**

♦ *The assembly bracket must only be removed if the engine is supported with the supporting device - MP9-200 (10-222A)- , if necessary -T30099- !*
♦ *Only release the engine support if the assembly bracket is removed.*

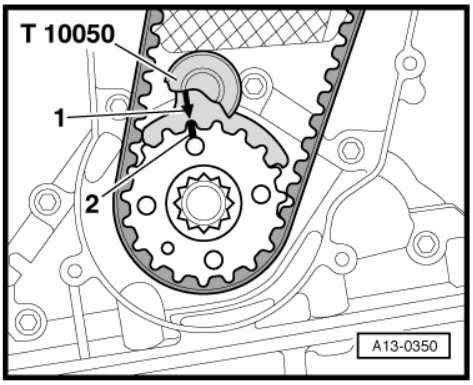
– Remove engine support ⇒ page 44 .



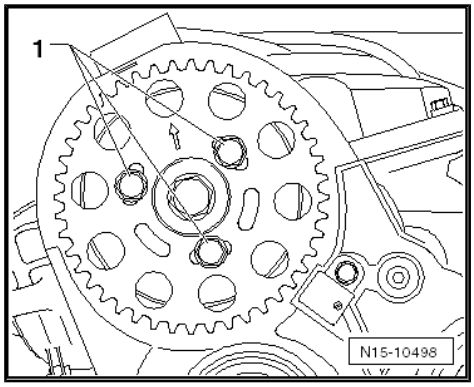

– Rotate the crankshaft on TDC in direction of rotation of the engine and remove the crankshaft timing belt sprocket with the crankshaft arrester - T10050- . Slide the crankshaft arrester from the front side of the toothed belt sprocket into its teeth.

**Note**

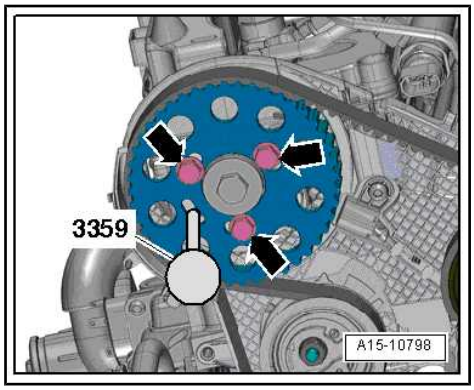
*The markings on the crankshaft - toothed belt sprocket -2- and on the crankshaft arrester - T10050- -1- must be aligned. While doing so, the stud of the crankshaft arrester - T10050- must engage in the hole of the sealing flange.*



The arrow on the camshaft sprocket must be close to the »12 o'clock« position.

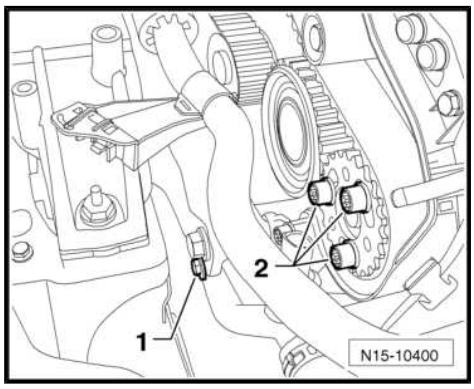



– Slacken the screws -arrows- for the camshaft sprocket by approx. 90°.



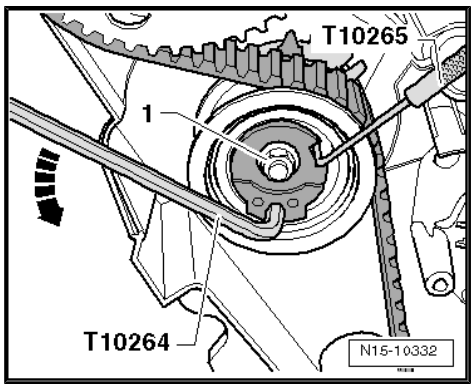

– Slacken the screws -2- for the toothed belt sprocket at the high pressure pump by approx. 90° using the socket insert XZN 10 - T10385- .

**Tensioning pulley A**

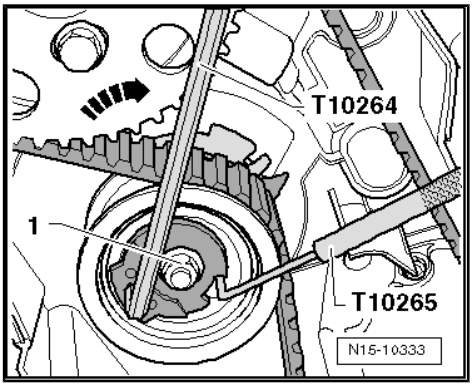



– Loosen nut -1- for tensioning pulley.

– Turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- in -direction of arrow- (anti-clockwise), until the tensioning pulley can be interlocked with the rig tool - T10265- .



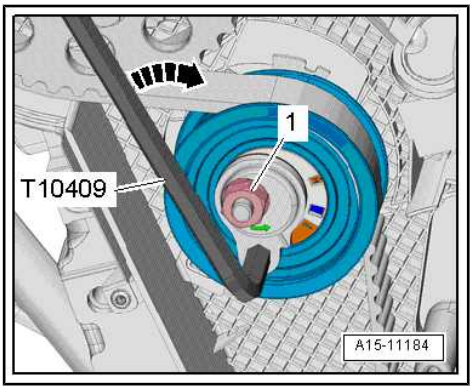
– Afterwards, turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- in -direction of arrow- up to the stop and tighten nut -1- by hand.




**Tensioning pulley B**

– Loosen nut -1- for tensioning pulley.

– Turn eccentric of the tensioning pulley with the offset screwdriver - T10409- in -direction of arrow- (clockwise) until the tensioner pulley is slackened (eccentric in approx. 9 o'clock position) and tighten the nuts -1- by hand.




**Proceed as follows for both tensioning pulleys**

**Caution**

***When installing, risk of damage through reversing the rotation direction of an already used toothed belt.***

- ***If the toothed belt is re-installed, mark the direction of rotation with chalk or a felt-tip pen before removing it.***

– First of all remove the toothed belt from the large guide pulley and then from the remaining toothed belt gears.

**Installing (set the timing)**

**Note**

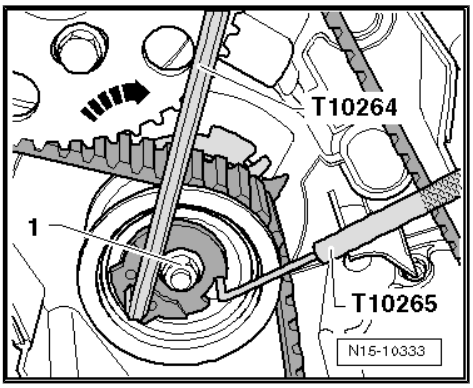
- *Adjusting work on the timing belt must only be performed on a cold engine, as the position of the pointer at the tensioning element is temperature dependent.*
- *If it is intended to replace the tensioning pulley, the engine support must be removed* ⇒ page 44 .
- *Replace the fixing screws for the camshaft sprocket and the toothed belt sprocket on the high pressure pump.*

**Conditions**

**Tensioning pulley A**

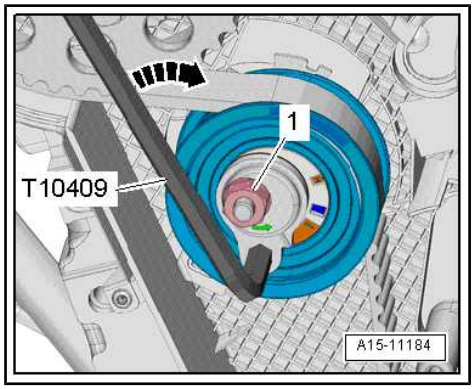
• Tensioning pulley locked with rig tool - T10265- and fixed with nut up to right stop.

**Tensioning pulley B**

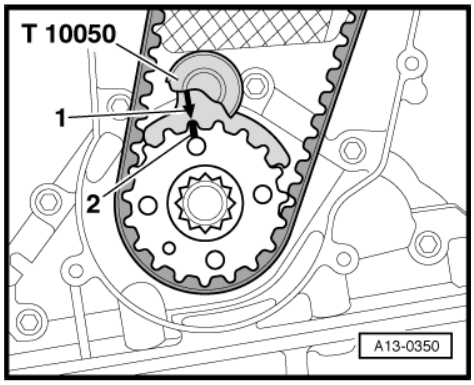


- The tensioner of the tensioning pulley is in the 9 o'clock position.
- The nut -1- of the tensioning pulley is tightened to 2 up to 4 Nm.

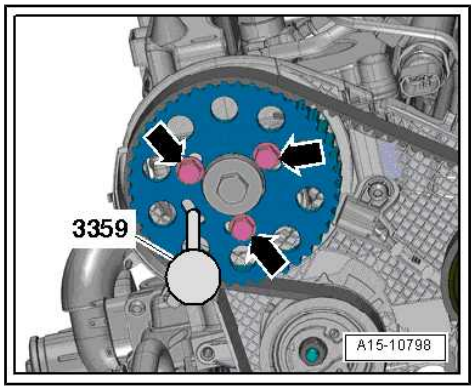
**Proceed as follows for both tensioning pulleys**




- Lock the crankshaft with the crankshaft arrester - T10050- .
- The screws for the camshaft sprocket are replaced and loosely tightened. It must still be possible to just turn the toothed belt sprocket, however it must not hang loose.



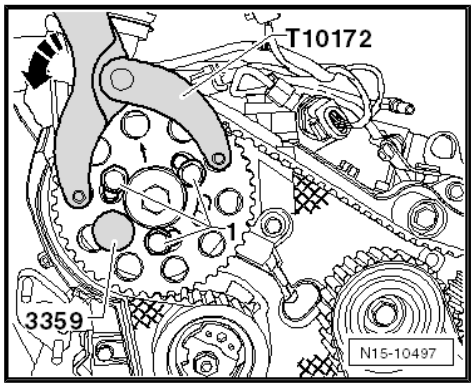

– Lock the hub of the camshaft with the rig pin for diesel injection pump - 3359- . To do so, slide the rig pin through the open elongated hole on the outside of the cylinder head.



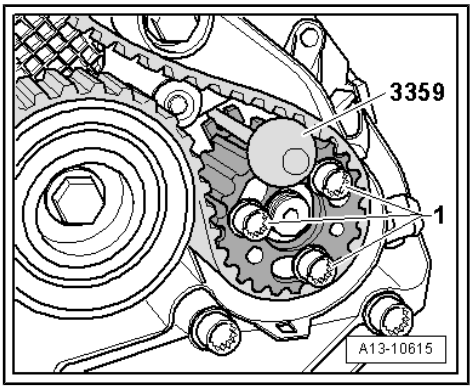

**Note**

*If necessary, turn the hub of the camshaft using the counterholder - T10172- and the adapters - T10172/4- until it can be arrested. To do so tighten at least one fixing screw -1- by hand.*

– Loosen again the screws which were tightened by hand -arrows-.

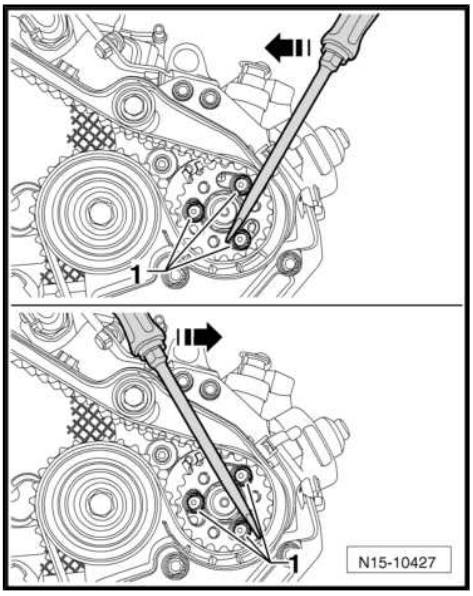


– Lock the hub of the high pressure pump with the rig pin for diesel injection pump - 3359- . To do so, insert the rig pin into the hole of the timing belt gear from the outside.




**Note**

*If necessary, use a screwdriver to turn the hub of the high pressure pump at the screw heads -1- until the hub can be locked with the rig pin.*




– Turn the camshaft sprocket -3- and the toothed belt sprocket on the high pressure pump -5- clockwise in their elongated holes as far as the stop.

– Fit the timing belt in the following order.

1 - Crankshaft - toothed belt sprocket

2 - Tensioning pulley

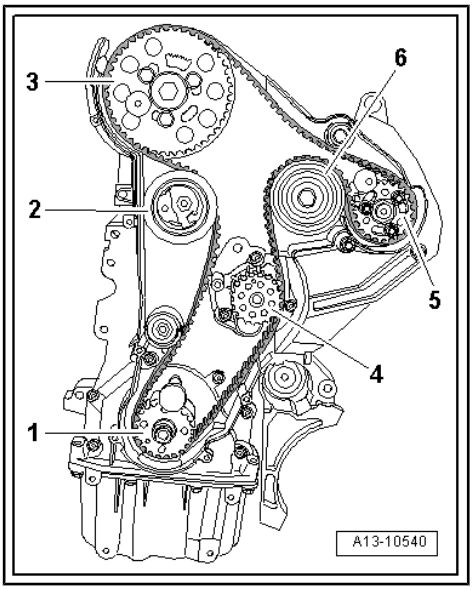
3 - Camshaft sprocket

4 - Timing belt gear on the coolant pump

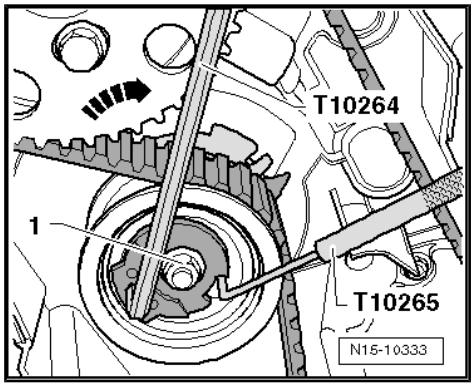
5 - Toothed belt gear on the high pressure pump

6 - Guide pulley

**Tensioning pulley A**

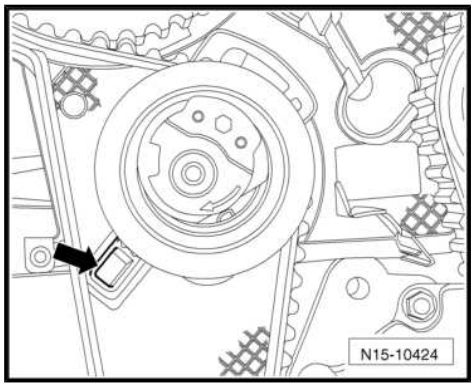


– Loosen nut -1- for tensioning pulley and remove rig tool - T10265- .




**Note**

*Pay attention to correct fitting of the tensioning pulley in the rear toothed belt guard -arrow-.*

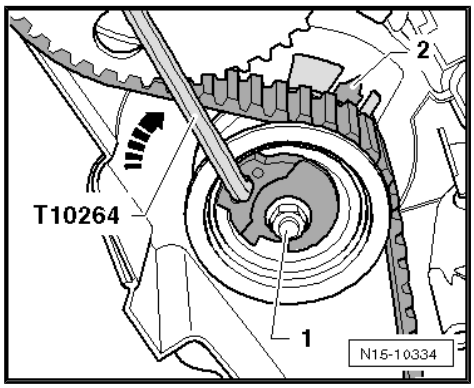



– Turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- clockwise -arrow- until the pointer -2- is in the centre of the base plate in front of the gap.

• The nut -1- must not turn along.

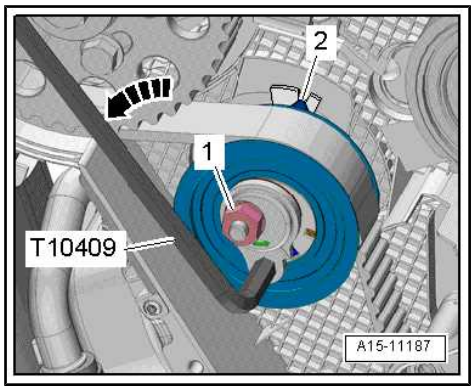
– Hold tensioning pulley in this position and tighten nut -1-.

Tightening torque: 20 Nm + 45° ($^1/_8$ turn)




**Tensioning pulley B**

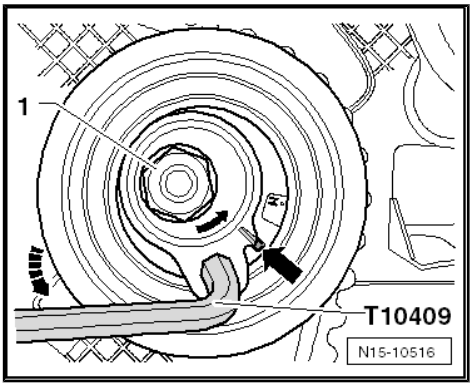
– Turn the eccentric of the tensioning pulley carefully with the offset screwdriver - T10409- anticlockwise until the pointer -2- is in the centre of the base plate in front of the gap. Ensure while doing so that the fastening nut -1- does not also rotate.



The markings -arrow- on the eccentric and on the tensioning pulley must almost coincide.

– Hold tensioning pulley in this position and tighten nut -1-.

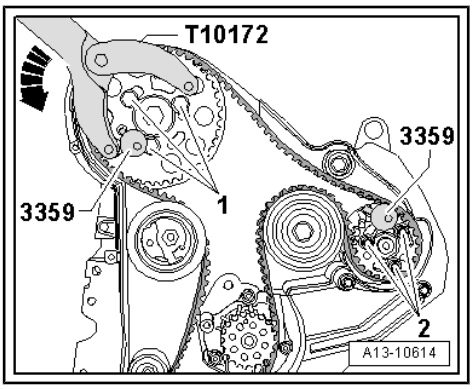
  Tightening torque: 20 Nm + 45° ($^1/_8$ turn)




**Proceed as follows for both tensioning pulleys**

– Fit counterholder - T10172- with bolts - T10172/4- onto camshaft sprocket and press in -direction of arrow-.

– Maintain pre-tensioning and initially tighten screws -1- for camshaft sprocket to 20 Nm.




**Note**

*The screws for the camshaft sprocket must be turned further after completion of setting and after timing testing* ⇒ page 101 .

– Tighten screw-2- for toothed belt pulley on the high pressure pump. Hold the toothed belt pulley with the Counterholder - T10172- with bolt - T10172/9- .

  Tightening torque: 20 Nm

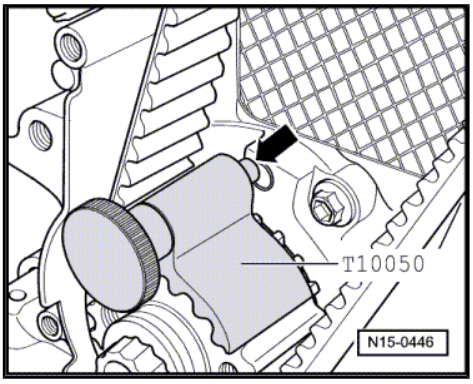
– Remove rig pins for diesel injection pump - 3359- and crankshaft arrester - T10050- .

**Test timing:**

– Turn the crankshaft at the screw for timing belt gear 2 turns in the direction of rotation of the engine until the crankshaft is positioned shortly before TDC for cylinder 1.

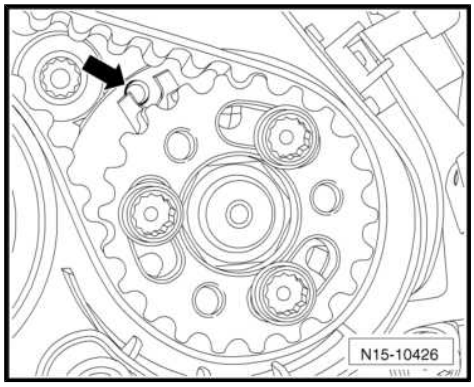
– Position again the crankshaft arrester - T10050- on the crankshaft timing belt sprocket.

– Turn the crankshaft in the direction of rotation of the engine until the bolt -arrow- of the crankshaft arrester engages during this rotary movement in the sealing flange.

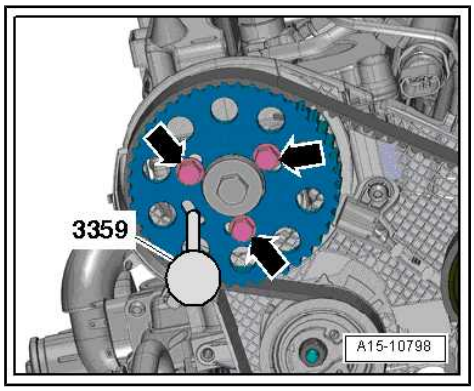


**Note**

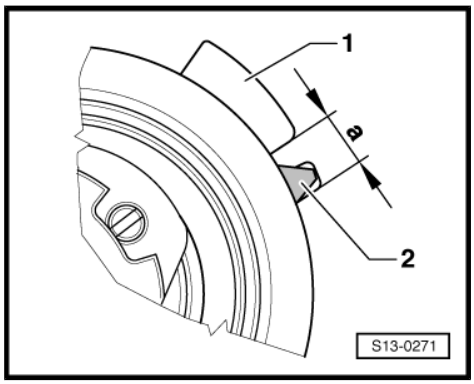
*The removal of the crankshaft and camshaft is limited in the following test. The removal point of the hub of the high pressure pump is always difficult to find again. A slight difference -arrow- does not influence the engine running.*




### Conditions




- The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .
- The pointer of the tensioning pulley -2- must be in the area -a- of the base plate -1-.




If the conditions are not fulfilled:

– Correct timing ⇒ page 100 .

If the conditions are fulfilled:

– Continued if the timing is correctly set ⇒ page 101 .

### Correct timing:

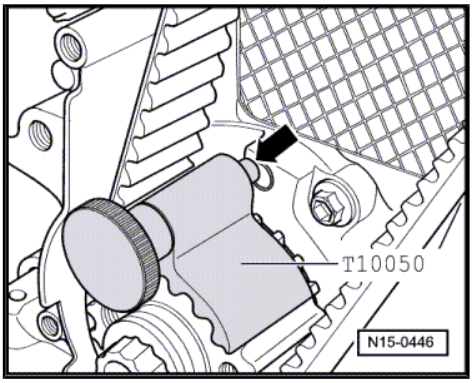
– Push the crankshaft arrester - T10050- until its locking bolt pushes out of the hole in the sealing flange.

– Turn the crankshaft slightly against the running direction of the engine before the TDC for cylinder 1.

– Now slowly turn the crankshaft in the running direction of the engine, until the hub of the camshaft can be locked during this rotary movement with the rig pin for the injection pump - 3359- .

– Slacken the fixing screws of the pulley when the hub of the camshaft sprocket is locked.

– Check the position of the bolt -arrow- of the crankshaft arrester - T10050- to the hole in the sealing flange.




**If the bolt -arrow- of the crankshaft arrester - T10050- is positioned to the left of the hole:**

– Slowly turn the crankshaft in the direction of rotation of the engine until the bolt of the crankshaft arrester - T10050- engages into the hole in the sealing flange.

– Pre-tighten the fixing screws for the camshaft sprocket to 20 Nm.

**Note**

*The screws must be further turned according to the setting of the timing ⇒ page 101 .*

**If the bolt of the crankshaft arrester - T10050- is positioned to the right behind the hole:**

– First of all turn the crankshaft slightly against the direction of rotation of engine until the bolt is positioned to the left in front of the hole.

– Slowly turn the crankshaft in the direction of rotation of the engine until the bolt of the crankshaft arrester - T10050- engages into the hole in the sealing flange.

– Pre-tighten the fixing screws for the camshaft sprocket to 20 Nm.

**Note**

*The screws must be further turned according to the setting of the timing ⇒ page 101 .*

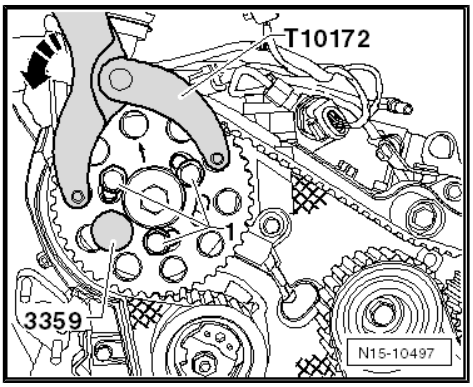
**Continued if the timing is correctly set:**

– Remove rig pin - 3359- and crankshaft arrester - T10050- .

– Check the timing once again ⇒ page 99 .

If the hub of the camshaft sprocket can now be secured:

– Torque the fixing screws of the camshaft sprocket a further 45° ($^1/_8$ turn) using a rigid wrench. Counterhold with counterholder - T10172- with bolts - T10172/4- .




**Further installation:**

Further installation occurs in reverse order to removal.

**Tightening torques**

♦ ⇒ “1.6 Assembly overview - toothed belt drive”, page 82

## 1.7.2 Removing and installing toothed belt (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

♦ Rig pin - 3359- (2x)

♦ Crankshaft arrester - T10050-

- Locking pin - T10060 A-
- Counterholder - T10172- with stud - T10172/4- and stud - T10172/9-
- Offset screwdriver - T10264- (tensioning pulley A)
- Rig tool - T10265- (tensioning pulley A)
- Offset screwdriver - T10409- (tensioning pulley B)
- Socket insert XZN 10 - T10385-
- Pliers for spring strap clamps

**Removing**

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***If the toothed belt is replaced within the scope of engine repair (apart from change intervals), it should be entered in the Service Schedule!***
- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .
- *The engine support does not have to be removed in order to remove the camshaft sprocket.*
- *On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

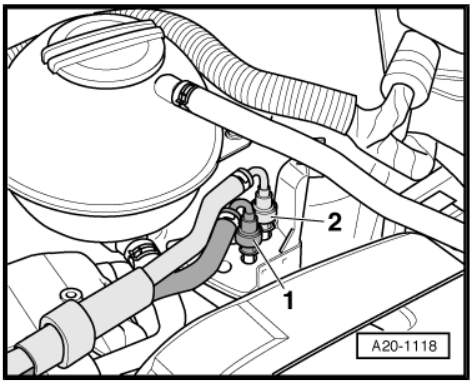
– Put shift lever into neutral and/or the gear selector into position “N” to rotate the crankshaft.

– Switch off ignition and pull out ignition key.

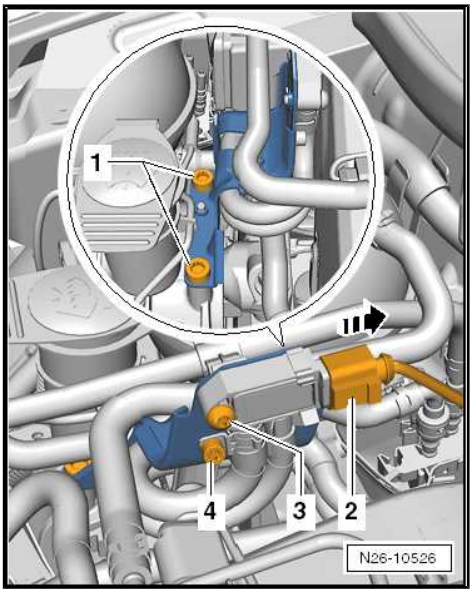
– Remove engine cover ⇒ page 10 .

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Detach fuel feed line -2- and fuel return-flow line -1-, to do so press in securing ring. Unlock the quick coupling and disconnect ⇒ page 303 .




– Disconnect the plug from the differential pressure sender - G505- and unscrew the fixing screws -1-.



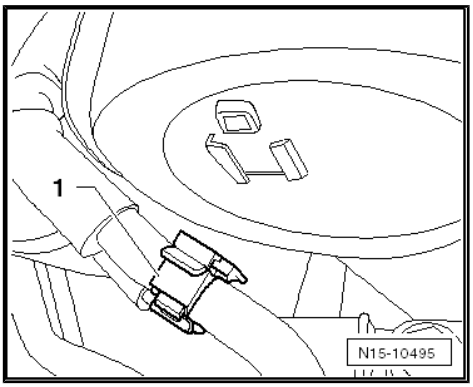

– Slacken line -1- for differential pressure sender - G505- with bracket from top timing belt guard.

– Remove the bracket with the differential pressure sender - G505- and place it to the rear.

**Caution**

*Risk of damage!*

- *The differential pressure indicator - G505- is very sensitive and must not touch somewhere when laying it down with the bracket.*




– Unscrew bolt -1-.

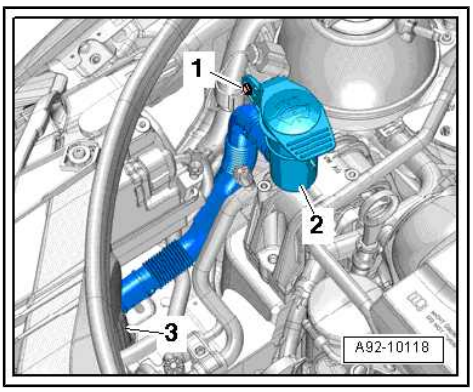
– Push the filler tube with the filler neck -2- for the washer-fluid reservoir to the side.

**Note**

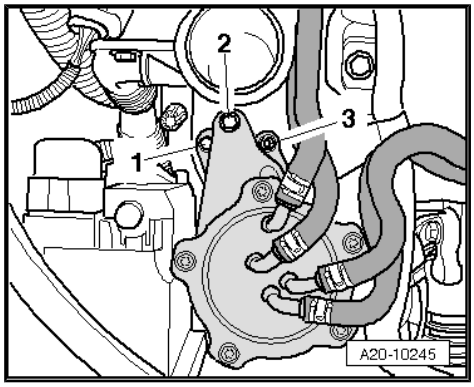
*For reasons of clarity the fuel filter is not shown.*

– Unplug connector from compensation bottle.

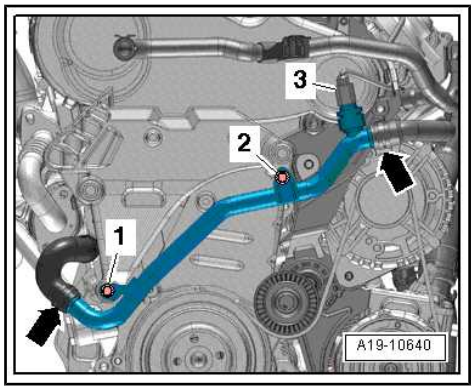
– Unscrew screw for compensation bottle.



– Release screw -1- by two turns.
– Release screw -2- and nut -3-.
– Unclip bracket for coolant line at fuel filter.
– Lay the compensation bottle with the hoses connected and the fuel filter with the hoses connected onto the engine.



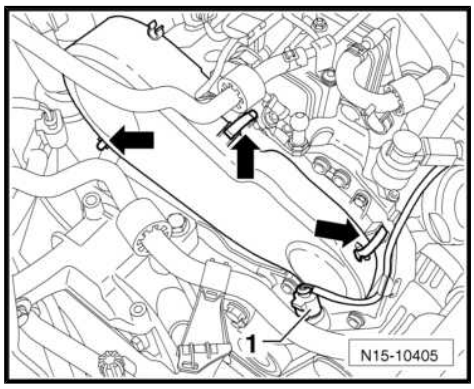

– Disconnect plug -3- at the coolant temperature sender at radiator outlet - G83- .
– Release nut -1- and screw -2-.
– Press the right coolant pipe with the hoses connected -arrows- to the side.



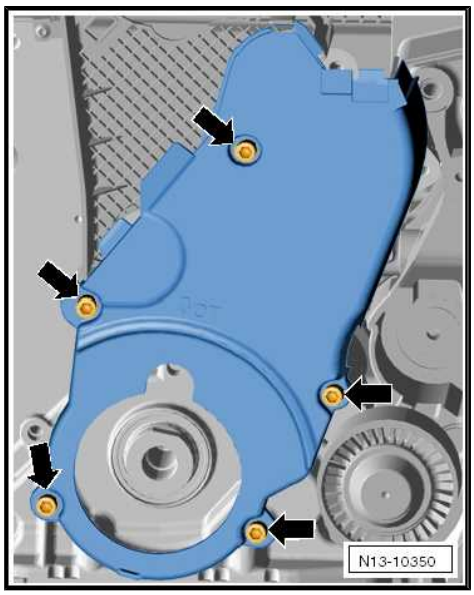

– Remove top part of toothed belt guard; to do so release retaining clips -arrows-.
– Remove crankshaft-belt pulley ⇒ page 67 .

**Note**

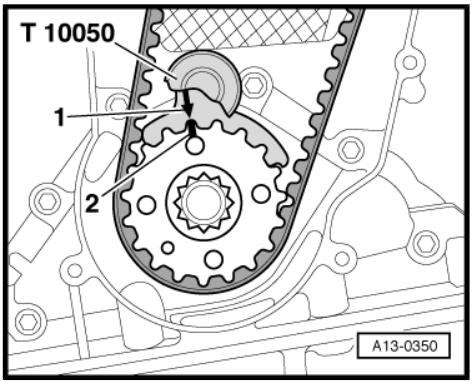
*Do not lock tensioning element for V-ribbed belt.*




– Release screws -arrows-.
– Remove bottom toothed belt guard.



– Rotate the crankshaft on TDC in direction of rotation of the engine and remove the crankshaft timing belt sprocket with the crankshaft arrester - T10050- . To do so, slide the crankshaft arrester from the front side of the timing belt sprocket into its teeth.

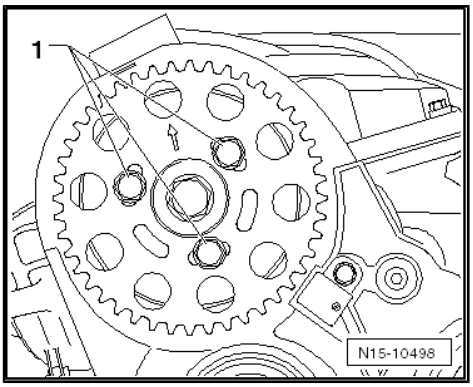



**Note**

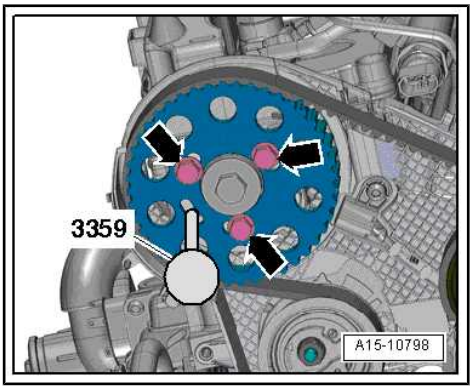
*The markings on the crankshaft toothed belt sprocket -2- and crankshaft arrester - T10050- -1- must face each other. While doing so, the stud of the crankshaft arrester - T10050- must engage in the hole of the sealing flange.*

The arrow on the camshaft sprocket must be close to the »12 o'clock« position.

– It marks the direction of running of the timing belt.

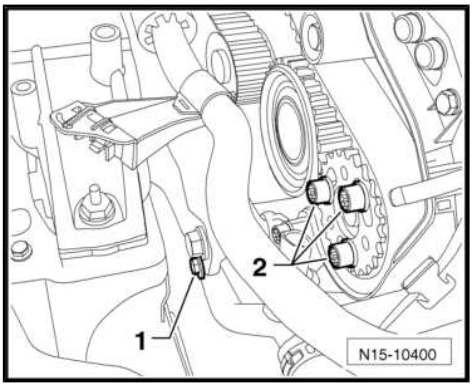



– Slacken the screws -arrows- for the camshaft sprocket by approx. 90°.



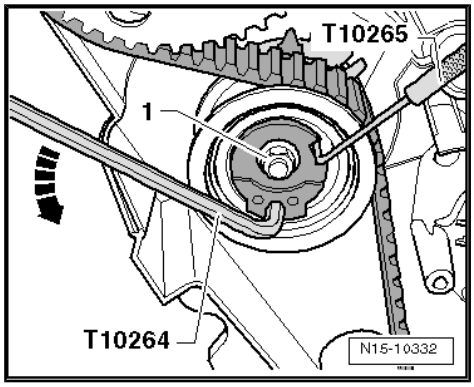

– Slacken the screws -2- for the toothed belt sprocket at the high pressure pump by approx. 90° using the socket insert XZN 10 - T10385- .

**Tensioning pulley A**



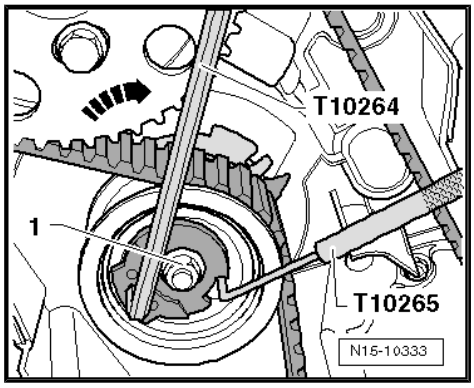
– Loosen nut -1- for tensioning pulley.

– Turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- in -direction of arrow- (anti-clockwise) until the tensioner pulley can be interlocked with the extractor - T10265- .



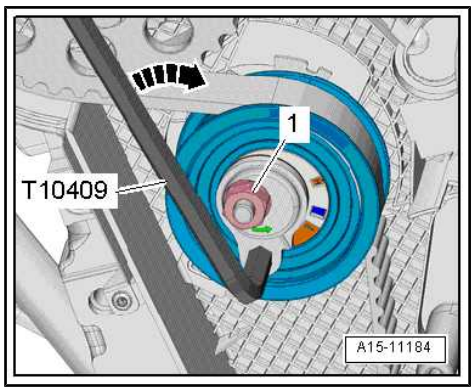

– Afterwards, turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- in -direction of arrow- up to the stop and tighten nut -1- by hand.

**Tensioning pulley B**




– Loosen nut -1- for tensioning pulley.

– Turn eccentric of the tensioning pulley with the offset screwdriver - T10409- in -direction of arrow- (clockwise) until the tensioner pulley is slackened (eccentric in approx. 9 o'clock position) and tighten the nuts -1- by hand.




**Proceed as follows for both tensioning pulleys**

**Caution**

***When installing, risk of damage through reversing the rotation direction of an already used toothed belt.***

- ***If the toothed belt is re-installed, mark the direction of rotation with chalk or a felt-tip pen before removing it.***

– First of all remove the toothed belt from the large guide pulley and then from the remaining toothed belt gears.

**Installing (set the timing)**

**Note**

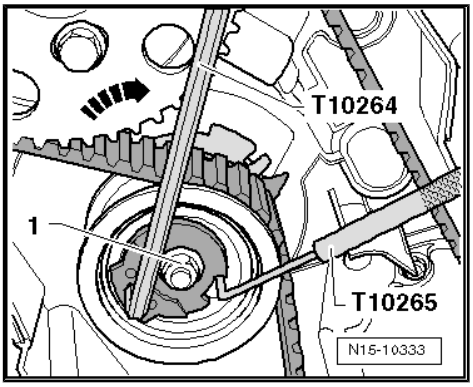
- *Adjusting work on the timing belt must only be performed on a cold engine, as the position of the pointer at the tensioning element is temperature dependent.*
- *If it is intended to replace the tensioning pulley, the engine mount must be removed ⇒ page 53 .*
- *Replace the fixing screws for the camshaft sprocket and the toothed belt sprocket on the high pressure pump.*

**Conditions**

**Tensioning pulley A**

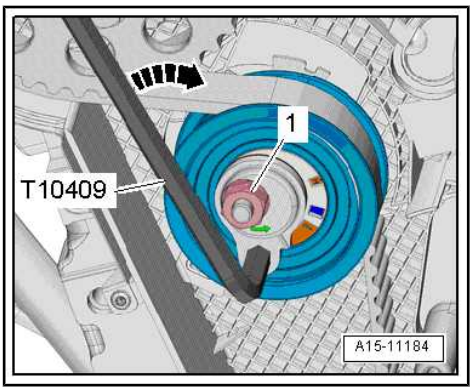
- Tensioning pulley locked with rig tool - T10265- and fixed with nut up to right stop.

**Tensioning pulley B**

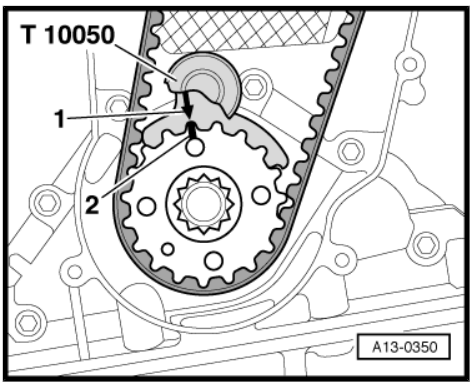



- The tensioner of the tensioning pulley is in the 9 o'clock position.
- The tensioning pulley is loose and the nut -1- is tightened to 2 up to 4 Nm.

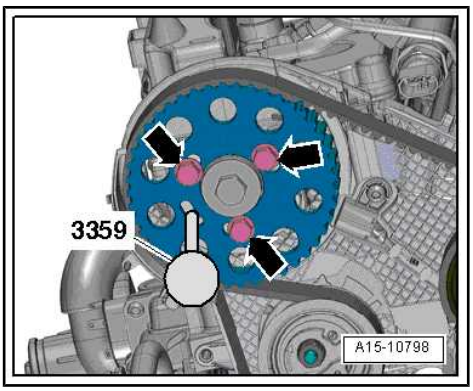
**Proceed as follows for both tensioning pulleys**




- Lock the crankshaft with the crankshaft arrester - T10050- .
- The screws for the camshaft sprocket are replaced and loosely tightened. It must still be possible to just turn the toothed belt sprocket, however it must not hang loose.

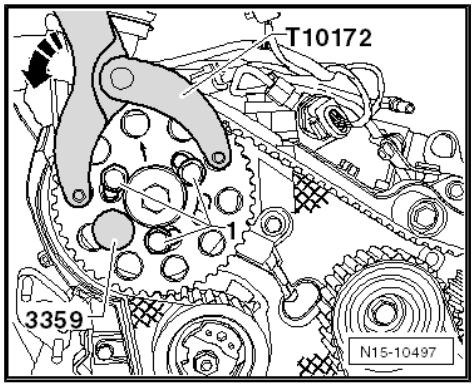



– Lock the hub of the camshaft with the rig pin for diesel injection pump - 3359- . To do so, slide the rig pin through the open elongated hole on the outside of the cylinder head.



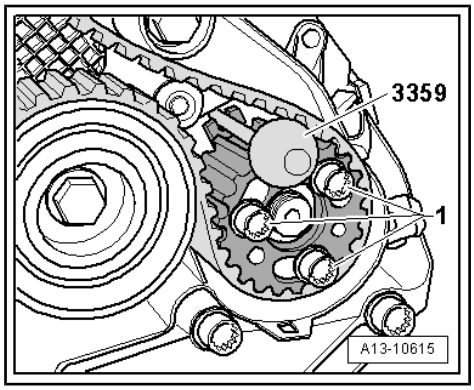
**Note**

*If necessary, turn the hub of the camshaft using the counterholder - T10172- and the adapters - T10172/4- until it can be arrested. To do so tighten at least one fixing screw -1- by hand.*



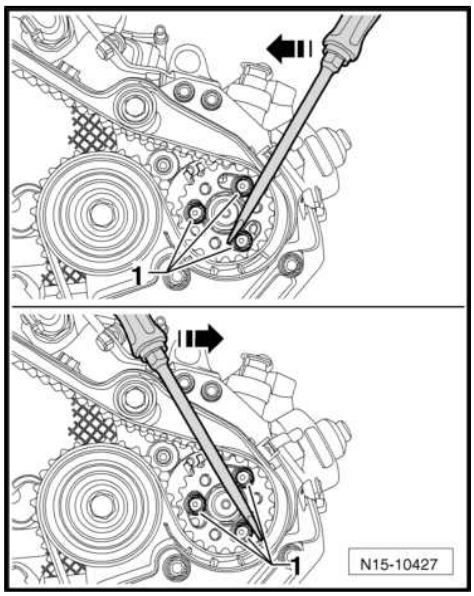

– Loosen again the screws which were tightened by hand -arrows-.

– Lock the hub of the high pressure pump with the rig pin for diesel injection pump - 3359- . To do so, insert the rig pin into the hole of the timing belt gear from the outside.



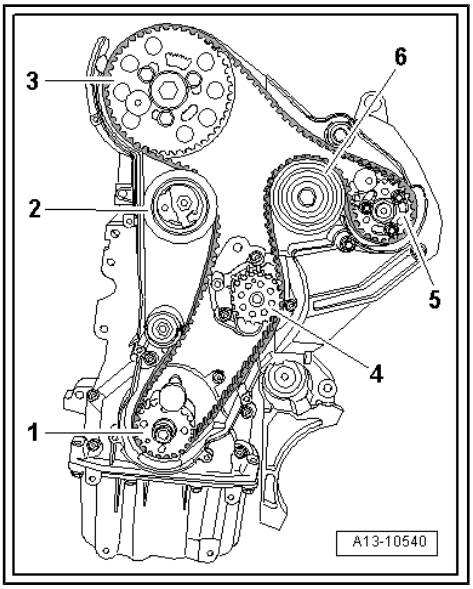

**Note**

*If necessary, use a screwdriver to turn the hub of the high pressure pump at the screw heads -1- until the hub can be locked with the rig pin.*



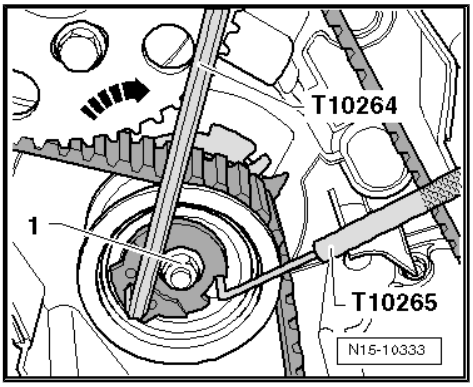
– Turn the camshaft sprocket -3- and the toothed belt sprocket on the high pressure pump -5- clockwise in their elongated holes as far as the stop.
– Fit the timing belt in the specified order.

1 - Crankshaft - toothed belt sprocket
2 - Tensioning pulley
3 - Camshaft sprocket
4 - Timing belt gear on the coolant pump
5 - Toothed belt gear on the high pressure pump
6 - Guide pulley



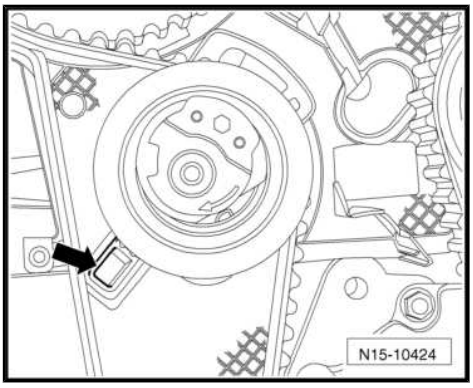

**Tensioning pulley A**

– Loosen nut -1- for tensioning pulley and remove rig tool - T10265- .



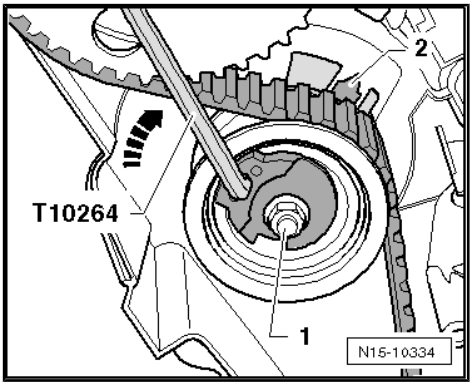

**Note**

*Pay attention to correct fitting of the tensioning pulley in the rear toothed belt guard -arrow-.*



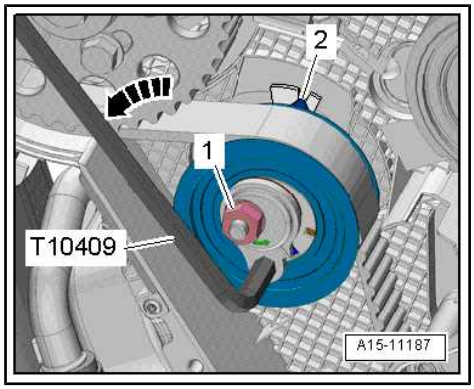

– Turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- clockwise -arrow- until the pointer -2- is in the centre of the base plate in front of the gap.
• The nut -1- must not turn along.
– Hold tensioning pulley in this position and tighten nut -1-.

Tightening torque: 20 Nm + 45° ($^1/_8$ turn).




**Tensioning pulley B**

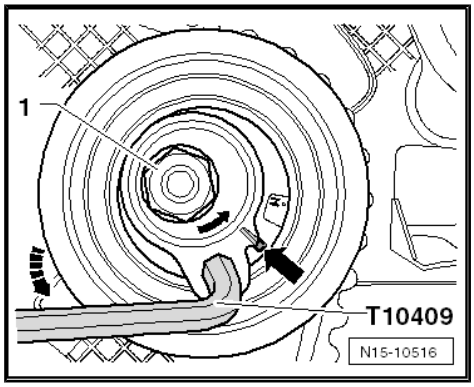
– Turn the eccentric of the tensioning pulley carefully with the offset screwdriver - T10409- anticlockwise until the pointer -2- is in the centre of the base plate in front of the gap. Ensure while doing so that the fastening nut -1- does not also rotate.




The markings -arrow- on the eccentric and on the tensioning pulley must almost coincide.

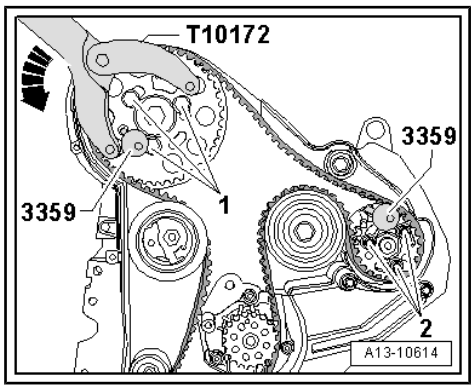
– Hold tensioning pulley in this position and tighten nut -1-.

  Tightening torque: 20 Nm + 45° ($^1/_8$ turn).




**Proceed as follows for both tensioning pulleys**

– Fit counterholder - T10172- with bolts - T10172/4- onto camshaft sprocket and press in -direction of arrow-.
– Maintain pre-tensioning and initially tighten screws -1- for camshaft sprocket to 20 Nm.




**Note**

*The screws for the camshaft sprocket must be turned further after completion of setting and after timing testing* *⇒ page 113* *.*

– Tighten screw-2- for toothed belt pulley on the high pressure pump. Hold the toothed belt pulley with the Counterholder - T10172- with bolt - T10172/9- .

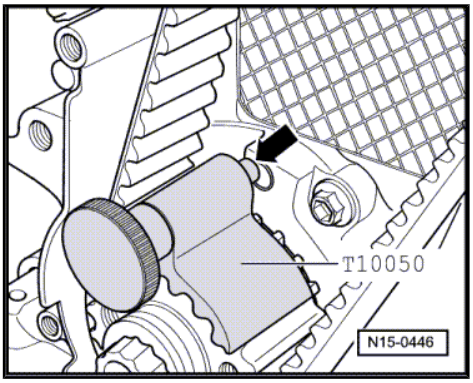
  Tightening torque: 20 Nm.

– Remove rig pins for diesel injection pump - 3359- and crankshaft arrester - T10050- .

**Test timing:**

– Turn the crankshaft at the screw for timing belt gear 2 turns in the direction of rotation of the engine until the crankshaft is positioned shortly before TDC for cylinder 1.

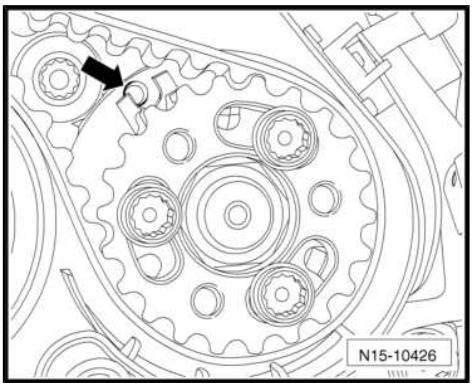
– Position again the crankshaft arrester - T10050- on the crankshaft timing belt sprocket.
– Turn the crankshaft in the direction of rotation of the engine until the bolt -arrow- of the crankshaft arrester engages during this rotary movement in the sealing flange.

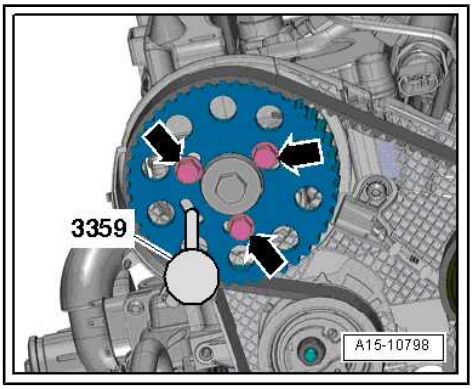



**Note**

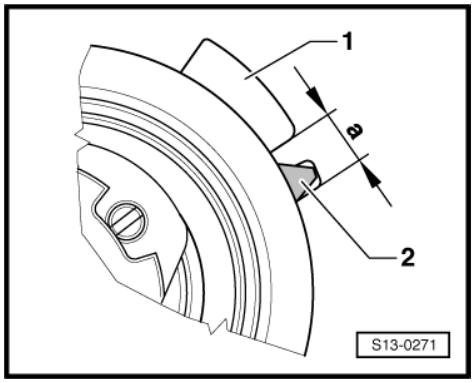
*The removal of the crankshaft and camshaft is limited in the following test. The removal point of the hub of the high pressure pump is always difficult to find again. A slight difference -arrow- does not influence the engine running.*

**Conditions**



- The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .
- The pointer of the tensioning pulley -2- must be in the area -a- of the base plate -1-.




If the conditions are not fulfilled:

– Correct timing ⇒ page 112 .

If the conditions are fulfilled:

– Continued if the timing is correctly set ⇒ page 113 .

**Correct timing:**

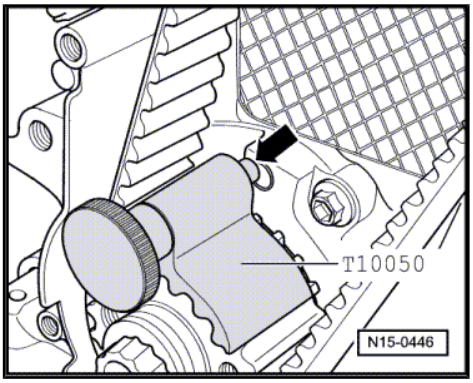
– Push the crankshaft arrester - T10050- until its locking bolt pushes out of the hole in the sealing flange.

– Turn the crankshaft slightly against the running direction of the engine before the TDC for cylinder 1.

– Now slowly turn the crankshaft in the running direction of the engine, until the hub of the camshaft can be locked during this rotary movement with the rig pin for the injection pump - 3359- .

– Slacken the fixing screws of the pulley when the hub of the camshaft sprocket is locked.

– Check the position of the bolt -arrow- of the crankshaft arrester - T10050- to the hole in the sealing flange.




**If the bolt -arrow- of the crankshaft arrester - T10050- is positioned to the left of the hole:**

– Slowly turn the crankshaft in the direction of rotation of the engine until the bolt of the crankshaft arrester - T10050- engages into the hole in the sealing flange.

– Pre-tighten the fixing screws for the camshaft sprocket to 20 Nm.

**Note**

*The screws must be further turned according to the setting of the timing ⇒ page 113 .*

**If the bolt of the crankshaft arrester - T10050- is positioned to the right behind the hole:**

– First of all turn the crankshaft slightly against the direction of rotation of engine until the bolt is positioned to the left in front of the hole.

– Slowly turn the crankshaft in the direction of rotation of the engine until the bolt of the crankshaft arrester - T10050- engages into the hole in the sealing flange.

– Pre-tighten the fixing screws for the camshaft sprocket to 20 Nm.

**Note**

*The screws must be further turned according to the setting of the timing ⇒ page 113 .*

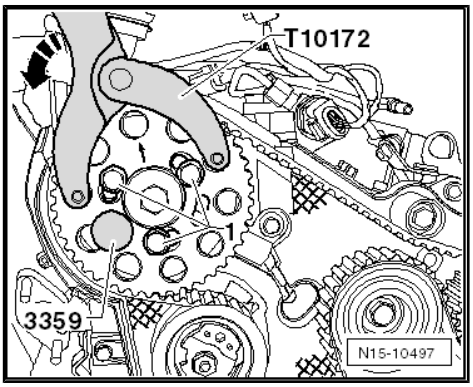
**Continued if the timing is correctly set:**

– Remove rig pin - 3359- and crankshaft arrester - T10050- .

– Check the timing once again ⇒ page 110 .

If the hub of the camshaft sprocket can now be secured:

– Torque the fixing screws of the camshaft sprocket a further 45° ($^1/_8$ turn) using a rigid wrench. Counterhold with counterholder - T10172- with bolts - T10172/4- .




**Further installation:**

Further installation occurs in reverse order to removal.

**Tightening torques**

◆ ⇒ “1.6 Assembly overview - toothed belt drive”, page 82

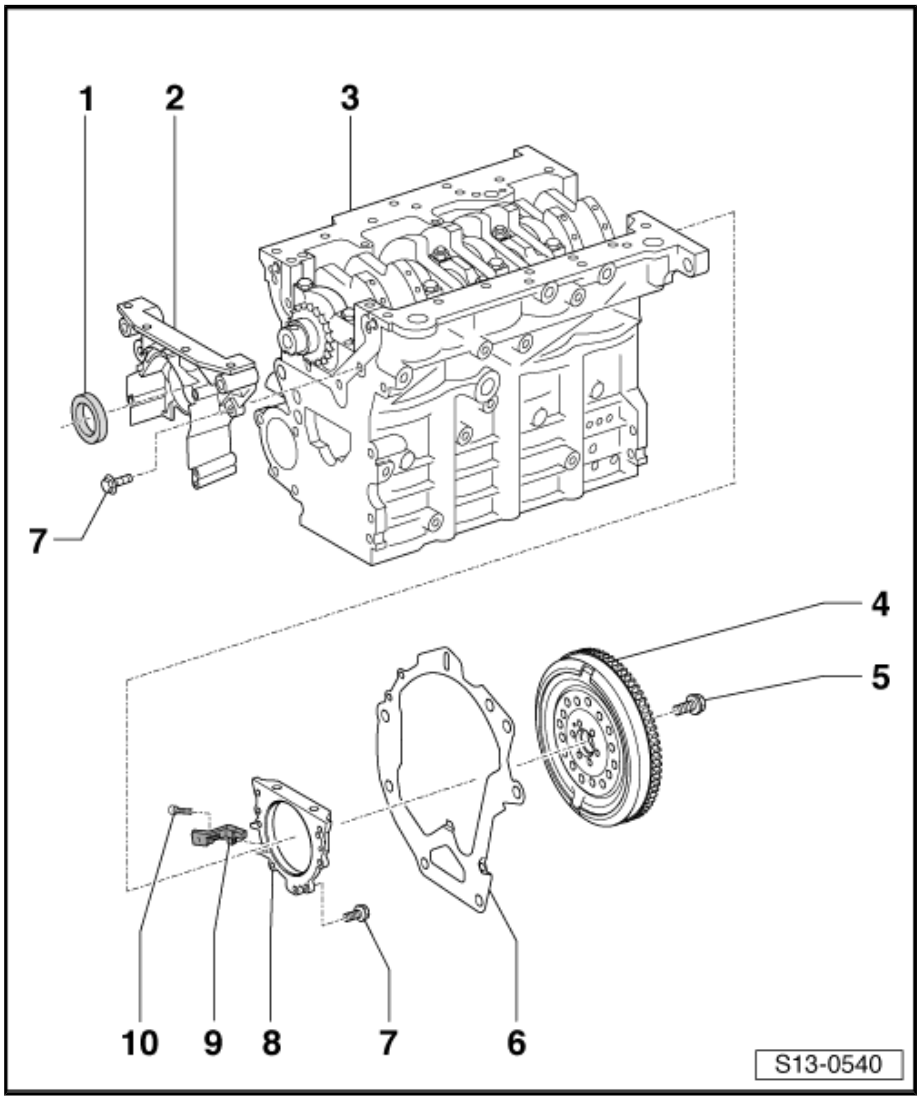
# 2 Removing and installing sealing flange and flywheel



## 2.1 Summary of components - sealing flange and flywheel

**Note**

*Repairs to the clutch ⇒ Gearbox; Rep. gr. 30 .*




**1 - Sealing ring**
- ❑ replace ⇒ page 115
- ❑ do not oil or grease

**2 - Sealing flange on the belt pulley side**
- ❑ must be positioned on dowel sleeves
- ❑ removing and installing ⇒ page 117

**3 - Cylinder block**
- ❑ removing and installing crankshaft ⇒ page 127
- ❑ Disassembling and assembling pistons and conrods ⇒ page 129

**4 - Flywheel**
- ❑ removing and installing ⇒ page 125
- ❑ assembly is only possible in one position through offset holes
- ❑ Vehicles with dual-mass flywheel: Check function ⇒ Vehicle diagnostic tester

**5 - Screw**
- ❑ replace
- ❑ 60 Nm + torque a further 90° ($^1/_4$ turn)

**6 - Intermediate plate**
- ❑ must be positioned on dowel sleeves
- ❑ do not damage/bend during assembly work
- ❑ hang on the sealing flange ⇒ page 115

**7 - Screw**

- ❑ 15 Nm

**8 - Sealing flange on the gearbox side**

- ❑ can only be replaced complete with gasket ring and with rotor of engine speed sender - G28-
- ❑ replace ⇒ page 119

**9 - Engine speed sender - G28-**

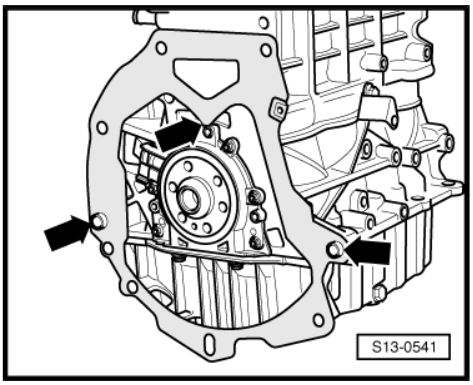
- ❑ removing and installing ⇒ page 382

**10 - Screw**

- ❑ 5 Nm

**Installing intermediate plate**

– Insert intermediate plate on sealing flange and push onto the dowel sleeves -arrows-.




## 2.2 Replacing crankshaft seal on belt pulley side

**Special tools and workshop equipment required**

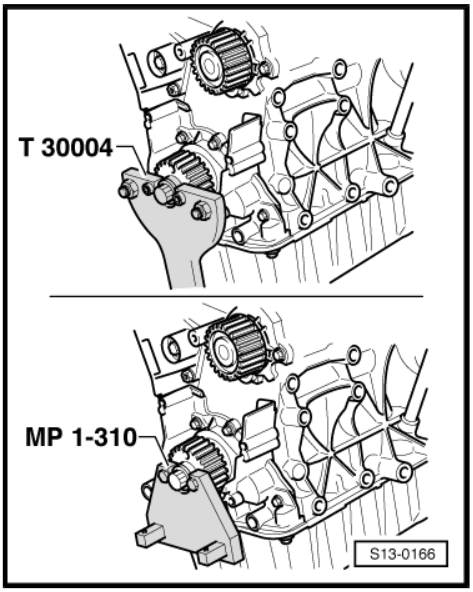
- ♦ Counterholder - T30004 (3415)- or counterholder for toothed belt sprocket - MP 1-310 (3099)-
- ♦ Gasket ring extractor - MP 1-226 (3203)-
- ♦ Assembly device - T10053-

**Removing**

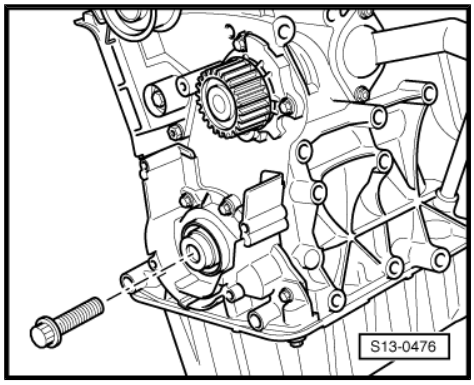
- Engine installed.

– Removing toothed belt ⇒ page 90 .

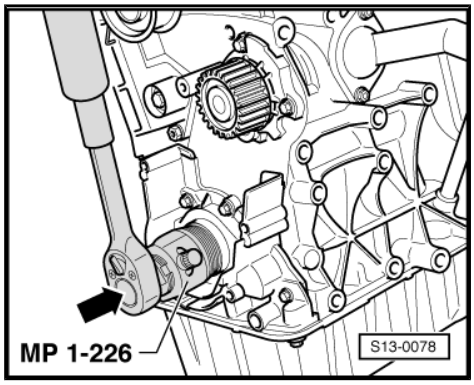
– Remove crankshaft - toothed belt sprocket, to this end lock toothed belt sprocket with counterholder - T30004- or counterholder - MP 1-310- .



– To guide the gasket ring extractor, screw the central screw for the crankshaft toothed belt sprocket into the crankshaft by hand up to the stop.




– Turn inner part of gasket ring extractor - MP 1-226- two turns (approx. 3 mm) out of the outer part and lock with knurled screw.
– Oil the thread head of the gasket ring extractor, position and forcely screw into the gasket ring as far as possible.
– Release knurled screw and turn the inner side against the crankshaft until the gasket ring is pulled out.
– Clamp gasket ring extractor into the vice and remove gasket ring with pliers.
– Clean the contact and sealing surfaces.



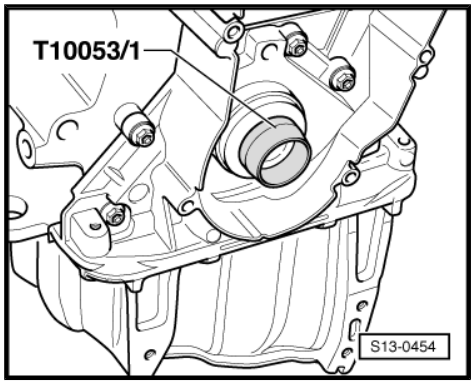

**Install**

**Note**

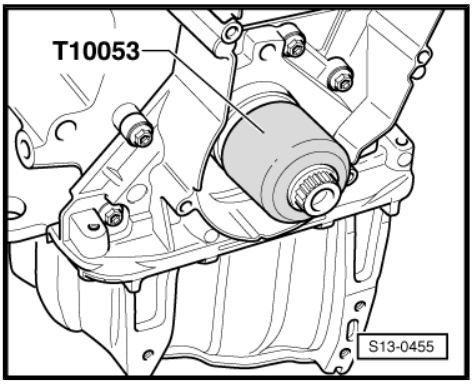
*Do not oil the sealing lip and the outer surface of the gasket ring before the pressing in procedure.*

– Remove oil residue on the crankshaft journal with a clean cloth.

– Insert guide bushing - T10053/1- on the crankshaft bearing pin.
– Slide gasket ring over the guide bushing.



– Press in the gasket ring flush with the central screw for the crankshaft toothed belt sprocket and with the pressure bushing of the assembly device - T10053- .




**Note**

- *There must not be any oil present on the contact surface between toothed belt sprocket and crankshaft.*
- *Replace central screw for crankshaft toothed belt sprocket.*
- *Do not oil central screw for crankshaft toothed belt sprocket.*

– Install crankshaft - toothed belt sprocket, to this end lock toothed belt sprocket with counterholder .

– Installing the timing belt ⇒ page 90 .

## 2.3 Removing and installing the sealing flange on the belt pulley side

### Special tools and workshop equipment required

- Counterholder - T30004 (3415)- or counterholder for toothed belt sprocket - MP 1-310 (3099)-
- Assembly device - T10053-
- Protective goggles and gloves
- Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Silicone sealant ⇒ ETKA - Electronic catalogue of original parts

### Removing

• Engine installed.

– Removing toothed belt ⇒ page 90 .

– Remove crankshaft - toothed belt sprocket, to this end lock toothed belt sprocket with counterholder - T30004- or counterholder - MP 1-310- .

– Drain engine oil:

♦ ⇒ Maintenance ; Booklet Fabia II .

♦ ⇒ Maintenance ; Booklet Roomster .

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

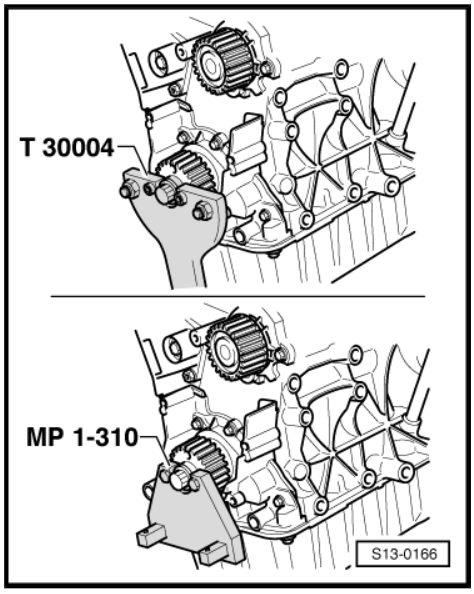
♦ ⇒ Maintenance ; Booklet Rapid Indie .

♦ ⇒ Maintenance ; Booklet Rapid NH .

– Removing the oil pan ⇒ page 204 .

– Unscrew the fixing screws of the front sealing flange and remove sealing flange, if necessary release by applying slight blows with a rubber-headed hammer.

– Drive out the gasket ring from the removed sealing flange.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**WARNING**

***Wear protective gloves and goggles when working with gasket remover and degreasing agent!***

– Remove residual sealant from the sealing surfaces on sealing flange, cylinder block and on the oil pan with chemical sealant remover.

– Degrease the sealing surfaces.

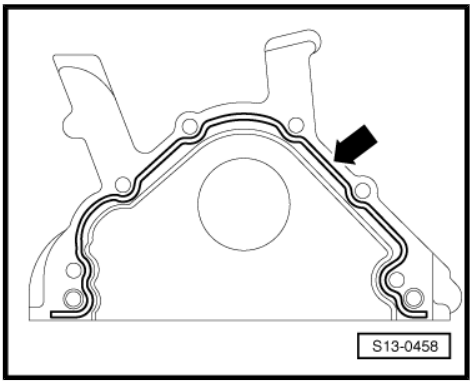
**Note**

*Pay attention to the use by date on the silicone sealant.*

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

– Apply silicone sealant bead -arrow- to the clean sealing surface of the sealing flange, as shown.

• Thickness of sealant bead -arrow-: 2…3 mm.




**Note**

♦ *The sealant bead must not be thicker than 3 mm otherwise excess sealant may get into the oil pan and clogg the strainer in the oil suction pipe.*

♦ *The sealing flange must be installed within 5 minutes after applying the silicone sealant.*

♦ *When installing the sealing flange with the gasket ring fitted place a guide sleeve - T10053/1- on the crankshaft journal.*

– Carefully push the sealing flange onto the dowel sleeves at the cylinder block and tighten new fixing bolts by hand.

– Tighten the screws of the sealing flange alternately and crosswise.

– Install sump ⇒ page 204 .

– Install the new gasket ring for the crankshaft on the belt pulley side ⇒ page 115 .

– Installing the timing belt ⇒ page 90 .

– Top up with engine oil and check the oil level:

♦ ⇒ Maintenance ; Booklet Fabia II .

♦ ⇒ Maintenance ; Booklet Roomster .

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

♦ ⇒ Maintenance ; Booklet Rapid Indie .

♦ ⇒ Maintenance ; Booklet Rapid NH

**Tightening torques**

♦ ⇒ “2.1 Summary of components - sealing flange and flywheel”, page 114

## 2.4 Replace sealing flange on the gearbox side

**Special tools and workshop equipment required**

♦ Assembly tool - T10134-

♦ Feeler gauge

♦ Steel straightedge

♦ Screw M6 x 35 (3x)

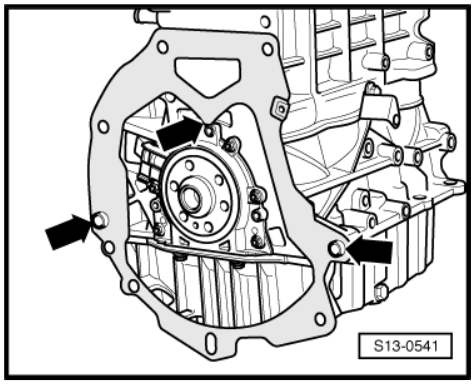
♦ Screw M7 x 35 (2x)

**Removing**

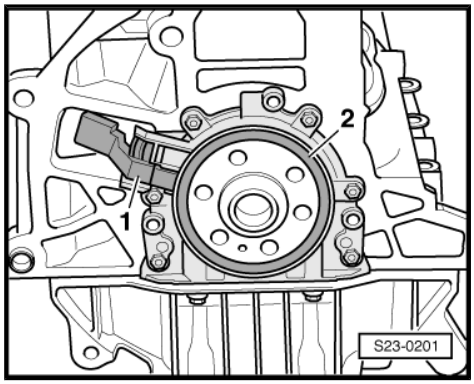
• Gearbox is removed.

– Remove the flywheel ⇒ page 125 .

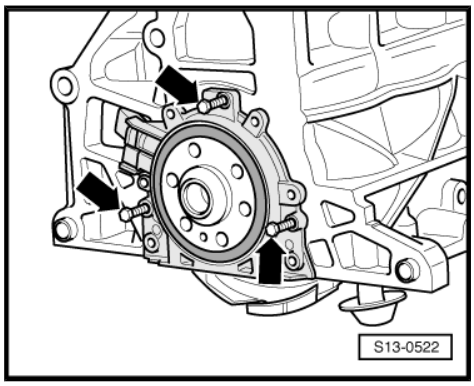
– Remove the intermediate plate from the dowel sleeves and unhook from sealing flange -arrows-.
– Position crankshaft to TDC for cylinder 1 ⇒ page 90 .
– Removing the oil pan ⇒ page 204 .




– Remove engine speed sender - G28- -Pos. 1-.
– Unscrew the fixing screws of the sealing flange.




– Screw 3 screws M6 x 35 mm into the threaded bores of the sealing flange -arrows-.
– Press out sealing flange together with rotor from the crankshaft by alternately screwing the screws into the sealing flange.




**Install**

**Note**

- *The sealing flange with PTFE gasket ring is provided with sealing lip supporting ring. This supporting ring is intended as an assembly sleeve and must not be removed before installing.*
- *Do not separate or turn the sealing flange and rotor after removing them from the spare part package.*
- *The rotor is given its fitting location by fixing the assembly tool - T10134- to the positioning pin.*
- *The sealing flange and gasket ring form one unit and must be replaced together with the rotor.*
- *The rotor has an elastomer layer on its sealing surface with the crankshaft. This layer must not be brought into contact with dirt or grease.*
- *The assembly tool - T10134- is given its fitting location to the crankshaft by means of a guide bolt, which is guided into the threaded bore of the crankshaft.*

**A - Mounting sealing flange with rotor on the assembly tool - T10134-**

A - Hexagon nut

B - Clamping surface

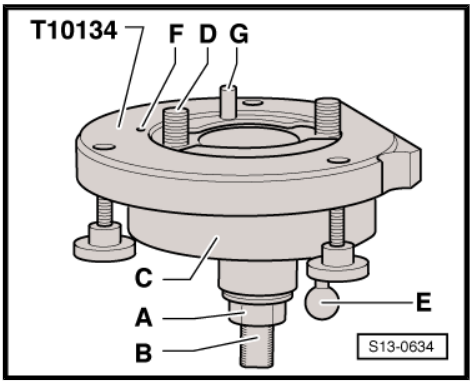
C - Assembly cup

D - Allan screw

E - Guide pins (for petrol engine)

F - Positioning pin

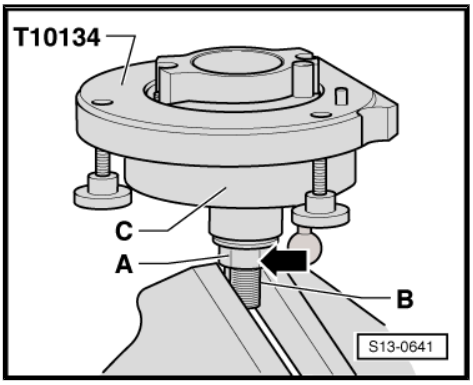
G - Guide pins (for Diesel engine)




– Grip the assembly tool - T10134- on the clamping surface -B- of the threaded spindle in a vice.

– Push assembly cup -C- down so that it rests on the hexagon nut -A- -arrow-.

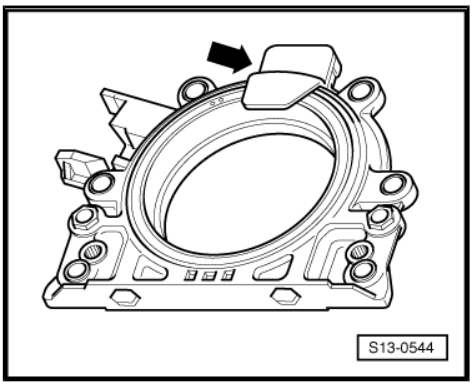
• The inner part of the assembly tool and the assembly cup must be flush.




– Remove the securing clip -arrow- from the new sealing flange.

**Note**

*Do not remove or turn the rotor from the sealing flange.*

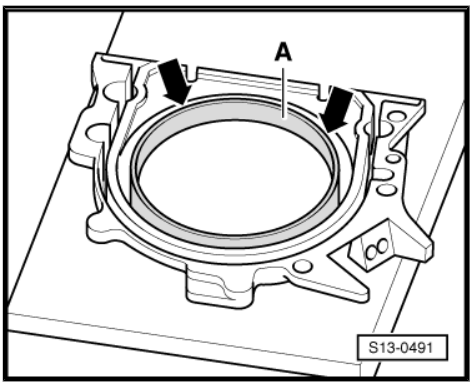



– Lay the front side of the sealing flange on a clean and level surface.

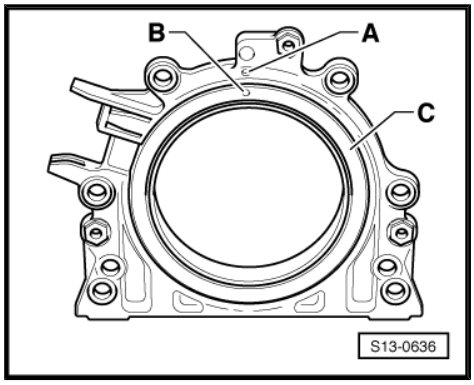
– Press down sealing lips supporting ring -A- in -direction of the arrow-, until it rests on the level surface.

**Note**

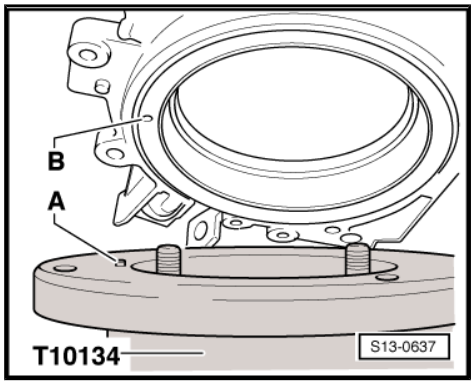
*The top side of the rotor and the front side of the sealing flange must be flush.*



The locating hole -B- on the rotor -C- must be flush with the marking -A- on the sealing flange.



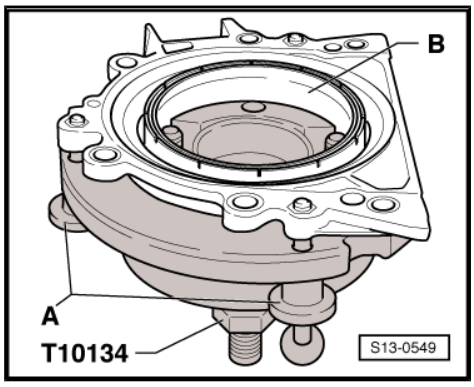

– Lay the sealing flange with the front side on the assembly tool - T10134- in such a way that the positioning pin -A- engages into the hole -B- of the rotor.




**Note**

*Make sure the sealing flange lies flat on the assembly tool.*

– When tightening the knurled screws -A- press the sealing lip supporting ring -B- on the surface of the assembly tool - T10134- in such a way that the positioning pin can no longer slide out of the rotor hole.

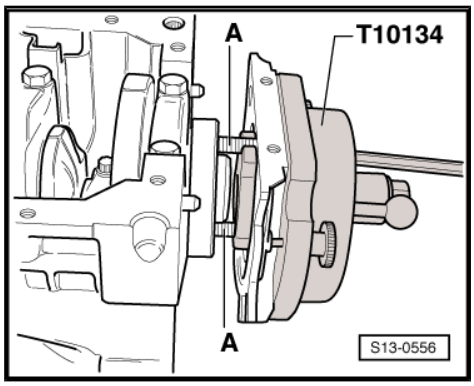



**B - Mounting the assembly tool - T10134- with sealing flange on the crankshaft flange**

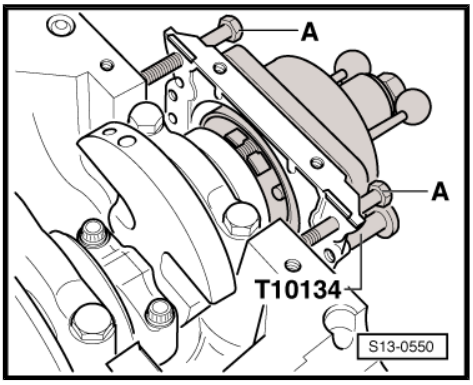
- The crankshaft flange must be free of grease and oil
- Crankshaft is at TDC for cylinder 1

– Unscrew hexagon nut up to the end of the threaded spindle.

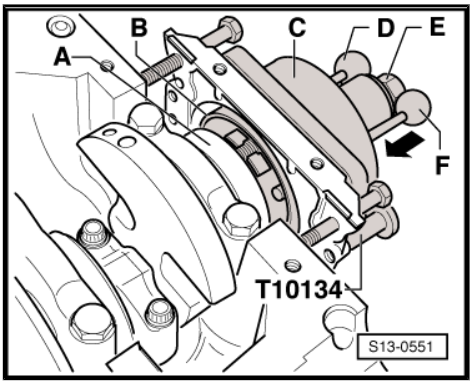
– Screw assembly tool - T10134- with Allan screws -A- up to the stop onto the crankshaft flange.



– Screw in 2 screws M7 x 35 mm -A- by about 3 thread turns for the sealing flange guide into the cylinder block.




– Move the assembly cup -C- by hand in the -direction of the arrow- until the rotor -B- rests on the crankshaft flange -A-. Subsequently insert the guide bolt -D- into the threaded bore of the crankshaft up to the stop. If the guide bolt is correctly positioned, then the handle has a distance of approx. 10 mm from the assembly cup -C-. This gives the rotor its final fitting location.
– Screw in hexagon nut -E- by hand onto the threaded spindle until it rests against the assembly cup -C-.

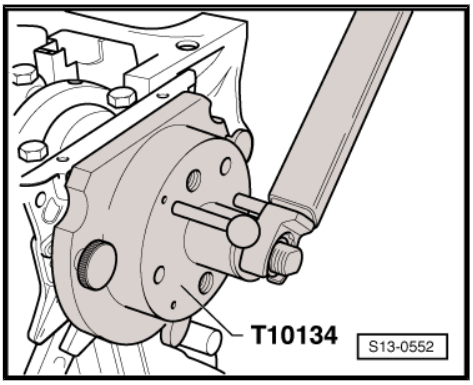



**Note**

*The guide pin for petrol engines -F- must not be inserted in threaded hole of crankshaft.*

**C - Pressing the rotor onto the crankshaft flange**

– Tighten the hexagon nut of the assembly tool - T10134- using a torque wrench with adapter. Tightening torque: 35 Nm.

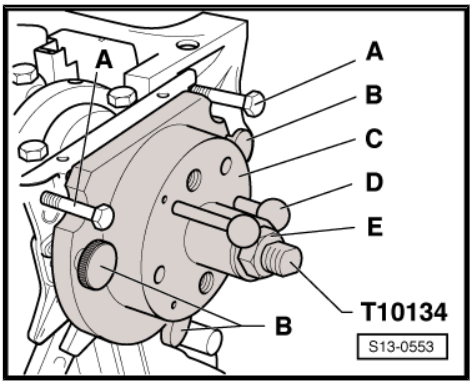



**Note**

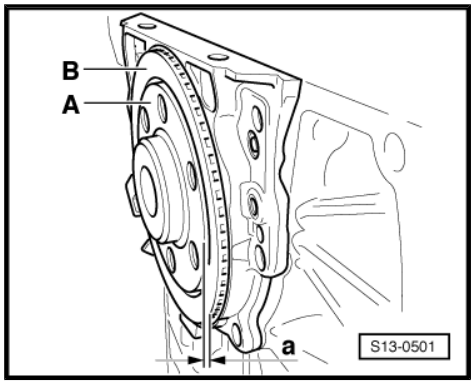
*After tightening the nut to 35 mm there must still be a narrow air gap between the cylinder block and the sealing flange.*

**D - Inspecting the fitting position of the rotor on the crankshaft**

– Unscrew hexagon nut -E- up to the end of the threaded spindle.
– Release both screws -A- to the guide from the cylinder block.
– Unscrew three knurled screws -B- from the sealing flange.
– Unscrew two Allan screws and remove assembly tool.
– Remove sealing lip supporting ring.



The fitting position of the rotor on the crankshaft is accurate if there is a distance -a- = 0.5 mm between the crankshaft flange -A- and the rotor -B-.



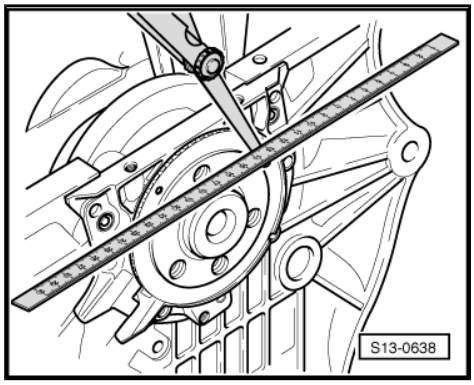

– Position the steel striaghtedge onto the crankshaft flange.
– Measure the distance between the steel straightedge and the rotor with a feeler gauge.

If the measured distance is less than 0.5 mm:

– Press down rotor ⇒ page 124 .

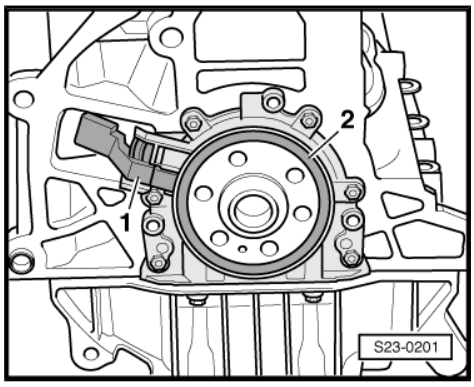
If the dimension is correct:

– Tighten the fixing screws of the sealing flange alternately crosswise.

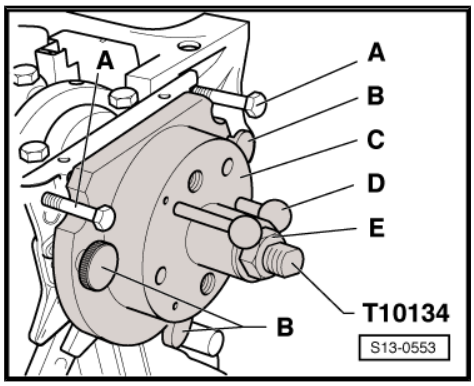



– Install engine speed sender - G28- -Pos. 1-.
– Install sump ⇒ page 204 .
– Installing intermediate plate.
– Install flywheel with new screws.

**E - Pressing down the rotor**




– Screw assembly tool - T10134- with Allan screws up to the stop onto the crankshaft flange.
– Screw in three knurled screws -B- into the flange.
– Subsequently insert the guide bolt -D- into the threaded bore of the crankshaft up to the stop. If the guide bolt is correctly positioned, then the handle has a distance of approx. 10 mm from the assembly cup -C-.
– Screw in hexagon nut -E- by hand onto the threaded spindle until it rests against the assembly cup.



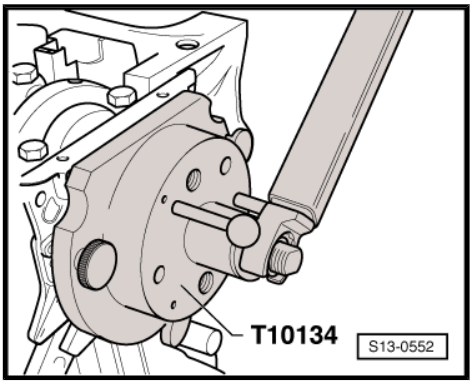
– Tighten the hexagon nut of the assembly tool using a torque wrench with adapter. Tightening torque: 40 Nm.

– Again inspect the fitting position of the rotor on the crankshaft ⇒ page 123 .

If the dimension -a- is too small again:

– Tighten the hexagon nut of the assembly tool to 45 Nm.

– Again inspect the fitting position of the rotor on the crankshaft ⇒ page 123 .




**Tightening torques**

♦ ⇒ “2.1 Summary of components - sealing flange and flywheel”, page 114

## 2.5 Removing and installing flywheel

**Special tools and workshop equipment required**

♦ Counterholder - MP1-223 (3067)-

**or**

♦ Engine mount - MP 1-202 (VW 540)-

♦ Bushing - T30010 (VW 540/1B)-

♦ Flywheel lock - MP 1-504-

**Removing**

• Gearbox is removed.

– Remove clutch on vehicles with manual gearbox ⇒ Gearbox; Rep. gr. 30 .

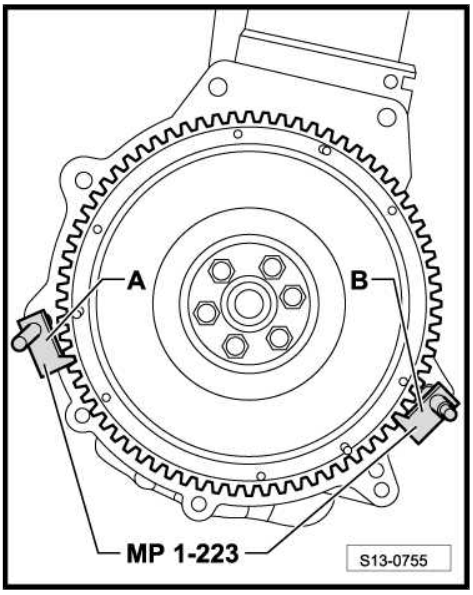
**Engine installed**

– Insert the counterholder - MP1-223 (3067)- into the bore hole on the cylinder block.

• Fitting position of the tool:

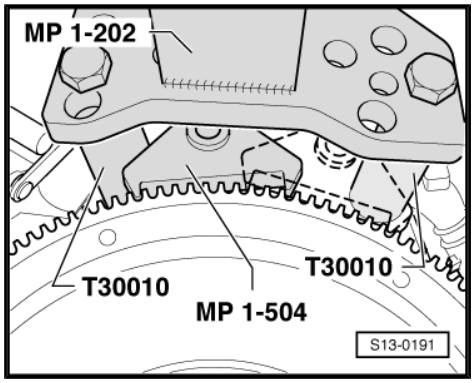
A - for tightening

B - for slackening



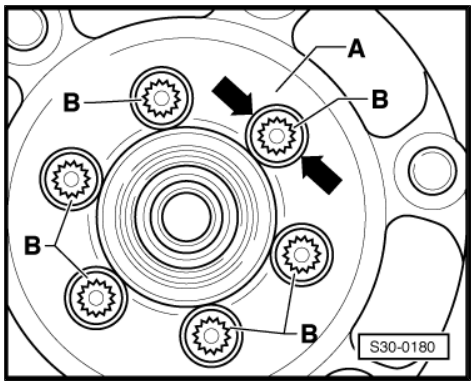
### Engine removed

– Position the flywheel lock - MP 1-504- on the starter ring gear of the flywheel disk and turn crankshaft until it rests against the sleeve - T30010- .




### Vehicles with two-mass flywheel

– Rotate the secondary side -A- of the two-mass flywheel in such a way that the screws -B- are positioned in the middle of the holes -arrows-.




**Caution**

*When unscrewing the screws -B-, ensure that no screw head catches on the secondary side -A- of the two-mass flywheel, otherwise it will be damaged.*

### Continued for all vehicles

– Release screws and remove flywheel.

### Install

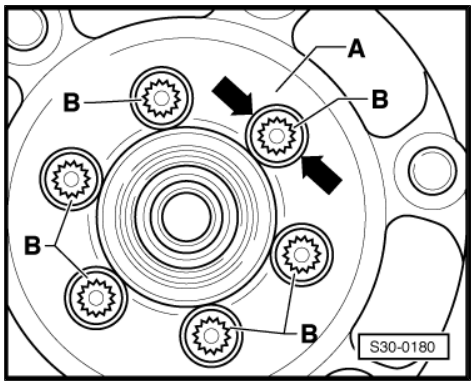
Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Use new screws for attaching.*

### Vehicles with two-mass flywheel

– Rotate the secondary side -A- of the two-mass flywheel in such a way that the screws -B- are positioned in the middle of the holes -arrows-.




### Continued for all vehicles

– Tighten securing bolts for flywheel step by step in the following order:

| Stage | Screws | Tightening torque/torquing angle |
|---|---|---|
| 1. | All | Screw in by hand |
| 2. | All | 60 Nm |
| 3. | All | 90° (torque a further 90° ($^1/_4$ turn) |

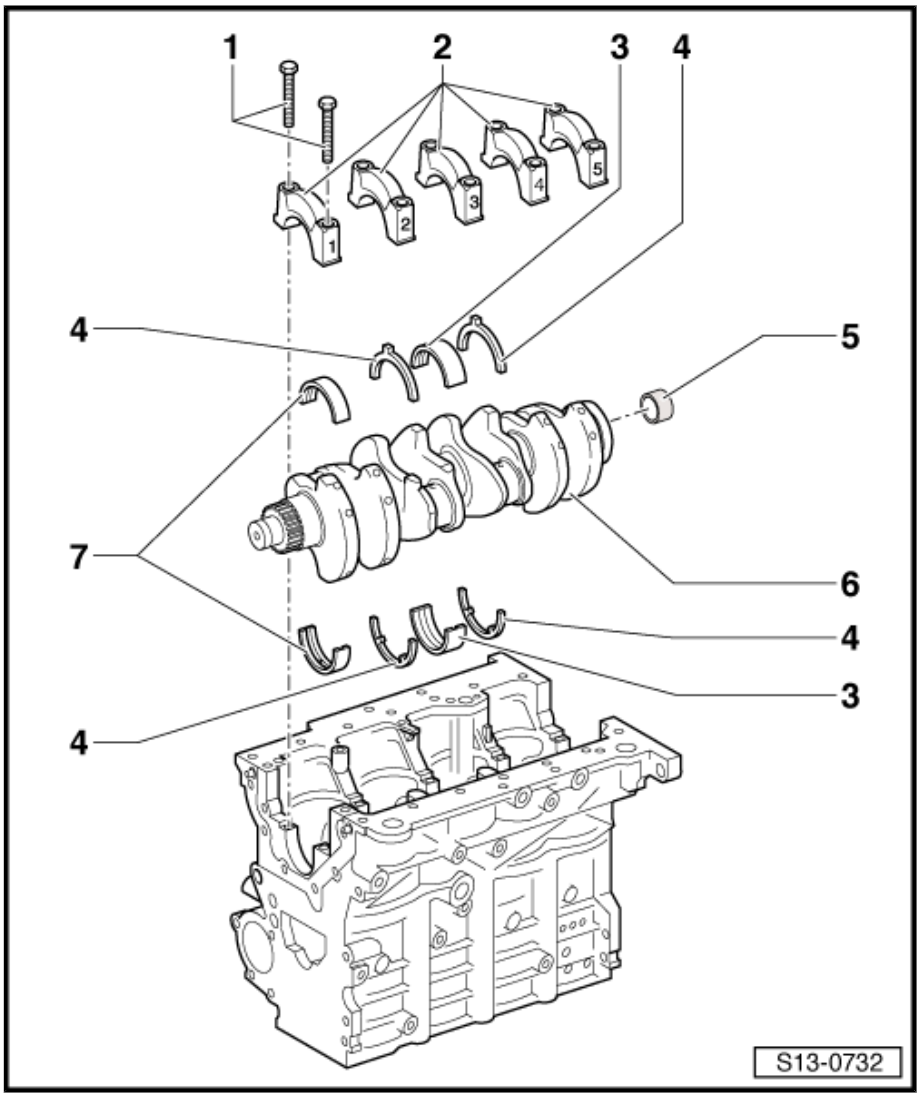
# 3 Crankshaft, Piston and Conrod



## 3.1 Removing and installing crankshaft

**Note**

*The engine should be attached to the engine repair stand with the engine holder - MP 1-202- for carrying out removal and installation work.*




**1 - Screw**

- ❑ replace
- ❑ 65 Nm + torque a further 90° (1/4 turn)

**2 - Bearing caps**

- ❑ Bearing cover 1: Belt pulley side
- ❑ Bearing cover 3: with recesses for thrust washers
- ❑ retaining lugs of the bearing shells of the cylinder block/bearing cap must be on top of one another

**3 - Bearing shell**

- ❑ for cylinder block with lubricating groove
- ❑ for bearing cap without lubricating groove
- ❑ do not mix up already used bearing shells (mark)

**4 - Thrust washers**

- ❑ for bearing cap 3
- ❑ pay attention to locating element

**5 - Needle bearing**

- ❑ only on vehicles with automatic gearbox
- ❑ replace ⇒ page 128

**6 - Crankshaft**

- ❑ with pinion for oil pump drive
- ❑ New axial clearance: 0.07 … 0.17 mm

  Wear limit: 0.37 mm

- ❑ Crankshaft bearing journals: ∅ 54.00 mm
- ❑ Conrod bearing journals: ∅ 47.80 mm

**7 - Bearing shell**

- ❑ for cylinder block with lubricating groove
- ❑ for bearing cap without lubricating groove
- ❑ do not mix up already used bearing shells (mark)

## 3.2 Replace needle bearing for crankshaft

Only on vehicles equipped with automatic gearbox.

**Special tools and workshop equipment required**

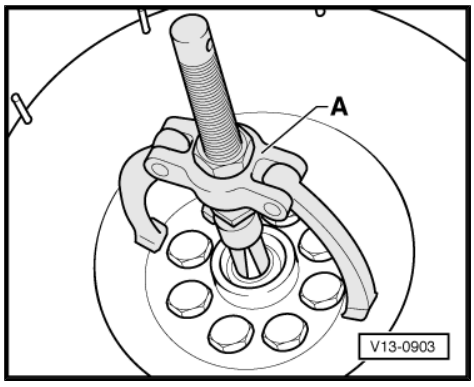
- ♦ Centering mandrel - T30029 (3176)-
- ♦ Interior extractor - Kukko 21/2-
- ♦ Countersupport - Kukko 22/1-

**Note**

*For installing an engine in a vehicle with automatic gearbox, check whether the needle bearing is built on the gearbox side in the crankshaft. Install the needle bearing as required.*

**Removing**

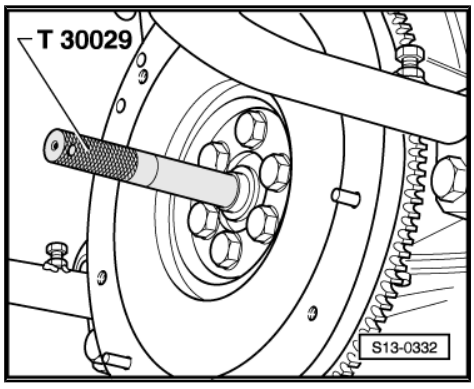
– Pull out needle bearing with interior extractor - Kukko 21/2- and countersupport - Kukko 22/1- .




**Install**

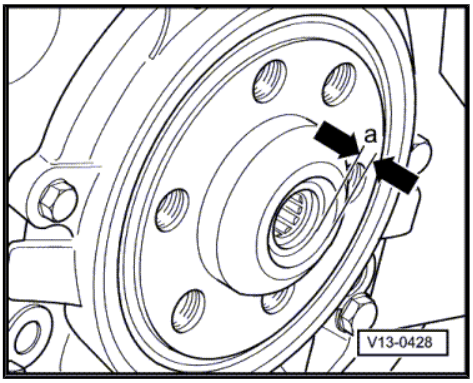
– Drive in the needle bearing using the centering pin - T30029- .

• Fitting position: Labelled side of needle bearing must be legible in the installed condition.



Depth of installation of the needle bearing

- Dimension -a- = 1.5 up to 1.8 mm




## 3.3 Piston and conrod - Summary of components

**1 - Circlip**

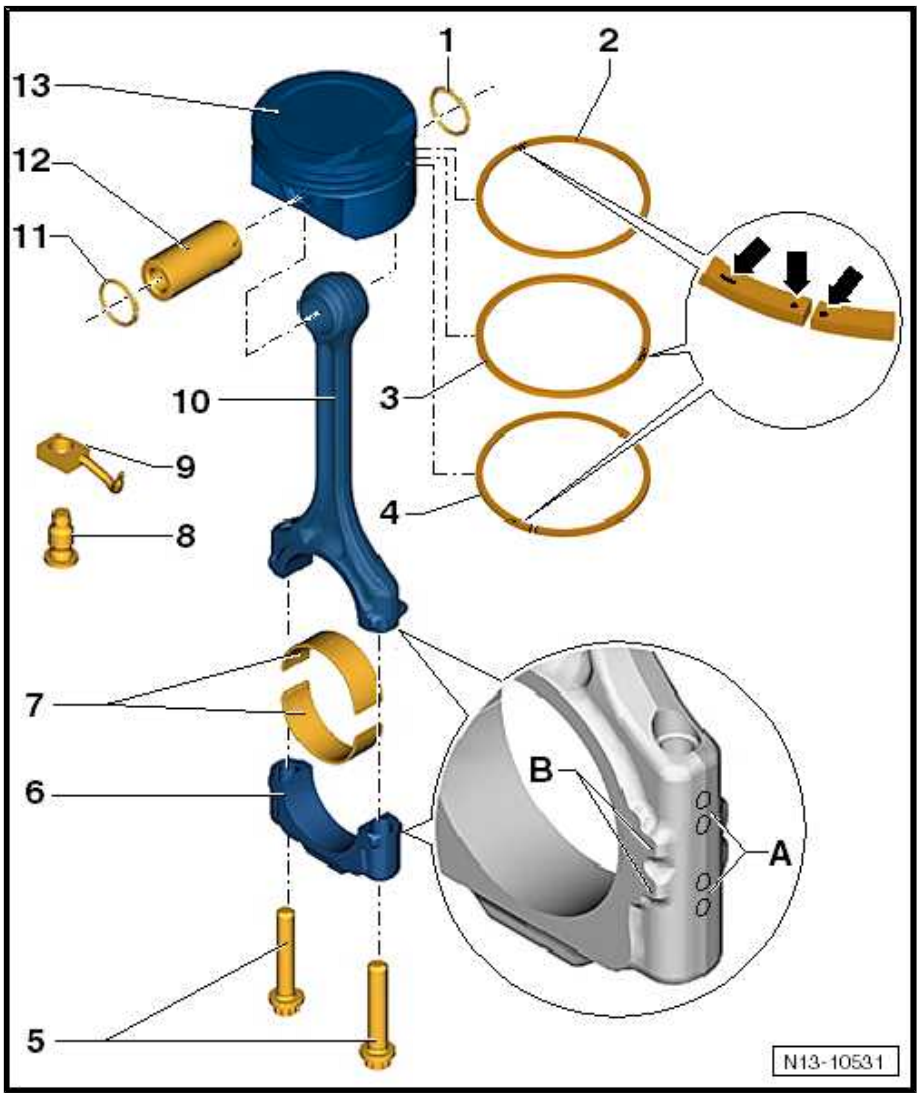
- ❑ replace

**2 - Piston ring**

- ❑ Compression ring
- ❑ Offset joint 120°
- ❑ use piston ring pliers for removing and installing
- ❑ marking “TOP” faces piston crown
- ❑ Identification of the installation position: “Identification using points or lines” near -arrows- to the piston crown
- ❑ Inspect gap clearance ⇒ page 131
- ❑ Inspect end clearance ⇒ page 131

**3 - Piston ring**

- ❑ Compression ring
- ❑ Offset joint 120°
- ❑ use piston ring pliers for removing and installing
- ❑ marking “TOP” faces piston crown
- ❑ Identification of the installation position: “Identification using points or lines” near -arrows- to the piston crown
- ❑ Inspect gap clearance ⇒ page 131
- ❑ Inspect end clearance ⇒ page 131




**4 - Piston ring**

- ❑ Oil scraper ring
- ❑ Offset joint 120° to bottom compression ring
- ❑ use piston ring pliers for removing and installing
- ❑ marking “TOP” faces piston crown

- ❑ Identification of the installation position: “Identification using points or lines” near -arrows- to the piston crown
- ❑ Inspect gap clearance ⇒ page 131
- ❑ Inspect end clearance ⇒ page 131

**5 - Screw**

- ❑ replace
- ❑ Oil thread and contact surface
- ❑ 30 Nm + torque a further 90° ($^1/_4$ turn)

**6 - Conrod bearing cap**

- ❑ cracked cover fits only in one position at the relevant conrod
- ❑ Mark the assignment to the cylinder using a colour marking -A-
- ❑ Fitting position: Markings -B- point towards belt pulley side

**7 - Bearing shells**

- ❑ Fitting position ⇒ page 133
- ❑ Do not interchange used bearing shells (mark them, but do not mark the contact surface)
- ❑ replace bearing shells that are worn through to the base layer
- ❑ Pay attention to version: top bearing shell (towards the piston) must be in long wearing material, distinguishing feature of new bearing shells: black marking on contact surface near the separation point
- ❑ pay attention to correct position

**8 - Pressure relief valve**

- ❑ replace without sealant
- ❑ removing and installing ⇒ page 133
- ❑ 27 Nm

**9 - Oil injection nozzle**

- ❑ for piston cooling
- ❑ removing and installing ⇒ page 133

**10 - Conrod**

- ❑ always replace as a set only
- ❑ mark matching cylinder -A-
- ❑ Fitting position: Markings -B- point towards belt pulley side
- ❑ with a split bearing cap
- ❑ separate new conrod ⇒ page 135
- ❑ Axial clearance: Wear limit 0.37 mm

**11 - Circlip**

- ❑ replace

**12 - Piston pin**

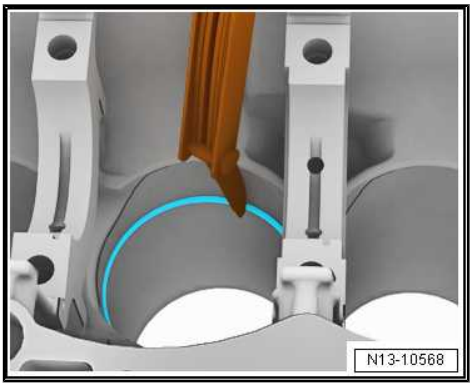
- ❑ if stiff, heat piston to 60°C
- ❑ use drift - VW 222A- for removing and installing

**13 - Piston**

- ❑ with combustion chamber
- ❑ Mark the installation position and the assignment to cylinder ⇒ page 132
- ❑ arrow on the piston crown faces towards the belt pulley side
- ❑ replace piston if there is any sign of crack formation on the piston body
- ❑ Inspecting piston ⇒ page 132
- ❑ Piston and cylinder dimensions ⇒ page 133
- ❑ inspect cylinder bore ⇒ page 132
- ❑ use piston ring tensioning strap for installing
- ❑ inspect piston projection at TDC ⇒ page 134

❑ removing and installing ⇒ page 133

### Inspecting piston ring gap clearance



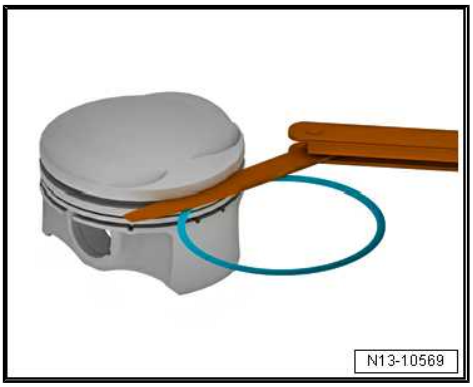

### Special tools and workshop equipment required

♦ Feeler gauge

– Insert ring at right angles from above down into lower cylinder opening, about 15 mm away from edge of cylinder. To insert use piston without rings.

| Piston ring (dimensions in mm) | new | Wear limit |
|---|---|---|
| 1. Compression ring | 0.20 … 0.40 | 1.00 |
| 2. Compression ring | 0.20 … 0.40 | 1.00 |
| Oil scraper ring | 0.25 … 0.50 | 1.00 |

### Inspect piston ring end clearance



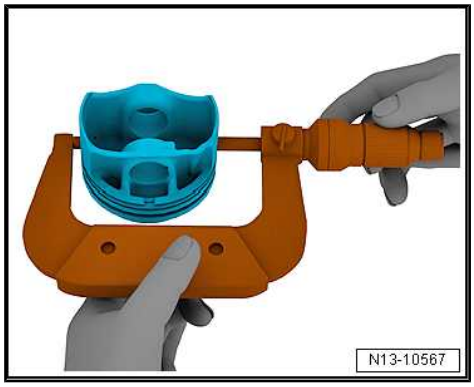

### Special tools and workshop equipment required

♦ Feeler gauge

– Clean before inspecting the annular grooves of the piston.

| Piston ring (dimensions in mm) | new | Wear limit |
|---|---|---|
| 1. Compression ring | 0.06 … 0.09 | 0.25 |
| 2. Compression ring | 0.05 … 0.08 | 0.25 |
| Oil scraper ring | 0.03 … 0.06 | 0.15 |

### Inspecting pistons




### Special tools and workshop equipment required

- ♦ External micrometer

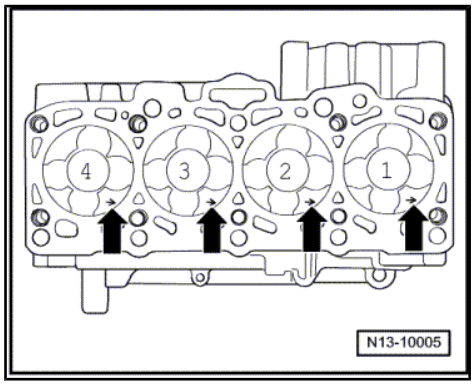
– Measure about 10 mm from the lower edge, offset at right angles to the piston pin shaft.

- Maximum deviation from nominal dimension: 0.04 mm.

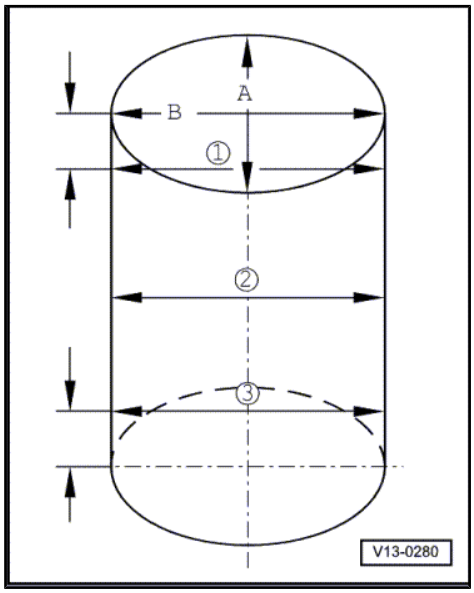
Nominal dimension ⇒ page 133

### Installation position and assignment of piston/cylinder

- The arrow on the piston crown -arrows- faces towards the belt pulley side.




### Inspecting cylinder bore




### Special tools and workshop equipment required

- ♦ Internal precision measuring instrument

– Measure cylinder at 3 points crosswise in transverse direction -A- and lengthwise -B-.

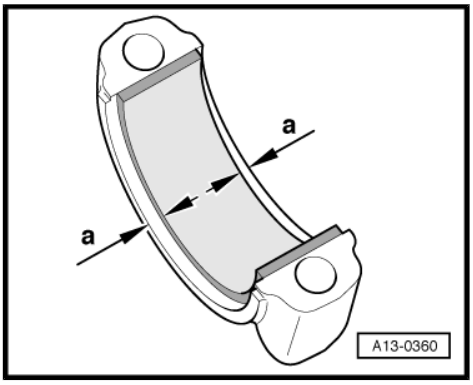
- Maximum deviation from nominal dimension: 0.10 mm.

Nominal dimension ⇒ page 133

**Fitting position of the bearing shells in the conrods**

– Insert bearing shell in the conrod or in the center of the conrod bearing cap.

• Dimension -a- = 2.5 mm.

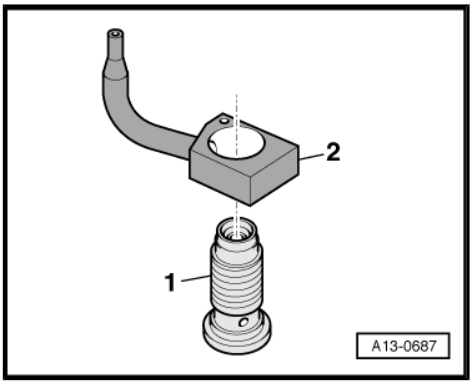



**Oil spray nozzle and pressure relief valve**

1 - Screw with pressure relief valve

2 - Oil spray nozzle (for cooling piston)

• Fitting position: Align the guide edge of the oil injection nozzle to the area of the cylinder block being worked on.




**Note**

♦ *The oil injection nozzles must not be bent.*

♦ *Replace the oil injection nozzles if they are bent.*

## 3.3.1 Piston and cylinder dimensions

| Grinding dimension | Ø piston mm | Ø cylinder bore mm |
|---|---|---|
| Basic dimension | 79.455 1) | 79.50 |

• 1) Dimension with coating (thickness 0.02 mm). The coating wears off.

## 3.4 Removing and installing the piston

**Special tools and workshop equipment required**

♦ Drift - VW 222 A-

♦ Piston ring tensioning strap

**Removing**

• Engine secured to the assembly stand ⇒ page 28 .

– Remove cylinder head ⇒ page 149 .

– Removing the oil pan ⇒ page 204 .

– Mark the fitting position of the piston and the assignment to the cylinder ⇒ page 132

– Mark the installation position of the conrod and the assignment to the cylinder -Pos. 10- ⇒ page 129 .

– Remove conrod bearing cap and pull out piston with conrod upwards.

**Note**

*If stiff, heat the piston pin of the piston to about 60°C.*

– Remove the circlip from the bore of the piston pin.

– Drive off piston pin with a drift - VW 222 A- .

**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace screws which have been tightened firmly to a torquing angle.*

– Lubricate the contact surfaces of the bearing shells.

– Install piston with piston ring tensioning strap.

Fitting position:

- Piston ⇒ page 132
- Bearing shells in the conrods ⇒ page 133

– Install the conrod bearing cap according to the markings.

**Tightening torques**

♦ ⇒ “3.3 Piston and conrod - Summary of components”, page 129

## 3.5 Checking piston projection in TDC

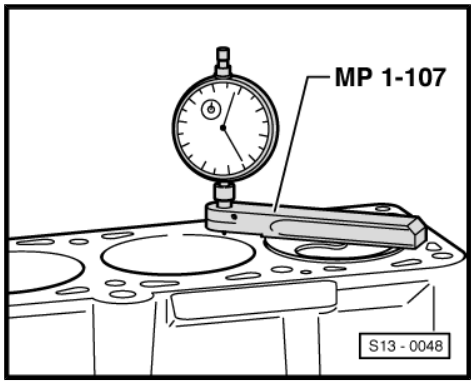
**Special tools and workshop equipment required**

♦ Measuring tool for liner pretension - MP 1-107-

**Test sequence**

– Attach the measuring tool for liner pretension - MP 1-107- to the cylinder block as shown in the illustration.

– Measure the projection for each cylinder at 2 points.




When fitting new pistons or a partial engine, check the piston projection in TDC on all pistons.

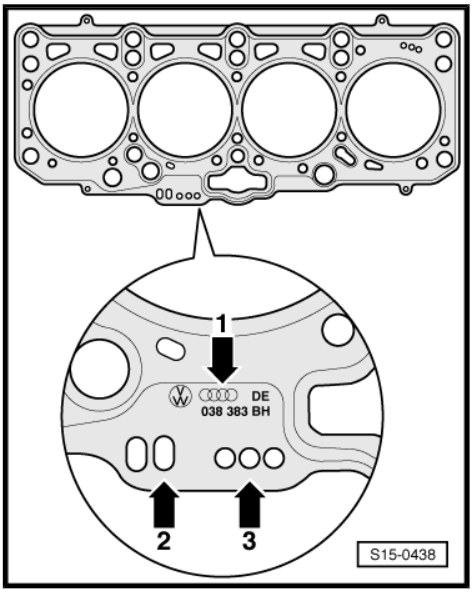
If different values are measured during the projection measurement of the piston, the greatest dimension applies for the seal assignment.

Depending on the piston projection fit the relevant cylinder head seal in accordance with the table below.

| Piston projection over cylinder block top side mm | Marking of bores |
|---|---|
| 0.91 … 1.00 | 1 |
| 1.01 … 1.10 | 2 |
| 1.11 … 1.20 | 3 |

**Identification of the cylinder head gasket**

- Part number = -arrow 1-
- Bores -arrow 2- (ignore)
- Bores -arrow 3-




**Note**

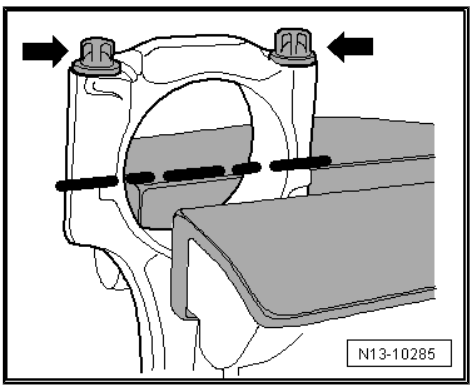
*If different values are measured during the projection measurement of the piston, the greatest dimension applies for the seal assignment.*

## 3.6 Separating new conrod

It can happen that on new conrods, the provided separation point is not completely cracked. If the conrod bearing cap cannot be removed by hand, then proceed as follows:

– Mark the assignment of the conrod to the cylinder.

– Slightly tension the conrod, as shown in the illustration, in a vice provided with aluminium protective jaws.

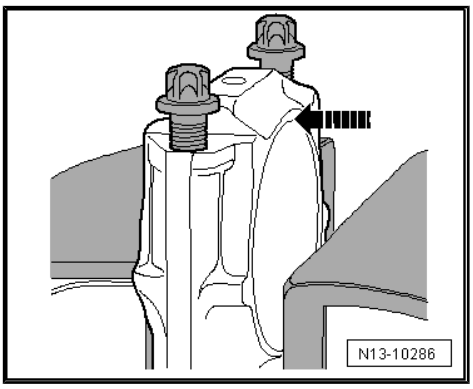



**Note**

- *Only tension the conrod slightly in order to avoid damage on the conrod.*
- *The conrod is clamped below the broken line.*

– Unscrew both screws -arrows- by approx. 5 turns.

– Carefully knock against the conrod bearing cap with a plastic hammer in -direction of arrow- in order to loosen it.

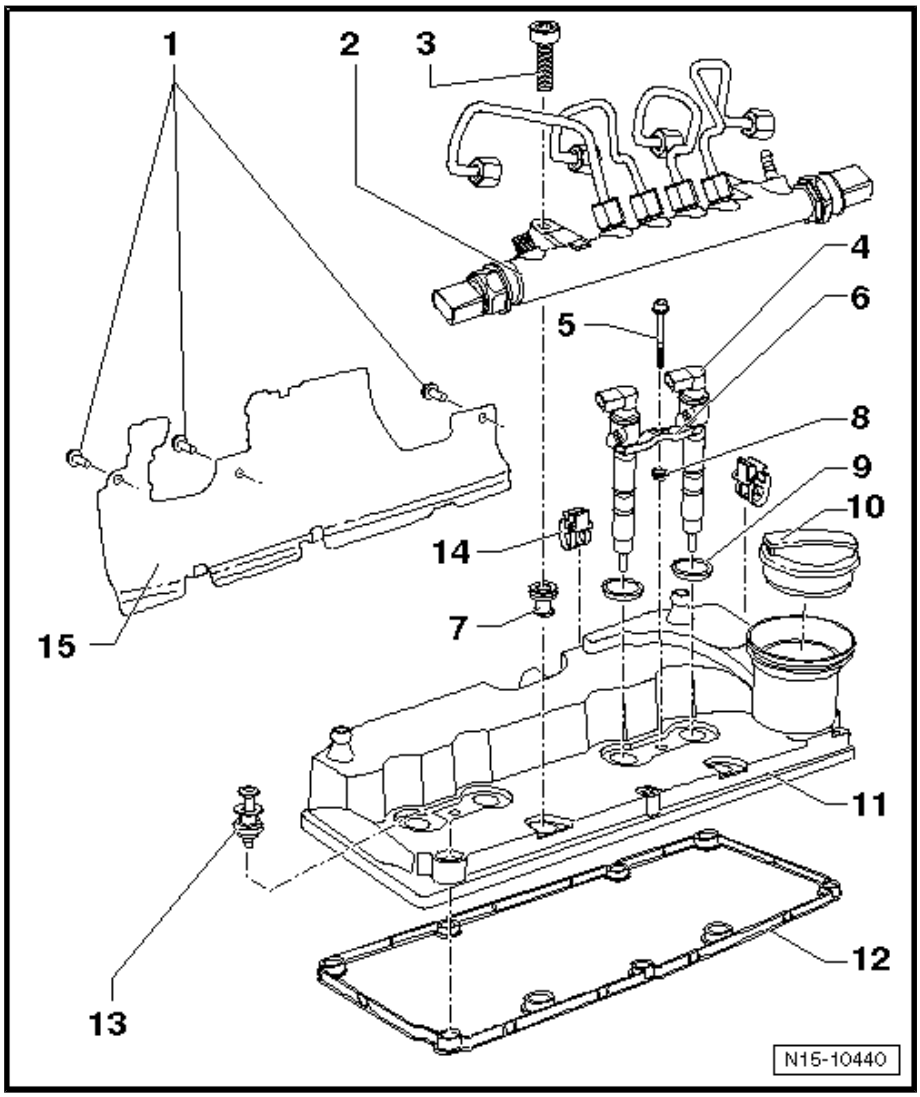


# 15 – Cylinder head, valve gear

## 1 Removing and installing cylinder head



### 1.1 Cylinder head cover - Summary of components




**1 - Screw**
- ❑ 5 Nm

**2 - Fuel distributor**
- ❑ with injection lines
- ❑ do not change the flexion of the injection lines ⇒ page 384

**3 - Screw**
- ❑ 22 Nm

**4 - Injection unit (Piezo injector)**
- ❑ removing and installing ⇒ page 389

**5 - Screw**
- ❑ replace
- ❑ 8 Nm + 180° further

**6 - Clamping claw**
- ❑ one clamping claw for 2 injection units

**7 - Bush**
- ❑ for attaching the fuel distributor
- ❑ replace if damaged

**8 - Sealing ring**
- ❑ replace

**9 - Sealing ring**
- ❑ replace

**10 - Screw cap**
- ❑ Replace seal if damaged

**11 - Cylinder head cover**
- ❑ wymontowanie i zamontowanie ⇒ page 137

**12 - Gasket**

- ❑ replace if damaged or leaking

**13 - Screw**

- ❑ observe tightening torque and tightening sequence ⇒ page 137
- ❑ Insert screw with bush and elastomer damping element in the cylinder head cover in such a way that it does not fall out
- ❑ 10 Nm

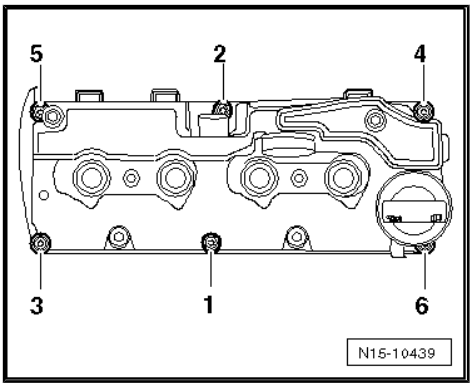
**14 - Support**

- ❑ for wiring loom

**15 - Heat shield**

**Cylinder head cover - tightening torque and tightening order**

– Tighten the screws for the cylinder head cover in the sequence -1…6- to 10 Nm.




## 1.2 Removing and installing cylinder head cover

⇒ "1.2.1 Removing and installing cylinder head cover (Fabia II, Roomster, Rapid India, Rapid NH)", page 137

⇒ "1.2.2 Removing and installing cylinder head cover (Octavia II, Superb II, Yeti)", page 142

## 1.2.1 Removing and installing cylinder head cover (Fabia II, Roomster, Rapid India, Rapid NH)

**Note**

*Observe the safety precautions when working on the diesel direct injection system* ⇒ page 3 .

**Removing**

Observe all safety measures and notes for assembly work on the fuel system and on the injection system as well as the rules for cleanliness ⇒ page 6 .

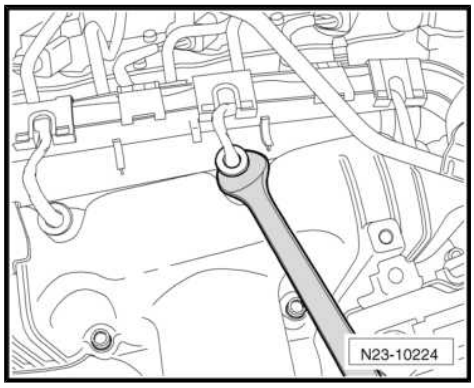
– Remove engine cover ⇒ page 10 .

– If present, remove the noise insulation at the injection units.

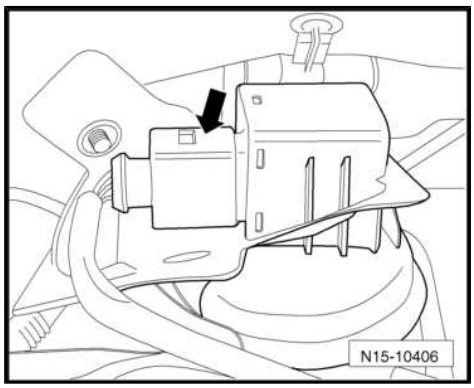
**Caution**

- *Carefully disconnect the plug from the glow plugs.*
- *If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).*

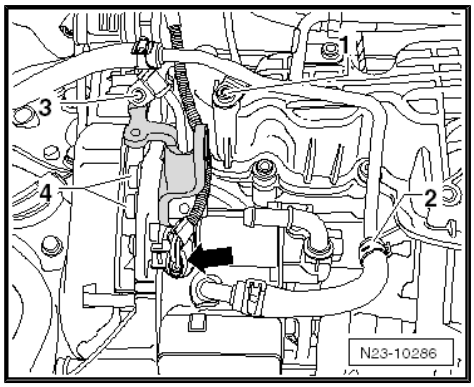
– Carefully disconnect the plug from the glow plugs. To do so use an open-end wrench, SW 12, for help.



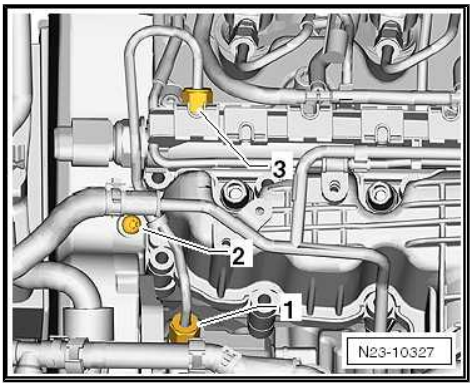

– Disconnect the plug of the position sender for charge pressure regulator - G581- -arrow- at the vacuum unit from the exhaust turbocharger and guide the line out of the brackets.




– Unscrew bolt -3-.
– Remove trailer engine bracket »grey«.



– Remove the fuel high pressure line between the high pressure pump -1- and the fuel distributor -3-.

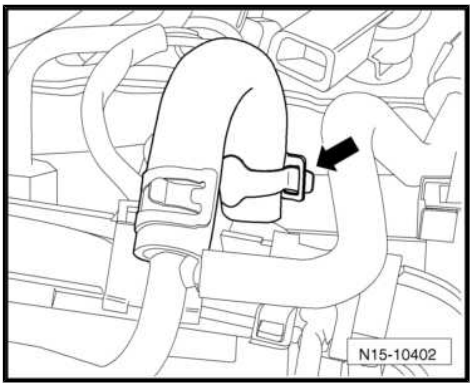



**Note**

- *Preferred loosening sequence of the high pressure lines cylinders 4-3-2-1.*
- *Counterhold at the injection units when loosening the high pressure connection piece.*

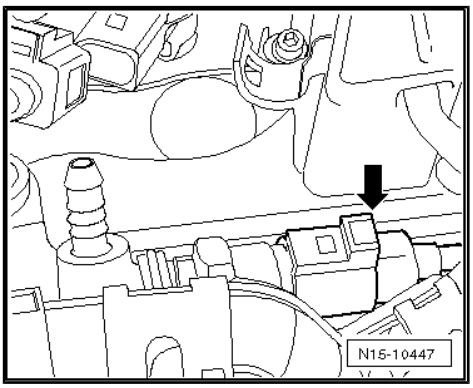
– Remove high pressure line between fuel distributor and injection units.

– Slacken spring strap clamp -arrow- and detach the line from the fuel distributor.



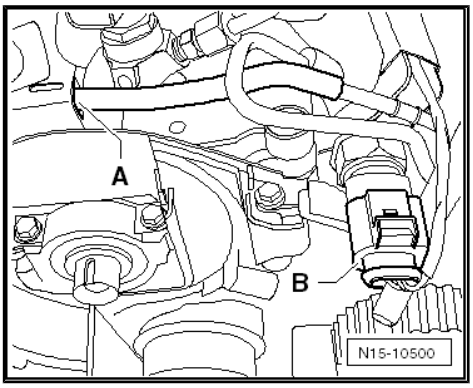

– Disconnect the plug at the fuel pressure regulating valve - N276- -arrow-.

– Remove the cable guide from the fuel distributor and lay it to the side.

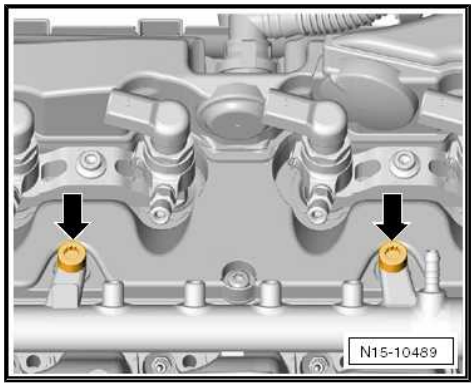



– Disconnect plug at fuel pressure sender - G247- -B-.

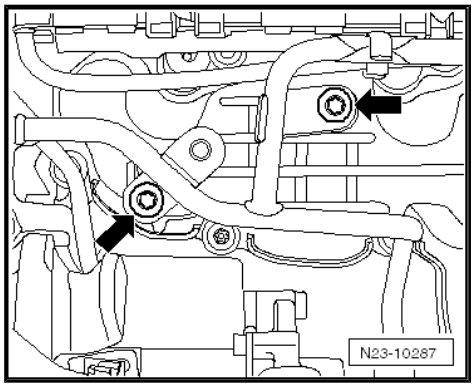
– Detach the vacuum line at the cylinder head cover -A-.



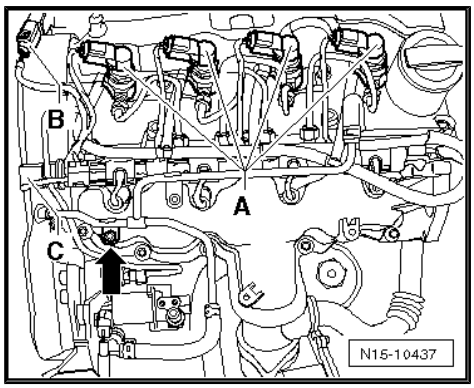
– Screw out screws -arrows- and remove fuel distributor.



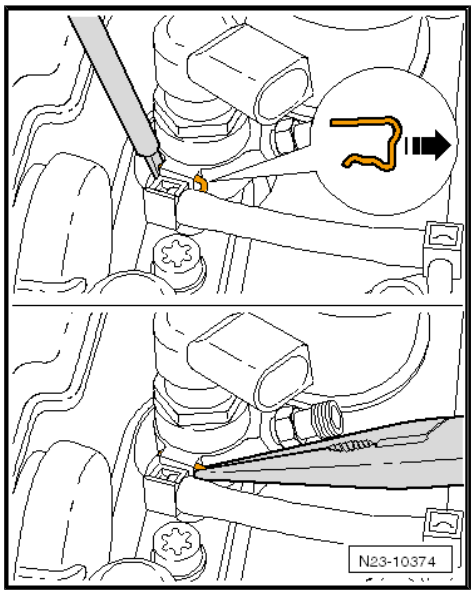

– Unscrew the fixing screws at the intake manifold -arrows- and lay the fuel return-flow line to the side.




– Disconnect the plug from the injection units -A-.



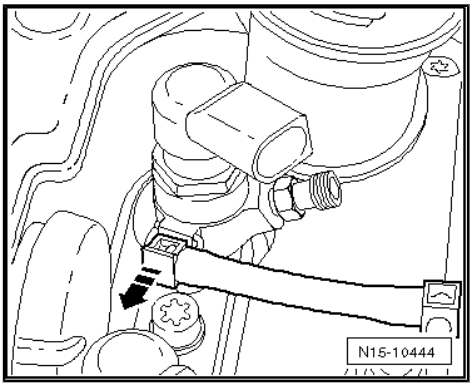

– Unlock the connections of the fuel return-flow line using a screwdriver and a set of pointed pliers.



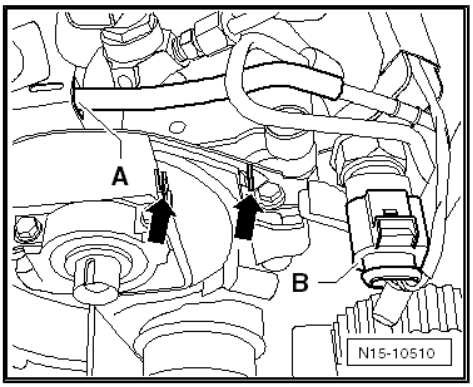

**Note**

*Always replace clamps.*

– Disconnect the connections of the fuel return-flow line at the injectors in -direction of arrow-.
– Remove the complete return-flow line and place it down at the intake manifold.
– Remove the remaining vacuum lines from the bracket at the cylinder head cover.
– Remove top toothed belt guard.
– Remove the vent line between the cylinder head cover and the intake hose. To do so, press together the quick-release fittings.
– Remove the injection units ⇒ page 389 .
– Unscrew the fixing screws of the cylinder head cover.
– Remove cylinder head cover.




– To do so, unclip the cylinder head cover at the catch pegs -arrows- of the rear toothed belt guard.



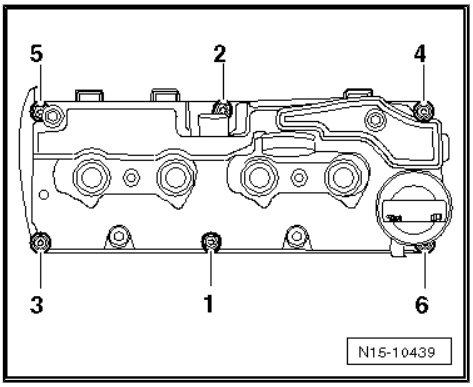

### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace gasket for cylinder head cover if damaged or leaking.*

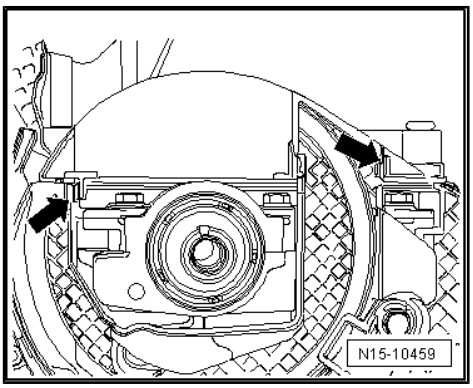
– Screw on the cylinder head cover by hand in the sequence -1 ... 6-.
– Make sure that the cylinder head cover is correctly clipped with the toothed belt guard.




**Note**

*To provide a clearer illustration, the camshaft sprocket is removed.*

– To do so, if necessary use a screwdriver to press the toothed belt guard in the area of the clips -arrows- against the cylinder head cover until they lock audibly into each other.
– Check the clearance between the hub and the toothed belt guard.
– Install the injection units ⇒ page 389 .




Connect the ⇒ Vehicle diagnostic tester and carry out the function “bleeding the fuel system” in the “targeted functions”.

### Tightening torques

- ⇒ “1.1 Cylinder head cover - Summary of components”, page 136
- ⇒ “2.1 Fuel system - Summary of components”, page 384

## 1.2.2 Removing and installing cylinder head cover (Octavia II, Superb II, Yeti)

**Note**

*Observe the safety precautions when working on the diesel direct injection system ⇒ page 3 .*

### Removing

Observe all safety measures and notes for assembly work on the fuel system and on the injection system as well as the rules for cleanliness ⇒ page 6 .

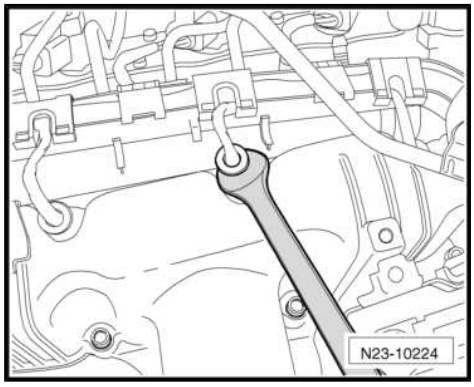
– Remove engine cover ⇒ page 10 .

– If present, remove the noise insulation at the injection units.

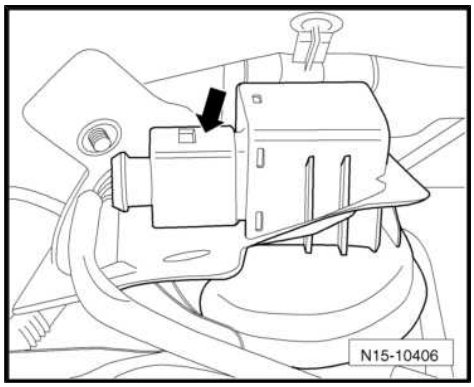
**Caution**

- *Carefully disconnect the plug from the glow plugs.*
- *If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).*

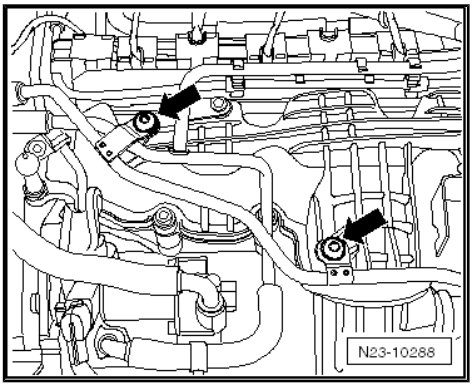
– Carefully disconnect the plug from the glow plugs. Use the assembly spanner SW 12 for help.



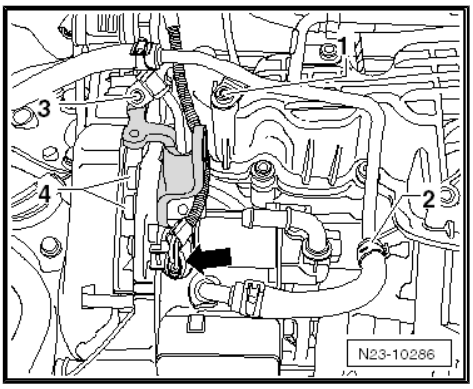

– Disconnect the plug of the position sender for charge pressure regulator - G581- -arrow- at the vacuum unit from the exhaust turbocharger and guide the line out of the brackets.



– Unscrew screws -arrows- and lay the coolant return-flow line to the side.




– Unscrew bolt -3-.
– Remove engine mount »grey«.
– Remove the fuel high pressure line between the high pressure pump and the fuel distributor.

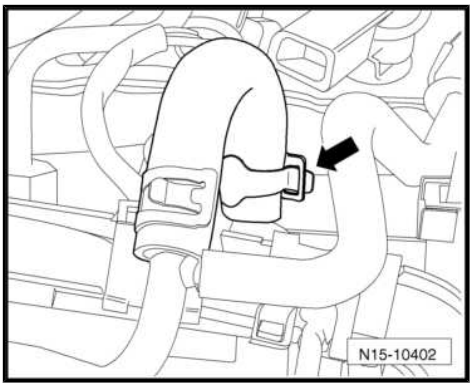



**Note**

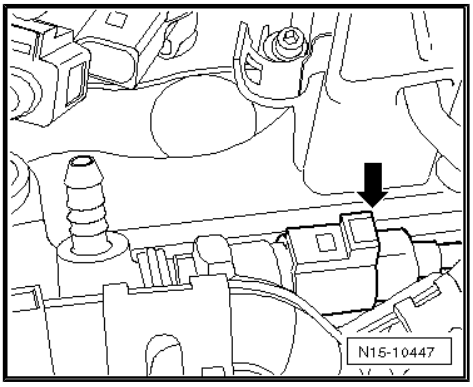
- *Preferred loosening sequence of the high pressure lines cylinders 4-3-2-1.*
- *Counterhold at the injection units when loosening the high pressure connection piece.*

– Remove high pressure line between fuel distributor and injection units.

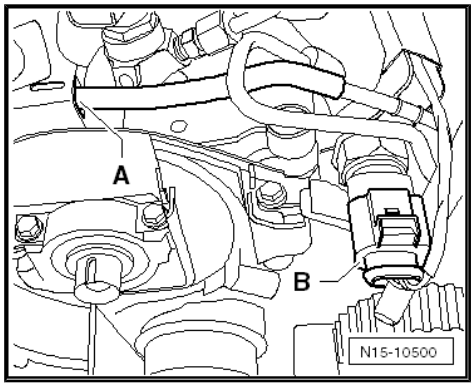
– Slacken spring strap clamp -arrow- and detach the line from the fuel distributor.



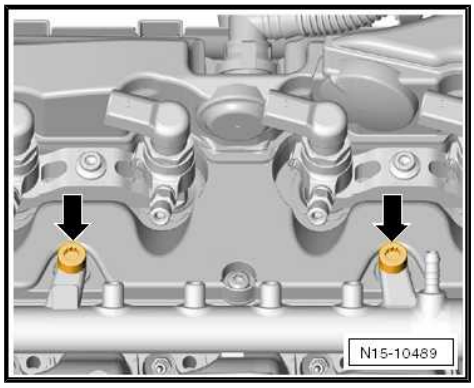

– Disconnect the plug at the fuel pressure regulating valve - N276- -arrow-.
– Remove the cable guide from the fuel distributor and lay it to the side.



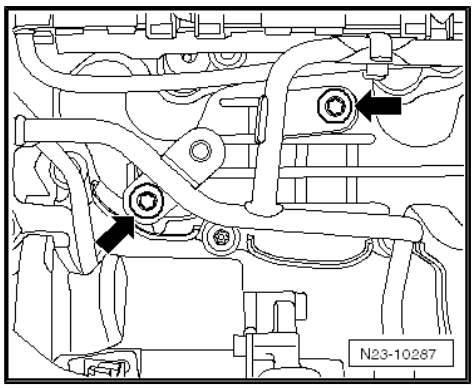
– Disconnect plug at fuel pressure sender - G247- -B-.
– Detach the vacuum line at the cylinder head cover -A-.



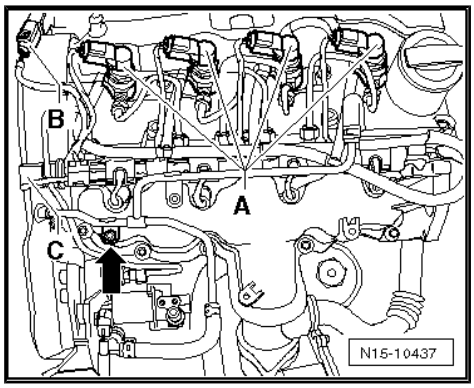

– Screw out screws -arrows- and remove fuel distributor.



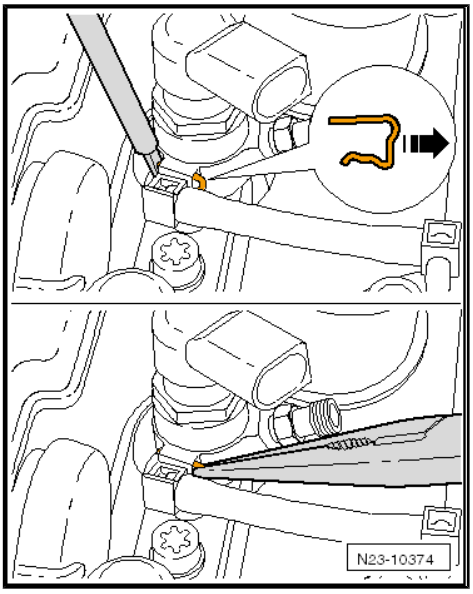

– Unscrew the fixing screws at the intake manifold -arrows- and lay the fuel return-flow line to the side.




– Disconnect the plug from the injection units -A- and the differential pressure sender - G505- -B-.



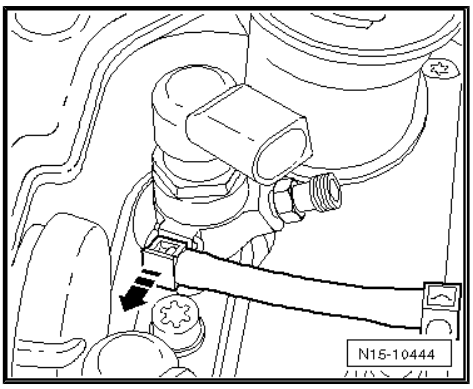
– Unlock the connections of the fuel return-flow line using a screwdriver and a set of pointed pliers.



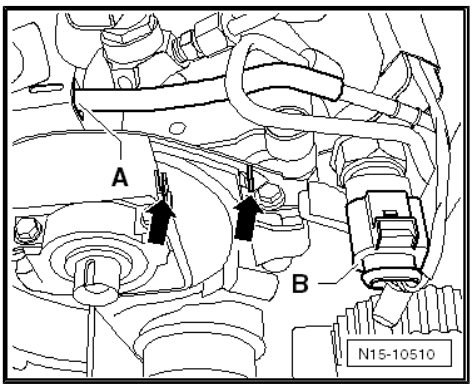

**Note**

*Always replace clamps.*

– Disconnect the connections of the fuel return-flow line at the injectors in -direction of arrow-.
– Remove the complete return-flow line and place it down at the intake manifold.
– Remove the remaining vacuum lines from the bracket at the cylinder head cover.
– Remove top toothed belt guard.
– Remove the vent line between the cylinder head cover and the intake hose. To do so, press together the quick-release fittings.
– Remove the injection units ⇒ page 389 .
– Unscrew the fixing screws of the cylinder head cover.
– Remove cylinder head cover.




– To do so, unclip the cylinder head cover at the catch pegs -arrows- of the rear toothed belt guard.



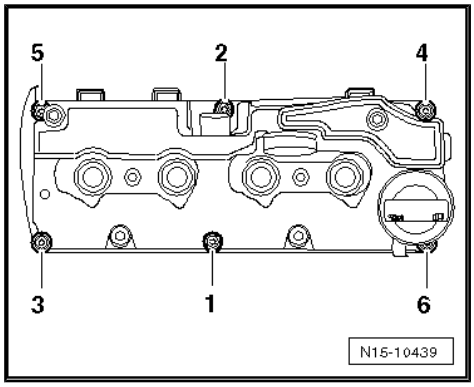

**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace gasket for cylinder head cover if damaged or leaking.*

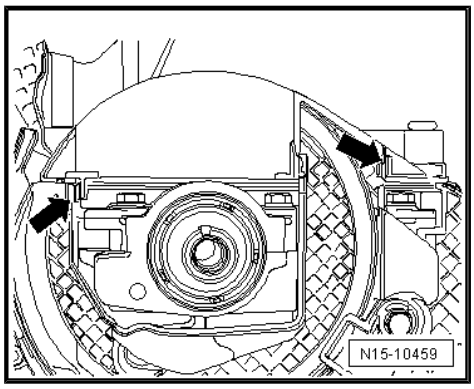
– Screw on the cylinder head cover by hand in the sequence -1 ... 6-.
– Make sure that the cylinder head cover is correctly clipped with the toothed belt guard.




**Note**

*To provide a clearer illustration, the camshaft sprocket is removed.*

– To do so, if necessary use a screwdriver to press the toothed belt guard in the area of the clips -arrows- against the cylinder head cover until they lock audibly into each other.
– Check the clearance between the hub and the toothed belt guard.
– Install the injection units ⇒ page 389 .




Connect the ⇒ Vehicle diagnostic tester and carry out the function “bleeding the fuel system” in the “targeted functions”.

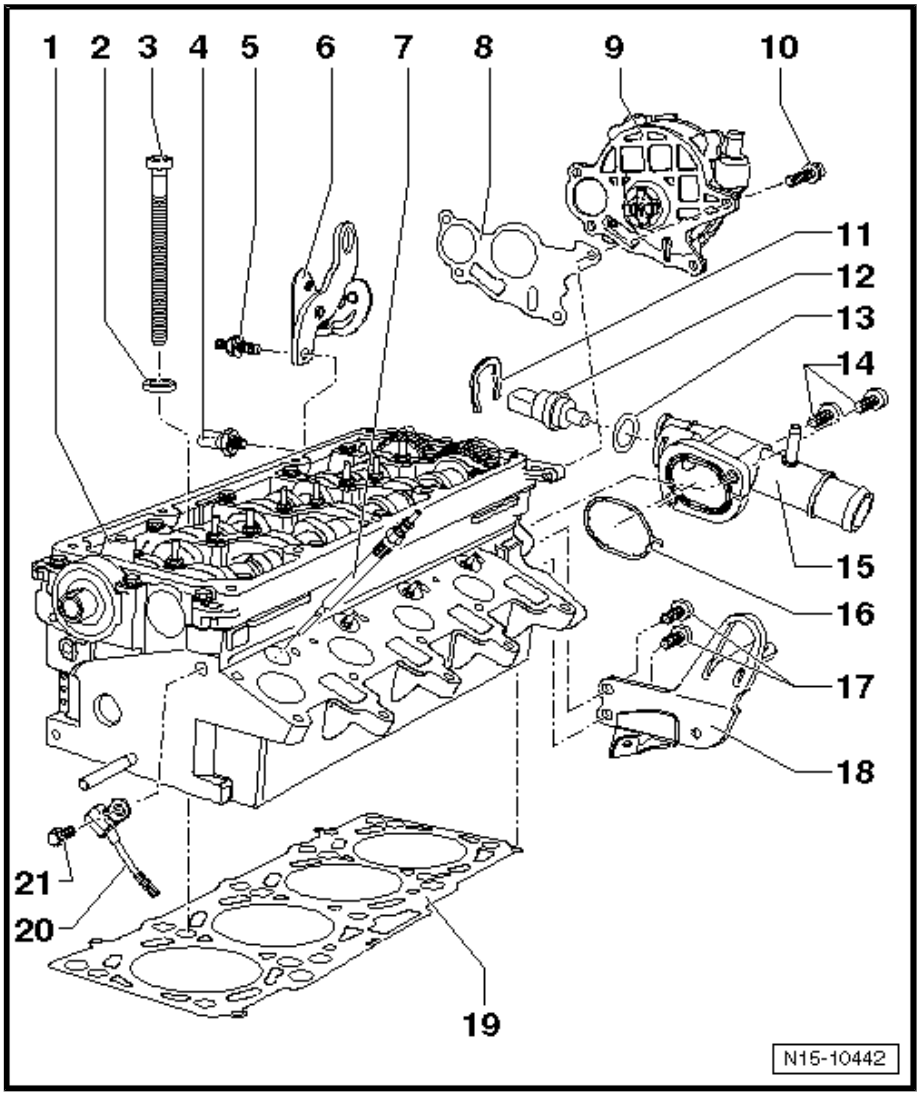
**Tightening torques**

- ⇒ “1.1 Cylinder head cover - Summary of components”, page 136
- ⇒ “2.1 Fuel system - Summary of components”, page 384

## 1.3 Cylinder head - summary of components

**Note**

- *Cylinder heads with cracks between the valve seats may continue to be used without any reduction in the life time provided the cracks are slight and max. 0.5 mm wide.*
- *It is not permissible to rework the cylinder heads of diesel engines.*
- *Replace O-rings and gaskets.*
- *Replace cylinder head bolts and screws which have been tightened to a torquing angle.*
- *When installing an exchange cylinder head with the camshafts installed, it is necessary to oil the contact surfaces between the roller arms and the cams after installing the head.*
- *Do not remove the plastic bases supplied as a protection for the open valves until just before fitting on the cylinder head.*
- *When replacing the cylinder head, replace all the coolant ⇒ page 223 .*




**1 - Cylinder head**

- ❑ wymontowanie i zamontowanie ⇒ page 149
- ❑ check for distortion ⇒ page 148
- ❑ after replacing fill entire system with fresh coolant

**2 - Washer**

- ❑ for cylinder head screw

**3 - Cylinder head bolt**

- ❑ pay attention to sequence for loosening and tightening ⇒ page 149
- ❑ before fitting insert washers in the cylinder head

**4 - Oil pressure switch - F1-**

- ❑ Identification: green
- ❑ 0.05 MPa (0.5 bar)
- ❑ Cut open gasket ring if leaking and replace
- ❑ check ⇒ page 212
- ❑ 20 Nm

**5 - Screw**

- ❑ 20 Nm

**6 - Rear left lifting eye on cylinder head**

**7 - Glow plug**

- ❑ 18 Nm

**8 - Gasket**

- ❑ replace

**9 - Vacuum pump**

> **WARNING**
> *The vacuum pump must on no account be disassembled, otherwise the proper operation of the pump vacuum part is no longer assured. This will result in a failure of the brake booster.*

- ❑ removing and installing ⇒ page 170

**10 - Screw**

- ❑ 10 Nm

**11 - Clamp**

**12 - Coolant temperature sender - G62-**

- ❑ Renew. ⇒ page 237 .

**13 - O-ring**
- ❑ replace

**14 - Screw**
- ❑ 10 Nm

**15 - Coolant connection fitting**

**16 - Gasket**
- ❑ replace

**17 - Screw**
- ❑ 25 Nm

**18 - Front left lifting eye on cylinder head**
- ❑ the front right lifting eye is attached at the bracket for auxiliary units in the same way ⇒ page 57

**19 - Cylinder head gasket**
- ❑ replace
- ❑ Pay attention to the marking ⇒ page 148
- ❑ after replacing fill entire system with fresh coolant

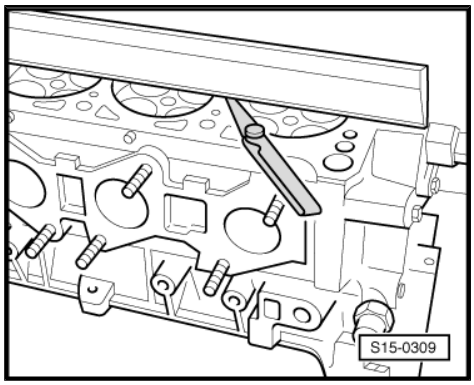
**20 - Hall sender - G40-**
- ❑ for camshaft position
- ❑ removing and installing ⇒ page 169

**21 - Screw**
- ❑ 10 Nm

### Inspecting the cylinder head for distortion

– Inspect cylinder head at several points for distortion using a knife-edge straightedge and feeler gauge.

• Maximum permitted distortion: 0.1 mm

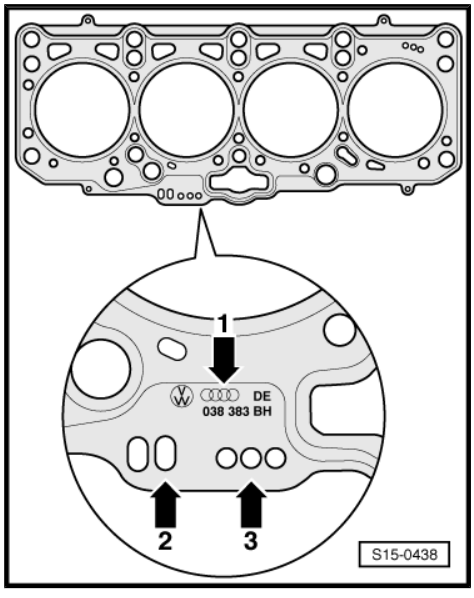



**Note**

*It is not permissible to rework the cylinder heads of diesel engines.*

### Identification of the cylinder head gasket

- ♦ Part number = -arrow 1-
- ♦ Control code = -arrow 2- (ignore)
- ♦ Bores = -arrow 3-




**Note**

- ♦ *Differing thicknesses of cylinder head gaskets are inserted according to the piston projection. If only the gasket is replaced, it must be replaced with a new gasket with the same marking.*
- ♦ *When fitting new pistons or a partial engine, check the piston projection in TDC on all pistons* ⇒ page 134 .

## 1.4 Removing and installing cylinder head

⇒ "1.4.1 Removing and installing cylinder head (Fabia II, Roomster, Rapid India, Rapid NH)", page 149

⇒ "1.4.2 Removing and installing cylinder head (Octavia II, Superb II, Yeti)", page 159

## 1.4.1 Removing and installing cylinder head (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Guide bolt - MP1-208 (3070)-
- Counterholder - T10051-
- Extractor - T10052-
- Socket insert XZN 10 - T10385-
- Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.
- Locking agent - D 000 600 A2-
- Protective goggles and gloves

**For vehicles Rapid NH**

**Special tools and workshop equipment required**

- Support - T10358-

**Removing**

**Requirements**

- Engine temperature should not exceed 35 °C, because the cylinder head could be twisted when slackening the screws.
- The pistons must not be in TDC.

**Caution**

*When undertaking all installation work, particularly in the engine compartment due to its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.*

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .

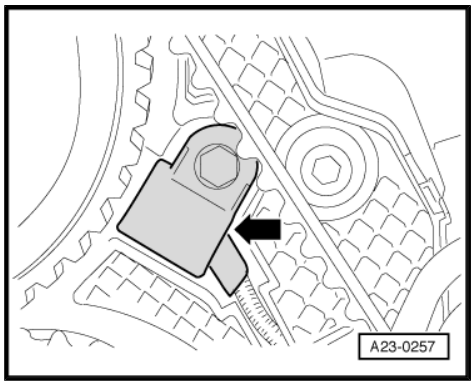
– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System; Rep. gr. 27 .

– Remove engine cover ⇒ page 10 .

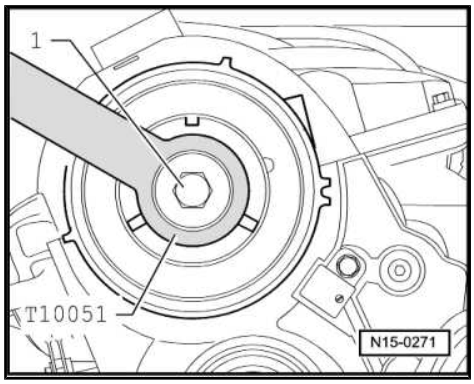
– Remove air filter housing with air mass meter - G70- and intake hose ⇒ page 426 .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Remove cylinder head cover ⇒ page 137 .
– Removing toothed belt ⇒ page 90 .
– Unscrew Hall sender - G40- -arrow- and place down.
– Remove camshaft sprocket.



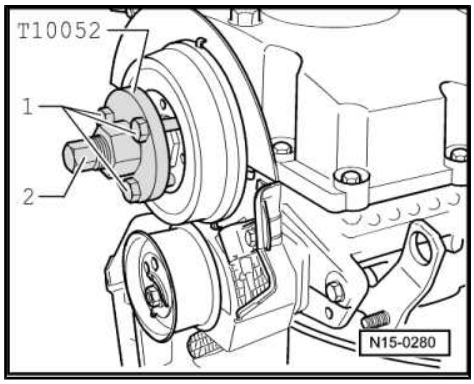

– Counterhold the hub with the counterholder - T10051- and slacken the fixing screw -1- of the hub.
– Unscrew the fixing screw of the hub by approx. 2 turns.




– Position the extractor - T10052- and align it with the hub bores.
– Tighten fixing screws -1-.
– Put the hub under tension by uniformly tightening the extractor -2- until the hub is released from the camshaft cone.

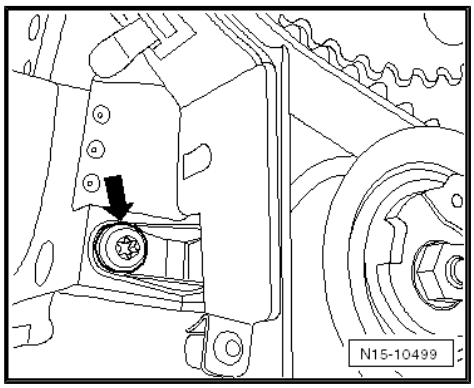
**Note**

*While doing so, hold the extractor firmly using a wrench SW 30.*

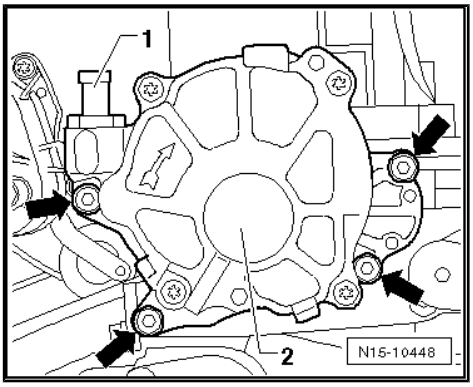



– Remove hub from cone of camshaft.

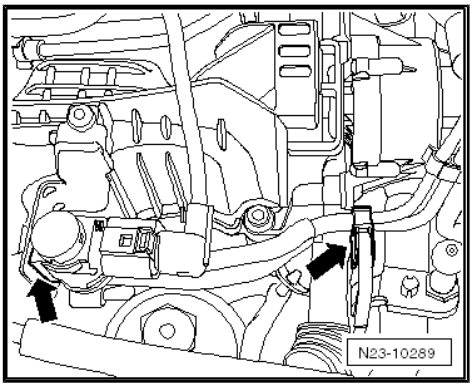
– Unscrew the fixing screw -arrow- of the toothed belt guard.



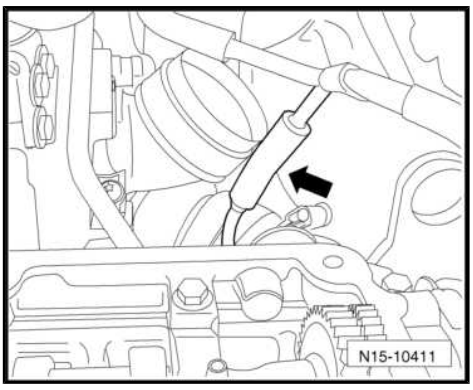
– Detach the vacuum line -1- from the vacuum pump -2-.



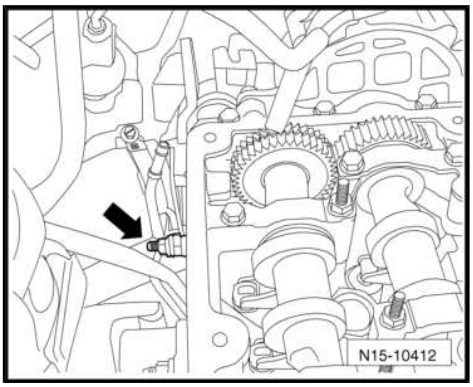

– Slacken the vacuum lines -arrows- and lay them to the side.



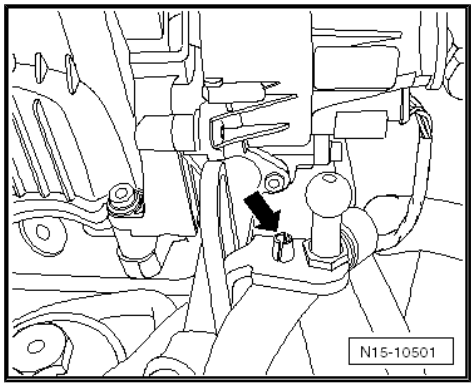

– Detach vacuum line -arrow-.
– Lay vacuum lines to the side.



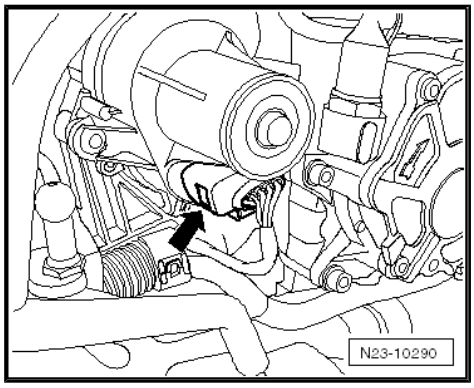

– Unscrew the connection -arrow- of the vacuum line.



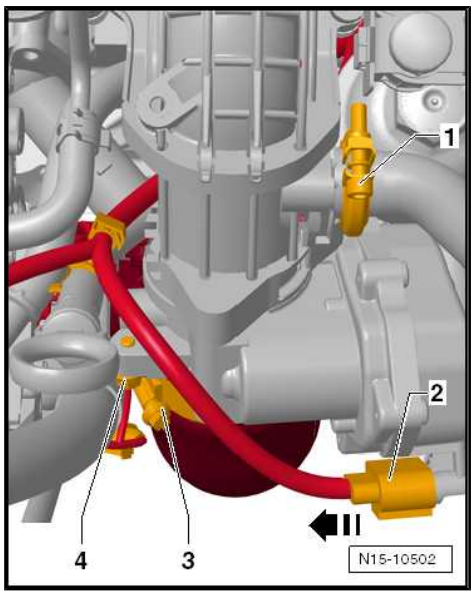
– Unclip the engine pre-wiring from the holder -arrow-.



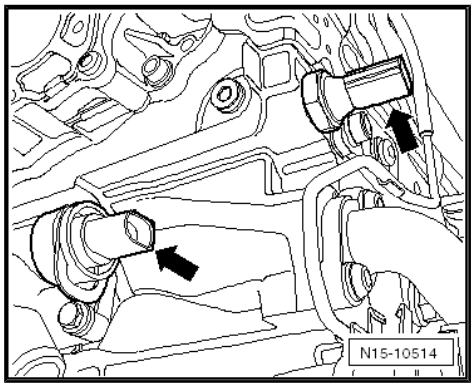

– Disconnect plug -arrow- from intake manifold flap motor - V157- , if present.
– Lay the engine pre-wiring to the side.



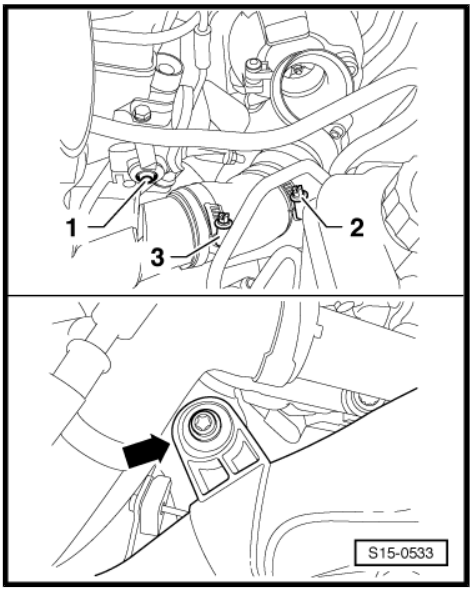

– Disconnect the plug from the throttle valve control unit - J338- -2-.
– Open clamp -3- and detach charge air hose »dark red«.
– Release the screw from the oil measuring connection -4-.



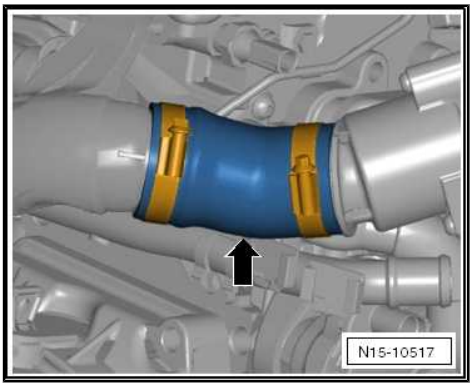

– Disconnect plug at oil pressure switch -arrow- and guide out the cable -Pos. 4- ⇒ page 146 .



– Release the fixing screw -1- from the charge air pipe (if present), slacken the clamp -2- or -3-.
– Release fixing screw -arrow- from charge air pipe.

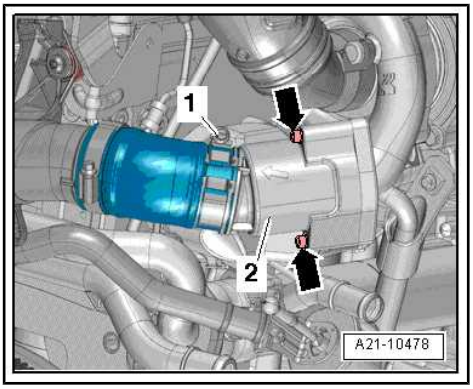



– Detach the connecting hose -arrow- as far as possible from the vibration damper.
– Push the charge air pipe as far as possible to the side.

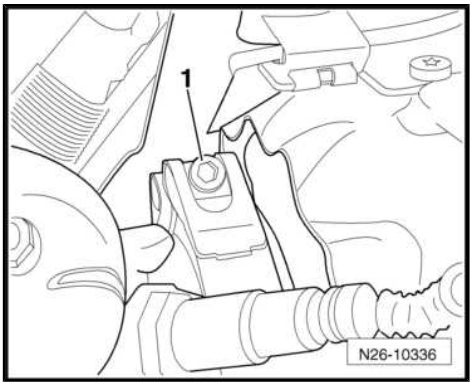



– Screw out screws -arrows- and remove pulsation dampener -2-.

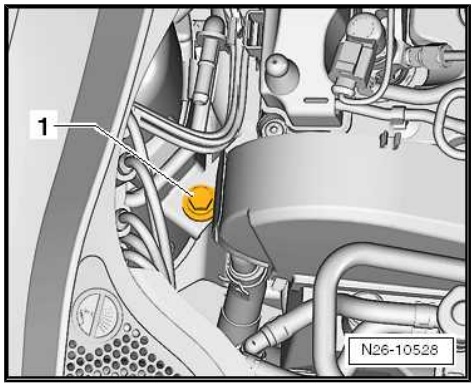
**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**




– Unscrew the screw -1- and open the clamp at the diesel particle filter.

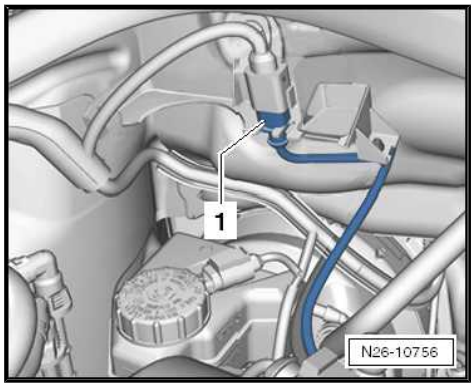


– Release the top screw -1- for attaching the diesel particle filter.




**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

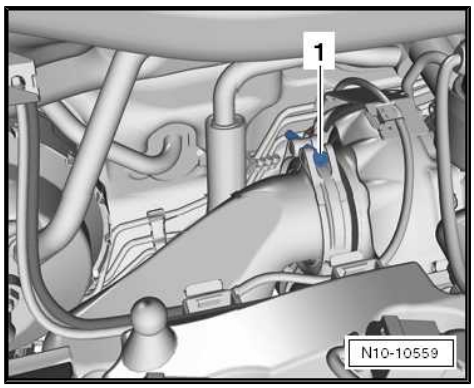
– Disconnect plug connection -1- from exhaust gas temperature sender 1 - G235- .




**Note**

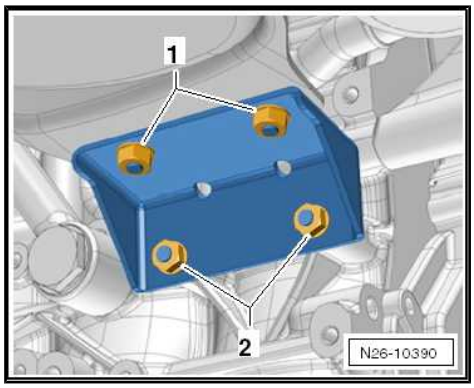
*Illustration for Rapid India vehicles:*

– Unscrew screw -1- and open the clamp between catalytic converter and exhaust gas turbocharger.

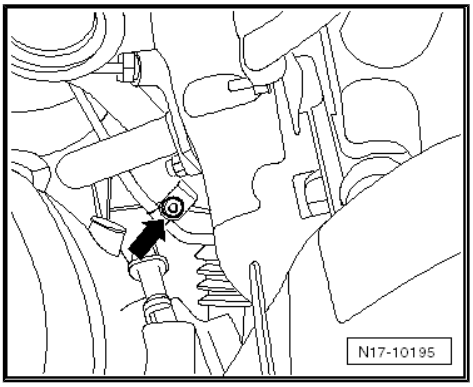



**Continued for all vehicles**

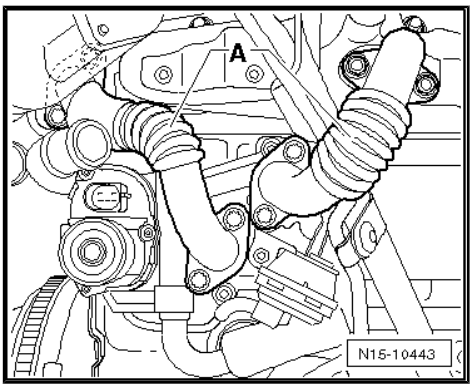
– Unscrew the nuts -2-.



– Unscrew the screw of the retaining clip -arrow- for the oil feed line at the support for the exhaust gas turbocharger.




– Remove connection pipes -A- to exhaust gas recirculation radiator.
– Remove the oil feed line and the support for the exhaust turbocharger ⇒ page 202 .
– Drain coolant ⇒ page 223 .

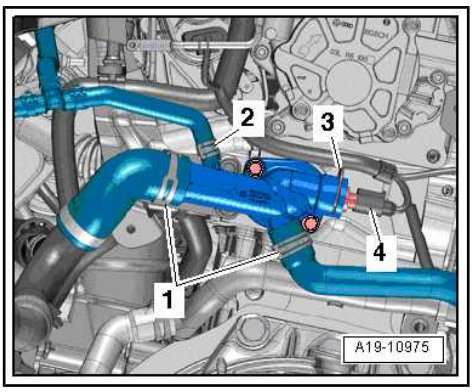



– Disconnect plug -4- at the coolant temperature sender - G62- .
– Slacken the hose clamps -1- and -2- and detach the coolant hoses from the connection fittings.

**For vehicles Rapid NH**

The lifting eyes are located on the cylinder head. An additional holder must be fitted on the gearbox flange to support the engine.

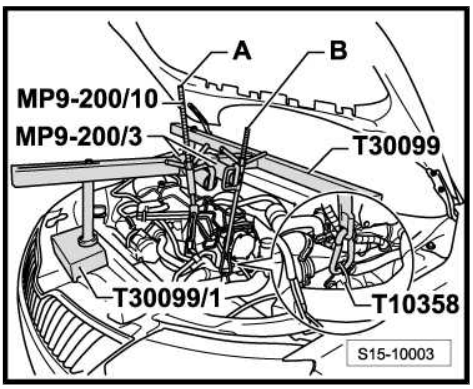
– Remove connection fitting ⇒ page 214 .



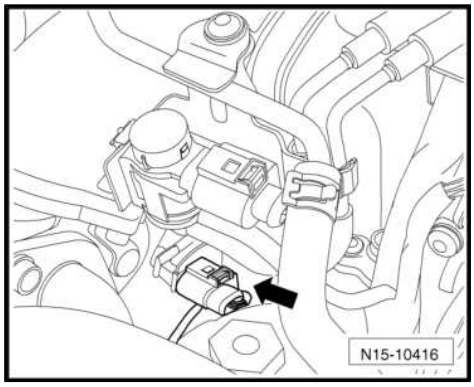

– Fasten the holder - T10358- below the top screw at the gearbox.
– Raise engine with spindle -B- until spindle -A- is relieved
– Release spindle -A- and take out of the cylinder head holder.

**Continued for all vehicles**

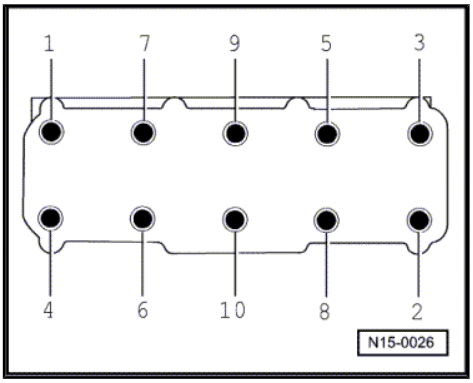
– Release the fixing nut of the timing belt tensioning pulley.



– Disconnect plug from Hall sender - G40- -arrow-.



– Follow the specified order for loosening cylinder head bolts.




**Note**

- *The assistance of a 2nd mechanic is required for lifting out the cylinder head.*
- *The timing belt tensioning pulley is removed from the pin screw when lifting out the cylinder head.*

– First of all raise the cylinder head at the gearbox side and thread it out of the toothed belt guard. Make sure that the timing belt tensioning pulley does not fall down.

**Caution**

***Risk of damage to the glow plugs when placing down the cylinder head.***

- ***If the cylinder head is removed with installed glow plugs, do not place it down on the sealing surface since the glow plugs protrude slightly beyond the sealing surface.***

**Install**

**Note**

- *There must not be any oil or coolant present in the blind holes for the cylinder head bolts.*
- *Replace cylinder head bolts.*
- *When undertaking assembly replace self-locking nuts and screws as well as gasket rings and gaskets which have been tightened to a torquing angle.*
- *Remove the new cylinder head gasket from its wrapping immediately before fitting.*
- *Treat the seal with the utmost care. Damage to the silicone layer and in the area of the bead results in leakages.*
- *When installing an exchange cylinder head with the camshafts installed, it is necessary to oil the contact surfaces between the roller arms and the cams after installing the cylinder head.*
- *Secure all hose connections with corresponding hose clips.*

**WARNING**

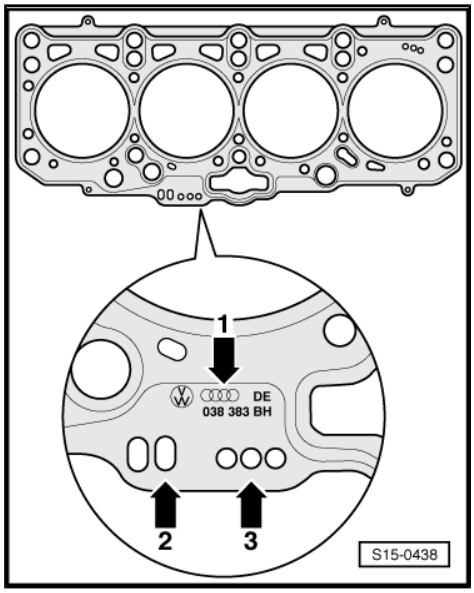
***Wear protective gloves and goggles when working with gasket remover and degreasing agent!***

– Make sure that when cleaning the cylinder head and cylinder block no foreign bodies can get into the cylinder or into the oil and coolant galleries.

– Carefully remove old sealant residue from the cylinder head and cylinder block using a chemical sealant remover.

– Remove the crankshaft arrester - T10050- before fitting on the cylinder head and turn back the crankshaft in the opposite direction of rotation of the engine until all the pistons are almost evenly at TDC.

– Pay attention to the identification of the cylinder head seal.



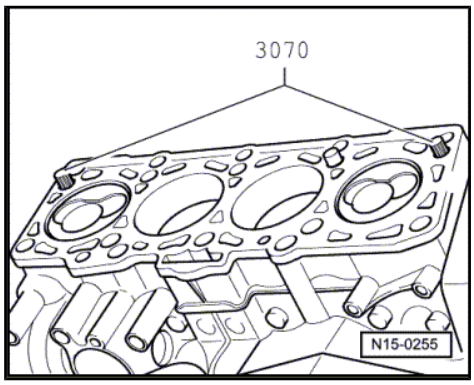

- Part number = -arrow 1-
- Bores -arrow 2- (ignore)
- Bores = -arrow 3-

**Note**

- *Install a new cylinder head gasket with the same marking, irrespective of whether or not the cylinder head was replaced.*
- *If parts of the crankshaft drive were replaced, then the new cylinder head gasket must be redefined by measuring the protrusion of the piston in TDC.*

– Position the cylinder head gasket with the marking to the top.

– To centre, screw guide bolts - MP1-208 (3070)- into the external bores at the inlet side.




**Note**

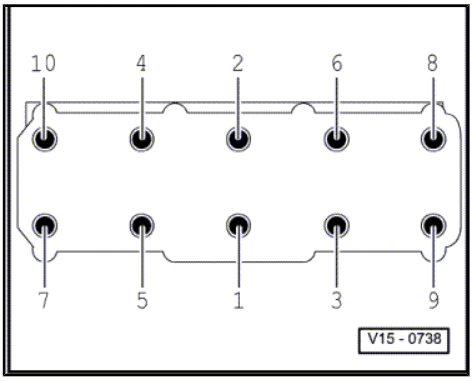
*The tensioning pulley must be placed on the stud bolts when the cylinder head is being fitted.*

– Fit cylinder head, insert 8 cylinder head bolts and tighten hand-tight.

– Unscrew guide pins - MP1-208 (3070)- through the screw holes in the cylinder head and insert the last cylinder head bolts until contact is made.

– Tighten cylinder head in 4 stages in the tightening order shown:

| Stage | Tighten |
|---|---|
| I | – Initially tighten using torque wrench to 35 Nm. |
| II | – Initially tighten using torque wrench to 60 Nm. |
| III | – Using a rigid wrench torque a further 90° (1/4 turn). |
| IV | – Using a rigid wrench torque a further 90° (1/4 turn). |




**Note**

*Tightening up the cylinder head bolts after doing repair work is not necessary.*

Installation is carried out in the reverse order. When installing, note the following:

– Filling and bleeding the fuel system ⇒ page 382 .

– Check fuel system for tightness ⇒ page 406 .

– Perform a test drive and query and delete fault memory⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

**Tightening torques**

- ⇒ “1.3 Cylinder head - summary of components”, page 146
- ⇒ “1.6 Assembly overview - toothed belt drive”, page 82
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342
- ⇒ “1.1 Pre-exhaust pipe”, page 436
- ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479

## 1.4.2 Removing and installing cylinder head (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Guide bolt - MP1-208 (3070)-
- Counterholder - T10051-
- Extractor - T10052-
- Socket insert XZN 10 - T10385-
- Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.
- Locking agent - D 000 600 A2-

- Protective goggles and gloves

### Removing

### Requirements

- Engine temperature should not exceed 35 °C, because the cylinder head could be twisted when slackening the screws.
- The pistons must not be in TDC.

**Caution**

***When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:***

- ***Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.***
- ***In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.***

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ page 6 .

– Disconnect the battery-earth strap with the ignition off ⇒ Electrical System; Rep. gr. 27 .

– Remove engine cover ⇒ page 10 .

– Remove air filter housing with air mass meter - G70- and intake hose ⇒ page 426 .

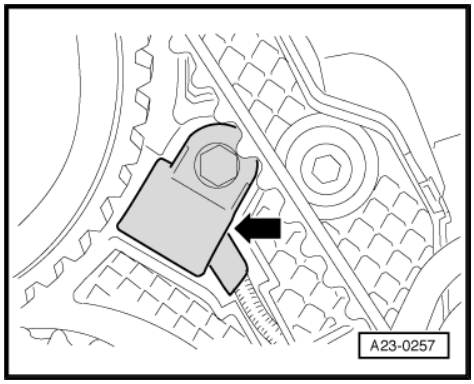
– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Remove cylinder head cover ⇒ page 137 .

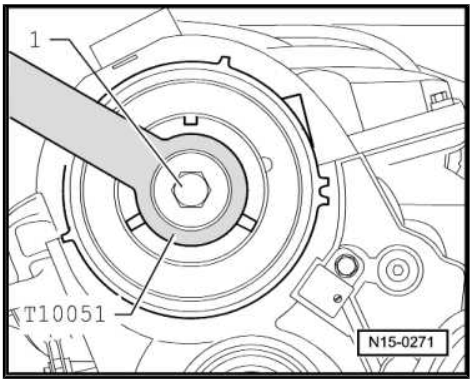
– Removing toothed belt ⇒ page 90 .

– Unscrew Hall sender - G40- -arrow- and place down.

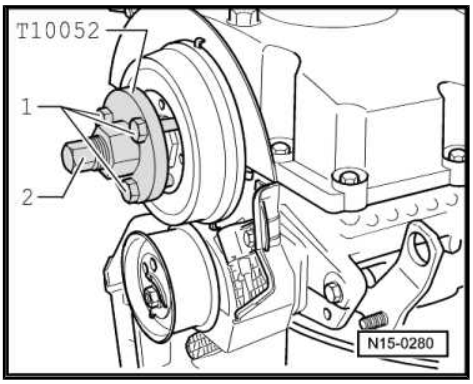
– Remove camshaft sprocket.



– Counterhold the hub with the counterholder - T10051- and slacken the fixing screw -1- of the hub.
– Unscrew the fixing screw of the hub by approx. 2 turns.



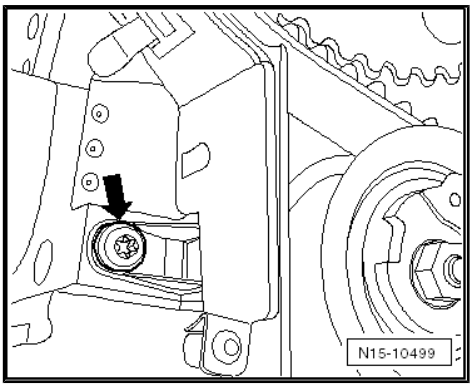

– Position the extractor - T10052- and align it with the hub bores.
– Tighten fixing screws -1-.
– Put the hub under tension by uniformly tightening the extractor -2- until the hub is released from the camshaft cone.



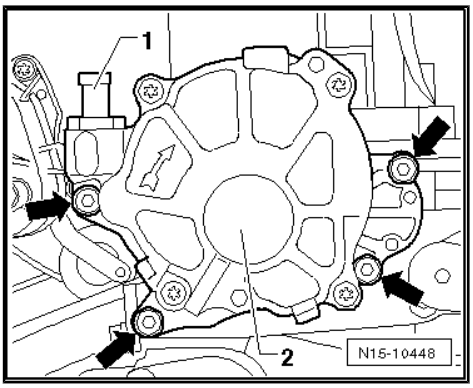

**Note**

*While doing so, hold the extractor firmly using a wrench SW 30.*

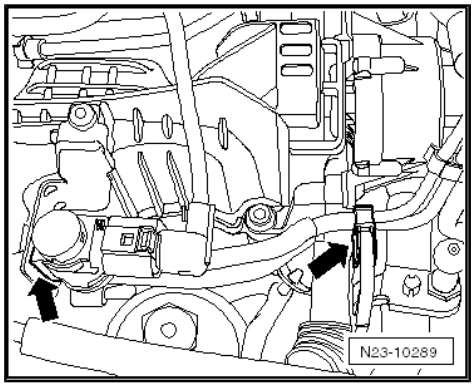
– Remove hub from cone of camshaft.
– Unscrew the fixing screw -arrow- of the toothed belt guard.



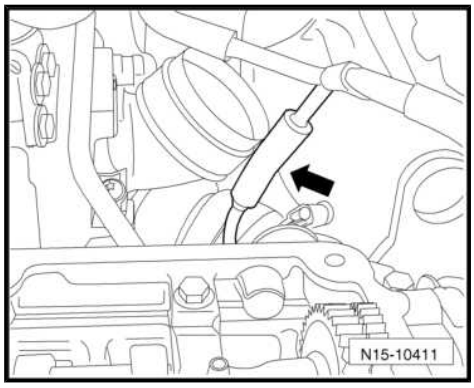

– Detach the vacuum line -1- from the vacuum pump -2-.



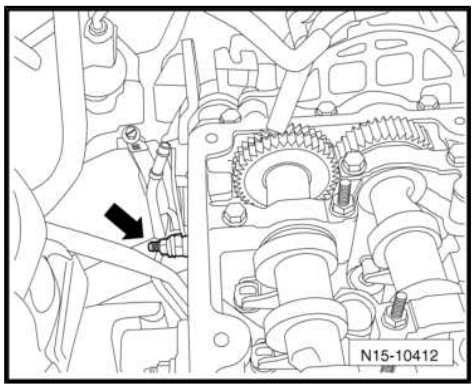
– Unclip the vacuum lines, -arrows- and lay them to the side.



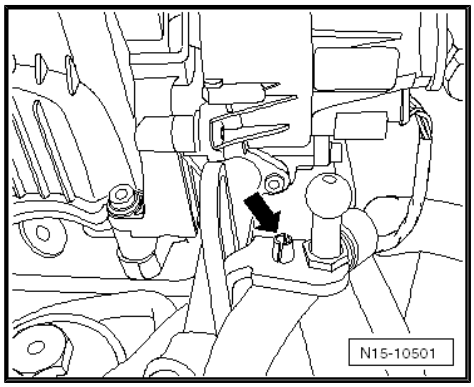

– Detach vacuum line -arrow-.
– Lay vacuum lines to the side.



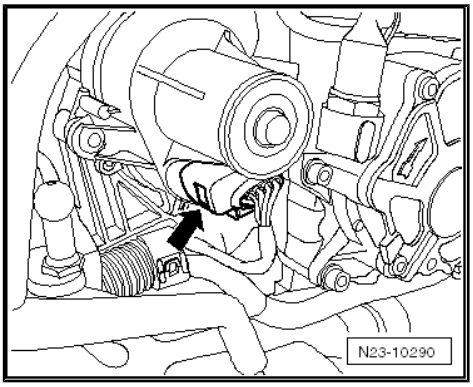

– Unscrew the connection -arrow- of the vacuum line.



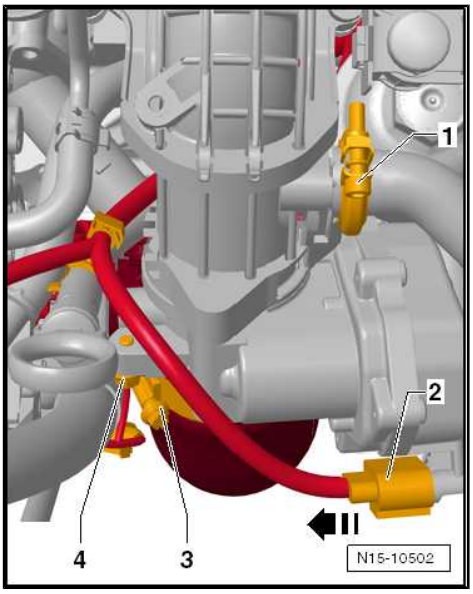

– Unclip the engine pre-wiring from the holder -arrow-.



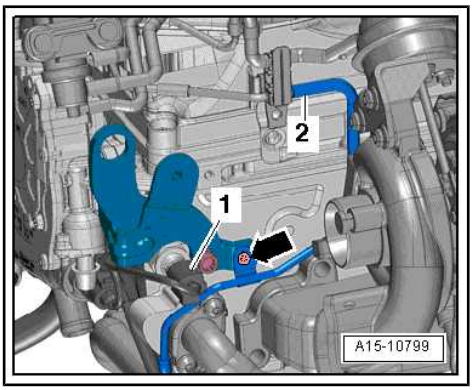
– Unplug plug -arrow- from intake manifold flap motor - V157- .
– Lay the engine pre-wiring to the side.



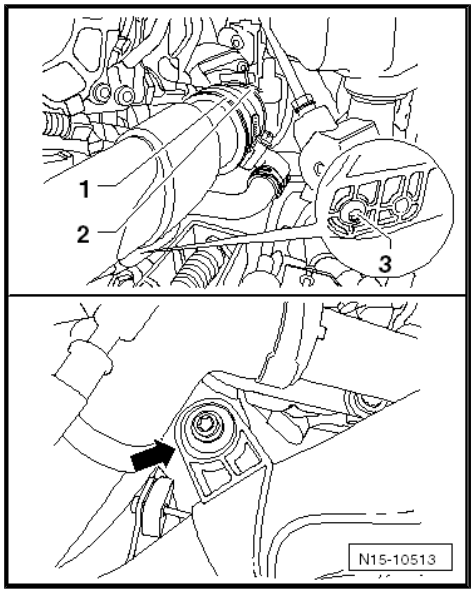

– Disconnect the plug from the throttle valve control unit - J338- -2-.
– Open clamp -3- and detach charge air hose »dark red«.
– Release the screw -4- from the oil measuring connection.



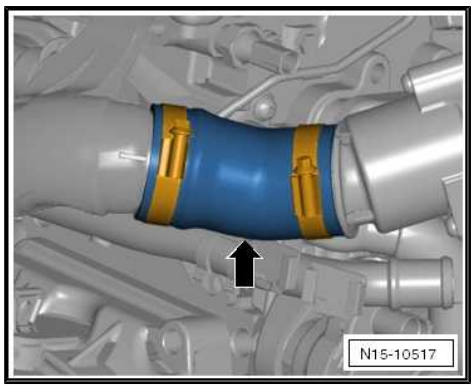

– Disconnect plug -1- at oil pressure switch - F1- .



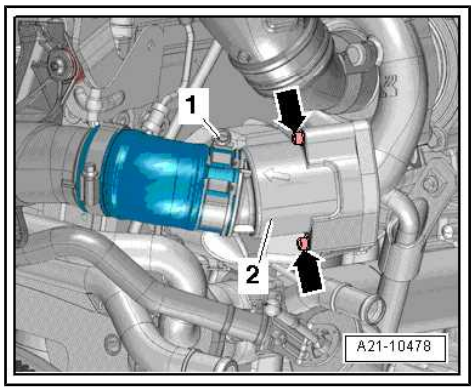
– Release the fixing screw -3- from the charge air pipe, slacken the clamp -1- or -2-.
– Release fixing screw -arrow- of charge air pipe.



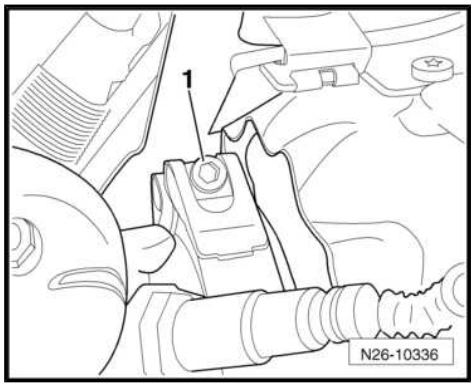

– Detach the connecting hose -arrow- as far as possible from the pulsation dampener.
– Push the charge air pipe as far as possible to the side.



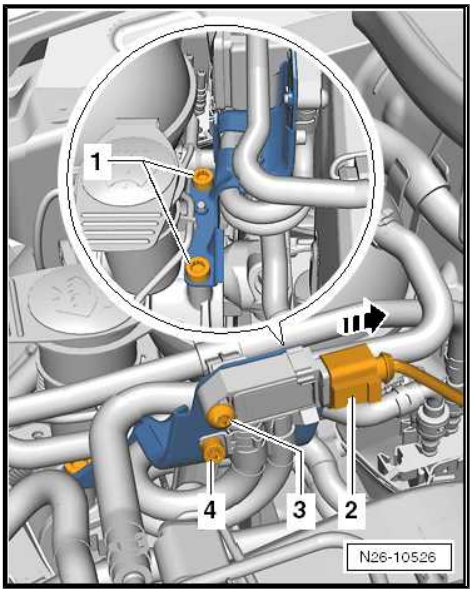

– Screw out screws -arrows- and remove pulsation dampener -2-.



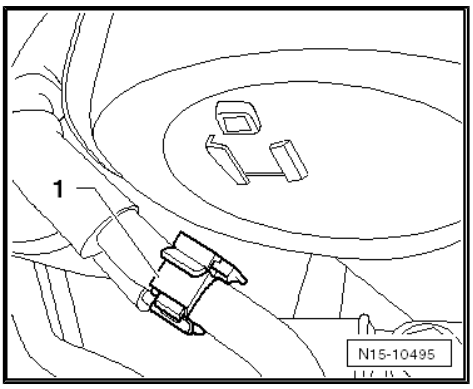

– Unscrew the screw -1- and open the clamp at the diesel particle filter.



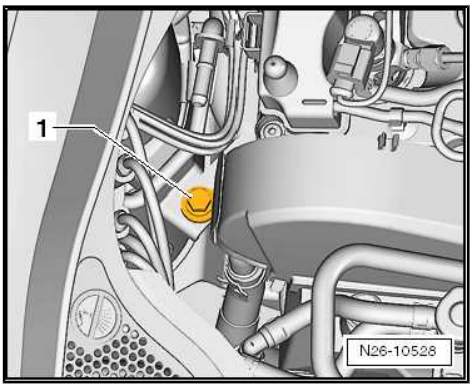
– Disconnect the plug -2- from the differential pressure sender - G505- and unscrew the fixing screws -1-.
– Release screws -3- and -4-.



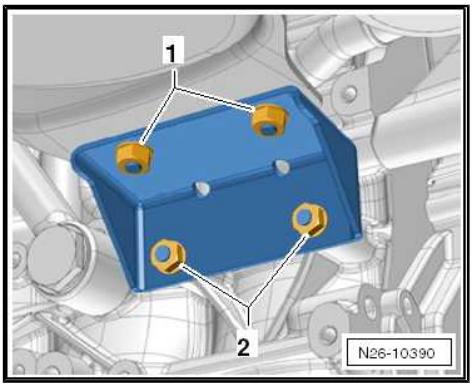

– Slacken line -1- for differential pressure sender - G505- with bracket from top timing belt guard.
– Remove the bracket with the differential pressure sender - G505- and place it to the rear.



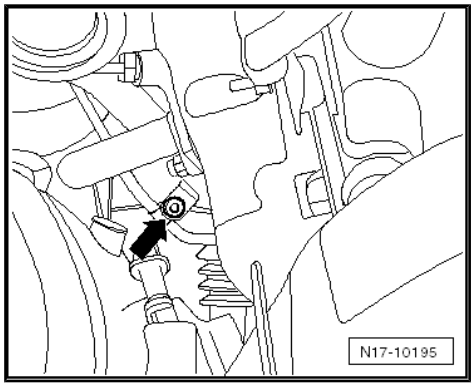

– Release the top screw -1- for attaching the diesel particle filter.



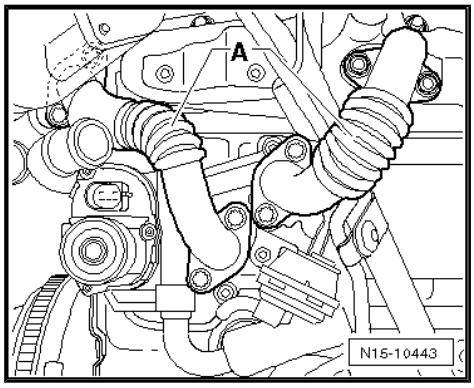

– Unscrew the nuts -2-.



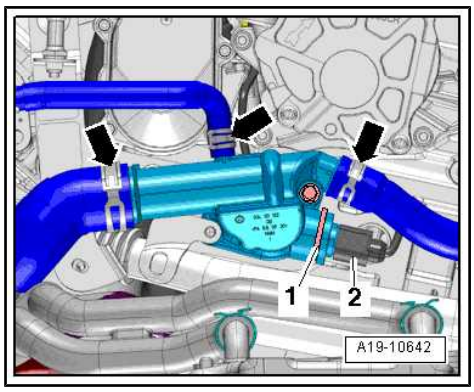
– Now the fixing screw of the retaining clip -arrow- for the oil feed line at the support of the exhaust turbocharger is accessible. Release screw -arrow-.



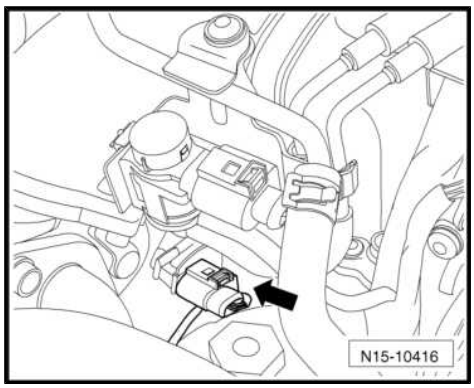

– Remove connection pipes -A- to exhaust gas recirculation radiator.
– Remove the oil feed line and the support for the exhaust turbocharger ⇒ page 202 .
– Drain coolant ⇒ page 223 .



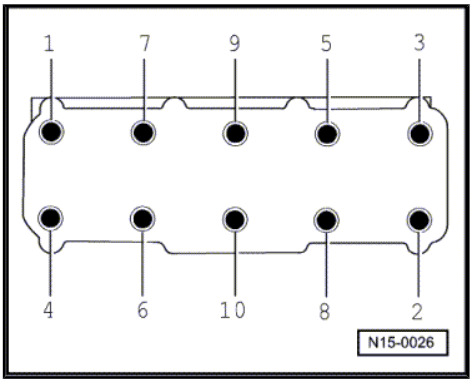

– Disconnect plug -2- from coolant temperature sender - G62- .
– Slacken the hose clamps -arrows- and detach the coolant hoses from the connection fittings.
– Release the fixing nut of the timing belt tensioning pulley.




– Disconnect plug connection -arrow- from Hall sender - G40- .



– Follow the specified order for loosening cylinder head bolts.




**Note**

- *The assistance of a second mechanic is required for removing the cylinder head.*
- *The timing belt tensioning pulley is removed from the pin screw when lifting out the cylinder head.*

– First of all raise the cylinder head at the gearbox side and then thread it out of the toothed belt guard. Make sure that the timing belt tensioning pulley does not fall down.

**Caution**

***Risk of damage to the glow plugs when placing down the cylinder head.***

- ***If the cylinder head is removed with installed glow plugs, do not place it down on the sealing surface since the glow plugs protrude slightly beyond the sealing surface.***

**Install**

**Note**

- *There must not be any oil or coolant present in the blind holes for the cylinder head bolts.*
- *Replace cylinder head bolts.*
- *Replace self-locking nuts.*
- *Replace screws which have been tightened to torquing angle.*
- *Always replace gasket rings and seals.*
- *Remove the new cylinder head gasket from its wrapping immediately before fitting.*
- *Treat the seal with the utmost care. Damage to the silicone layer and in the area of the bead results in leakages.*
- *When installing an exchange cylinder head with the camshafts installed, it is necessary to oil the contact surfaces between the roller arms and the cams after installing the cylinder head.*
- *Secure all hose connections with corresponding hose clips.*

**WARNING**

***Wear protective gloves and goggles when working with gasket remover and degreasing agent!***

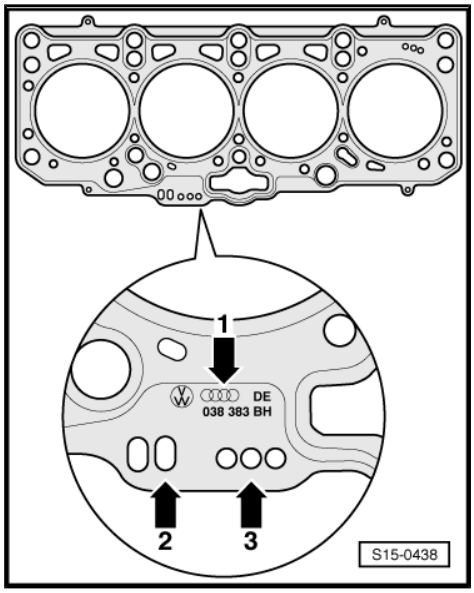
– Make sure that when cleaning the cylinder head and cylinder block no foreign bodies can get into the cylinder or into the oil and coolant galleries.

– Carefully remove old sealant residue from the cylinder head and cylinder block using a chemical sealant remover.

– Remove the crankshaft arrester - T10050- before placing on the cylinder head and turn the crankshaft in the opposite direction of rotation of engine until all the pistons are approx. at TDC.

– Pay attention to the identification of the cylinder head seal.

- Part number = -arrow 1-
- Control code = -arrow 2- (ignore)
- Bores = -arrow 3-

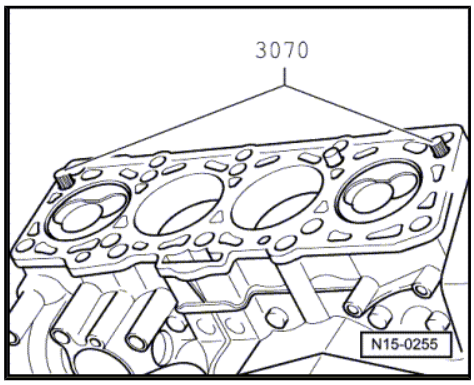



**Note**

- *Install a new cylinder head gasket with the same marking, irrespective of whether or not the cylinder head was replaced.*
- *If parts of the crankshaft drive were replaced, then the new cylinder head gasket must be redefined by measuring the protrusion of the piston in TDC.*

– Position the cylinder head gasket with the marking to the top.

– To centre, screw guide bolts - MP1-208 (3070)- into the external bores at the inlet side.



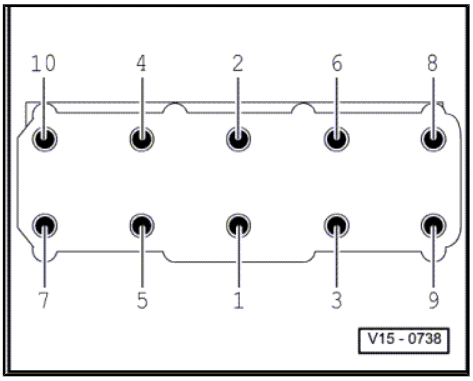

**Note**

*The tensioning pulley must be placed on the stud bolts when the cylinder head is being fitted.*

– Fit cylinder head, insert 8 cylinder head bolts and tighten hand-tight.

– Unscrew guide pins - MP1-208 (3070)- through the screw holes in the cylinder head and insert the last cylinder head bolts until contact is made.

– Tighten cylinder head in 4 stages in the tightening order shown:




| Stage | Tighten |
|---|---|
| I | – Initially tighten using torque wrench to 35 Nm. |
| II | – Initially tighten using torque wrench to 60 Nm. |
| III | – Using a rigid wrench torque a further 90° (1/4 turn). |
| IV | – Using a rigid wrench torque a further 90° (1/4 turn). |

**Note**

*Tightening up the cylinder head bolts after doing repair work is not necessary.*

Installation is carried out in the reverse order. When installing, note the following:

– Filling and bleeding the fuel system ⇒ page 382 .

– Check fuel system for tightness ⇒ page 406 .

– Perform a test drive and query and delete fault memory⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

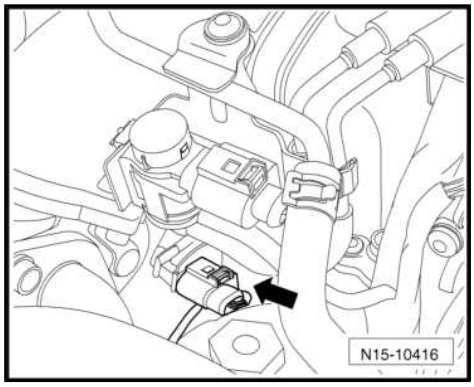
**Tightening torques**

- ⇒ “1.3 Cylinder head - summary of components”, page 146
- ⇒ “1.6 Assembly overview - toothed belt drive”, page 82
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342
- ⇒ “1.1 Pre-exhaust pipe”, page 436
- ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479

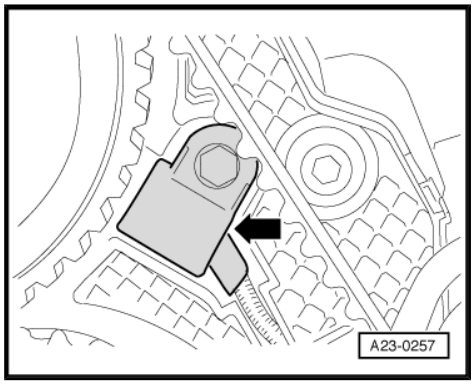
## 1.5 Removing and installing Hall sender - G40-

– Removing toothed belt ⇒ page 90 .

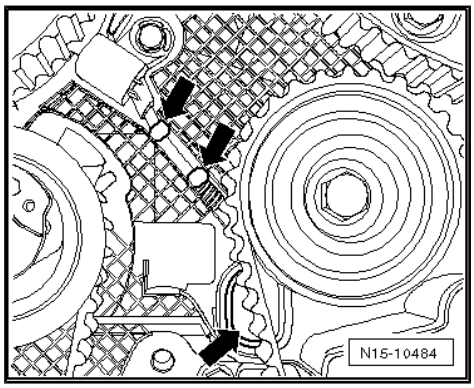
– Disconnect plug from Hall sender - G40- -arrow-.
– Disconnect the plug from its bracket.




– Unscrew Hall sender - G40- -arrow-.




– Remove the lands and the cover of the repair opening -arrows- using a screwdriver.
– Unscrew the Hall sender - G40- from the cylinder head and guide its plug through the repair hole in the toothed belt guard.




**Install**

Installation is carried out in the reverse order. Pay attention to the following:

♦ Close repair opening in the toothed belt guard with rubber plugs ⇒ ETKA - Electronic Catalogue of Original Parts .
– install toothed belt and set the timing ⇒ page 90 .

**Tightening torques**

♦ ⇒ “1.3 Cylinder head - summary of components”, page 146

## 1.6 Removing and installing the vacuum pump

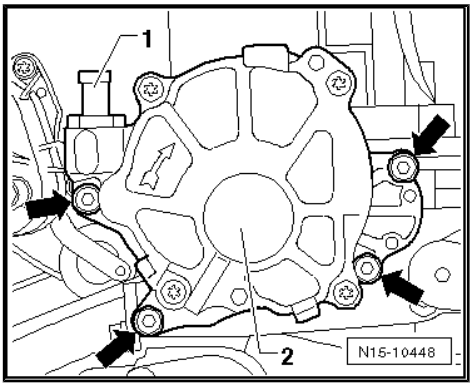
**WARNING**

*The vacuum pump must on no account be disassembled, otherwise the proper operation of the pump vacuum part is no longer assured. This will result in a failure of the brake booster.*

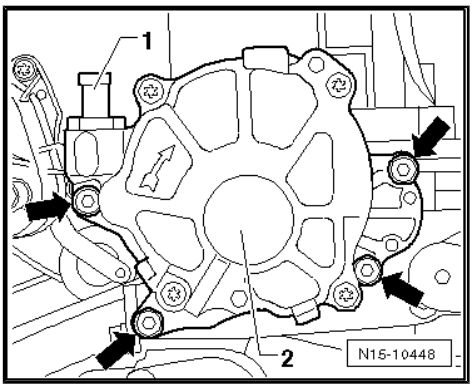
**Removing**

– Remove air filter housing ⇒ page 426 .

– Detach the vacuum line -1- from the vacuum pump -2-.
– Unscrew the fixing screws of the left charge air pipe and afterwards press the left charge air pipe slightly downwards in order to reach the rear bolted connection of the vacuum pump.




– Unscrew fixing screws -arrows-.
– Remove vacuum pump -2- from cylinder head.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Pay attention to the correct position of the coupling for the vacuum pump in the camshaft.*
- *Always replace the vacuum pump seals.*

– Install the vacuum pump and tighten the securing bolts.
– Connect the vacuum line -1- of the brake servo unit to the vacuum pump.

**Tightening torques**

- ⇒ “1.3 Cylinder head - summary of components”, page 146

## 1.7 Testing the compression

**Note**

- *A rough test of the compression pressure can be carried out in the targeted fault finding ⇒ Vehicle diagnostic tester.*
- *The following work sequence with the compression tester gives more precise values.*

**Special tools and workshop equipment required**

- Flexible-head wrench SW 10 - 3220-
- Compression tester , e.g. -V.A.G 1763-
- Adapter - V.A.G 1763/8-

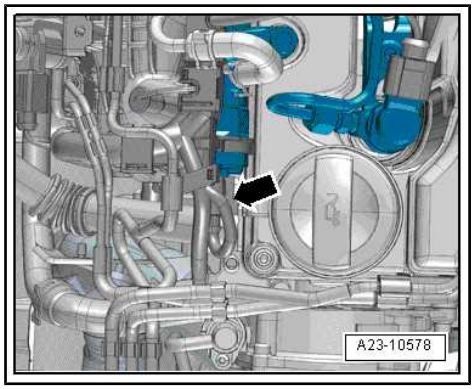
**Test condition**

- Engine oil temperature at least 80°C.
- Battery voltage at least 12.5 V.

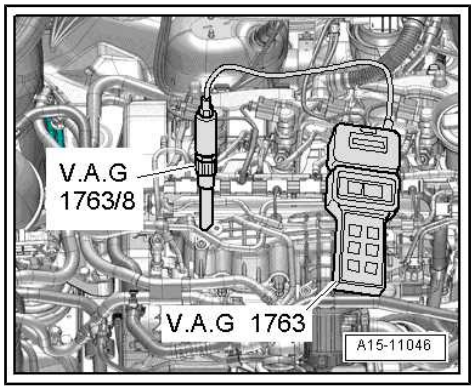
**Test sequence**

– Remove engine cover ⇒ page 10 .

– Disconnect the plug at the fuel pressure regulating valve - N276- -arrow- on the fuel distributor.
– Start engine briefly in order to reduce the pressure in the fuel distributor.
– Remove all glow plugs ⇒ page 488 .




– Screw the adapter - V.A.G 1763/8- into the threaded hole of the glow plug on the cylinder to be checked and connect the compression tester - V.A.G 1763- .




**Note**

*Use of the compression tester - V.A.G 1763- ⇒ Operating instructions .*

– Operate the starter with the assistance of a 2nd mechanic until no further pressure rise is indicated by the compression tester - V.A.G 1763- .
– Measure the compression pressure consecutively on all the cylinders.

| Compression readings | Pressure |
|---|---|
| New engine | 2.5 ... 3.1 MPa (25.0 ... 31.0 bar) |
| Wear limit | 1.9 MPa (19.0 bar) |
| Maximum permissible difference between the cylinders | 0.5 MPa (5.0 bar) |

Installation is performed in the reverse order, pay attention to the following points:

– Install the glow plug for the relevant cylinder ⇒ page 488 .
– Interrogating and erasing fault memory of engine control unit ⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

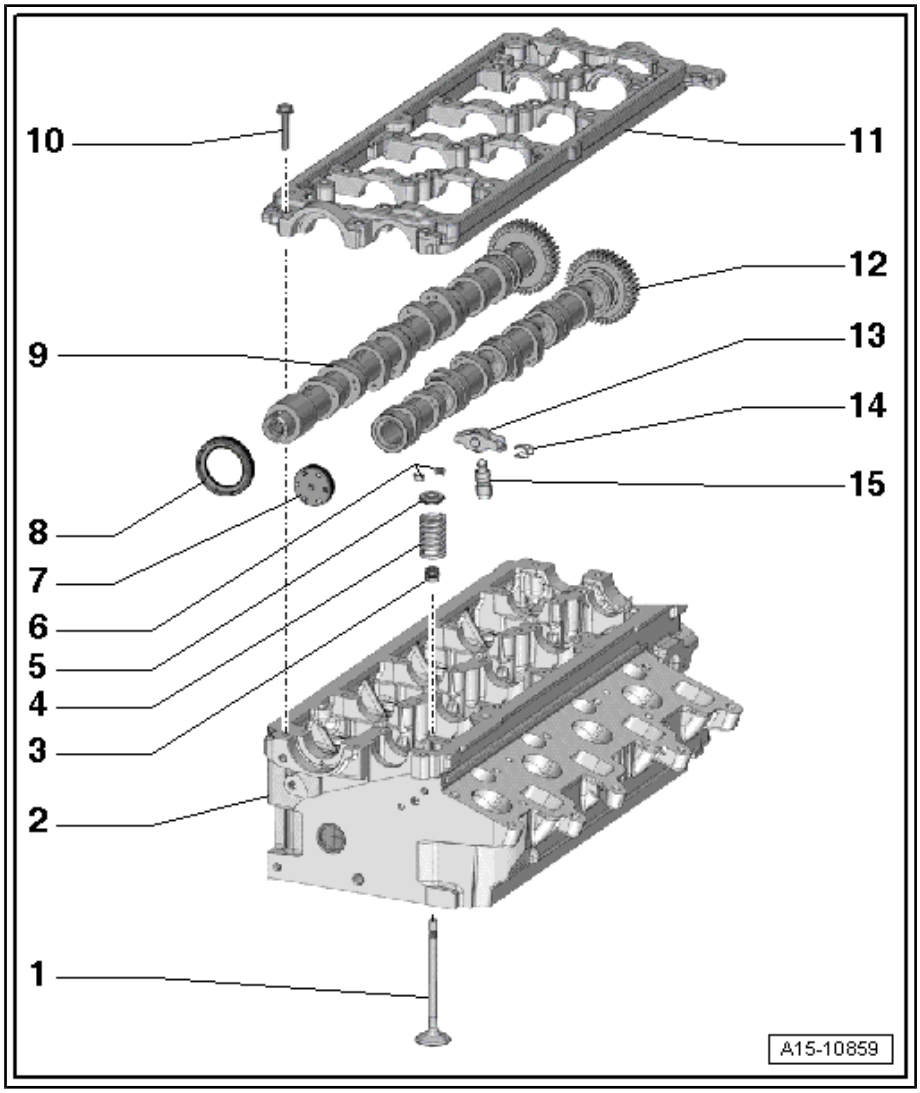
# 2 Valve gear



## 2.1 Assembly overview - valve gear

**Note**

- *After installing the camshafts, the engine must not be cranked or started for about 30 minutes. The hydraulic clearance compensation elements must settle (otherwise the valves would strike the pistons).*
- *After carrying out work on the valve gear, carefully crank engine at least 2 revolutions to ensure that no valve touches the piston when the engine is started.*
- *Always replace gasket rings and seals.*




**1 - Valve**

- ❑ do not rework, only grinding in is permissible
- ❑ mark the fitting position for re-installation
- ❑ Valve dimensions ⇒ page 188
- ❑ inspecting valve guides ⇒ page 188

**2 - Cylinder head**

- ❑ pay attention to the notes ⇒ page 146
- ❑ check for distortion ⇒ page 148
- ❑ wymontowanie i zamontowanie ⇒ page 149
- ❑ after replacing fill entire system with fresh coolant

**3 - Valve stem seal**

- ❑ replace ⇒ page 183

**4 - Valve spring**

**5 - Valve spring retainer**

**6 - Valve collets**

**7 - Screw cap**

- ❑ replace
- ❑ removing: if the bearing frame is built in, insert a screwdriver and lever out
- ❑ Installing: drive flush with suitable thrust piece without sealant

**8 - Sealing ring**

- ❑ Do not additionally lubricate or grease sealing lip of the gasket ring
- ❑ Remove oil residue on the camshaft stud with a clean cloth
- ❑ before fitting cover slot on the camshaft cone with adhesive tape (e.g. Scotch tape).
- ❑ Various versions, observe part numbers ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ replace ⇒ page 175

**9 - Exhaust camshaft**

- ❑ pay attention to different versions according to production date - part number
- ❑ removing and installing ⇒ page 178
- ❑ Measure axial play ⇒ page 182

**10 - Screw**

- ❑ order of tightening ⇒ page 178
- ❑ 10 Nm

**11 - Bearing frame**

- ❑ pay attention to sequence for loosening and tightening ⇒ page 178
- ❑ seal with silicone sealant ⇒ ETKA - Electronic catalogue of original parts

**12 - Inlet camshaft**

- ❑ removing and installing ⇒ page 178

- ❑ Measure axial play ⇒ page 182

**13 - Roller rocker arm**

- ❑ Mark installation position
- ❑ do not interchange
- ❑ Check smooth operation of cylindrical-roller bearings
- ❑ oil contact surfaces

**14 - Locking clip**

- ❑ check for firm seating

**15 - Hydraulic balancing element**

- ❑ Mark installation position
- ❑ oil the contact surfaces before installing

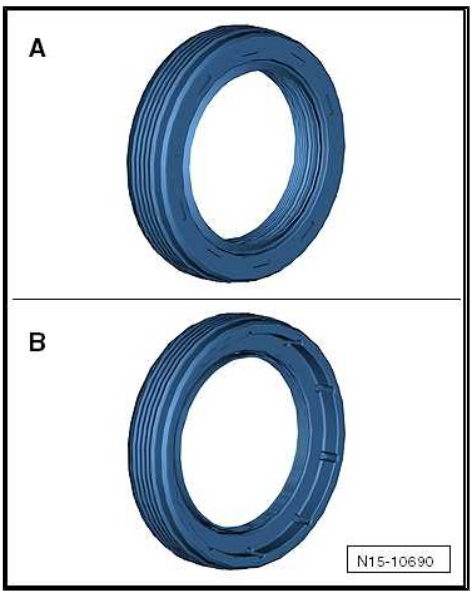
## 2.2 Replacing camshaft gasket ring

⇒ "2.2.1 Vehicles with old gasket ring", page 175

⇒ "2.2.2 Vehicles with new gasket ring", page 176

**Note**

- *A new gasket is used continuously.*
- *Gasket ring "old version" -Position A- forms a blocking surface between the camshaft and cylinder head.*
- *Gasket ring "new version" -Position B- forms a shoulder between the camshaft and cylinder head. Here another work procedure must be performed ⇒ page 176 .*




### 2.2.1 Vehicles with »old« gasket ring

**Special tools and workshop equipment required**

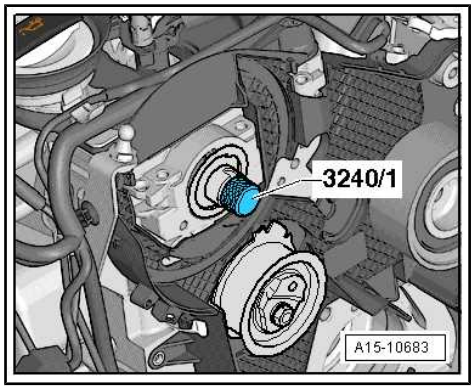
- Insertion tool - MP 1-214 (10-203)-
- Gasket ring extractor - T30003 (3240)-
- Screw M12 x 1.5 x 75 from the insertion tool - MP 1-214 (10-203)-

**Removing**

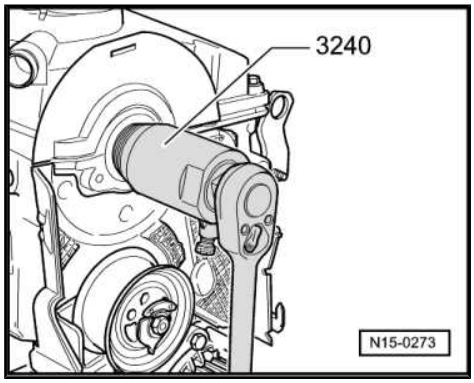
– Pull toothed belt off camshaft sprocket and from toothed belt gear on the high pressure pump ⇒ page 90 .

– Remove camshaft sprocket and hub ⇒ page 178 .

– Insert thrust piece -3240/1- into the camshaft.
– Unscrew inner part of the gasket ring extractor -3240- two turns (approx. 3 mm) out of the outer part and lock with knurled screw.




– Oil the thread head of the gasket ring extractor, position and forcely screw into the gasket ring as far as possible.
– Release knurled screw and turn the inner side against the camshaft until the gasket ring is pulled out.



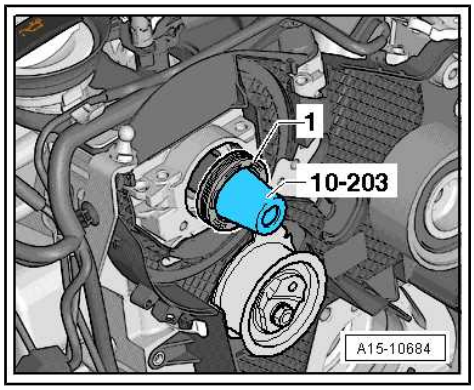

**Install**

– Clean the friction and sealing surface.

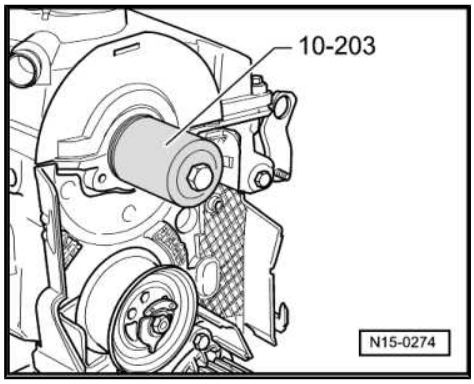
**Note**

*The sealing lip of the gasket ring must neither be oiled nor greased additionally.*

– Fit the guide bushing from -MP 1-214 (10-203)- onto the camshaft as shown in the illustration.
– Carefully slide the gasket ring -1- over the guide bushing onto the camshaft.




– Press in the gasket ring with the thrust piece of the insertion tool - MP 1-214 (10-203)- and the screw M12 x 1.5 x 75 up to the stop.
– Install the hub and the camshaft sprocket ⇒ page 178 .
– Installing the timing belt ⇒ page 90 .




## 2.2.2 Vehicles with »new« gasket ring

**Special tools and workshop equipment required**

- Insertion tool - MP1-214 (10-203)-
- Gasket ring extractor - T10443-

♦ Screw M12 x 1.5 x 75 from the insertion tool - MP1-214 (10-203)-

**Removing**

– Pull toothed belt off camshaft sprocket and from toothed belt gear on the high pressure pump ⇒ page 90 .

– Remove camshaft sprocket and hub ⇒ page 178 .

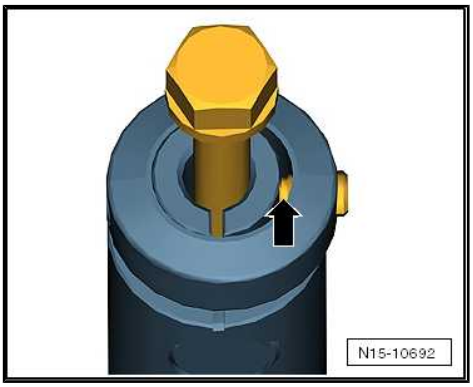
**Caution**

***If it is turned back too much, the inner pressure plate of the gasket ring extractor - T10443- loosens from the pressure screw. In this case, the pressure plate must be pressed onto the pressure screw once again.***

– Turn back the pressure screw of the gasket ring extractor »with fingertip touch« until a slight resistance can be felt.

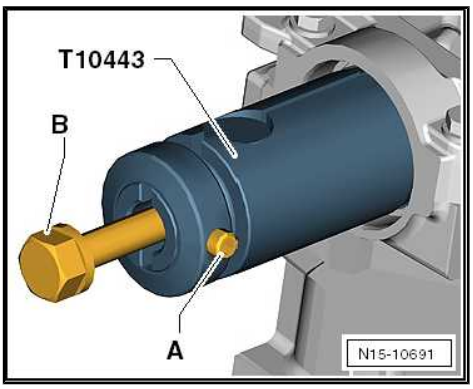
**Note**

*The clamping sleeves of the gasket ring extractor have grub screws. However, the clamping occurs by means of only one of these grub screws -arrow- while the other ones are tightly bolted.*




– Position the gasket ring extractor straight as shown and screw in the grub screw -A- until the gasket ring extractor clamps.

– Screw in the pressure screw -B- until the gasket ring is pulled out.




**Install**

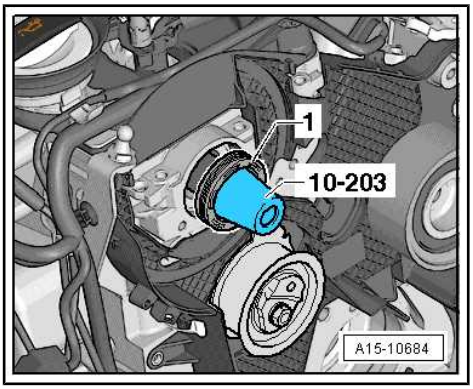
– Clean the friction and sealing surface.

**Note**

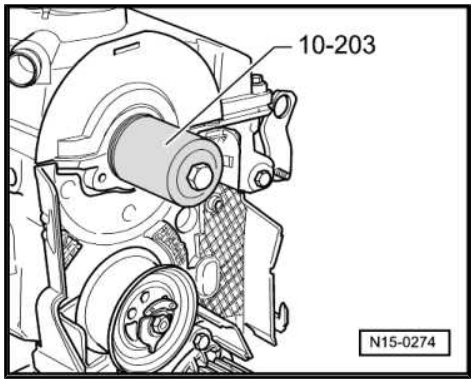
*The sealing lip of the gasket ring must neither be oiled nor greased.*

– Fit guide bushing made out of -MP1-214 (10-203)- on the camshaft as shown in the illustration. The writing on the gasket ring must point outwards.

– Carefully slide the gasket ring -1- over the guide bushing onto the camshaft.



– Press in the gasket ring with the thrust piece of the insertion tool - MP1-214 (10-203)- and the screw M12 x 1.5 x 75 up to the stop.




– Install the hub and the camshaft sprocket ⇒ page 178 .

– Installing the timing belt ⇒ page 90 .

## 2.3 Removing and installing camshafts

**Special tools and workshop equipment required**

- Counterholder - T10051-
- Extractor - T10052-
- Camshaft-insertion tool - T40094-
- Camshaft-insertion tool - T40095-
- Tensioning tool - T40096/1-
- Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**Removing**

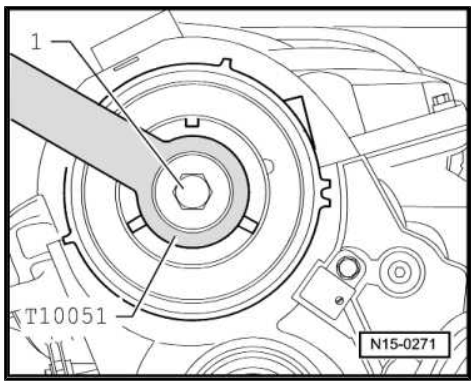
• Cylinder head fitted.

– Pull toothed belt off camshaft sprocket and from toothed belt gear on the high pressure pump ⇒ page 90 .

– Remove cylinder head cover ⇒ page 137 .

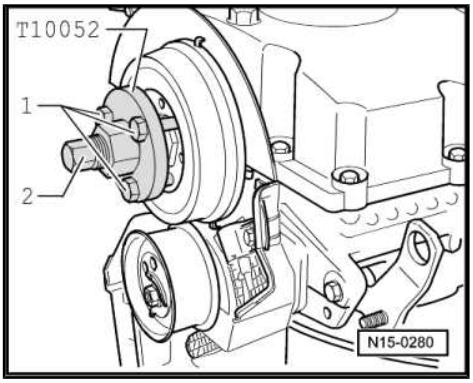
– Remove camshaft sprocket.

– Slacken screw -1- for the hub of the camshaft, to do so counterhold with counterholder - T10051- .

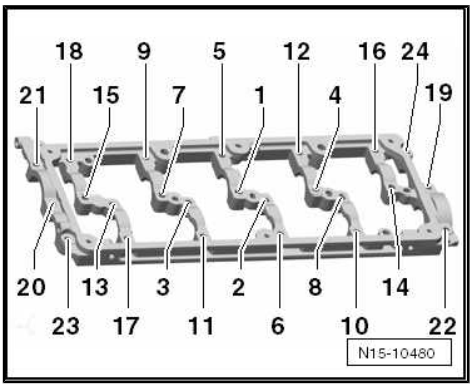



– Release screw by about 2 turns.

– Position the extractor - T10052- at the hub of the camshaft and screw the screws -1- into the hub.
– Screw in the screw -2- for removing the hub of the camshaft and counterhold on the hexagon (with open-end wrench SW 30) of the extractor.
– Remove hub from cone of camshaft.
– Remove vacuum pump ⇒ page 170 .




– Release the bearing frame screws in the order -24...1-.
– Unscrew the screws and carefully loosen the bearing frame from the bonding.
– Mark the camshafts for reinstalling and remove.




**Install**

**WARNING**

***Wear protective gloves and goggles when working with gasket remover and degreasing agent!***

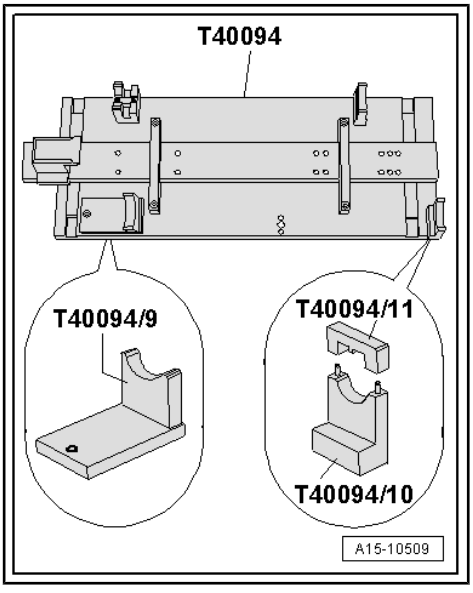
– Remove residual sealant on the bearing frame and cylinder head using a chemical sealant remover.
– Clean sealing surfaces, they must be free of oil and grease.
– Oil contact surfaces of camshafts.

**Caution**

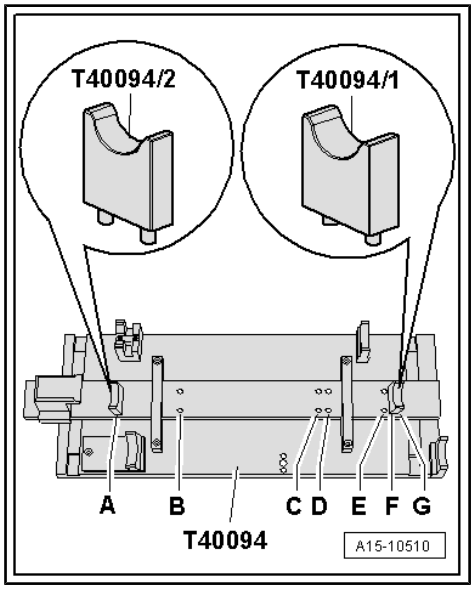
***The camshafts must only be installed using the camshaft-insertion tool - T40094- as described in the following, otherwise the axial bearing in the bearing frame can be destroyed and the cylinder head must be replaced.***

Set up the camshaft-insertion tool - T40094- as follows:

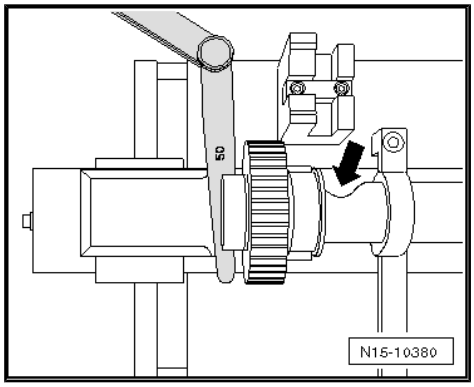
– Tighten the supports -T40094/9- and -T40094/10- (with -T40094/11- ) to the base plate as shown in the illustration. It may be necessary to remove the bolted supports in this location.



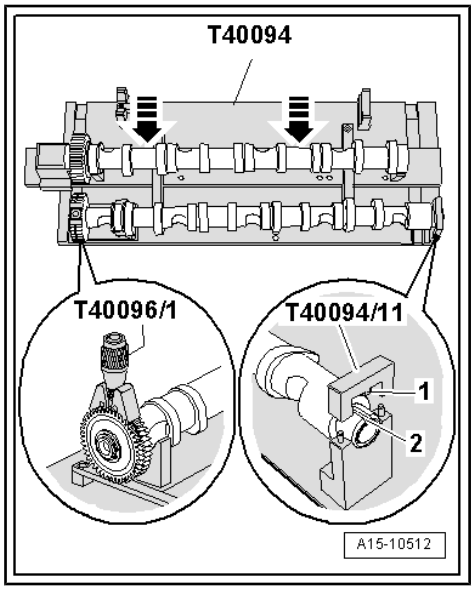
– Position the support -T40094/1- onto the plug location -F- and the support -T40094/2- onto the plug location -A-.
– Insert the inlet camshaft in the supports -T40094/1- and -T40094/2- .




– The protrusion -arrow- of the cylinder head bolt must point to the outside.
– Fit on a feeler gauge of 0.50 mm in order to balance out any play and slide the support -T40094/8- into the groove of the inlet camshaft.




– Insert the outlet camshaft in the supports -T40094/9- and -T40094/11- .
– Interlock the outlet camshaft with the cover -T40094/11- .
• The peg -1- of the cover must engage in the groove -2- in the camshaft.




**Note**

*The tensioning gear at the exhaust camshaft is no longer present as of 02.2010.*

**Engines with tensioning gear**

– Position the tensioning tool -T40096/1- on the serration of the outlet camshaft in such a way that each leg of the tensioning tool engages into each one half-pinion.
• The wider leg must engage in the wider half-pinion.
– Tension the tensioning tool with the knurled wheel until the tooth flanks are flush with each other.

**Continued for all engines**

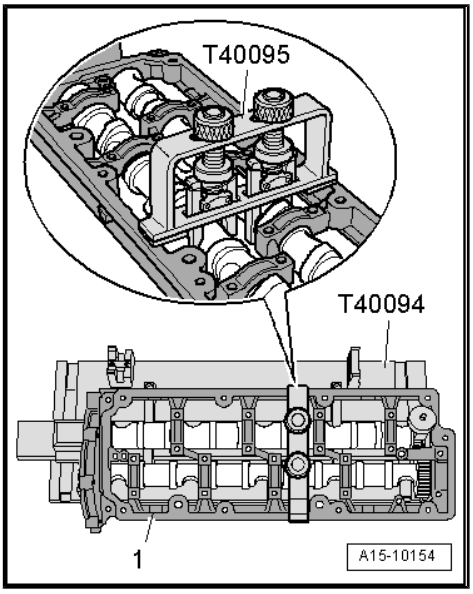
– Slide the inlet camshaft to the outlet camshaft until the serrations are in mesh -arrows-.

– Position the bearing frame -1- onto the camshafts.

• All of the camshaft bearings must rest on the camshafts.

– Position the camshaft-insertion tool - T40095- and fix the camshafts in the bearing frame as shown in the illustration.

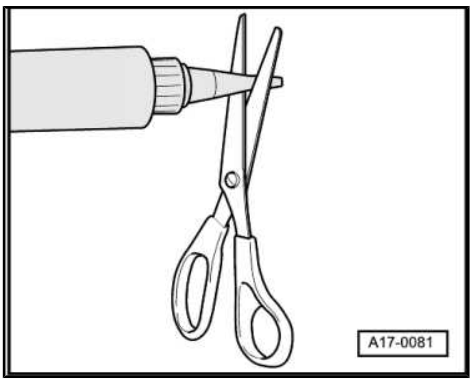
– Remove cover -T40094/11- and move support -T40094/8- from the groove of the inlet camshaft.




**Note**

*Pay attention to the use by date on sealant.*

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 2 mm).



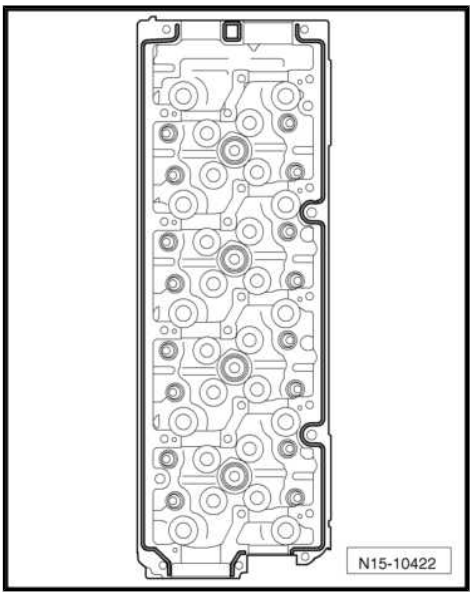

**Caution**

***Risk of contamination of the camshaft bearings through excess sealant.***

♦ *Do not apply thicker sealant beads than indicated.*

– Apply sealant beads onto the clean sealing surfaces of the cylinder head as shown in the illustration.

• Thickness of sealant bead: 2…3 mm.




**Note**

*The bearing frame must be installed within 5 minutes after applying the silicone sealant.*

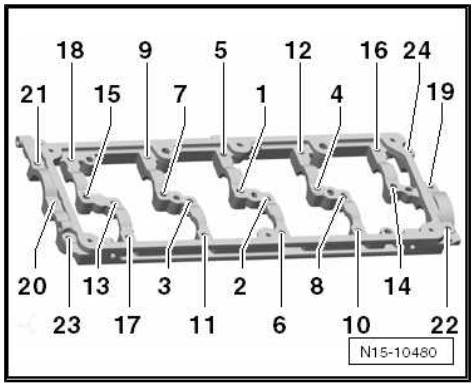
– Remove the camshafts together with the bearing frame, the camshaft-insertion tool - T40095- and the tensioning tool - T40096/1- from the camshaft-insertion tool - T40094- and carefully fit into the cylinder head.

– First of all tighten the screws and the nuts for the bearing frame in the sequence -1°...°24- by hand.

• The bearing frame must rest on the cylinder head with its complete contact surface.

– First of all tighten the screws and the nuts for the bearing frame in the sequence -1°...°24- by hand.

– Remove the camshaft-insertion tool - T40095- and the tensioning tool -T40096/1- .




Installation is carried out in the reverse order. When installing, note the following:

– Install camshaft seal ⇒ page 175 .

– Drive in new screw cap ⇒ page 173 .

– Install vacuum pump ⇒ page 170 .

– Install cylinder head cover ⇒ page 137 .

**Note**

♦ *After installing the camshafts, the engine must not be cranked or started for about 30 minutes. The hydraulic clearance compensation elements must settle (otherwise the valves would strike the pistons).*

♦ *After carrying out work on the valve gear, carefully crank engine at least 2 revolutions to ensure that no valve touches the piston when the engine is started.*

### Tightening torques

♦ ⇒ “2.1 Assembly overview - valve gear”, page 173

## 2.4 Measuring the axial play of the camshafts

### Special tools and workshop equipment required

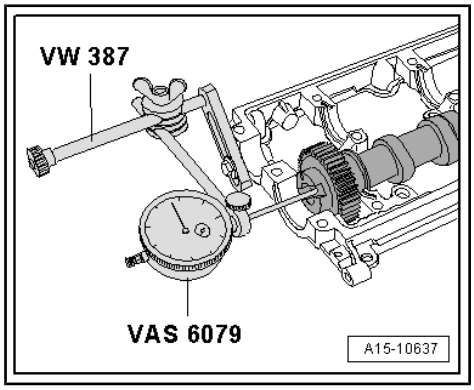
♦ Universal dial gauge holder - MP3-447 (VW 387)-

♦ Dial gauge, e.g. - VAS 6079-

### Work procedure

– Remove bearing frame ⇒ page 178 .

– Attach the dial gauge with the universal dial gauge holder - MP3-447 (VW 387)- to the bearing frame as shown in the illustration.




– Press the camshaft by hand against the dial gauge.

– Position dial gauge to “0”.

– Press the camshaft off the dial gauge and read the value.

Axial play of inlet camshaft and outlet camshaft:

• Specified value: 0.048 ... 0.118 mm

• Wear limit 0.17 mm.

## 2.5 Replacing valve stem seals

⇒ “2.5.1 Replacing valve stem seals, cylinder head installed”, page 183

⇒ “2.5.2 Replacing valve stem seals, cylinder head removed”, page 185

## 2.5.1 Replacing valve stem seals, cylinder head installed

**Special tools and workshop equipment required**

- Valve stem seal extractor - MP 1-230 (3364)-
- Valve stem seal insertion tool - MP 1-233 (3365)-
- Disassembly and assembly device for valve collets - VAS 5161- with spacer -VAS 5161/23-1- and guide plate -VAS 5161/23-

**Work procedure**

– Remove all glow plugs ⇒ page 488 .

– Remove the camshafts ⇒ page 178 .

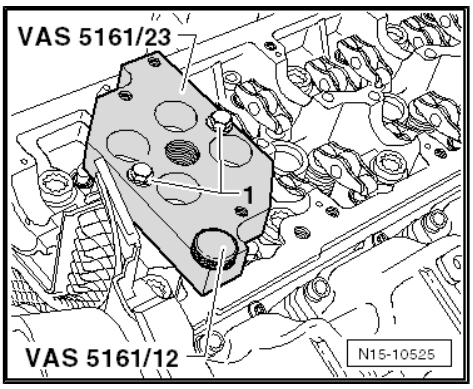
– When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.

– Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.

– Put the piston of the relevant cylinder at “bottom dead centre”.

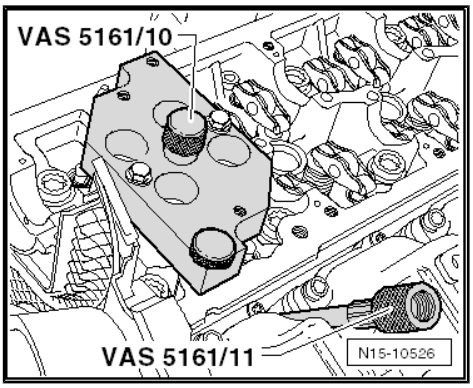
– Position the guide plate -VAS 5161/23- onto the cylinder head.

– Screw the guide plate to the side of the intake manifold with the knurled screw -VAS 5161/12- and to the pin screws with 2 nuts M6 without collar -1- by hand until it fits on tightly.

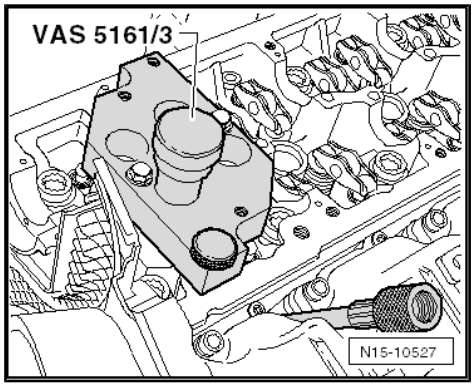



– Screw the sealing bolt -VAS 5161/10- into the guide plate.

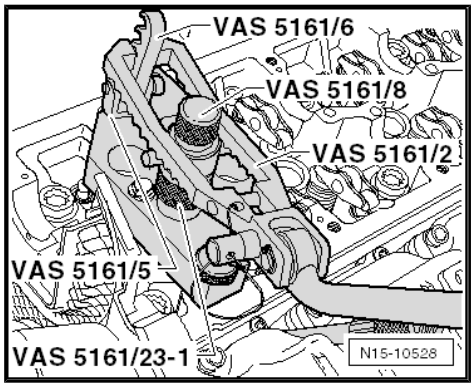
– Screw the adapter -VAS 5161/11- hand-tight into the relevant pencil type glow plug thread.



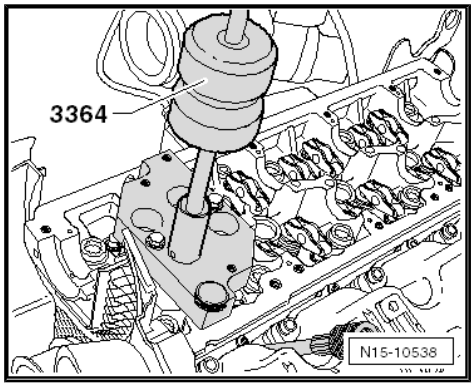
– Insert the impact drift -VAS 5161/3- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.



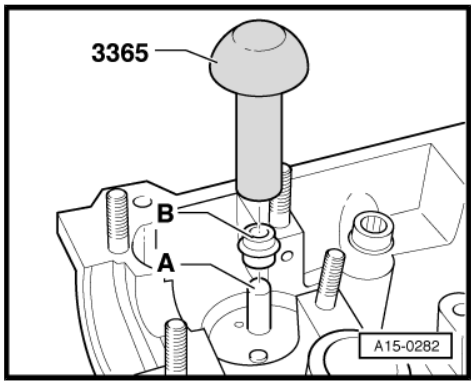

– Screw the detent part -VAS 5161/6- with the interlocking fork -VAS 5161/5- into the guide plate.
– Slide spacer -VAS 5161/23-1- onto the assembly cartridge -VAS 5161/8- .
– Connect the adapter to the compressed air with a commercially available intermediate piece and apply constant pressure.
• Minimum pressure: 0.6 MPa (6 bar) overpressure.
– Hook the pressure fork -VAS 5161/2- onto the detent part and push the assembly cartridge downwards.
– Turn simultaneously the knurled screw of the assembly cartridge to the right, until the tips click into the valve collets.
– Rotate the knurled screw to the left and to the right, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.
– Release the pressure fork.
– Remove assembly cartridge with spacer.
– Remove the valve spring with the valve spring retainer.



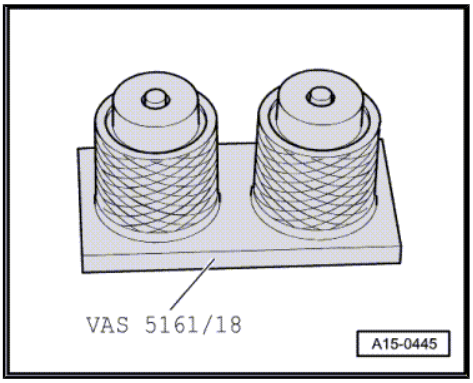

– Pull off valve stem seal with extractor for valve stem seal - 3364- .




– Fit the plastic bushing -A-, which is attached to the new valve stem seals -B-, onto the valve stem.
– Lightly oil sealing lip of the new valve stem seal.
– Slide the valve stem seal onto the plastic bushing.
– Carefully press the valve stem seal with the valve stem seal insertion tool - 3365- onto the valve guide.
– Remove plastic sleeve.



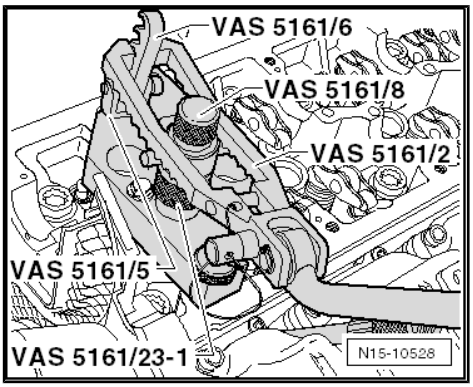
If the valve collets were removed from the assembly cartridge, first of all they must be inserted into the insertion device for valve collets -VAS 5161/18- .




- The large diameter of the valve collets points to the top.

– Insert the valve spring and the valve spring retainer.

– Press the assembly cartridge from the top onto the insertion device for valve collets and lift up the valve collets.




– Re-insert the assembly cartridge into the guide plate - VAS 5161/23- .

– Press down the pressure fork and turn the knurled screw to the left and to the right while pulling it upwards, by doing so the valve collets are inserted.

– Release the pressure fork on tightened knurled screw.

– Repeat the procedure for each valve.

**Assembling**

Installation is performed in the reverse order, pay attention to the following points:

– Ensure that all the roller arms are correctly positioned on the valve stem ends and are clipped in place on the relevant hydraulic balancing elements.

– Install camshafts ⇒ page 178 .

– Install glow plugs ⇒ page 488 .

## 2.5.2 Replacing valve stem seals, cylinder head removed

**Special tools and workshop equipment required**

- ♦ Valve stem seal extractor - MP 1-230 (3364)-
- ♦ Valve stem seal insertion tool - MP 1-233 (3365)-
- ♦ Disassembly and assembly device for valve collets - VAS 5161- with guide plate -VAS 5161/23- and spacer bush -VAS 5161/23-1-
- ♦ Engine and gearbox support - VAS 6095-
- ♦ Cylinder head tensioning device - VAS 6419-
- ♦ 2x screw M6 x 30

**Work procedure**

– Remove the camshaft housing ⇒ page 178 .

– When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.

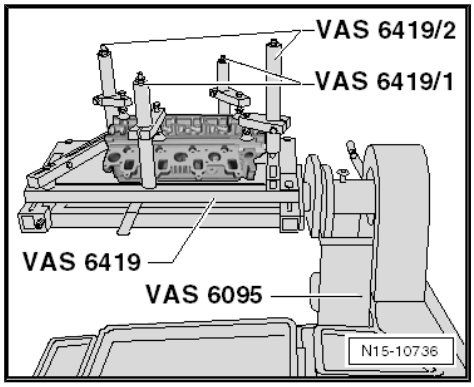
– Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.

– Insert the cylinder head tensioning device - VAS 6419- into the engine and gearbox jack - VAS 6095- .

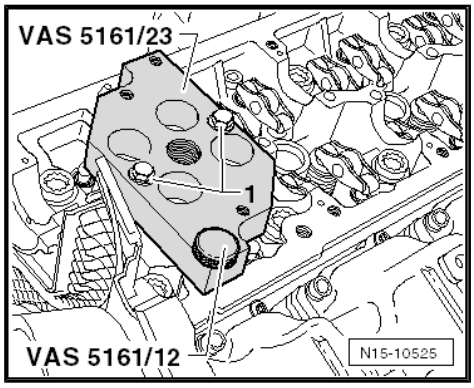
– Tension cylinder head in the cylinder head tensioning device - VAS 6419- according to the operating manual.

The cylinder head tensioning device - VAS 6419- operating manual is with the device.

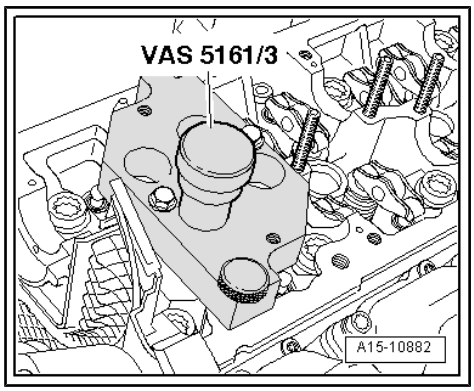
– Connect cylinder head tensioning device to compressed air.
– Adjust the air bellows with the lever below the combustion chamber on which the valve stem seals should be removed.
– Allow just enough air to flow into the air bag so that it applied to the valve disc.



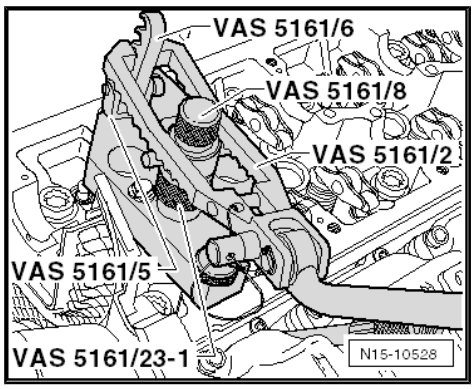

– Position the guide plate -VAS 5161/23- onto the cylinder head.
– Screw on guide plate with knurled screw -VAS 5161/12- and 2 M6 x 30 screws hand-tight until contact is made.



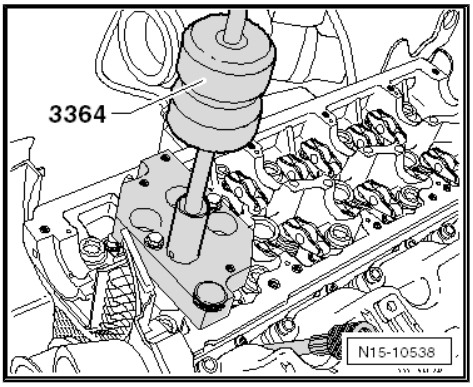

– Insert the impact drift -VAS 5161/3- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.




– Screw the detent part -VAS 5161/6- with the interlocking fork -VAS 5161/5- into the guide plate.
– Slide spacer -VAS 5161/23-1- onto the assembly cartridge - VAS 5161/8- .
– Hook the pressure fork -VAS 5161/2- onto the detent part and push the assembly cartridge downwards.
– Turn simultaneously the knurled screw of the assembly cartridge to the right, until the tips click into the valve collets.
– Rotate the knurled screw to the left and to the right, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.
– Release the pressure fork.
– Remove assembly cartridge with spacer.
– Remove the valve spring with the valve spring retainer.



– Pull off valve stem seal with extractor for valve stem seal - 3364- .

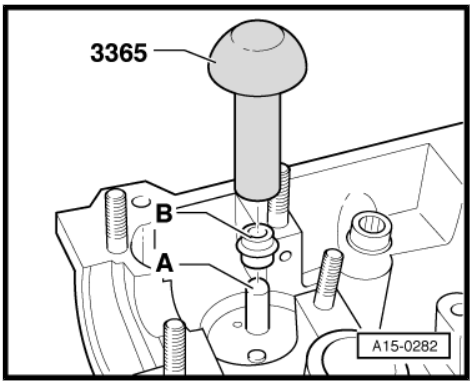



**Caution**

*Risk of damage when installing the valve stem seals.*

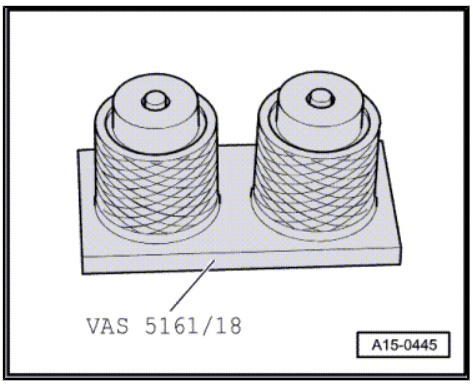
*Fit the plastic bushing -A-, which is attached to the new valve stem seals -B-, onto the valve stem.*

– Lightly oil sealing lip of the new valve stem seal.
– Slide the valve stem seal onto the plastic bushing.
– Carefully press the valve stem seal with the valve stem seal insertion tool - 3365- onto the valve guide.
– Remove plastic sleeve.

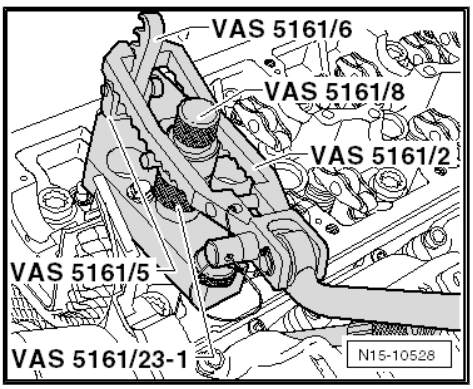



If the valve collets were removed from the assembly cartridge, first of all they must be inserted into the insertion device - VAS 5161/18- .

• The large diameter of the valve collets points to the top.
– Insert the valve spring and the valve spring retainer.
– Press the assembly cartridge from the top onto the insertion device for valve collets and lift up the valve collets.




– Re-insert the assembly cartridge into the guide plate - VAS 5161/23- .
– Press down the pressure fork and turn the knurled screw to the left and to the right while pulling it upwards, by doing so the valve collets are inserted.
– Release the pressure fork on tightened knurled screw.
– Repeat the procedure for each valve.

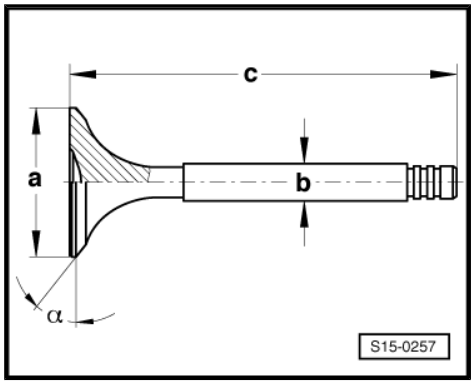



### Assembling

Install in the reverse order of removal. When doing this, note the following:

– Ensure that all the roller arms are correctly positioned on the valve stem ends and are clipped in place on the relevant hydraulic balancing elements.
– Install camshafts ⇒ page 178 .

## 2.6 Valve dimensions




**For engine with identification characters CAYA, CAYB, CAYC, CLNA**

| Dimension | | Inlet valve | Exhaust valve |
|---|---|---|---|
| ∅ a | mm | 26.50 ... 26.70 | 24.40 ... 24.60 |
| ∅ b | mm | 5.968 ... 5.982 | 5.958 ... 5.972 |
| c | mm | 99.30 | 99.10 |
| α | ∠° | 45 | 45 |

**Note**

*Valves must not be reworked. Only lapping-in is permitted.*

**For engine with identification characters CWXB**

| Dimension | | Inlet valve | Exhaust valve |
|---|---|---|---|
| ∅ a | mm | 24.00 ... 24.20 | 21.90 ... 22.10 |
| ∅ b | mm | 5.968 ... 5.982 | 5.958 ... 5.972 |
| c | mm | 99.30 | 99.10 |
| α | ∠° | 45 | 45 |

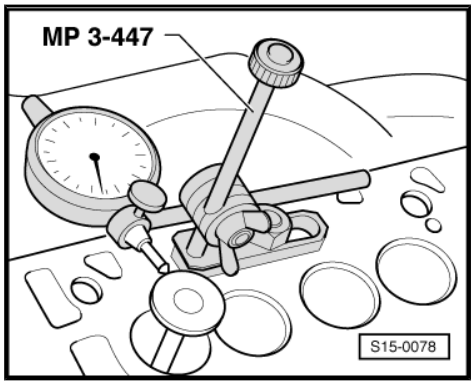
**Note**

*Valves must not be reworked. Only lapping-in is permitted.*

## 2.7 Inspect valve guides

**Special tools and workshop equipment required**

- Universal dial gauge holder - MP 3-447 (VW 387)-
- Dial gauge




**Test sequence**

**Note**

*If the valves are replaced when carrying out repair work, use new valves for the measurement.*

– Insert valve into valve guide. The end of valve stem must be flush with guide.

• Valve rock: maximum 1.3 mm

**Note**

*If the wear limit is exceeded, repeat measurement with new valves. If the wear limit is again exceeded, replace cylinder head. The valve guides cannot be replaced.*

# 17 – Lubrication

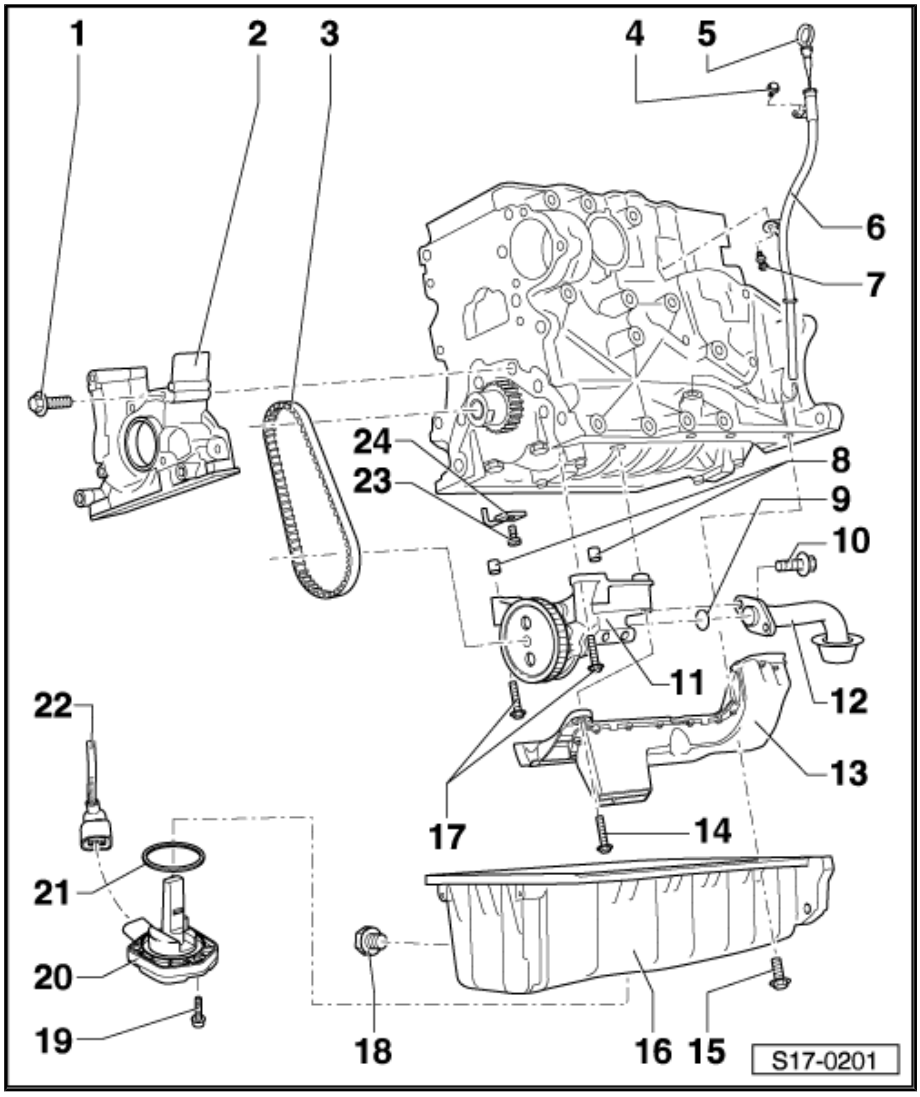
## 1 Removing and installing parts of the lubrication system



### 1.1 Removing and installing parts of the lubrication system - Summary of components

**Note**

- *If considerable quantities of metal swarf as well as abrasion is found in the engine oil when carrying out engine repairs, carefully clean the oil galleries in order to avoid consequential damage and additionally replace the oil injection nozzles and the engine oil cooler as well as the oil filter element.*
- *Oil spray nozzle and pressure relief valve ⇒ page 133*




**1 - Screw**
- ❑ 15 Nm

**2 - Sealing flange on the belt pulley side**
- ❑ must be positioned on dowel sleeves
- ❑ removing and installing ⇒ page 117
- ❑ Replace crankshaft seal on belt pulley side ⇒ page 115

**3 - Toothed belt for oil pump**
- ❑ check for wear and damage, replace if necessary

**4 - Screw**
- ❑ 10 Nm

**5 - Dipstick**
- ❑ oil level must not exceed max. marking

**6 - Guide tube**

**7 - Clip**

**8 - Dowel sleeves**

**9 - O-ring**
- ❑ replace

**10 - Screw**
- ❑ 10 Nm

**11 - Oil pump**
- ❑ before installing, check whether both dowel sleeves are present
- ❑ if there is any scoring on the contact surfaces of the gears, replace
- ❑ Tightening torque of oil pump cover on oil pump housing: 10 Nm

**12 - Intake manifold**
- ❑ Clean strainer if dirty

**13 - Baffle**

**14 - Screw**
- ❑ 15 Nm

**15 - Screw**
- ❑ 13 Nm

**16 - Oil pan**
- ❑ wymontowanie i zamontowanie ⇒ page 204
- ❑ install with silicone sealant ⇒ ETKA - Electronic catalogue of original parts

**17 - Screw**
- ❑ 16 Nm

**18 - Drain screw**
- ❑ with integrated gasket ring
- ❑ replace
- ❑ 30 Nm

**19 - Screw**

- ❑ replace
- ❑ 10 Nm

**20 - Oil level and oil temperature sender - G266-**

- ❑ check ⇒ Vehicle diagnostic tester

**21 - O-ring**

- ❑ replace

**22 - Wiring loom to oil level and oil temperature sender**

**23 - Pressure relief valve**

- ❑ opens at 0.25..0.32 MPa (2.5..3.2 bar) overpressure
- ❑ replace without sealant
- ❑ removing and installing ⇒ page 133
- ❑ 27 Nm

**24 - Oil injection nozzle**

- ❑ for piston cooling
- ❑ removing and installing ⇒ page 133

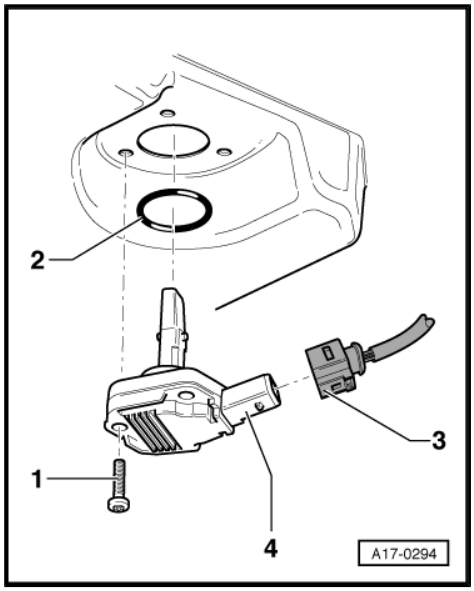
## 1.2 Removing and installing oil level and oil temperature sender - G266-

**Removing**

– Drain engine oil:

- ♦ ⇒ Maintenance ; Booklet Fabia II .
- ♦ ⇒ Maintenance ; Booklet Roomster .
- ♦ ⇒ Maintenance ; Booklet Octavia II .
- ♦ ⇒ Maintenance ; Booklet Superb II .
- ♦ ⇒ Maintenance ; Booklet Yeti .
- ♦ ⇒ Maintenance ; Booklet Rapid Indie .
- ♦ ⇒ Maintenance ; Booklet Rapid NH .

– Separate plug connection -3-.
– Release screws -1- and remove oil level and oil temperature sender - G266- -4-.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace gasket ring -2- and screws -1-.*

– Top up with engine oil and check the oil level:
- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .

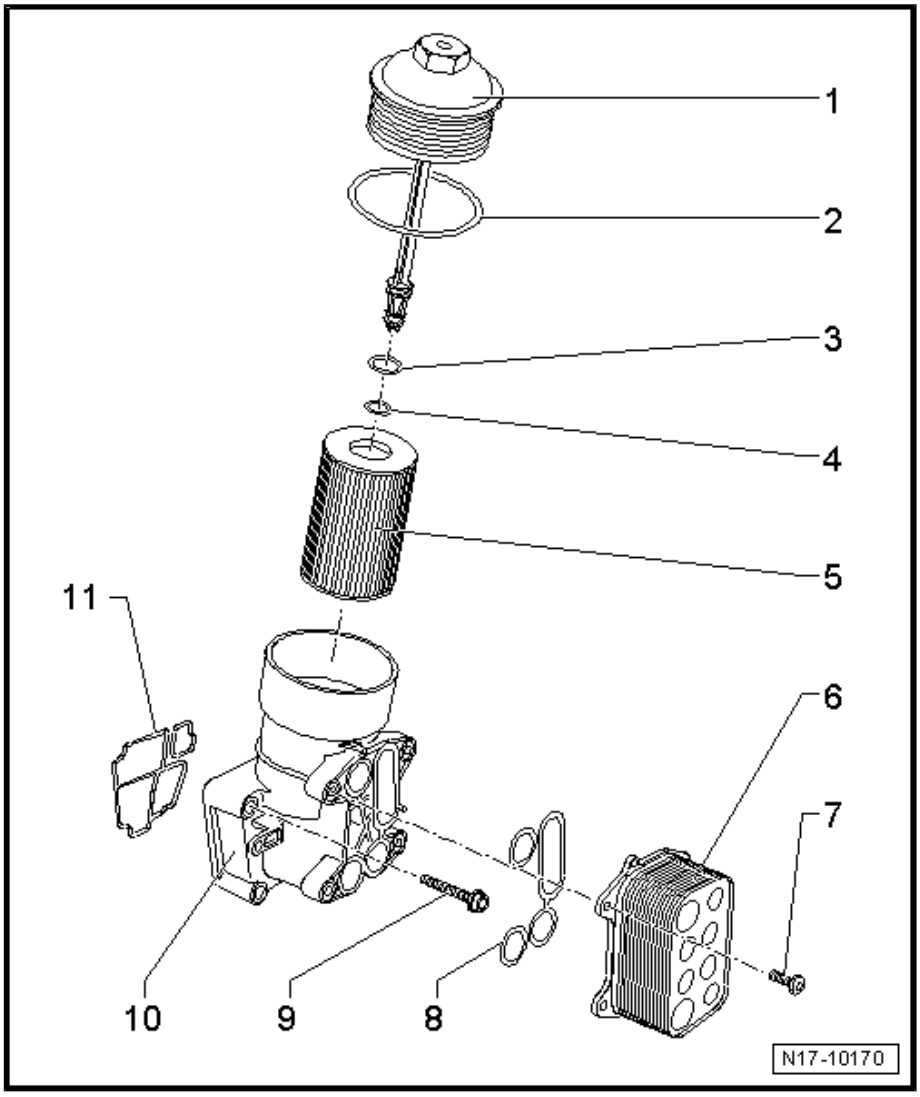
**Tightening torques**

- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

## 1.3 Oil filter holder - Summary of components

**Note**

- *If considerable quantities of metal swarf as well as abrasion is found in the engine oil when carrying out engine repairs, carefully clean the oil galleries in order to avoid consequential damage and additionally replace the oil injection nozzles and the engine oil cooler as well as the oil filter element.*
- *Oil spray nozzle and pressure relief valve ⇒ page 133 .*




**1 - Screw cap**

- ❑ slacken and tighten with oil filter wrench - 3417-
- ❑ 25 Nm

**2 - O-ring**

- ❑ replace

**3 - O-ring**

- ❑ replace

**4 - O-ring**

- ❑ replace

**5 - Oil filter element**

- ❑ pull off from cap -Pos. 1-
- ❑ when replacing the oil filter element, replace the O-rings Pos. -2-, -3- and -4-
- ❑ Check fitting position
- ❑ Pay attention to change intervals:

- ♦ ⇒ Maintenance ; Booklet Fabia II
- ♦ ⇒ Maintenance ; Booklet Roomster
- ♦ ⇒ Maintenance ; Booklet Octavia II
- ♦ ⇒ Maintenance ; Booklet Superb II
- ♦ ⇒ Maintenance ; Booklet Yeti
- ♦ ⇒ Maintenance ; Booklet Rapid Indie
- ♦ ⇒ Maintenance ; Booklet Rapid NH .

**6 - Engine oil cooler**

- ❑ connection diagram for coolant hoses ⇒ page 218

**7 - Screw**

- ❑ 11 Nm

**8 - Gasket**

- ❑ replace

**9 - Screw**

- ❑ replace
- ❑ tighten crosswise
- ❑ Tightening torques and -order ⇒ page 194

**10 - Oil filter holder**

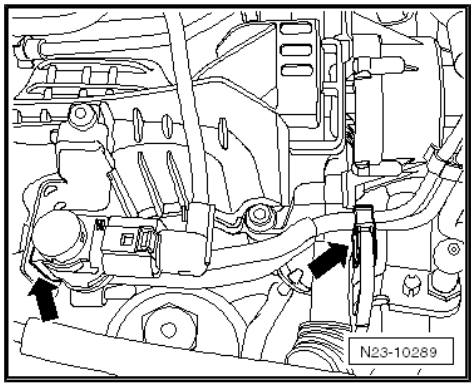
- ❑ with integrated return-flow check tube
- ❑ cannot be replaced individually
- ❑ wymontowanie i zamontowanie ⇒ page 194

**11 - Gasket**

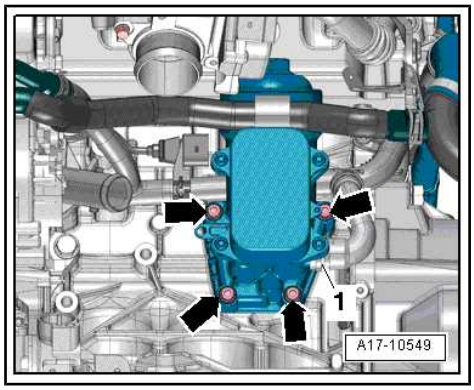
- ❑ replace

**Note**

*To change the oil filter, unclip the vacuum lines -arrows- and lay them aside.*




**Oil filter holder, tightening torques and tightening sequence**



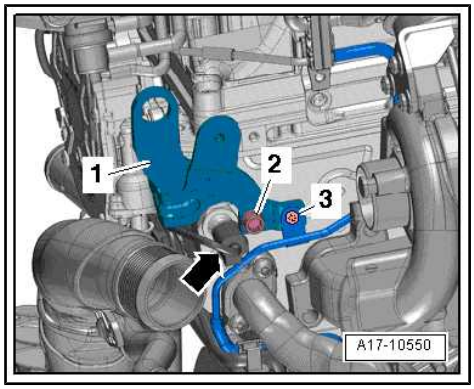

**Note**

*Replace screws for oil filter holder.*

– First of all insert the screw at the top left and at the bottom right.
– Tighten the screws in two stages:

| Stage | Bolts | Torque/torquing angle |
|---|---|---|
| 1. | -Arrows- | 14 Nm |
| 2. | -Arrows- | 180° ($^1/_2$ turn) |

**Oil pressure switch - F1-**




- with gasket
- Replace gasket rings
- Switching pressure 0.03 ... 0.06 MPa (0.3 ... 0.6 bar)
- removing and installing ⇒ page 201
- check ⇒ page 212
- 20 Nm

## 1.4 Removing and installing the oil filter holder with the engine oil cooler

⇒ "1.4.1 Removing and installing oil filter holder with engine oil cooler (Fabia II, Roomster, Rapid India, Rapid NH)", page 194

⇒ "1.4.2 Removing and installing oil filter holder with engine oil cooler (Octavia II, Superb II, Yeti)", page 197

## 1.4.1 Removing and installing oil filter holder with engine oil cooler (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Assembly device - T10118-
- Catch pan , e.g. -VAS 6208-
- Removal tool for inner lining of the door panel - MP8-602/1-

- Old oil collecting and suction equipment , e.g. -V.A.G 1782-
- Pliers for spring strap clamps

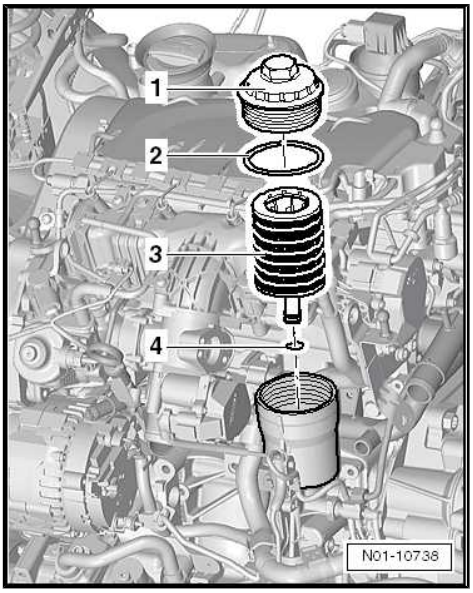
**Removing**

– Remove engine cover ⇒ page 10 .

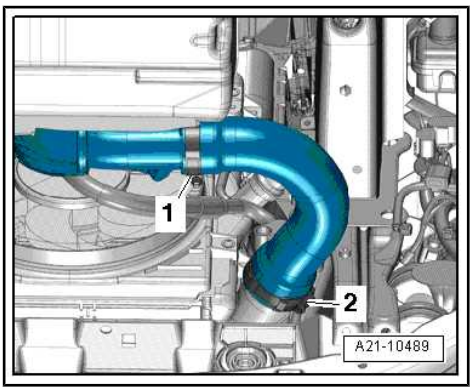
– Drain coolant ⇒ page 223 .

– Remove oil filter insert -3-:

- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .



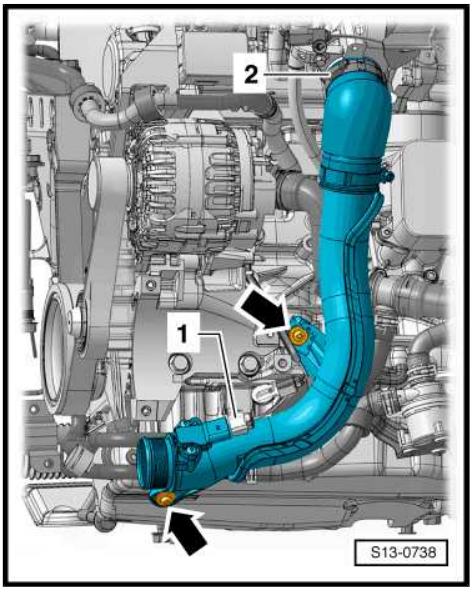

– Remove the charge air hose, to do so slacken the hose clamps -1- and -2-.



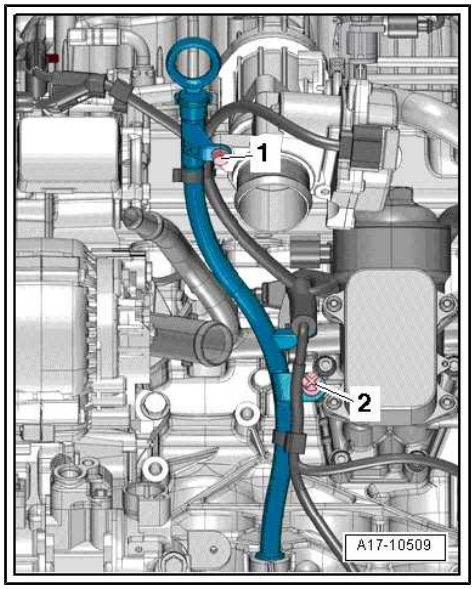

– Release screws -arrows-.

– Loosen hose clamp -2-.

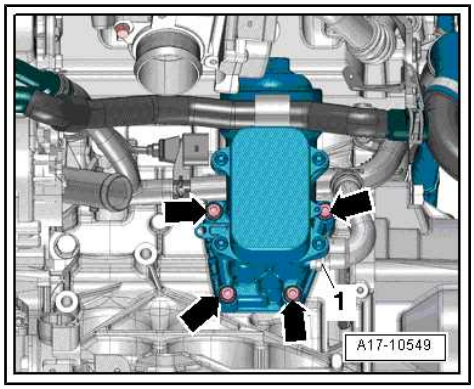
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.



– Slightly pull out oil dipstick, unscrew screw -1-.
– Press off clip -2- with removal tool for inner lining of the door panel - MP8-602/1- .
– Pull out the oil dipstick guide pipe upwards out of the cylinder block and push it to the side.
– Position the catch pan , e.g. -VAS 6208- , under the engine.




– Remove coolant hose - to do so, undo the hose clamp -1-.
– Place an old oil collecting and suction equipment - V.A.G 1782- under the engine.
– Release screws -arrows- and remove oil filter holder with engine oil cooler.




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Replace gaskets, gasket rings and O-rings.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with prescribed clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Observe the assembly instruction for hose connections with screw clamps ⇒ page 372 .*

– Install oil filter insert, fill with engine oil and check the oil level:

- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .

– Top up or replace coolant if the engine oil cooler was replaced ⇒ page 223 .

### Tightening torques

- ⇒ “1.3 Oil filter holder - Summary of components”, page 192
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

## 1.4.2 Removing and installing oil filter holder with engine oil cooler (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Assembly device - T10118-
- Catch pan , e.g. -VAS 6208-
- Removal tool for inner lining of the door panel - MP8-602/1-
- Old oil collecting and suction equipment , e.g. -V.A.G 1782-
- Pliers for spring strap clamps

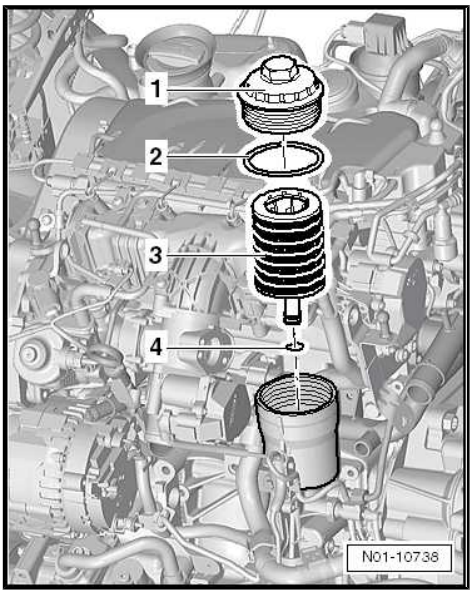
**Removing**

– Drain coolant ⇒ page 223 .

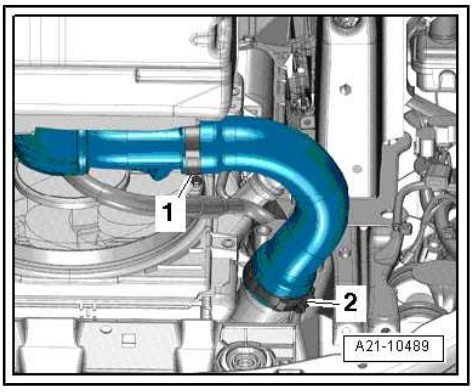
– Remove air filter housing ⇒ page 426 .

– Remove oil filter insert -3-:

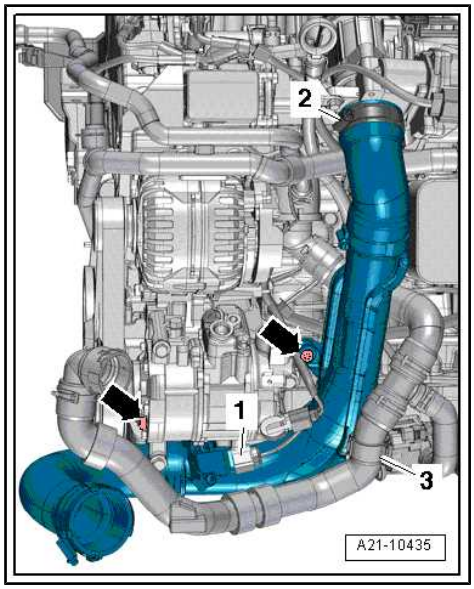
- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .



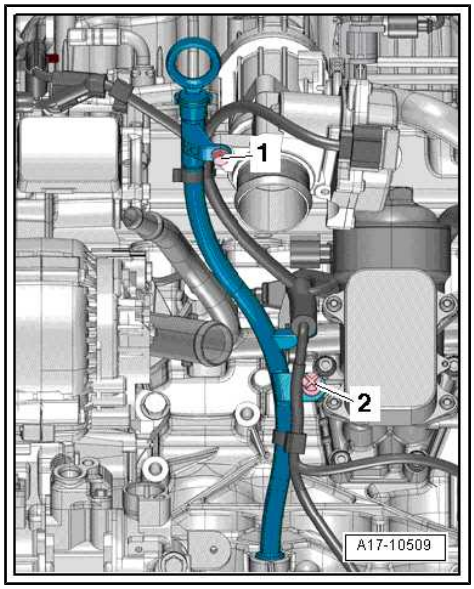

– Remove the charge air hose, to do so slacken the hose clamps -1- and -2-.



– Release screws -arrows-.
– Expose coolant hose -3-.
– Loosen hose clamp -2-.
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.



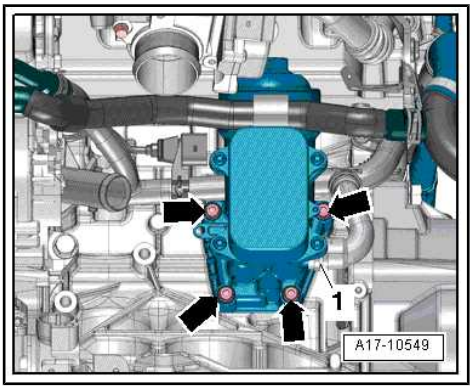

– Slightly pull out oil dipstick, unscrew screw -1-.
– Press off clip -2- with removal tool for inner lining of the door panel - MP8-602/1- .
– Pull out the oil dipstick guide pipe upwards out of the cylinder block and push it to the side.
– Position the catch pan , e.g. -VAS 6208- , under the engine.



– Remove coolant hose - to do so, undo the hose clamp -1-.

– Place an old oil collecting and suction equipment - V.A.G 1782- under the engine.

– Screw out screws -arrows- and remove oil filter holder with engine oil cooler.




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Replace gaskets, gasket rings and O-rings.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with prescribed clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Observe the assembly instruction for hose connections with screw clamps ⇒ page 372 .*

– Install oil filter insert, fill with engine oil and check the oil level:

- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .

– Top up or change coolant if the engine oil cooler was replaced ⇒ page 223 .

### Tightening torques

- ⇒ “1.3 Oil filter holder - Summary of components”, page 192
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

## 1.5 Removing and installing engine oil cooler

### Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Old oil collecting and suction equipment , e.g. -V.A.G 1782-
- Pliers for spring strap clamps

### Removing

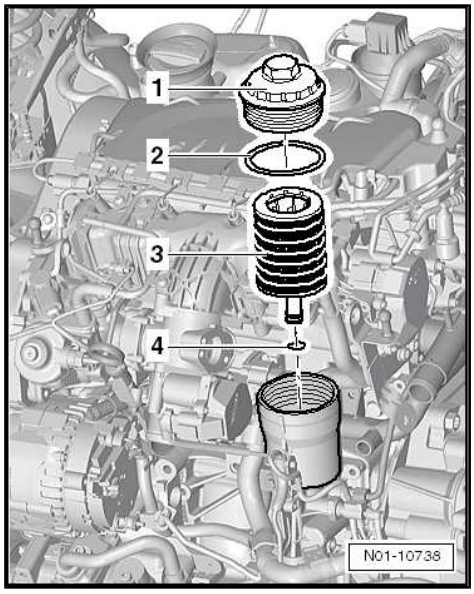
– Remove engine cover ⇒ page 10 .

– Drain coolant ⇒ page 223 .

– Remove air filter housing ⇒ page 426 .

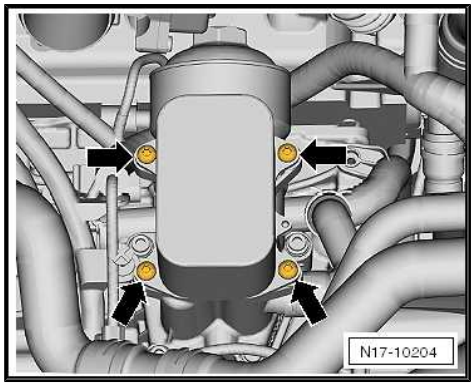
– Remove oil filter insert -3-:

- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .




– Release screws -arrows-.

– Take the engine oil cooler out of the housing.




**Install**

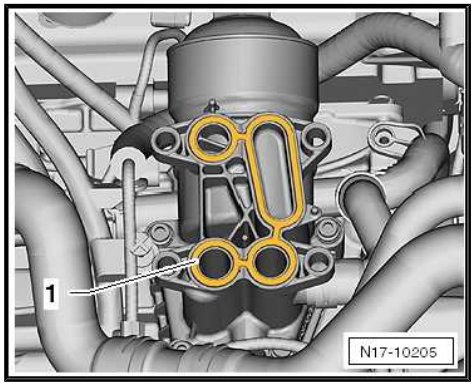
Installation is performed in the reverse order, pay attention to the following points:

**Note**

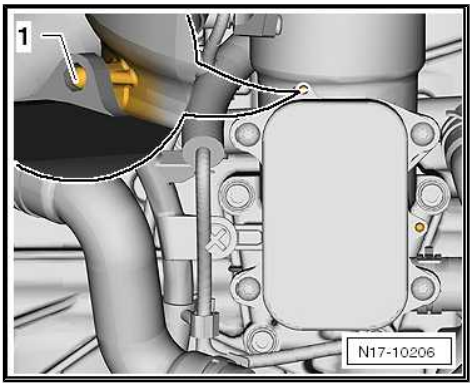
- *Replace gaskets, gasket rings and O-rings.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *The hose connections are secured with spring-type clips. In the event of repairs only use spring-type clips.*

– Insert new gaskets -Pos. 8- ⇒ page 192 -1- in the supports of the oil filter holder.

– Carefully position the engine oil cooler onto the dowel sleeves.

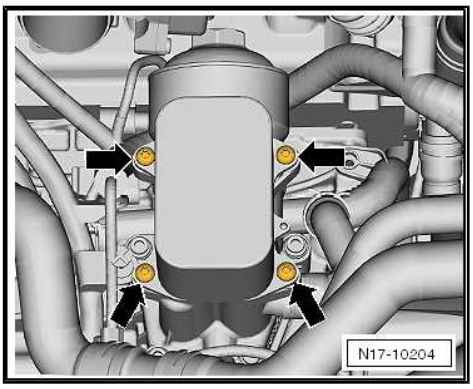


– Push the engine oil cooler on the ends of the dowel sleeves -1-.
– Insert new screws and screw in up to the stop.




– Tighten the screws -arrows- crosswise in 3 stages:

| Stage | Screws | Tightening torque |
|---|---|---|
| 1. | -Arrows- | only tighten by hand |
| 2. | -Arrows- | 5 Nm |
| 3. | -Arrows- | 11 Nm |




– Install oil filter insert, fill with engine oil and check the oil level:

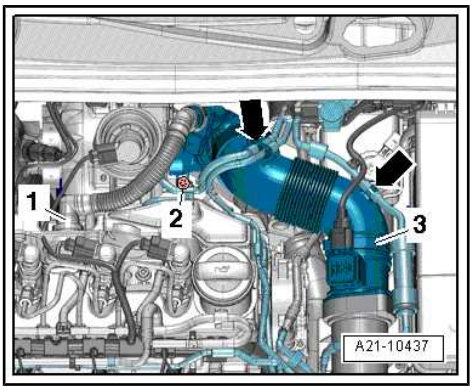
♦ ⇒ Maintenance ; Booklet Fabia II .
♦ ⇒ Maintenance ; Booklet Roomster .
♦ ⇒ Maintenance ; Booklet Octavia II .
♦ ⇒ Maintenance ; Booklet Superb II .
♦ ⇒ Maintenance ; Booklet Yeti .
♦ ⇒ Maintenance ; Booklet Rapid Indie .
♦ ⇒ Maintenance ; Booklet Rapid NH .

– Top up or change coolant if the engine oil cooler was replaced ⇒ page 223 .

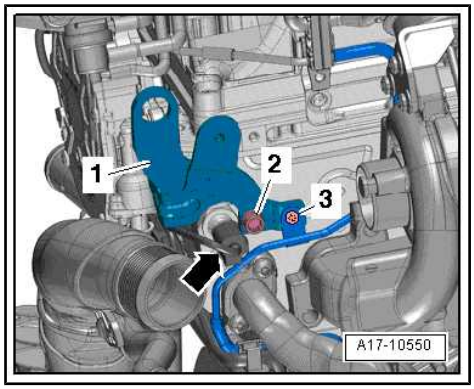
## 1.6 Removing and installing oil pressure switch - F1-

### Removing

– Remove engine cover ⇒ page 10 .
– Remove the hose for the crankcase ventilation -1-, to do so press together the release buttons.
– Release vacuum hoses -arrows-.
– Slacken hose clamp -3- and remove air guide pipe from air filter housing.
– Release screw -2-, swivel suction hose with connection fitting towards the rear and detach from exhaust gas turbocharger.



– Release screws -2- and -3- and remove engine lifting eye -1-.
– Disconnect plug connection -arrow-.
– Screw out oil pressure switch - F1- .




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Replace gasket ring.*

– Install inlet connection.
– Install vacuum line.

**Tightening torques**

◆ ⇒ “1.3 Cylinder head - summary of components”, page 146

## 1.7 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support

⇒ “1.7.1 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support (Fabia II, Roomster, Rapid India, Rapid NH)”, page 202

⇒ “1.7.2 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support (Octavia II, Superb II, Yeti)”, page 204

### 1.7.1 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support (Fabia II, Roomster, Rapid India, Rapid NH)

**1 - Screw**
- ❑ 20 Nm

**2 - Union nut**
- ❑ for oil feed line at exhaust gas turbocharger
- ❑ 22 Nm

**3 - Oil feed line**

**4 - Oil return-flow line**
- ❑ Replace gasket

**5 - Screw**
- ❑ 20 Nm

**6 - Screw**
- ❑ replace
- ❑ 25 Nm

**7 - Connection pipe to exhaust gas recirculation radiator**
- ❑ Replace gasket

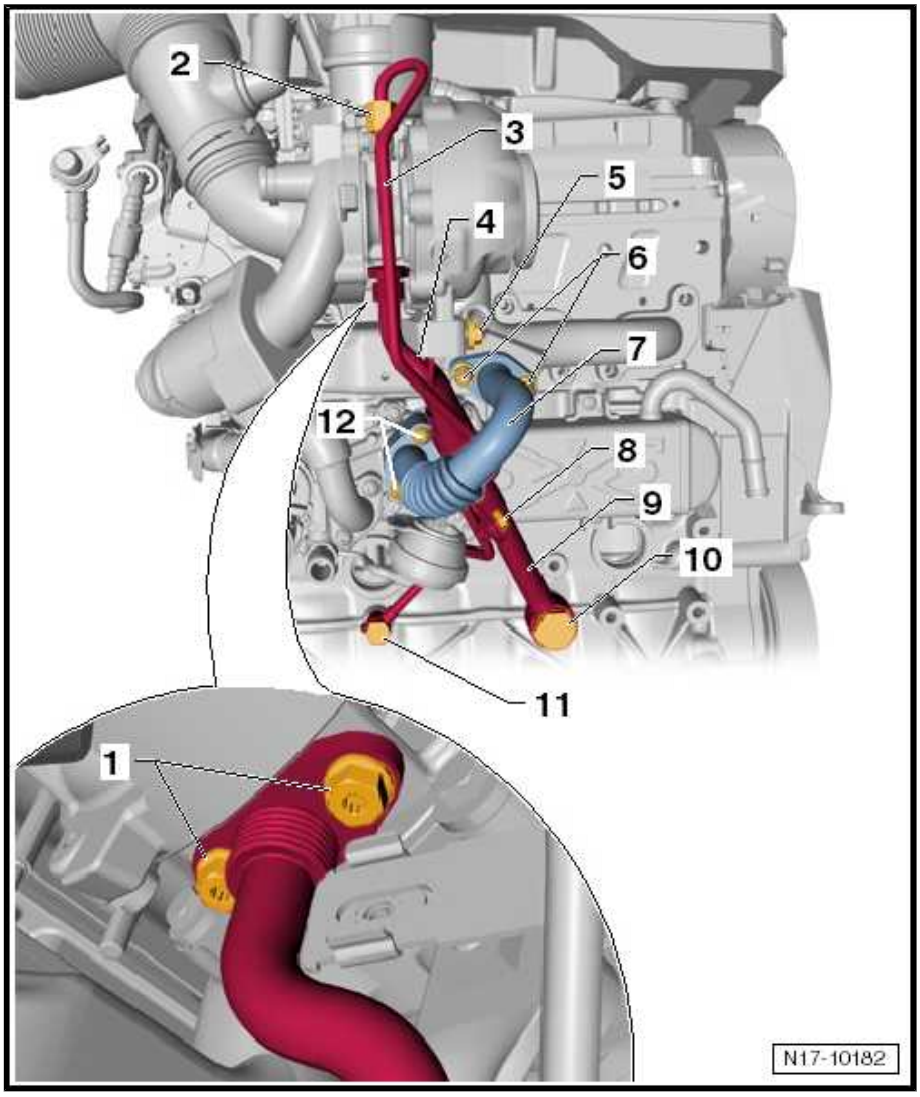
**8 - Screw**
- ❑ 10 Nm

**9 - Support**
- ❑ for exhaust gas turbocharger

**10 - Hollow screw**
- ❑ replace
- ❑ 60 Nm

**11 - Hollow screw**
- ❑ replace
- ❑ Replace gasket rings
- ❑ 30 Nm

**12 - Screw**
- ❑ replace
- ❑ 25 Nm



## 1.7.2 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support (Octavia II, Superb II, Yeti)

**1 - Screw**
- ❑ 20 Nm

**2 - Oil feed line**

**3 - Oil return-flow line**
- ❑ Replace gasket

**4 - Screw**
- ❑ 25 Nm

**5 - Screw**
- ❑ replace
- ❑ 20 Nm

**6 - Connection pipe to exhaust gas recirculation radiator**
- ❑ Replace gasket

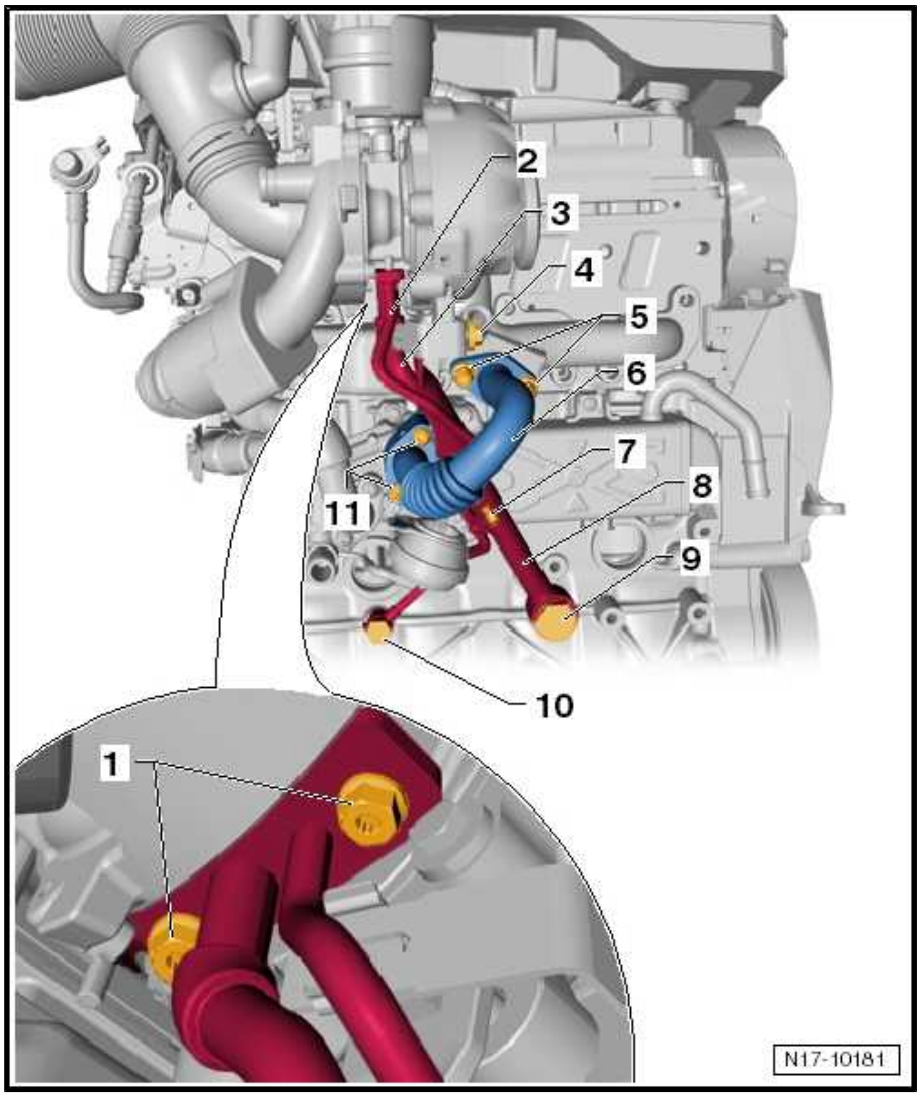
**7 - Screw**
- ❑ 10 Nm

**8 - Support**
- ❑ for exhaust gas turbocharger

**9 - Hollow screw**
- ❑ replace
- ❑ 60 Nm

**10 - Hollow screw**
- ❑ replace
- ❑ Replace gasket rings
- ❑ 30 Nm

**11 - Screw**
- ❑ 25 Nm




## 1.8 Removing and installing oil pan

⇒ "1.8.1 Removing and installing sump (Fabia II, Roomster, Rapid India, Rapid NH)", page 204

⇒ "1.8.2 Removing and installing sump (Octavia II, Superb II, Yeti)", page 208

## 1.8.1 Removing and installing sump (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

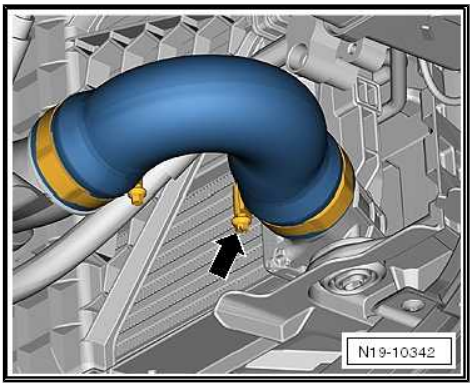
- ♦ Socket insert - T10058-
- ♦ Old oil collecting and suction equipment , e.g. -V.A.G 1782-
- ♦ Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- ♦ Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.

- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**Removing**

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

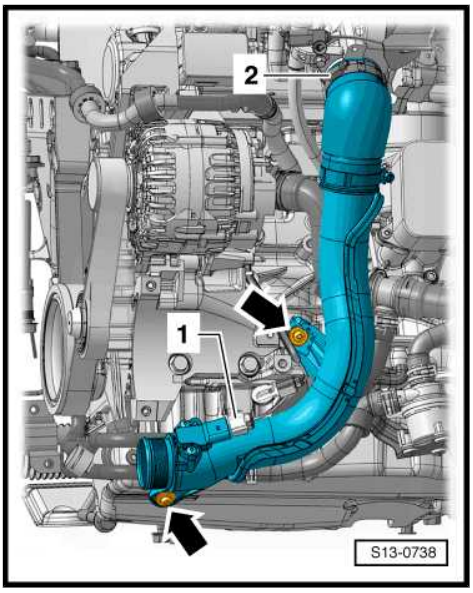
– Remove right charge air hose.



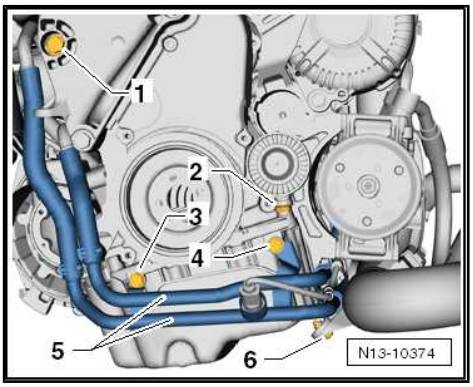

– Release screws -arrows-, push the right charge air pipe slightly to the side.

– Loosen hose clamp -2-.

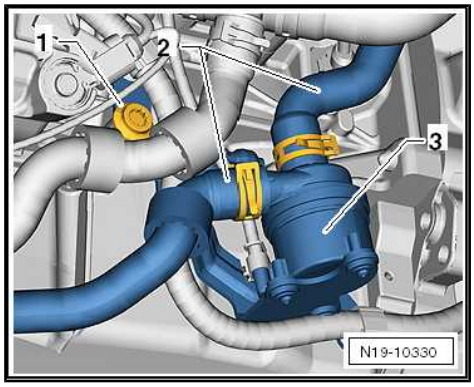
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.



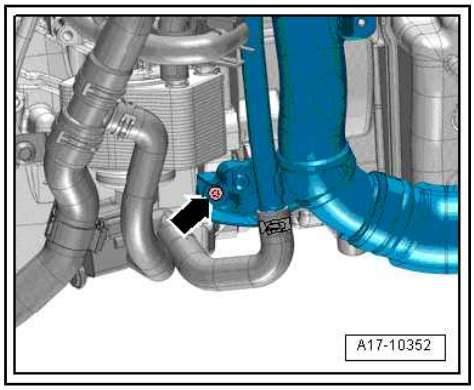

– Unscrew screws -3-, -4-.



– Unscrew screw -1- and press recirculation pump 2 - V178- -3- (if present) to the side.

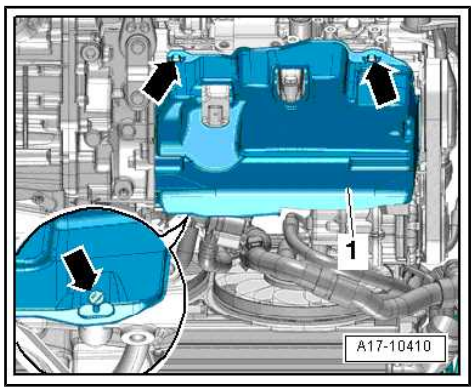



– Unscrew screw -arrow- on the left charge air pipe.
– Disconnect plug at oil level and oil temperature sender - G266- .

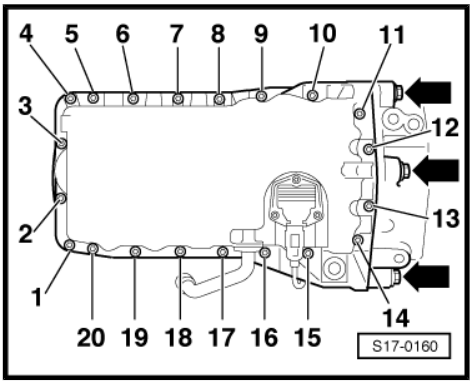



– Remove noise insulation of oil pan -1-, to do so slacken the fixing parts -arrows-.
– Suction off engine oil -V.A.G 1782- with old oil collecting and suction equipment:

♦ ⇒ Maintenance ; Booklet Fabia II .
♦ ⇒ Maintenance ; Booklet Roomster .
♦ ⇒ Maintenance ; Booklet Rapid Indie .
♦ ⇒ Maintenance ; Booklet Rapid NH .



– Unscrew the bolts of oil pan/gearbox -arrows-.
– Loosen bolts -1 … 20- crosswise and release.
– Remove oil pan, if necessary release by applying slight blows with a rubber-headed hammer.




### Install

Installation is performed in the reverse order, pay attention to the following points:

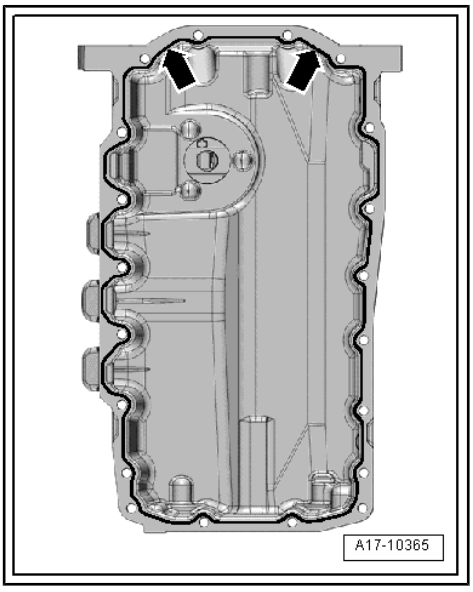
**WARNING**

*Wear protective gloves and goggles when working with gasket remover and degreasing agent!*

– Remove residual sealant from the sealing surfaces on the cylinder block and on the oil pan with chemical sealant remover.
– Degrease the sealing surfaces.
– Cut off nozzle tube at the front marking (∅ of nozzle approx. 3 mm).

– Apply silicone sealant bead -arrow- to the clean sealing surface of the oil pan, as shown.

• Thickness of sealant bead: 2…3 mm.




**Note**

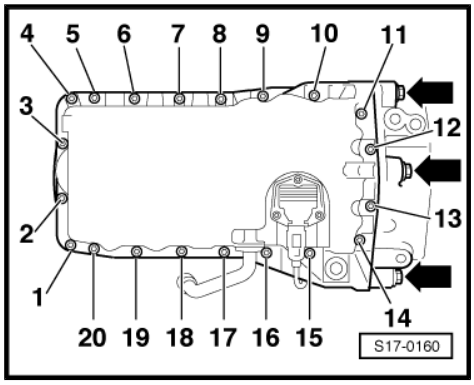
♦ *The sealant bead must not be thicker than 3 mm. Otherwise, excess sealant may get into the oil pan and clogg the strainer in the oil suction pipe.*

♦ *Take particular care when applying the sealant bead in the area of the sealing flange on the gearbox side -arrows-.*

♦ *The oil pan must be installed within 5 minutes after applying the silicone sealant .*

– Fit on oil pan immediately and tighten the bolts as follows:

| Stage | Screws | Tightening torque |
|---|---|---|
| 1. | -1 … 20- | crosswise, 5 Nm |
| 2. | -Arrows- | 40 Nm |
| 3. | -1 … 20- | crosswise, 13 Nm |




**Note**

- *When installing the oil pan with the engine removed, ensure that the oil pan is flush with the cylinder block at the flywheel side.*
- *After installing the oil pan, allow the sealant to dry for about 30 minutes. Only then fill with engine oil.*

– Fill with engine oil and check the oil level:

- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .

## 1.8.2 Removing and installing sump (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

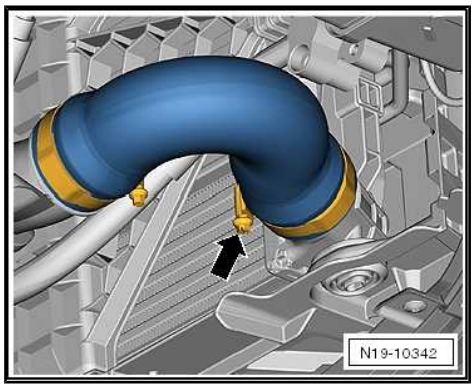
- Socket insert - T10058-
- Old oil collecting and suction equipment , e.g. -V.A.G 1782-
- Silicone sealant ⇒ ETKA - Electronic catalogue of original parts
- Sealant remover gasket stripper (bearing code GST, bearing article no. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**Removing**

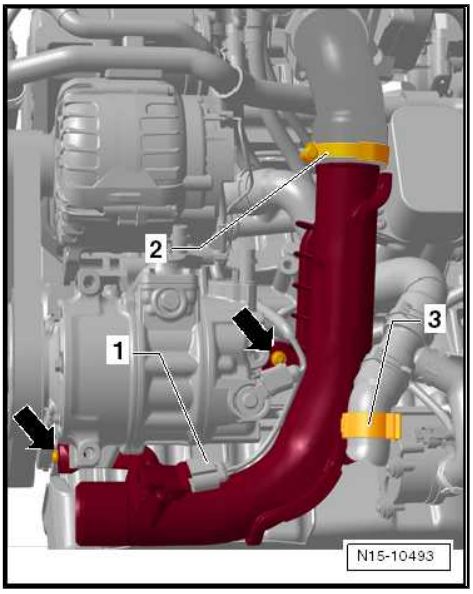
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove the right wheelhouse liner bottom part ⇒ Body Work; Rep. gr. 66 .

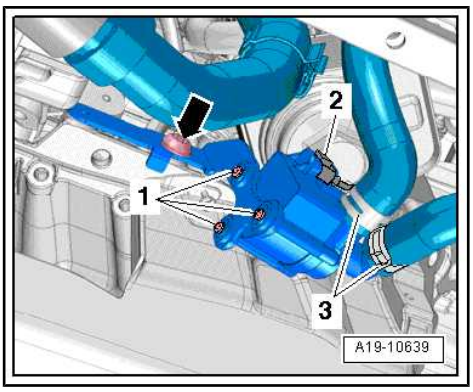
– Remove right charge air hose.



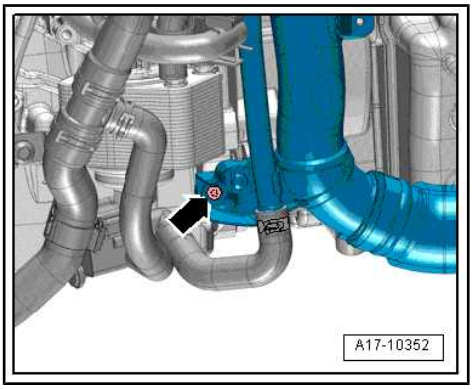
– Release screws -arrows-.
– Expose coolant hose -3-.
– Disconnect plug -1- at charge pressure sender - G31- with intake air temperature sender - G42- .
– Slacken the hose clamp -2- and push the charge air pipe to the right.




– Unscrew screw -arrow- and push the coolant recirculation pump 2 - V178- to the side.

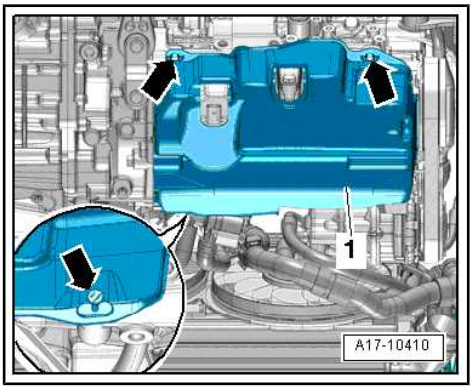



– Unscrew screw -arrow- on the left charge air pipe.
– Disconnect plug at oil level and oil temperature sender - G266- .

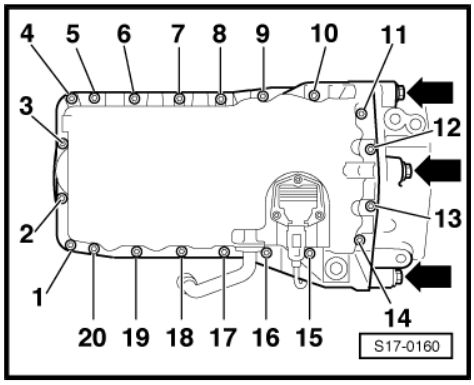



– Remove noise insulation of oil pan -1-, to do so slacken the fixing parts -arrows-.
– Suction off engine oil -V.A.G 1782- with old oil collecting and suction equipment:

♦ ⇒ Maintenance ; Booklet Octavia II .
♦ ⇒ Maintenance ; Booklet Superb II .
♦ ⇒ Maintenance ; Booklet Yeti .



– Unscrew the bolts of oil pan/gearbox -arrows-.
– Loosen bolts -1 … 20- crosswise and release.
– Remove oil pan, if necessary release by applying slight blows with a rubber-headed hammer.




### Install

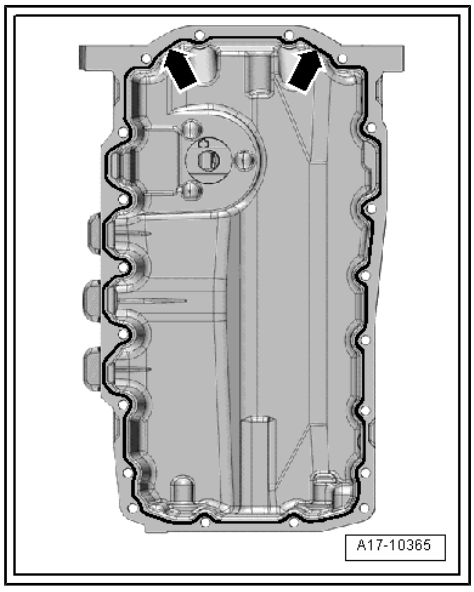
Installation is performed in the reverse order, pay attention to the following points:

**WARNING**

***Wear protective gloves and goggles when working with gasket remover and degreasing agent!***

– Remove residual sealant from the sealing surfaces on the cylinder block and on the oil pan with chemical sealant remover.
– Degrease the sealing surfaces.
– Cut off nozzle tube at the front marking (∅ of nozzle approx. 3 mm).

– Apply silicone sealant bead -arrow- to the clean sealing surface of the oil pan, as shown.
• Thickness of sealant bead: 2…3 mm.

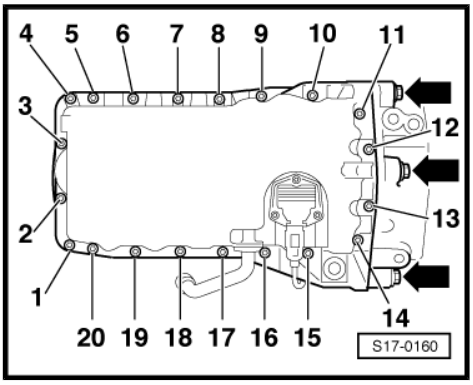



**Note**

- *The sealant bead must not be thicker than 3 mm otherwise excess sealant may get into the oil pan and clogg the strainer in the oil suction pipe.*
- *Take particular care when applying the sealant bead in the area of the sealing flange on the gearbox side -arrows-.*
- *The oil pan must be installed within 5 minutes after applying the silicone sealant .*

– Fit on oil pan immediately and tighten the bolts as follows:

| Stage | Screws | Tightening torque |
|---|---|---|
| 1. | -1 … 20- | crosswise, 5 Nm |
| 2. | -Arrows- | 40 Nm |
| 3. | -1 … 20- | crosswise, 13 Nm |




**Note**

- *When installing the oil pan with the engine removed, ensure that the oil pan is flush with the cylinder block at the flywheel side.*
- *After installing the oil pan, allow the sealant to dry for about 30 minutes. Only then fill with engine oil.*

– Fill with engine oil and check the oil level:

- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .

## 1.9 Removing and installing oil pump

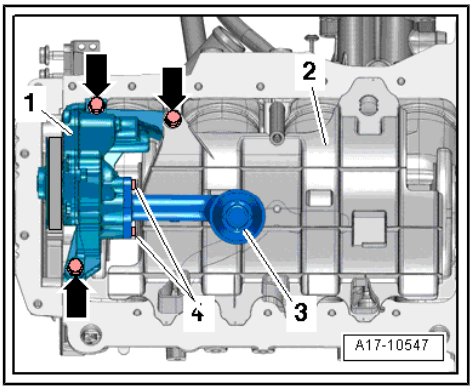
### Removing

– Removing the oil pan ⇒ page 204 .

– Release screws -4- and remove oil suction pipe -3-.

– Release screws -arrows- and remove baffle -2-.

– Unhook the oil pump -1- from the toothed belt and remove it.



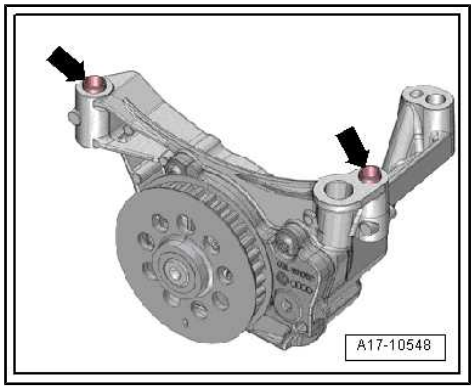

### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*Renew O-ring.*

– Check the dowel sleeves at the oil pump housing -arrows- for centering the oil pump, insert the dowel sleeves if they are not present.
– Check oil pump for smooth operation, to do so turn the belt pulley with a finger.




**Note**

*A sluggish oil pump must be replaced.*

– Check toothed belt for oil pump.

**Note**

- *Replace damaged toothed belt.*
- *After long duration the toothed belt can sag, this is not a fault.*

– Hook the oil pump with belt pulley into the toothed belt and tighten together with the baffle.
– Install sump ⇒ page 204 .

**Tightening torques**

- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

## 1.10 Testing oil pressure and oil pressure switch

**Special tools and workshop equipment required**

- Oil pressure tester , e.g. -V.A.G 1342-
- Voltage tester , e. g. -V.A.G 1527 B-
- Measuring tool set , e.g. -V.A.G 1594 C-

**Test conditions**

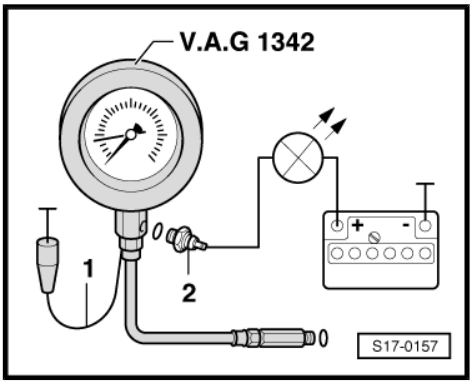
- Oil level o.k.
- Coolant temperature approx. 80°C.

**Test preparations**

– Remove oil pressure switch - F1- ⇒ page 201 .

– Screw the connection of the oil pressure tester - V.A.G 1342- into the hole for the oil pressure switch.

– Screw the oil pressure switch -2- into the oil pressure tester.




**Testing oil pressure switch**

– Connect brown cable -1- of oil pressure tester to earth (-).

– Unclamp the voltage tester with its auxiliary cables out of the measuring tool set on the oil pressure switch and plus (+) terminal on the battery.

• The LED must not light up.

If the LED lights up:

– Replace oil pressure switch.

If the LED does not light up:

– Start engine.

**Note**

*Observe the testing equipment and the LED while actuating the starter since the switching point of the oil pressure switch can already be exceeded when starting up.*

• The LED must light up at an overpressure of 0.03 ... 0.06 MPa (0.3 ... 0.6 bar).

If the LED does not light up:

– Replace oil pressure switch.

**Testing oil pressure**

– Start engine.

• Oil pressure in idle: at least 0.06 MPa (0.6 bar)

• Oil pressure at 2000 rpm: at least 0.1 MPa (1 bar)

If the specified values are not reached, the oil pump is defective.

– Replace oil pump ⇒ page 211 .

• Oil pressure at higher speed: max. 0.5 MPa (5.0 bar).

If the specified value is exceeded, the pressure control valve in the oil pump is defective.

– Replace oil pump ⇒ page 211 .

# 19 – Cooling

## 1 Cooling system

⇒ “1.1 Summary of components - Parts of cooling system engine side”, page 214

⇒ “1.2 Coolant hose schematic diagram”, page 218

⇒ “1.3 Draining and filling coolant”, page 223

⇒ “1.4 Remove and install coolant recirculation pump 2 V178 ”, page 233

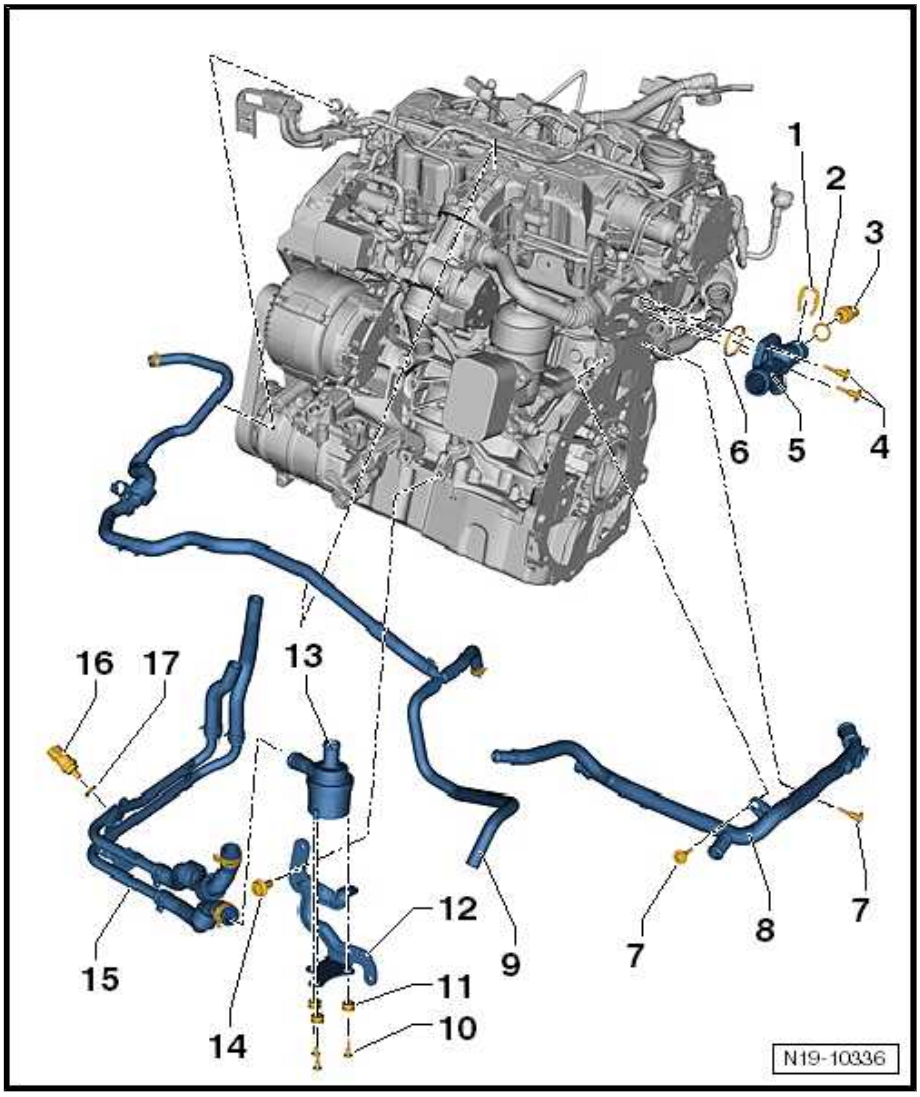
⇒ “1.5 Replace coolant temperature sender G62 ”, page 237

### 1.1 Summary of components - Parts of cooling system engine side

⇒ “1.1.1 Summary of components - parts of the cooling system, engine side (Fabia II, Roomster, Rapid India, Rapid NH)”, page 214

⇒ “1.1.2 Summary of components - parts of cooling system engine-side (Octavia II, Superb II, Yeti)”, page 216

#### 1.1.1 Summary of components - parts of the cooling system, engine side (Fabia II, Roomster, Rapid India, Rapid NH)




**1 - Retaining clip**

- ❑ Check for secure seating

**2 - O-ring**

- ❑ replace

**3 - Coolant temperature sender -G62-**

- ❑ Renew. ⇒ page 237 .

**4 - Screw**

- ❑ 9 Nm

**5 - Connection fittings**

- ❑ for cylinder head

**6 - Gasket**

- ❑ replace

**7 - Screw**

- ❑ 5 Nm

**8 - Front coolant pipe**

**9 - Coolant hose**

**10 - Screw**

- ❑ 5 Nm

**11 - Grommet**

- ❑ is not supplied individually

**12 - Support**

- ❑ for coolant recirculation pump 2 -V178-

**13 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233
- ❑ not present on vehicles with engine identification characters CWXB

**14 - Screw**

- ❑ 40 Nm

**15 - Coolant lines**

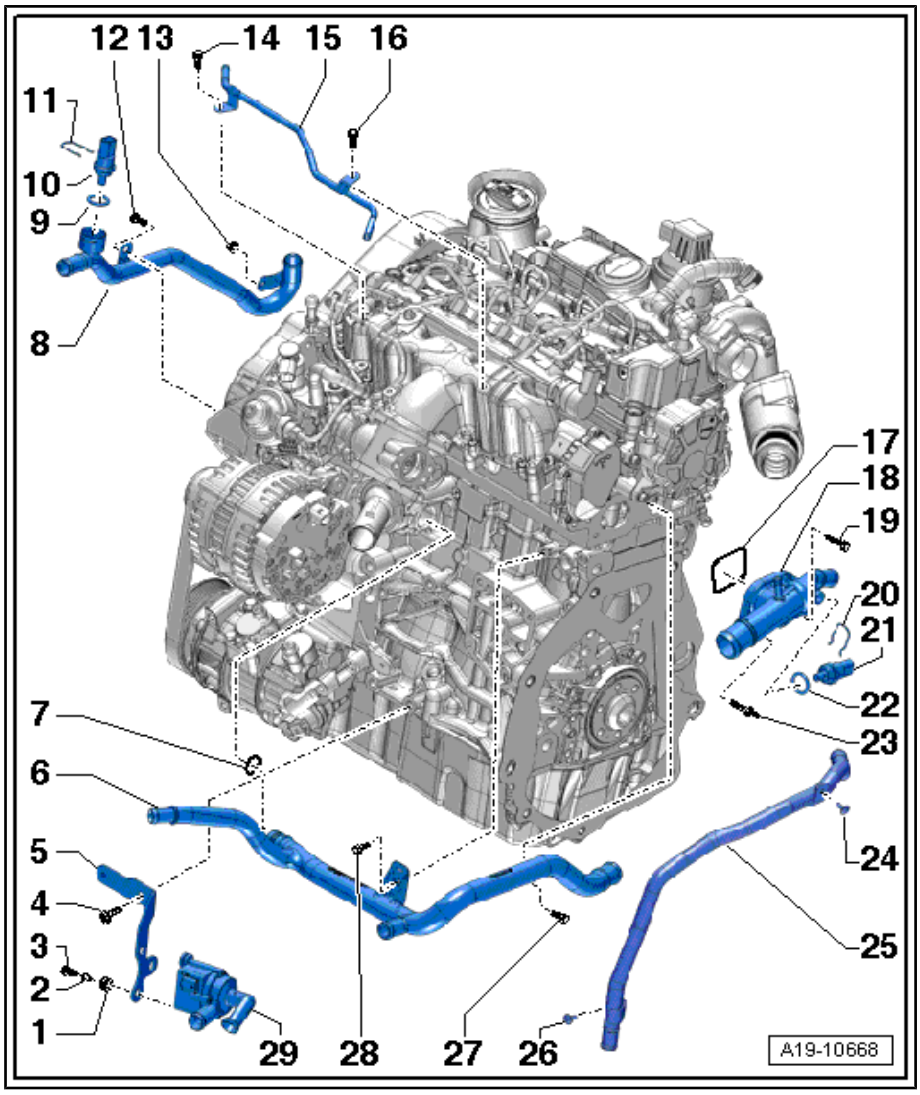
- ❑ to radiator for exhaust gas recirculation

**16 - Coolant temperature sender at radiator outlet - G83-**

**17 - O-ring**

- ❑ replace

## 1.1.2 Summary of components - parts of cooling system engine-side (Octavia II, Superb II, Yeti)




**1 - Tensioning sleeve**
- ❑ not available separately

**2 - Bushing**
- ❑ not available separately

**3 - Screw**
- ❑ 3 Nm

**4 - Screw**
- ❑ 40 Nm

**5 - Support**
- ❑ for coolant recirculation pump 2 -V178-

**6 - Coolant pipe - front**

**7 - O-ring**
- ❑ replace

**8 - Coolant pipe - right**

**9 - O-ring**
- ❑ replace

**10 - Coolant temperature sender at radiator outlet - G83-**

**11 - Retaining clip**
- ❑ check tightness

**12 - Screw**
- ❑ 9 Nm

**13 - Screw**
- ❑ 9 Nm

**14 - Screw**
- ❑ 9 Nm

**15 - Coolant line**

**16 - Screw**
- ❑ 9 Nm

**17 - Gasket**
- ❑ replace

**18 - Connection fittings**
- ❑ for cylinder head

**19 - Screw**
- ❑ 9 Nm

**20 - Retaining clip**
- ❑ Check for secure seating

**21 - Coolant temperature sender -G62-**
- ❑ Renew. ⇒ page 237 .

**22 - O-ring**
- ❑ replace

**23 - Screw**

- ❑ 9 Nm

**24 - Screw**

- ❑ 9 Nm

**25 - Coolant pipe - left**

**26 - Screw**

- ❑ 9 Nm

**27 - Screw**

- ❑ 40 Nm

**28 - Screw**

- ❑ 13 Nm

**29 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233

## 1.2 Coolant hose schematic diagram

⇒ "1.2.1 Connection diagram for coolant hoses (Fabia II, Roomster)", page 218

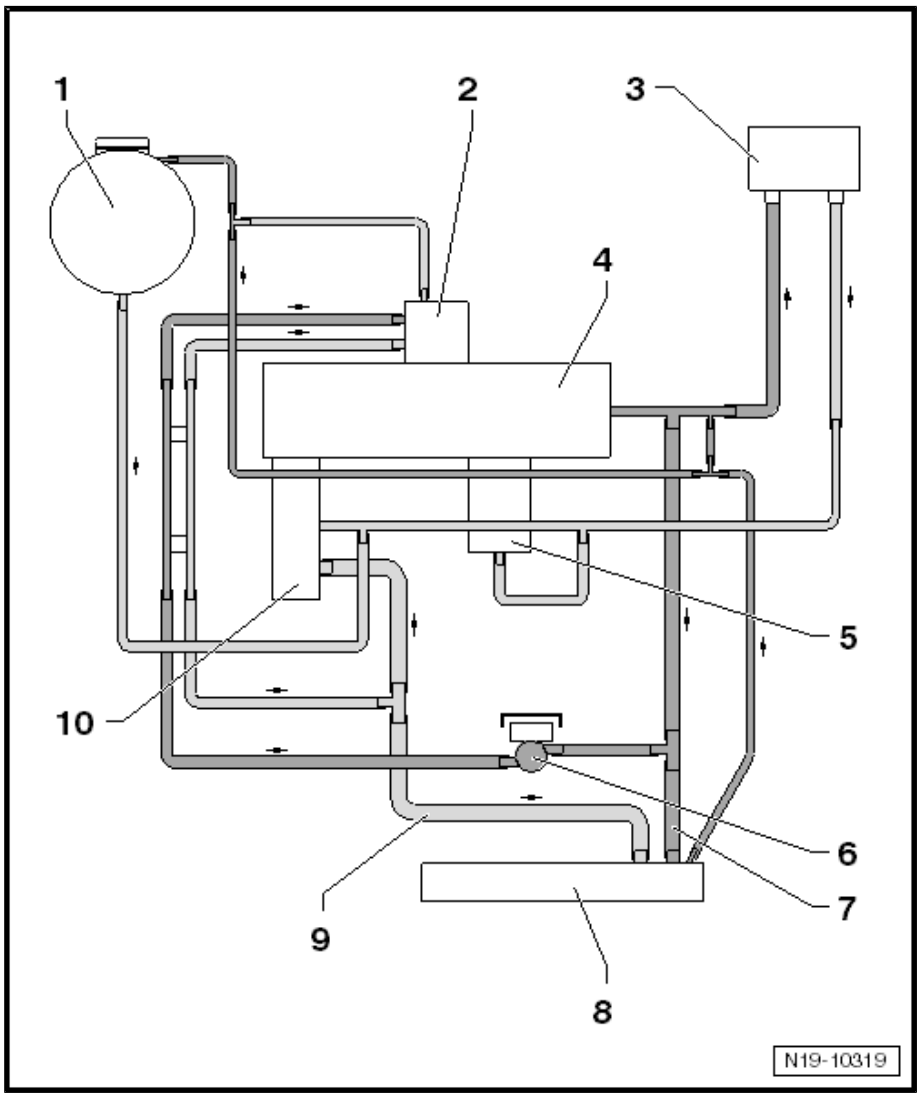
⇒ "1.2.2 Connection diagram for coolant hoses as of 06.2010 (Fabia II, Roomster, Rapid India, Rapid NH)", page 219

⇒ "1.2.3 Connection diagram for coolant hoses for engine with identification characters CWXB (Rapid India)", page 220

⇒ "1.2.4 Connection diagram for coolant hoses (Octavia II up to 05.2010)", page 221

⇒ "1.2.5 Connection diagram for coolant hoses (Octavia II from 06.2010, Superb II, Yeti)", page 222

### 1.2.1 Connection diagram for coolant hoses (Fabia II, Roomster)




**1 - Expansion reservoir**

- ❑ with cap
- ❑ Testing the pressure relief valve in the cap ⇒ page 266

**2 - Radiator for exhaust gas recirculation**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 482

**3 - Heat exchanger of heating system**

- ❑ with quick coupling

**4 - Cylinder head and cylinder block**

**5 - Engine oil cooler**

- ❑ wymontowanie i zamontowanie ⇒ page 192

**6 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233

**7 - Top coolant hose**

- ❑ with quick coupling

**8 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

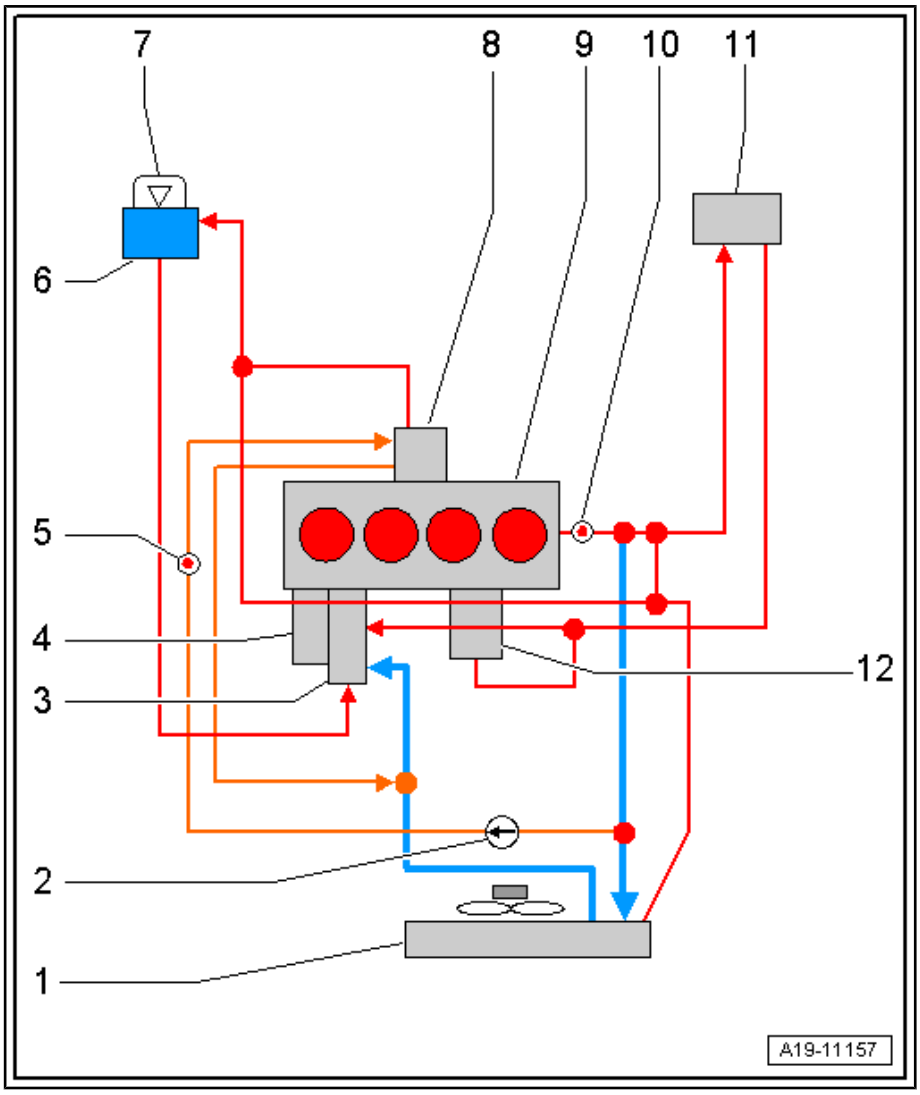
**9 - Bottom coolant hose**

- ❑ with quick coupling

**10 - Coolant pump/coolant regulator**

- ❑ removing and installing ⇒ page 241
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

## 1.2.2 Connection diagram for coolant hoses as of 06.2010 (Fabia II, Roomster, Rapid India, Rapid NH)




**1 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**2 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233

**3 - 4/2 way valve with coolant regulator**

- ❑ wymontowanie i zamontowanie ⇒ page 242

**4 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**5 - Coolant temperature sender at radiator outlet - G83-**

**6 - Expansion reservoir**

**7 - Screw cap**

- ❑ Testing the pressure relief valve in the cap ⇒ page 266

**8 - Radiator for exhaust gas recirculation**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 482

**9 - Cylinder head and cylinder block**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**10 - Coolant temperature sender - G62-**

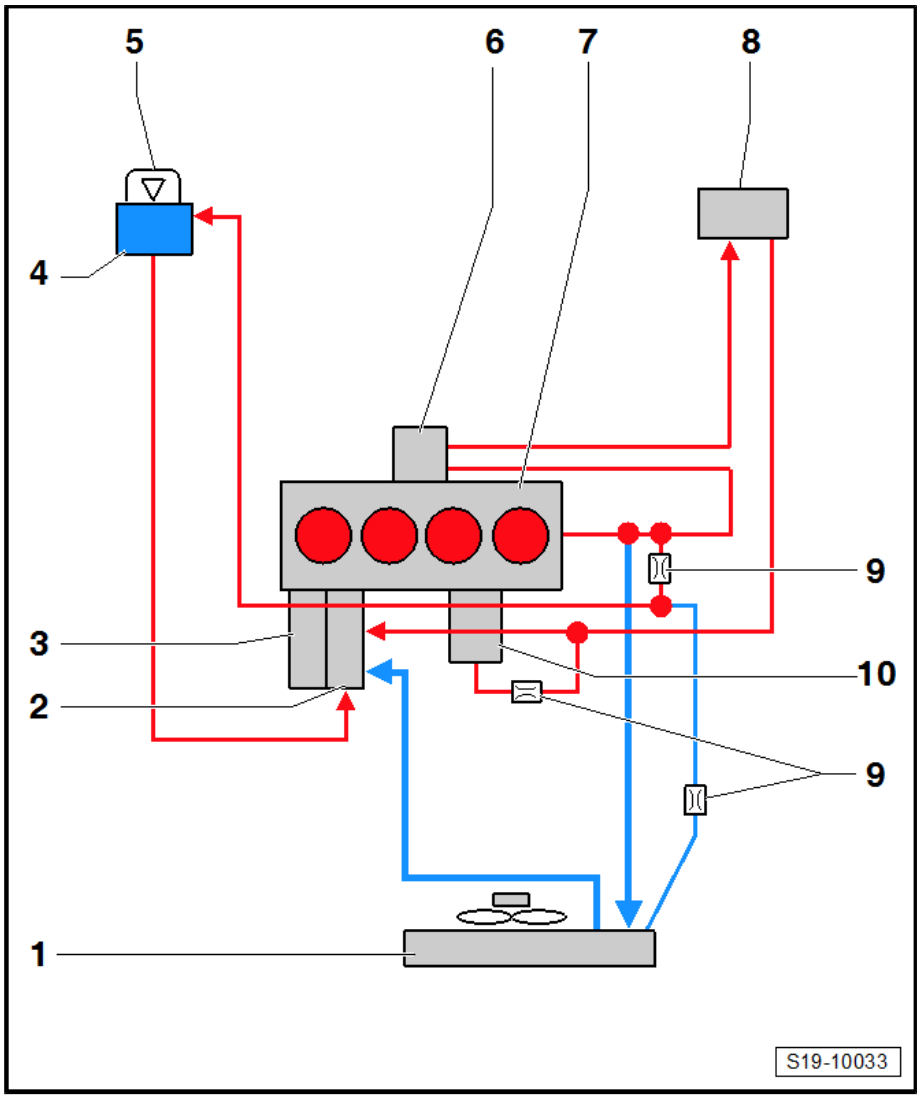
**11 - Heat exchanger of heating system**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ with quick coupling

**12 - Engine oil cooler**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 192

## 1.2.3 Connection diagram for coolant hoses for engine with identification characters CWXB (Rapid India)




**1 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**2 - 4/2 way valve with coolant regulator**

- ❑ wymontowanie i zamontowanie ⇒ page 242

**3 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**4 - Expansion reservoir**

**5 - Screw cap**

- ❑ Testing the pressure relief valve in the cap ⇒ page 266

**6 - Radiator for exhaust gas recirculation**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 482

**7 - Cylinder head and cylinder block**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**8 - Heat exchanger of heating system**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ with quick coupling

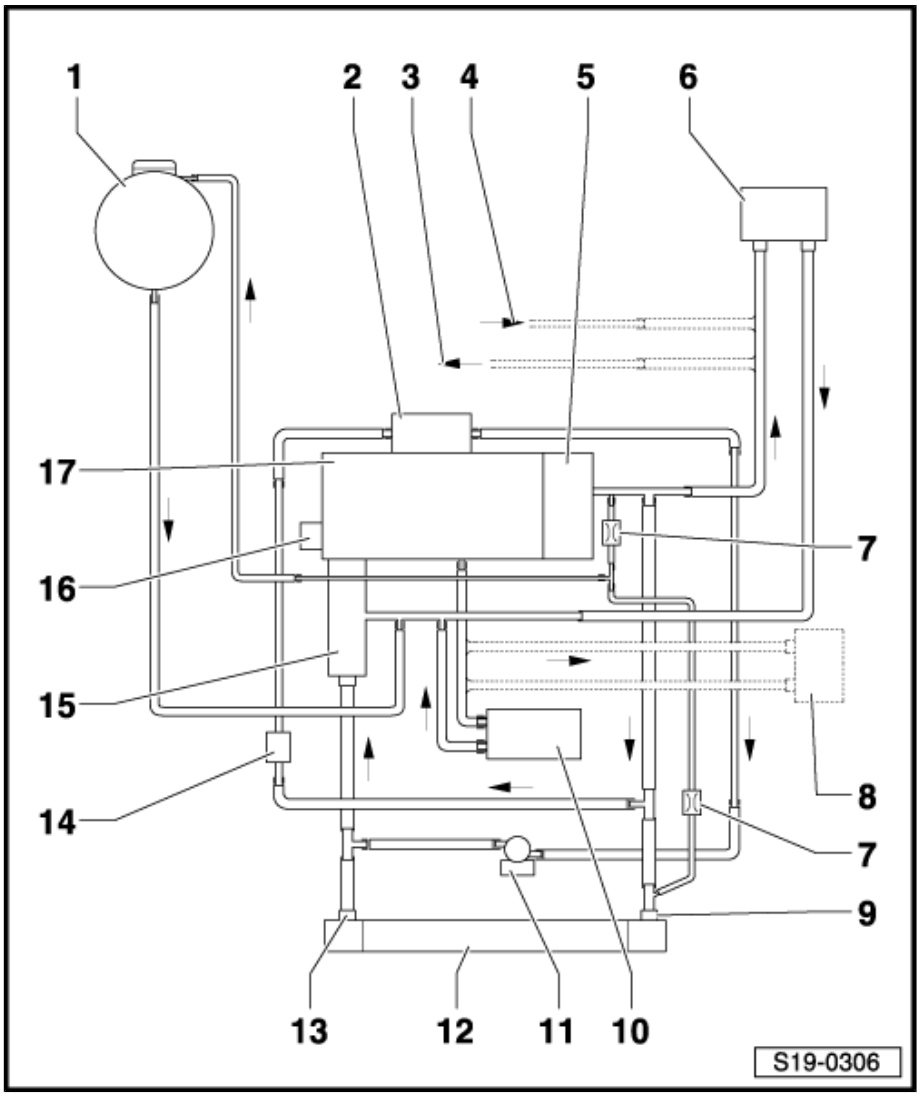
**9 - Choke**

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

**10 - Engine oil cooler**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 192

## 1.2.4 Connection diagram for coolant hoses (Octavia II up to 05.2010)




**1 - Expansion reservoir**

- ❑ with cap
- ❑ Testing the pressure relief valve in the cap ⇒ page 266

**2 - Radiator for exhaust gas recirculation**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 482

**3 - to auxiliary heating**

**4 - from the auxiliary heating**

**5 - Cylinder block**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**6 - Heat exchanger of heating system**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**7 - Throttle valve**

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

**8 - ATF radiator**

- ❑ only on vehicles with automatic gearbox

**9 - Left coolant hose**

**10 - Engine oil cooler**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 192

**11 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233

**12 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**13 - Right coolant hose**

**14 - Coolant temperature sender at radiator outlet - G83-**

**15 - Coolant regulator**

- ❑ wymontowanie i zamontowanie ⇒ page 242

**16 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**17 - Cylinder head**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

## 1.2.5 Connection diagram for coolant hoses (Octavia II from 06.2010, Superb II, Yeti)

**1 - Expansion reservoir**

- ❑ with cap
- ❑ Testing the pressure relief valve in the cap ⇒ page 266

**2 - Radiator for exhaust gas recirculation**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 482

**3 - to auxiliary heating**

**4 - from the auxiliary heating**

**5 - Cylinder block**

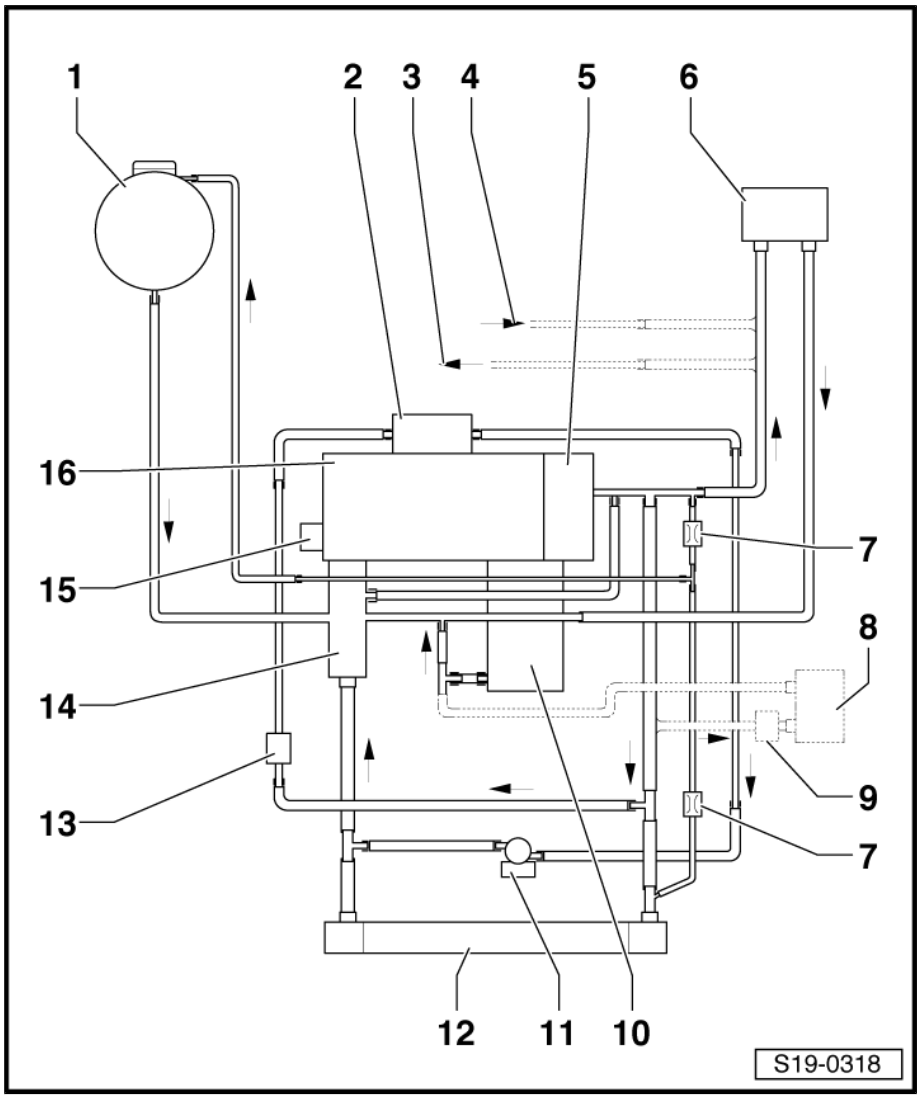
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**6 - Heat exchanger of heating system**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**7 - Throttle valve**

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)




**8 - ATF radiator**

- ❑ only on vehicles with automatic gearbox

**9 - Coolant regulator**

- ❑ only on vehicles with automatic gearbox

**10 - Engine oil cooler**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223
- ❑ wymontowanie i zamontowanie ⇒ page 192

**11 - Coolant recirculation pump 2 - V178-**

- ❑ wymontowanie i zamontowanie ⇒ page 233

**12 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**13 - Coolant temperature sender at radiator outlet - G83-**

**14 - 4/2 way valve with coolant regulator**

- ❑ wymontowanie i zamontowanie ⇒ page 242

**15 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**16 - Cylinder head**

- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

## 1.3 Draining and filling coolant

⇒ "1.3.1 Drain and fill coolant (Fabia II, Roomster, Rapid India, Rapid NH)", page 223

⇒ "1.3.2 Drain and fill coolant (Octavia II, Superb II, Yeti)", page 228

### 1.3.1 Drain and fill coolant (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- ♦ Catch pan , e.g. -VAS 6208-
- ♦ Pliers for spring strap clamps
- ♦ Refractometer

**Draining**

**Note**

*Collect drained coolant in a clean container for proper disposal or reuse.*

**WARNING**

***Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

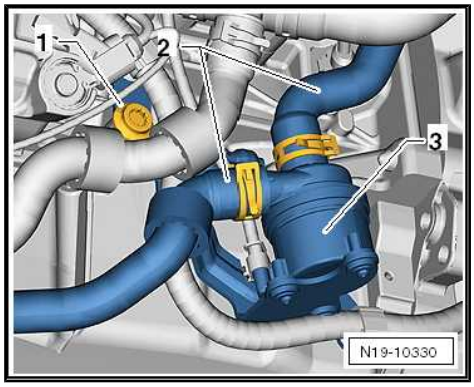
– Open the cap of the coolant expansion reservoir.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Place a catch pan under the engine.

– Remove coolant hoses -2- from the Recirculation pump 2 - V178- -3- (if present).

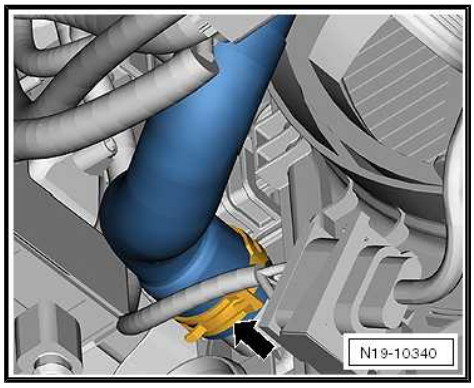
– Remove the left charge air hose.

**Caution**

***Shut off the opening of the charge air cooler, e.g. with a clean foam piece, so that no coolant can penetrate.***




– Remove the coolant hose from the radiator; to do so loosen the retaining clip -arrow-.

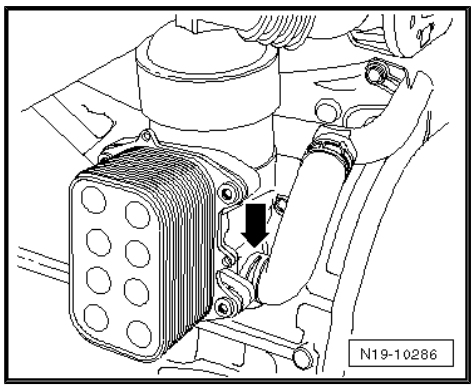



– Remove the coolant hose on the engine oil cooler -arrow- and drain residual coolant.

**Fill without using filling device**

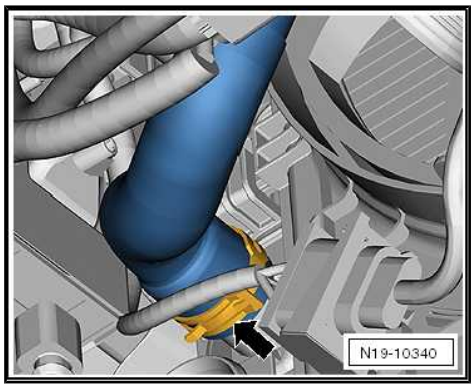
**Note**

*Replace O-rings.*

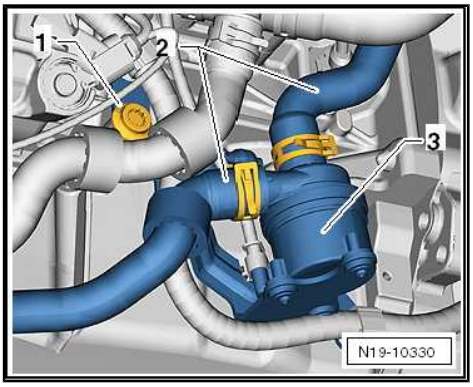



– Connect coolant hose at bottom of radiator -arrow-.

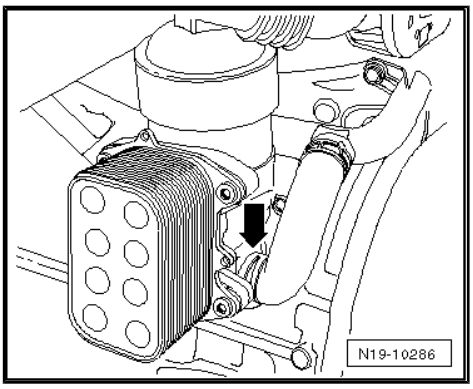
– Install the left charge air hose.



– Connect the coolant hoses -2- at the coolant recirculation pump 2 - V178- .




– Connect the coolant hose on the engine oil cooler -arrow-.




Select the appropriate coolant additive from the ⇒ ETKA - Electronic catalogue of original parts .

– In a clean reservoir mix water and coolant additive in the specified mixing ratio:

♦ ⇒ Maintenance ; Booklet Fabia II .

♦ ⇒ Maintenance ; Booklet Roomster .

♦ ⇒ Maintenance ; Booklet Rapid Indie .

♦ ⇒ Maintenance ; Booklet Rapid NH .

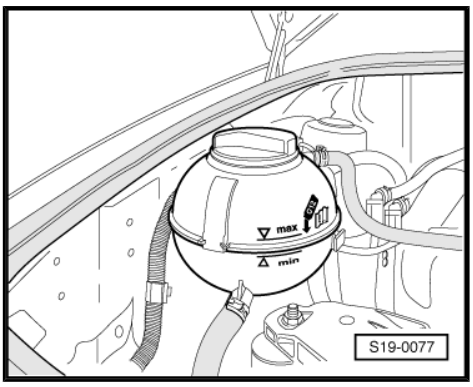
– Top up coolant in the expansion reservoir, until the “max. marking” of the coolant level is reached.

– Switch off the heating, and if present, the air conditioning system.

– Start engine, run for not more than 3 minutes at approx. 2000 rpm and while doing so continuously top up coolant in the expansion reservoir.

– Tighten cap at expansion reservoir.

– Run engine until radiator fan starts.




**WARNING**

*Hot steam may escape when the compensation bottle is opened.*

- *Wear safety goggles and safety clothing, in order to avoid eye injuries and scalding.*
- *Cover the cap with a cloth and open carefully.*

– Check the level of coolant when the expansion reservoir is closed and top up if necessary when the engine is cooled down.

- When engine is at operating temperature the coolant level must be at the “max. marking”, when engine is cold between the “min. marking” and the “max. marking”.

### Fill using filling device

### Special tools and workshop equipment required

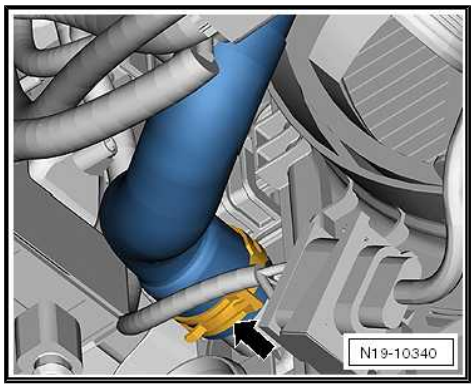
♦ Adapter - V.A.G 1274/8-

♦ Cooling system charge unit - VAS 6096-

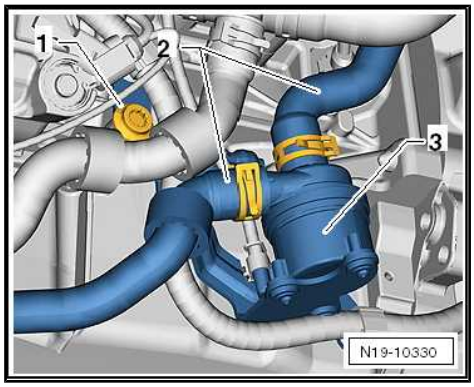
**Note**

*Replace O-rings.*

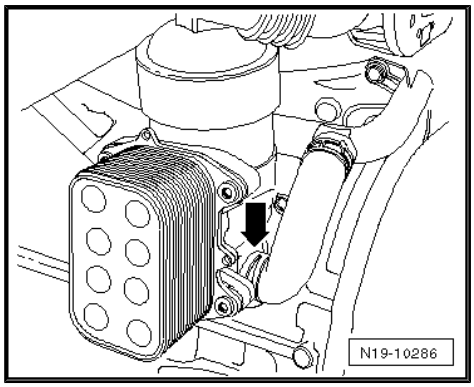
– Connect coolant hose at bottom of radiator -arrow-.
– Install the left charge air hose.




– Connect the coolant hoses -2- at the coolant recirculation pump 2 - V178- .




– Connect the coolant hose on the engine oil cooler -arrow-.

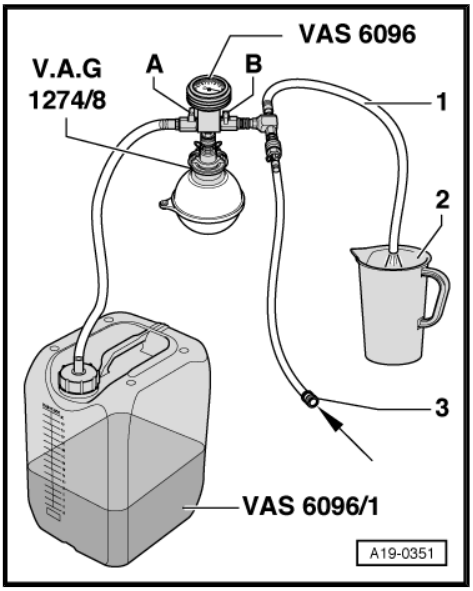



Select the appropriate coolant additive from the ⇒ ETKA - Electronic catalogue of original parts .

– Fill up the coolant reservoir -VAS 6096- with at least 8 litres of pre-mixed coolant mixed to the correct ratio:

♦ ⇒ Maintenance ; Booklet Fabia II .
♦ ⇒ Maintenance ; Booklet Roomster .
♦ ⇒ Maintenance ; Booklet Rapid Indie .
♦ ⇒ Maintenance ; Booklet Rapid NH .

– Screw the adapter for the cooling system testing device - V.A.G 1274/8- into the coolant expansion tank.
– Secure cooling system filling device -VAS 6096- to adapter - V.A.G 1274/8- .
– Close valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.
– Lead the bleeder hose -1- into a small container -2-.

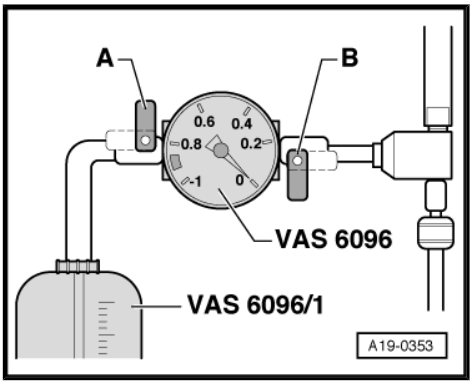



**Note**

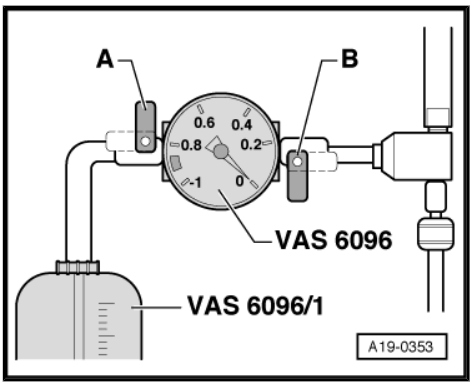
*A small amount of coolant, which must be collected, is entrained with the exhaust air.*

– Connect hose -3- to compressed air.
• Pressure: 0.6…1.0 MPa (6 … 10 bar)

– Open the valve -B-, while doing so turn the lever in the direction of flow.
• The pressure gauge must enter the green area.
– Also briefly open valve -A- by turning the lever in the flow direction so that the coolant expansion tank -VAS 6096- hose is filled with coolant.
– Close the valve -A- again.
– Leave the valve -B- open a further 2 minutes.
• Additional vacuum is generated in the cooling system by the suction jet pump. The pressure gauge must remain in the green area.




– Close the valve -B-.
– Remove pressure hose.
– The pressure gauge must stay in the green area.




**Note**

♦ *If the pressure gauge is below the green area, repeat the process.*
♦ *If the vacuum drops, the cooling system must be checked for leak points.*
♦ *Subsequent filling must be done »slowly«.*

– Open valve -A- slowly.

• Vacuum in the cooling system causes the coolant to be drawn out of the coolant expansion reservoir -VAS 6096- and the cooling system is filled.

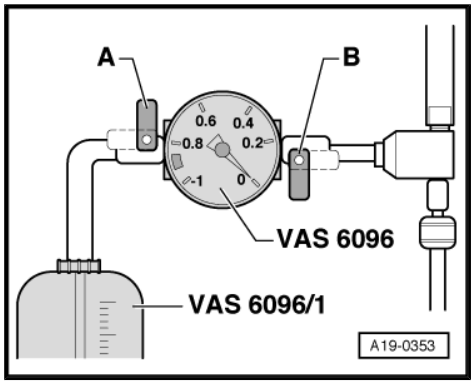
– Remove cooling system filling device -VAS 6096- from adapter -V.A.G 1274/8- on the coolant expansion tank.

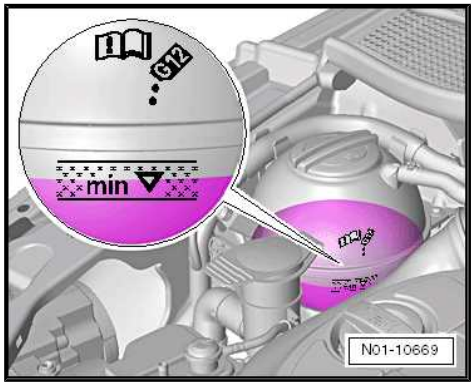
– Start the engine and set heater to »warm«.

– Keep the engine speed at approximately 2000 rpm for approximately 3 minutes.

– Run engine at idle until the radiator fan - V7- starts.

– Check coolant level and add or draw off coolant as necessary. At operating temperature the coolant level must be at the upper mark; when the engine is cold it must be in the middle of the rastered field.




## 1.3.2 Drain and fill coolant (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

♦ Catch pan , e.g. -VAS 6208-

♦ Refractometer

♦ Pliers for spring strap clamps

**Draining**

**Note**

*Collect drained coolant in a clean container for proper disposal or reuse.*

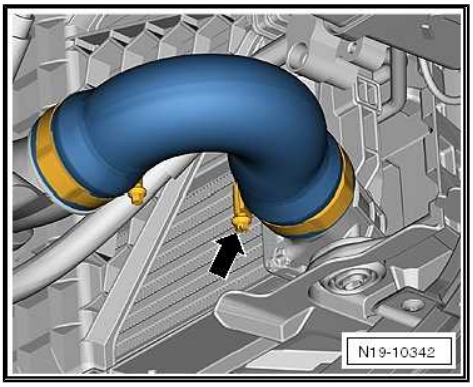
**WARNING**

***Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

– Open the cap of the coolant expansion reservoir.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove right charge air hose.

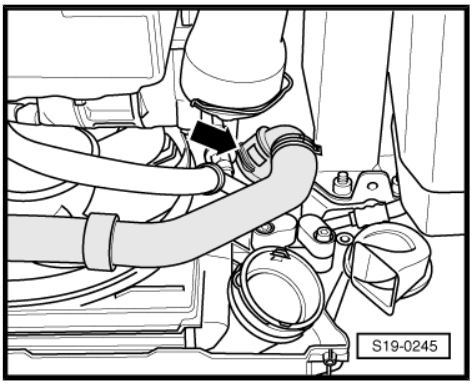



**Caution**

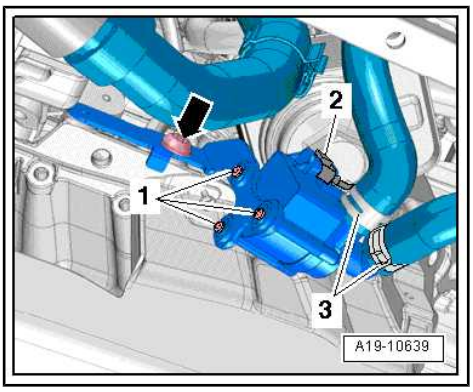
***Shut off the opening of the charge air cooler, e.g. with a clean foam piece, so that no coolant can penetrate.***

– Place a catch pan under the engine.

– Remove the right coolant hose from the radiator; to do so pull the retaining clip -arrow-.




– Remove the coolant hoses -3- at the coolant recirculation pump 2 - V178- .

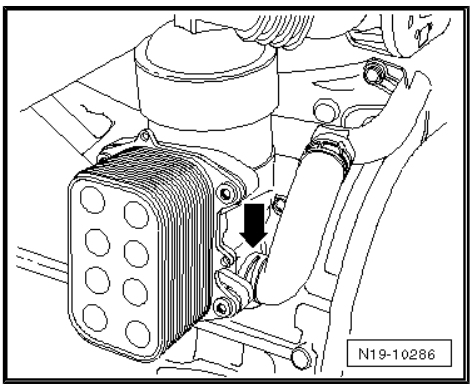



– Remove the coolant hose on the engine oil cooler -arrow- and drain residual coolant.

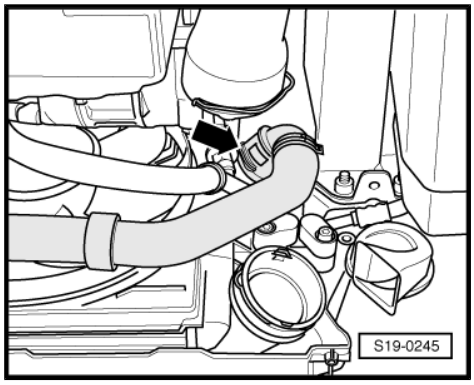
**Fill without using filling device**

**Note**

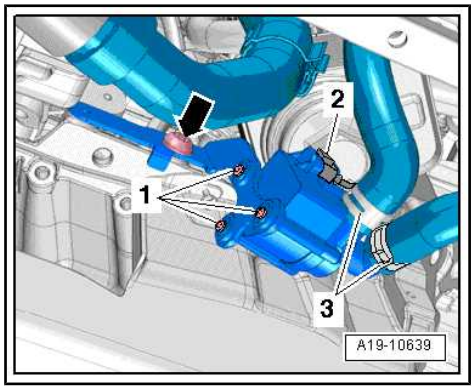
*Replace O-rings.*



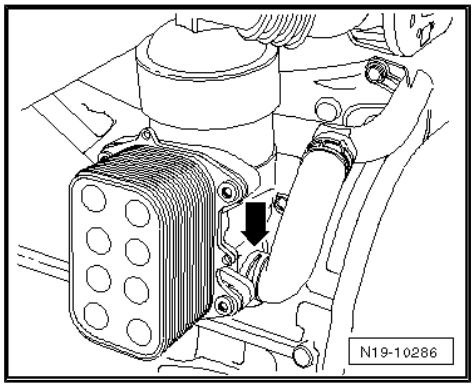
– Connect right coolant hose at radiator -arrow-.




– Connect the coolant hoses -3- at the coolant recirculation pump 2 - V178- .




– Connect the coolant hose on the engine oil cooler -arrow-.




Select the appropriate coolant additive from the ⇒ ETKA - Electronic catalogue of original parts .

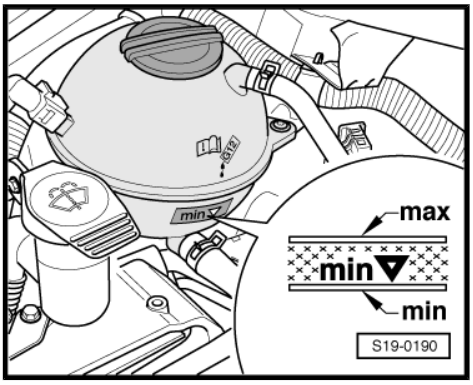
– In a clean reservoir mix water and coolant additive in the specified mixing ratio:

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

– Top up the coolant system through the connection of the expansion reservoir, until the max. marking of the coolant level is reached.
– Switch off the heating, and if present, the air conditioning system.
– Start engine, run for not more than 2 minutes at approx. 1500 rpm and while doing so continuously top up coolant in the expansion reservoir.
– Tighten cap at expansion reservoir.
– Run engine until radiator fan starts.




**WARNING**

***Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

– Check the level of coolant when the expansion reservoir is closed and top up if necessary when the engine is cooled down.
• When engine is at operating temperature the coolant level must be at the maximum marking, when engine is cold between the minimum and the maximum markings.

**Fill using filling device**

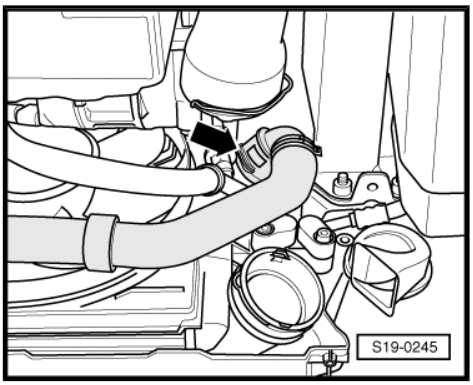
**Special tools and workshop equipment required**

♦ Adapter - V.A.G 1274/8-
♦ Cooling system charge unit - VAS 6096-

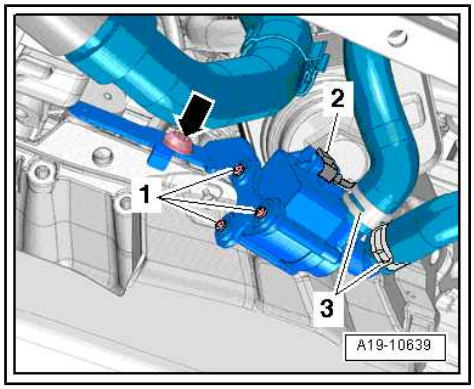
**Note**

*Replace O-rings.*

– Connect right coolant hose at radiator -arrow-.



– Connect the coolant hoses -3- at the coolant recirculation pump 2 - V178- .




– Connect the coolant hose on the engine oil cooler -arrow-.

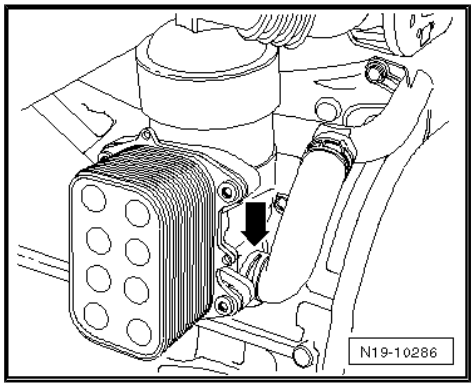
Select the appropriate coolant additive from the ⇒ ETKA - Electronic catalogue of original parts .

– Fill up the coolant reservoir -VAS 6096- with at least 8 litres of pre-mixed coolant mixed to the correct ratio:

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

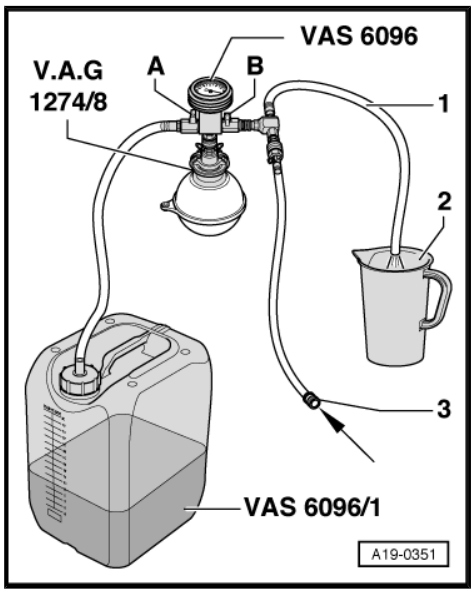



– Screw the adapter for the cooling system testing device - V.A.G 1274/8- into the coolant expansion tank.

– Secure cooling system filling device -VAS 6096- to adapter - V.A.G 1274/8- .

– Close valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.

– Lead the bleeder hose -1- into a small container -2-.




**Note**

*A small amount of coolant, which must be collected, is entrained with the exhaust air.*

– Connect hose -3- to compressed air.

• Pressure: 0.6…1.0 MPa (6 … 10 bar)

– Open the valve -B-, while doing so turn the lever in the direction of flow.

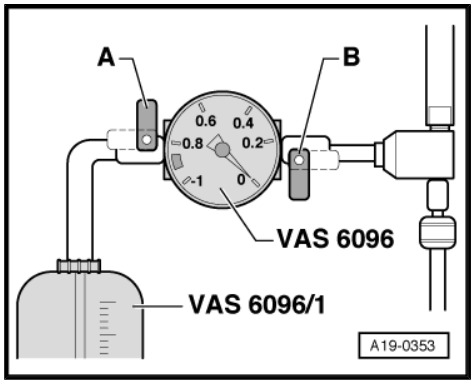
• The pressure gauge must enter the green area.

– Also briefly open valve -A- by turning the lever in the flow direction so that the coolant expansion tank -VAS 6096- hose is filled with coolant.

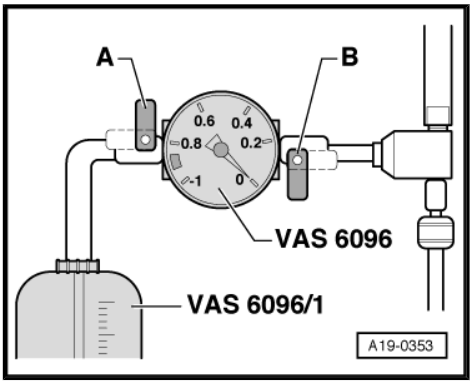
– Close the valve -A- again.

– Leave the valve -B- open a further 2 minutes.

• Additional vacuum is generated in the cooling system by the suction jet pump. The pressure gauge must remain in the green area.



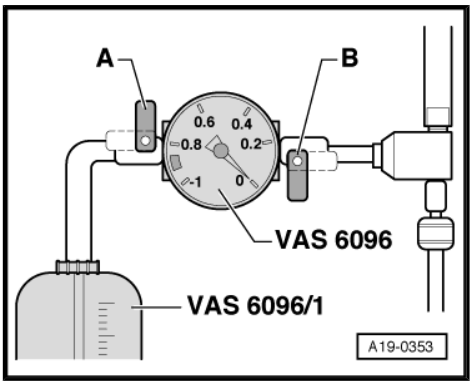
– Close the valve -B-.
– Remove pressure hose.
– The pressure gauge must stay in the green area.



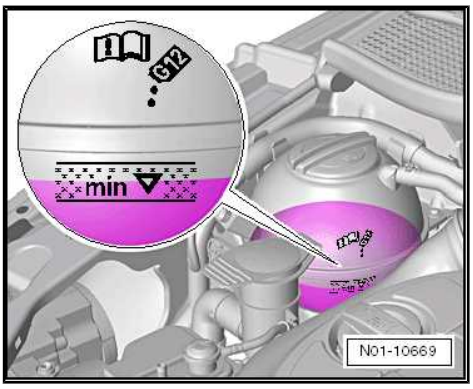

**Note**

- *If the pressure gauge is below the green area, repeat the process.*
- *If the vacuum drops, the cooling system must be checked for leak points.*
- *Subsequent filling must be done »slowly«.*

– Open valve -A- slowly.
• Vacuum in the cooling system causes the coolant to be drawn out of the coolant expansion reservoir -VAS 6096- and the cooling system is filled.
– Remove cooling system filling device -VAS 6096- from adapter -V.A.G 1274/8- on the coolant expansion tank.
– Start the engine and set heater to »warm«.
– Keep the engine speed at approximately 2000 rpm for approximately 3 minutes.
– Run engine at idle until the radiator fan - V7- starts.




– Check coolant level and add or draw off coolant as necessary. At operating temperature the coolant level must be at the upper mark; when the engine is cold it must be in the middle of the rastered field.




## 1.4 Remove and install coolant recirculation pump 2 - V178-

⇒ “1.4.1 Removing and installing recirculation pump 2 V178 (Fabia II, Roomster, Rapid India, Rapid NH)”, page 233

⇒ “1.4.2 Remove and install recirculation pump 2 V178 (Octavia II, Superb II,Yeti)”, page 235

## 1.4.1 Removing and installing recirculation pump 2 - V178- (Fabia II, Roomster, Rapid India, Rapid NH)

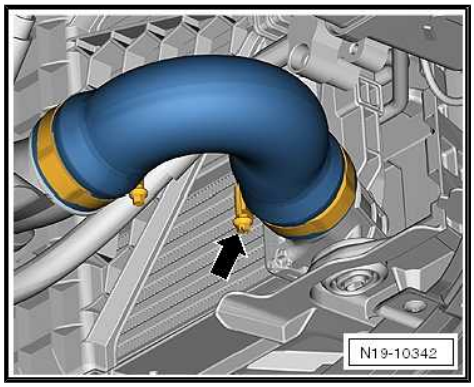
**Special tools and workshop equipment required**

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Pliers for spring strap clamps

### Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

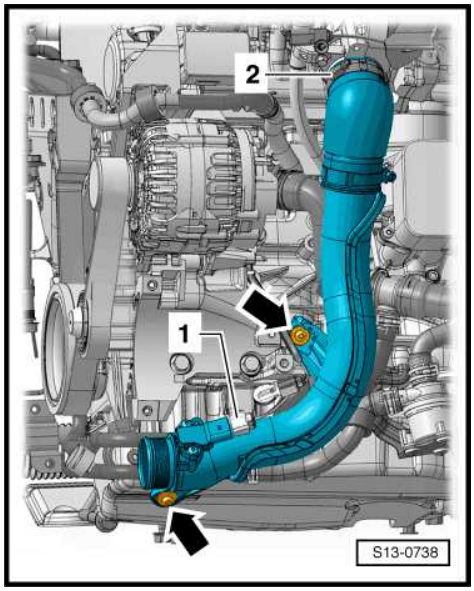
– Remove right charge air hose.




– Release screws -arrows-.

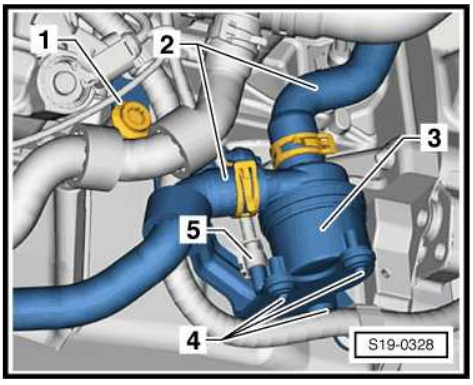
– Disconnect plug -1- at charge pressure sender - G31- with intake air temperature sender - G42- .

– Slacken the hose clamp -2- and push the charge air pipe to the right.



**Note**

*In order to collect flowing out coolant, place a cloth below the coolant recirculation pump 2 - V178- -3-.*




– Pinch off coolant hoses -2- with hose clamps up to 25 mm - MP7-602- and remove.
– Unplug connector -5-.
– If necessary, loosen the cable guide at the pump holder.
– Release screws -4- and remove coolant recirculation pump 2 - V178- -3-.

**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clips.*

– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

**Tightening torques**

- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Summary of components - Parts of cooling system engine side”, page 214

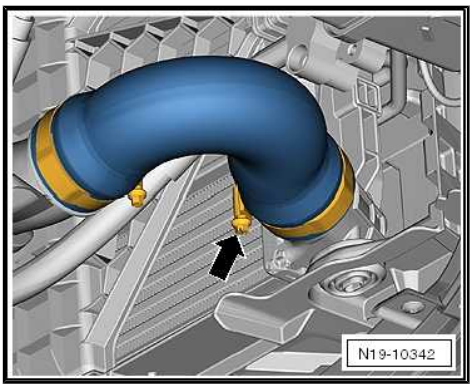
## 1.4.2 Remove and install recirculation pump 2 - V178- (Octavia II, Superb II,Yeti)

**Special tools and workshop equipment required**

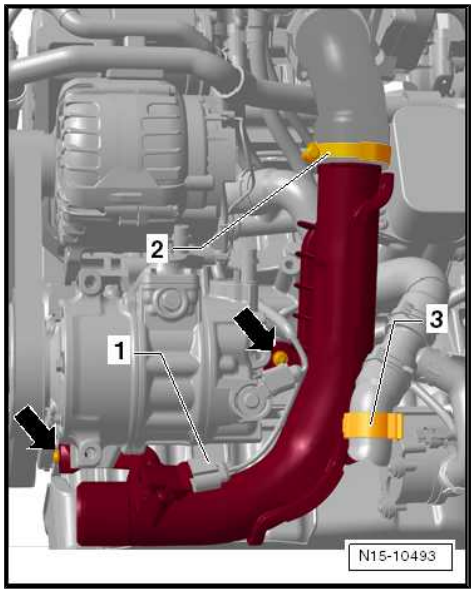
- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Pliers for spring strap clamps

**Removing**

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Remove right charge air hose.



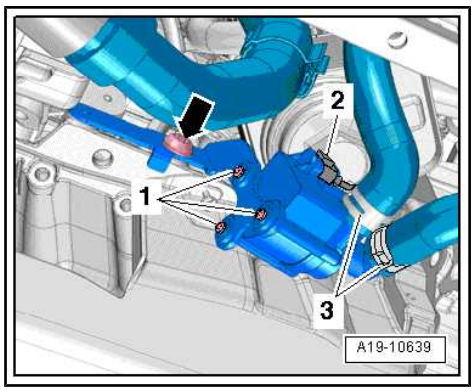
– Release screws -arrows-.
– Expose coolant hose -3-.
– Disconnect plug -1- at charge pressure sender - G31- with intake air temperature sender - G42- .
– Slacken the hose clamp -2- and push the charge air pipe to the right.




**Note**

*In order to collect flowing out coolant, place a cloth below the coolant recirculation pump 2 - V178- .*

– Pinch off coolant hoses with hose clamps up to 25 mm - MP7-602- and remove, to do so slacken spring strap clamps -3-.
– Unplug connector -2-.
– Release screws -1- and remove coolant recirculation pump 2 - V178- .




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Observe the assembly instruction for hose connections with screw clamps* *⇒ page 372* .

– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

### Tightening torques

- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Summary of components - Parts of cooling system engine side”, page 214

## 1.5 Replace coolant temperature sender - G62-

⇒ "1.5.1 Replace coolant temperature sender G62 (Fabia II, Roomster, Rapid India, Rapid NH)", page 237

⇒ "1.5.2 Replace coolant temperature sender G62 (Octavia II, Superb II, Yeti)", page 238

## 1.5.1 Replace coolant temperature sender - G62- (Fabia II, Roomster, Rapid India, Rapid NH)

**Replace**

- Engine cold

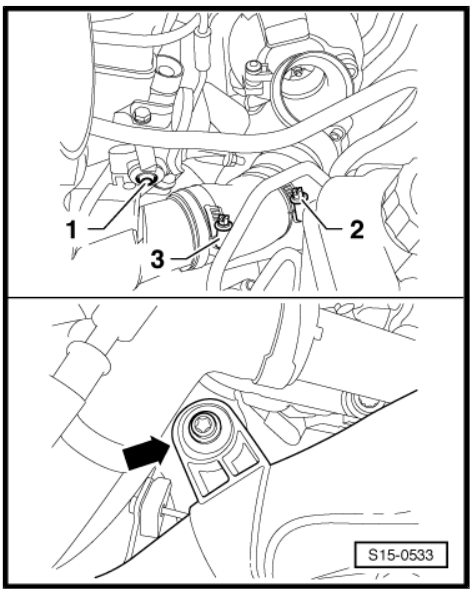
– Briefly open the cap of the coolant expansion tank to remove the remaining pressure in the coolant system.

– Remove air filter ⇒ page 426 .

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

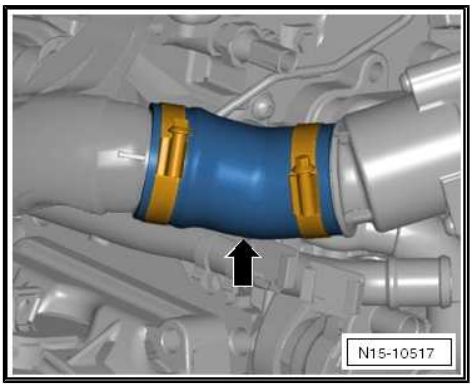
– Release the fixing screw -1- from the charge air pipe (if present), slacken the clamp -2- or -3-.

– Release fixing screw -arrow- from charge air pipe.

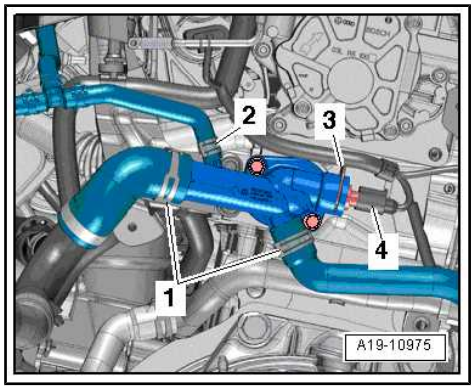



– Detach the connecting hose -arrow- as far as possible from the vibration damper.

– Push the left charge air pipe to the left.



– Disconnect plug -4- at the coolant temperature sender - G62- .




**Note**

- *In order to collect flowing out coolant, place a cloth below the connection fitting.*
- *Have a new coolant temperature sender - G62- with a new gasket ring ready.*

– Remove the retaining clip -3-, pull the coolant temperature sender - G62- out of the connection fitting and install a new coolant temperature sender - G62- .

– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

Further installation occurs in reverse order.

**Tightening torques**

- ⇒ “2.1 Charge air cooler”, page 367

## 1.5.2 Replace coolant temperature sender - G62- (Octavia II, Superb II, Yeti)

**Replace**

- Engine cold

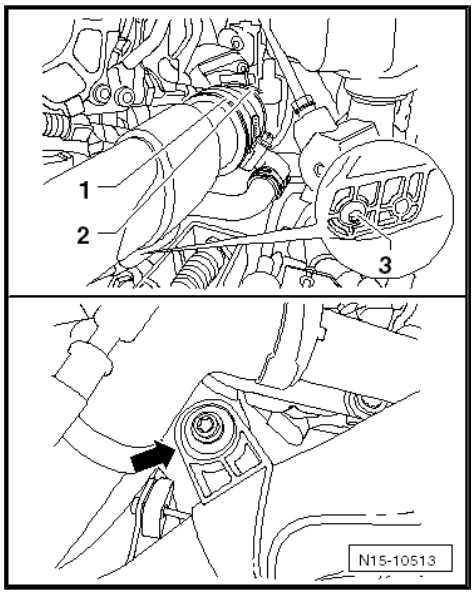
– Briefly open the cap of the coolant expansion tank to remove the remaining pressure in the coolant system.

– Remove air filter housing ⇒ page 426 .

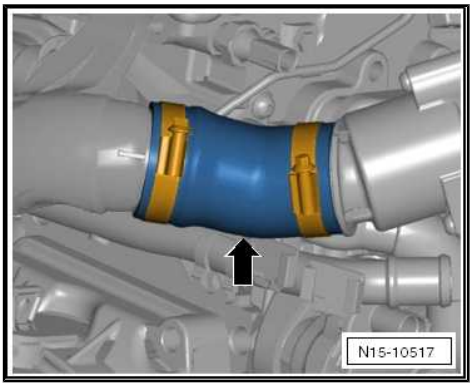
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Release the fixing screw -3- from the charge air pipe, slacken the clamp -1- or -2-.

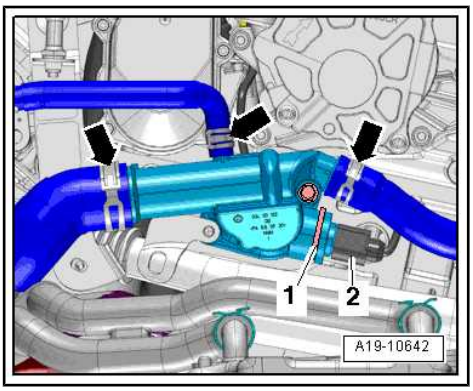
– Release fixing screw -arrow- of charge air pipe.



– Detach the connecting hose -arrow- as far as possible from the pulsation dampener.
– Push the left charge air pipe as well as the left coolant pipe to the left.




– Disconnect plug -2- at the coolant temperature sender - G62- .




**Note**

- *In order to collect flowing out coolant, place a cloth below the connection fitting.*
- *Have a new coolant temperature sender - G62- with a new gasket ring ready.*

– Remove the retaining clip -1-, pull the coolant temperature sender - G62- out of the connection fitting and install a new coolant temperature sender - G62- .
– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

Further installation occurs in reverse order.

**Tightening torques**

- ⇒ “2.1 Charge air cooler”, page 367

# 2 Coolant pump and coolant regulator

⇒ "2.1 Summary of components - coolant pump and coolant thermostat", page 240

⇒ "2.2 Removing and installing coolant pump", page 241

⇒ "2.3 Removing and installing thermostat", page 242

⇒ "2.4 Testing coolant thermostat", page 249

## 2.1 Summary of components - coolant pump and coolant thermostat

⇒ "2.1.1 Summary of components - coolant pump and coolant regulator up to 05.2010 (Fabia II, Roomster, Octavia II)", page 240

⇒ "2.1.2 Summary of components - coolant pump and 4/2 way valve with coolant regulator as of 06.2010 (Fabia II, Roomster, Octavia II, Superb II, Yeti, Rapid India, Rapid NH)", page 241

### 2.1.1 Summary of components - coolant pump and coolant regulator up to 05.2010 (Fabia II, Roomster, Octavia II)

**1 - Coolant pump**
- ❑ wymontowanie i zamontowanie ⇒ page 241

**2 - Screw**
- ❑ 15 Nm

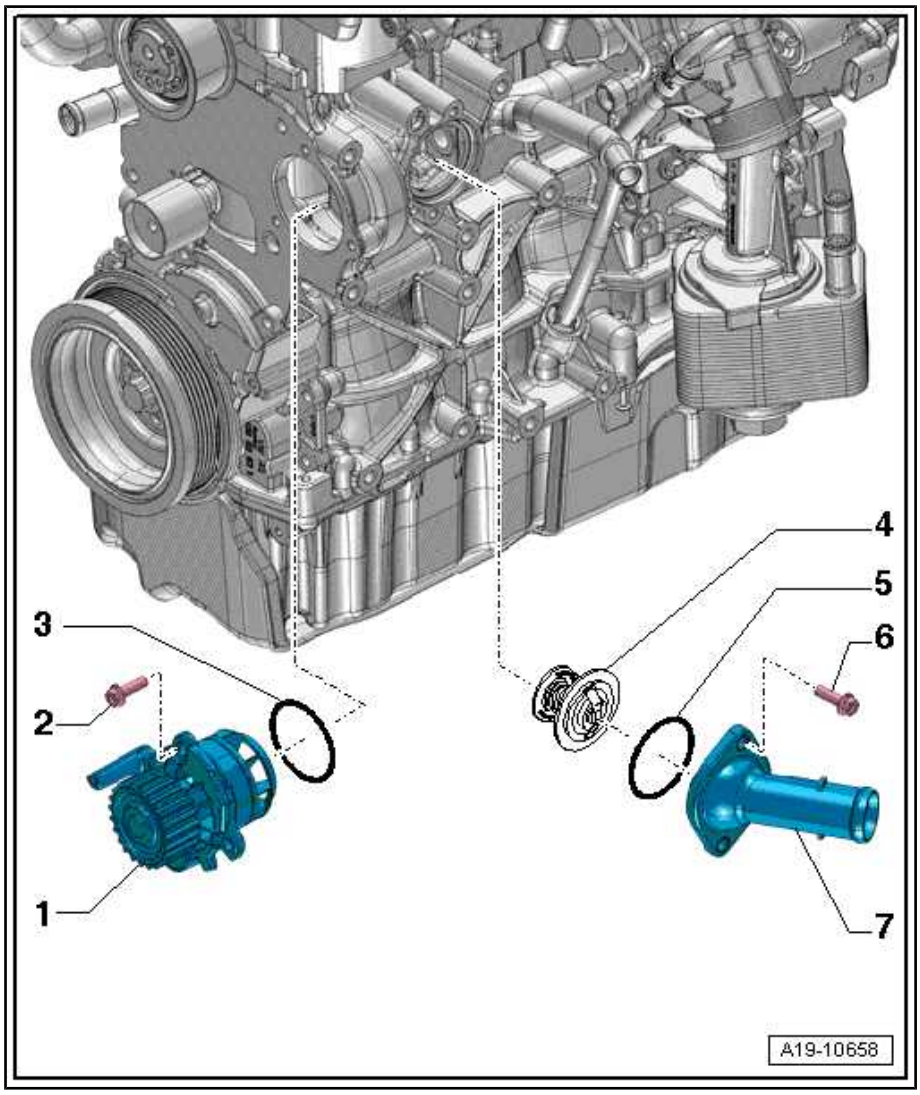
**3 - O-ring**
- ❑ replace

**4 - Coolant regulator**
- ❑ wymontowanie i zamontowanie ⇒ page 242
- ❑ sprawdzanie ⇒ page 249

**5 - O-ring**
- ❑ replace

**6 - Screw**
- ❑ 13 Nm

**7 - Connection fittings**



## 2.1.2 Summary of components - coolant pump and 4/2 way valve with coolant regulator as of 06.2010 (Fabia II, Roomster, Octavia II, Superb II, Yeti, Rapid India, Rapid NH)

**1 - Coolant pump**

- ❑ wymontowanie i zamontowanie ⇒ page 241

**2 - Screw**

- ❑ 15 Nm

**3 - O-ring**

- ❑ replace

**4 - O-ring**

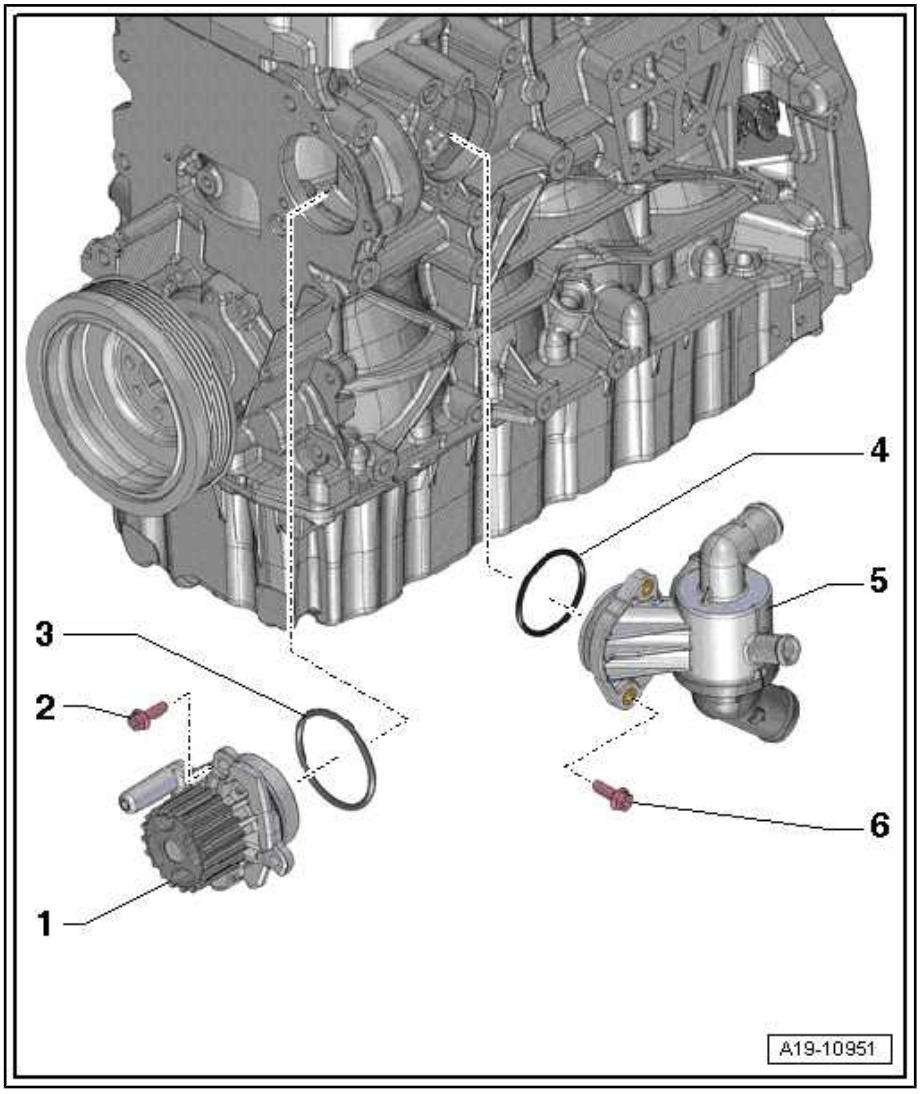
- ❑ replace

**5 - 4/2 way valve with coolant regulator**

- ❑ The coolant regulator is integrated in the 4/2 way valve and cannot be replaced separately
- ❑ wymontowanie i zamontowanie ⇒ page 242
- ❑ sprawdzanie ⇒ page 249

**6 - Screw**

- ❑ 15 Nm




## 2.2 Removing and installing coolant pump

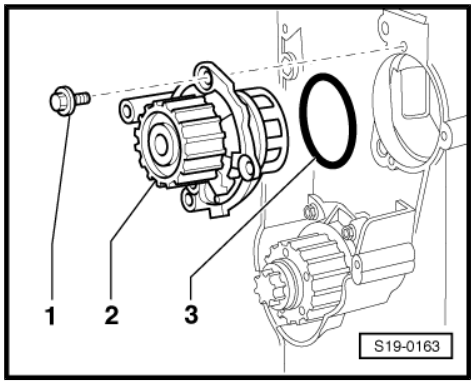
**Removing**

– Drain coolant ⇒ page 223 .

– Removing toothed belt ⇒ page 90 .

– Release screws -1- and remove coolant pump -2-.

– Remove O-ring -3-.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

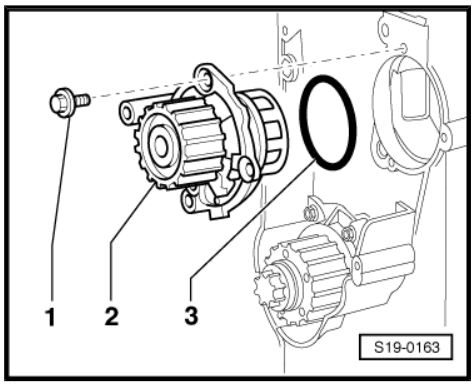
*Renew O-ring.*

– Clean sealing surface for O-ring or smoothen.

– Moisten the new O-ring -3- with coolant.

– Attach the coolant pump -2-.

• Fitting position: Plug in the housing is pointing downwards.




– Tighten the screws -1- of the coolant pump.

– Installing the timing belt ⇒ page 90 .

– Top up coolant ⇒ page 223 .

**Tightening torques**

♦ ⇒ “2.1 Summary of components - coolant pump and coolant thermostat”, page 240

## 2.3 Removing and installing thermostat

⇒ “2.3.1 Removing and installing coolant regulator up to 5.2010 (Fabia II, Roomster)”, page 242

⇒ “2.3.2 Removing and installing coolant regulator up to 5.2010 (Octavia II)”, page 244

⇒ “2.3.3 Removing and installing 4/2 way valve with coolant regulator as of 06.2010 (Fabia II, Roomster, Octavia II, Superb II, Yeti, Rapid India, Rapid NH)”, page 247

### 2.3.1 Removing and installing coolant regulator up to 5.2010 (Fabia II, Roomster)

**Special tools and workshop equipment required**

♦ Flexible-head wrench SW 10 - 3185-

♦ Socket insert - T10058-

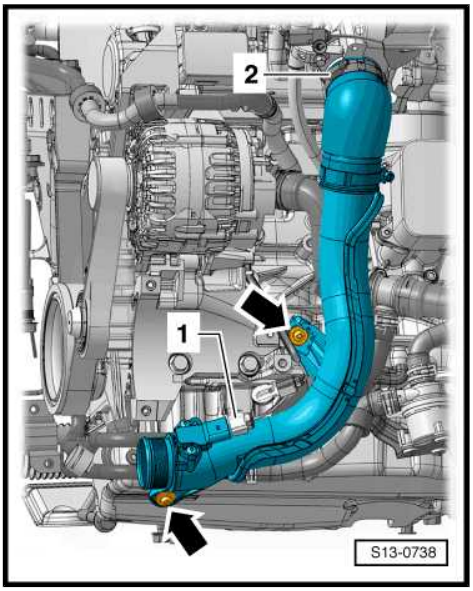
♦ Catch pan , e.g. -VAS 6208-

♦ Pliers for spring strap clamps

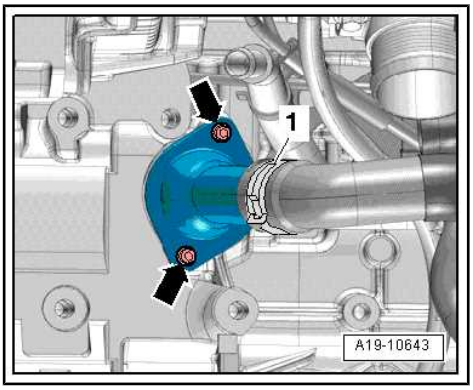
**Removing**

– Drain coolant ⇒ page 223 .

– Release screws -arrows-.
– Loosen hose clamp -2-.
– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.




– Remove the coolant hose from the connection fitting, to do so slacken the hose clamp -1-.
– Slacken the screws -arrows- using the flexible-head wrench - 3185- , screw out with socket insert - T10058 - and remove the connection fitting.




– Turn the coolant thermostat -2- approx. 15° clockwise -arrow- and remove it from the connection fitting.
– Remove O-ring -1-.

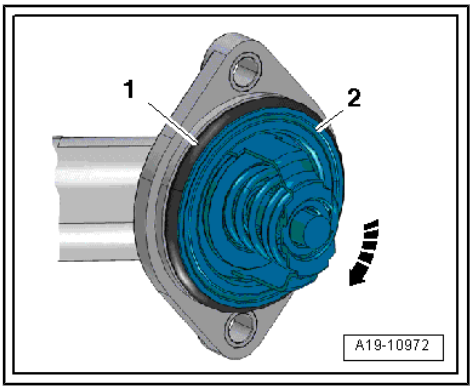
**Install**

Installation is performed in the reverse order, pay attention to the following points:

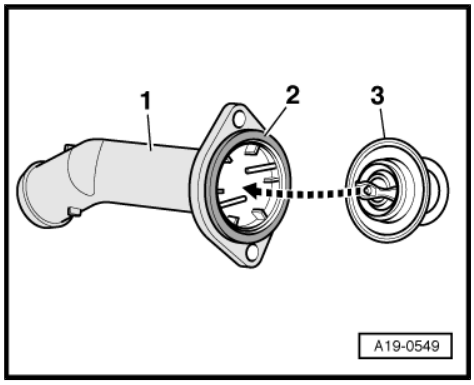
**Note**

- *Renew O-ring.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with specified clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

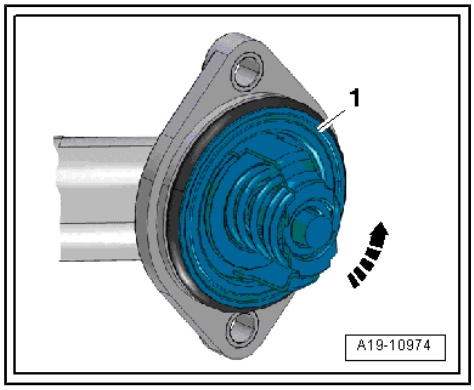
– Clean sealing surface for O-ring or smoothen.
– Moisten O-ring -2- with coolant additive.



– Insert the coolant regulator -3- with the O-ring -2-.

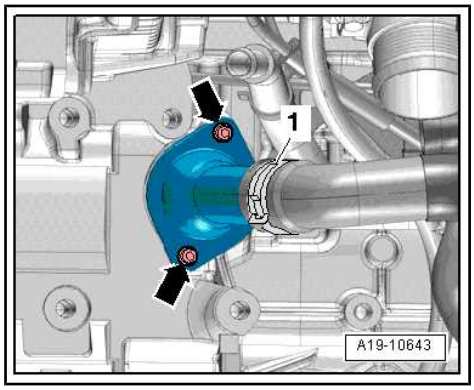



– Screw in coolant thermostat -1- anti-clockwise as far as the stop -arrow-.




– Fit connection fitting onto cylinder block and tighten screws -arrows-.

– Top up coolant ⇒ page 223 .




**Tightening torques**

- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “2.1 Summary of components - coolant pump and coolant thermostat”, page 240

## 2.3.2 Removing and installing coolant regulator up to 5.2010 (Octavia II)

**Special tools and workshop equipment required**

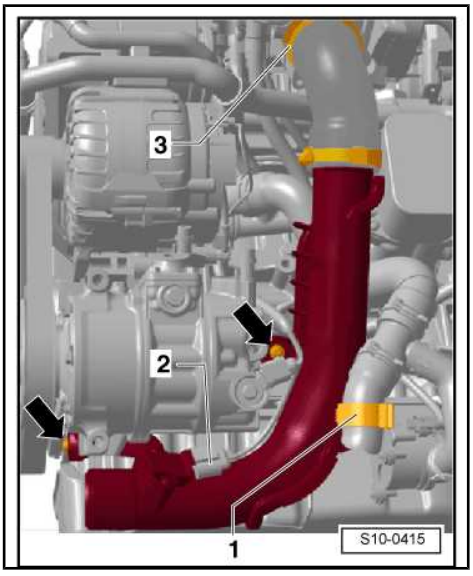
- Flexible-head wrench SW 10 - 3185-
- Socket insert - T10058-
- Catch pan , e.g. -VAS 6208-
- Pliers for spring strap clamps

**Removing**

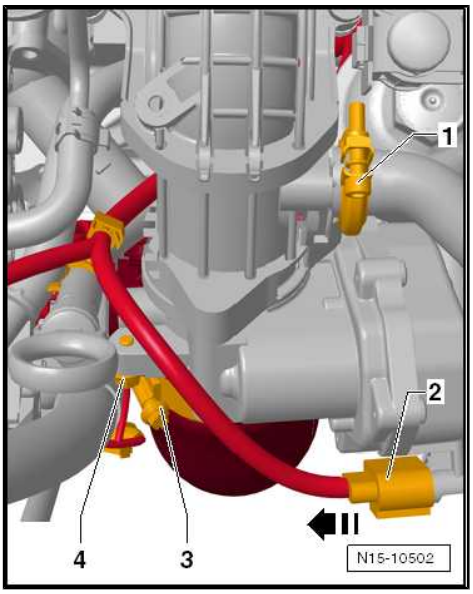
– Drain coolant ⇒ page 223 .

– Remove fan shroud with radiator ⇒ page 259 .

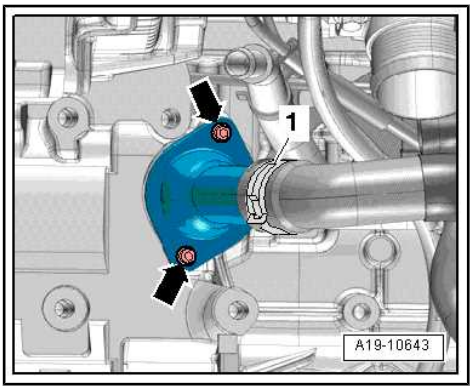
– Release screws -arrows-.
– Expose coolant hose -1-.
– Loosen hose clamp -3-.
– Disconnect the plug -2- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.




– Disconnect the plug -2- from the throttle valve control unit - J338- .
– Unscrew the top fixing screw of the guide pipe for the oil dip-stick -4-.
– Remove throttle valve control unit - J338- and take off.

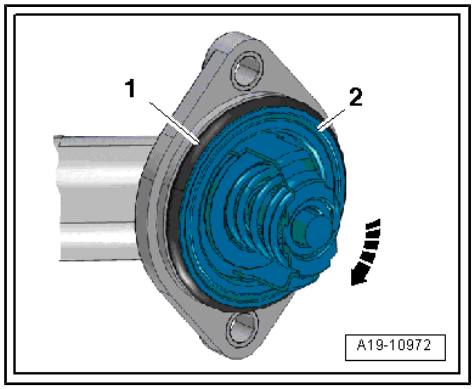



– Remove the coolant hose from the connection fitting, to do so slacken the hose clamp -1-.
– Slacken the screws -arrows- using the hinged wrench SW 10 - 3185- , screw out with socket insert - T10058- and remove the connection fitting.



– Turn the coolant thermostat -2- approx. 15° clockwise -arrow- and remove it from the connection fitting.

– Remove O-ring -1-.




### Install

Installation is performed in the reverse order, pay attention to the following points:

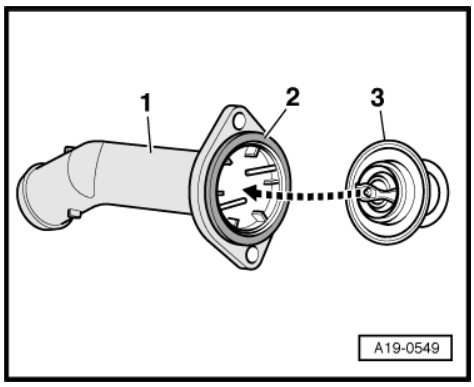
**Note**

- *Renew O-ring.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with specified clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

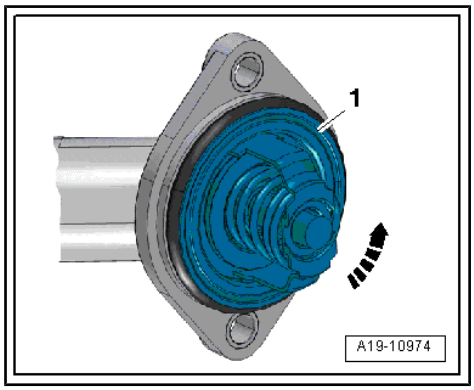
– Clean sealing surface for O-ring or smoothen.

– Moisten O-ring -2- with coolant additive.

– Insert the coolant regulator -3- with the O-ring -2-.

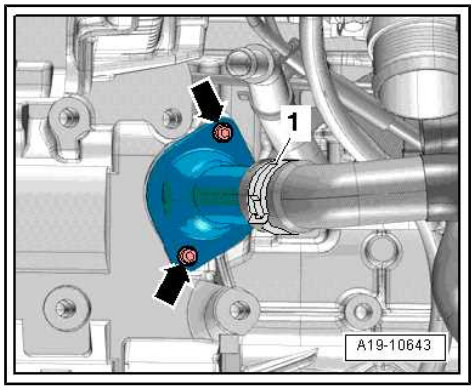



– Screw in coolant thermostat -1- anti-clockwise as far as the stop -arrow-.




– Fit connection fitting onto cylinder block and tighten screws -arrows-.

– Top up coolant ⇒ page 223 .




### Tightening torques

- ⇒ “2.1 Summary of components - coolant pump and coolant thermostat”, page 240
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189
- ⇒ “3.1 Intake manifold with component parts”, page 414

## 2.3.3 Removing and installing 4/2 way valve with coolant regulator as of 06.2010 (Fabia II, Roomster, Octavia II, Superb II, Yeti, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Catch pan , e.g. -VAS 6208-
- Pliers for spring strap clamps

**Removing**

– Drain coolant ⇒ page 223 .

– Remove the generator ⇒ Electrical System; Rep. gr. 27 .

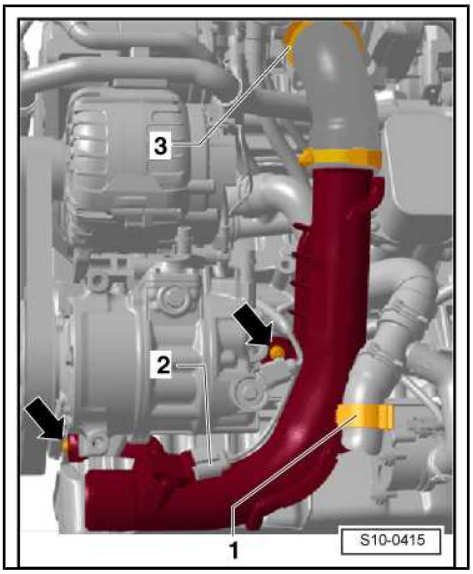
– Release screws -arrows-.

**Vehicles Octavia, Superb II, Yeti**

– Expose coolant hose -1-.

– Loosen hose clamp -3-.

– Disconnect the plug -2- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.

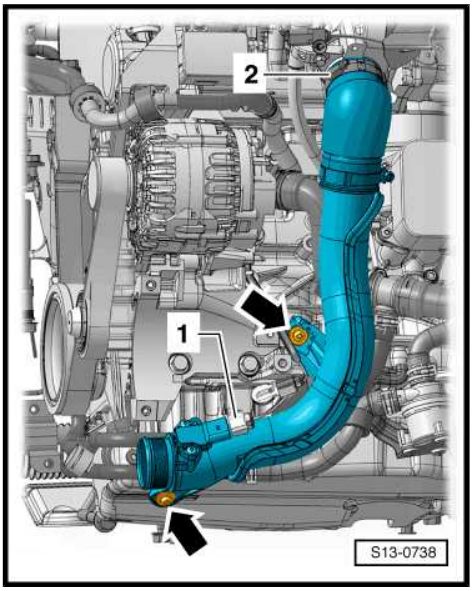



**Vehicles Fabia II, Roomster, Rapid India, Rapid NH**

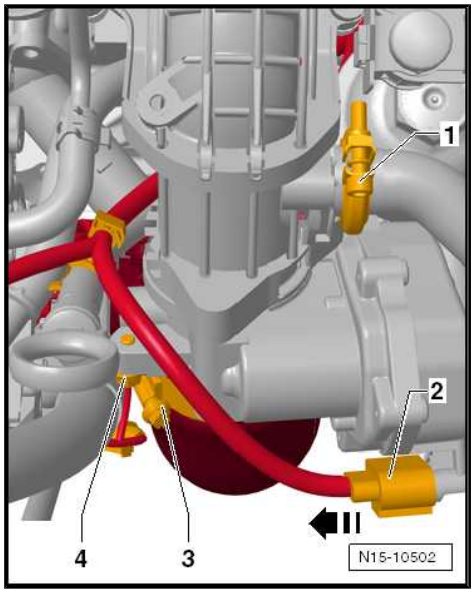
– Loosen hose clamp -2-.

– Disconnect the plug -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the right charge air pipe.

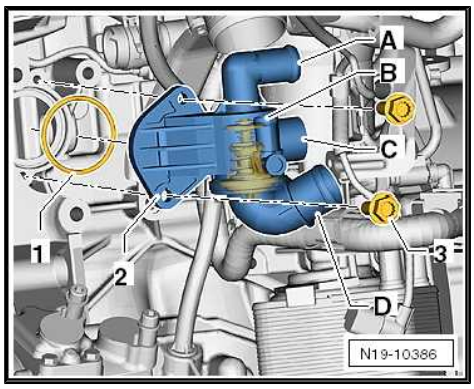
**Continued for all vehicles**



– Disconnect the plug -2- from the throttle valve control unit - J338- .
– Unscrew the top fixing screw of the guide pipe for the oil dipstick -4-.
– Remove throttle valve control unit - J338- and take off.




– Remove the coolant hoses, to do so slacken the hose clamps -A-, -B- and -D-.
– Unscrew bolts -3-.
– Remove the 4/2 way valve with coolant regulator from the cylinder block and then detach it from the front coolant pipe.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Renew O-ring.*
- *Hose connections as well as charge air pipes and charge air hoses must be free of oil and grease before being installed.*
- *Observe the instructions for installing the charge air hoses and tightening torques of the screw clamps ⇒ page 372 .*
- *Secure all hose connections with the prescribed clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

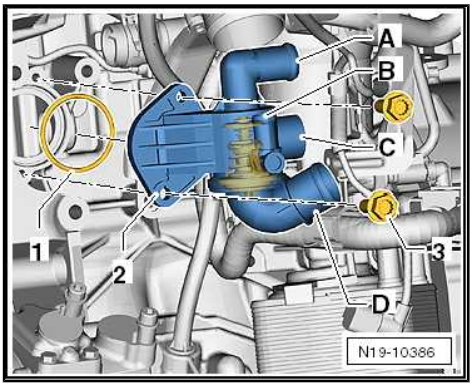
– Moisten new O-ring -1- with coolant.

– First of all position the 4/2 way valve with coolant regulator with the connection fitting -C- on the front coolant pipe and subsequently insert it into the cylinder block.

Screw in fixing screws -3- for 4/2 way valve with coolant regulator -2-.

– Connect the coolant hoses to the connection fittings -A-, -B- and -D-.

– Top up coolant ⇒ page 223 .




**Tightening torques**

- ⇒ “2.1 Summary of components - coolant pump and coolant thermostat”, page 240
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189
- ⇒ “3.1 Intake manifold with component parts”, page 414

## 2.4 Testing coolant thermostat

**Vehicles with coolant thermostat**

– Heat up the removed coolant regulator in a water bath.

**Vehicles with 4/2 way valve**

– Heat up the removed 4/2 way valve with coolant regulator in a water bath.

| Start of opening | End of opening | Opening stroke |
|---|---|---|
| approx. 87°C | approx. 102°C [1)] | min. 7 mm |

- [1)] Cannot be tested.

# 3 Coolers, radiator, radiator fan



## 3.1 Assembly overview - radiator/radiator fan



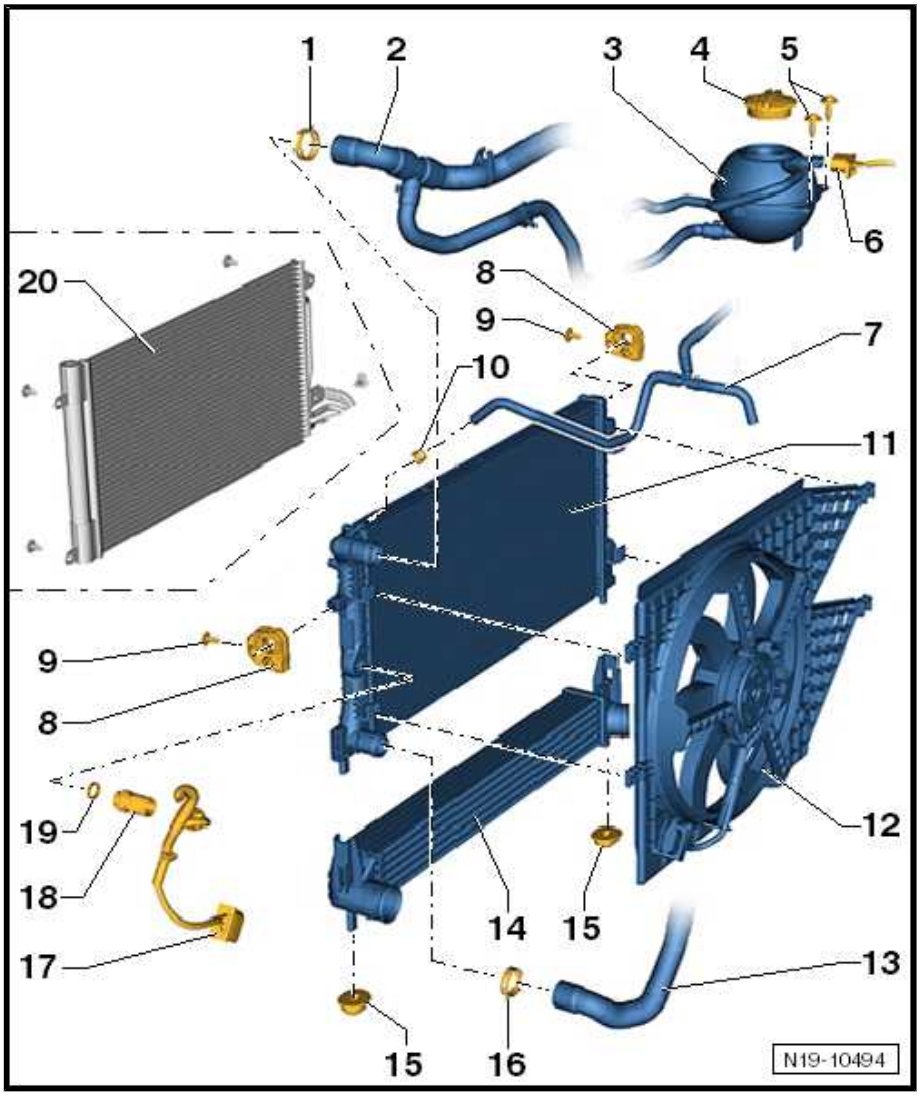
### 3.1.1 Summary of components - cooler/radiator fan (Fabia II,Roomster,Rapid NH)

**WARNING**

*Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.*

**Note**

- *When the engine is warm the cooling system is under pressure. If necessary, release pressure before beginning repair work.*
- *Secure all hose connections with corresponding hose clips.*
- *Spring-type clip pliers are recommended for installation of spring-type clips.*
- *Always replace seals and gasket rings.*
- *When installing fit the coolant hoses free of stress, without them touching any other components (pay attention to the marking on the coolant connection).*




**1 - Clamp**
- ❑ replace if damaged

**2 - Top coolant hose**
- ❑ connection diagram for coolant hoses ⇒ page 218

**3 - Expansion reservoir**
- ❑ Check the cooling system for tightness ⇒ page 266

**4 - Screw cap**
- ❑ Test pressure 0.14...0.16 MPa (1.4...1.6 bar)
- ❑ sprawdzanie ⇒ page 266

**5 - Screw**
- ❑ 5 Nm

**6 - Connector**

**7 - Coolant hose**

**8 - Radiator bearing**

**9 - Screw**
- ❑ 5 Nm

**10 - Clamp**
- ❑ replace if damaged

**11 - Radiator**
- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**12 - Fan shroud with radiator fan - V7-**
- ❑ wymontowanie i zamontowanie ⇒ page 259
- ❑ Various versions, observe part numbers ⇒ ETKA - Electronic Catalogue of Original Parts

**13 - Bottom coolant hose**
- ❑ connection diagram for coolant hoses ⇒ page 218

**14 - Charge air cooler**
- ❑ remove and install together with radiator ⇒ page 262

**15 - Bottom radiator bearing**
- ❑ black

**16 - Clamp**
- ❑ replace if damaged

**17 - Connector**

**18 - Thermoswitch for radiator fan - F18-**
- ❑ for fan
- ❑ switching temperatures:

1. Stage
- ♦ on: 91 … 97 °C
- ♦ off: 84 … 91 °C

2. Stage
- ♦ on: 99 … 105 °C
- ♦ off: 91 … 98 °C
  - ❑ 35 Nm

**19 - Sealing ring**
- ❑ replace

**20 - AC condenser**
- ❑ removing and installing ⇒ Heating, Air Conditioning; Rep. gr. 87

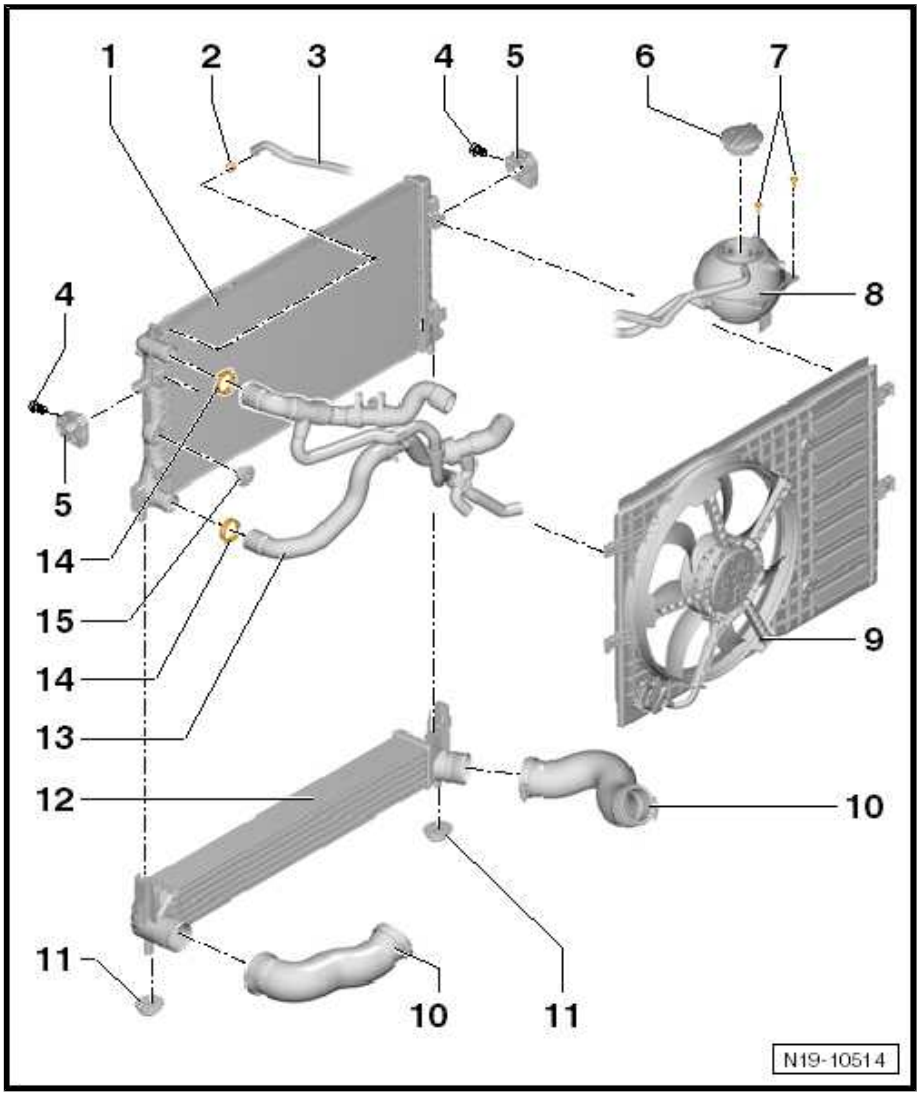
## 3.1.2 Summary of components - cooler/radiator fan (Rapid India)

**WARNING**

***Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

**Note**

- ♦ *When the engine is warm the cooling system is under pressure. If necessary, release pressure before beginning repair work.*
- ♦ *Secure all hose connections with corresponding hose clips.*
- ♦ *Spring-type clip pliers are recommended for installation of spring-type clips.*
- ♦ *Always replace seals and gasket rings.*
- ♦ *When installing fit the coolant hoses free of stress, without them touching any other components (pay attention to the marking on the coolant connection).*




**1 - Radiator**

- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**2 - Clamp**

- ❑ replace if damaged

**3 - Top coolant hose**

- ❑ connection diagram for coolant hoses ⇒ page 218

**4 - Screw**

- ❑ 5 Nm

**5 - Radiator bearing**

**6 - Screw cap**

- ❑ Test pressure 0.14...0.16 MPa (1.4...1.6 bar)
- ❑ sprawdzanie ⇒ page 266

**7 - Screw**

- ❑ 5 Nm

**8 - Expansion reservoir**

- ❑ Check the cooling system for tightness ⇒ page 266

**9 - Fan shroud with radiator fan - V7-**

- ❑ wymontowanie i zamontowanie ⇒ page 259

**10 - Charge air hose**

**11 - Bottom radiator bearing**

- ❑ black

**12 - Charge air cooler**

- ❑ remove and install together with radiator ⇒ page 262

**13 - Coolant hose**

- ❑ connection diagram for coolant hoses ⇒ page 218

**14 - Clamp**

- ❑ replace if damaged

**15 - Plug**

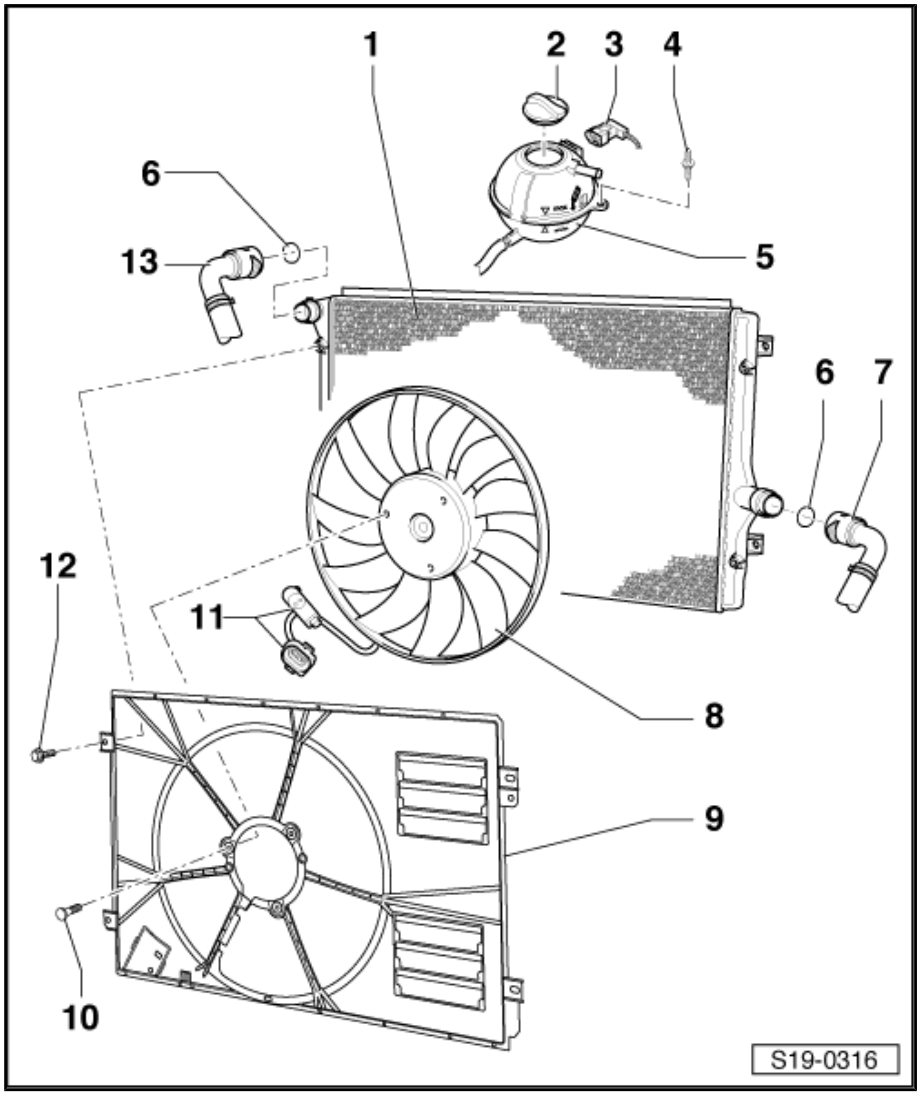
## 3.1.3 Summary of components - cooler/radiator fan (Octavia II, Superb II, Yeti)

**WARNING**

*Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.*

**Note**

- *When the engine is warm the cooling system is under pressure. If necessary, release pressure before beginning repair work.*
- *Secure all hose connections with corresponding hose clips.*
- *Spring-type clip pliers are recommended for installation of spring-type clips.*
- *Always replace seals and gasket rings.*
- *When installing fit the coolant hoses free of stress, without them touching any other components (pay attention to the marking on the coolant connection).*




**1 - Radiator**
- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**2 - Screw cap**
- ❑ Test pressure 0.14...0.16 MPa (1.4...1.6 bar)
- ❑ sprawdzanie ⇒ page 268

**3 - Connector**

**4 - Screw**
- ❑ 3 Nm

**5 - Expansion reservoir**

**6 - O-ring**
- ❑ replace if damaged

**7 - Bottom coolant hose**
- ❑ connection diagram for coolant hoses ⇒ page 218

**8 - Radiator fan - V7-**
- ❑ wymontowanie i zamontowanie ⇒ page 259

**9 - Fan shroud**

**10 - Screw**
- ❑ 5 Nm

**11 - Connector**

**12 - Screw**
- ❑ 5 Nm

**13 - Top coolant hose**
- ❑ to connection fitting laterally at cylinder head
- ❑ connection diagram for coolant hoses ⇒ page 218

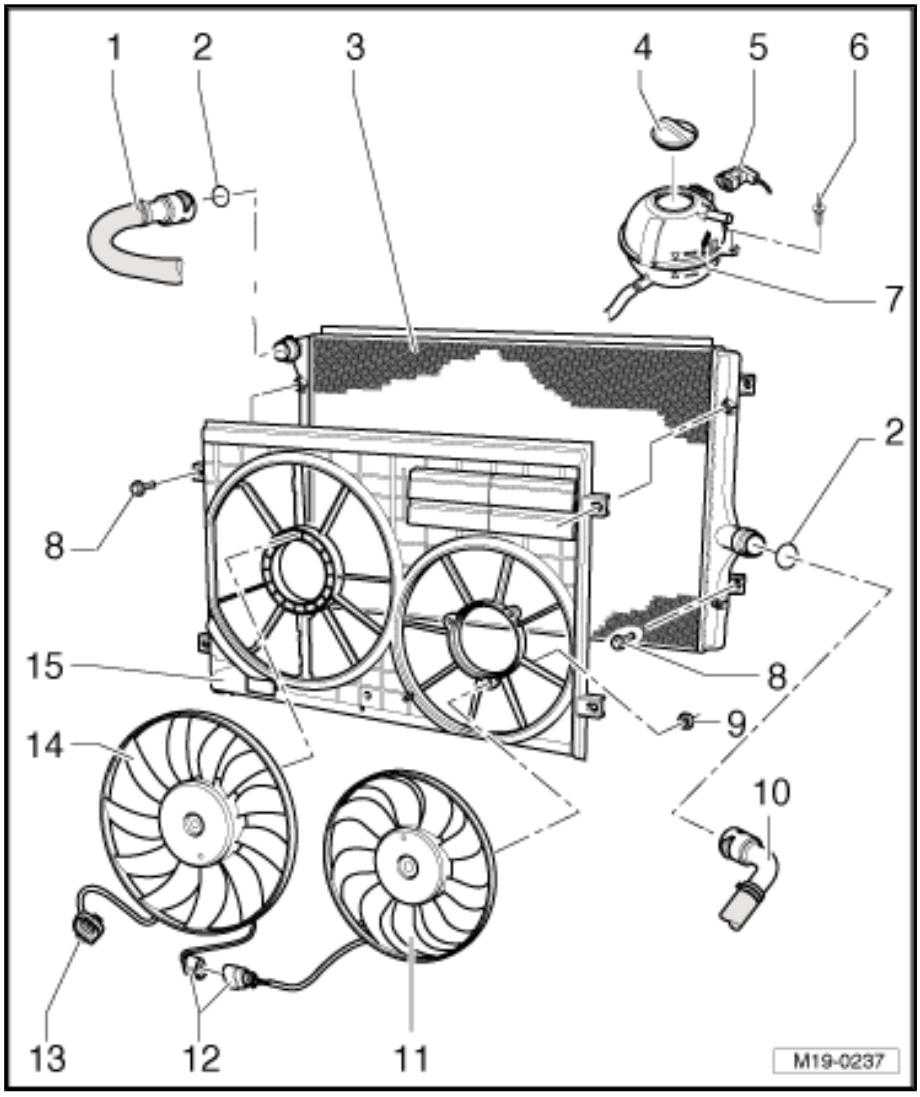
## 3.1.4 Summary of components - cooler/two radiator fans (Octavia II, Superb II, Yeti)

**WARNING**

***Hot steam or hot coolant may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

**Note**

- *When the engine is warm the cooling system is under pressure. If necessary, release pressure before beginning repair work.*
- *Secure all hose connections with corresponding hose clips.*
- *Spring-type clip pliers are recommended for installation of spring-type clips.*
- *Always replace seals and gasket rings.*
- *When installing fit the coolant hoses free of stress, without them touching any other components (pay attention to the marking on the coolant connection).*




**1 - Top coolant hose**
- ❑ to connection fitting laterally at cylinder head
- ❑ connection diagram for coolant hoses ⇒ page 218

**2 - O-ring**
- ❑ replace if damaged

**3 - Radiator**
- ❑ wymontowanie i zamontowanie ⇒ page 262
- ❑ after replacing fill entire system with fresh coolant ⇒ page 223

**4 - Screw cap**
- ❑ Test pressure 0.14...0.16 MPa (1.4...1.6 bar)
- ❑ sprawdzanie ⇒ page 268

**5 - Connector**

**6 - Screw**
- ❑ 3 Nm

**7 - Expansion reservoir**

**8 - Screw**
- ❑ 5 Nm

**9 - Nut**
- ❑ 5 Nm

**10 - Bottom coolant hose**
- ❑ connection diagram for coolant hoses ⇒ page 218

**11 - Right radiator fan - V35-**
- ❑ wymontowanie i zamontowanie ⇒ page 259

**12 - Connector**

**13 - Connector**

**14 - Radiator fan - V7-**
- ❑ wymontowanie i zamontowanie ⇒ page 259

**15 - Fan shroud**

## 3.2 Fan shroud with radiator fan - V7-

⇒ "3.2.1 Summary of components - fan shroud with radiator fan V7 (Fabia II,Roomster,Rapid NH)", page 257

⇒ "3.2.2 Summary of components - fan shroud with radiator fan V7 (Rapid India)", page 258

### 3.2.1 Summary of components - fan shroud with radiator fan - V7- (Fabia II,Roomster,Rapid NH)

**1 - Nut**

- ❑ 5 Nm

**2 - Bushing**

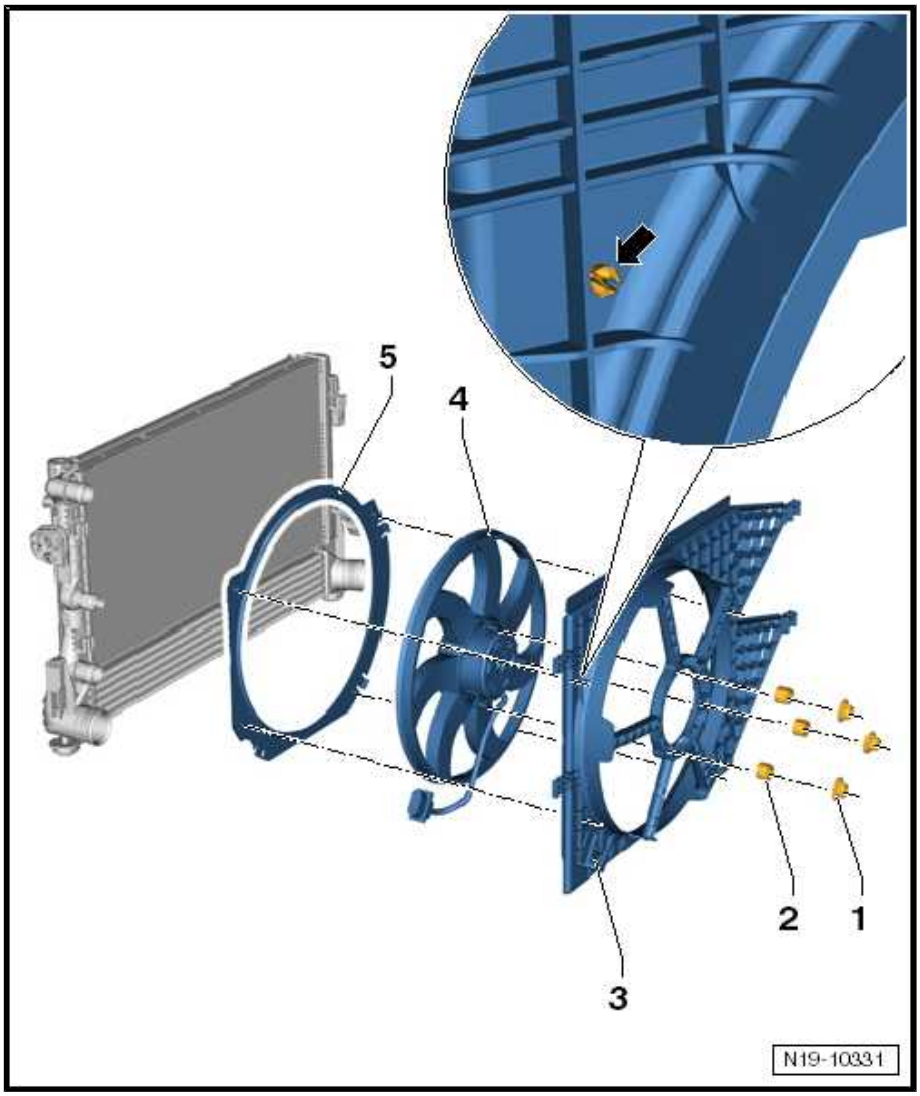
**3 - Fan shroud**

- ❑ wymontowanie i zamontowanie ⇒ page 259
- ❑ Various versions, observe part numbers ⇒ ETKA - Electronic Catalogue of Original Parts

**4 - Radiator fan - V7-**

**5 - The fan ring**

- ❑ attached to the fan shroud by means of integrated expanding rivets -arrow-



## 3.2.2 Summary of components - fan shroud with radiator fan - V7- (Rapid India)

**1 - Nut**

- ❑ 5 Nm

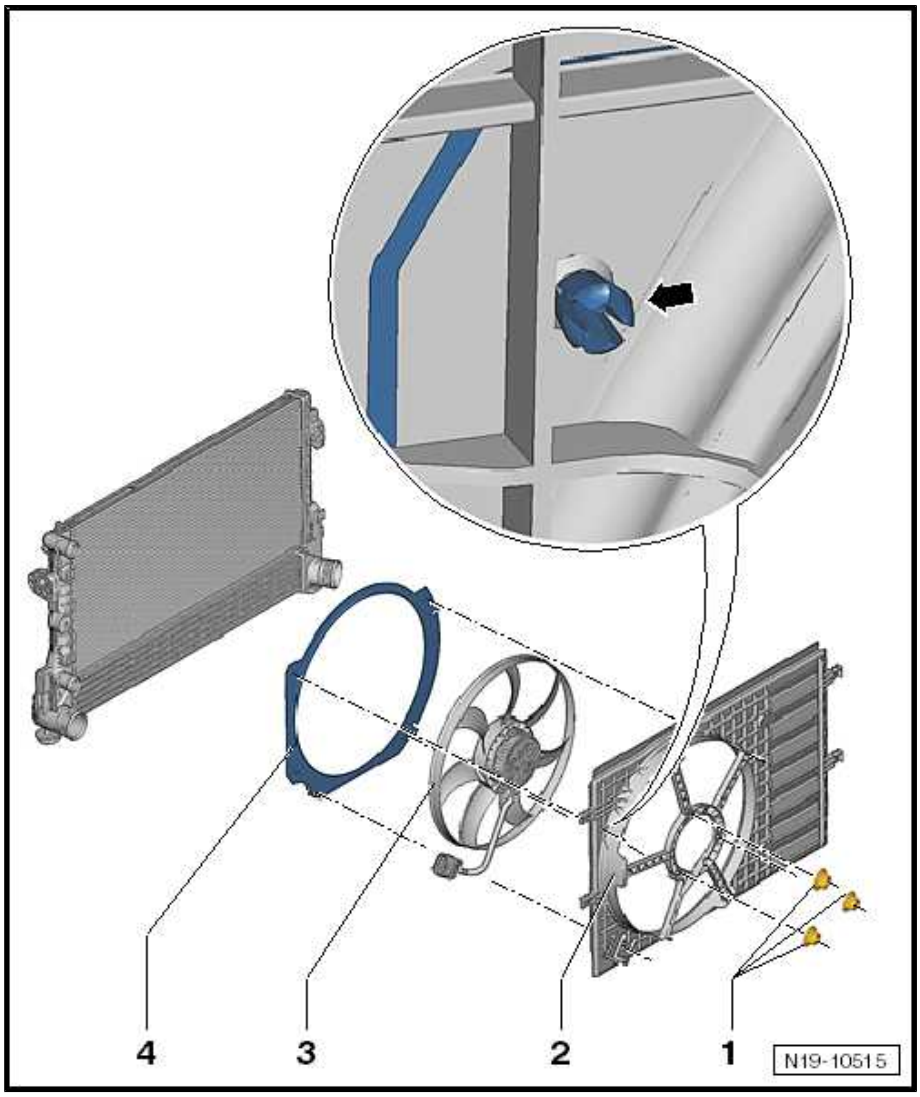
**2 - Fan shroud**

- ❑ wymontowanie i zamontowanie ⇒ page 259
- ❑ Various versions, observe part numbers ⇒ ETKA - Electronic Catalogue of Original Parts

**3 - Radiator fan - V7-**

**4 - The fan ring**

- ❑ attached to the fan shroud by means of integrated expanding rivets -arrow-



## 3.3 Removing and installing fan shroud with radiator fan

⇒ "3.3.1 Removing and installing fan shroud with radiator fan V7 (Fabia II, Roomster, Rapid India, Rapid NH)", page 259

⇒ "3.3.2 Removing and installing fan shroud for radiator fan V7 and V35 (Octavia II, Superb II, Yeti)", page 260

## 3.3.1 Removing and installing fan shroud with radiator fan - V7- (Fabia II, Roomster, Rapid India, Rapid NH)

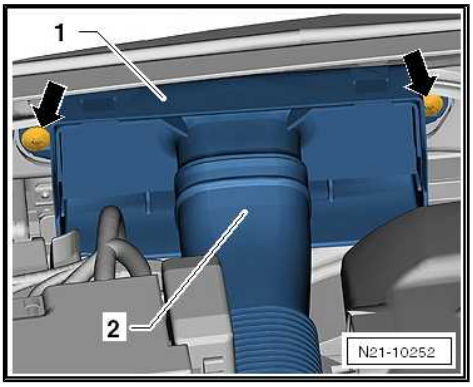
**Removing**

– Screw out screws -arrows- for inlet connection -1-. Remove connecting hose -2- to air filter.

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

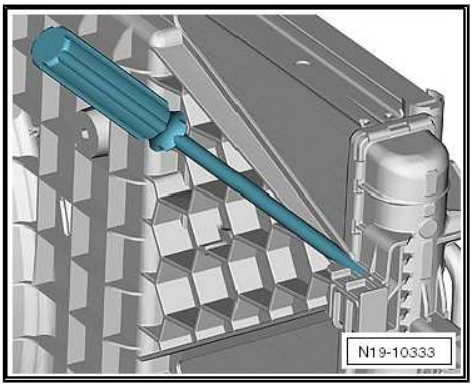
– Remove right charge air hose and left charge air hose ⇒ page 367 .

– Disconnect plug for radiator fan - V7- -Pos. 17- ⇒ page 250 .




– Release the fan shroud with the radiator fan - V7- on the right and left catch hooks using a suitable tool.

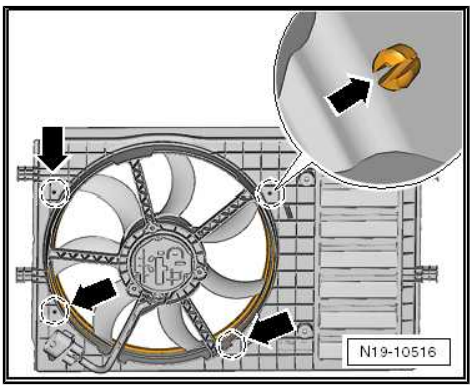
– Push the fan shroud with the radiator fan - V7- upwards out of the supports and remove downwards.



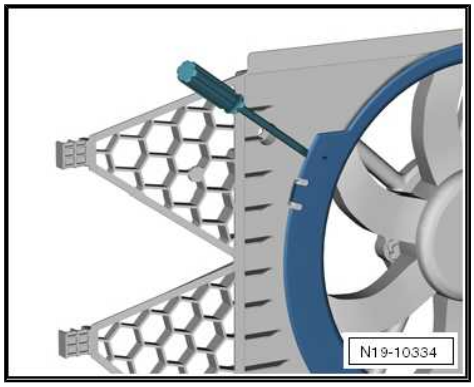

**Remove the radiator fan from the fan shroud**

– Disconnect the plug connection for the radiator fan - V7- from the holder.

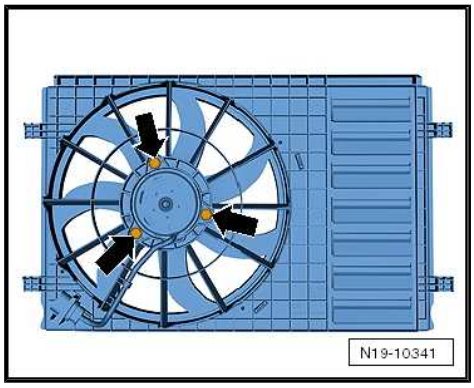
– Turn back dowels from the expanding rivet -arrows-.



– Carefully slacken the fan ring on the reverse side of the shroud using a suitable tool.
– Remove fan ring.




– Unscrew the nuts -arrows- and remove the radiator fan - V7- from the shroud.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

– Insert the fan shroud with the radiator fan - V7- from below and slide into all 4 supports on the radiator from above.
• The fan shroud must click audibly into place in the supports on the top right and left.
– Check that the fan shroud with the radiator fan - V7- catches correctly in the installation position.

**Tightening torques**

◆ ⇒ “3.2 Fan shroud with radiator fan V7 ”, page 257

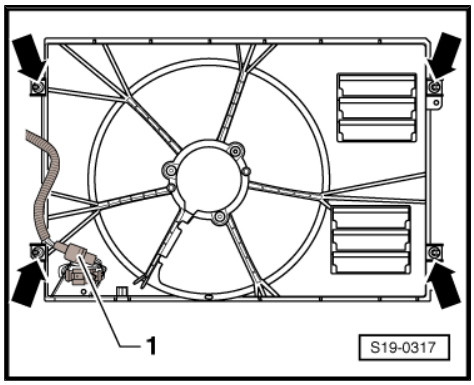
## 3.3.2 Removing and installing fan shroud for radiator fan - V7- and -V35- (Octavia II, Superb II, Yeti)

**Removing**

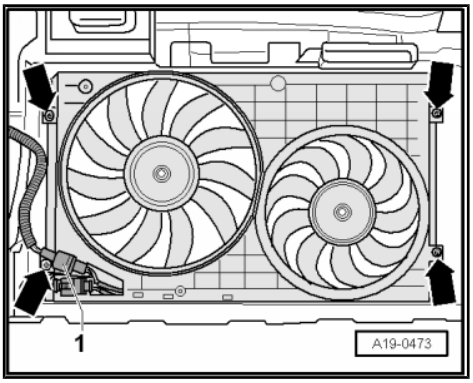
**For vehicles with a fan**

– Unscrew top screws -top arrows- of the fan shroud.

**For vehicles with two fans**



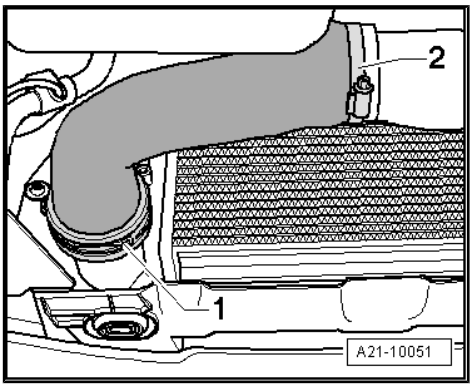
– Unscrew top screws -top arrows- of the fan shroud.




**Continued for all vehicles**

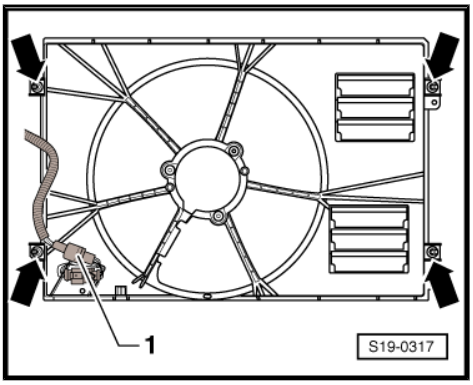
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove the left charge air hose, to do so loosen the hose clamp -2- and raise the clamp -1-.



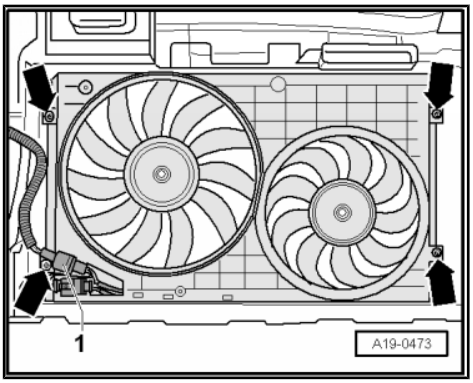

**For vehicles with a fan**

– Separate plug connection -1-.
– Unscrew bottom screw -bottom arrows- of the fan shroud.
– Remove fan shroud with radiator fan downwards.




**For vehicles with two fans**

– Separate plug connection -1-.
– Unscrew bottom screw -bottom arrows- of the fan shroud.
– Remove fan shroud with radiator fans downwards.




**Install**

Installation is carried out in the reverse order.

**Tightening torques**

◆ ⇒ “3.1 Assembly overview - radiator/radiator fan”, page 250

## 3.4 Removing and installing radiator

⇒ "3.4.1 Removing and installing radiator (Fabia II, Roomster, Rapid India, Rapid NH)", page 262

⇒ "3.4.2 Removing and installing radiator (Octavia II, Superb II, Yeti)", page 264

### 3.4.1 Removing and installing radiator (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Catch pan , e.g. -VAS 6208-
- Broad cross-head screwdriver
- Pliers for spring strap clamps

**Removing**

– Remove front bumper ⇒ Body Work; Rep. gr. 63 .

**For Rapid India vehicles**

– Remove battery tray ⇒ Electrical System; Rep. gr. 27 .

**Continued for all vehicles**

– Drain coolant ⇒ page 223 .

– Remove fan shroud with radiator fan - V7- ⇒ page 259 .

**For vehicles Fabia II, Roomster, Rapid NH**

– Disconnect plug from thermo-switch for radiator fan - F18- .

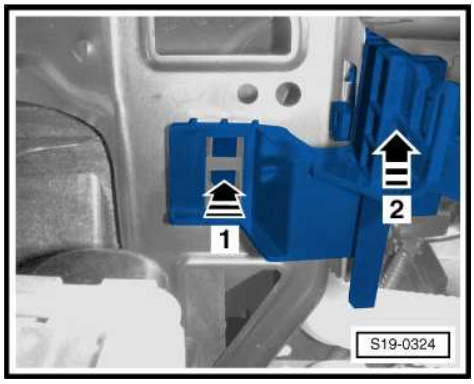
**Continued for all vehicles**

– Detach top coolant hose from connection fitting of radiator.

**For vehicles Fabia II, Roomster, Rapid NH**

– Remove the holder for the windscreen washer fluid reservoir.

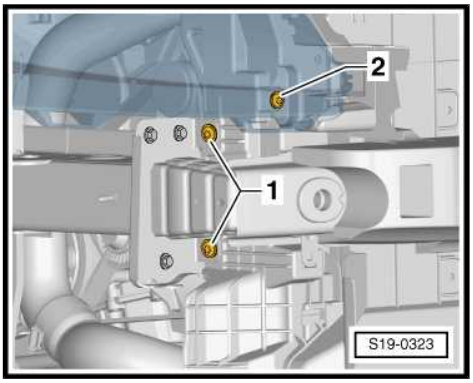
To do so, press in the catch -direction of arrow 1- and at the same time push the bracket upwards -direction of arrow 2-.




**Continued for all vehicles**

– Unscrew right and left screw -2- for radiator bearing.

– Press radiator to the rear and remove radiator mounts to the right and left -Pos. 8- ⇒ page 250 .




**Vehicles without air conditioning system**

– Push the radiator together with the charge air cooler upwards out of the lower rubber bearings and remove it laterally down.

**Vehicles with air conditioning**

– Remove V-ribbed belt ⇒ page 57 .

**WARNING**

*Risk of injury through refrigerant.*

- *Do not open the refrigerant circuit of the air conditioning system.*

**Caution**

*Risk of damaging the condenser as well as the refrigerant lines and hoses.*

- *Do not over-tension or buckle refrigerant lines and hoses.*

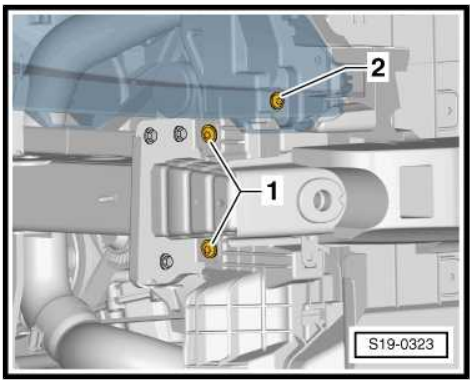
– Remove the AC compressor from the bracket for auxiliary units and secure it with connected refrigerant hoses to the body.

– Mark the installation position of the screws -1- on the right and left and only slacken them.

– Push the radiator together with the charge air cooler and the condensor upwards out of the lower rubber bearings.

To do so, pull the plastic housing of the lock carrier downwards. There is little space on the right between the refrigerant line and the body.

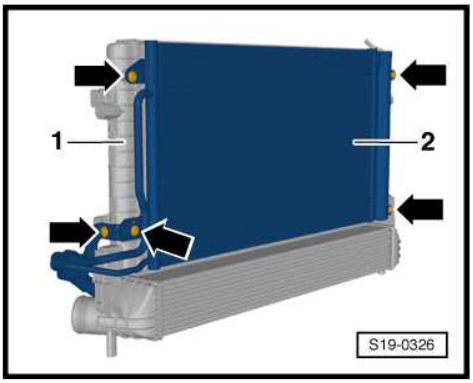
– Lay the radiator with the condensor to the rear.




– Release the screws -arrows- of the condensor -2- from the radiator -1-.

– Draw the condensor forwards and attach to the lock carrier.

– Remove radiator together with charge air cooler laterally down.

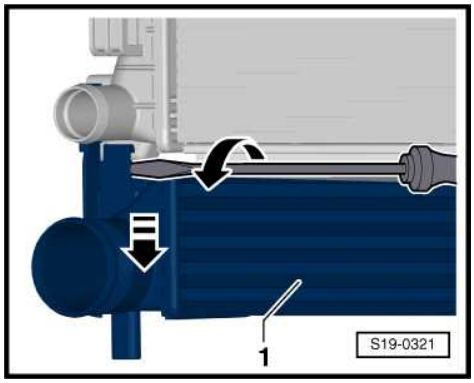



**Separate the charge air cooler from the radiator.**

**Caution**

*To prevent damage to the charge air cooler, the separation of the charge air cooler from the radiator must be carried out by 2 mechanics.*

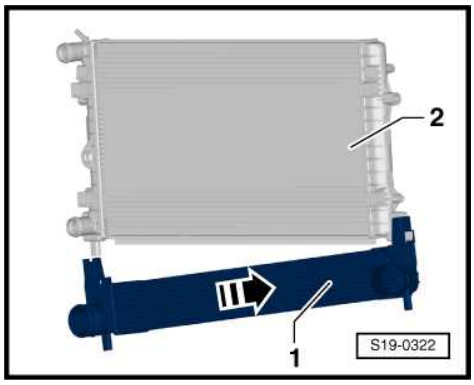
– Slide a broad cross-head screwdriver into the left catch from the front and the rear. Carefully open the catch of the charge air cooler -1- at the radiator by turning the screwdriver.
– Pull the left charge air cooler slightly down in this position.




– Push the charge air cooler -1- to the right out of the catch of the radiator -2-.

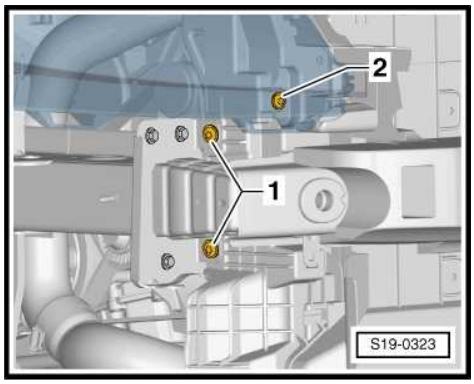
**Install**

Installation is performed in the reverse order, pay attention to the following points:




– On vehicles with air conditioning system, push the plastic housing of the lock carrier upwards into the initial position and tighten the screws -1- on the right and left.

  Tightening torque: 8 Nm.
– Top up coolant ⇒ page 223 .




## 3.4.2 Removing and installing radiator (Octavia II, Superb II, Yeti)

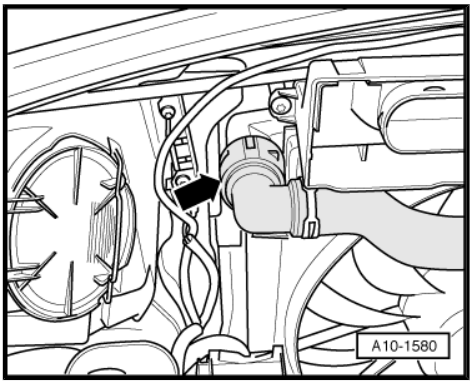
**Special tools and workshop equipment required**

- Catch pan , e.g. -VAS 6208-
- Pliers for spring strap clamps

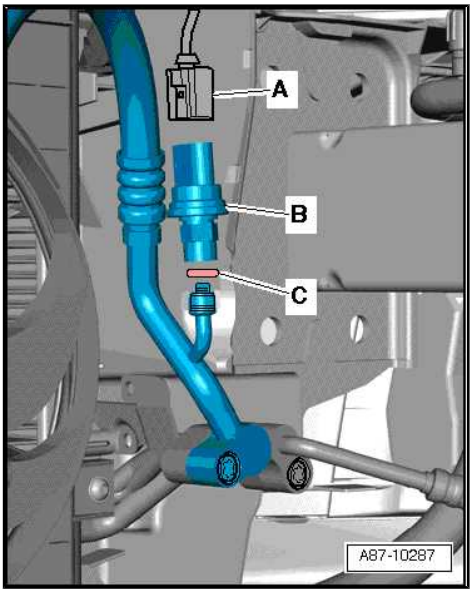
**Removing**

– Drain coolant ⇒ page 223 .

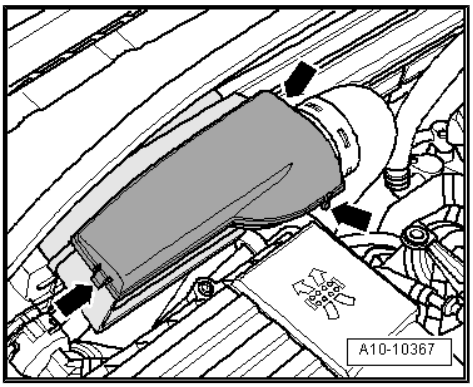
– Pull off left coolant hose from radiator -arrow-.
– Remove fan shroud with radiator ⇒ page 259 .



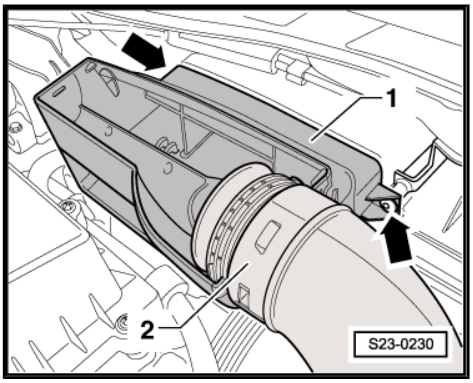

– Disconnect plug -A- on the high pressure sender - G65- -B-.



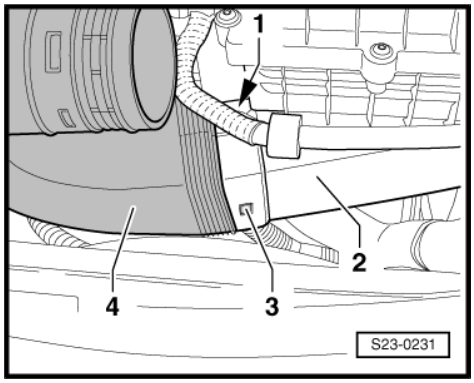

– Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



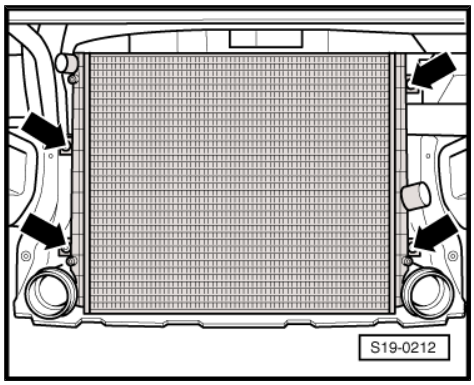

– Release screws -arrows- for connection fitting -1- and take connecting hose -2- out of the guide.



– Press in catch pegs -1- and -3- and pull off connecting hose -4- from air filter housing -2-.




– Screw out screws -arrows- and remove the radiator upwards.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Replace gasket rings and O-rings.*
- *Secure all hose connections with corresponding hose clips.*

– Top up coolant ⇒ page 223 .

**Tightening torques**

- ⇒ “3.1 Assembly overview - radiator/radiator fan”, page 250
- ⇒ “3.4 Air filter”, page 424

## 3.5 Checking the coolant system for leak-tightness

⇒ “3.5.1 Inspecting coolant system with cooling system testing device V.A.G 1274 for tightness”, page 266

⇒ “3.5.2 Inspecting coolant system with cooling system testing device V.A.G 1274 B for tightness”, page 267

### 3.5.1 Inspecting coolant system with cooling system testing device -V.A.G 1274- for tightness

**Special tools and workshop equipment required**

- Cooling system testing device , e.g. -V.A.G 1274-
- Adapter , e.g. -V.A.G 1274/8-
- Adapter , e.g. -V.A.G 1274/9-

**Test condition**

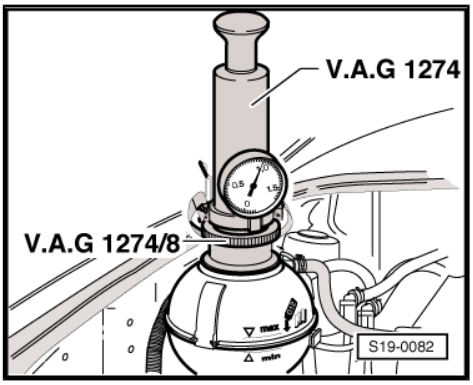
- Engine is at operating temperature.

**Test sequence**

**WARNING**

***Hot steam may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.***

– Open the cap of the coolant expansion reservoir.
– Position Cooling system testing device (e.g. -V.A.G 1274- ) with adapter (e.g. -V.A.G 1274/8- ) on the compensation bottle.
– Using the hand pump of the testing device generate an overpressure of approx. 0.1 MPa (1 bar).
– If the pressure drops determine positions of the leak and repair.




**Testing the pressure relief valve in the cap**

– Screw cap onto tester with adapter (e.g. -V.A.G 1274/9- ).
– Using the hand pump of the testing device generate an overpressure of approx. 0.16 MPa (1.6 bar).
– The pressure relief valve should open at a pressure of 0.14 ... 0.16 MPa (1.4 ... 1.6 bar).

## 3.5.2 Inspecting coolant system with cooling system testing device -V.A.G 1274 B- for tightness

**Special tools and workshop equipment required**

♦ Cooling system testing device - V.A.G 1274B-
♦ Adapter - V.A.G 1274/8-
♦ Adapter - V.A.G 1274/9-

**Test condition**

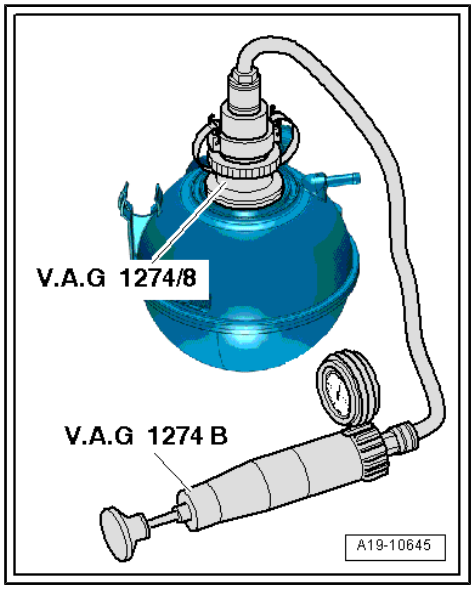
• Engine is at operating temperature.

**Test sequence**

> **WARNING**
>
> *Hot steam may escape when the compensation bottle is opened. Cover the cap with a cloth and open carefully.*

– Open the cap of the coolant expansion reservoir.
– Screw the adapter for the cooling system testing device -V.A.G 1274/8- into the coolant expansion tank.
– Connect the connecting piece -V.A.G 1274 B/1- to the adapter for the cooling system testing device -V.A.G 1274/8- .

– Connect the connecting piece -V.A.G 1274 B/1- via the delivered connecting hose to the cooling system testing device -V.A.G 1274 B- .
– Using the hand pump of the testing device generate an overpressure of approx. 0.1 MPa (1.0 bar).




**WARNING**

*Risk of scalding!*

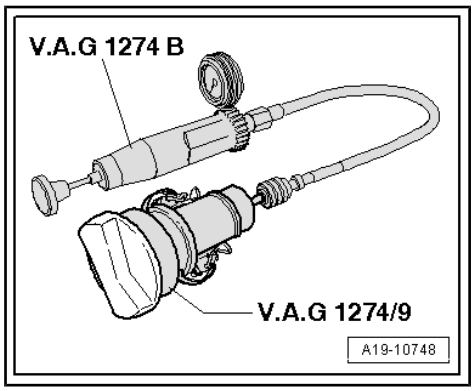
- *Before the cooling system testing device -V.A.G 1274 B- is separated from the connecting hose or the connecting piece -V.A.G 1274 B/1- , the existing pressure must absolutely be released.*
- *For this step, press the pressure relief valve on the cooling system testing device -V.A.G 1274 B- until the pressure gauge indicates the value »0«.*

If the pressure still drops:

– Search position of the leak and repair fault.

**Testing the pressure relief valve in the cap**

– Screw the screw cap into the adapter for the cooling system testing device -V.A.G 1274/9- .
– Connect the connecting piece -V.A.G 1274 B/1- to the adapter for the cooling system testing device -V.A.G 1274/9- .




– Connect the connecting piece -V.A.G 1274 B/1- via the delivered connecting hose to the cooling system testing device -V.A.G 1274 B- .
– Operate the handpump.
• The pressure relief valve should open at a pressure of 0.14 ... 0.16 MPa (1.4 ... 1.6 bar).

If the pressure relief valve opens too early or too late:

– Replace cap.

# 20 – Fuel supply system

## 1 Measures in case of misfuelling

**Note**

- *Fuel lines are secured with quick-release couplings ⇒ page 303 .*
- *Fuel hoses must only be secured with spring-type clamps ⇒ ETKA - Electronic catalogue of original parts .*
- *Use pliers for spring strap clips to fit the spring strap clips.*

**Observe safety precautions ⇒ page 3 .**

**Observe rules for cleanliness ⇒ page 6 .**

**Caution**

***Because of insufficient lubrication by diesel fuel, misfuelling can cause irreversible damage to high pressure components, particularly the high pressure pump.***

- ***Damage can be expected in the form of scoring and particle erosion.***
- ***Thus, free metal particles contaminate the fuel system as well as the injection system, whereby further damage can be expected especially to the fuel pressure regulating valve and in the injection units.***

**Note**

*Operating instructions must be provided in the form of a flow chart taking account of the various factors through individual work sequences.*

**If the engine was started with incorrect fuel?**

Yes ⇒ page 269

No ⇒ page 270

### 1.1 Step 1, engine started with incorrect fuel

– Completely empty the fuel tank ⇒ page 290 .

**Remove fuel delivery unit ⇒ page 293 .**

– Check the fuel tank for swarfs.

– Empty fuel pump reservoir of the fuel delivery unit.

– Carry out a visual inspection for coarse contamination and swarfs in the fuel pump reservoir and on the preliminary stage screen.

**Are swarfs present?**

Yes ⇒ page 270

No ⇒ page 270

## 1.2 Step 2, the engine was not started with incorrect fuel

**Caution**

*Do not switch on the ignition.*

*The engine must not be started.*

– Completely empty the fuel tank ⇒ page 290 .

– Fill the fuel tank with 5 ltr. of diesel fuel and empty it again ⇒ page 290 .

– Replace the fuel filter ⇒ page 282 .

– Fill vehicle tank and take it for a test run.

**End**

## 1.3 Step 3, metal swarfs are present in the fuel delivery unit and the fuel tank

– Clean, for example using fuel delivery unit and fuel tank with diesel suction device, e. g. -VAS 5226- .

**Install fuel delivery unit ⇒ page 293 .**

**Vehicles with auxiliary heating**

– Check the fuel line between the fuel tank and dosing pump -V54- for swarfs. Replace where necessary ⇒ Heating, Air Conditioning; Rep. gr. 82 .

**Continued for all vehicles**

– Fill the fuel tank with 5 ltr. of diesel fuel and empty it again ⇒ page 290 .

– Replace the following high pressure components:

- High pressure pump ⇒ page 400 .
- High pressure lines ⇒ page 384 .
- Fuel distributor ⇒ page 384 .
- Fuel pressure regulating valve - N276- ⇒ page 397 .
- Fuel pressure sender - G247- ⇒ page 399 .
- Injection units ⇒ page 389 .
- Fuel return-flow lines ⇒ page 384 .
- Fuel filter ⇒ page 282 .

– Fill vehicle tank.

– Filling and bleeding the fuel system ⇒ page 382 .

– Perform a test drive.

**End**

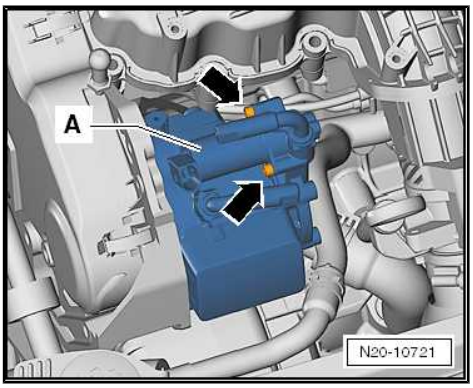
## 1.4 Step 4, no metal swarfs are present in the fuel delivery unit and the fuel tank

– Fill the fuel tank with 5 ltr. of diesel fuel and empty it again ⇒ page 290 .

**Caution**

*When removing the fuel dosage valve from the high pressure pump, there is the risk that dirt may get into the pump whereby damage to the pump could occur. Therefore, clean the fuel dosage valve as well as the high pressure pump as thoroughly as possible before removing, while doing so observe the rules of cleanliness when working on the injection system ⇒ page 6 .*

– Disconnect the plug from the valve.
– Unscrew the screws -arrows- and carefully remove the fuel dosage valve - N290- -A- from the high pressure pump.
– Check fuel dosage valve - N290- and high pressure pump for swarfs.




**Are swarfs present?**

Yes ⇒ page 271

No ⇒ page 271

## 1.5 Step 5: Metal swarfs present in high pressure pump

– Replace the following high pressure components:
- Replace high pressure pump ⇒ page 400 .
- High pressure lines ⇒ page 384 .
- Fuel distributor ⇒ page 384 .
- Fuel pressure regulating valve - N276- ⇒ page 397 .
- Fuel pressure sender - G247- ⇒ page 399 .
- Injection units ⇒ page 389 .
- Fuel return-flow lines ⇒ page 384 .
- Fuel filter ⇒ page 282 .

– Fill vehicle tank.
– Filling and bleeding the fuel system ⇒ page 382 .
– Perform a test drive.

**End**

## 1.6 Step 6: no metal swarfs are present in the high pressure pump

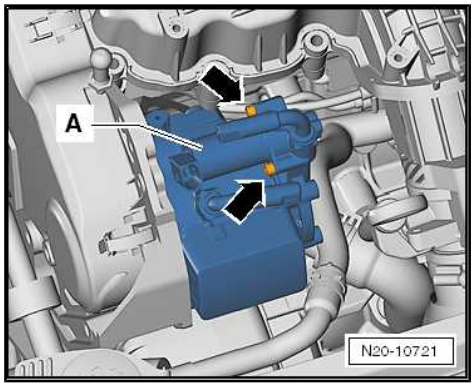
**Caution**

*Watch out for damages to gasket rings for fuel dosage valve - N290- . If a gasket ring is damaged, the high pressure pump must be replaced.*

– Wet the lower gasket ring for fuel dosage valve - N290- with fuel.

– Slide the valve into the high pressure pump with light rotary movements.
– Screw in screws -arrows- only by hand.
– Tighten the screws in two stages:

| Stage | Screws | Tightening torque |
|---|---|---|
| 1. | -Arrows- | 3 Nm |
| 2. | -Arrows- | 7 Nm |




– Replace the fuel filter ⇒ page 282 .
– Filling and bleeding the fuel system ⇒ page 382 .
– Fill vehicle tank and take it for a test run.

**End**

# 2 Removing and installing parts of the fuel supply system



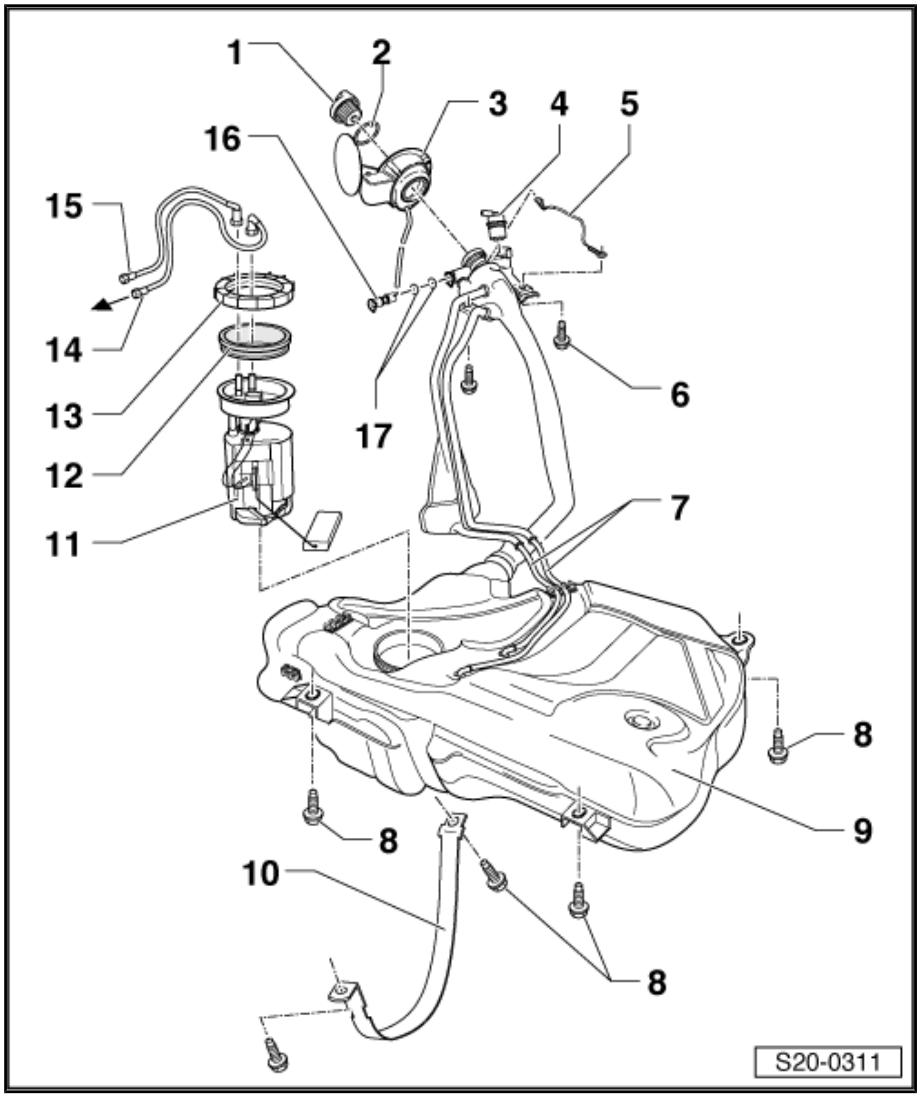
## 2.1 Fuel tank with attached parts



### 2.1.1 Summary of components - fuel tank with attached parts (Fabia II)

**Note**

- *Fuel lines are secured with quick-release couplings.*
- *Fuel hoses must be secured only with spring strap clips. The use of clamp or screw-type clips is not permissible.*
- *Use pliers for spring strap clips to fit the spring strap clips.*




**1 - Screw cap**

**2 - Gasket**

**3 - Fuel tank lid unit**

- ❑ with rubber bowl

**4 - Gravity valve**

- ❑ to remove, unclip valve at top and lift out of filler neck
- ❑ inspect valve for blockage:

- ◆ Valve horizontal - valve open
- ◆ Valve tilted by 45° - valve closed

**5 - Earth connection**

**6 - Screw**

- ❑ 10 Nm

**7 - Vent lines**

- ❑ clipped in place on fuel tank

**8 - Screw**

- ❑ 25 Nm

**9 - Fuel tank**

- ❑ when removing, support with the engine/gearbox jack e.g. -V.A.G 1383 A-
- ❑ wymontowanie i zamontowanie ⇒ page 307

**10 - Tensioning strap**

**11 - Fuel delivery unit**

- ❑ wymontowanie i zamontowanie ⇒ page 293
- ❑ with sender for fuel gauge display - G-
- ❑ removing and installing the sender for fuel gauge ⇒ page 300
- ❑ inspecting fuel pump ⇒ page 316
- ❑ note the installed position of the fuel tank ⇒ page 275
- ❑ Clean strainer if dirty

**12 - Sealing ring**

- ❑ replace
- ❑ only moisten from the inside the flange of the fuel delivery unit with fuel for installation purposes

**13 - Union nut**

- ❑ use wrench - MP 1-227 (3217)- for removing and installing
- ❑ 80 Nm

**14 - Feed line**

- ❑ to fuel filter
- ❑ Connection to the delivery unit ⇒ page 275
- ❑ check for firm seating
- ❑ black

**15 - Return-flow line**

- ❑ check for firm seating

- ❑ Connection to the delivery unit ⇒ page 275
- ❑ blue

**16 - Vent valve**

- ❑ to remove, unclip valve at side and take out of filler neck
- ❑ before installing, unscrew screw cap -Pos. 1-
- ❑ sprawdzanie ⇒ page 275

**17 - O-ring**

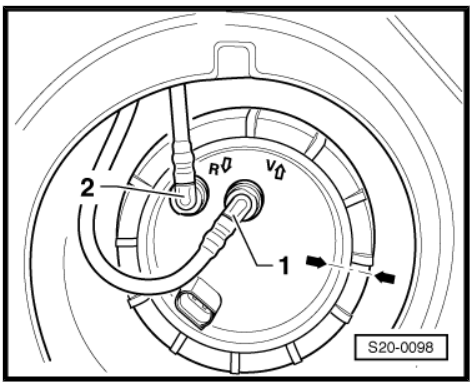
- ❑ replace

**Fitting position of the flange of the fuel delivery unit/the sender for the fuel gauge display**

The marking on the flange must match the label on the fuel tank -arrows-.

(Black) feed line -1- to connection marked -V-.

(Blue) return-flow line -2- to connection marked -R-.



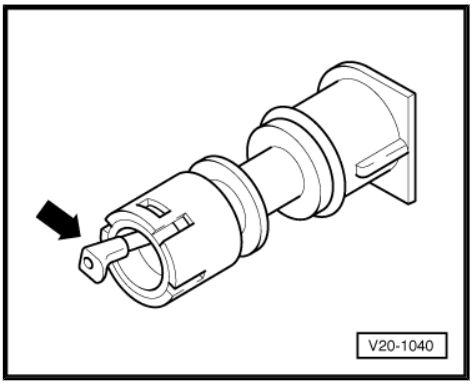

**Note**

*After installing the fuel delivery unit/the sender for the fuel gauge display, check whether the feed line and the return-flow line are clipped onto the fuel tank.*

**Inspect vent valve**

Lever in zero position: Valve closed

Lever pressed in direction of the arrow: Valve open



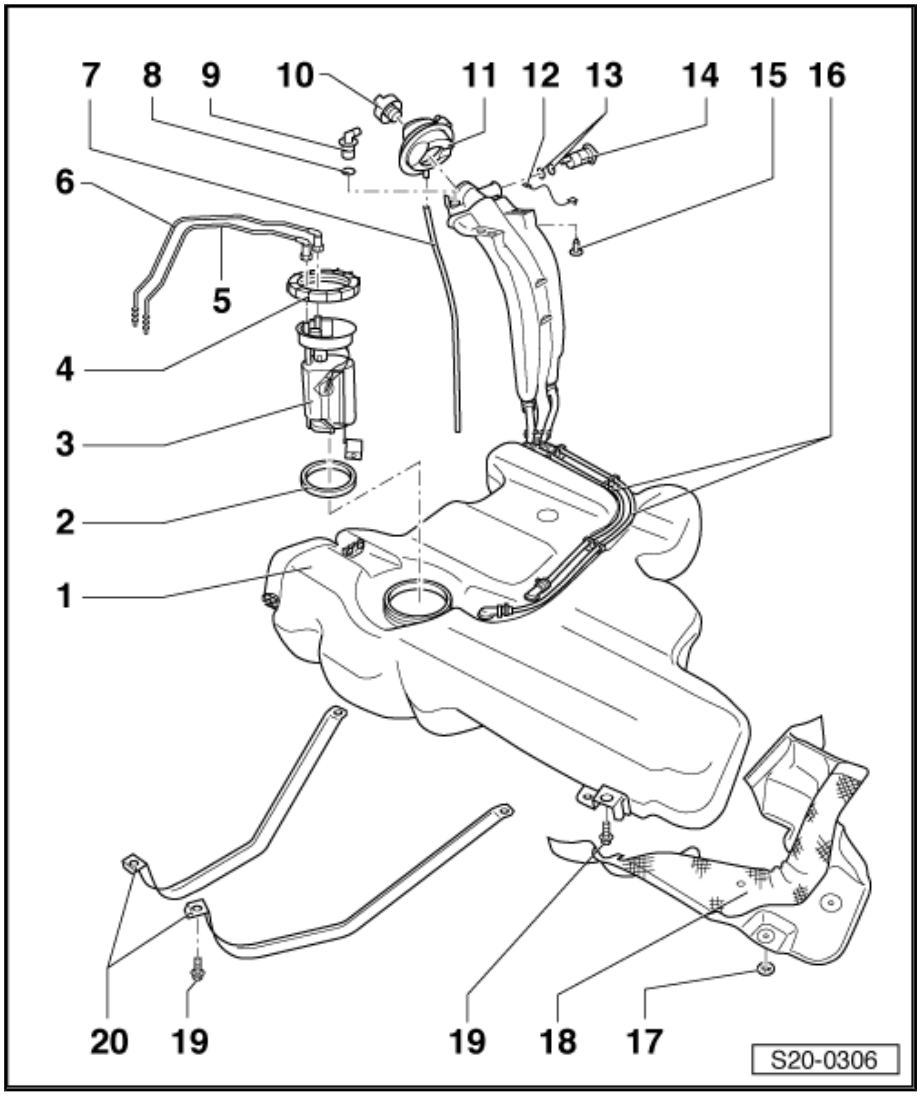

**Note**

*Before installing the vent valve, unscrew the cap from the filler neck.*

## 2.1.2 Summary of components - Fuel tank with attached parts (Roomster, Rapid India, Rapid NH)

**Note**

- ♦ *Fuel lines are secured with quick-release couplings.*
- ♦ *Fuel hoses must be secured only with spring strap clips. The use of clamp or screw-type clips is not permissible.*
- ♦ *Use pliers for spring strap clips to fit the spring strap clips.*




**1 - Fuel tank**

- ❑ when removing, support with the engine/gearbox jack e.g. -V.A.G 1383 A-
- ❑ wymontowanie i zamontowanie ⇒ page 307

**2 - Sealing ring**

- ❑ replace
- ❑ only moisten from the inside the flange of the fuel delivery unit with fuel for installation purposes

**3 - Fuel delivery unit**

- ❑ wymontowanie i zamontowanie ⇒ page 293
- ❑ with sender for fuel gauge display - G-
- ❑ removing and installing the sender for fuel gauge ⇒ page 300
- ❑ inspecting fuel pump ⇒ page 316
- ❑ note the installed position of the fuel tank ⇒ page 277
- ❑ Clean strainer if dirty

**4 - Union nut**

- ❑ use wrench - MP 1-227 (3217)- for removing and installing
- ❑ 80 Nm

**5 - Feed line**

- ❑ to fuel filter
- ❑ check for firm seating
- ❑ black

**6 - Return-flow line**

- ❑ check for firm seating
- ❑ blue

**7 - Overflow hose**

**8 - O-ring**

- ❑ replace

**9 - Gravity valve**

- ❑ to remove, unclip valve at top and lift out of filler neck
- ❑ inspect valve for blockage:

♦ Valve horizontal - valve open

♦ Valve tilted by 45° - valve closed

**10 - Screw cap**

**11 - Fuel tank lid unit**

- ❑ with rubber bowl

**12 - Earth connection**

**13 - O-ring**

- ❑ replace

**14 - Vent valve**

- ❑ to remove, unclip valve at side and take out of filler neck
- ❑ before installing, unscrew screw cap -Pos. 10-
- ❑ sprawdzanie ⇒ page 277

**15 - Screw**

- ❑ 11 Nm

**16 - Vent lines**

- ❑ clipped in place on fuel tank

**17 - Circlip**

**18 - Heat shield**

**19 - Screw**

- ❑ 25 Nm

**20 - Tensioning strap**

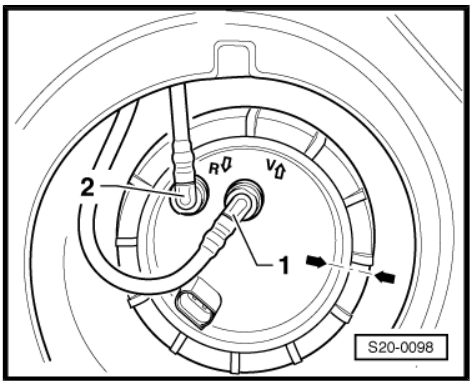
- ❑ pay attention to different lengths

### Fitting position of the flange of the fuel delivery unit/the sender for the fuel gauge display

The marking on the flange must match the label on the fuel tank -arrows-.

(Black) feed line -1- to connection marked -V-.

(Blue) return-flow line -2- to connection marked -R-.



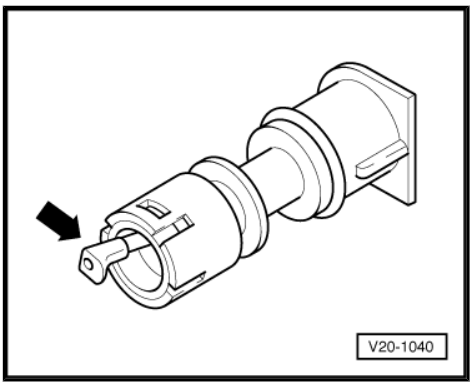

**Note**

*After installing the fuel delivery unit/the sender for the fuel gauge display, check whether the feed line and the return-flow line are clipped onto the fuel tank.*

### Inspect vent valve

Lever in zero position: Valve closed

Lever pressed in direction of the arrow: Valve open



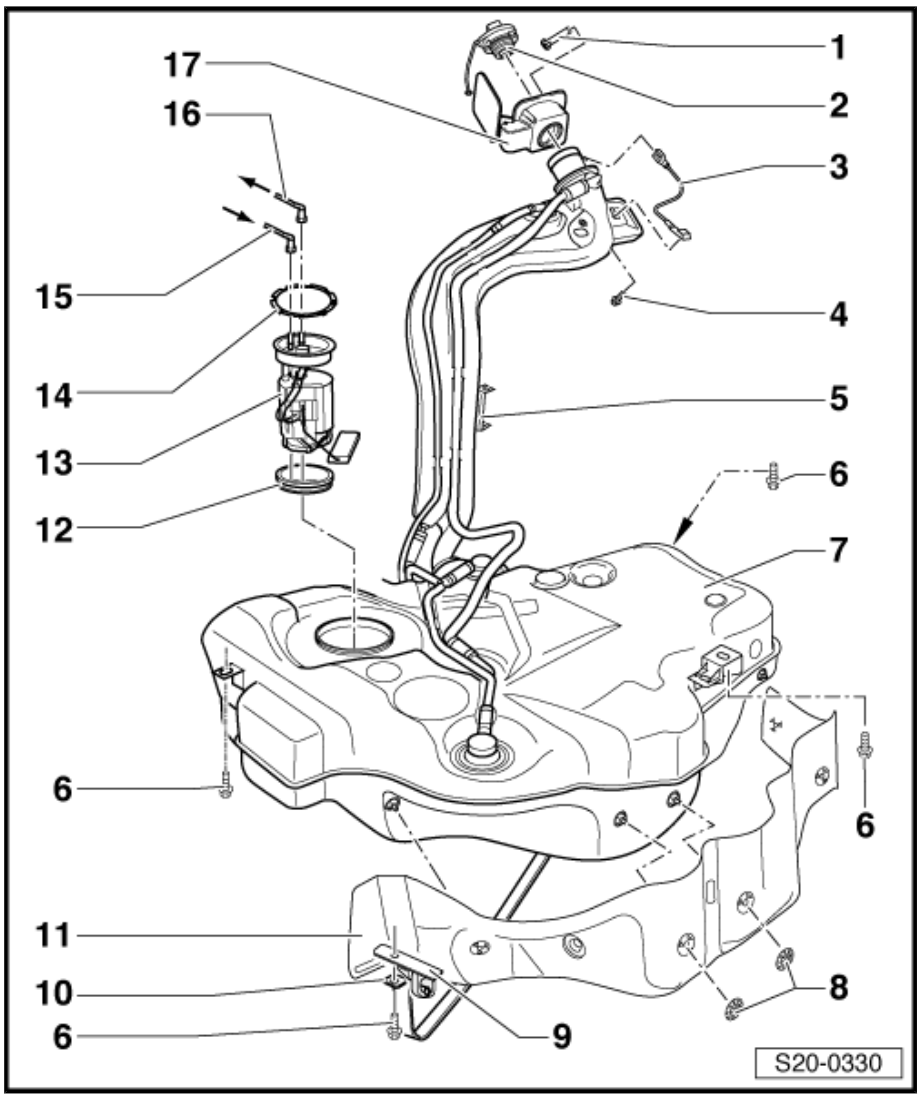

**Note**

*Before installing the vent valve, unscrew the cap from the filler neck.*

## 2.1.3 Summary of components - Fuel tank with attached parts (Octavia II with front wheel drive, Yeti)

**Note**

- *Fuel lines are secured with quick-release couplings.*
- *Fuel hoses must be secured only with spring strap clips. The use of clamp or screw-type clips is not permissible.*
- *Use pliers for spring strap clips to fit the spring strap clips.*




**1 - Mounting part**

**2 - Screw cap**

- ❑ replace the O-ring if it is damaged

**3 - Earth connection**

**4 - Screw**

- ❑ 11 Nm

**5 - Guide**

**6 - Screw**

- ❑ replace
- ❑ 25 Nm

**7 - Fuel tank**

- ❑ when removing, support using the engine/gearbox jack , e.g. -V.A.G 1383 A-
- ❑ wymontowanie i zamontowanie ⇒ page 307

**8 - Circlip**

**9 - Bracket for the exhaust system**

**10 - Tensioning strap**

- ❑ Check fitting position

**11 - Heat shield**

**12 - Sealing ring**

- ❑ replace
- ❑ to be inserted dry into the opening of the fuel tank
- ❑ must be moistened on the inside with fuel before assembly of the fuel delivery unit

**13 - Fuel delivery unit**

- ❑ with sender for fuel gauge display
- ❑ wymontowanie i zamontowanie ⇒ page 293
- ❑ note the correct installed position of the fuel tank ⇒ page 279
- ❑ inspecting fuel pump ⇒ page 316
- ❑ Clean strainer if dirty
- ❑ removing and installing the sender for fuel gauge ⇒ page 300

**14 - Lock ring**

- ❑ use wrench - T30101 (3087)- for removing and installing
- ❑ pay attention to correct position
- ❑ 110 Nm

**15 - Return-flow line**

- ❑ from fuel filter
- ❑ clipped in place on fuel tank
- ❑ pay attention to correct position
- ❑ blue

**16 - Feed line**

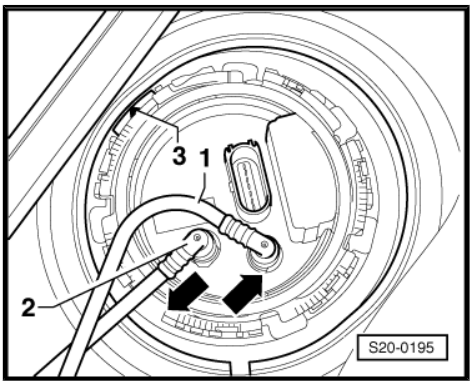
- ❑ to fuel filter
- ❑ clipped in place on fuel tank
- ❑ pay attention to correct position
- ❑ black

**17 - Fuel tank lid unit**

- ❑ with rubber bowl
- ❑ Removing and installing ⇒ Body Work; Rep. gr. 55

**Fitting location of the fuel delivery unit**

The marking -3- on the flange of the fuel delivery unit points against the direction of travel.




**Note**

*The fuel delivery unit can only be installed in this position.*

Blue return-flow line -1-.

Black feed line -2-.

**Note**

*After installing the fuel delivery unit, check whether the feed line and the return-flow line are still clipped in place on the fuel tank.*

## 2.1.4 Summary of components - Fuel tank with attached parts (Octavia II with four-wheel drive, Superb II)

**Note**

- ♦ *Fuel lines are secured with quick-release couplings.*
- ♦ *Fuel hoses must be secured only with spring strap clips. The use of clamp or screw-type clips is not permissible.*
- ♦ *Use pliers for spring strap clips to fit the spring strap clips.*

**1 - Fuel tank lid unit**

- ❑ with rubber bowl
- ❑ Removing and installing ⇒ Body Work; Rep. gr. 55

**2 - Screw cap**

**3 - Mounting part**

**4 - Earth connection**

- ❑ check for firm seating

**5 - Screw**

- ❑ 10 Nm

**6 - Suction spray pump**

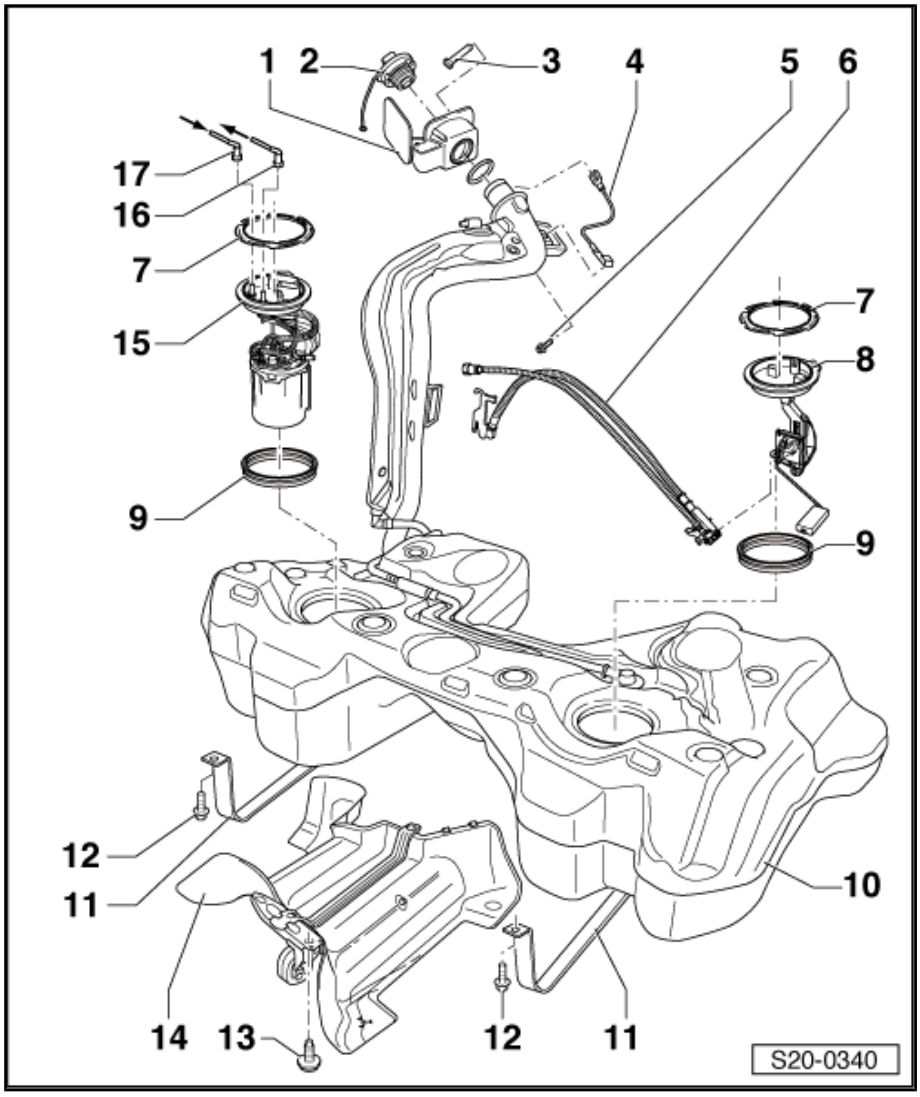
- ❑ connected to the fuel gauge sender 2 - G169-
- ❑ wymontowanie i zamontowanie ⇒ page 303

**7 - Lock ring**

- ❑ use wrench - T30101 (3087)- for removing and installing
- ❑ check for firm seating
- ❑ 110 Nm

**8 - Fuel gauge sender 2 - G169-**

- ❑ note the installed position of the fuel tank ⇒ page 281
- ❑ wymontowanie i zamon-



towanie ⇒ page 300

**9 - Sealing ring**

- ❑ to be inserted dry into the opening of the fuel tank
- ❑ replace if damaged
- ❑ only moisten from the inside the seal of the flange with fuel for installation purposes

**10 - Fuel tank**

- ❑ when removing, support using the engine/gearbox jack , e.g. -V.A.G 1383 A-
- ❑ wymontowanie i zamontowanie ⇒ page 307

**11 - Tensioning strap**

- ❑ Check fitting position

**12 - Screw**

- ❑ replace
- ❑ 25 Nm

**13 - Screw**

- ❑ 23 Nm

**14 - Heat shield**

**15 - Fuel delivery unit**

- ❑ with sender for fuel gauge display -G-
- ❑ wymontowanie i zamontowanie ⇒ page 293
- ❑ note the installed position of the fuel tank ⇒ page 281
- ❑ inspecting fuel pump ⇒ page 316
- ❑ Clean strainer if dirty
- ❑ Removing and installing the fuel gauge sender -G- ⇒ page 300

**16 - Feed line**

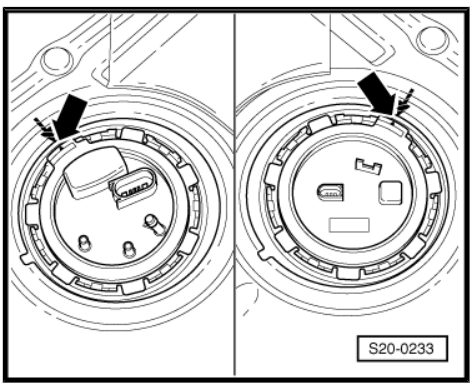
- ❑ to fuel filter
- ❑ clipped in place on fuel tank
- ❑ check for firm seating
- ❑ black

**17 - Return-flow line**

- ❑ clipped in place on fuel tank
- ❑ check for firm seating
- ❑ blue (blue marking)

**Fitting position of the flange of the fuel delivery unit (with fuel gauge sender -G- ) and the flange with fuel gauge sender 2 - G169-**

The markings on the flanges must be aligned with markings on the fuel tank -arrows-.




**Note**

*Markings on the fuel tank are hardly visible.*

## 2.2 Fuel filter

⇒ "2.2.1 Summary of components - fuel filter (Fabia II, Roomster, Rapid NH)", page 282

⇒ "2.2.2 Summary of components - fuel filter (Octavia II, Superb II, Yeti)", page 283

⇒ "2.2.3 Summary of components - fuel filter (Rapid India)", page 285

### 2.2.1 Summary of components - fuel filter (Fabia II, Roomster, Rapid NH)

The fuel flow direction is indicated with arrows on the hoses and on the fuel filter.

**1 - Support**

**2 - Fuel filter**

- ❑ do not interchange connections
- ❑ wymontowanie i zamontowanie ⇒ page 287

**3 - Intake hose**

- ❑ from fuel preheating valve
- ❑ check for firm seating
- ❑ white marking

**4 - Intake hose**

- ❑ to high pressure pump
- ❑ check for firm seating
- ❑ white marking

**5 - Screw**

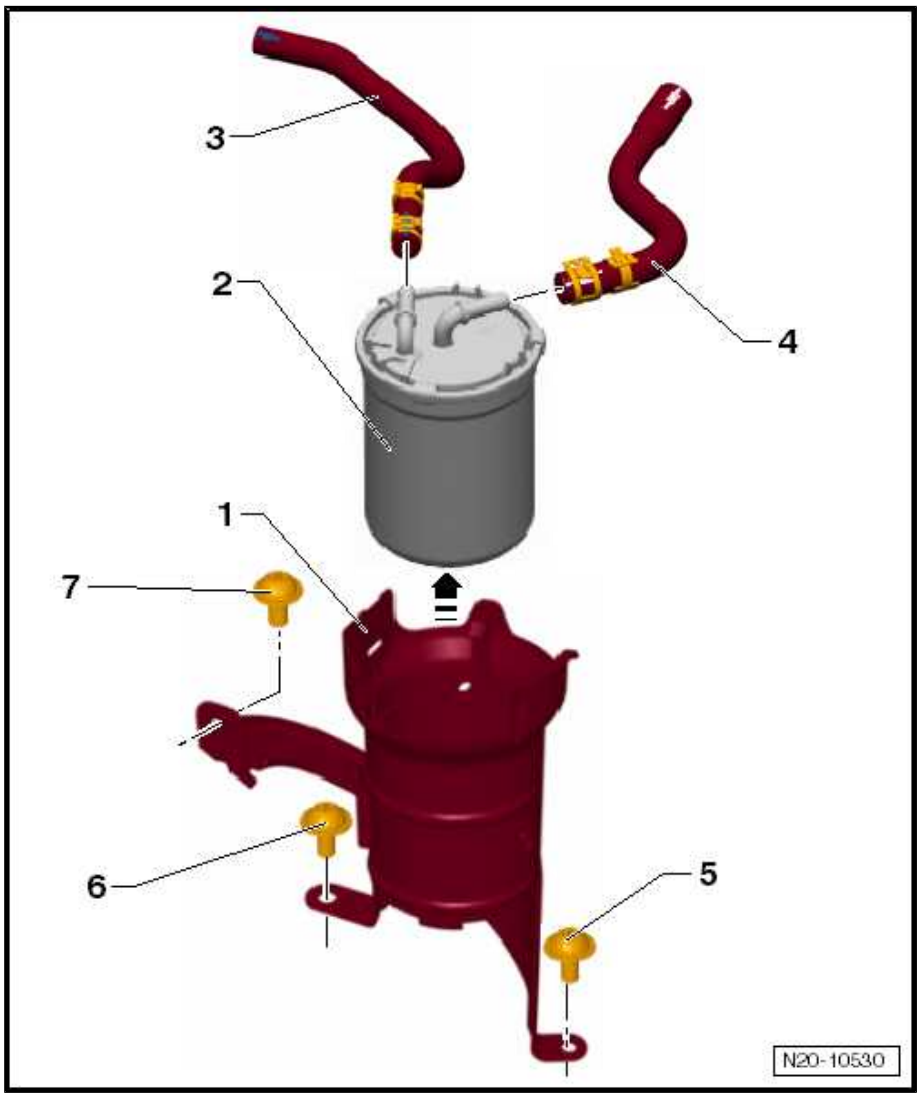
- ❑ 20 Nm

**6 - Screw**

- ❑ 20 Nm

**7 - Screw**

- ❑ 20 Nm

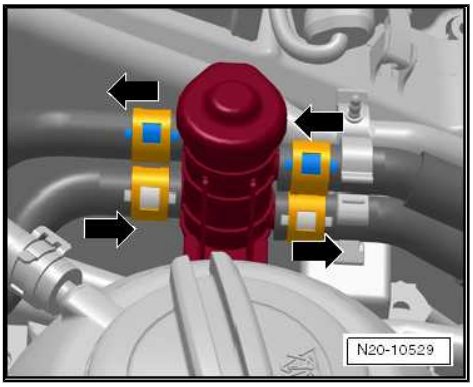


**Connecting the fuel preheating valve**

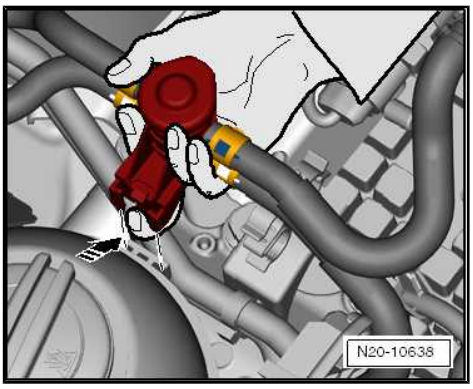
Return-flow lines to fuel tank blue or with blue marking.

Fuel filter supply lines are white or have white markings.

**Remove fuel preheating valve**




– Unlock the catch peg -arrow- with a finger and pull the fuel preheating valve upwards out of the guide of the coolant expansion bottle.




**Install**

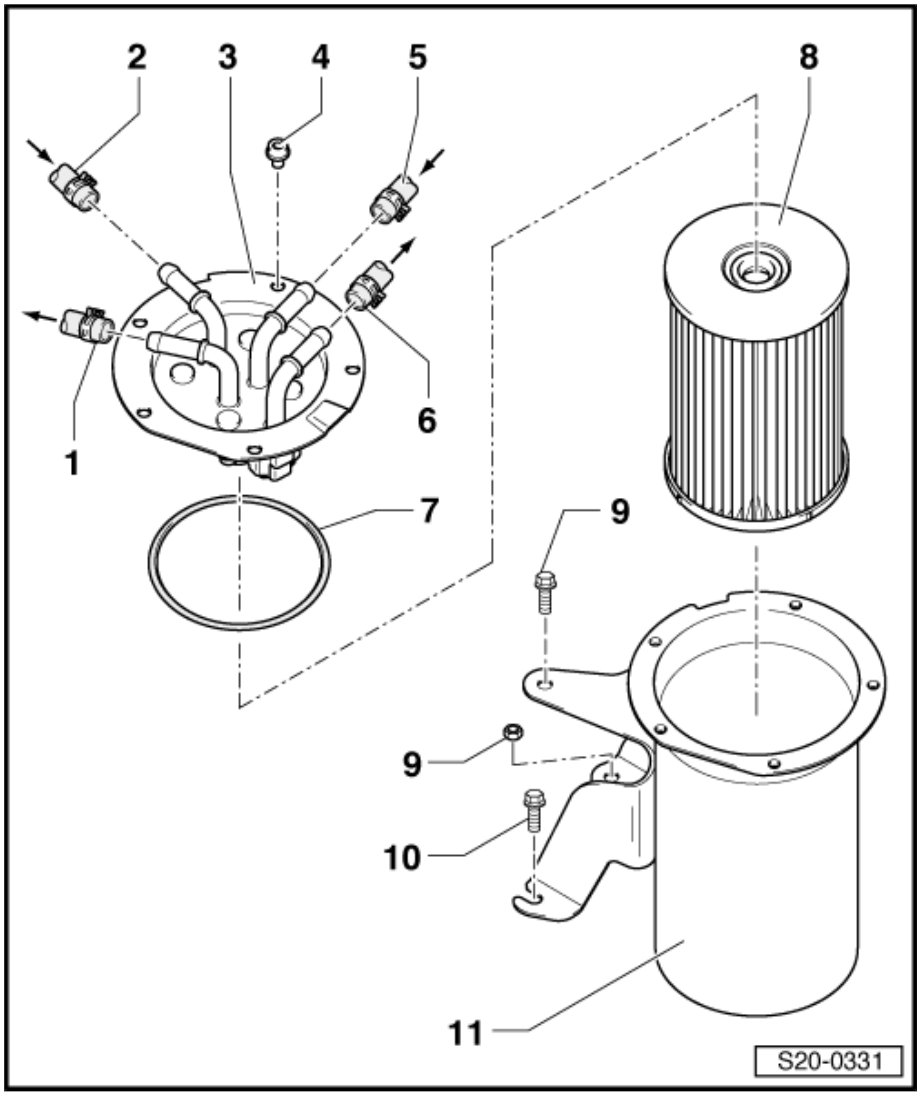
– Push the fuel preheating valve from above into the coolant expansion bottle.

The catch peg must lock in place on the coolant expansion bottle.

## 2.2.2 Summary of components - fuel filter (Octavia II, Superb II, Yeti)

**Note**

*Before disconnecting the fuel hoses, mark assignment to the supports.*




**1 - Return-flow hose**

- ❑ to fuel tank
- ❑ blue marking and blue inscription
- ❑ is connected on the blue line on the separation point in the engine compartment on the right

**2 - Intake hose**

- ❑ from fuel tank
- ❑ white marking and white inscription
- ❑ is connected on the black line on the separation point in the engine compartment on the right

**3 - Fuel filter - top part**

- ❑ raise at the assembly groove using the offset screwdriver - VAS 6543- :

- ♦ ⇒ Maintenance ; Booklet Octavia II
- ♦ ⇒ Maintenance ; Booklet Superb II
- ♦ ⇒ Maintenance ; Booklet Yeti

**4 - Screw**

- ❑ 5 Nm

**5 - Return-flow hose**

- ❑ of engine
- ❑ blue marking and blue inscription

**6 - Intake hose**

- ❑ to additional fuel pump
- ❑ white marking and white inscription

**7 - Sealing ring**

- ❑ replace

**8 - Fuel filter element**

- ❑ Pay attention to change intervals:

- ♦ ⇒ Maintenance ; Booklet Octavia II
- ♦ ⇒ Maintenance ; Booklet Superb II
- ♦ ⇒ Maintenance ; Booklet Yeti

**9 - Nuts/bolts**

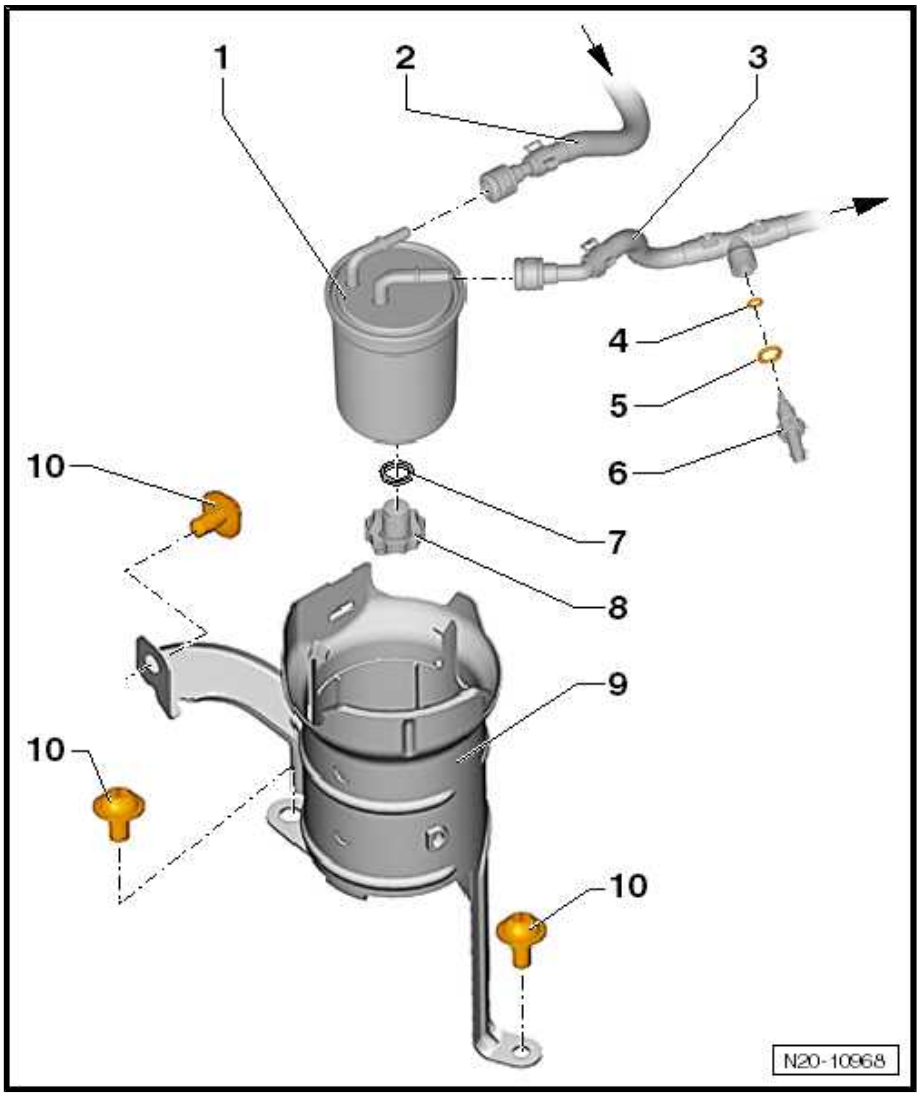
- ❑ 8 Nm

**10 - Screw**

- ❑ to remove fuel filter only slacken screw
- ❑ 8 Nm

**11 - Fuel filter - bottom part with integrated bracket**

## 2.2.3 Summary of components - fuel filter (Rapid India)




**1 - Fuel filter**

- ❑ the arrows engraved on the filter identify the fuel inlet and the fuel outlet
- ❑ wymontowanie i zamontowanie ⇒ page 287
- ❑ when removing, disconnect the fuel feed line, push the retaining lugs outwards and remove the fuel filter towards the top
- ❑ Drainage for vehicles with engine identification characters CWXB ⇒ page 286
- ❑ Change intervals:

♦ ⇒ Maintenance ; Booklet Rapid Indie

**2 - Feed line**

- ❑ from the fuel delivery unit
- ❑ white marking
- ❑ detach at the quick coupling

**3 - Feed line**

- ❑ to high pressure pump
- ❑ white marking
- ❑ detach at the quick coupling

**4 - O-ring**

- ❑ replace

**5 - O-ring**

- ❑ replace, included in the scope of delivery of the fuel temperature sender - G81-

**6 - Fuel temperature sender - G81-**

**7 - Gasket**

- ❑ If present
- ❑ replace if damaged

**8 - Water drain cap**

- ❑ If present
- ❑ Tighten by hand

**9 - Support**

- ❑ for fuel filter

**10 - Screw**

- ❑ 20 Nm

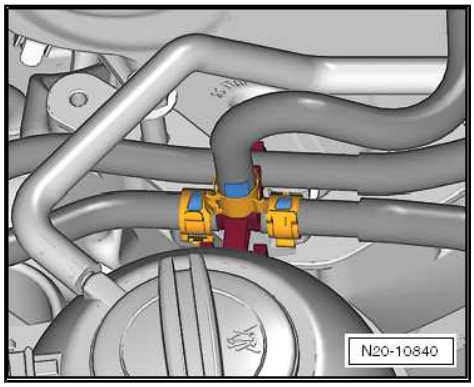
**Connect the T-piece in the low-pressure fuel system (6.0 bar)**

Return-flow lines to fuel tank blue or with blue marking.

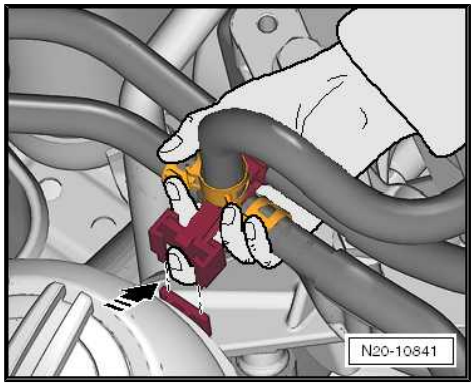
Fuel filter supply lines are white or have white markings.

Check for firm seating.

**Removing**




– Unlock the catch peg -arrow- with a finger and pull the T-piece upwards out of the guide of the coolant expansion bottle.




**Install**

– Push the T-piece from above into the coolant expansion bottle.

The catch peg must lock in place on the coolant expansion bottle.

## 2.3 Drain fuel filter

⇒ "2.3.1 Drain fuel filter for engine with identification characters CWXB (Rapid India)", page 286

### 2.3.1 Drain fuel filter for engine with identification characters CWXB (Rapid India)

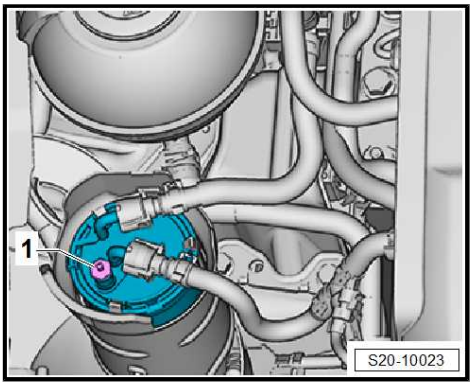
**Special tools and workshop equipment required**

- Fuel-resistant container
- Transparent hose

**Note**

- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*
- *Make sure no diesel fuel runs onto the coolant hoses. If necessary clean the hoses immediately!*
- *Observe the disposal instructions!*
- *The drain valve is not present in all versions.*

– Insert the transparent hose with a drain container onto the drain plug -1-.
– Start engine.
– Carefully undo the drain plug -1- by $^1/_4$ turns.
– Drain off approx. 0.3 to 0.4 litres of fluid. Once clean diesel fuel discharges, seal the drain plug -1-.
– Switch off engine and remove the hose.




## 2.4 Removing and installing fuel filter

⇒ "2.4.1 Remove and install fuel filter (Fabia II, Roomster, Rapid NH)", page 287

⇒ "2.4.2 Removing and installing fuel filter (Rapid India)", page 288

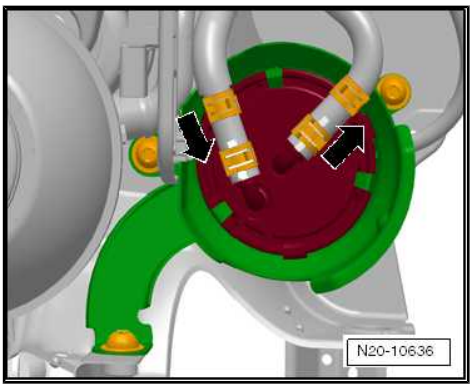
## 2.4.1 Remove and install fuel filter (Fabia II, Roomster, Rapid NH)

### Removing

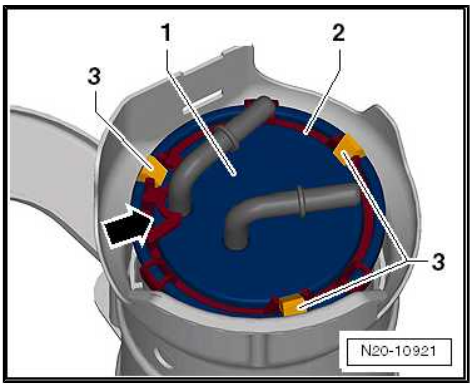
**Note**

- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

– Release spring strap clips and disconnect fuel hoses from fuel filter.




– Press the retaining lugs -3- upwards, and remove the fuel filter -1- by lifting it upwards.

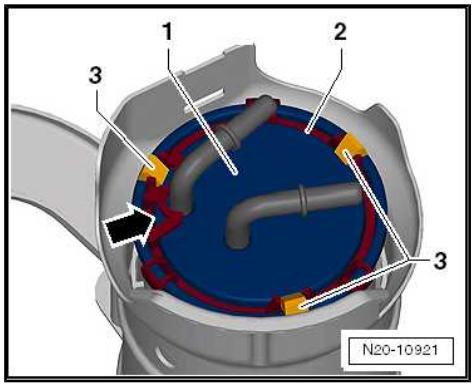



### Install

Installation is carried out in the reverse order. Pay attention to the following:

- Lay the fuel hoses avoiding any kinks.
- Make sure the fuel hoses fit tightly.
- Do not mix-up the feed line and the return-flow line (the return-flow line is blue or has a blue marking, the feed line is white or has a white marking).
- Clip the fuel and coolant hoses into the holders again.

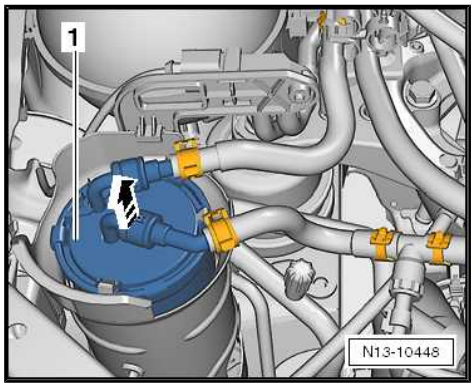
– Correctly plug locating lug -2- with guide -arrow- onto the connections -Pos. 3- ⇒ page 282 of the fuel filter -1-.
– Clip retaining ring -2- onto the fuel filter -1-.
– Press in the fuel filter -1- into the mounting bracket as far as it goes.
– Ensure that the retaining lugs -3- lock into place in the provided recesses of the retainer ring -2-.
– Venting air from the fuel filter ⇒ page 289 .



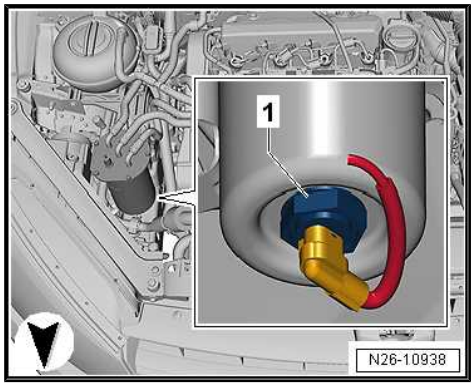

## 2.4.2 Removing and installing fuel filter (Rapid India)

### Removing

– Disconnect the fuel feed lines at the quick couplings from the fuel filter -1-. To do so, push the quick couplings onto the nozzles, press in the securing elements (hold pressed) and detach the quick couplings. Unlock the quick coupling and disconnect ⇒ page 303 .
– Push the catch pegs up and remove the fuel filter towards the top.




– Equipment variant with water level sender - G63- : Disconnect the electrical plug connection at the water level sender -1-.




### Install

Installation is carried out in the reverse order. Pay attention to the following:

♦ Pay attention to the fitting position of the fuel filter. The arrows engraved on the filter identify the fuel inlet and the fuel outlet.
♦ Lay the fuel hoses avoiding any kinks.
♦ Make sure the quick couplings fit tightly. Check that it is correctly locked in place by pulling on it.

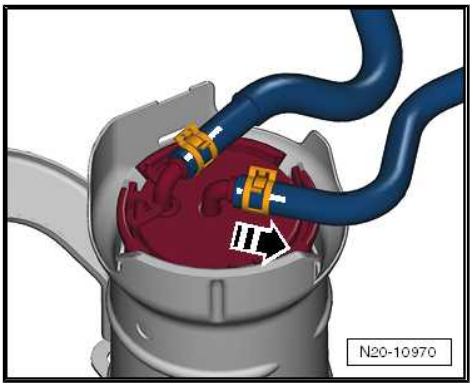
– Filling and bleeding the fuel system ⇒ page 382 .

## 2.5 Venting air from the fuel filter

⇒ "2.5.1 Ventilating fuel filter (Fabia II, Roomster, Rapid NH)", page 289

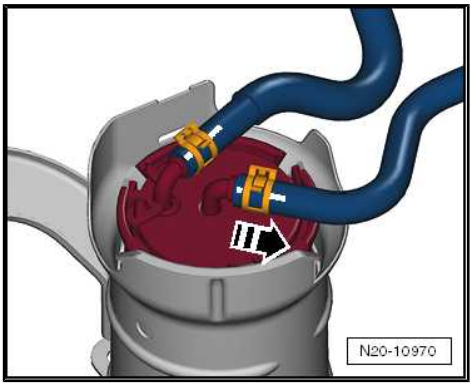
### 2.5.1 Ventilating fuel filter (Fabia II, Roomster, Rapid NH)

- A fuel filter without quick couplings: this filter must be bled (fuel system 0.5 bar)

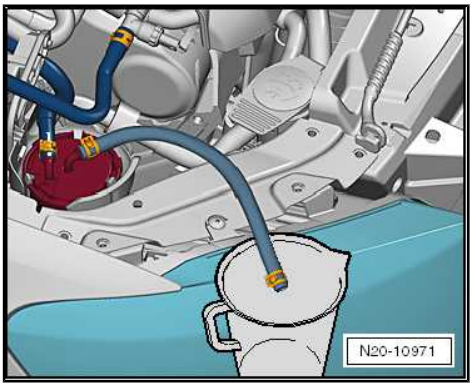



The fuel hoses are connected directly to the fuel filter.

– After changing the filter do not reconnect the fuel hose to the high pressure pump.




– Connect a suitable hose and guide it into a catch pan.

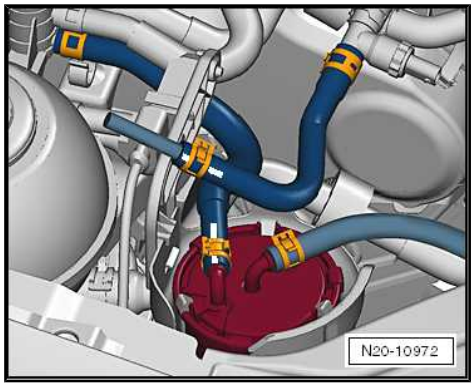


– Lock the fuel hose onto the high pressure pump seal.

• Vehicle must be refuelled.

– Connect ⇒ Vehicle diagnostic tester and switch on ignition system.

– Perform “Check fuel pump” function.




**Note**

*The fuel pump is activated for 30 seconds.*

– Then connect the fuel line to the high pressure pump on the fuel filter.

## 2.6 Extract fuel from the fuel tank

⇒ “2.6.1 Suctioning fuel off of the fuel tank (Fabia II, Roomster, Rapid India, Rapid NH)”, page 290

⇒ “2.6.2 Suction off fuel from the fuel tank (Octavia II, Superb II, Yeti)”, page 291

### 2.6.1 Suctioning fuel off of the fuel tank (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

♦ Hose adapter , e.g. -V.A.G 1318-16-

♦ Adapter set , e.g. -V.A.G 1318/17-

♦ Measuring tool set , e.g. -V.A.G 1594 C-

♦ 12 V battery

♦ Fuel tank

**Note**

*If there are functional problems of the fuel delivery unit suction off fuel with fuel extraction device, e.g. -VAS 5190- .*

**Work procedure**

**Note**

*Observe the regulations concerning cleanliness when working on the fuel supply/injection system ⇒ page 6 .*

**Vehicles Fabia II**

– Position right rear seat vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Roomster**

– Fold back the middle and rear seat and position vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Rapid India, Rapid NH**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**Continued for all vehicles**

– Remove the cover of the fuel delivery unit under the mat.

– Remove plug connector for fuel pump.

**WARNING**

***The fuel feed line is pressurized! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

– Pull off the fuel feed line and gather residual fuel in a cloth. Unlock the quick coupling and disconnect ⇒ page 303 .

– Connect up adapter -V.A.G 1318/16- and -V.A.G 1318/17- and connect the “suction line” to the feed support of the fuel pump.

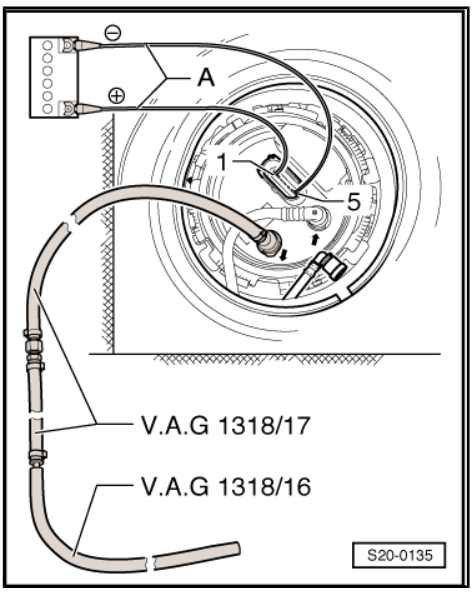
– Hold the “suction line” in a suitable fuel tank.

– Using auxiliary cables -A- from the measuring tool set - V.A.G 1594/C- connect up the battery through contacts of the fuel pump as follows:

  Battery positive (+) to contact -1- of the fuel pump

  Battery minus (-) to contact -5- of the fuel pump

The fuel pump runs and suctions off fuel.




**Caution**

***In order to avoid fuel overflow due to the fuel tank not being sufficiently large enough, the fuel pump must not run unattended.***

## 2.6.2 Suction off fuel from the fuel tank (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Hose adapter , e.g. -V.A.G 1318/16-
- Adapter , e.g. -V.A.G 1318/17-
- Measuring tool set , e.g. -V.A.G 1594 C-
- Battery
- Fuel tank

**Note**

*If the fuel pump is defective, suction off fuel using a fuel suction device , e.g. -VAS 5190- .*

**Work procedure**

**Note**

- *Safety precautions when working on the fuel supply system* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

– Switch off ignition and pull out ignition key.

**For the vehicles Octavia II, Superb II**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

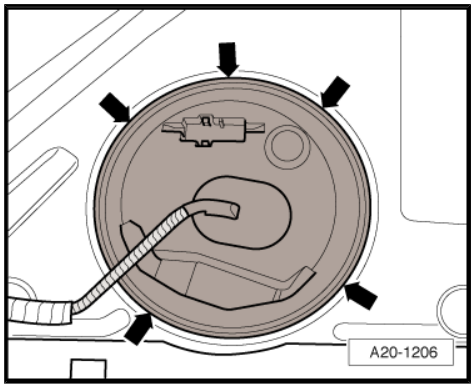
**For the vehicles Yeti**

– Remove rear seat bench with brackets ⇒ Body Work; Rep. gr. 72 .

– Remove floor covering under the rear seat bench.

**For all vehicles**

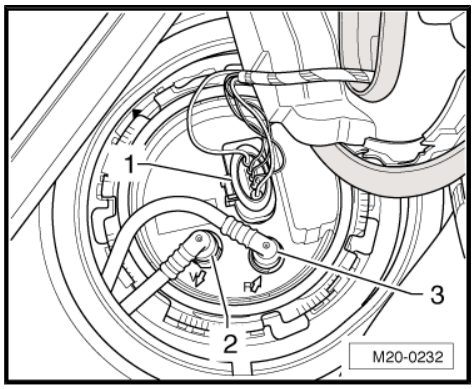
– Unclip retaining catches -arrows- of cover for the fuel pump and remove cover.




**Note**

*For vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

– Disconnect plug -1- and aerial cable -2-.




**Note**

- *On vehicles with four-wheel drive, the position of the plugs and the fuel lines is different.*
- *Press in the securing ring in order to unlock the lines.*

– Connect the adapter - V.A.G 1318/17- and the adapter - V.A.G 1318/16- and fit the “suction line” onto the feed support of the fuel pump.

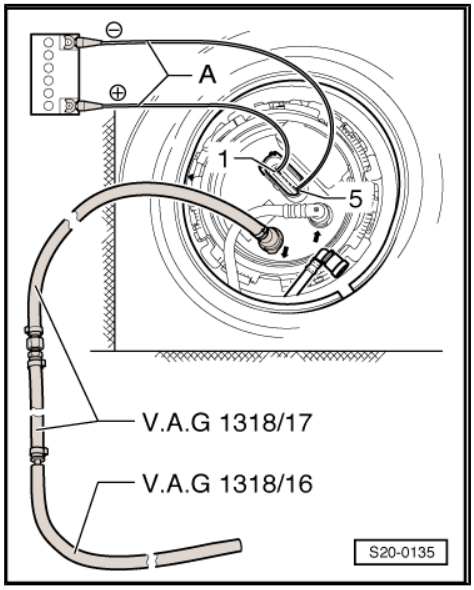
– Hold the “suction line” in a suitable fuel tank.

– Connect the battery and the contacts of the fuel pump with adapter cables -A- from the adapter cable set as follows:

Battery positive (+) to contact -1- of the fuel pump

Battery minus (-) to contact -5- of the fuel pump

The fuel pump runs and suctions off fuel.




**Caution**

***In order to prevent an overflow of fuel in case of a too small fuel tank, the fuel pump must not run unattended.***

## 2.7 Removing and installing fuel delivery unit

⇒ "2.7.1 Removing and installing fuel delivery unit (Fabia II, Roomster, Rapid India, Rapid NH)", page 293

⇒ "2.7.2 Removing and installing fuel delivery unit (Octavia II with front-wheel drive, Yeti)", page 294

⇒ "2.7.3 Removing and installing fuel delivery unit (Octavia II with four-wheel drive, Superb II)", page 296

## 2.7.1 Removing and installing fuel delivery unit (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Wrench for union nut - MP 1-227 (3217)-
- Fuel extraction device , e. g. -VAS 5190-

**Conditions**

- The fuel tank must not be more than 3/4 full.
- Ignition is switched off and ignition key is withdrawn.

**Removing**

**Note**

- *If necessary drain the fuel tank ⇒ page 290 .*
- *Observe the safety instructions before starting fitting work ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

**Vehicles Fabia II**

– Position right rear seat vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Roomster**

– Fold back the middle and rear seat and position vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Rapid India, Rapid NH**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**Continued for all vehicles**

– Remove the cover of the fuel delivery unit under the mat.

– Remove plug connector for fuel pump.

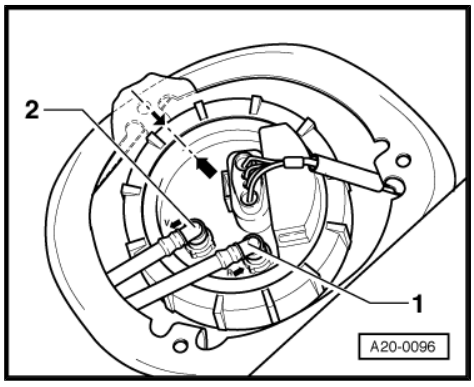
**WARNING**

*The fuel system is under pressure! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully removing the hose.*

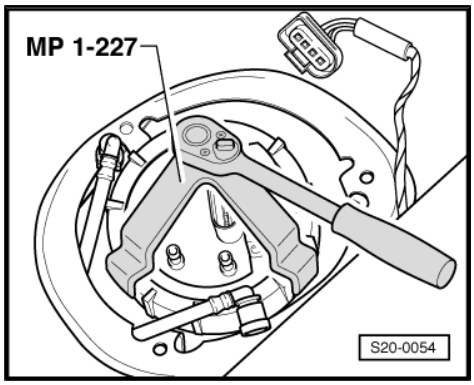
**Note**

*Press together the securing ring on the rear side of the angular connection in order to unlock the fuel lines.*

– Remove feed line (black) -2- and return-flow line (blue) -1- from the flange of the delivery unit, to do so press together the release buttons. Unlock the quick coupling and disconnect ⇒ page 303 .




– Unscrew union nut with wrench for union nut - MP 1-227 (3217)- .
– Pull the fuel delivery unit and the gasket ring out of the opening of the fuel tank.




**Note**

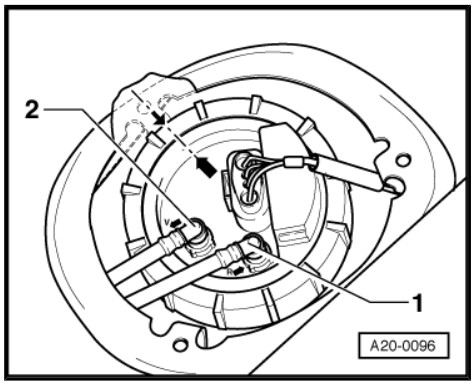
*The old delivery unit must be emptied before disposing of it if it should be replaced.*

### Install

– The fuel delivery unit is installed in the reverse order. Pay attention to the following:

**Note**

- *Do not bend the sender for fuel gauge display when installing it.*
- *Only moisten from the inside the seal of the flange with fuel for fitting purposes.*
- *Observe installation position of the fuel delivery unit flange: The marking on the flange must match the label on the fuel tank -arrows-.*
- *Do not interchange feed line and return-flow line.*
- *Make sure the fuel lines fit tightly.*
- *After installing the fuel delivery unit, check whether the feed, return-flow and vent lines are clipped in place on the fuel tank.*




### Tightening torques

- ⇒ “2.1 Fuel tank with attached parts”, page 273

## 2.7.2 Removing and installing fuel delivery unit (Octavia II with front-wheel drive, Yeti)

### Special tools and workshop equipment required

♦ Key - T30101 (3087)-

**Removing**

- The fuel tank must not be more than $^{3}/_{4}$ full.

**Note**

♦ *If necessary drain the fuel tank ⇒ page 290 .*

♦ *Safety precautions when working on the fuel supply system ⇒ page 3 .*

♦ *Observe rules for cleanliness ⇒ page 6 .*

– Switch off ignition and pull out ignition key.

**For the vehicles Octavia II**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

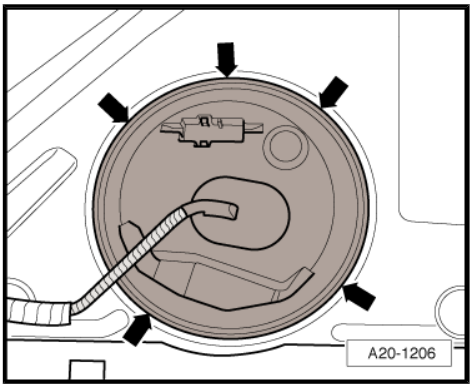
**For the vehicles Yeti**

– Remove rear seat bench with brackets ⇒ Body Work; Rep. gr. 72 .

– Remove floor covering under the rear seat bench.

**For all vehicles**

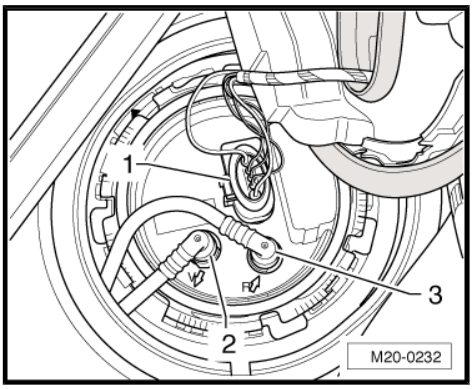
– Unclip retaining catches -arrows- of cover for the fuel delivery unit and remove cover.




**Note**

*For vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

– Pull off plug -1-, black feed line -2- and blue return line -3-.

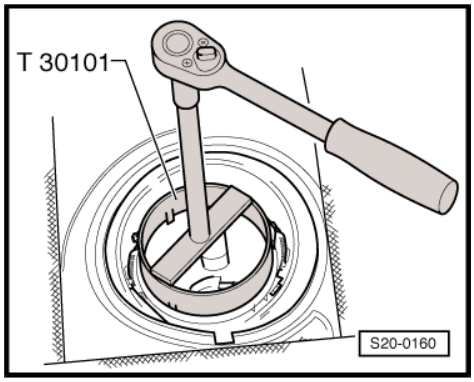



**Note**

♦ *Press in the securing ring in order to unlock the lines.*

♦ *For vehicles with auxiliary heating the suction line for the dosing pump - V54- must be pulled out additionally (open lower clamp).*

– Open lock ring with the wrench - T30101 (3087)- .




**Note**

*When installing, ensure that the float arm of the sender for fuel gauge display - G- is not bent.*

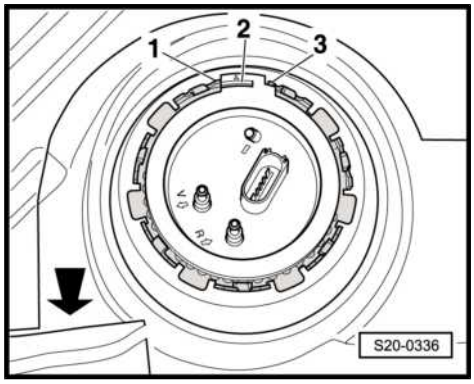
– Pull the fuel delivery unit and the gasket ring out of the opening of the fuel tank.

**Note**

*You must empty the old fuel delivery unit before disposing of it if you wish to replace it.*

### Install

– The fuel delivery unit is installed in the reverse order. However, pay attention to the following:




**Note**

- *Insert new dry gasket ring into the opening of the fuel tank.*
- *The gasket ring must only be moistened on the inside with fuel before assembly of the fuel delivery unit.*
- *Do not bend the sender for fuel gauge display when installing it.*
- *Observe the fitting location of the fuel delivery unit. The marking -3- on the flange must point against the direction of travel. The fuel delivery unit can only be installed in this position.*
- *Do not interchange feed line and return-flow line.*
- *Make sure the line connections fit tightly.*
- *After installing the fuel delivery unit, check whether the feed line and the return-flow line are still clipped in place on the fuel tank.*

### Tightening torques

- ⇒ “2.1 Fuel tank with attached parts”, page 273

## 2.7.3 Removing and installing fuel delivery unit (Octavia II with four-wheel drive, Superb II)

### Special tools and workshop equipment required

- Key - T30101 (3087)-
- Protective gloves

### Precondition

- The fuel tank must not be more than $^{1}/_{3}$ full.

## Removing

**Note**

- *If necessary drain the fuel tank ⇒ page 290 .*
- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe the regulations concerning cleanliness when working on the fuel supply/injection system ⇒ page 6 .*

– Switch off ignition and pull out ignition key.

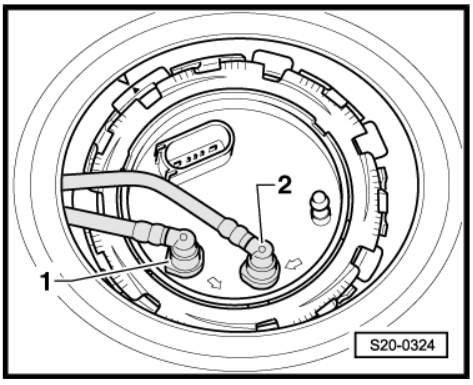
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

– Remove the cover from the fuel delivery unit.

**Note**

- *On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*
- *Two types of fuel delivery units are installed in the vehicles, which can be recognized on the different flanges.*

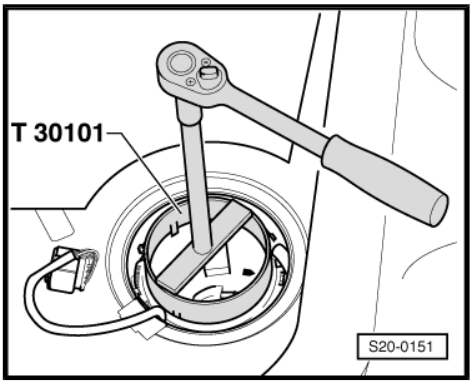
– Disconnect the plug as well as the black fuel feed line -1- and the blue fuel return-flow line -2- from the flange.




**Note**

- *Press in the securing ring in order to unlock the lines.*
- *For vehicles with auxiliary heating the suction hose for the dosing pump - V54- must be pulled out additionally (open lower clamp).*

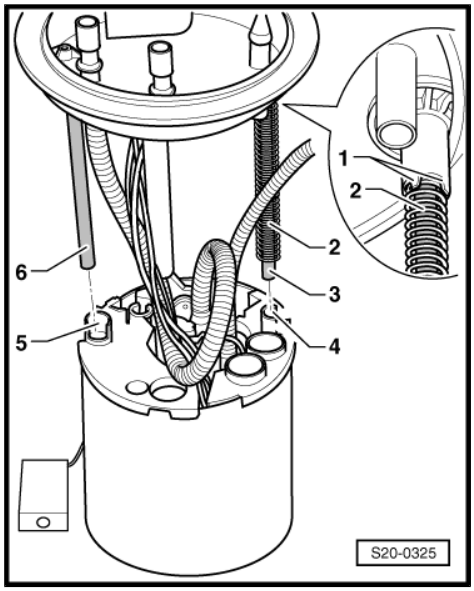
– Open lock ring with the wrench - T30101 (3087)- .



– Slightly raise the closing flange and check if the spring -2- is still fastened on the flange -1-.

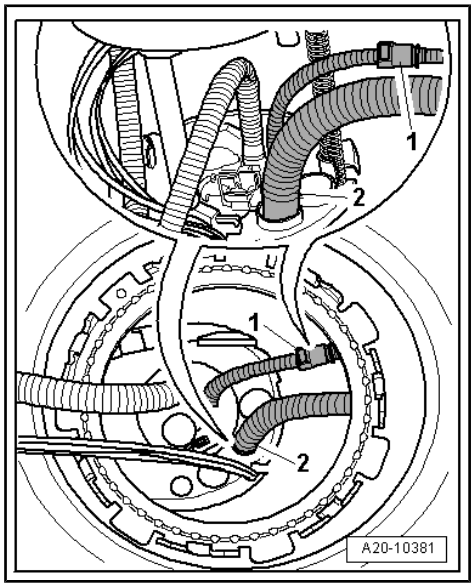
  If the spring -2- lies loose on the guide pipe -3-, hold the spring with the fingers when removing the closing flange.

– Pull out closing flange and gasket ring of the fuel delivery unit from the opening of the fuel tank and place to the side with the connected lines.




– Separate through the opening of the fuel tank the fuel line -1- to the suction jet pump, to do so press the release button.

– Remove the fuel delivery line -2- from the fuel delivery unit.




**Note**

- *You must wear protective gloves for removing the fuel delivery unit.*
- *Take the fuel delivery unit out of the fuel tank in such a way that the electrical cables and the fuel hoses are not damaged and that the float arm of the sender for the fuel gauge display - G- is not bent.*
- *You must empty the old fuel delivery unit before disposing of it if you wish to replace it.*

– Pull the fuel delivery unit out of the opening of the fuel tank.

**Install**

Installation occurs in reverse order to removal. Pay attention to the following:

– Insert the fuel delivery unit into the fuel tank with the closing flange placed to the side. Thus, do not bend the float arm of the fuel gauge sender unit - G- .

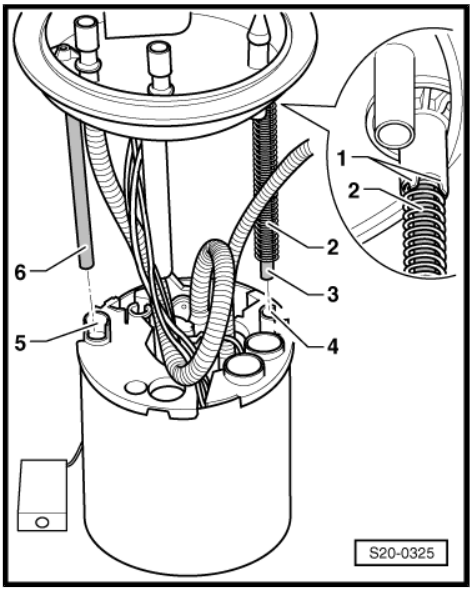
– Install the fuel delivery line as well as the fuel line.

– Insert the new dry gasket ring into the opening of the fuel tank and moisten only from the inside with fuel for installing the closing flange.

- The spring -2- must be fastened to the retaining lugs -1- of the closing flange.

– First of all guide the guide pipe -3- into the guide bore -4-.

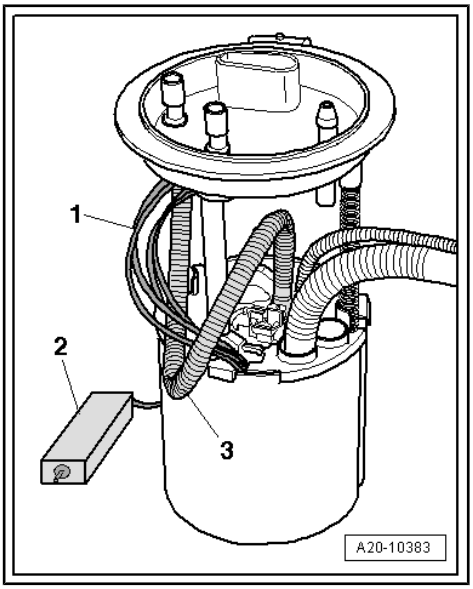
– Then lower the closing flange in such a way that the guide pipe -6- locks into the guide bore -5-.




**Note**

*Pay attention that the electrical cables -1- and the fuel feed line -3- are routed according to the illustration and the float arm -2- is not blocked.*

– Press the closing flange down and bring it into the installation position.

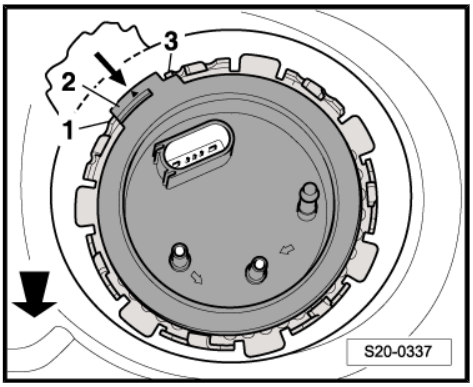



Further information:

- Observe the fitting location of the fuel delivery unit. The catch -2- on the closing flange must lie between the tabs -1- and -3- on the fuel tank. The -arrow- shows the direction of travel.
- Do not interchange feed line and return-flow line.
- Make sure the fuel lines fit tightly.
- After installing the fuel delivery unit, check whether the feed line and the return-flow line is still clipped in place on the fuel tank.

**Tightening torques**

- ⇒ “2.1 Fuel tank with attached parts”, page 273



## 2.8 Removing and installing the sender for fuel gauge display

⇒ “2.8.1 Removing and installing fuel gauge display G (Fabia II, Roomster, Rapid India, Rapid NH)”, page 300

⇒ “2.8.2 Remove and install fuel gauge sender G (Octavia II, Superb II,Yeti)”, page 300

⇒ “2.8.3 Removing and installing fuel gauge sender 2 G169 (Octavia II with four-wheel drive, Superb II)”, page 301

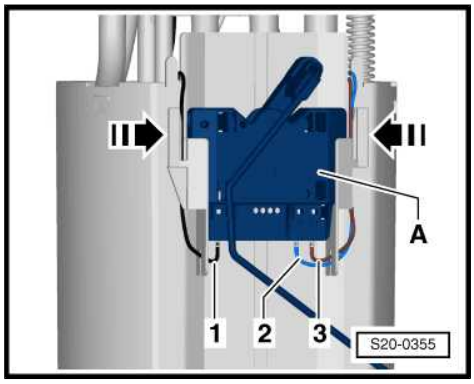
### 2.8.1 Removing and installing fuel gauge display - G- (Fabia II, Roomster, Rapid India, Rapid NH)

**Removing**

– Remove fuel delivery unit ⇒ page 293 .

– Unlatch and disconnect the plug of the lines -1- (black), -2- (blue) and -3- (brown).

– Press together the holding tabs -arrows- and remove the sender for fuel gauge display - G- upwards.




**Install**

– Insert the sender for fuel gauge display - G- in the guides at the fuel delivery unit and press downwards until it latches into position.

– Connect the lines -1-, -2- and -3- and fix in the holding slots of the fuel delivery unit.

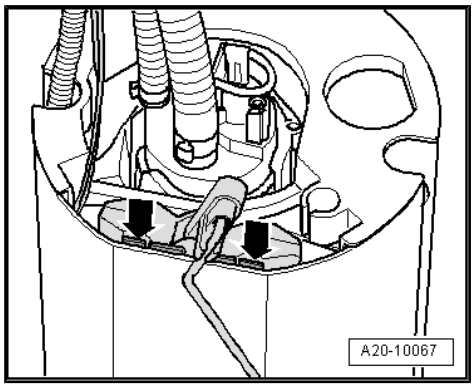
– Install fuel delivery unit ⇒ page 293 .

### 2.8.2 Remove and install fuel gauge sender - G- (Octavia II, Superb II,Yeti)

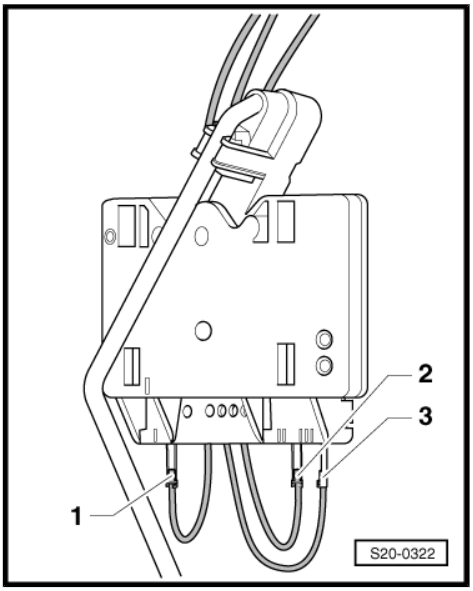
**Removing**

– Remove fuel delivery unit ⇒ page 293 .

– Unlock the catches -arrows- using a screwdriver and pull out the sender for fuel gauge display - G- towards the top.



– Unlatch and disconnect the plug connection of the lines -1- (brown), -2- (blue) and -3- (black).




**Install**

– Connect the lines and check the connector for secure catch.

– Insert the sender for fuel gauge display - G- in the guides at the fuel delivery unit and press downwards until it latches into position.

– Install fuel delivery unit ⇒ page 293 .

## 2.8.3 Removing and installing fuel gauge sender 2 - G169- (Octavia II with four-wheel drive, Superb II)

- The fuel tank must not be more than $^1/_2$ full.

**Note**

- *If necessary drain the fuel tank ⇒ page 290 .*
- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe the regulations concerning cleanliness when working on the fuel supply/injection system ⇒ page 6 .*
- *Make sure that the sender for fuel gauge display is not bent.*

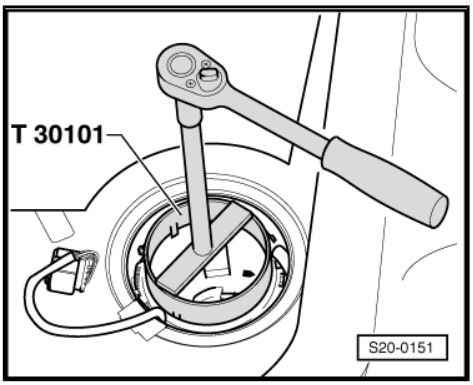
**Removing**

– Switch off ignition and pull out ignition key.

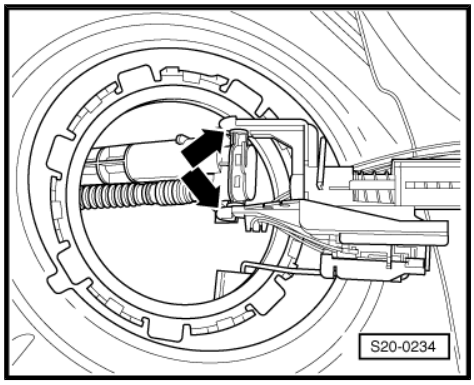
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

– Remove left cover and disconnect plug from fuel gauge sender 2 - G169- .

– Open lock ring with the wrench - T30101 (3087)- .



– Slightly pull fuel gauge sender 2 - G169- out of the opening of the fuel tank, release catches -arrows- and disconnect suction jet pump.




### Install

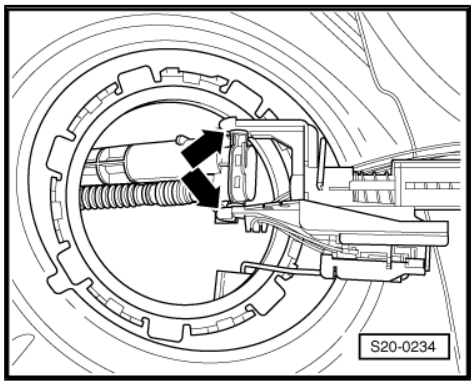
Installation occurs in reverse order to removal. Pay attention to the following:

**Caution**

***When installing do not bend the float arm of the fuel gauge sender 2 - G169- .***

– Insert the fuel gauge sender 2 - G169- into the fuel tank.

– Fit the suction jet pump in the fuel tank onto the fuel gauge sender 2 - G169- and push it in until the catches -arrows- latch into position.

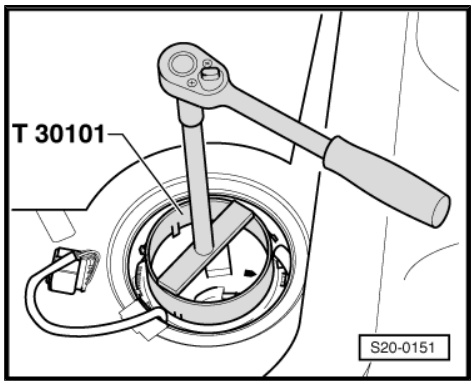



– Insert new dry gasket ring of the flange into the opening of the fuel tank and only moisten the inside (towards flange) with fuel.

– Check the fitting position ⇒ page 281 and insert the flange of the fuel gauge sender 2 - G169- into the opening of the fuel tank.

– Check correct seating of the gasket ring.

– Tighten the lock ring with socket wrench - T30101 (3087)- .




– Fit on plug and install left cover.

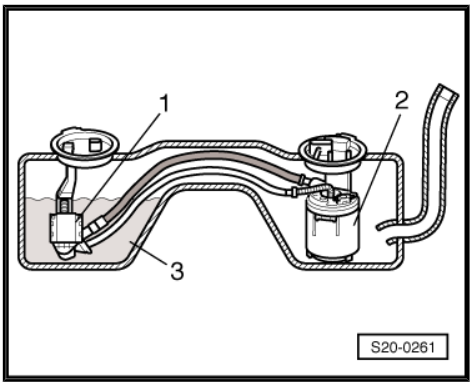
### Tightening torques

◆ ⇒ “2.1 Fuel tank with attached parts”, page 273

## 2.9 Removing and installing suction jet pump

⇒ "2.9.1 Removing and installing suction jet pump (Octavia II with four-wheel drive, Superb II)", page 303

## 2.9.1 Removing and installing suction jet pump (Octavia II with four-wheel drive, Superb II)




**Note**

- *The fuel tank is subdivided in a left and a right chamber. In order to pump the fuel out of the left chamber -3- of the fuel tank into the right chamber to the housing of the fuel delivery unit -2-, a suction jet pump -1- is required.*
- *The version of the fuel tank requires that the fuel is pumped from the area of the fuel gauge sender 2 - G169- with a suction jet pump to the fuel pump.*
- *A check is only to be carried out, if the engine stops because of fuel shortage, although the fuel gauge still indicates a fuel tank which is 1/4 full.*

**Work procedure**

– Remove fuel delivery unit ⇒ page 293 .

– Remove fuel gauge sender 2 - G169- ⇒ page 300 .

– Now the suction jet pump can be pulled out from the side of the fuel gauge sender 2 - G169- (left vehicle side).

– Check, if the fuel lines on the suction jet pump are placed on firmly and not damaged.

– Check the suction jet pump additionally for possible contamination.

## 2.10 Separating quick couplings

**Special tools and workshop equipment required**

- Lever - T10468-

**Assign quick couplings**

**Note**

*Quick couplings of fuel lines, vacuum and ventilation lines are colour marked. Either a colour point at the quick coupling or the release button has the corresponding colour.*

| Quick coupling | Colour coding at the quick coupling |
|---|---|
| Fuel feed line | Black |
| Fuel return-flow line | Blue |
| Breather | White, beige |
| Vacuum | Green |

**WARNING**

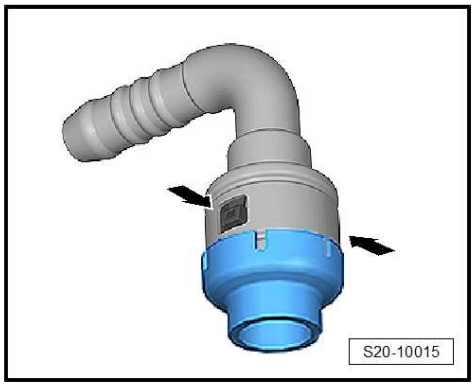
***The fuel feed line is pressurized! Wear safety goggles and safety clothing, in order to avoid injuries and skin contact with fuel. Place cleaning cloths around the connection point before detaching hose connections. Reduce pressure by carefully removing the hose.***

Version 1

**Note**

*When the push-fit coupling is fitted with a plastic circlip, leave it inserted when removing and installing the quick release.*

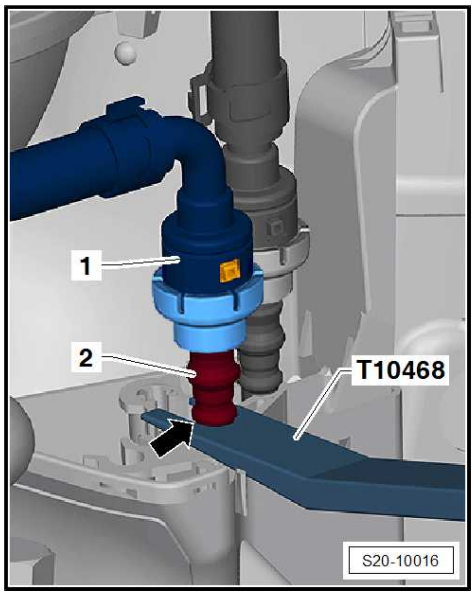
Push-on coupling with release buttons -arrows- on right and left.




The separation point -1- in the engine compartment must be held.

– Position the lever - T10468- between the heat shield and the stop -arrow- of the fuel flow line -2- and hold it.

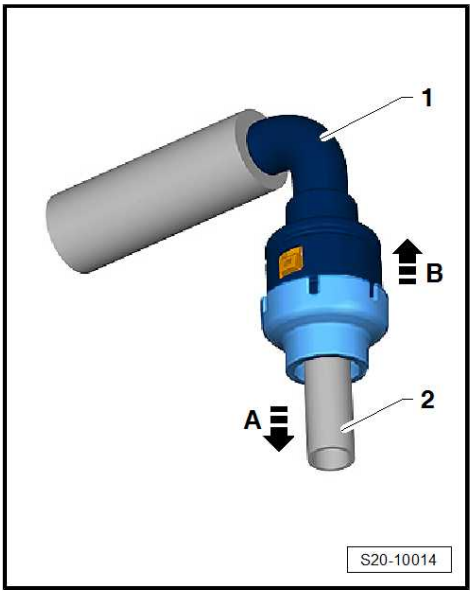
Continued for all separation points



– Press the push-fit coupling -1- in direction of arrow -A-.
– Press the release buttons and remove the push-fit coupling -1- from the fuel line -2- in direction of the arrow -B-.

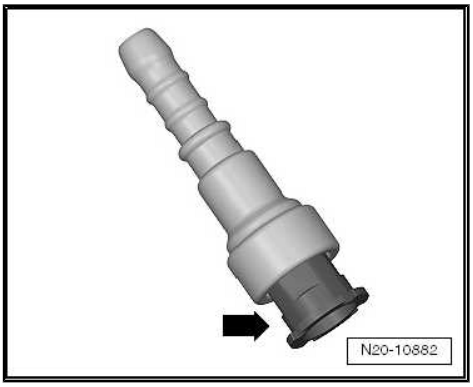
Pay attention to the assignment of the colours when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!




**Version 2**

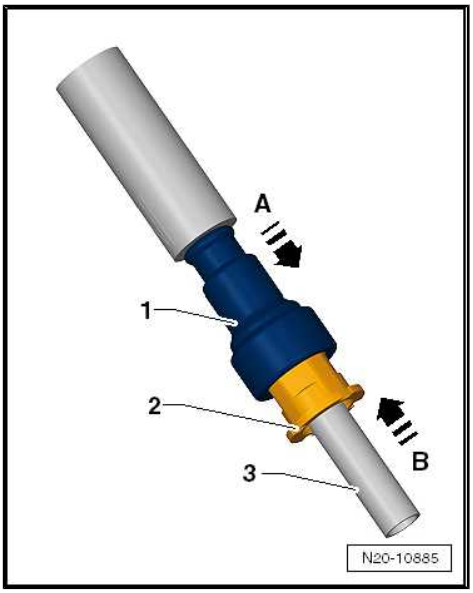
Push-on coupling with pull-release mechanism -arrow-.




– Press the push-fit coupling -1- in direction of arrow -A-.
– Pull pull-release mechanism -2- in direction of arrow -B-.
– Remove the push-fit coupling -1- from the fuel line -3- in direction of the arrow -B-.

Pay attention to the assignment of the colours when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!



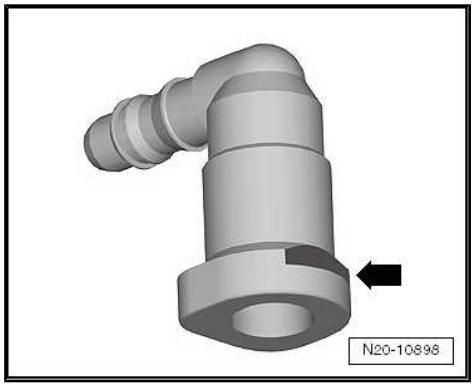
### Version 3

Quick coupling with front button -arrow-.

– Press the release button -arrow- and detach the quick couplings.

Pay attention to the assignment of the colours when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!




### Version 4

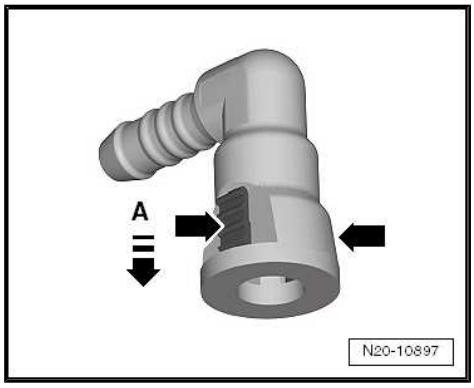
Push-on coupling with release buttons -arrows- on right and left.

– Press the push-fit coupling in direction of arrow -A-.

– Press release buttons -arrows- and detach quick coupling.

Pay attention to the assignment of the colours when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!



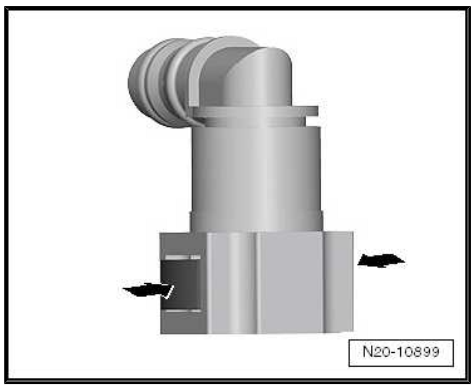

### Version 5

Push-on coupling with release buttons -arrows- on right and left.

– Press release buttons -arrows- and detach quick coupling.

Pay attention to the assignment of the colours when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!




### Version 6

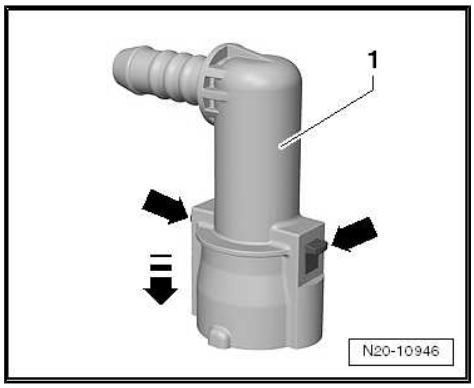
Push-on coupling with release buttons -arrows- on right and left.

– Press push-on coupling -1- in -direction of arrow- and hold pressed.

– Press release buttons -arrows- and detach quick coupling.

Pay attention to the colour assignment when installing ⇒ page 303 .

– Check the quick couplings for firm seating by pulling in the opposite direction!



## 2.11 Removing and installing the fuel tank

⇒ "2.11.1 Removing and installing fuel tank (Fabia II, Roomster, Rapid India, Rapid NH)", page 307

⇒ "2.11.2 Removing and installing fuel tank (Octavia II with front-wheel drive, Yeti)", page 309

⇒ "2.11.3 Removing and installing fuel tank (Octavia II with four-wheel drive, Superb II)", page 312

### 2.11.1 Removing and installing fuel tank (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

♦ Engine/gearbox jack , e.g. -V.A.G 1383 A-

**Conditions**

- Ignition is switched off and ignition key is withdrawn.
- The fuel tank must not be more than $^1/_4$ full.

**Removing**

**Note**

♦ *Observe the safety instructions before starting fitting work* ⇒ page 3 .

♦ *Observe rules for cleanliness* ⇒ page 6 .

– Unscrew the cap from the filler neck.

– Close the opening of the fuel filler neck with a clean foam piece, so that no dirt can penetrate.

**Vehicles Fabia II**

– Position right rear seat vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Roomster**

– Fold back the middle and rear seat and position vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Rapid India, Rapid NH**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**Continued for all vehicles**

– Remove the cover of the fuel delivery unit under the mat.

– Remove plug connector for fuel pump.

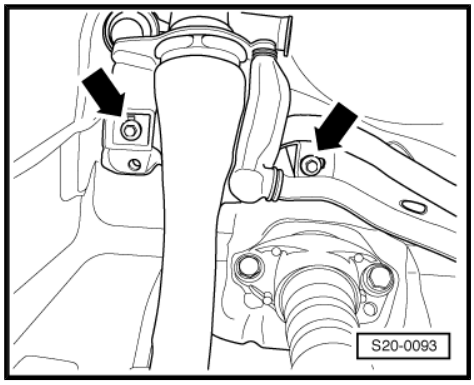
– If necessary drain the fuel tank ⇒ page 290 .

– Removing rear axle ⇒ Chassis; Rep. gr. 42 .

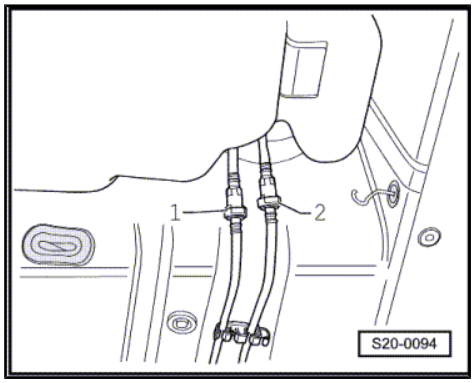
– Remove the rear right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .

– Remove rear part of exhaust system ⇒ page 449 .

– Unscrew bolts on filler neck -arrows-.




– Disconnect feed line (black) -1- and return-flow line (blue) -2- from the fuel tank, to do so press the release buttons. Unlock the quick coupling and disconnect ⇒ page 303 .




**For vehicles Roomster, Rapid India, Rapid NH**

– Remove tensioning strap over the heat protection plate.

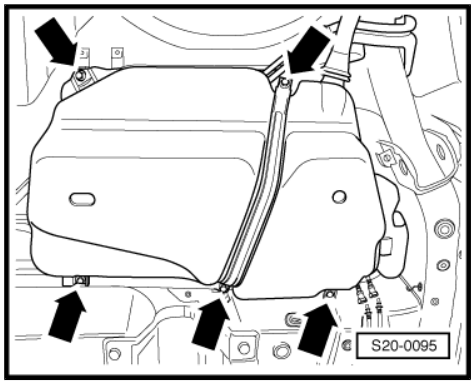
– Remove the heat shield cover of the fuel tank.

**For all vehicles**

– Support fuel tank with engine/gearbox jack -V.A.G 1383 A- .

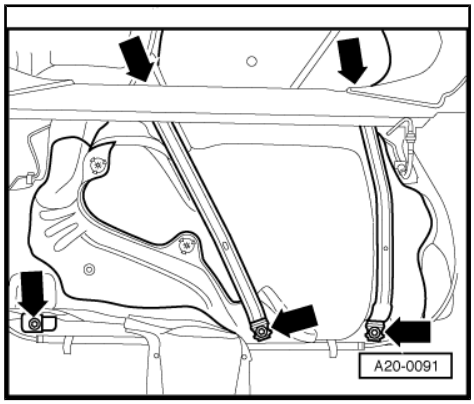
**For vehicles Fabia II**

– Unscrew tensioning strap and fixing screws -arrows-.




**For vehicles Roomster, Rapid India, Rapid NH**

– Unscrew the remaining tensioning strap and fixing screw -arrows-.




**For all vehicles**

– Pull the filler neck out of the rubber bowl and swivel the fuel tank downwards.

**Install**

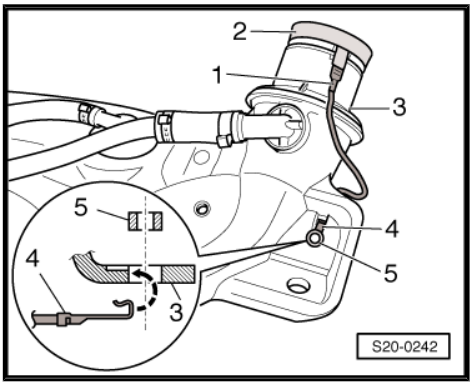
Installation is carried out in the reverse order. Pay attention to the following:

– Check both earth connections for corrosion, if necessary remove corrosion.

– Check the fitting position of the earth lead -1-.

• The plug -1- must be firmly attached to the sheet metal ring -2-.

• The contact tab -4- must be hung on the fuel tank -3- and secured with the spacer bush -5-.

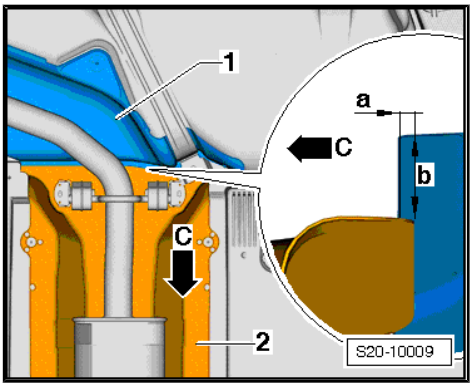



**For vehicles Rapid NH**

**Note**

♦ *Make sure that the heat shield for fuel tank -1- does not collide with the tunnel-heat shield -2- when installing the fuel tank.*

♦ *Tunnel-heat shield -2- must moderately cover in direction of travel -C- tunnel-heat shield of fuel tank.*




**Continued for all vehicles**

♦ Install the fuel lines without kinks.

♦ Do not mix-up the feed line and the return-flow line (the return-flow line is blue, the feed line is black).

♦ Make sure the connections are securely fitted.

♦ Check feed line and return-flow line at fuel tank for firm seating.

Before starting the engine, the fuel system must be bled as follows:

– Switch on the ignition and only switch it off once the fuel pump has come to a standstill. Repeat this procedure at least »5 times«.

**Tightening torques**

♦ ⇒ “2.1 Fuel tank with attached parts”, page 273

## 2.11.2 Removing and installing fuel tank (Octavia II with front-wheel drive, Yeti)

**Special tools and workshop equipment required**

♦ Engine and gearbox jack , e.g. -V.A.G 1383 A-

**Removing**

**Note**

♦ *Drain the fuel tank* *⇒ page 290* .

♦ *Safety precautions when working on the fuel supply system* *⇒ page 3* .

♦ *Observe the regulations concerning cleanliness when working on the fuel supply/injection system* *⇒ page 6* .

– Switch off ignition and pull out ignition key.

**For the vehicles Octavia II**

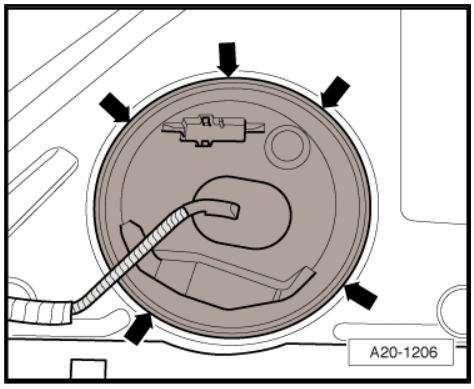
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**For the vehicles Yeti**

– Remove rear seat bench with brackets ⇒ Body Work; Rep. gr. 72 .
– Remove floor covering under the rear seat bench.

**For all vehicles**

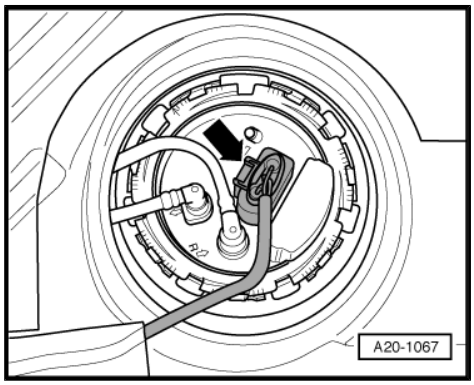
– Unclip retaining catches -arrows- of cover for the fuel delivery unit and remove cover.



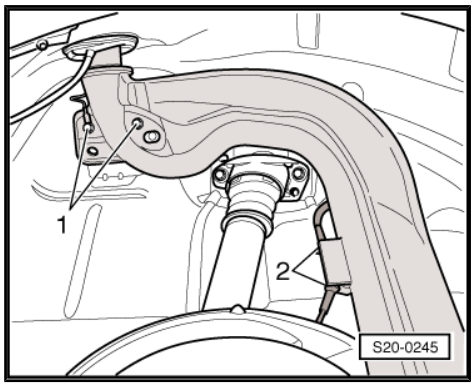

**Note**

*On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

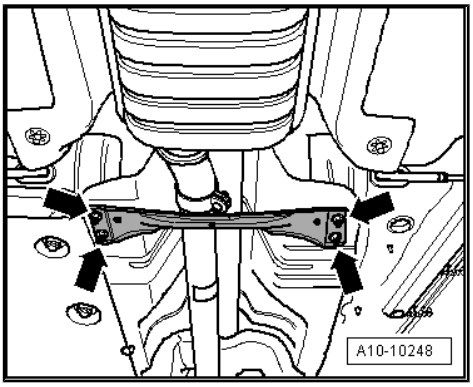
– Unplug connector -arrow-.
– Unscrew right rear wheel ⇒ Chassis; Rep. gr. 44 .
– Open the fuel tank cap and clean around the fuel filler neck.
– Unscrew the cap from the fuel filler neck.
– Close the opening of the fuel filler neck with a clean foam piece, so that no dirt can penetrate.
– Remove the rear right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .




– Unscrew screws -1- for filler neck on the body.
– Unclip the wiring loom from the holder -2- at the top and bottom of the filler neck.



– Remove rear tunnel bridge -arrows-.

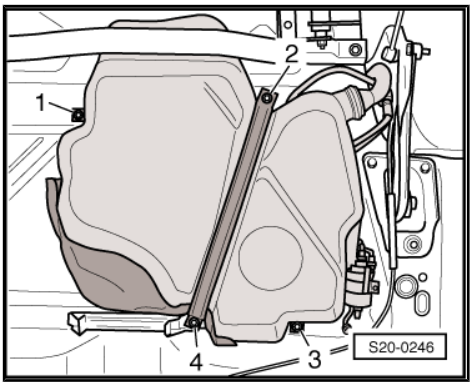



– Slacken front clamping sleeve at exhaust sleeve and push clamping sleeve to the rear.
– Slacken all the suspensions of the middle and rear part of the exhaust system from the retaining straps.
– Slightly lower the middle and rear part of the exhaust system and tie with wire to the body.
– Disconnect the feed line and the return-flow line on the front right of the fuel tank. Unlock the quick coupling and disconnect ⇒ page 303 .

**Note**

- *For vehicles with auxiliary heating, the fuel line for the dosing pump - V54- must also be disconnected.*
- *Press down the securing rings in order to unlock the connections of the fuel lines.*

– Unscrew screws -2- and -4- for tensioning strap.




– Support fuel tank using the engine/gearbox jack - V.A.G 1383 A- .
– Release fixing screws -1- and -3-.
– Lower the fuel tank.

**Install**

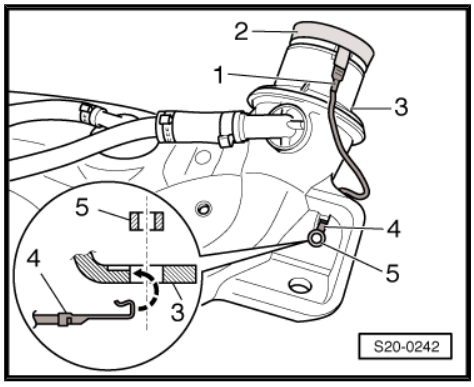
– Check both earth connections for corrosion, if necessary remove corrosion.

– Check the fitting position of the earth lead -1-.

• The plug -1- must be firmly attached to the sheet metal ring -2-.

• The contact tab -4- must be hung on the fuel tank -3- and secured with the spacer bush -5-.

– Pull through the filler neck between the body and the rear axle with the help of a second mechanic. Then position the fuel tank onto the engine/gearbox jack - V.A.G 1383 A- .




Further installation occurs in reverse order. Pay attention to the following:

♦ Install the fuel lines without kinks.

♦ Do not mix-up the feed line and the return-flow line (the return-flow line is blue, the feed line is black).

♦ Make sure the connections are securely fitted.

♦ Check feed line and return-flow line at fuel tank for firm seating.

Before starting the engine, the fuel system must be bled as follows:

– Switch on the ignition and only switch it off once the fuel pump has come to a standstill. Repeat this procedure at least »5 times«.

**Tightening torques**

♦ ⇒ “2.1 Fuel tank with attached parts”, page 273

♦ ⇒ “1.5 Middle and rear part of the exhaust system”, page 449

## 2.11.3 Removing and installing fuel tank (Octavia II with four-wheel drive, Superb II)

**Special tools and workshop equipment required**

♦ Engine and gearbox jack , e.g. -V.A.G 1383 A-

**Removing**

**Note**

♦ *Drain the fuel tank ⇒ page 290 .*

♦ *Safety precautions when working on the fuel supply system ⇒ page 3 .*

♦ *Observe the regulations concerning cleanliness when working on the fuel supply/injection system ⇒ page 6 .*

– Switch off ignition and pull out ignition key.

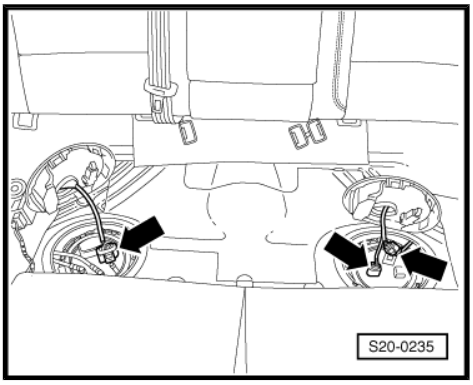
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

– Remove the cover from the fuel delivery unit and from the fuel gauge sender 2 - G169- .

**Note**

*On vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

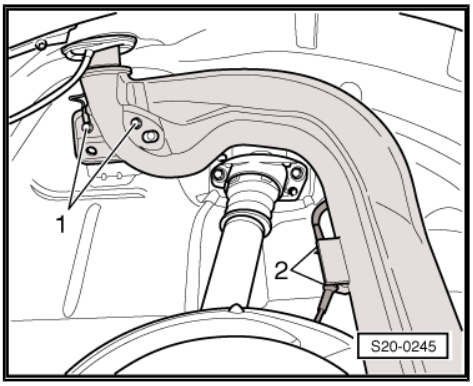
– Remove the plug from the fuel delivery unit and from the fuel gauge sender 2 - G169- -arrows-.
– Unscrew right rear wheel ⇒ Chassis; Rep. gr. 44 .
– Open the fuel tank cap and clean around the fuel filler neck.
– Unscrew the cap from the fuel filler neck.
– Close the opening of the fuel filler neck with a clean foam piece, so that no dirt can penetrate.
– Remove the rear right wheelhouse liner ⇒ Body Work; Rep. gr. 66 .




– Unscrew screws -1- for filler neck on the body.
– Unclip the wiring loom from the holder -2- at the top and bottom of the filler neck.

**Note**

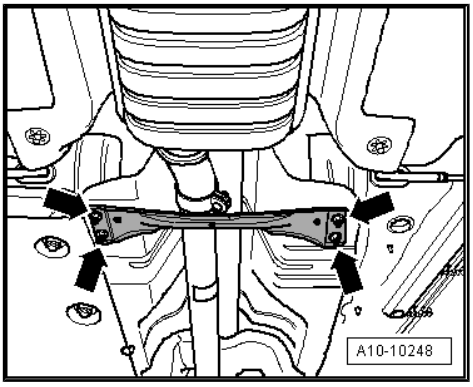
- *For vehicles with auxiliary heating, the fuel line for the dosing pump - V54- must also be disconnected.*
- *Press down the securing rings in order to unlock the connections of the fuel lines. Unlock the quick coupling and disconnect ⇒ page 303 .*




– Remove tunnel bridge -arrows-.
– Remove middle and rear part of exhaust system.

**Vehicles with four-wheel drive**

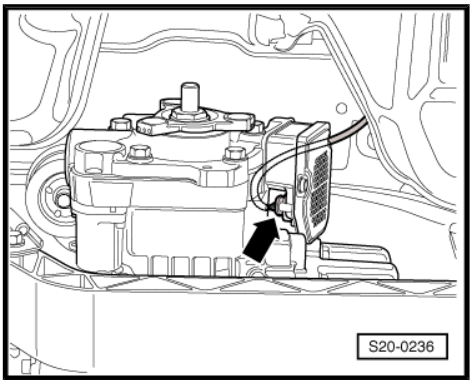
– Remove propshaft ⇒ Gearbox; Rep. gr. 39 .



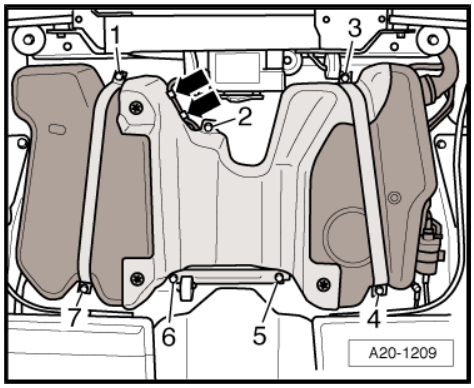

– Disconnect plug from four-wheel drive control unit - J492- -arrow-.

**Continued for all vehicles**

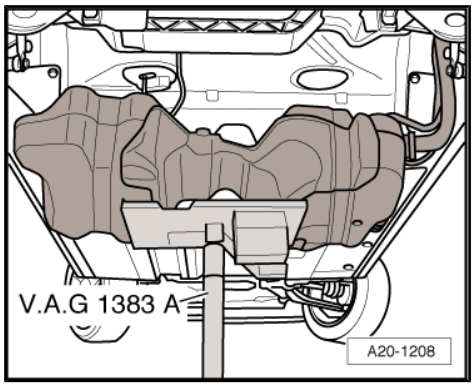
– Disconnect the feed line and the return-flow line on the front right of the fuel tank. Unlock the quick coupling and disconnect ⇒ page 303 .



– First unscrew the screws -2-, -5- and -6-.
– Support fuel tank using the engine/gearbox jack - V.A.G 1383 A- .
– Unscrew the screws for the tensioning straps -1-, -3-, -4- and -7-.



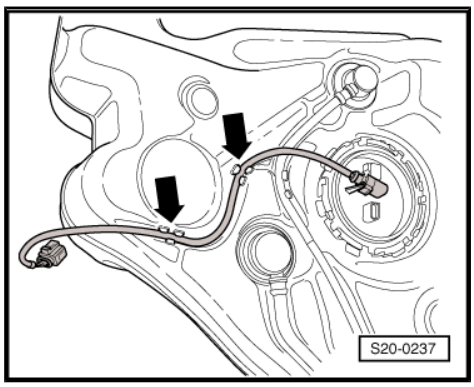

– Lower slightly the fuel tank using the engine/gearbox jack - V.A.G 1383 A- .
– Then remove the fuel tank from the engine/gearbox jack - V.A.G 1383 A- and pull through the filler neck between the body and the rear axle with the help of a second mechanic.




**Install**

**Vehicles with four-wheel drive**

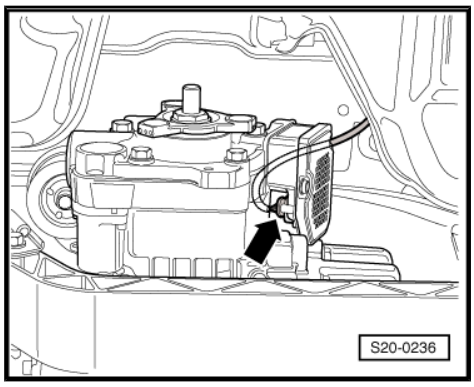
– Attach line for four-wheel drive control unit - J492- to the fuel tank -arrows-. To do so, support the fuel tank with the engine/ gearbox jack .
– Raise fuel tank in its installation position and install.




– Connect the plug to the four-wheel drive control unit - J492- -arrow-.

**Continued for all vehicles**

– Check both earth connections for corrosion, if necessary remove corrosion.

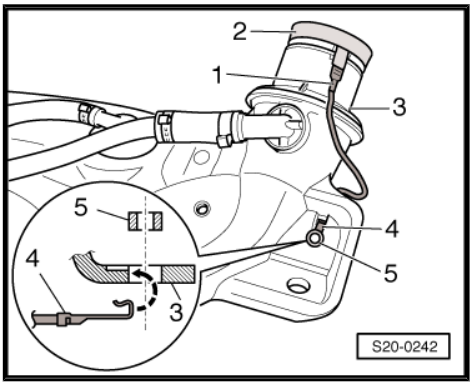


– Check the fitting position of the earth lead -1-.

• The plug -1- must be firmly attached to the sheet metal ring -2-.

• The contact tab -4- must be hung on the fuel tank -3- and secured with the spacer bush -5-.

– Pull through the filler neck between the body and the rear axle with the help of a second mechanic. Then position the fuel tank onto the engine/gearbox jack - V.A.G 1383 A- .




Further installation occurs in reverse order. Pay attention to the following:

♦ Install the fuel lines without kinks.

♦ Do not mix-up the feed line and the return-flow line (the return-flow line is blue, the feed line is black).

♦ Make sure the connections are securely fitted.

♦ Check feed line and return-flow line at fuel tank for firm seating.

Before starting the engine, the fuel system must be bled as follows:

– Switch on the ignition and only switch it off once the fuel pump has come to a standstill. Repeat this procedure at least »5 times«.

**Tightening torques**

♦ ⇒ “2.1 Fuel tank with attached parts”, page 273

♦ ⇒ “1.5 Middle and rear part of the exhaust system”, page 449

## 2.12 Checking fuel pump



### 2.12.1 Check fuel flow rate of the fuel pump (Fabia II, Roomster, Rapid NH)

**Check with ⇒ Vehicle diagnostic tester**

**Note**

*For checking the fuel flow rate of the fuel pump, the procedure with the remote control - V.A.G 1348/3A- can also be used ⇒ page 317 .*

**Special tools and workshop equipment required**

- Measuring vessel

**Test conditions**

- Battery voltage at least 12.5 V.
- Fuel filter o.k.
- Fuel tank at least $^1/_2$ full.
- Ignition off.

**Test sequence**

**Note**

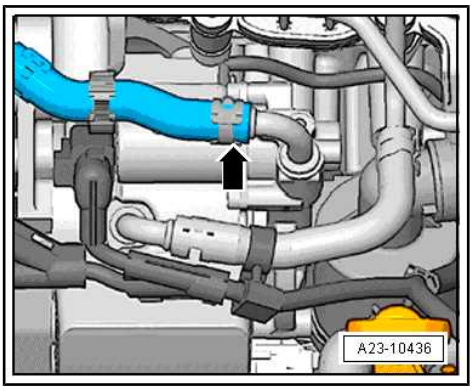
- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

– Remove engine cover ⇒ page 10 .

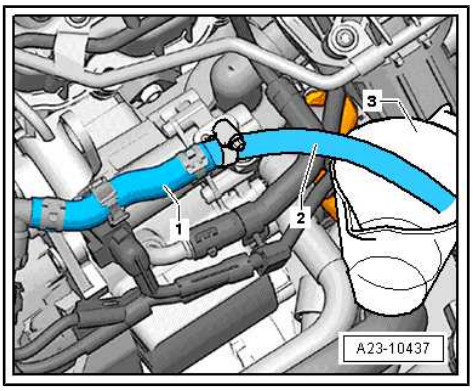
**WARNING**

***Fuel supply line is pressurised! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

– Detach the fuel feed line -arrow- from the high pressure pump.




– Hold the fuel feed line -1- (lengthened with a suitable hose -2-) in a measuring vessel -3-.
– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.




**Note**

*The fuel pump is activated for 30 seconds.*

- Specified value of minimum fuel delivery volume in 30 seconds: min. 600 ml

If the minimum fuel delivery volume is not reached, the following faults may be present:

- ♦ Battery voltage too low.
- ♦ Fuel lines crimped, carry out a visual inspection.
- ♦ The fuel filter is clogged.
- ♦ There is a leak in the fuel system, check for tightness.
- ♦ Fuel pump defective: Inspection ⇒ page 316 .

**Check with the remote control - V.A.G 1348/3A-**

**Special tools and workshop equipment required**

- ♦ Hose adapter , e.g. -V.A.G 1318/16-
- ♦ Adapter set , e.g. -V.A.G 1318/17-
- ♦ Remote control , e.g. -V.A.G 1348/3A-
- ♦ Measuring vessel

**Test conditions**

- Supply voltage is o.k.
- Battery voltage at least 11.5 V.
- Fuel temperature 15…30 °C.
- Fuel tank at least $^1/_4$ full.

### Test sequence

**Note**

- *Observe the safety instructions before starting fitting work* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

– Unscrew the cap from the filler neck.

**Vehicles Fabia II**

– Position right rear seat vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Roomster**

– Fold back the middle and rear seat and position vertically ⇒ Body Work; Rep. gr. 72 .

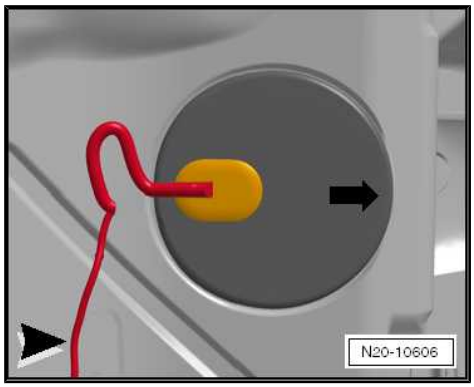
**Vehicles Rapid NH**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**Continued for all vehicles**

– Remove the cover of the fuel delivery unit under the mat.

– Remove plug connector for fuel pump.




– Connect remote control -V.A.G 1348/3A- with connection lines from measuring tool set to contact -1- of the fuel pump and to battery +.

– Use connection lines from the measuring tool set to connect the contacts -5- to the plug and to the fuel pump.

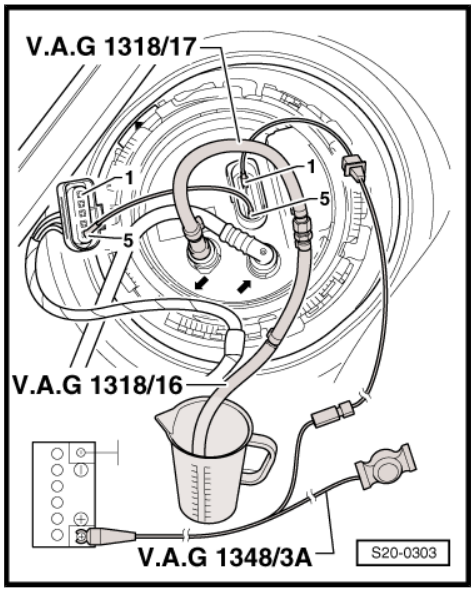
– Pull off the fuel feed line and gather residual fuel in a cloth. Unlock the quick coupling and disconnect ⇒ page 303 .

**WARNING**

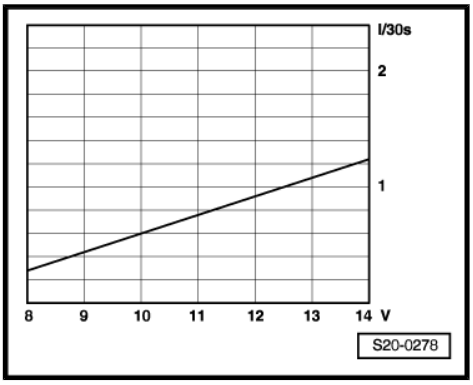
***The fuel feed line is pressurized! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

– Connect adapter -V.A.G 1318/17- and -V.A.G 1318/16- to the fuel pumpand hold in the measuring vessel.

– Activate remote control -V.A.G 1348/3A- for 30 seconds.



– Compare the amount of the fuel pumped to the specified value (the amount of the fuel pumped is dependent on the voltage at the fuel delivery unit).




If the minimum fuel delivery volume is not reached:

– Remove the fuel delivery unit and check whether the pump strainer is not clogged up.

If no fault was detected until now:

– Replace fuel delivery unit ⇒ page 293 .

## 2.12.2 Check current draw of fuel pump (Fabia II, Roomster, Rapid NH)

**Special tools and workshop equipment required**

- Hand multimeter , e.g. -V.A.G 1526D-
- Amps clamp , e.g. -V.A.G 1526B/2-
- Adapter for measuring method/DSO (5-pin) , e.g. -VAS 5565-

**Note**

- *The battery voltage as well as the temperature of the diesel fuel have a major influence on the power consumption of the fuel pump. For this reason it is necessary to ensure that the battery voltage is at least 12 V when testing.*
- *Depending on the season, it is necessary to ensure that the vehicle is fueled with “winter diesel”.*

**Test conditions**

- Battery voltage at least 12 volts
- Fuel temperature above 10 °C

**Vehicles Fabia II**

– Position right rear seat vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Roomster**

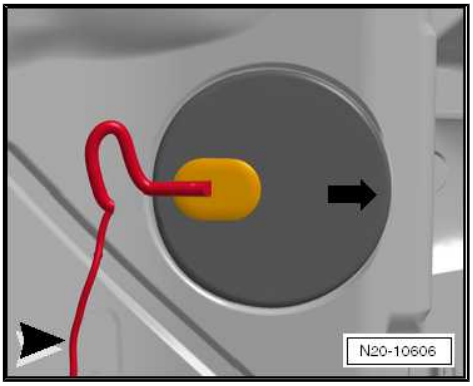
– Fold back the middle and rear seat and position vertically ⇒ Body Work; Rep. gr. 72 .

**Vehicles Rapid NH**

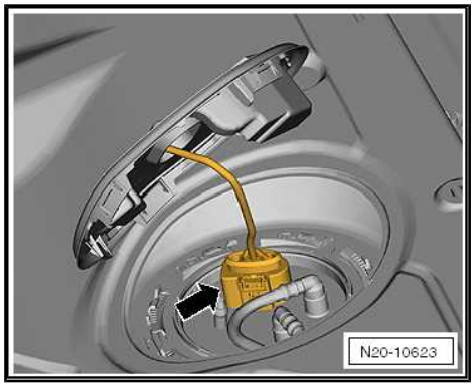
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

**Continued for all vehicles**

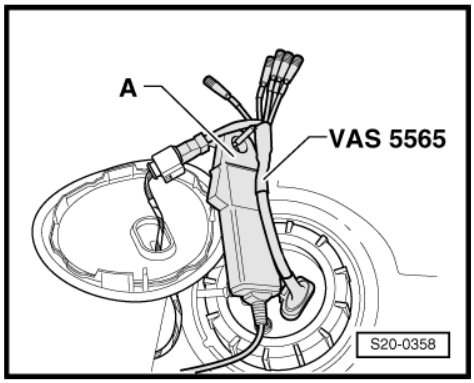
– Remove the cover of the fuel delivery unit under the mat.



– First of all check the plug connection -arrow- for correct fit. Pull on the plug without pressing the locking mechanism. If the plug connection was not correctly positioned, this could cause a fault.
– Unplug connector -arrow-.




– Connect test instrument adapter/DSO (5-pin) - VAS 5565- to connector and fuel delivery unit.
– Connect the current probe -A- on the red cable - with the inscription “current probe” - of the adapter for measuring method/DSO (5-pin) - VAS 5565- .




**Note**

*The current probe of the hand-held multimeter - V.A.G 1715- can also be used.*

– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.

**Note**

*The fuel pump is activated for 30 seconds.*

– Read off power consumption at handheld multimeter - V.A.G 1526D- .

• Specified value: maximum 7.5 A

If the specfied current uptake is exceeded:

– Fuel pump defective, replace the fuel delivery unit ⇒ page 293 .

## 2.12.3 Check feed pressure of fuel pump (Rapid India)

**Note**

*The 0.6 MPa (6.0 bar) low pressure fuel system is used in the Rapid India vehicle. Identification mark ⇒ page 334 .*

**Caution**

***First of all check the electrical plug connection to the fuel pump for firm seating, whereby it is necessary to pull on the plug connection without pressing the catch.***

**Special tools and workshop equipment required**

♦ Hose adapter - VAS 6551/5-2-

- Hose adapter - VAS 6551/5-3-
- Adapter - VAS 6551/5-1-

**Test condition:**

- Fuses o.k. ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Battery voltage at least 12 V.
- The measurement does not depend on the fuel level, however the minimum fuel level of 5 litres must be kept.
- Ensure level vehicle positioning.
- Flow path in the fuel hoses and the lines in the engine compartment and on the underbody not interrupted due to damage (kinks).
- All electrical consumers such as the lights and rear window heater must be switched off.

**WARNING**

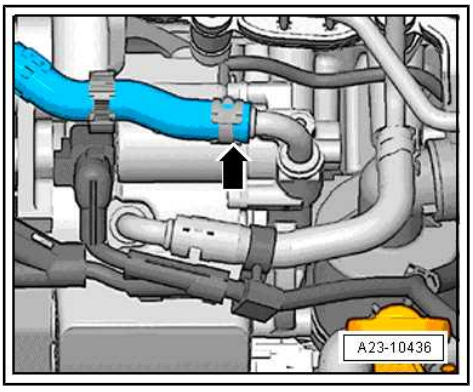
***Fuel supply line is pressurised! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

**Test sequence:**

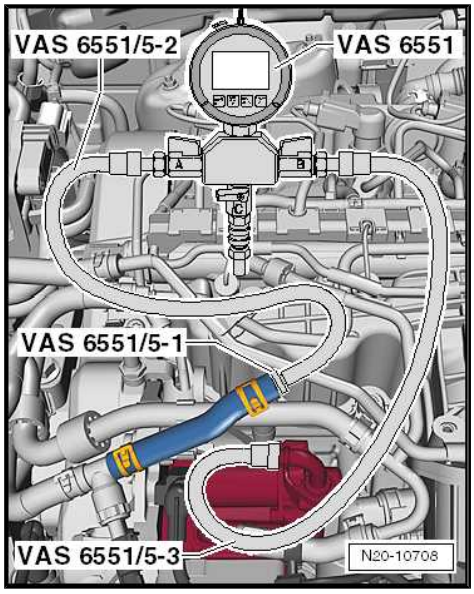
**Note**

- *Safety precautions when working on the fuel supply system* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

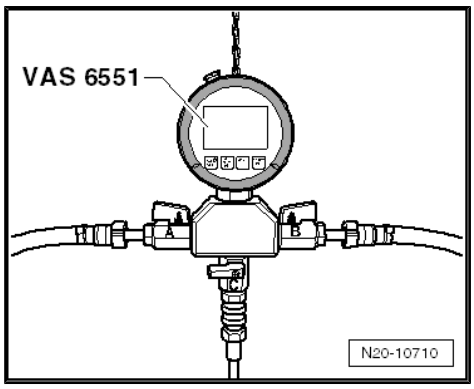
– Remove engine cover ⇒ page 10 .
– Connect hose adapter - VAS 6551/5-2- with hose adapter - VAS 6551/5-4- .
– Collect the fuel which flows out with a cleaning cloth.
– Detach the fuel feed line -arrow- from the high pressure pump.



– Connect the pressure gauge - VAS 6551- with the lines of the hose adapter - VAS 6551/5-2- and hose adapter - VAS 6551/5-3- to the fuel circuit.
– Switch on the pressure gauge - VAS 6551- by pressing the button `On/Off`.




– Open the shut-off cocks “A” and “B” of the pressure gauge - VAS 6551- , close the shut-off cock “C”.
– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.




**Note**

*The fuel pump will now be activated for 30 seconds.*

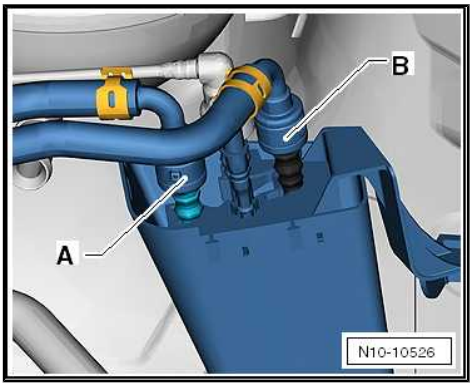
– Read the pressure on the pressure gauge - VAS 6551- .
• Specified value: at least 0.45 MPa (4.5 bar)
– Start engine and run in idle.
– Read the pressure on the pressure gauge - VAS 6551- .
• Specified value: at least 0.45 MPa (4.5 bar)
– Position the pressure gauge - VAS 6551- on the windscreen in such a way that it is legible from inside.
– Increase idling speed to 2500 rpm.
– Read the pressure on the pressure gauge - VAS 6551- .
• Specified value: at least 0.45 MPa (4.5 bar)

If the specified value is not reached, the test must be repeated before the fuel enters the fuel filter. This will determine whether the fuel filter is clogged.

If no pressure rise occurs, first check the voltage supply ⇒ Vehicle diagnostic tester and the power consumption ⇒ page 327 of the fuel pump.

– Re-connect the fuel feed line to the high pressure pump.

– Detach fuel feed line -B-. To do so, push the quick coupling onto the nozzle, press in the securing elements (hold pressed) and detach the quick coupling. Unlock the quick coupling and disconnect ⇒ page 303 .




– Connect pressure gauge - VAS 6551- with lines -VAS 6551/1- and -VAS 6551/2- to the fuel circuit.

Pay attention to secure catch of the couplings.

– Collect the fuel which flows out with a cleaning cloth.

– The pressure measurement is carried out in the same way as the previous test.

However, the pressure value must be a minimum of 0.46 MPa (4.6 bar).

♦ If the prescribed pressure values are not reached

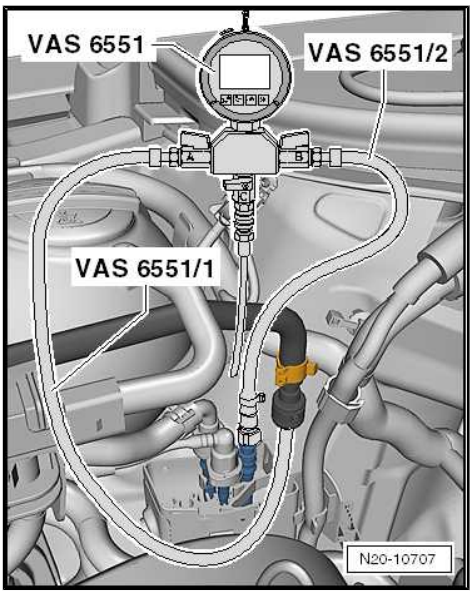
♦ The difference between the existing pressure values (up-stream and downstream filters) ≥ 0.04 MPa (0.4 bar)

– The fuel filter must be replaced ⇒ page 287 .

♦ If the prescribed pressure values are not reached

♦ The measurement must be directly carried out at the fuel pump.

– Re-connect the quick coupling of the fuel feed line.

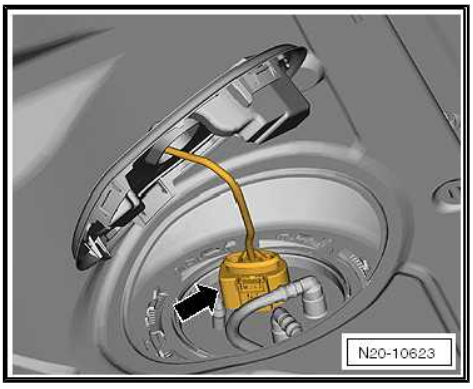



Pay attention to secure catch of the coupling.

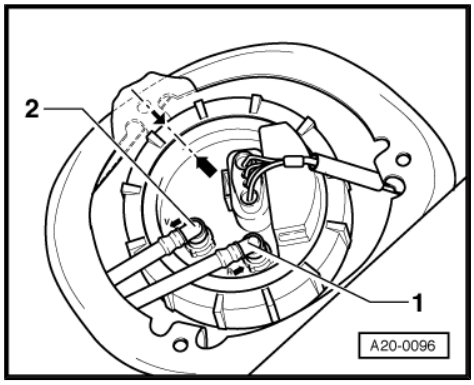
– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

– Remove the cover of the fuel delivery unit under the mat.

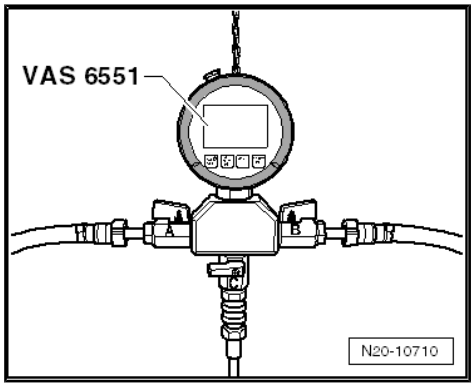
– First of all check the plug connection -arrow- for firm seating, whereby it is necessary to pull on the plug connection without pressing the catch. If the plug connection was not correctly plugged in, this could cause a fault.



– Remove feed line (black) -2- from pump flange- do so by pressing the release button. Unlock the quick coupling and disconnect ⇒ page 303 .
– Collect the fuel which flows out with a cleaning cloth.




– Connect the connection -A- of the pressure gauge - VAS 6551- with the line -VAS 6551/1- to the open nozzles of the fuel delivery unit.
– Close the shut-off cocks “B” and “C” of the pressure gauge - VAS 6551- .
– Switch on the pressure gauge - VAS 6551- by pressing the button On/Off.
– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.




**Note**

*The fuel pump will now be activated for 30 seconds.*

– Read the pressure on the pressure gauge - VAS 6551- .
• Specified value: min. 0.72 ± 0.05 MPa (7.2 ± 0.5 bar)

If the indicated pressure is not reached, the indicated pressure is completely or temporarily interrupted again, this could cause the following faults:

♦ Battery voltage below 12.5 V (connect charger).
♦ Fuel flow rate of fuel pump too low, check ⇒ page 324 .
♦ Voltage supply of fuel pump not O.K., check ⇒ Vehicle diagnostic tester.
♦ Power consumption of fuel pump too low, check ⇒ page 327 .
♦ Filter strainer of fuel delivery unit soiled. Remove, in order to check the fuel delivery unit ⇒ page 293 .
♦ Quick coupling in the fuel delivery unit faulty. Remove, in order to check the fuel delivery unit ⇒ page 293 .

## 2.12.4 Check fuel flow rate of the fuel pump (Rapid India)

**Special tools and workshop equipment required**

♦ Hose adapter - VAS 6551/5-2-
♦ Hose adapter - VAS 6551/5-3-
♦ Adapter - VAS 6551/5-1-
♦ Adapter for measuring method/DSO (5-pin) , e.g. -VAS 5565-
♦ Handheld multimeter - V.A.G 1526D-
♦ Measuring vessel

**Test sequence:**

- The feed pressure of the fuel pump (fuel low pressure) was checked before ⇒ page 320 .
- Fuel tank at least $^{3}/_{4}$ full.
- Battery voltage at least 12.5 Volts.

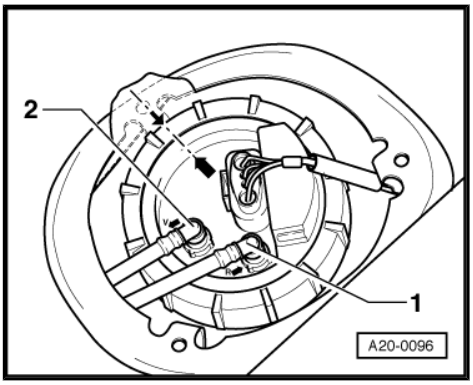
**Note**

- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

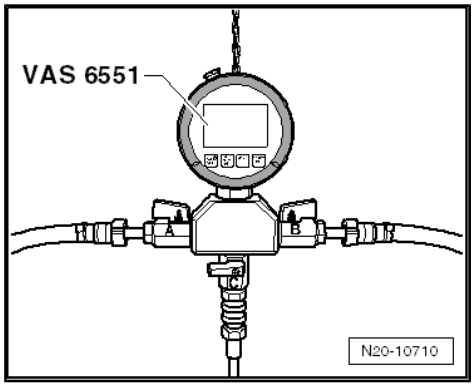
**WARNING**

***Fuel supply line is pressurised! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

– Remove feed line (black) -2- from pump flange- do so by pressing the release button. Unlock the quick coupling and disconnect ⇒ page 303 .
– Collect the fuel which flows out with a cleaning cloth.



– Connect the connection -A- of the pressure gauge - VAS 6551- with the line -VAS 6551/1- to the open nozzles of the fuel delivery unit.
– Starting at the connection -B-, guide the hose adapter - VAS 6551/2- in a measuring vessel ≥ 3 litres and hold it in position.
– Switch on the pressure gauge - VAS 6551- by pressing the button On/Off.
– Close the shut-off cocks “B” and “C” of the pressure gauge - VAS 6551- .
– Switch on ignition.
– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.




**Note**

*The fuel pump will now be activated for 30 seconds.*

– Carefully and fully open the shut-off cock -B-.
– Slowly close the shut-off cock -B- again, during this period read off the pressure on the pressure gauge - VAS 6551- . Set the specified value of 0.5 ± 0.02 MPa (5 ± 0.2 bar) by carefully closing it.
– Drain the measuring vessel.

Repeat the function “test fuel pump”.

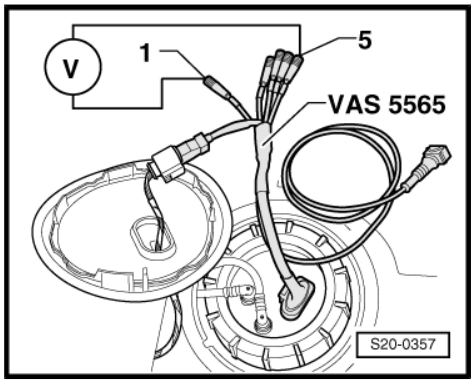
The fuel flow rate of the fuel pumped is dependent on the voltage of the fuel pump.

– For this reason, additionally connect the multimeter - V.A.G 1526- to the outgoing circuits -1- and -5- of the adapter for measuring method/DSO (5-pin) - VAS 5565- .

**Test conditions**

- Fuel temperature 15 up to 25 °C.
- Pressure 0.5 ± 0.02 MPa (5 ± 0.2 bar) at the flange outlet of the fuel pump.
- A voltage of 11 to 15 V must be present at the fuel pump during the test. Measured at the flange plug connection of the pump.

– Carry out the function “test fuel pump”.



– Compare the delivered fuel rate with the read off value from the table.

*) delivered fuel rate in ml / 30 s

**) Voltage at fuel delivery unit (V) when engine not running and delivery unit operating

**Read out examples:**

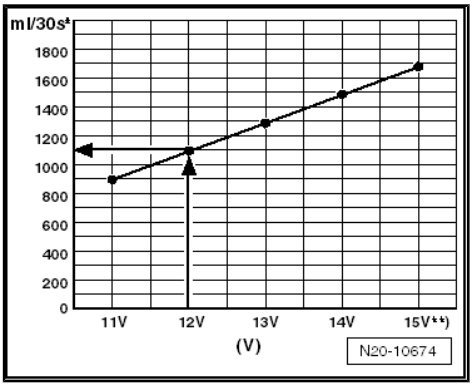
During the test, for example a voltage of 12.0 V is measured at the fuel pump.

Hence the delivered fuel rate of 1100 ml/30 s

The conveyed quantity has been reached or is still being measured: Fuel pump o.k.

If the delivered fuel rate of the fuel pump is not reached, this could cause the following faults:

- Battery voltage below 12.5 V (connect charger).
- Filter strainer of fuel delivery unit soiled. Inspect filter strainer for soiling ⇒ page 293 .
- During the test, a voltage of 11 up to 15 V was reached.
- Testing the voltage supply of the fuel pump ⇒ Vehicle diagnostic tester.
- Checking the power consumption of the fuel pump ⇒ page 327 .




## 2.12.5 Check power consumption of the fuel pump (Rapid India)

**Special tools and workshop equipment required**

- Hand multimeter - V.A.G 1526D- or current probe - V.A.G 1526B/2-
- Adapter for measuring method / DSO (5-pin) - VAS 5565-

**Note**

- *The battery voltage as well as the temperature of the diesel fuel have a major influence on the power consumption of the fuel pump. For this reason it is necessary to ensure that the battery voltage is at least 12.5 V when testing.*
- *Depending on the season, it is necessary to ensure that the vehicle is fueled with "winter diesel".*

**Test conditions:**

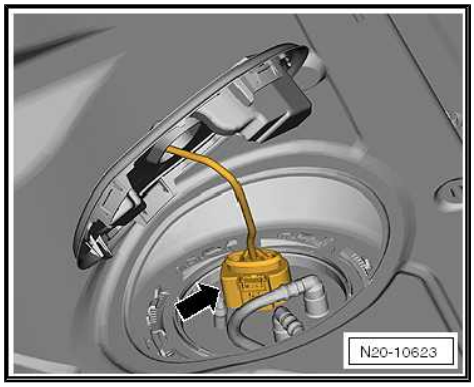
- Battery voltage at least 12.5 volts
- Fuel temperature above 10 °C

**Test sequence:**

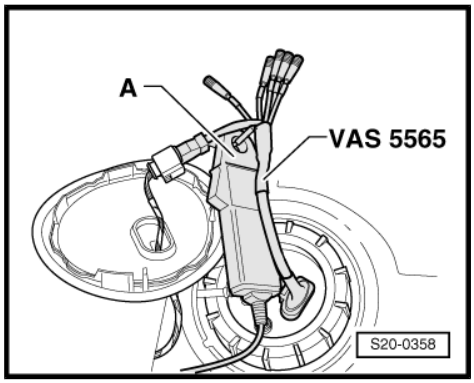
– Removing rear seat bench ⇒ Body Work ⇒ Rep. gr. 72 .

– Remove the cover of the fuel delivery unit under the mat.

– First of all check the plug connection -arrow- for firm seating, whereby it is necessary to pull on the plug connection without pressing the catch. If the plug connection was not correctly plugged in, this could cause a fault.
– Unplug connector -arrow-.




– Connect test instrument adapter/DSO (5-pin) - VAS 5565- to connector and fuel delivery unit.
– Connect the current probe -A- on the red cable - with the inscription “current probe” - of the adapter for measuring method/DSO (5-pin) - VAS 5565- .




**Note**

*Connect the current probe of the multimeter - V.A.G 1715- on the red cable - with the inscription “current probe” - of the adapter for measuring method/DSO (5-pin) - VAS 5565- .*

– Switch on ignition.
– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.

**Note**

*The fuel pump will now be activated for 30 seconds.*

– Read current consumption from Handheld multimeter - V.A.G 1526D- .
• Specified value: min. 8.0 A, max. 14.0 A.

If the measured value except the specified value:

– Remove fuel delivery unit ⇒ page 293 .
– Check whether the electric wiring between the flange and fuel pump is connected and test for continuity.

If there is no open circuit in the wiring.

– Replace fuel delivery unit ⇒ page 293 .

## 2.12.6 Check the feed pressure of the fuel pump (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

♦ Pressure gauge , e.g. -V.A.G 1318-
♦ Adapter , e.g. -V.A.G 1318/17A-

**Test conditions**

• Battery voltage at least 12 V.
• Fuses o.k. ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

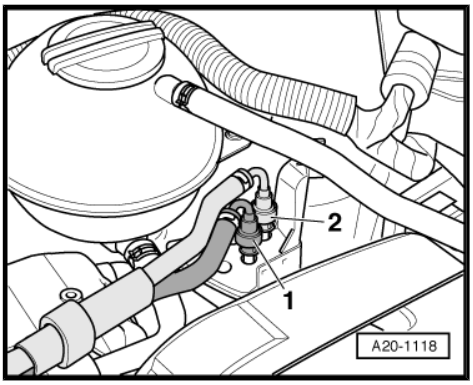
- All electrical consumers such as the lights and rear window heater must be switched off.

**Test sequence**

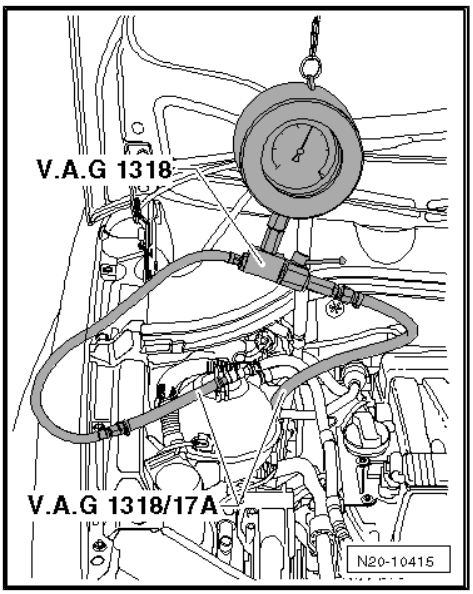
**Note**

- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

– Separate fuel feed line -2-, to do so press in securing ring. Unlock the quick coupling and disconnect ⇒ page 303 .




– Connect the pressure gauge - V.A.G 1318- with the adapter set - V.A.G 1318/17A- to the open ends of the fuel feed line (the illustration shows a different engine).




– Open shut-off cock of the pressure gauge.

– Start engine and run in idle.

– Read the pressure on the pressure gauge - V.A.G 1318- .

- Specified value: at least 0.05 MPa (0.5 bar)

– Ïncrease the engine speed to 2 500 rpm and read the pressure on the pressure gauge - V.A.G 1318- .

- Specified value: at least 0.025 MPa (0.25 bar)

If the specified value is not reached or if the feed pressure is temporarily interrupted:

– Replace fuel delivery unit ⇒ page 293 .

If the specified value is reached:

– Replace the fuel filter in order to prevent a fuel filter from being blocked.

– Check the fuel flow rate of the fuel pump ⇒ page 329 .

## 2.12.7 Check the fuel flow rate of the fuel pump (Octavia II, Superb II, Yeti)

**Check with ⇒ Vehicle diagnostic tester**

**Note**

*For checking the fuel flow rate of the fuel pump, the procedure with the remote control - V.A.G 1348/3A- can also be used ⇒ page 331 .*

**Special tools and workshop equipment required**

- Measuring vessel

**Test conditions**

- Battery voltage at least 12.5 V.
- Fuel filter o.k.
- Fuel tank at least $^1/_2$ full.
- Ignition off.

**Test sequence**

**Note**

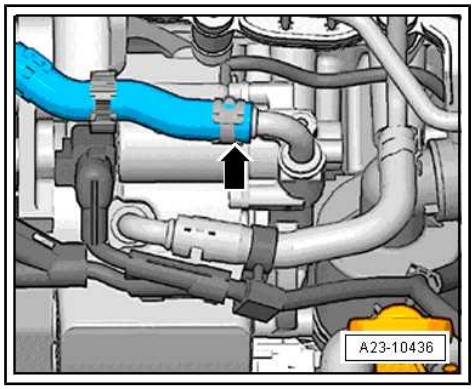
- *Safety precautions when working on the fuel supply system* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

– Remove engine cover ⇒ page 10 .

**WARNING**

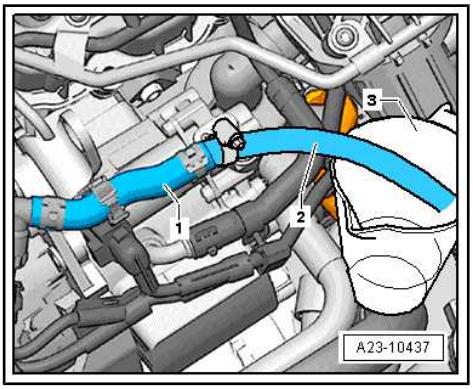
***Fuel supply line is pressurised! Place a clean cleaning cloth around the connection point before detaching hose connections. Reduce pressure by carefully releasing the connection point.***

– Detach the fuel feed line -arrow- from the high pressure pump.



– Hold the fuel feed line -1- (lengthened with a suitable hose -2-) in a measuring vessel -3-.

– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.




**Note**

*The fuel pump is activated for 30 seconds.*

- Specified value of minimum fuel delivery volume in 30 seconds: min. 600 ml

If the minimum fuel delivery volume is not reached, the following faults may be present:

- Battery voltage too low.
- Fuel lines crimped, carry out a visual inspection.
- The fuel filter is clogged.
- There is a leak in the fuel system, check for tightness.
- Fuel pump defective: Inspection ⇒ page 316 .

**Check with the remote control - V.A.G 1348/3A-**

**Special tools and workshop equipment required**

- Remote control , e.g. -V.A.G 1348/3A-
- Measuring tool set , e.g. -V.A.G 1594 C-
- Adapter , e.g. -V.A.G 1318/16-
- Adapter , e.g. -V.A.G 1318/17-
- Measuring vessel

**Test conditions**

- Battery voltage at least 12 V.
- Fuel temperature 15…30 °C.
- Fuel tank at least $^1/_4$ full.

**Test sequence**

**Note**

- *Safety precautions when working on the fuel supply system* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

– Unscrew the cap from the filler neck.

**For the vehicles Octavia II, Superb II**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

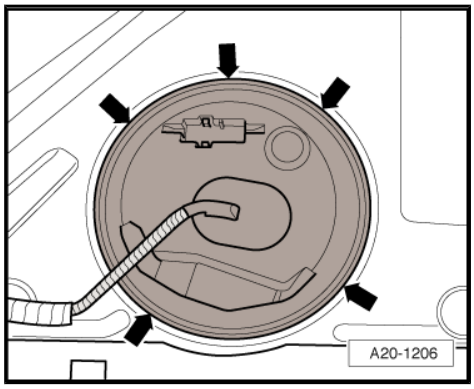
**For the vehicles Yeti**

– Remove rear seat bench with brackets ⇒ Body Work; Rep. gr. 72 .

– Remove floor covering under the rear seat bench.

**For all vehicles**

– Unclip retaining catches -arrows- of cover for the fuel delivery unit and remove cover.




**Note**

*For vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

– Remove plug connector for fuel pump.

– Connect remote control - V.A.G 1348/3A- with connection lines from measuring tool set to contact -1- of the fuel pump and to battery positive terminal.

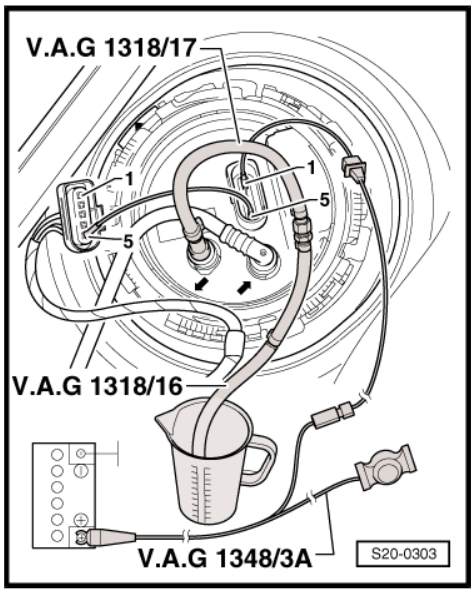
– Use connection lines from the measuring tool set to connect the contacts -5- to the plug and to the fuel pump.

– Pull off the fuel feed line from the flange of the fuel delivery unit. Unlock the quick coupling and disconnect ⇒ page 303 .

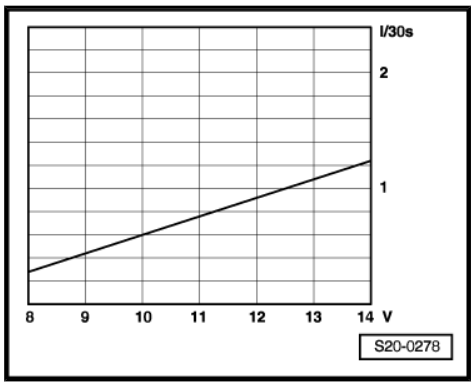
– Connect adapter - V.A.G 1318/17- and adapter - V.A.G 1318/16- , fit onto the feed support and hold in a measuring vessel.

– Activate the remote control - V.A.G 1348/3A- for 30 seconds.

– Measure the battery voltage.




– Compare the fuel rate with the specified value.




**Note**

- *The amount of the fuel pumped is dependent on the voltage.*
- *The voltage at the fuel pump is about 2 volts less than the battery voltage.*

If the minimum fuel delivery volume is not reached:

– Remove the fuel delivery unit and check whether the pump strainer is not clogged up.

If no fault was detected until now:

– Replace fuel delivery unit ⇒ page 293 .

## 2.12.8 Check the power consumption of the fuel pump (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Multimeter , e.g. -V.A.G 1526D-
- Amps clamp , e.g. -V.A.G 1526B/2-
- Adapter for measuring method/DSO (5-pin) , e.g. -VAS 5565-

**Note**

- *The battery voltage as well as the temperature of the diesel fuel have a major influence on the power consumption of the fuel pump. For this reason it is necessary to ensure that the battery voltage is at least 12 V when testing.*
- *Depending on the season, it is necessary to ensure that the vehicle is fueled with "winter diesel".*

**Test conditions**

- Battery voltage at least 12 volts
- Fuel temperature above 10 °C

**For the vehicles Octavia II, Superb II**

– Removing rear seat bench ⇒ Body Work; Rep. gr. 72 .

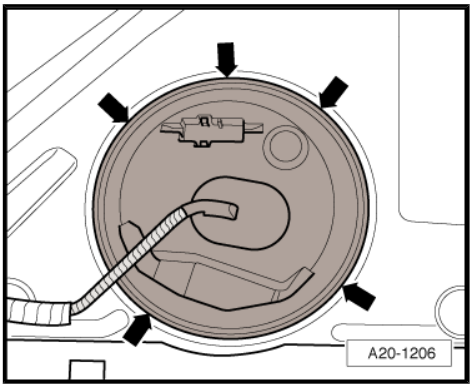
**For the vehicles Yeti**

– Remove rear seat bench with brackets ⇒ Body Work; Rep. gr. 72 .

– Remove floor covering under the rear seat bench.

**For all vehicles**

– Unclip retaining catches -arrows- of cover for the fuel delivery unit and remove cover.




**Note**

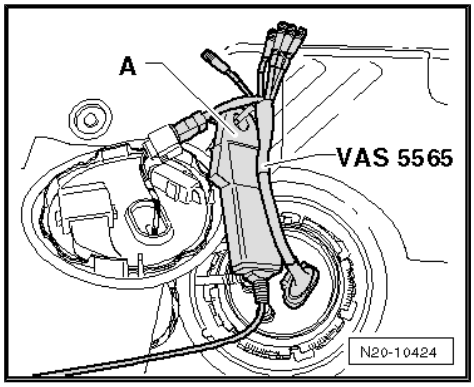
*For vehicles with auxiliary heating, the plug connection for the dosing pump - V54- must be disconnected additionally.*

– First of all check the plug for correct fit. Pull on the plug without pressing the locking mechanism. If the plug was not correctly plugged in, it may have caused a fault.

– Disconnect the plug from the flange of the fuel delivery unit.

– Connect the adapter for measuring method/DSO (5-pin) , e.g. -VAS 5565- , between the plug and the flange.

– Connect the current probe -A- on the red cable - with the inscription “current probe” - of the adapter for measuring method/DSO (5-pin) - VAS 5565- .




**Note**

*The current probe of the hand-held multimeter - V.A.G 1715- can also be used.*

– Switch on ignition.

– Connect the ⇒ Vehicle diagnostic tester and carry out the “Check fuel pump” function.

**Note**

*The fuel pump is activated for 30 seconds.*

– Read current consumption from Handheld multimeter - V.A.G 1526D- .

- Specified value: maximum 7.5 A

If the specfied current uptake is exceeded:

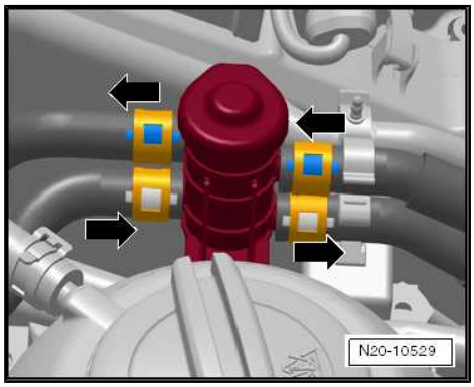
– Fuel pump defective, replace the fuel delivery unit ⇒ page 293 .

## 2.13 Identification mark of the different low-pressure fuel systems

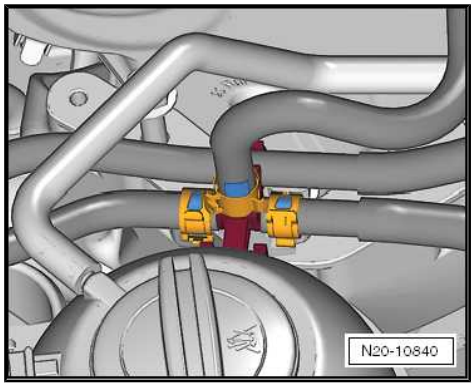
There are 2 versions of the low-pressure fuel systems installed.

– Prior to starting testing, determine which system the vehicle has.

**Identification mark of the low-pressure fuel systems**




- The low-pressure fuel systems 0.05 MPa (0.5 bar) is installed with a preheating valve.
- The low-pressure fuel system (6.0 bar) is NOT installed with a preheating valve, but with a T-piece.
- Additional identification marks of the low-pressure fuel systems are located on the high-pressure side of the fuel system



**1 - Fuel return-flow line of low-pressure fuel system 0.05 MPa (0.5 bar)**

- ❑ Position -1- ⇒ page 384
- ❑ flexible
- ❑ with pressure holding valve

**2 - Fuel return-flow line of low-pressure fuel system 0.6 MPa (6.0 bar)**

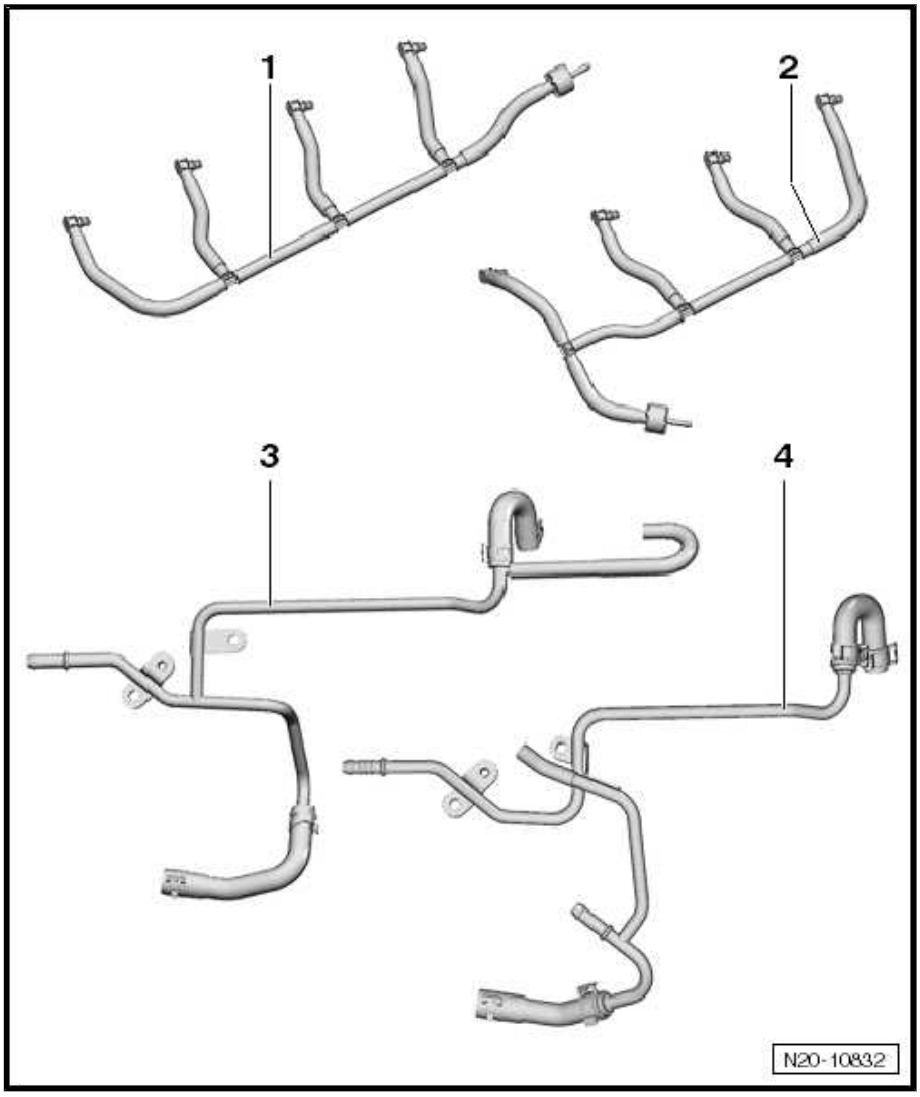
- ❑ Position -1- ⇒ page 384
- ❑ flexible
- ❑ with pressure holding valve

**3 - Fuel return-flow lines of low-pressure fuel system 0.05 MPa (0.5 bar)**

- ❑ rigid

**4 - Fuel return-flow lines of low-pressure fuel system 0.6 MPa (6.0 bar)**

- ❑ rigid



**1 - High pressure pump with low-pressure fuel system 0.05 MPa (0.5 bar)**

- ❑ with prepump installed in the high pressure pump

**2 - High pressure pump of low-pressure fuel system 0.6 MPa (6.0 bar)**

- ❑ without prepump
- ❑ The fuel pump produces the required 0.6 MPa (6.0 bar) in the low-pressure fuel system ⇒ page 293 .

**3 - Fuel pressure regulating valve - N 276- of low-pressure fuel system 0.05 MPa (0.5 bar)**

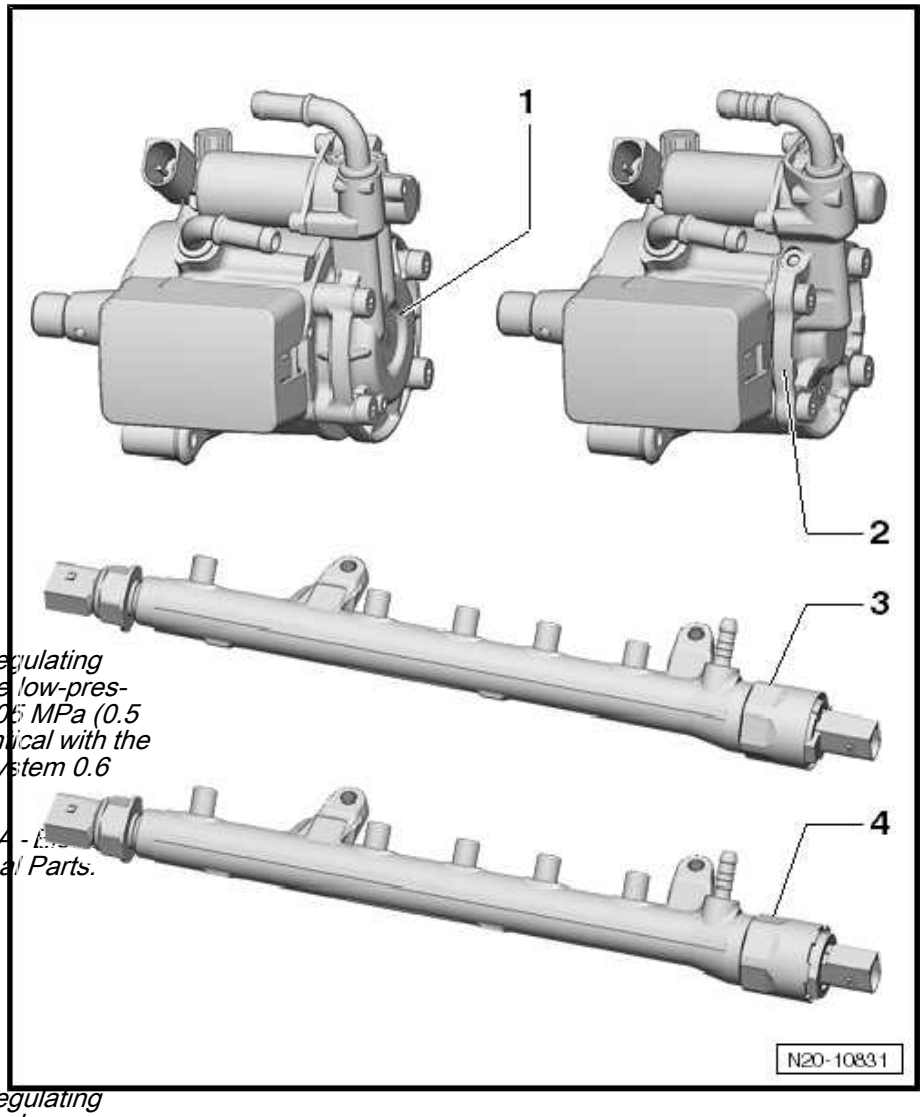
**Note**

- *The fuel pressure regulating valve - N 276- of the low-pressure fuel system 0.05 MPa (0.5 bar) is optically identical with the low-pressure fuel system 0.6 MPa (6.0 bar).*
- *Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.*

**4 - Fuel pressure regulating valve - N 276- of low-pressure fuel system 0.6 MPa (6.0 bar)**

**Note**

- *The fuel pressure regulating valve - N 276- of the low-pressure fuel system 0.6 MPa (6.0 bar) is optically identical with the low-pressure fuel system 0.05 MPa (5.0 bar).*
- *Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.*




**inspecting fuel pump** ⇒ page 316 .

# 3 Accelerator control

⇒ “3.1 Accelerator pedal module”, page 337

⇒ “3.2 Removing and installing accelerator pedal module”, page 338

⇒ “3.3 Disconnect connector for accelerator pedal module and fit on”, page 340

## 3.1 Accelerator pedal module

⇒ “3.1.1 Summary of components - Accelerator pedal module (Fabia II, Roomster, Rapid India, Rapid NH)”, page 337

⇒ “3.1.2 Summary of components - accelerator pedal module (Octavia II, Superb II, Yeti)”, page 338

### 3.1.1 Summary of components - Accelerator pedal module (Fabia II, Roomster, Rapid India, Rapid NH)

**1 - Bearing bracket**

- ❑ removing and installing ⇒ Chassis; Rep. gr. 46

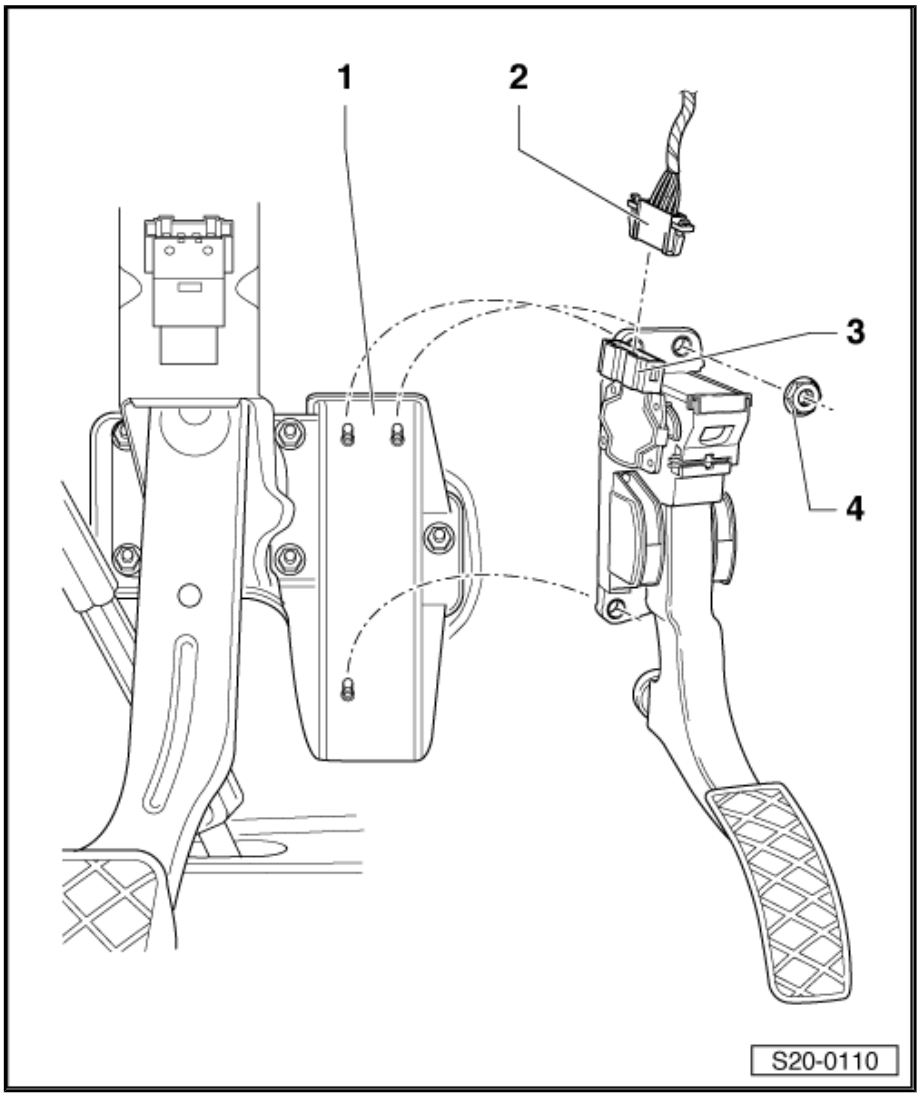
**2 - Connector**

**3 - Accelerator pedal module**

- ❑ with accelerator pedal position sender - G79- and accelerator pedal position sender 2 - G185-
- ❑ to remove the sender remove the bottom part of the dash panel on the driver's side
- ❑ not adjustable
- ❑ check ⇒ Vehicle diagnostic tester

**4 - Nut**

- ❑ 9 Nm



## 3.1.2 Summary of components - accelerator pedal module (Octavia II, Superb II, Yeti)

**1 - Connector**

- ❑ disconnect and fit on ⇒ page 340

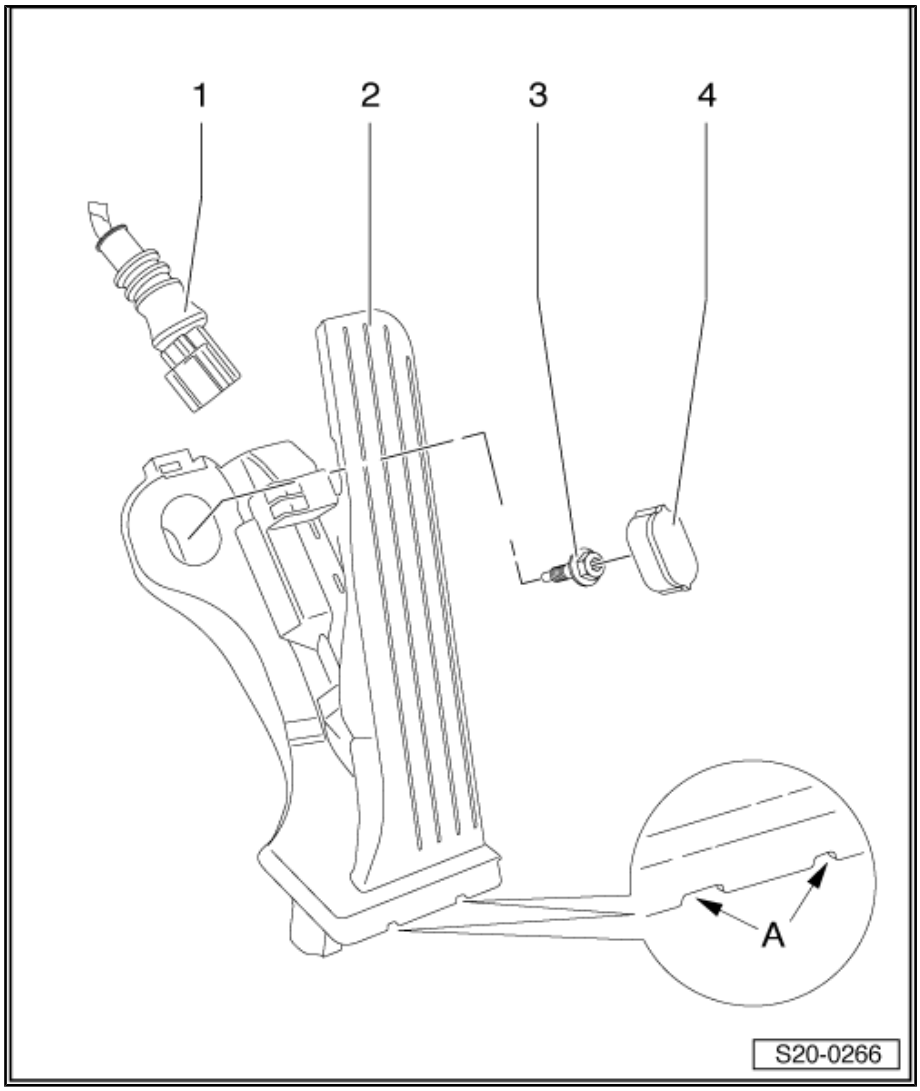
**2 - Accelerator pedal module**

- ❑ with accelerator pedal position sender - G79- and accelerator pedal position sender 2 - G185-
- ❑ on vehicles with automatic gearbox with kick-down switch
- ❑ if the accelerator pedal module was replaced on vehicles with automatic gearbox, the engine control unit must be adapted ⇒ Vehicle diagnostic tester
- ❑ -A- openings for the release tool
- ❑ not adjustable
- ❑ wymontowanie i zamontowanie ⇒ page 338

**3 - Screw**

- ❑ 10 Nm

**4 - Cap**




## 3.2 Removing and installing accelerator pedal module

⇒ "3.2.1 Removing and installing accelerator pedal module (Octavia II, Superb II, Yeti)", page 338

## 3.2.1 Removing and installing accelerator pedal module (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- ♦ Release tool - T10238- (for left-hand drive vehicle)
- ♦ Release tool - T10240- (for right-hand drive vehicle)

### Removing

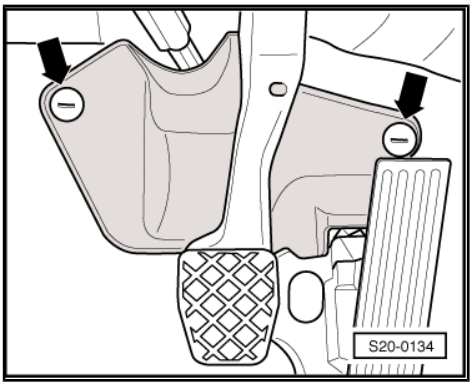
– Remove steering column cover -arrows-.

– Disconnect connector from accelerator pedal module.

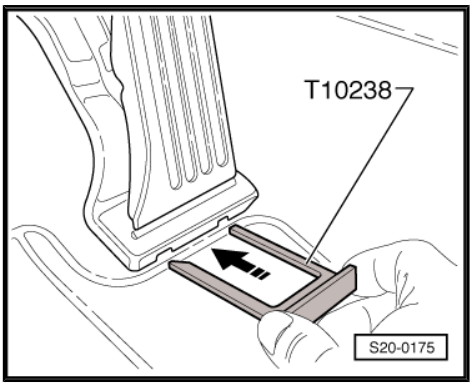
To do so press down securing element at plug.

– Lever out the cap with a screwdriver ⇒ page 338 .

– Release fixing screw ⇒ page 338 .




– Push the release tool - T10238- (on right-hand drive vehicles release tool - T10240- ) as shown up to the stop into the provided openings and remove the accelerator pedal module.




### Install

– Fit the plug -2- onto the accelerator pedal module -5-.

The locking of the connector must be audible.

– Push again rubber grommet -1- onto the connector -2-.

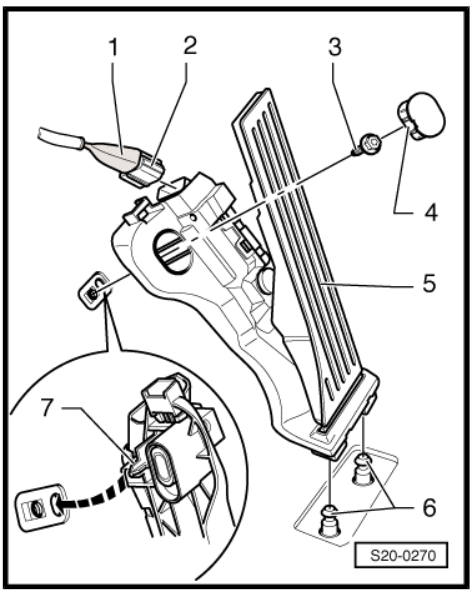
– Push accelerator pedal module onto the fixing bolts -6-.

– Insert the centering pin -7- into the hole in the underbody.

– Screw on accelerator pedal module with fixing screw -3- and fit the cap -4-.

– Install steering column cover.

– If the accelerator pedal module was replaced on vehicles with automatic gearbox, the engine control unit must be adapted ⇒ Vehicle diagnostic tester.




### Tightening torques

◆ ⇒ “3.1 Accelerator pedal module”, page 337

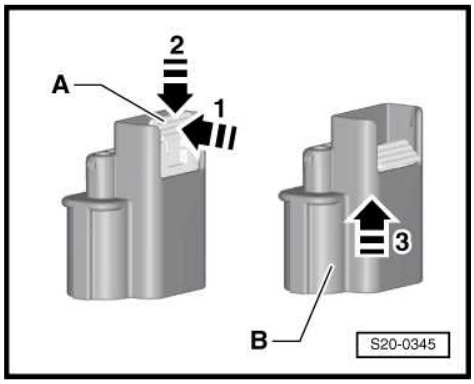
## 3.3 Disconnect connector for accelerator pedal module and fit on

⇒ "3.3.1 Removing and installing accelerator pedal module connector (Octavia II, Superb II, Yeti)", page 340

## 3.3.1 Removing and installing accelerator pedal module connector (Octavia II, Superb II, Yeti)

**Note**

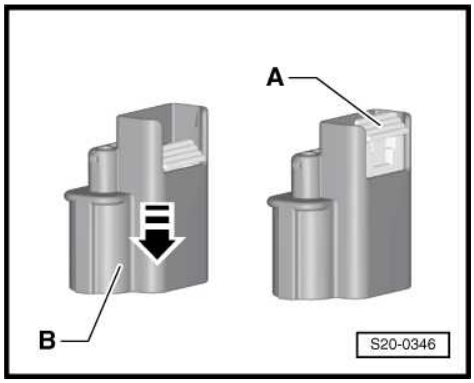
*The plugs for the accelerator pedal module which are inserted, must be disconnected and fit on in a different manner.*




**Disconnect connector 1K0 973 706**

- Lightly press the piston slide valve -A- (grey) in direction of arrow -1- and slide as far as it can go in the direction of arrow -2-.
- Hold the piston slide valve in this position and disconnect the socket housing -B- in direction of arrow -3-

  The piston slide valve -A- remains in the bottom position.



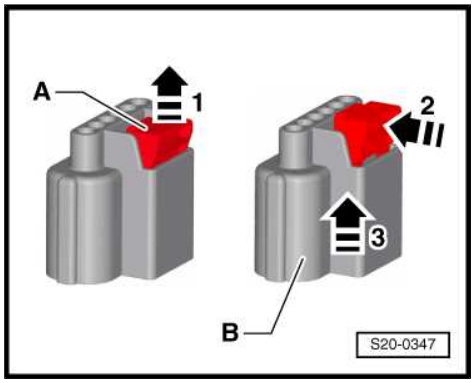

**Fit on connector 1K0 973 706**

- Push the socket housing -B- in -direction of arrow- until the piston slide valve can be heard to lock in place.

  The piston slide valve -A- moves automatically upwards.

**Note**

*For safety reasons, check the connector for secure catch by tightening it in the opposite direction.*

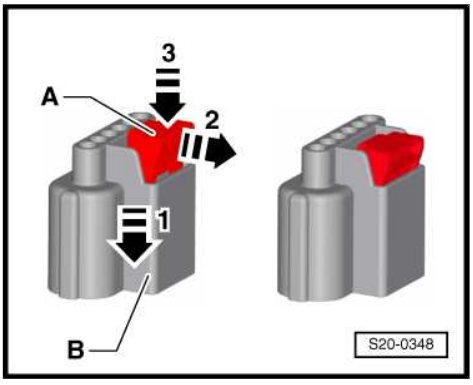



**Disconnect connector 8K0 973 706**

- Remove piston slide valve -A- (red) up to the stop in direction of arrow -1-.
- Press the piston slide valve in direction of arrow -2- and disconnect the socket housing -B- in direction of arrow -3-

  The piston slide valve -A- remains in the top position.

**Fit on connector 8K0 973 706**




– Push connector housing -B- in direction of arrow -1- as far as the stop.

– Lightly press the piston slide valve in direction of arrow -2- and slide in the direction of arrow -3-.

  The piston slide valve -A- can only be pushed down if the socket housing was pushed up to the stop.

**Note**

*For safety reasons, check the connector for secure catch by tightening it in the opposite direction.*

# 21 – Turbocharging/supercharging

## 1 Charge-air system - exhaust gas turbocharger

⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342

⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 346

⇒ “1.3 Replace vacuum positioning element for charge pressure regulation with position sender for charge pressure regulator G581 ”, page 355

⇒ “1.4 Removing and installing the exhaust gas temperature sender 1 G235 ”, page 360

⇒ “1.5 Connection diagram for vacuum hoses”, page 362

⇒ “1.6 Checking vacuum system”, page 364

## 1.1 Exhaust gas turbocharger with component parts

⇒ “1.1.1 Summary of components - Exhaust gas turbocharger with component parts (Roomster, Rapid India, Rapid NH)”, page 342

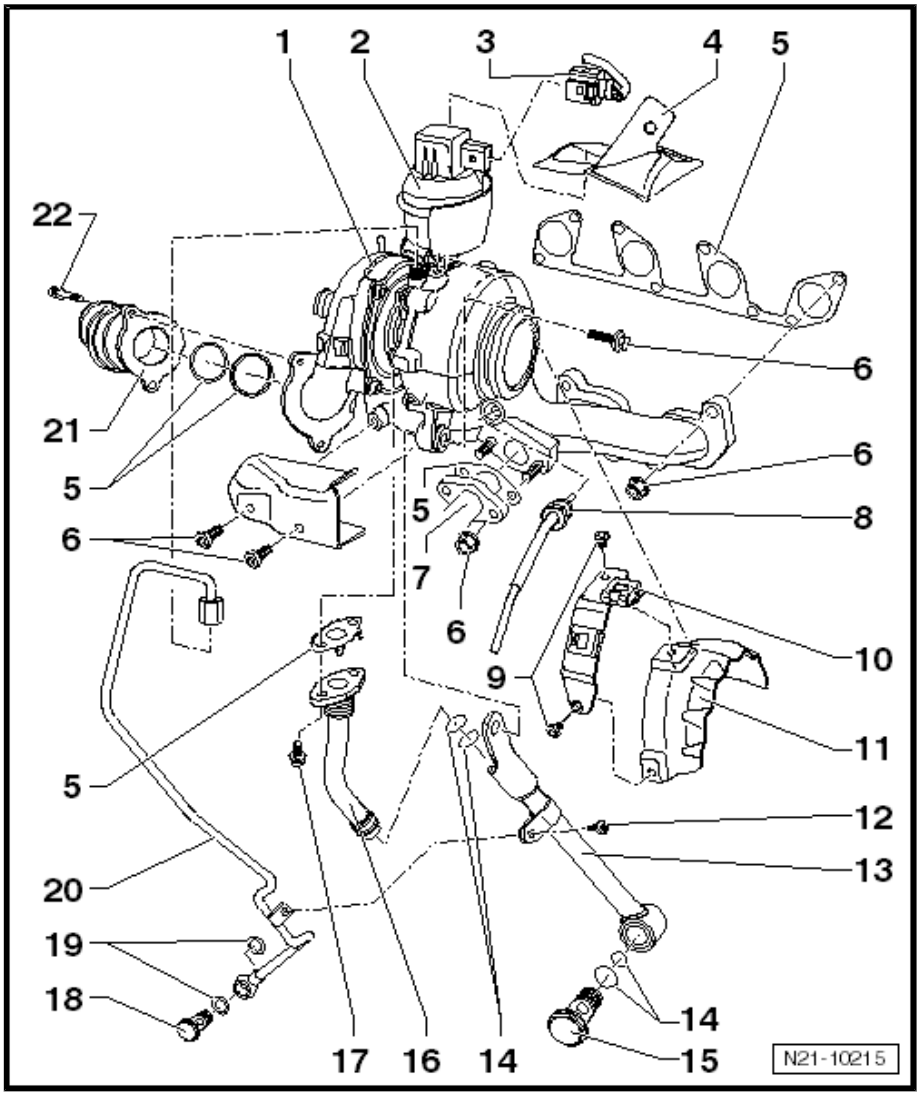
⇒ “1.1.2 Summary of components - Exhaust gas turbocharger with component parts (Octavia II, Superb II, Yeti)”, page 344

### 1.1.1 Summary of components - Exhaust gas turbocharger with component parts (Roomster, Rapid India, Rapid NH)

**Note**

- *Observe rules for cleanliness ⇒ page 6 .*
- *Observe general instructions for charge-air system ⇒ page 7 .*

The exhaust turbocharger and the exhaust manifold are one component part.




**1 - Exhaust gas turbocharger**

- ❑ only complete with exhaust manifold
- ❑ wymontowanie i zamontowanie ⇒ page 346
- ❑ Remove and install the connection pipe for the intake hose ⇒ page 426

**2 - Vacuum setting element**

- ❑ with position sender for charge pressure regulator - G581-
- ❑ Renew. ⇒ page 355 .

**3 - Connector**

- ❑ to position sender for charge pressure regulator - G581-

**4 - Heat shield**

- ❑ replace if damaged

**5 - Gasket**

- ❑ replace

**6 - Nuts/bolts**

- ❑ 20 Nm

**7 - Connecting pipe**

- ❑ to radiator for exhaust gas recirculation

**8 - Exhaust gas temperature sender 1 - G235-**

- ❑ coat thread with hot bolt paste - G 052 112 A3- before installing
- ❑ wymontowanie i zamontowanie ⇒ page 360
- ❑ 45 Nm

**9 - Screw**

- ❑ 10 Nm

**10 - Uchwyt**

- ❑ for oil feed line

**11 - Heat shield**

**12 - Screw**

- ❑ 10 Nm

**13 - Support for exhaust gas turbocharger**

- ❑ wymontowanie i zamontowanie ⇒ page 202

**14 - Sealing ring**

- ❑ replace

**15 - Hollow screw**

- ❑ replace
- ❑ 60 Nm

**16 - Oil return-flow line**

**17 - Screw**

- ❑ 20 Nm

**18 - Hollow screw**

- ❑ replace
- ❑ 30 Nm

**19 - Sealing ring**

- ❑ replace

**20 - Oil feed line**

- ❑ wymontowanie i zamontowanie ⇒ page 202
- ❑ check continuity
- ❑ before installing, fill the exhaust turbocharger on the connection fitting for the oil feed line with engine oil

**21 - Pulsation dampener**

**22 - Screw**

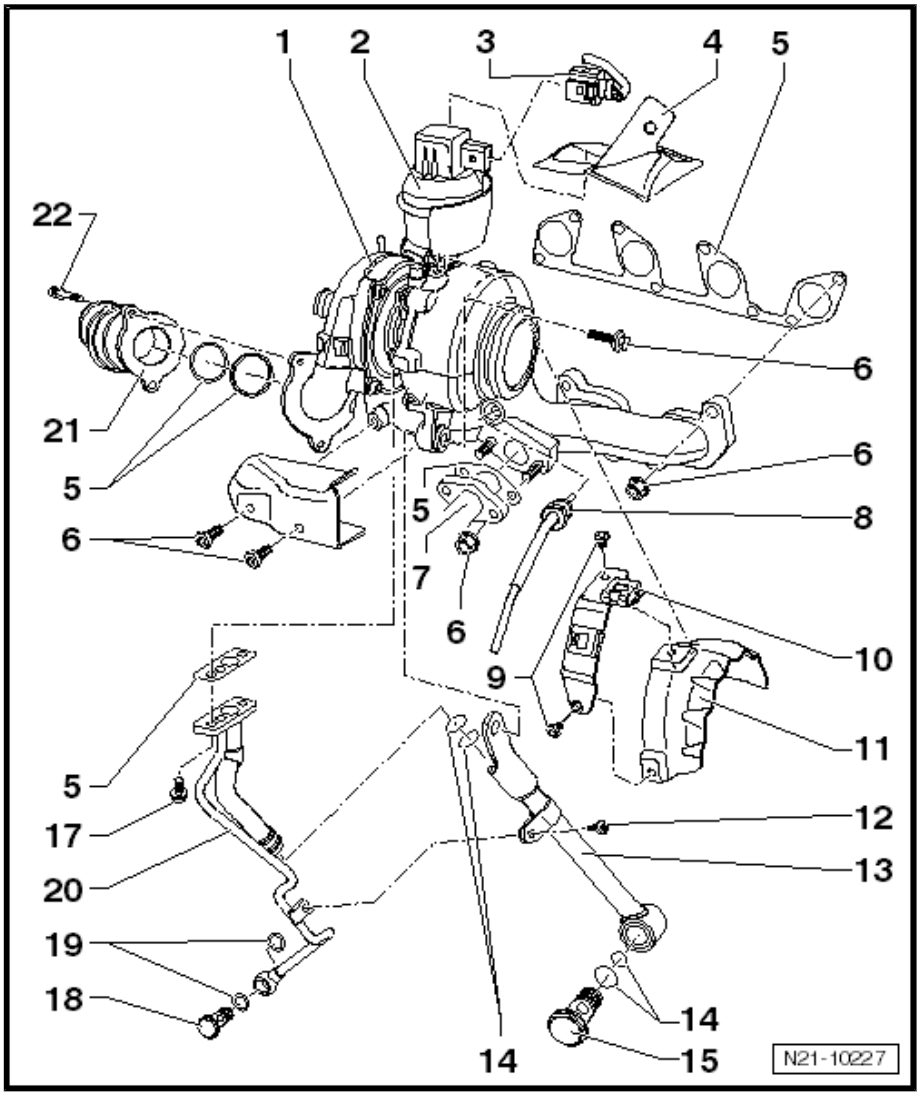
- ❑ 10 Nm

## 1.1.2 Summary of components - Exhaust gas turbocharger with component parts (Octavia II, Superb II, Yeti)

**Note**

- *Observe rules for cleanliness* *⇒ page 6* *.*
- *Observe general instructions for charge-air system* *⇒ page 7* *.*

The exhaust turbocharger and the exhaust manifold are one component part.




**1 - Exhaust gas turbocharger**

- ❑ only complete with exhaust manifold
- ❑ wymontowanie i zamontowanie ⇒ page 346
- ❑ Remove and install the connection pipe for the intake hose ⇒ page 426

**2 - Vacuum setting element**

- ❑ with position sender for charge pressure regulator - G581-

**3 - Connector**

- ❑ to position sender for charge pressure regulator - G581-

**4 - Heat shield collar**

- ❑ replace if damaged

**5 - Gasket**

- ❑ replace

**6 - Nuts/bolts**

- ❑ 20 Nm

**7 - Connecting pipe**

- ❑ to radiator for exhaust gas recirculation

**8 - Exhaust gas temperature sender 1 - G235-**

- ❑ coat thread with hot bolt paste - G 052 112 A3- before installing
- ❑ wymontowanie i zamontowanie ⇒ page 360
- ❑ 45 Nm

**9 - Screw**

- ❑ 10 Nm

**10 - Uchwyt**

- ❑ for oil feed line

**11 - Heat shield**

**12 - Screw**

- ❑ 10 Nm

**13 - Support for exhaust gas turbocharger**

- ❑ wymontowanie i zamontowanie ⇒ page 202

**14 - Sealing ring**

- ❑ replace

**15 - Hollow screw**

- ❑ replace
- ❑ 60 Nm

**16 - Free position**

**17 - Screw**

- ❑ 20 Nm

**18 - Hollow screw**

- ❑ replace
- ❑ 30 Nm

**19 - Sealing ring**

- ❑ replace

**20 - Oil feed line**

- ❑ wymontowanie i zamontowanie ⇒ page 202
- ❑ check continuity
- ❑ before installing, fill the exhaust turbocharger on the connection fitting for the oil feed line with engine oil

**21 - Pulsation dampener**

**22 - Screw**

- ❑ 10 Nm

## 1.2 Removing and installing exhaust gas turbocharger

⇒ "1.2.1 Removing and installing exhaust gas turbocharger (Fabia II, Roomster, Rapid India, Rapid NH)", page 346

⇒ "1.2.2 Removing and installing exhaust gas turbocharger (Octavia II, Superb II, Yeti)", page 350

### 1.2.1 Removing and installing exhaust gas turbocharger (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- ♦ Pliers for spring strap clamps
- ♦ Key - T10461-

**Removing**

**Caution**

*In case a mechanical damage to the exhaust gas turbocharger is found, for example, damage to the compressor wheel, it is not sufficient to only replace the turbocharger. In order to prevent consequential damage to the engine, perform the following tasks:*

- ♦ *Clean all oil lines.*
- ♦ *Change engine oil and oil filter.*
- ♦ *Check air filter housing, air filter element and charge air pipes as well as charge air hoses for soiling.*
- ♦ *Check all the air guides and the charge air cooler for foreign bodies.*

*If foreign bodies are detected in the charge air system, the complete charge-air routing must be cleaned and if necessary the charge air cooler must also be replaced.*

**Note**

- *Observe rules for cleanliness ⇒ page 6 .*
- *Observe general instructions for charge-air system ⇒ page 7 .*

**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

– Remove pre-exhaust pipe with catalytic converter ⇒ page 457 .

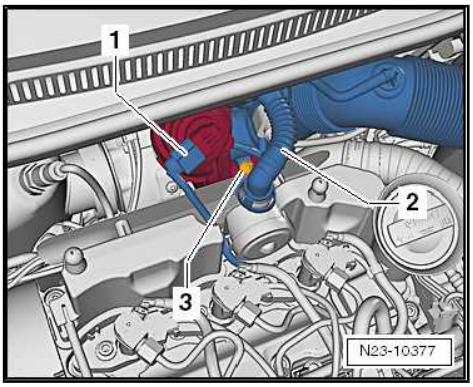
**Continued for all vehicles**

– Remove air filter housing with air mass meter - G70- ⇒ page 426 .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Disconnect plug -1- from position sender for charge pressure regulator - G581- at exhaust gas turbocharger.

– Detach vacuum line -2- at exhaust gas turbocharger.

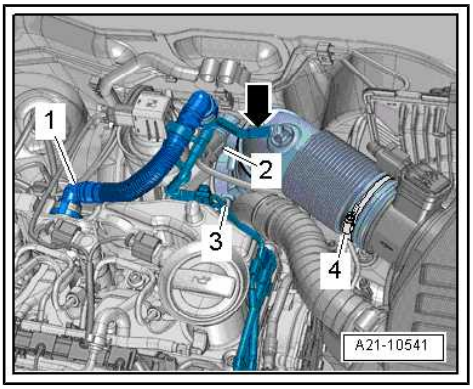



– Remove the hose for the crankcase ventilation -1-, to do so press the release buttons.

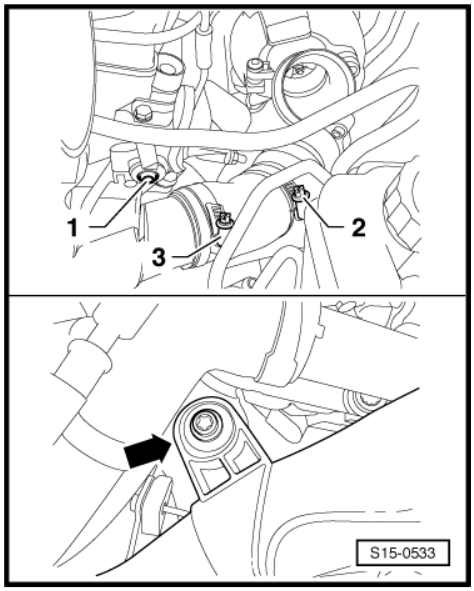
– Slacken vacuum hose to intake hose.

– Release screw -3- (captive), swivel intake hose with connection fitting towards the rear and detach from exhaust gas turbocharger.

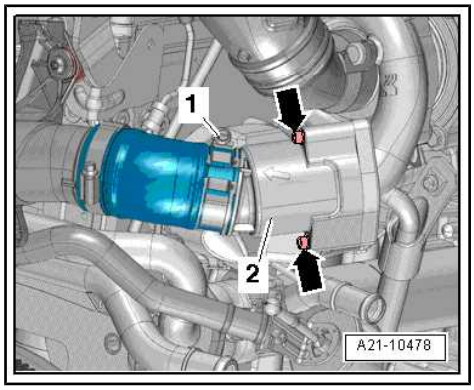
– Remove intake hose.



– Release the fixing screw -1- from the charge air pipe (if present), slacken the clamp -2-.
– Release fixing screw -arrow- from charge air pipe.




– Release the screws -arrows- and detach the connecting hose as far as possible from the pulsation dampener.
– Push the left charge air pipe as far as possible to the left.
– Remove the pulsation dampener.

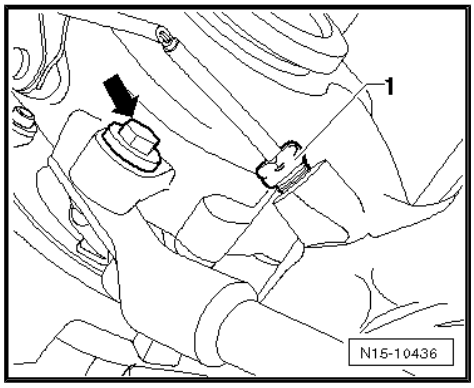



**Caution**

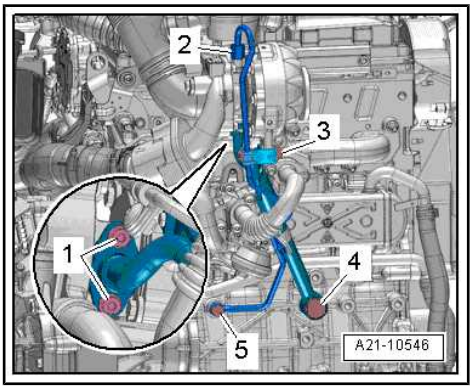
*The exhaust gas temperature sender 1 - G235- covers the top bolted connection of the support for exhaust turbocharger.*

- *The exhaust gas temperature sender 1 - G235- must not be bent.*
- *For this reason it must be removed.*

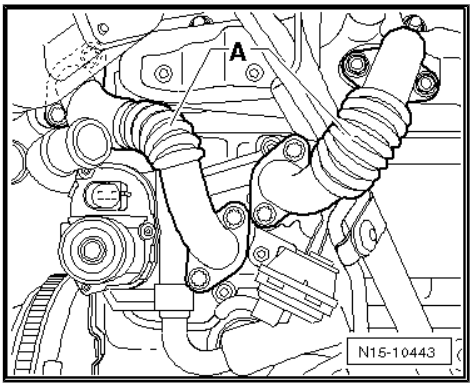
– Remove exhaust gas temperature sender 1 - G235- -1- ⇒ page 360 .



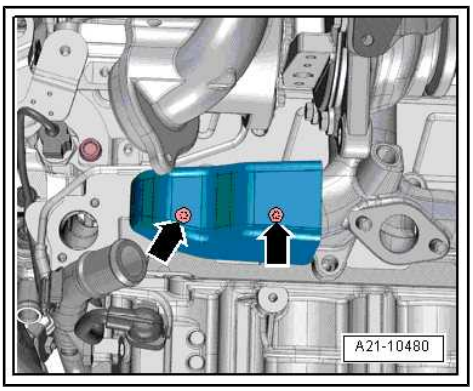
– Unscrew the union nut -2-. At the same time counterhold the hexagon of the connection fitting using the key - T10461- .
– Unscrew screws -1-, -3- and hollow screws -4-, -5- and remove the support for exhaust turbocharger with oil feed line.



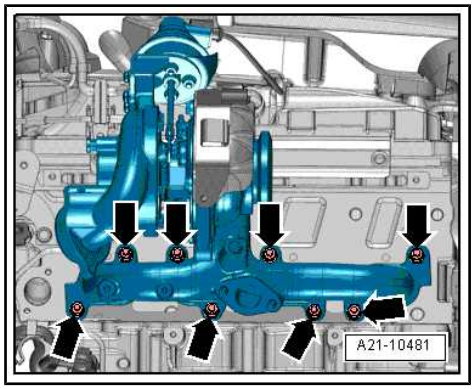

– Remove connection pipes -A- to exhaust gas recirculation radiator.




– Remove heat shield at exhaust manifold.



– Unscrew the nuts -arrows- and remove the exhaust gas turbocharger with exhaust manifold from the cylinder head.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Caution**

***Before installing, check if the decoupling element of the oil return-flow line is not bent and therefore is not overstretched. If this is the case, microcracks resulting in leaks may be created. If necessary renew the oil return pipe before installing the exhaust gas turbocharger.***

**Note**

- *Replace the gaskets, the sealing rings and the self-locking nuts.*
- *Fill exhaust turbocharger with engine oil through the connection fitting of the oil feed line.*
- *Remove oil and grease from the charge air pipes and hoses and from their connections before installing.*
- *Secure all hose connections with corresponding hose clips.*

– Checking the oil level:

- ⇒ Maintenance ; Booklet Fabia II .
- ⇒ Maintenance ; Booklet Roomster .
- ⇒ Maintenance ; Booklet Rapid Indie .
- ⇒ Maintenance ; Booklet Rapid NH .

**Note**

*After installing the turbocharger, run engine at idling speed for about 1 minute to ensure that oil is supplied to the turbocharger.*

**Tightening torques**

- ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479
- ⇒ “1.7 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support”, page 202

## 1.2.2 Removing and installing exhaust gas turbocharger (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Pliers for spring strap clamps

## Removing

**Caution**

*In case of mechanical damage to the exhaust gas turbocharger, e.g. damage of the compressor wheel, it is not sufficient to only replace the exhaust gas turbocharger. In order to prevent consequential damage to the engine, perform the following tasks:*

- *Clean all oil lines.*
- *Change engine oil and oil filter.*
- *Check air filter housing, air filter element and charge air pipes as well as charge air hoses for soiling.*
- *Check all the air guides and the charge air cooler for foreign bodies.*

*If foreign bodies are detected in the charge air system, the complete charge-air routing must be cleaned and if necessary the charge air cooler must also be replaced.*

**Note**

- *Observe rules for cleanliness* ⇒ page 6 .
- *Observe general instructions for charge-air system* ⇒ page 7 .

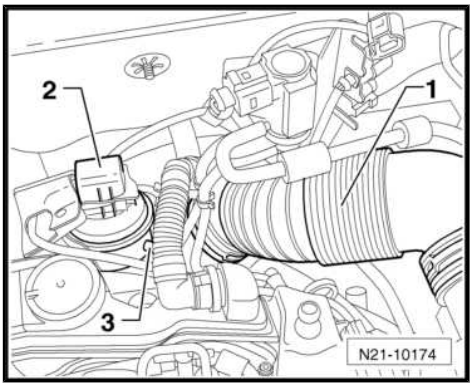
– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

– Remove air filter housing with air mass meter - G70- and intake hose ⇒ page 426 .

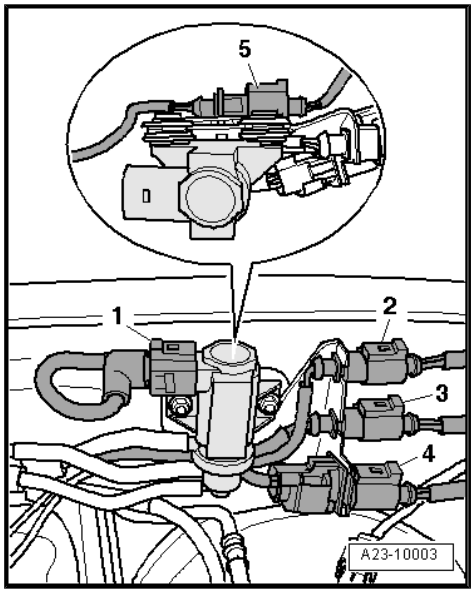
– Remove -1- intake manifold, disconnect plug from position sender for charge pressure regulator - G581- -2- at exhaust gas turbocharger.

– Detach vacuum line -3- at exhaust gas turbocharger.

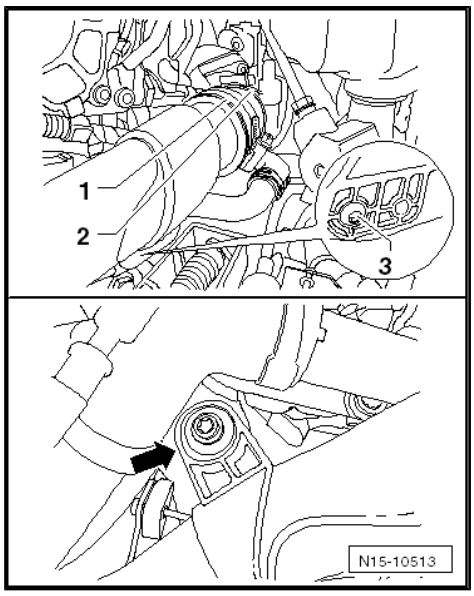
– Remove fan shroud with radiator ⇒ page 259 .



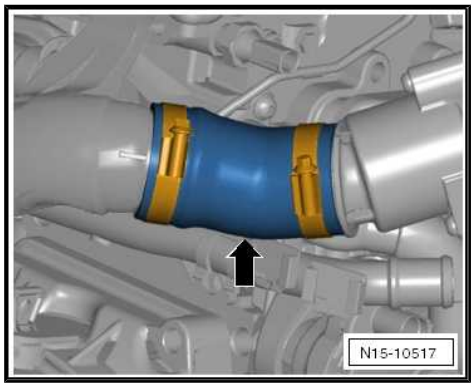
– Disconnect plug connection -3- for exhaust gas temperature sender 1 - G235- and expose electrical cables.




– Release the fixing screw -3- from the charge air pipe, slacken the clamp -1- or -2-.
– Release fixing screw -arrow- of charge air pipe.




– Detach the connecting hose -arrow- from the pulsation dampener.
– Push the left charge air pipe as far as possible to the left.
– Remove pulsation dampener from exhaust gas turbocharger, -Position 21- ⇒ page 344 .

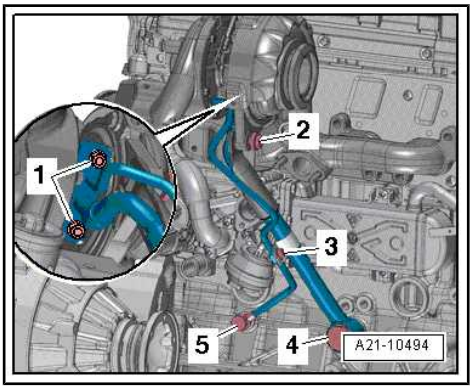



**Caution**

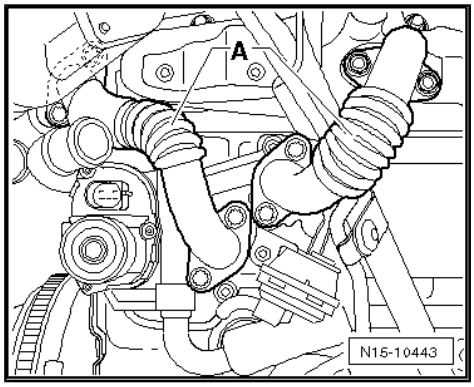
***The exhaust gas temperature sender 1 - G235- covers the top bolted connection of the support for exhaust turbocharger and must not be bent. For this reason it must be removed.***

– Remove exhaust temperature sender 1 - G235- ⇒ page 360 .

– Unscrew screws -1-, -2- and hollow screws -4-, -5- and remove the support for exhaust turbocharger with oil feed line.



– Remove connection pipes -A- to exhaust gas recirculation radiator.
– Remove heat shield at exhaust manifold.
– Screw out fixing nuts of exhaust manifold.
– Remove exhaust turbocharger with exhaust manifold downwards, to do so slightly push the engine/gearbox assembly to the front.




### Install

Installation is performed in the reverse order, pay attention to the following points:

**Caution**

***Before installing, check if the decoupling element of the oil return-flow line is not bent and therefore is not overstretched. If this is the case, microcracks resulting in leaks may be created. If necessary renew the oil return pipe before installing the exhaust gas turbocharger.***

**Note**

- *Replace the gaskets, the sealing rings and the self-locking nuts.*
- *Fill exhaust turbocharger with engine oil through the connection fitting of the oil feed line.*
- *Observe the assembly instruction for hose connections with screw clamps ⇒ page 372 .*
- *Remove oil and grease from the charge air pipes and hoses and from their connections before installing.*
- *Secure all hose connections with corresponding hose clips.*

– Checking the oil level:

- ⇒ Maintenance ; Booklet Octavia II .
- ⇒ Maintenance ; Booklet Superb II .
- ⇒ Maintenance ; Booklet Yeti .

**Note**

*After installing the turbocharger, run engine at idling speed for about 1 minute to ensure that oil is supplied to the turbocharger.*

### Tightening torques

- ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479
- ⇒ “1.7 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support”, page 202

## 1.3 Replace vacuum positioning element for charge pressure regulation with position sender for charge pressure regulator - G581-

⇒ "1.3.1 Replace vacuum positioning element for charge pressure regulation with position sender for charge pressure regulator G581 (Fabia II, Roomster, Rapid India, Rapid NH)", page 355

## 1.3.1 Replace vacuum positioning element for charge pressure regulation with position sender for charge pressure regulator - G581- (Fabia II, Roomster, Rapid India, Rapid NH)

**Note**

- *To replace the vacuum setting element with the position sender for charge pressure regulator - G581- the spare part set is offered ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *The socket insert - T10422 A- replaces the previous socket insert - T10422- . Existing socket inserts without index »A« can still be used.*

**Special tools and workshop equipment required**

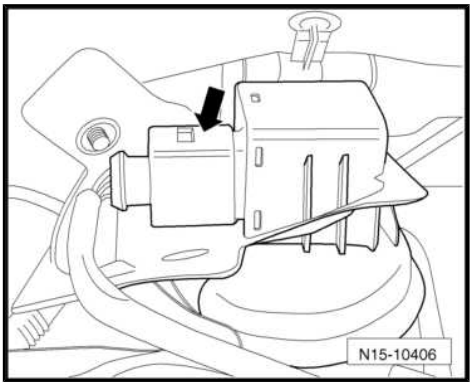
- Socket insert - T10422-
- Socket insert - T10422 A-
- Socket insert - T10423-
- Hand vacuum pump , e.g. -VAS 6213-
- Turbocharger tester - V.A.G 1397A-
- Hose clip pliers - VAS 6340-

**Caution**

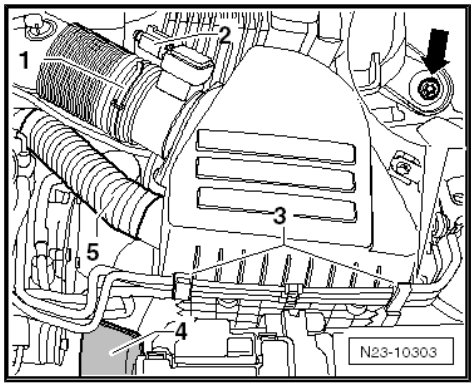
***The predefined special tools, especially the Polydrive socket - T10422- or Polydrive socket - T10422 A- are designed exclusively for use based on the following work procedure and must not be used for other screw connections. There is the risk of deformations and slipping of the socket insert at higher tightening torques.***

**Removing**

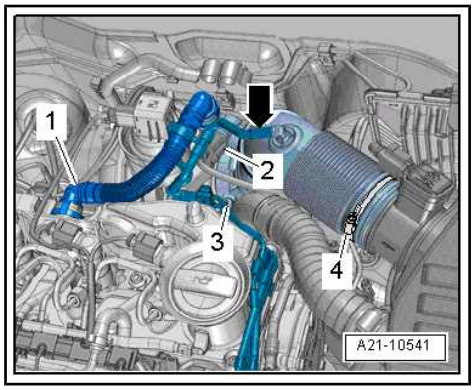
– Remove engine cover ⇒ page 10 .
– Slacken vacuum hose to intake hose.



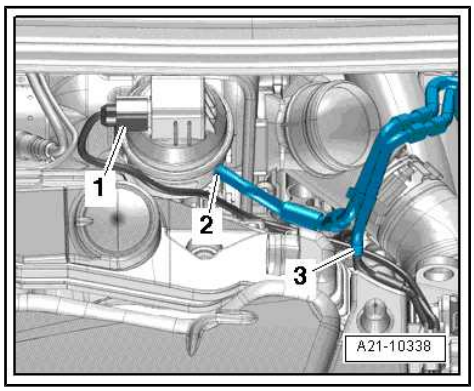
– Loosen the spring strap clip -1- and remove the hose from the air filter.



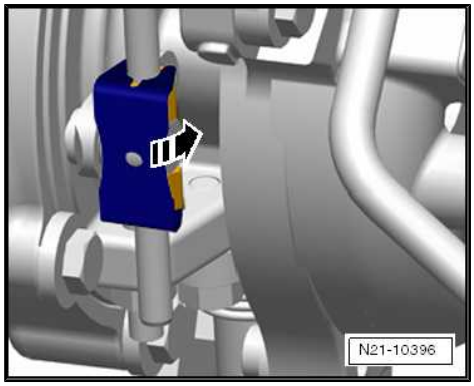

– Remove the hose for the crankcase ventilation -1-, to do so press the release buttons.
– Release screw -3- (captive), swivel intake hose with connection fitting towards the rear and detach from exhaust gas turbocharger.
– Seal the opening on the exhaust gas turbocharger with a screw cap from the spare part set.



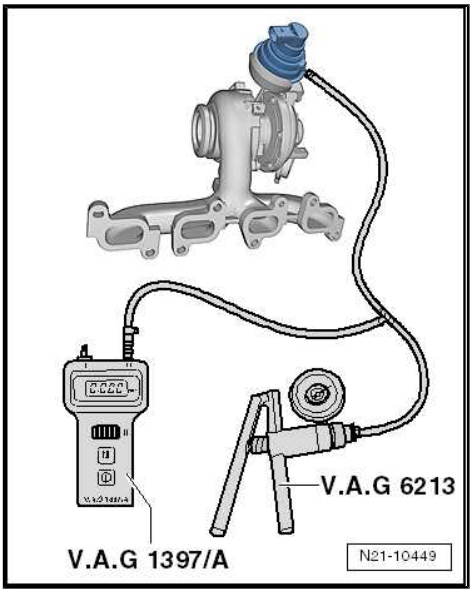

– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.
– Slacken vacuum hose on the cylinder head cover from the mounting bracket.
– Open heat-protection matting and disconnect electrical plug connection -1- on the position sender for charge pressure regulator - G581- .




– Remove lock washer.



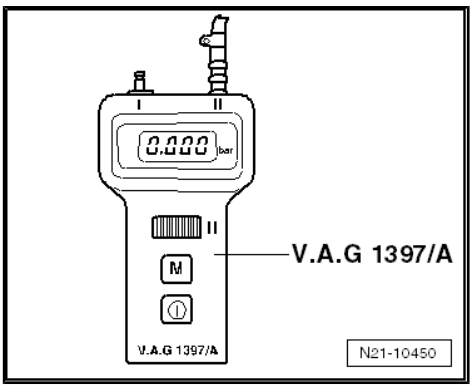
**Vehicles with fully-functional vacuum adjustment**



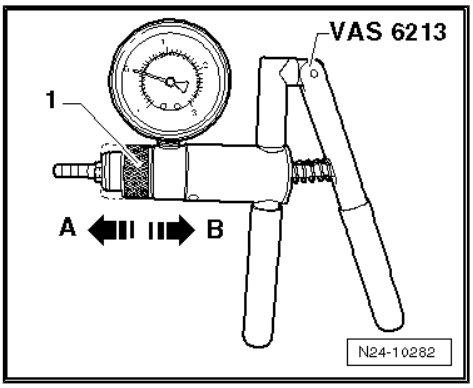

**Note**

*To allow for the replacement of special tools, the control rod on the exhaust gas turbocharger must be put into a particular position.*

– Connect the turbocharger tester - V.A.G 1397A- and hand vacuum pump - VAS 6213- to the dashpot of the exhaust gas turbocharger as shown.




– Adjust the turbocharger tester - V.A.G 1397A- into position »II«.
– Connect vacuum hose to the connection »II« of the turbocharger tester - V.A.G 1397A- .



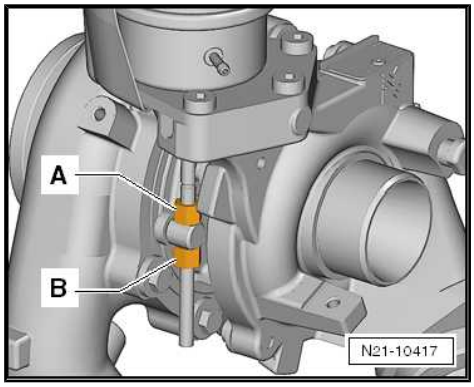

– Put the sliding ring -1- of the hand vacuum pump - VAS 6213- in position-A- for »vacuum«

**Caution**

***Use the hand vacuum pump - VAS 6213- to generate a max. vacuum of 0.08 MPa (0.8 bar).***

***Risk of damage to the pressure box from excessive vacuum.***

– Insert Polydrive socket - T10422- or Polydrive socket - T10422 A- onto fixing nut -B-.
– Use the hand vacuum pump - VAS 6213- to generate a vacuum of approx. 0.017 MPa (0.170 bar).
– Read off the vacuum on the turbocharger tester - V.A.G 1397A- .
– Keep the vacuum constant.
– Insert Polydrive socket - T10423- onto the locknut -A-.
– Hold the locknut -A- with Polydrive socket - T10423- into place/slacken.
– Undo fixing nut -B- with Polydrive socket - T10422- and Polydrive socket - T10422 A- from the control rod.
– Allow the vacuum to escape from the pressure box.
– Unscrew fixing nut -B- with Polydrive socket - T10422- and Polydrive socket - T10422 A- from the control rod.




**Vehicles with faulty vacuum adjustment**

**Note**

*To allow for the replacement of special tools, the control rod on the exhaust gas turbocharger must be put into a particular position.*

– Insert Polydrive socket - T10422- or Polydrive socket - T10422 A- onto fixing nut -B-.
– Press the control rod down using a suitable tool.
– Insert Polydrive socket - T10423- onto the locknut -A-.
– Hold the locknut -A- with Polydrive socket - T10423- into place/slacken.
– Undo and unscrew fixing nut -B- with Polydrive socket - T10422- and Polydrive socket - T10422 A- from the control rod.

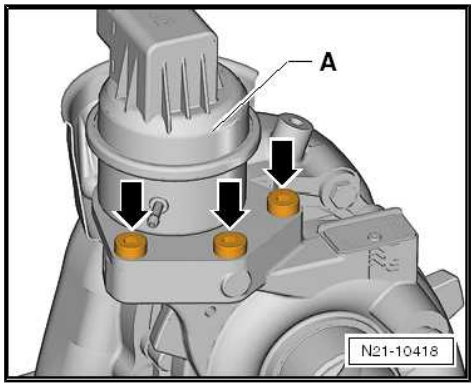
**Continued for all vehicles**

– Unscrew fixing screws on the pressure box -arrows-.
– Remove pressure box with position sender for charge pressure regulator - G581- -A-.

**Install**

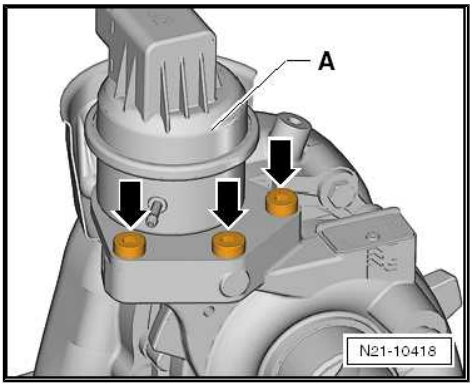
**Caution**

***Only use new screws and nuts from the spare part set!***




– Where necessary, remove the lower fixing nut on the control rod from the new socket.
– Screw the fixing nut by hand on the control rod in the direction of the pressure box as far as it will go.
– Pull the control rod through the adjuster lever on the exhaust gas turbocharger.

– Fit pressure box with position sender for charge pressure regulator - G581- -A- and secure with screws.

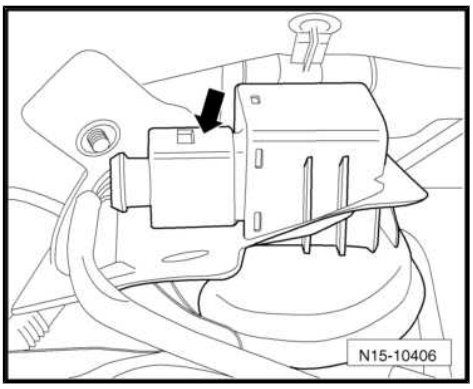



**Note**

*Ensure that the adjusting lever moves smoothly on the control rod.*

– Tighten screws -arrows- to 8 Nm.
– Screw lower fixing nut onto the control rod.

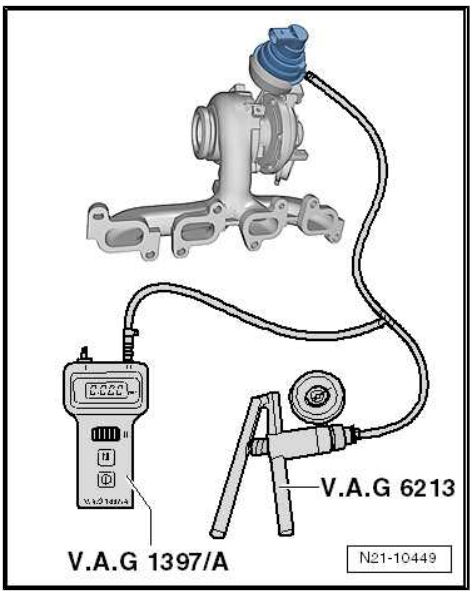
– Fit the plug -arrow- on the position sender for charge pressure regulator - G581- and close the heat-protection matting.



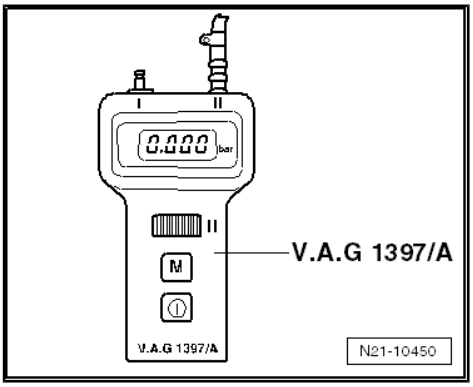

– Connect the turbocharger tester - V.A.G 1397A- and hand vacuum pump - VAS 6213- to the pressure box of the exhaust turbocharger as shown.

**Note**

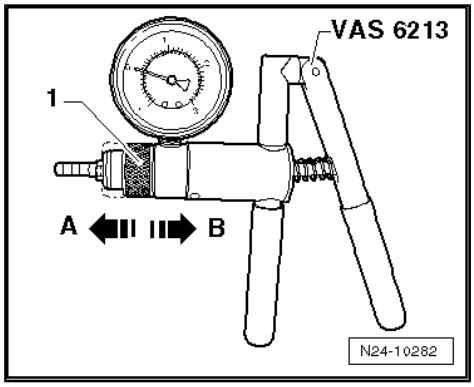
*This work step is used to activate the pressure box by vacuum.*




– Adjust the turbocharger tester - V.A.G 1397A- into position »II«.
– Connect vacuum hose to the connection »II« of the turbocharger tester - V.A.G 1397A- .



– Put the sliding ring -1- of the hand vacuum pump - VAS 6213- in position-A- for »vacuum«




**Caution**

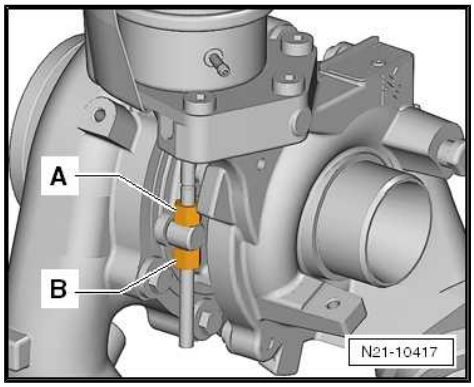
*Use the hand vacuum pump - VAS 6213- to generate a max. vacuum of 0.08 MPa (0.8 bar).*

*Risk of damage to the pressure box from excessive vacuum.*

*During the following setting of the control rod, maintain a steady vacuum and thus also a constant voltage.*

**Adjust the vacuum setting element for exhaust turbocharger**

– Connect vehicle diagnosis tester .
– Choose `Choose Targeted fault finding`.
– Choose function `Replace exhaust gas turbocharger pressure box`.
– Proceed according to the instructions on the vehicle diagnosis tester .




– Set the voltage by turning the nuts -A- and -B-.

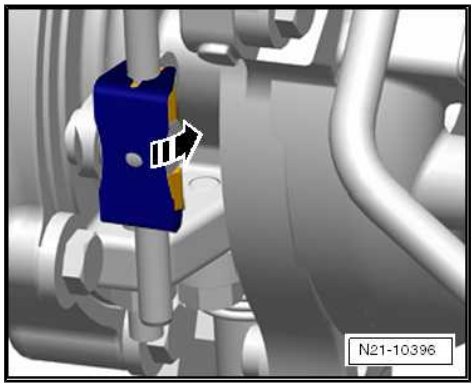
The adjuster lever is in the position »lower stop«.

**Tighten the control rod on the exhaust gas turbocharger**

**Note**

*The control rod is tightened in `Targeted fault finding`.*

– Read off the vacuum on the turbocharger tester - V.A.G 1397A- and keep constant.
– Observe the voltage in the vehicle diagnosis tester ; this value should not change.
– Counterhold on the locknut -A- with Polydrive socket - T10423- .
– Tighten fixing nut -B- with Polydrive socket - T10422- or - T10422 A- .




– Push the lock washer by hand onto the control rod.
– Use seal paint from the spare part set to seal the connection of the control rod/fixing nut.
– Remove screw cap from exhaust gas turbocharger.

Further assembly occurs in reverse order.

– Continue using `Targeted fault finding`.

## 1.4 Removing and installing the exhaust gas temperature sender 1 - G235-

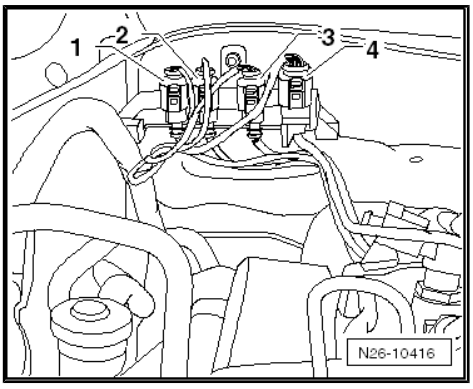
**Special tools and workshop equipment required**

♦ Extension SW 17 from the set of tools - T10395-

**Removing**

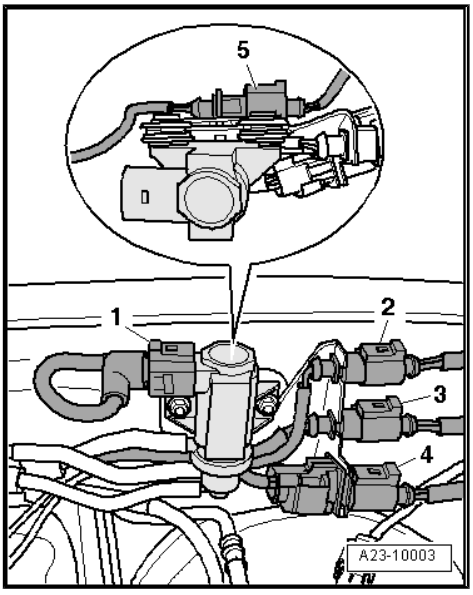
**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

– Disconnect plug connection -1- for exhaust gas temperature sender 1 - G235- and expose electrical cable.



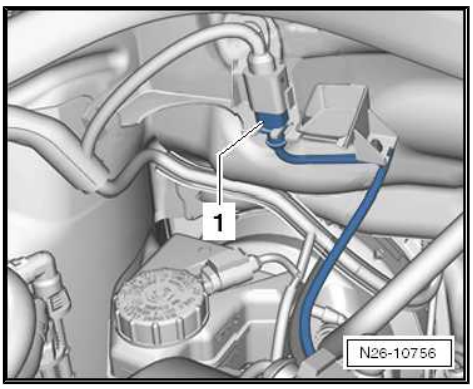

**For the vehicles Octavia II, Superb II, Yeti**

– Disconnect plug connection -3- for exhaust gas temperature sender 1 - G235- and expose electrical cable.




**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

– Disconnect plug connection -1- from exhaust gas temperature sender 1 - G235- and expose electrical cable.




**Note**

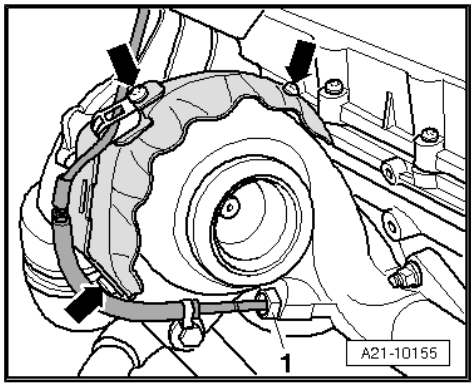
*Illustration for Rapid India vehicles:*

**Vehicles with four-wheel drive**

– Remove propshaft ⇒ Gearbox; Rep. gr. 39 .

**Continued for all vehicles**

– Unscrew the exhaust gas temperature sender 1 - G235- -1- from the exhaust manifold using the extension SW 17 from the set of tools - T10395- .




**Install**

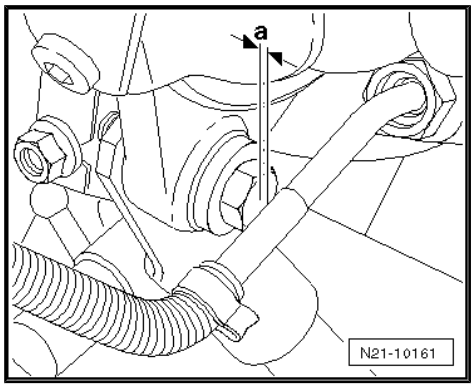
Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *The thread of the new temperature sender must be coated with assembly paste.*
- *Grease only the thread with hot bolt paste - G 052 112 A3- for re-used temperature sender.*
- *All cable straps should be fastened again in the same place when installing.*

Fitting position exhaust gas temperature sender 1 - G235- :

- The dimension -a- should not be less than 5 mm.




**Tightening torques**

- ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342

## 1.5 Connection diagram for vacuum hoses

⇒ “1.5.1 Connection diagram for vacuum hoses (Fabia II, Roomster, Rapid India, Rapid NH)”, page 362

⇒ “1.5.2 Connection diagram for vacuum hoses (Octavia II, Superb II, Yeti)”, page 364

### 1.5.1 Connection diagram for vacuum hoses (Fabia II, Roomster, Rapid India, Rapid NH)

**1 - Vacuum setting element**

- ❑ for changeover of radiator for exhaust gas recirculation

**2 - Non-return valve**

- ❑ Check fitting position
- ❑ Dark side pointing towards the vacuum pump -Pos. 7-

**3 - Changeover valve for radiator of exhaust gas recirculation - N345-**

- ❑ Check change-over ⇒ page 486

**4 - Cylinder head cover**

- ❑ with integrated vacuum reservoir

**5 - Vacuum setting element**

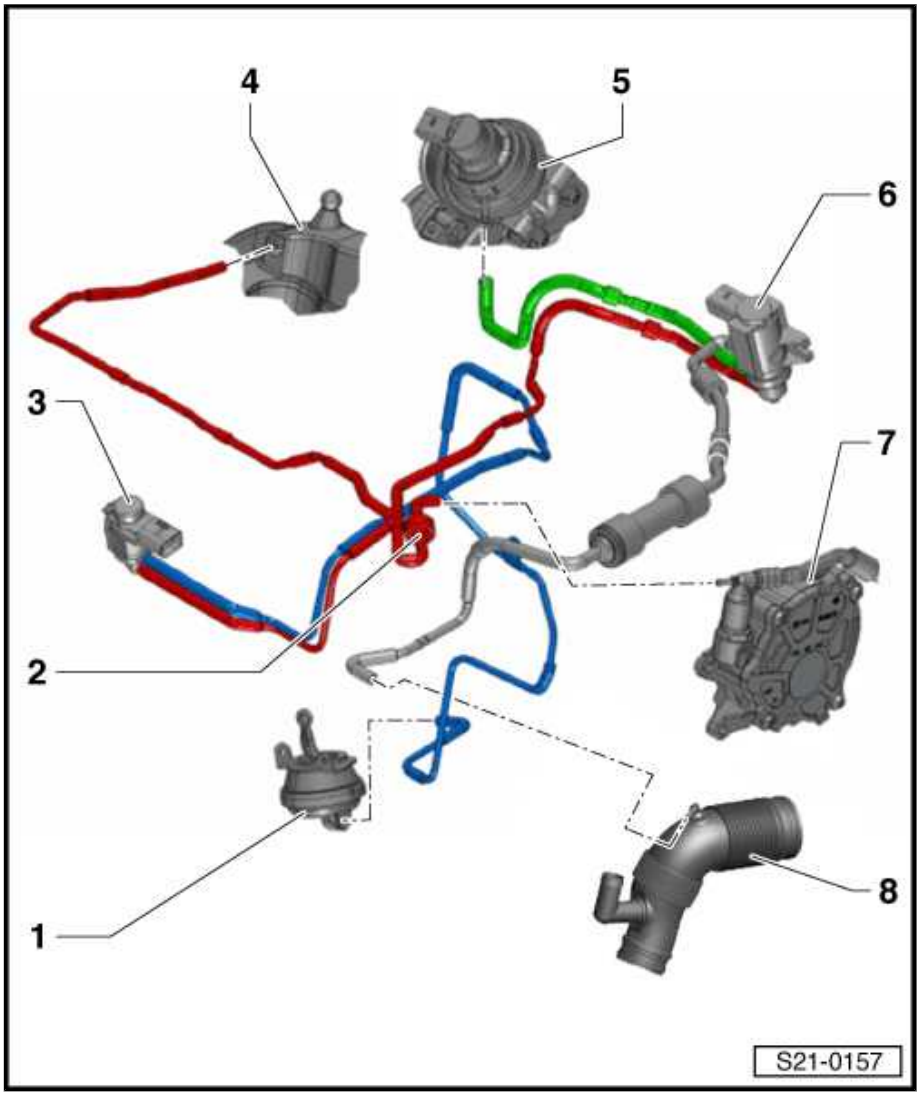
- ❑ at exhaust gas turbocharger
- ❑ with position sender for charge pressure regulator - G581-

**6 - Solenoid valve for charge pressure control - N75-**

**7 - Vacuum pump**

**8 - Air intake hose**

- ❑ with connecting piece for vent line



## 1.5.2 Connection diagram for vacuum hoses (Octavia II, Superb II, Yeti)

**1 - Vacuum setting element**

- ❑ for changeover of radiator for exhaust gas recirculation

**2 - Non-return valve**

- ❑ Check fitting position
- ❑ Dark side pointing towards the vacuum pump -Pos. 7-

**3 - Changeover valve for radiator of exhaust gas recirculation - N345-**

- ❑ Check change-over ⇒ page 486

**4 - Cylinder head cover**

- ❑ with integrated vacuum reservoir

**5 - Vacuum setting element**

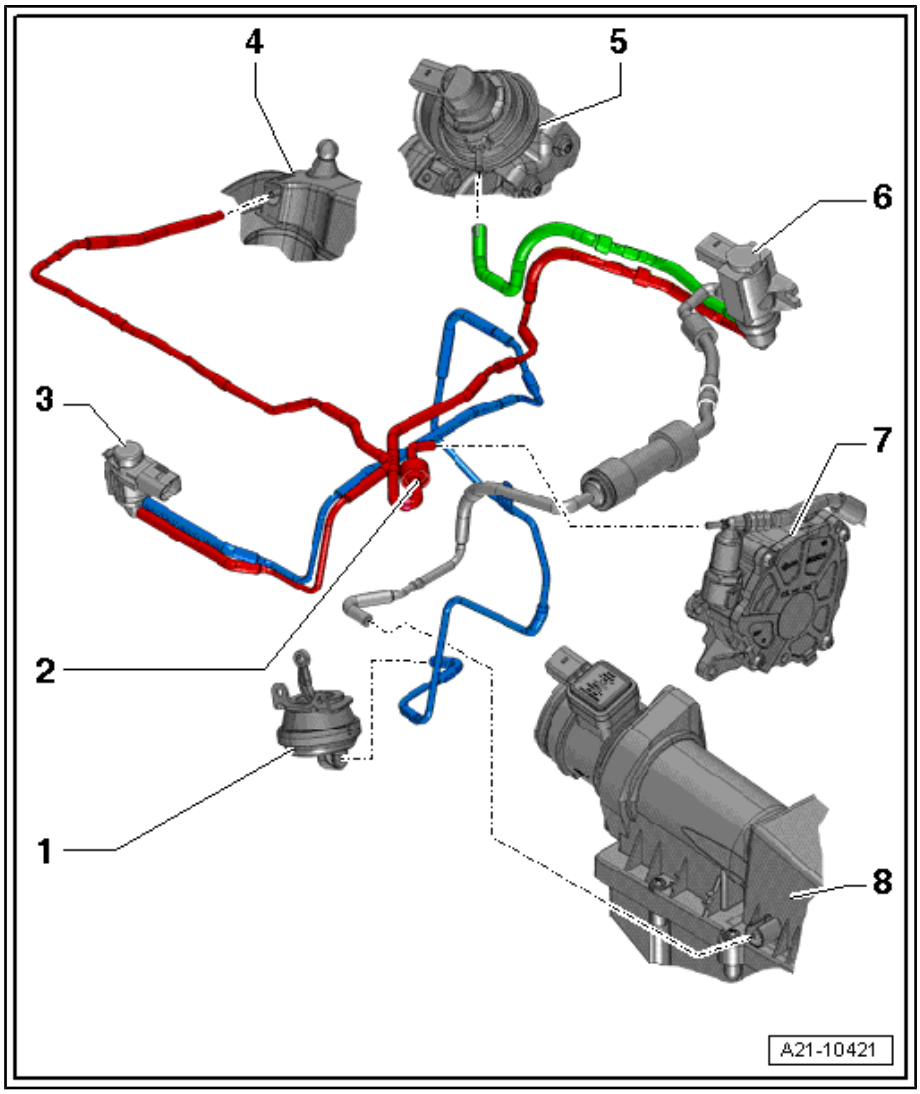
- ❑ at exhaust gas turbocharger
- ❑ with position sender for charge pressure regulator - G581-

**6 - Solenoid valve for charge pressure control - N75-**

**7 - Vacuum pump**

**8 - Air filter housing**

- ❑ with connecting piece for vent line




## 1.6 Checking vacuum system

**Caution**

*When routing the vacuum lines, make sure that the lines are not kinked, twisted or crimped. Otherwise this can lead to breakdown.*

**Special tools and workshop equipment required**

♦ Hand vacuum pump , e.g. -VAS 6213-

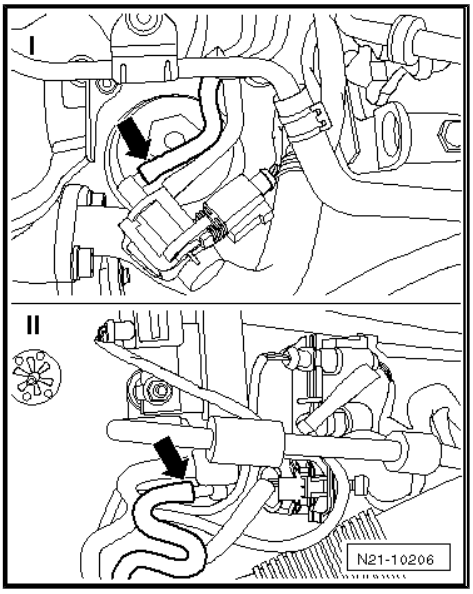
– Remove engine cover ⇒ page 10 .

**Check supply line, vacuum reservoir and non-return valve:**

– Unclip the changeover valve for radiator of exhaust gas recirculation - N345- from the front bracket at the intake manifold.

– Remove vacuum hose on lower connection arrow in -I- from the Changeover valve for radiator of exhaust gas recirculation - N345- and from the pressure control solenoid valve - N75- arrow in -II-.

– Close off the open hose ends with suitable dummy plugs.




**Note**

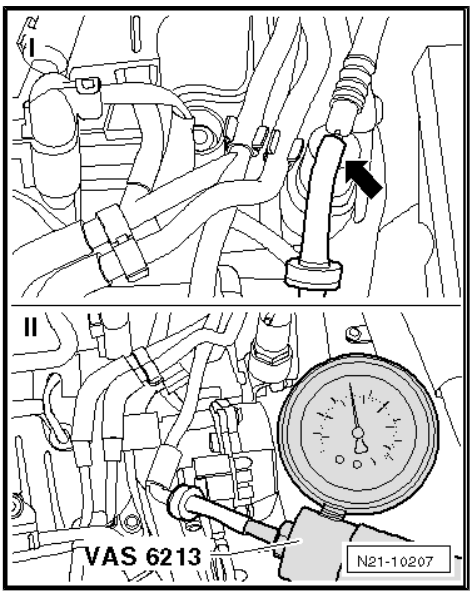
*Do not use any thread screws or thread bolts.*

– Remove the vacuum hose -arrow- at the connection fitting of the vacuum pump.

– Attach the hand vacuum pump - VAS 6213- to the detached hose and generate a vacuum of 0.06 MPa (0.6 bar).

– Observe the pressure gauge of the hand vacuum pump for approx. 30 seconds.

• The vacuum must not drop.




If the vacuum drops:

– Search for damage, for example a leaky connection in the hose line, and replace the corresponding part.

If the vacuum does not drop:

– First of all, detach the hose at the hand vacuum pump - VAS 6213- .

– Remove one of the dummy plugs from the hose ends.

If the non-return valve is functional, a significant spluttering can now be heard when the vacuum is suctioned off in the vacuum reservoir.

If no spluttering can be heard:

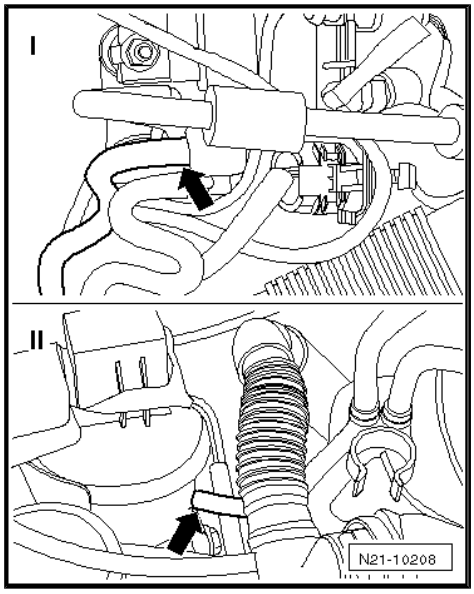
– Replace non-return valve.

– Re-connect all vacuum hoses.

**Check the control line to the exhaust turbocharger**

– Detach the hose on the middle connection arrow in -I- of the charge pressure control solenoid valve - N75- and on the vacuum setting element of the exhaust gas turbocharger arrow in -II-.

– Close one opening of the hose with a suitable dummy plug.




**Note**

*Do not use any thread screws or thread bolts.*

– Attach the hand vacuum pump - VAS 6213- to the other end of the hose and generate a vacuum of 0.06 MPa (0.6 bar).

– Observe the pressure gauge of the hand vacuum pump for approx. 30 seconds.

• The vacuum must not drop.

If the vacuum drops:

– Replace vacuum hose.

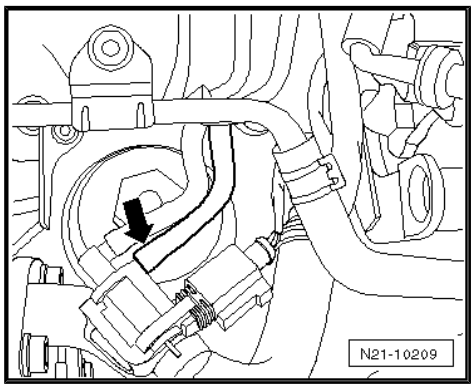
**Check the control line to the vacuum setting element for switching over the radiator for the exhaust gas recirculation**

– Detach the hose on the middle connection of the exhaust gas recirculation radiator change-over valve - N345- -arrow-.

– Attach the hand vacuum pump - VAS 6213- to the detached hose and generate a vacuum of 0.06 MPa (0.6 bar).

– Observe the pressure gauge of the hand vacuum pump for approx. 30 seconds.

• The vacuum must not drop.




If the pressure drops:

– Detach the vacuum hose on the vacuum setting element for switching over the radiator for exhaust gas recirculation.

– Attach the hand vacuum pump - VAS 6213- with the factory-delivered test hose to the vacuum setting element and generate a vacuum of 0.06 MPa (0.6 bar).

**Note**

♦ *The adjustment on the vacuum setting element must be noticeable and the vacuum must not drop. If this is not the case, replace the radiator for exhaust gas recirculation* *⇒ page 482* .

♦ *If no defect can be found on the vacuum setting element, replace the vacuum line of the changeover valve for radiator of exhaust gas recirculation - N345- .*

# 2 Charge-air system - radiator, leak-tightness



## 2.1 Charge air cooler



### 2.1.1 Summary of components - Charge air cooler (Fabia II, Roomster, Rapid India, Rapid NH)

**Note**

*Observe general instructions for charge-air system ⇒ page 7 .*

**1 - Charge air cooler**
- ❑ only remove together with radiator
⇒ page 262

**2 - Right charge air hose**

**3 - Screw clamp**
- ❑ 8 Nm

**4 - to throttle valve control unit - J338-**

**5 - Connecting hose**

**6 - Screw**
- ❑ 5 Nm

**7 - Charge pressure sender - G31- with intake air temperature sender - G42-**

**8 - Rubber grommet**
- ❑ replace if damaged

**9 - Screw**
- ❑ 10 Nm

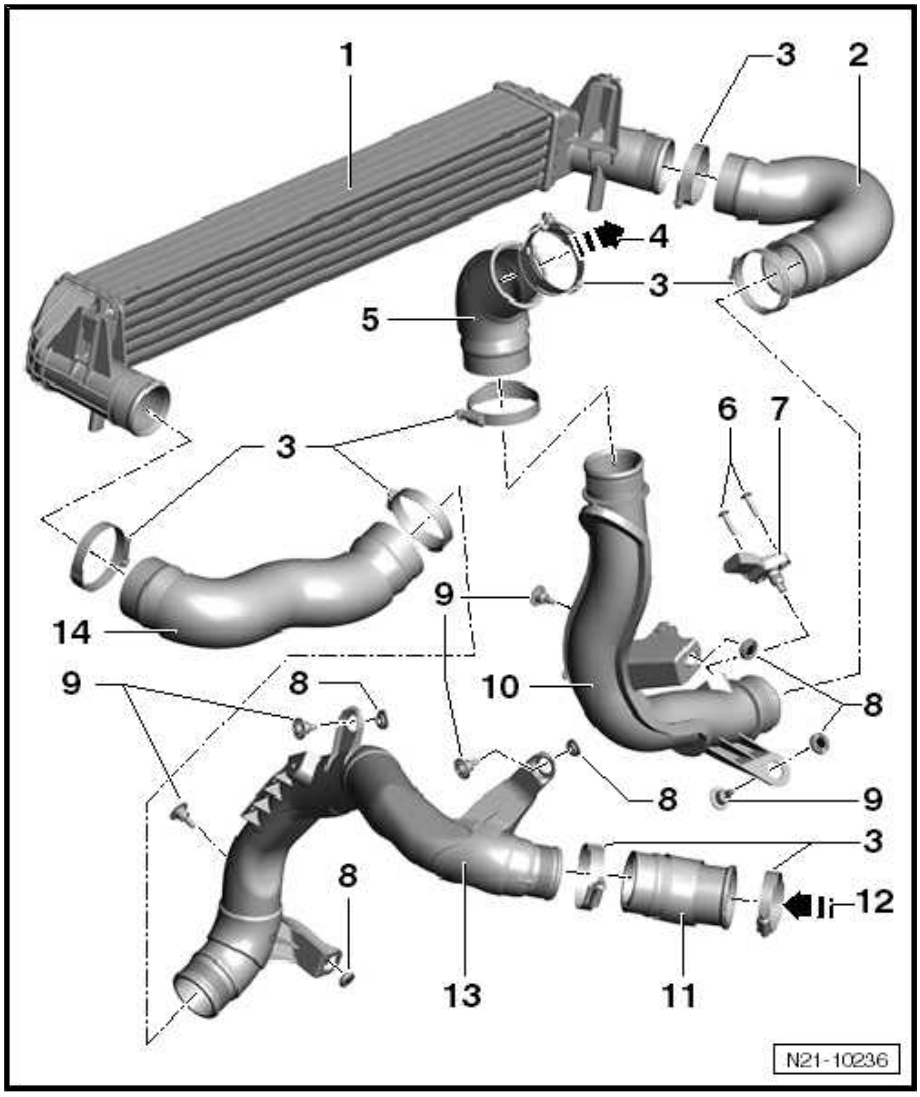
**10 - Right charge air pipe**

**11 - Connecting hose**

**12 - from exhaust turbocharger**

**13 - Left charge air pipe**
- ❑ Pay attention to the part number

**14 - Left charge air hose**




## 2.1.2 Summary of components - Charge air cooler (Octavia II, Superb II, Yeti)

**Note**

- *Observe general instructions for charge-air system* *⇒ page 7* *.*
- *Observe tightening torques of screw clamps for hose connections* *⇒ page 372* *.*

**1 - Connecting hose**

**2 - Left charge air pipe**

**3 - Bushing**

**4 - Screw**

- ❑ 10 Nm

**5 - Rubber grommet**

- ❑ replace if damaged

**6 - Left charge air hose**

**7 - bottom seal**

**8 - Charge air cooler**

- ❑ wymontowanie i zamontowanie ⇒ page 370

**9 - top seal**

**10 - Screw**

- ❑ 5 Nm

**11 - Support**

- ❑ Check fitting position

**12 - Bearings**

**13 - Right charge air hose**

**14 - Connecting hose**

**15 - Right charge air pipe**

- ❑ with fixing screw
- ❑ 10 Nm

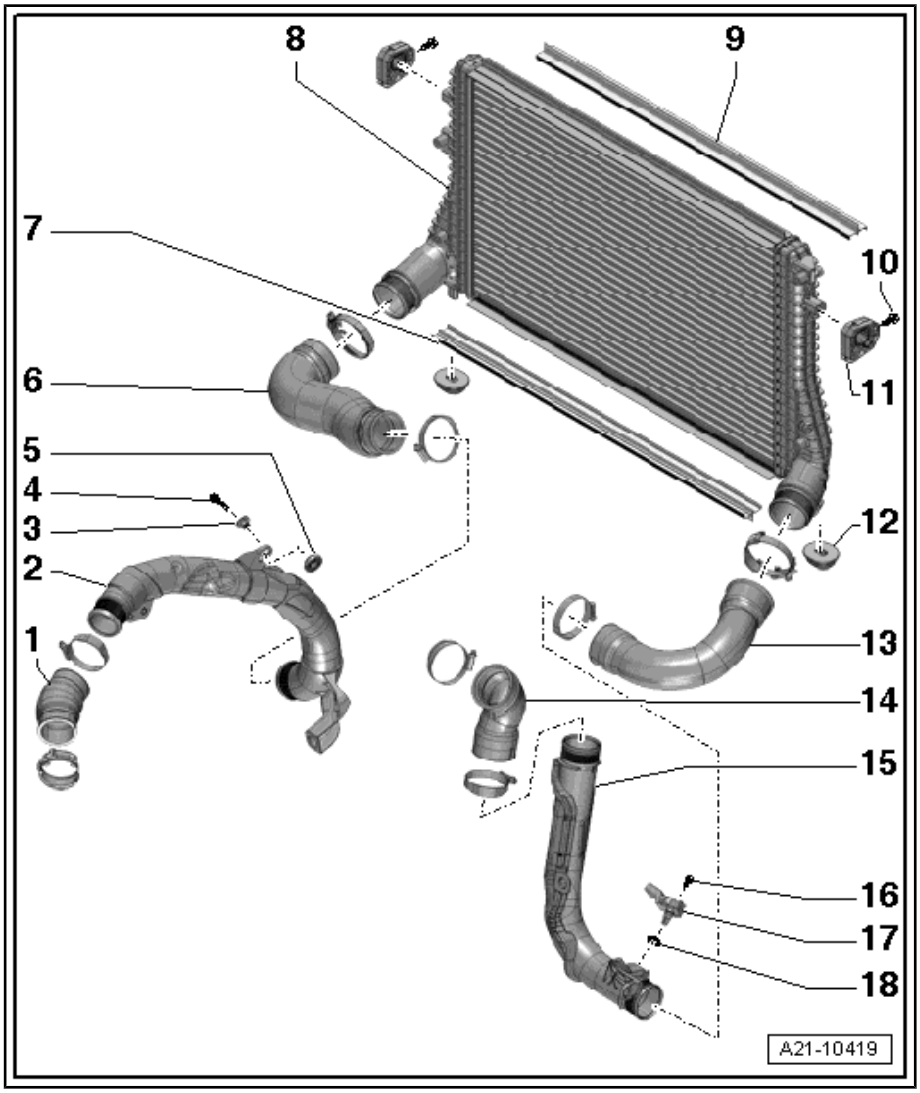
**16 - Screw**

- ❑ 5 Nm

**17 - Charge pressure sender - G31- with intake air temperature sender - G42-**

**18 - O-ring**

- ❑ replace



## 2.2 Removing and installing charge air cooler

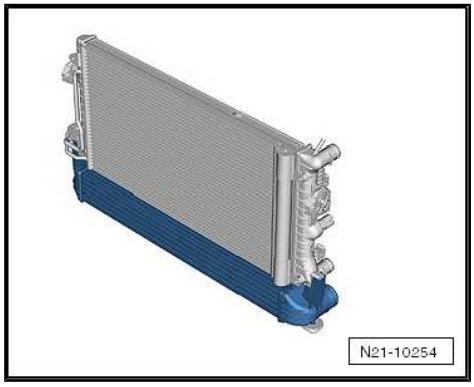
⇒ “2.2.1 Removing and installing charge air cooler (Fabia II, Roomster, Rapid India, Rapid NH)”, page 370

⇒ “2.2.2 Removing and installing charge air cooler (Octavia II, Superb II, Yeti)”, page 370

### 2.2.1 Removing and installing charge air cooler (Fabia II, Roomster, Rapid India, Rapid NH)

The charge-air cooler is located below the radiator.

Only remove charge-air cooler together with radiator ⇒ page 262 .




### 2.2.2 Removing and installing charge air cooler (Octavia II, Superb II, Yeti)

**Removing**

– Remove coolant radiator ⇒ page 262 .

– Remove front bumper ⇒ Body Work; Rep. gr. 63 .

– Remove the charge air hoses on the left and right from the charge air cooler.

**On vehicles with air conditioning**

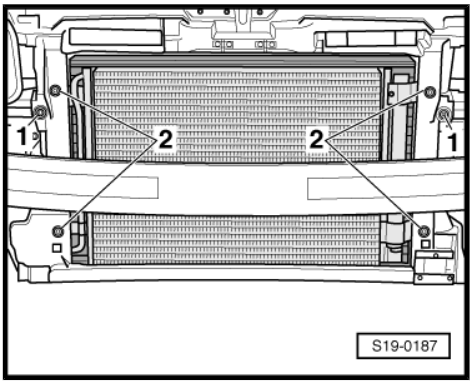
**WARNING**

*Do not open the refrigerant circuit of the air conditioning system.*

**Caution**

*In order to avoid damage to the condenser as well as to the refrigerant lines and hoses, ensure that the lines and hoses are not over-tensioned, kinked or bent.*

– Screw out the fixing screws -2- of the condenser.

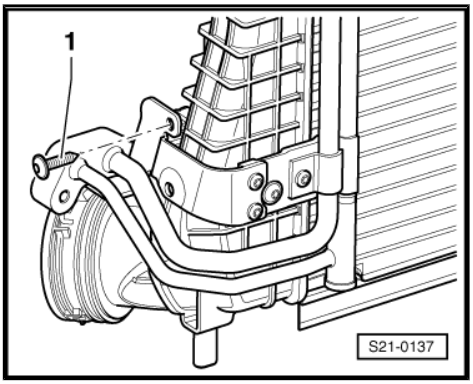



**For all vehicles**

– Unscrew fixing screws -1- for charge air cooler on right and left.

**On vehicles with air conditioning**

– With the aid of 2nd mechanic, press off the charge air cooler from the lock carrier so that the screw -1- for attaching the pipes of the air conditioning system is accessible.




– Remove screw -1-.

**For all vehicles**

– Carefully remove radiator downwards.

**Install**

Installation is performed in the reverse order, pay attention to the following points:

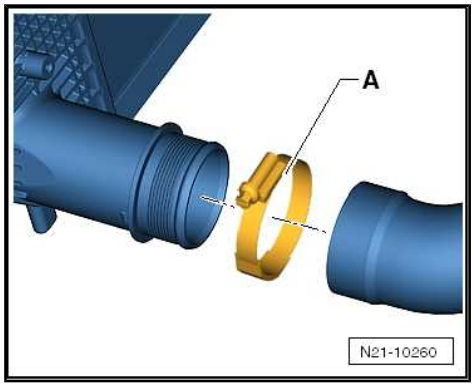
**Note**

- *Replace O-rings.*
- *Observe the mounting sequence for hose connections with screw clamps ⇒ page 372 .*

**Tightening torques**

- ⇒ “2.1 Charge air cooler”, page 367

## 2.3 Hose connections with screw clamps




**Note**

- *Connections, charge air pipes and hoses of charge air system must be free of oil and grease before being installed.*
- *Only install approved screw clamps for securing the hose connections ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *In order to secure the charge air hoses on their connection fittings, the threads must be treated with rust solvent if the screw clamps have been used beforehand.*
- *After a repair, check all the charge air pipes, charge air hoses and vacuum lines for tight connection and leaktightness.*

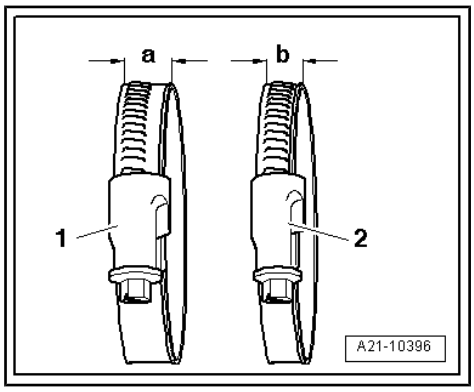
**Caution**

***The screw clamps -A- on the charge air hoses must definitely be precisely tightened in accordance with the specifications*** ***⇒ page 372*** ***.***

- ***A too low or on the contrary, a too high tightening torque of the screw clamps, may result in the charge air hose slipping off the fluted pipe or the charge air pipe while driving.***

**Tightening torques of screw clamps**

| Component | Nm |
|---|---|
| Screw clamp -a- = 12 mm | 5.5 Nm |
| Screw clamp -b- = 9 mm | 3 Nm |




## 2.4 Checking the charge-air system for leaktightness

**Special tools and workshop equipment required**

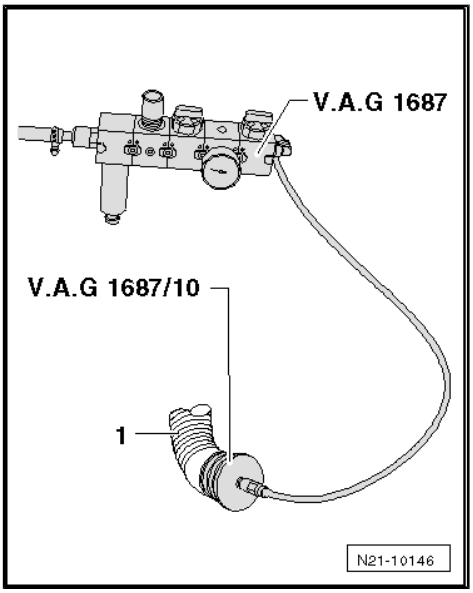
- Charge-air system testing device , e. g. -V.A.G 1687-
- Adapter , e.g. -V.A.G 1687/10-

**Test sequence**

– Remove the suction hose -1- from the air filter housing.

– Fit adapter - 1687/10- into the suction hose -1- and secure with a clamp.

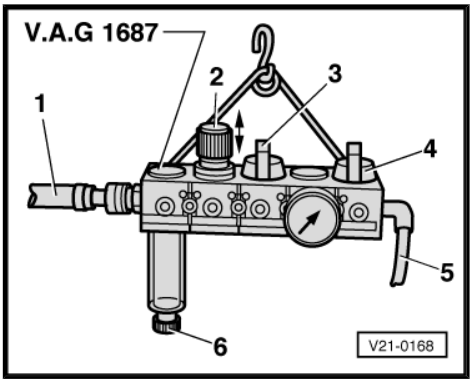
Prepare tester - V.A.G 1687- as follows:



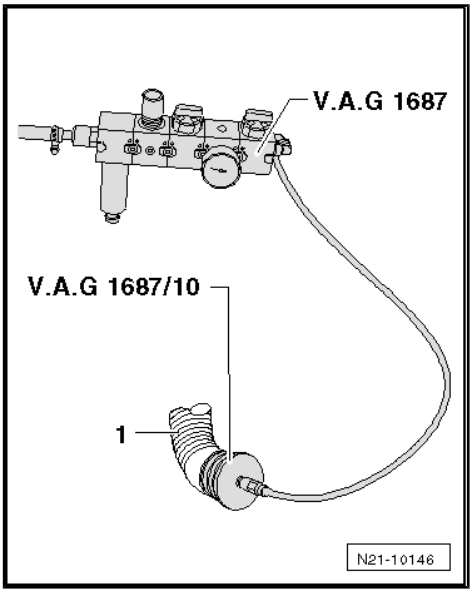

– Unscrew pressure control valve -2- fully and close the valves -3- and -4-.

**Note**

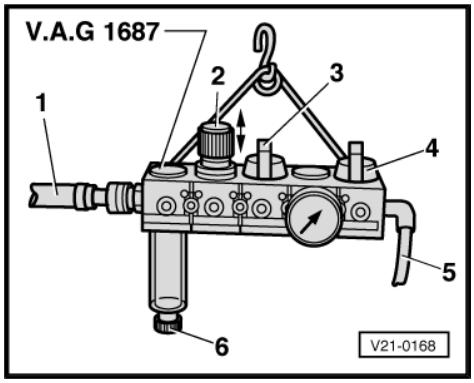
*The rotary knob must be pulled to the top in order to rotate the pressure control valve -2-.*




– Connect tester - V.A.G 1687- as shown to adapter - 1687/10- .



– Connect the pneumatic hose -1- (pneumatic support) at tester.




**Note**

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

– Open valve -3-.

– Set the pressure to 0.05 MPa (0.5 bar) with the pressure control valve -2-.

**Caution**

***The pressure must not be greater than 0.05 MPa (0.5 bar)! A too high pressure can damage the engine.***

– Open valve -4- and wait until the test circuit is filled. If necessary regulate the pressure to 0.05 MPa (0.5 bar).

– Listen to, touch or use commercially available leak search spray or the ultrasonic measuring device e. g. -V.A.G 1842- to check the charge-air system with exhaust gas turbocharger for leak points.

**Note**

- *Minor leaks are permissible on the suction side of the turbocharger, because the intake hoses are not designed for overpressure.*
- *A small amount of air escapes via the valves into the engine. For this reason no pressure test is possible.*
- *Use of ultrasonic measuring device - V.A.G 1842- ⇒ operating instructions .*
- *In case of a leak point, observe the instructions for charge air system ⇒ page 7 during the installation.*
- *Before removing the adapter, depressurize the test circuit by detaching the coupling from the adapter - 1687/10- .*

# 23 – Mixture preparation - injection

## 1 Diesel direct injection system - fitting locations, system overview



### 1.1 Overview of fitting locations

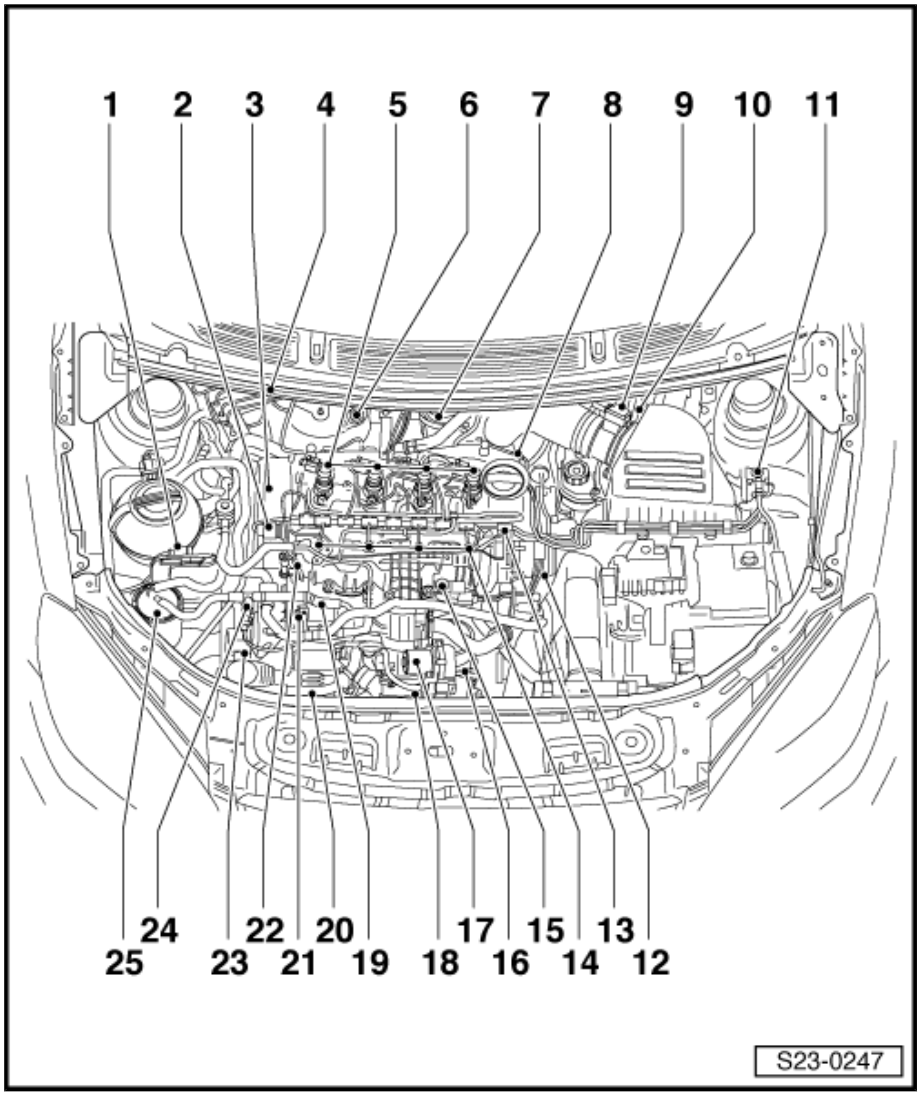


#### 1.1.1 Overview of fitting locations (Fabia II, Roomster, Rapid India, Rapid NH)

The control unit is equipped with a fault memory. Before repairs, setting operations and fault finding, interrogate the fault memory and execute a self-diagnosis ⇒ Vehicle diagnostic tester.

**Note**

- *Faults can be detected by the control unit as checking and adjustment work is being undertaken and then saved. It is therefore absolutely necessary to delete the fault memory after completing all checking and adjustment work ⇒ Vehicle diagnostic tester*
- *Observe the safety precautions when working on the diesel direct injection system ⇒ page 3 .*




**1 - Differential pressure sender - G505-**

- only for vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC

**2 - Fuel pressure sender - G247-**

**3 - Hall sender - G40- (camshaft position sensor)**

**4 - Connector**

- for exhaust gas temperature sender 4 - G648- (only for vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC)
- for exhaust gas temperature sender 1 - G235- ( Temperature sender upstream turbocharger - G507- )
- for Lambda probe - G39- (only for vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC)

**5 - Injection units (Piezo injectors)**

**6 - lambda probe - G39- with heating for lambda probe - Z19-**

- only for vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC

**7 - Position sender for charge pressure regulator - G581-**

- only for vehicles Fabia II, Roomster, Rapid NH

**8 - Exhaust gas return valve - N18-**

- consists of:

- mechanical valve (electrically operated)
- EGR control motor - V338-
- EGR potentiometer - G212-

**9 - Air mass meter - G70-**

**10 - Engine control unit**

**11 - Solenoid valve for charge pressure control - N75-**

**12 - Intake manifold flap motor - V157-**

- only on vehicles with intake manifold flap ⇒ page 414
- the function is not used

**13 - Control valve for fuel pressure - N276-**

**14 - Glow plugs**

- Glow plug 1 - Q10-
- Glow plug 2 - Q11-

- ❑ Glow plug 3 - Q12-
- ❑ Glow plug 4 - Q13-

**15 - Changeover valve for radiator of exhaust gas recirculation - N345-**

**16 - Engine speed sender - G28-**

- ❑ removing and installing ⇒ page 382

**17 - Throttle valve control unit - J338-**

**18 - Coolant recirculation pump 2 - V178-**

- ❑ not present on vehicles with engine identification characters CWXB

**19 - Connection of fuel feed line from fuel filter**

**20 - Charge pressure sender - G31- with intake air temperature sender - G42-**

**21 - High pressure pump with fuel dosage valve - N290-**

**22 - Connection of fuel feed line (high pressure line)**

**23 - Coolant temperature sender at radiator outlet - G83-**

**24 - Fuel temperature sender - G81-**

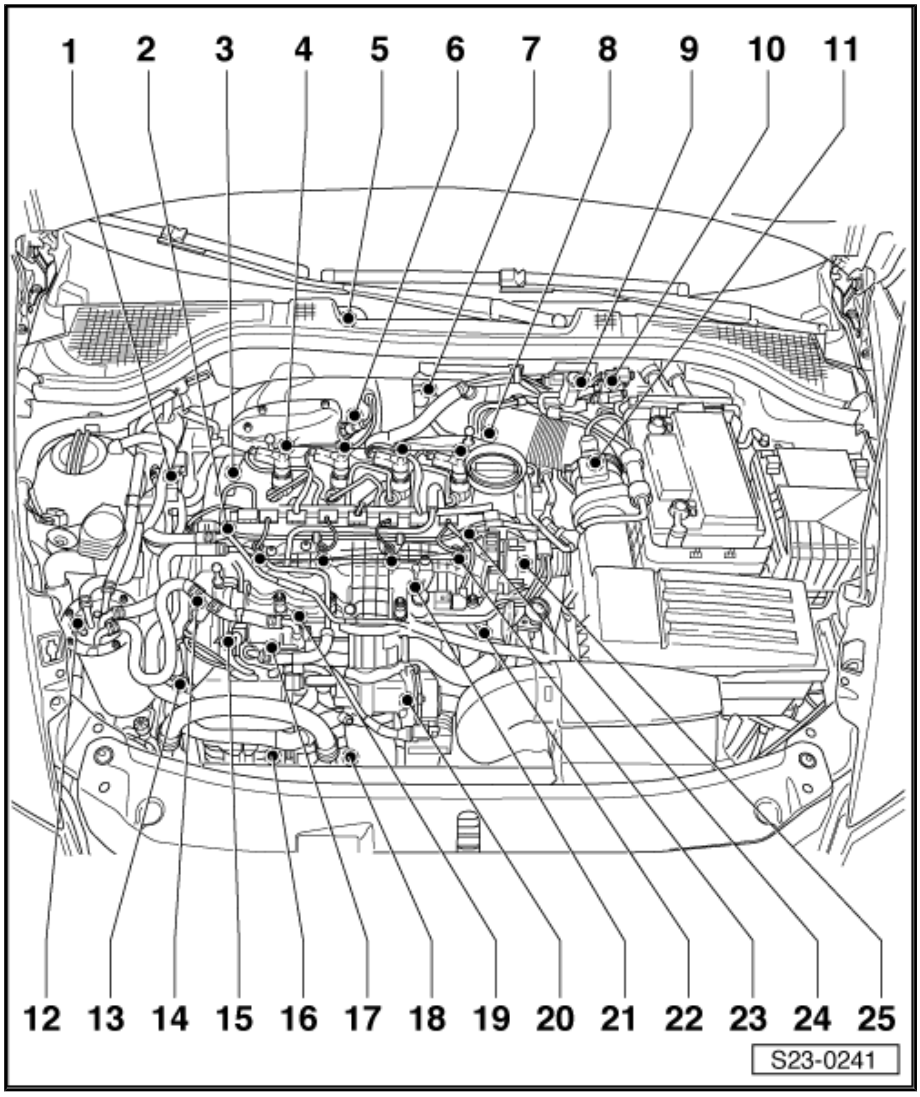
**25 - Fuel filter**

## 1.1.2 Overview of fitting locations (Octavia II, Superb II, Yeti)

The control unit is equipped with a fault memory. Before repairs, setting operations and fault finding, interrogate the fault memory and execute a self-diagnosis ⇒ Vehicle diagnostic tester.

**Note**

- ♦ *Faults can be detected by the control unit as checking and adjustment work is being undertaken and then saved. It is therefore absolutely necessary to delete the fault memory after completing all checking and adjustment work ⇒ Vehicle diagnostic tester*
- ♦ *Observe the safety precautions when working on the diesel direct injection system ⇒ page 3 .*




**1 - Differential pressure sender - G505-**

**2 - Fuel pressure sender - G247-**

**3 - Hall sender - G40- (camshaft position sensor)**

**4 - Injection units (Piezo injectors)**

**5 - Engine control unit**

**6 - lambda probe - G39- with heating for lambda probe - Z19-**

**7 - Position sender for charge pressure regulator - G581-**

**8 - Exhaust gas return valve - N18-**

- ❑ consists of:

- ♦ mechanical valve (electrically operated)
- ♦ EGR control motor - V338-
- ♦ EGR potentiometer - G212-

**9 - Solenoid valve for charge pressure control - N75-**

**10 - Connector**

- ❑ for exhaust gas temperature sender 4 - G648-
- ❑ for exhaust gas temperature sender 1 - G235- ( Temperature sender upstream turbocharger - G507- )
- ❑ for lambda probe - G39-

**11 - Air mass meter - G70-**

**12 - Fuel filter**

**13 - Coolant temperature sender at radiator outlet - G83-**

**14 - Fuel temperature sender - G81-**

**15 - High pressure pump with fuel dosage valve - N290-**

**16 - Charge pressure sender - G31- with intake air temperature sender - G42-**

**17 - Connection of fuel feed line (high pressure line)**

**18 - Coolant recirculation pump 2 - V178-**

**19 - Connection of fuel feed line from fuel filter**

**20 - Throttle valve control unit - J338-**

**21 - Changeover valve for radiator of exhaust gas recirculation - N345-**

**22 - Engine speed sender - G28-**

**23 - Glow plugs**

- ❑ Glow plug 1 - Q10-
- ❑ Glow plug 2 - Q11-
- ❑ Glow plug 3 - Q12-
- ❑ Glow plug 4 - Q13-

**24 - Control valve for fuel pressure - N276-**

**25 - Intake manifold flap motor - V157-**

- ❑ only on vehicles with intake manifold flap ⇒ page 414
- ❑ the function is not used

## 1.2 System overview

⇒ "1.2.1 System overview (Fabia II, Roomster, Rapid India, Rapid NH)", page 379

⇒ "1.2.2 System overview (Octavia II, Superb II, Yeti)", page 381

### 1.2.1 System overview (Fabia II, Roomster, Rapid India, Rapid NH)

**WARNING**

*Absolutely observe the safety precautions when working on the diesel direct injection system ⇒ page 3 .*

**1 - Fuel dosage valve - N290-**

**2 - High pressure pump**

- ❑ wymontowanie i zamontowanie ⇒ page 400

**3 - Fuel pressure sender - G247-**

- ❑ removing and installing ⇒ page 399

**4 - Fuel distributor**

**5 - Control valve for fuel pressure - N276-**

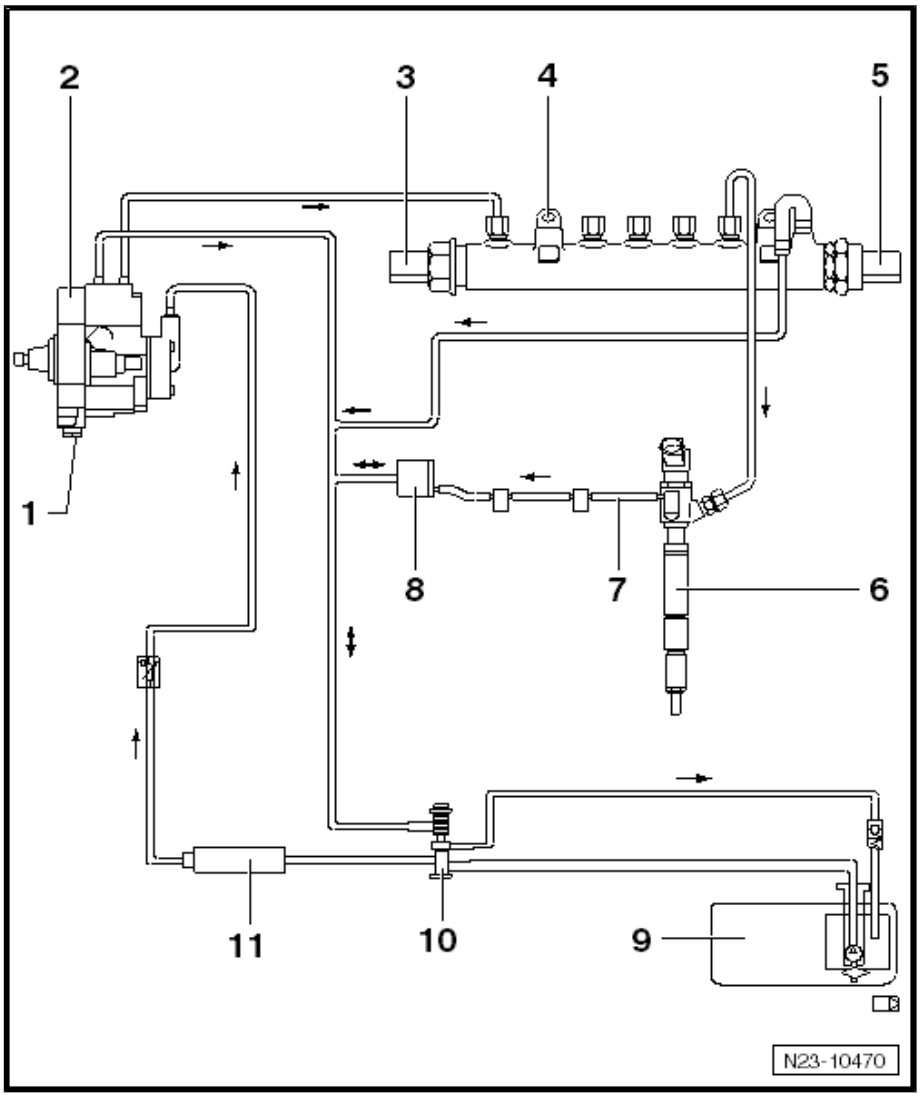
- ❑ replace after each removal
- ❑ check ⇒ page 407
- ❑ removing and installing ⇒ page 397

**6 - Injection unit (Piezo injector)**

- ❑ removing and installing ⇒ page 389
- ❑ Testing the vacuum ⇒ page 410

**7 - Fuel return-flow line**

- ❑ must be replaced completely
- ❑ the fuel return-flow line must not be disassembled; the return-flow line must only be replaced complete with pressure holding valve



**8 - Pressure holding valve**

- ❑ The pressure holding valve in the fuel return-flow line has the function to always hold a remaining pressure (control quantity) of approx. 0.1 MPa (1 bar). The injection units (piezo injectors) require this control quantity for their function.
- ❑ the fuel return-flow line must not be disassembled; the pressure holding valve must only be replaced complete with the return-flow line
- ❑ after replacing, the engine must run at idling speed for approx. 2 minutes in order to vent the fuel system
- ❑ check ⇒ page 411

**9 - Fuel tank**

- ❑ wymontowanie i zamontowanie ⇒ page 307

**10 - Preheating valve**

- ❑ only for vehicles Fabia II, Roomster, Rapid NH
- ❑ connect ⇒ page 282

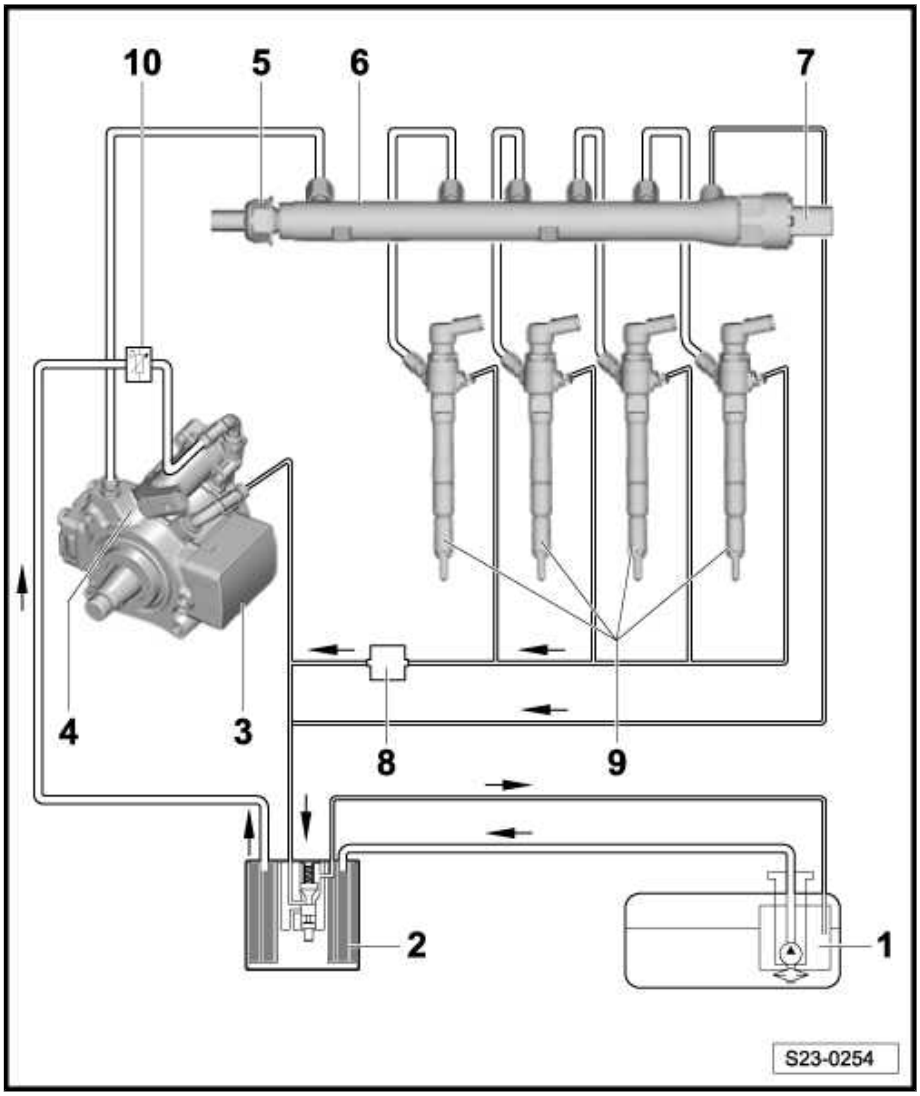
**11 - Fuel filter**

- ❑ wymontowanie i zamontowanie ⇒ page 282

## 1.2.2 System overview (Octavia II, Superb II, Yeti)

**WARNING**

*Absolutely observe the safety precautions when working on the diesel direct injection system ⇒ page 3 .*




**1 - Fuel tank**

**2 - Fuel filter**

**3 - High pressure pump**

- ❑ wymontowanie i zamontowanie ⇒ page 400

**4 - Fuel dosage valve - N290-**

**5 - Fuel pressure sender - G247-**

- ❑ removing and installing ⇒ page 399

**6 - Fuel distributor**

- ❑ removing and installing ⇒ page 394

**7 - Control valve for fuel pressure - N276-**

- ❑ replace after each removal
- ❑ check ⇒ page 407
- ❑ removing and installing ⇒ page 397

**8 - Fuel return-flow line with pressure holding valve**

- ❑ The pressure holding valve has the function to always hold a remaining pressure (control quantity) of approx. 0.1 MPa (1 bar) in the fuel return-flow line. The injection units (piezo injectors) require this control quantity for their function.
- ❑ the fuel return-flow line must not be disassembled
- ❑ must be replaced completely
- ❑ after replacing, the engine must run at idling speed for approx. 2 minutes in order to vent the fuel system
- ❑ check ⇒ page 411

**9 - Injection units (Piezo injectors)**

- ❑ removing and installing ⇒ page 389
- ❑ Testing the vacuum ⇒ page 410

**10 - Fuel temperature sender - G81-**

## 1.3 Filling/bleeding the fuel system

**Caution**

*In order to prevent the high pressure pump from running dry (very narrow tolerances) and to achieve a quick engine start after parts are replaced, the following must be observed:*

- *If fuel system between tank and pump parts/components have been removed or replaced the fuel system must be filled/bled before the engine is started up for the first time. The high pressure pump must not run dry.*

**In order to fill up the high pressure pump with fuel, proceed as follows:**

- Vehicle must be refuelled.

– Connect vehicle diagnosis tester and switch on ignition system.

– Perform `bleed fuel tank` targeted function.

- The fuel pump must run for approximately 180 seconds to ensure that the pump is sufficiently filled with fuel.

– After filling the fuel system, start the engine.

– Run the engine at medium speed for several minutes, then turn it off again.

– Test fuel system for tightness ⇒ page 406 .

– Delete event memory entry with Vehicle diagnosis tester .

– Then conduct test drive with at least one full load acceleration.

– Then check high-pressure area again for tightness.

**Note**

*If air is still present in the fuel system the engine may enter dry-running operation during the test drive. Switch off engine and delete the event memory. Then continue the test drive.*

– Query fault memory ⇒ Vehicle diagnostic tester.

## 1.4 Removing and installing engine speed sender - G28-

**Special tools and workshop equipment required**

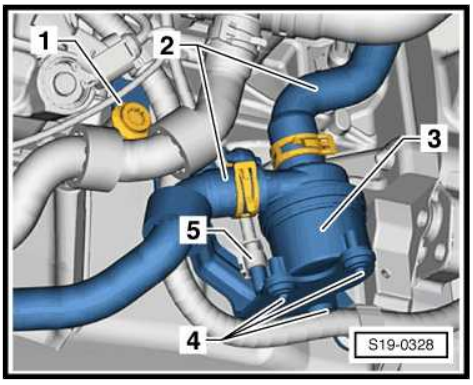
- Socket insert - T10370-
- Assembly device - T10118-

**Removing**

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

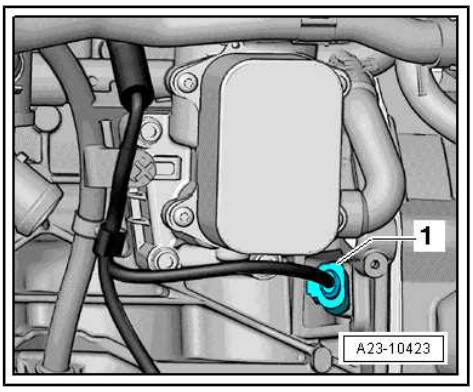
**For vehicles Fabia II, Roomster, Rapid India, Rapid NH**

– Undo screws -4- and secure coolant recirculation pump 2 - V178- -3- with connected hoses to the right on the side (where present).

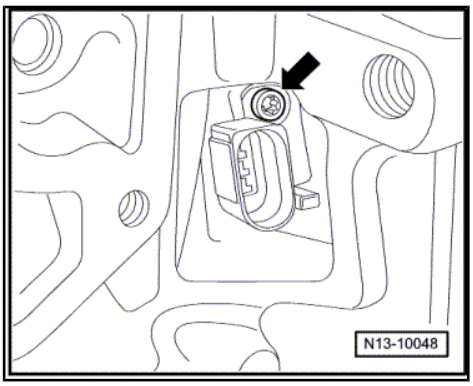



**For all vehicles**

– Disconnect the plug -1- on the engine speed sender - G28- with the assembly device - T10118- and lay the electrical cable to the side.




– Unscrew the fixing screw -arrow- of the engine speed sender - G28- and pull out the sender.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**For vehicles Fabia II, Roomster, Rapid India, Rapid NH**

– Install coolant recirculation pump 2 - V178- ⇒ page 214 .

**Tightening torques**

♦ ⇒ “2.1 Summary of components - sealing flange and flywheel”, page 114

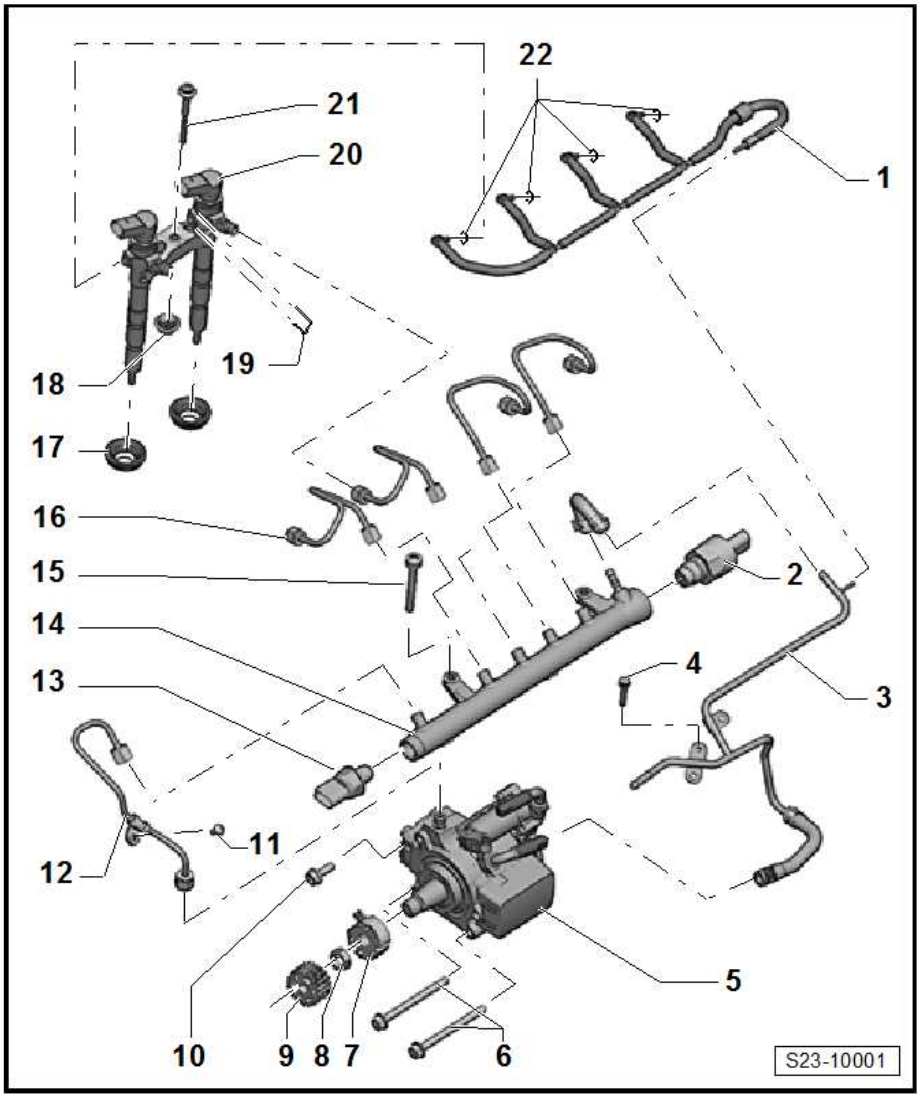
# 2 Fuel system, engine side



## 2.1 Fuel system - Summary of components

**Caution**

*In order to avoid the high pressure pump to run dry and to achieve a quick engine start after parts are replaced, the following points must be observed:*




**1 - Fuel return-flow lines**

> **Caution**
> *A new connection for the fuel return pipe is used continuously. Observe safety instructions ⇒ page 387 !*

- ❑ to fuel tank
- ❑ Fuel return-flow lines must not be kinked, damaged or blocked
- ❑ Fuel return-flow lines must not be disassembled
- ❑ The pressure holding valve has the task to always hold a remaining pressure (control quantity) in the fuel return-flow lines
- ❑ Check the pressure holding valve ⇒ page 411 .
- ❑ Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.

**2 - Control valve for fuel pressure - N276-**

- ❑ replace after each removal
- ❑ check ⇒ page 407
- ❑ removing and installing ⇒ page 397
- ❑ 80 Nm

**3 - Fuel return-flow line**

- ❑ Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.

**4 - Screw**

- ❑ 10 Nm

**5 - High pressure pump**

- ❑ wymontowanie i zamontowanie ⇒ page 400
- ❑ with fuel dosage valve - N290-
- ❑ an initial fuel filling must be carried out after the replacement (absolutely avoid it to run dry) ⇒ Vehicle diagnostic tester
- ❑ Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.

**6 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 180° ($^1/_2$ turn)

**7 - Hub**

- ❑ with transmitter ring
- ❑ to release and tighten use counterholder - T10051-
- ❑ to remove use extractor - T40064-

**8 - Nut**

- ❑ 95 Nm

**9 - Timing belt gear - high pressure pump**

- ❑ Replace bolts
- ❑ Tightening torque 20 Nm

**10 - Screw**

- ❑ replace
- ❑ 20 Nm + torque a further 45° ($^1/_8$ turn)

**11 - Screw**

- ❑ 10 Nm

**12 - High pressure line**

- ❑ between the high pressure pump and the fuel distributor
- ❑ do not install under tension
- ❑ installing ⇒ page 395
- ❑ 28 Nm

**Note**

- ♦ *The high pressure line can be reused after the following tests:*
- ♦ *Check the sealing cone of the high pressure line for deformations and cracks.*
- ♦ *The line borings must not be deformed, constricted or damaged.*
- ♦ *Corroded lines must no longer be used.*

**13 - Fuel pressure sender - G247-**

- ❑ removing and installing ⇒ page 399
- ❑ 100 Nm

**14 - Fuel distributor**

- ❑ removing and installing ⇒ page 394
- ❑ Assignment ⇒ ETKA - Electronic Catalogue of Original Parts.

**15 - Screw**

- ❑ 22 Nm

**16 - High-pressure lines**

- ❑ between fuel distributor and injection units
- ❑ do not interchange
- ❑ install free of stress
- ❑ installing ⇒ page 395
- ❑ 28 Nm

**Note**

- ♦ *Pay attention to the cylinder specific marking when re-using the high pressure lines.*
- ♦ *The high pressure line can be reused after the following tests:*

- *Check the sealing cone of the high pressure line for deformations and cracks.*
- *The line borings must not be deformed, constricted or damaged.*
- *Corroded lines must no longer be used.*

**17 - Gasket**

- ❑ replace

**18 - Gasket**

**19 - Retaining clip for return-flow lines**

- ❑ replace
- ❑ Lightly grease the retaining clip before installing the injector

**20 - Injection units (Piezo injectors)**

- ❑ removing and installing ⇒ page 389
- ❑ Check return flow quantity ⇒ page 408
- ❑ Testing the vacuum ⇒ page 410
- ❑ The following components and seals/O-rings must be replaced each time after removing and installing: Copper washer, O-ring from injection unit shaft, O-ring from the injector return, screw for clamping claw, retaining clip for return-flow lines
- ❑ Before re-using the “high pressure line”, carry out a visual inspection of the sealing cones for damage such as cross chamfers and corrosion, always replace if damaged
- ❑ Removed injection units (piezo injectors), high pressure lines and clamping claws, which are re-installed, may only be mounted again at the same point (cylinder)

**21 - Screw for clamping claw**

**Note**

*If the stripped engine is replaced the tightening of the screw of the injection unit clamping claws must be checked on the new stripped engine.*

- ❑ replace

first of all tighten the fixing screws to MAX: 1 - 2 Nm

after installing the high pressure lines, tighten to 8 Nm + torque a further 180° ($^1/_2$ turn)

**22 - O-ring**

- ❑ replace
- ❑ removing and installing ⇒ page 387

**Remove O-rings for fuel return-flow lines**

Proceed with utmost care. Avoid damage to the fuel return-flow line.

– Lever off the old O-ring from the fuel return-flow line with extreme care.

Do not use a sharp-edged tool. We recommend you use plastic tools.

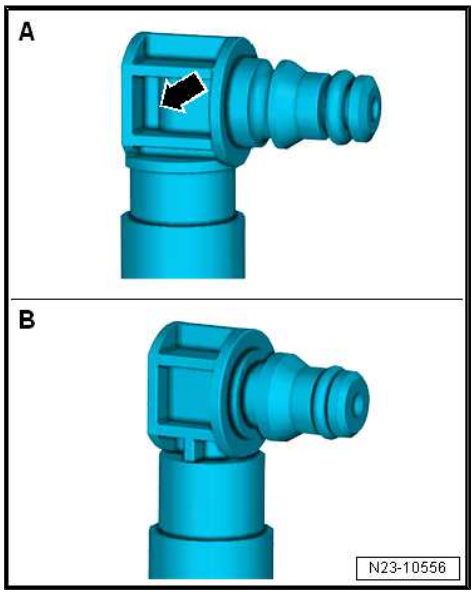
**Install O-rings for fuel return-flow lines**

**Caution**

*A new connection for the fuel return pipe is used continuously. When replacing O-rings, observe the correct assignment of the components. New return-flow line is noticeable in the connections at the recess -arrow-. You must fit orange O-rings here ⇒ ETKA - Electronic Catalogue of Original Parts . Mixed installation is not permitted and leads to leaks, with failure as a result.*

A - Use the connection of the »new« fuel return-flow line, with the recess, orange O-ring.

B - Use the connection of the »new« fuel return-flow line, with the recess, orange O-ring.



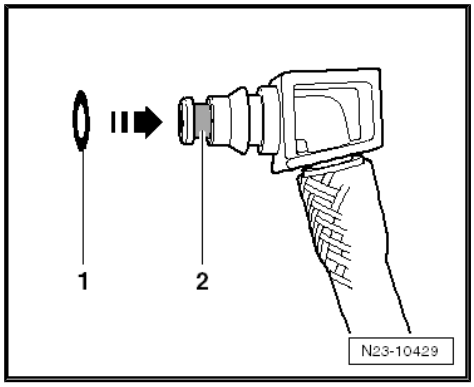

**Note**

*Avoid a rolling motion when sliding the O-rings on. The O-rings must not be turned inwards on the seat of the fuel return-flow line.*

Proceed with utmost care. Avoid damage to the fuel return-flow line.

– Clean the seating surfaces for the O-rings on the fuel return-flow line with great care.

– Carefully slide the O-Ring -1- into its seat -2-.




## 2.2 Injection units (piezo injectors) - Summary of components and fitting position of the clamping claw

**Caution**

*When installing a new stripped engine and after fitting the high pressure lines, it is absolutely necessary to tighten the screws -position 2- for the clamping claws of the injection units to the specified tightening torque. In order to align the injection units when fitting the high pressure lines, the clamping claws of the stripped engine are only tightened in series »by hand«. If the screws of the clamping claws are not tightened to the specified tightening torque, the engine may be damaged.*

**1 - Injection unit (Piezo injector)**

- ❑ removing and installing ⇒ page 389
- ❑ Check return flow quantity ⇒ page 408
- ❑ Testing the vacuum ⇒ page 410
- ❑ removed injection units and clamping claws to be re-installed must only be mounted again at the same cylinder.

**2 - Screw for clamping claw**

- ❑ replace

First of all tighten the fixing screws only to MAX: 1 - 2 Nm

after installing the high pressure lines, tighten to 8 Nm + torque a further 180° ($^1/_2$ turn)

**3 - High pressure connection piece at the injector**

- ❑ counterhold when loosening the high pressure lines
- ❑ 40 Nm

**4 - Retaining clip for return-flow lines**

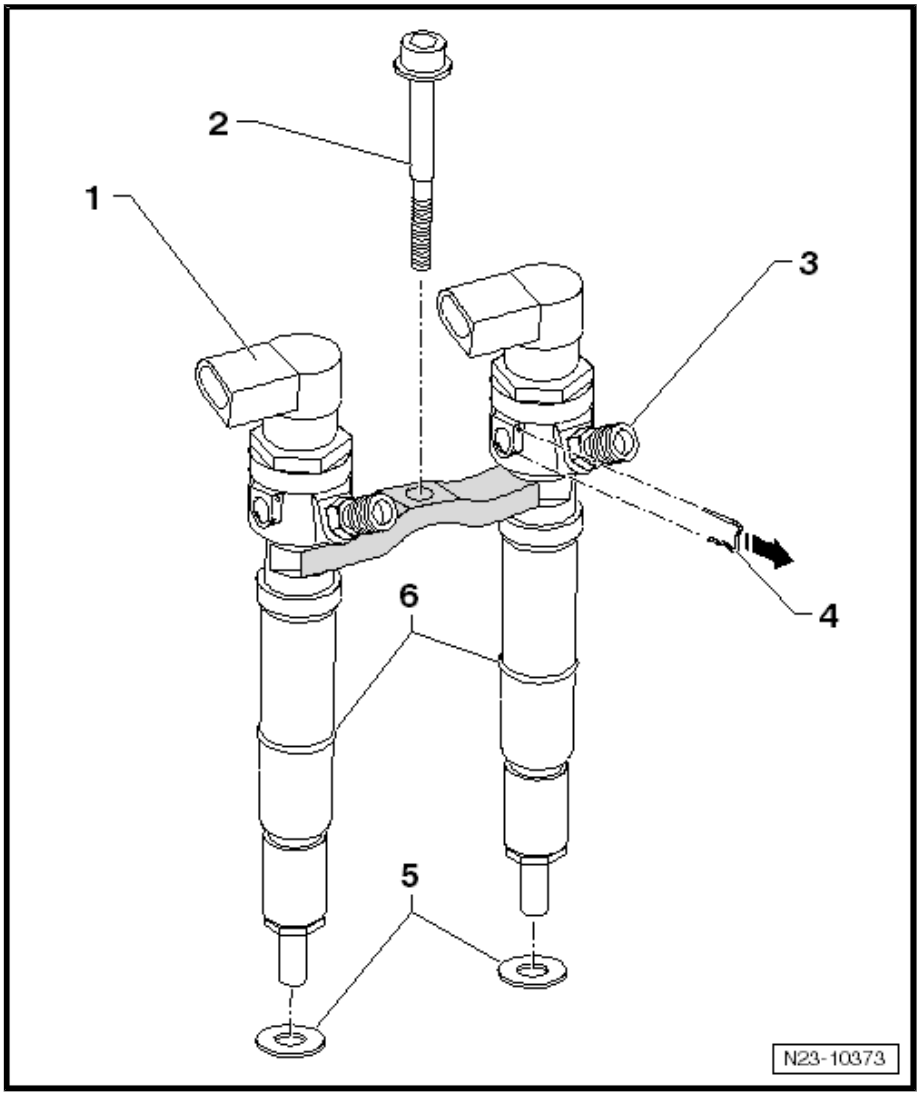
- ❑ replace
- ❑ Lightly grease the retaining clip before installing the injector

**5 - Copper disc**

- ❑ replace

**6 - O-ring**

- ❑ replace




## 2.3 Removing and installing injection unit (piezo injector)

**Special tools and workshop equipment required**

- ♦ Extractor - T10055-
- ♦ Assembly sleeve - T10377-
- ♦ Socket wrench insert - T40055-
- ♦ Extractor - T10402-
- ♦ Assembly sleeve - T10411-

## Removing

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

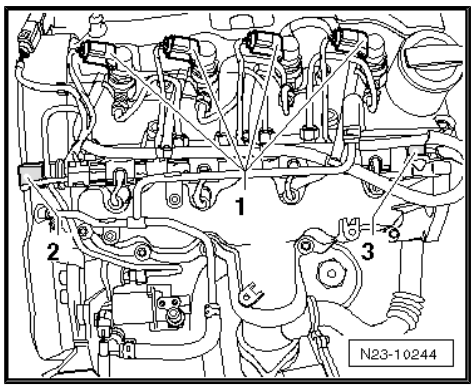
– Remove engine cover ⇒ page 10 .

– If present, remove the noise insulation at the injection units.

**Note**

- *Mark the assignment of the injection units to the cylinder. They must only be re-used on the same cylinder.*
- *Immediately close the open connections with a suitable screw cap.*

– Disconnect the plug -1- at the injection units to be removed.



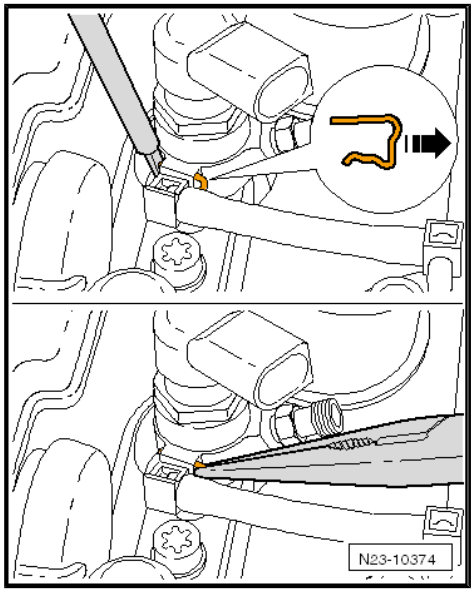

**Note**

- *Preferred loosening sequence of the high pressure lines cylinders 4-3-2-1.*
- *Counterhold at the injection units when loosening the high pressure connection piece.*

– Remove high pressure line between fuel distributor and injection units.

– Remove the high pressure line between the high pressure pump and the fuel distributor.

– Unlock the connections of the fuel return-flow line using a screwdriver and a set of pointed pliers.



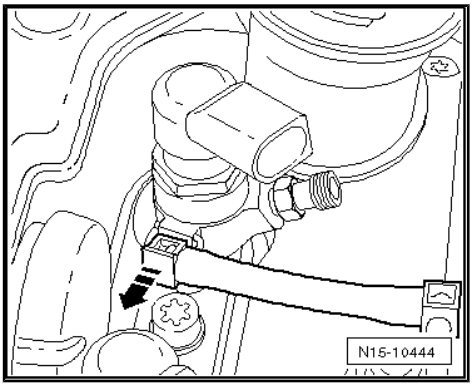

**Note**

*Always replace clamps.*

– Disconnect the connections of the fuel return-flow line at the injectors in -direction of arrow-.
– Unscrew the fixing screw, -Pos. 20- ⇒ page 384 of the clamping claw for the injection units (piezo injectors).

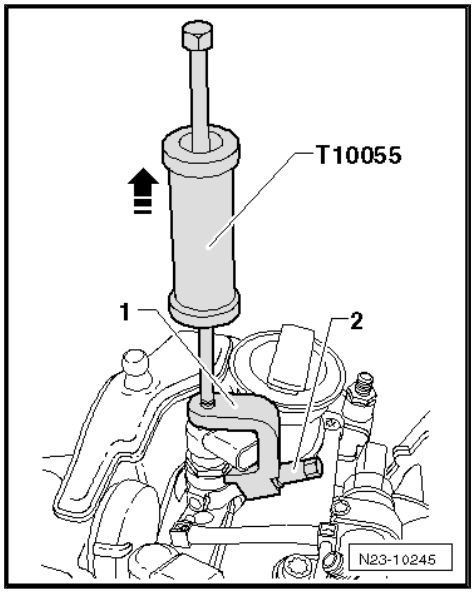
**Caution**

*Pay particular attention in order to avoid unnecessary installation work or consequential damage.*



– Position the extractor - T10055- with the extractor - T10402- -1- and -2- as shown and pull out the injection unit towards the top by tapping it.

– Place the removed injection units on a clean cloth.




**Install**

**Caution**

***Risk of damage to injection unit sealing surfaces.***

- ***To remove the soot particles on the sealing surface of the injection unit, clean the injection unit shaft in the cylinder head with cleaning set - VAS 6811- or with a cloth soaked in engine oil.***

**Important instructions for installing the injection units:**

When installing a new injection unit the following must be replaced:

- Screw for clamping claw
- Copper gasket
- O-ring for the injection unit shaft
- O-ring for fuel feed line connection
- Retaining clip for fuel return-flow line

**If the used injection unit is reinstalled:**

- When reinstalling, only insert injection units and injection lines for the same cylinder in the cylinder head.
- Check the injection units and the fitting positions for cleanliness before installing.
- The injection units must not show any sign of damage.

– Spray the tip of the injection unit with a rust solvent spray. Remove soot particles or oil particles with a cloth after 5 minutes.

– For disassembling the old copper gasket ring from the injection unit, carefully tighten the gasket ring in a vice until the copper gasket ring is prevented from spinning between the chuck jaws. Pull the injection unit out of the copper gasket ring with slight turning and pulling movements of the hand.

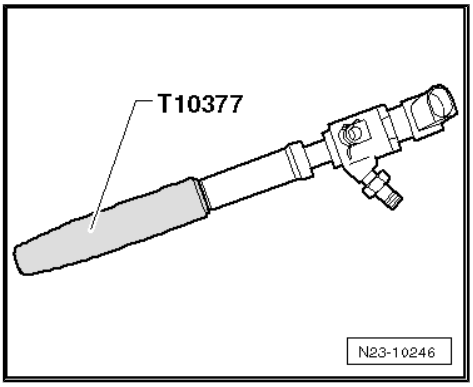
– Clean the deposit below the copper sealing ring.

**Continued for all injection units**

– Install the new copper gasket ring with the aid of a plastic bush.

– All the O-rings must be coated with engine oil before installing.

– Replace the gasket ring for the injection channel, for this step use the assembly sleeve - T10377- .

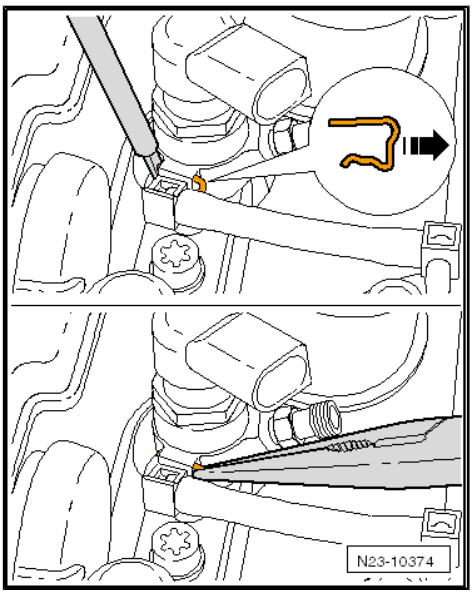



– Position the new clips before installing the injector. To do so, grease it lightly.

• Ensure that the injection channel is clean before the installation.

– Slide the clamping claw onto the injection units, observe the fitting position of the clamping claw ⇒ page 388 .

– Always insert 2 injectors with clamping claw carefully into the injection channels of the cylinder head.




**Caution**

***Pay particular attention in order to avoid unnecessary installation work or consequential damage.***

***Avoid damage and contact of the injectors with the cylinder head.***

***The new screws for the clamping claws are only tightened to the final tightening torque after installing the high pressure lines.***

– Initially tighten new fixing screws to a MAX: of 1 - 2 Nm.

It must be possible to align the injectors when installing the high pressure lines by hand.

– Install high pressure lines ⇒ page 395 .

– Tighten fixing screws to 8 Nm + torque a further 180° ($^1/_2$ turn).

Further assembly occurs in reverse order.

**Note**

*After replacing one or several injection units, the "injector quantity adjustment (IQA)" and the "injector voltage adjustment (IVA)" must be indicated in the engine control unit for the new injection units ⇒ Vehicle diagnostic tester.*

– Fill up the fuel system ⇒ Vehicle diagnostic tester.

## 2.4 Removing and installing the fuel distributor

### Removing

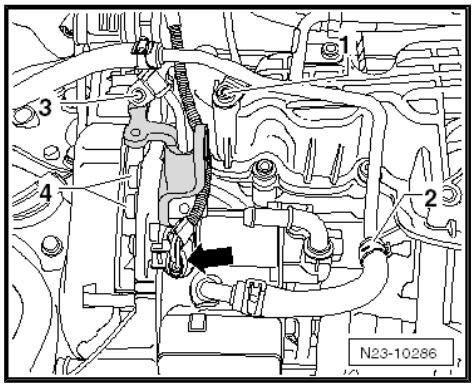
**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

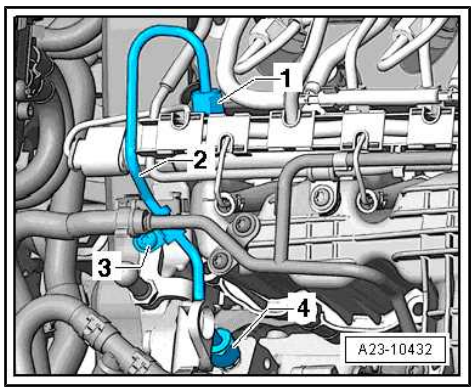
– Remove engine cover ⇒ page 10 .

**Note**

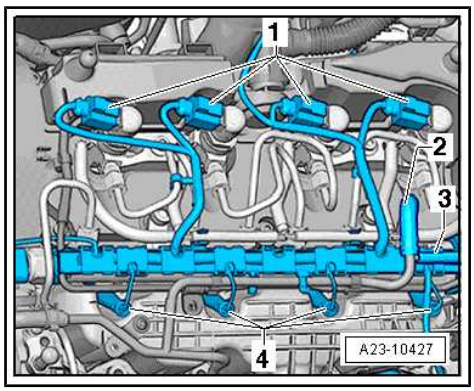
*The bracket (for the engine lifting eye) must be movable in order to unscrew the union nut from the high pressure pump, to do so slacken the screws -4-.*



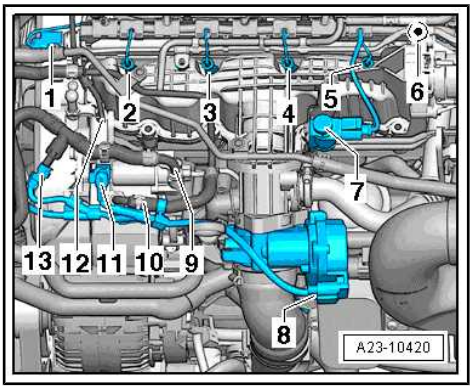

– Release screw -3- and union nuts -1- and -4-.
– Collect the fuel which flows out with a cleaning cloth.
– Remove fuel high pressure pipe -2-.
– Remove the cable guide from the fuel distributor and lay it to the side.
– Disconnect the plugs at the glow plugs ⇒ page 488 .




– Disconnect the plugs of the injection units -1-.
– Remove the fuel return-flow hose -2- from the fuel distributor, to do so slacken the hose clamp.



– Disconnect plug connections -1-, -6- and -7-.




**Caution**

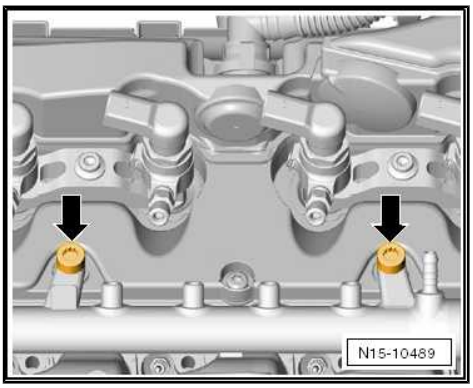
*When slackening the union nuts for the injection pipes, hold the connection fitting with an open-end wrench. If the connection fitting loosens, this can cause leakage.*

*Mark the assignment of the high pressure lines to the cylinders, they must only be re-used on the same cylinder.*

*Immediately close the open connections with a suitable screw cap.*

– Remove high pressure line between fuel distributor and injection units.

– Screw out screws -arrows- and remove fuel distributor.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

– Install fuel high pressure pipes free of stress ⇒ page 395 .

**Tightening torques**

♦ ⇒ “2.1 Fuel system - Summary of components”, page 384

## 2.5 Installing the high pressure lines

**Special tools and workshop equipment required**

♦ Socket wrench insert - T40055-

♦ Assembly sleeve - T10411-

♦ Cleaning and degreasing agent , e.g. -D 009 401 04-

♦ Protective goggles and gloves

**Note**

♦ *Safety precautions when working on the fuel supply system ⇒ page 3 .*

♦ *Observe rules for cleanliness ⇒ page 6 .*

**Caution**

♦ *For easier installation of the fuel high pressure pipe, release the tension of the fuel distributor. Move the fuel distributor slightly if necessary.*

♦ *For easier installation of the injection pipes, release the tension of the fuel distributor as well as the clamping claws of the injection units. If necessary, move the fuel distributor slightly and turn the corresponding injection unit slightly.*

♦ *The pipes must on no account be bent or installed when under tension. The installation tension can lead to fracture of the fuel high pressure pipe.*

**Note**

- ♦ *It is not allowed to use tools for aligning the fuel distributor/the injection units.*
- ♦ *Pay attention to the cylinder specific marking when re-using the high pressure lines.*
- ♦ *The high pressure lines can be re-used if:*

- The sealing cone of the relevant high pressure line is not deformed or cracked.
- The line boring is not deformed, constricted or damaged.
- ♦ Corroded lines must no longer be installed.

– Suction off dirt from the sealing cone at the fuel distributor.

**WARNING**

***Wear protective gloves and protective googles when working with grease remover!***

– Clean fuel line and line connection and blow-dry with compressed air.

– Moisten threads of union nuts with fuel.

– First position the injection lines from the fuel distributor to the injection unit by hand, only tighten the union nuts by hand.

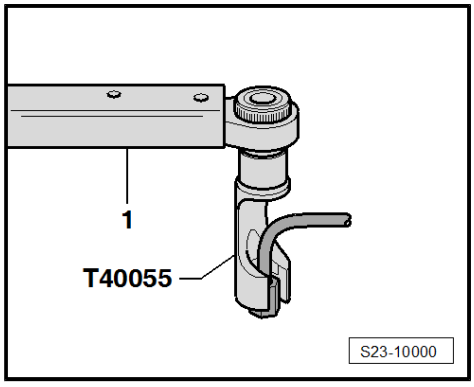
– Then install the high pressure line from the high pressure pump to the fuel distributor.

– Only tighten the union nuts by hand.

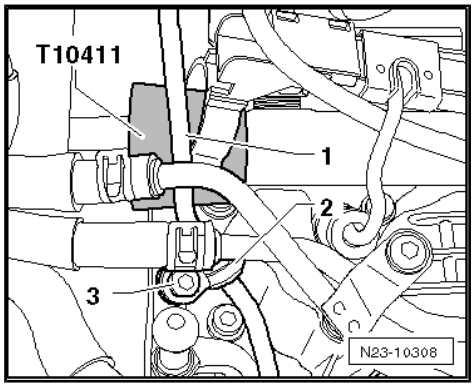
**Observe the following sequence:**

– Tighten high-pressure lines with Socket wrench insert SW 17 - T40055- on the fuel distributor and on the injection units.

– Tighten fuel distributor.

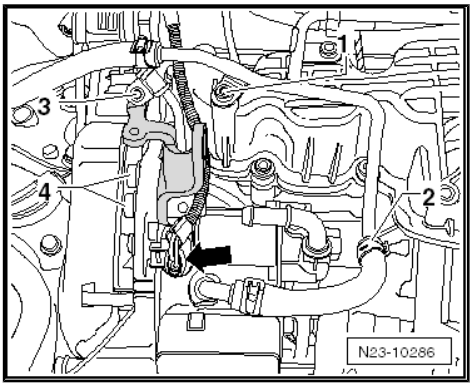



– For installing the high pressure line between the high pressure pump and the fuel distributor, slide the assembly sleeve - T10411- onto the fuel pressure sender - G247- .

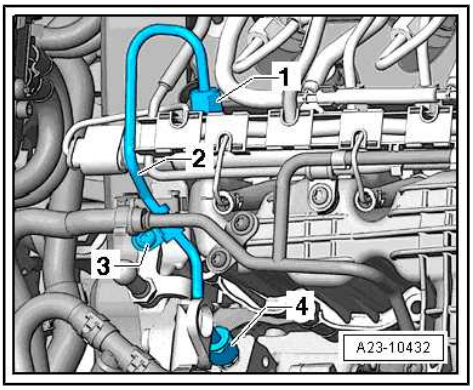


**Note**

- *The bracket for the engine lifting eye must be movable in order to mount the union nut onto the high pressure pump, to do so slacken the screws -4-.*
- *The assembly sleeve - T10411- ensures the correct distance between the fuel pressure sender - G247- and the high pressure line.*




– First tighten the high pressure line -2- between the high pressure pump and the fuel distributor at the high pressure pump -4- and then at the fuel distributor -1-.
– Screw on the screw -3- of the bracket for the fuel high pressure line.
– Screw on bracket (for engine lifting eye).
– Check fuel system for tightness ⇒ page 406 .




**Tightening torques**

- ⇒ “2.1 Fuel system - Summary of components”, page 384

## 2.6 Replace fuel pressure regulating valve - N276-

The fuel pressure regulating valve - N276- is located on the fuel distributor and provides a constant pressure in the fuel distributor and in the injection lines (fuel high pressure circuit).

The regulating valve opens if there is too high a pressure in the fuel high pressure circuit so that one part of the fuel from the fuel distributor returns to the fuel tank via a return-flow line.

The pressure control valve closes if there is too low a pressure in the high-pressure fuel circuit and thus seals the high-pressure side from the low-pressure side.

**Note**

*The fuel pressure regulating valve - N276- is not reusable.*

**Special tools and workshop equipment required**

- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves
- Open-end wrench SW 36

**Removing**

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Remove fuel distributor ⇒ page 394 .

**WARNING**

***Wear protective gloves and protective googles when working with grease remover!***

– Before removing, clean the thread area around the fuel pressure regulating valve with a grease remover - no dirt must get into the hole of the fuel distributor.

**Note**

*No grease remover must get into the plug connection, carefully clean.*

– Dry fuel pressure regulating valve - N276- .
– Slacken fuel pressure regulating valve - N276- . Afterwards release by hand.
– Suction the dirt out of the fuel distributor hole (thread and contact surface). To do so do not use any mechanical tools.

**Note**

*Close the fuel distributor hole immediately with a suitable screw plug in order to prevent dirt from penetrating.*

### Install

**Note**

- *The fuel pressure regulating valve - N276- does not have a gasket ring but a biting edge.*
- *The fuel pressure regulating valve - N276- is not reusable.*
- *Pay attention to damage of the sealing surfaces (biting edge seal) and the thread of the new fuel pressure regulating valve - N276- .*
- *Also check the sealing surface in the hole of the fuel distributor.*
- *Grease the beginning of the thread and the biting edge of the fuel pressure regulating valve - N276- with molykote grease.*

– Use the open-end wrench SW 36 for tightening.
– Install fuel distributor ⇒ page 394 .
– Check fuel system for tightness ⇒ page 406 .

**Note**

*If the fuel pressure regulating valve - N276- was replaced, the initialisation values of the regulating valve must be reset ⇒ Vehicle diagnostic tester, "Targeted functions"; "Reset initialisation values of the engine control".*

### Tightening torques

- ⇒ "2.1 Fuel system - Summary of components", page 384

## 2.7 Removing and installing fuel pressure sender - G247-

The fuel pressure sender - G247- is located in the fuel distributor, it measures the current fuel pressure in the high pressure system and delivers a voltage signal to the engine control unit - J623- .

If the sender fails, the pressure regulation is controlled by the engine control unit via a characteristic diagram; in case of emergency, the maximum engine speed is limited to 3000 rpm.

**Special tools and workshop equipment required**

- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**Removing**

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Remove engine cover ⇒ page 10 .

**WARNING**

***Wear protective gloves and protective googles when working with grease remover!***

– Before removing, clean the thread area around the fuel pressure sender - G247- with a grease remover (no dirt must get into the hole of the fuel distributor).

**Note**

*No grease remover must get into the plug connection, carefully clean.*

– Dry the fuel pressure sender - G247- .
– Disconnect plug at fuel pressure sender - G247- .

**Caution**

***Do not slacken the fuel pressure sender using the open-end wrench or the open ring spanner - Risk of damage!***

***Use lengthened socket insert.***

– Unscrew the fuel pressure sender - G247- .
– Suction the dirt out of the fuel distributor hole (thread and contact surface). To do so do not use any mechanical tools.

**Note**

*Close the fuel distributor hole immediately with a suitable screw plug in order to prevent dirt from penetrating.*

**Install**

**Note**

- *The fuel pressure sender - G247- has no gasket ring but a biting edge for sealing.*
- *Pay attention to damage of the sealing surfaces (biting edge seal) and the thread of the new fuel pressure sender - G247- . It is possible to use the fuel pressure sender - G247- again.*
- *Also check the sealing surface in the hole of the fuel distributor.*

**Caution**

***Do not tighten the fuel pressure sender using the open-end wrench or the open ring spanner - Risk of damage!***

***Use lengthened socket insert.***

– Tighten the fuel pressure sender - G247- by hand.
– Tighten the sender:
– Check fuel system for tightness ⇒ page 406 .

**Tightening torques**

- ⇒ “2.1 Fuel system - Summary of components”, page 384

## 2.8 Removing and installing the high pressure pump

⇒ “2.8.1 Removing and installing high pressure pump (Fabia II, Roomster, Rapid India, Rapid NH)”, page 400

⇒ “2.8.2 Removing and installing high pressure pump (Octavia II, Superb II, Yeti)”, page 403

## 2.8.1 Removing and installing high pressure pump (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Counterholder - T10051-
- Extractor - T40064-
- Thrust piece - T40064/1-
- Fillister head screw - T40064/2-

## Removing

**Note**

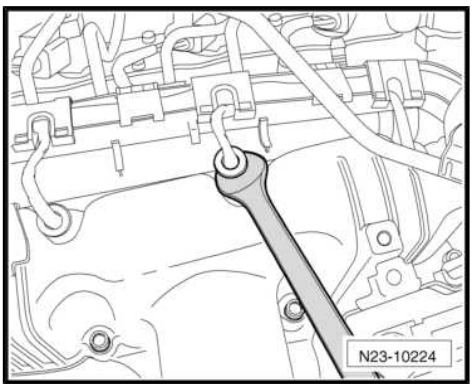
- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Remove the timing belt from the camshaft and the high pressure pump ⇒ page 90 .

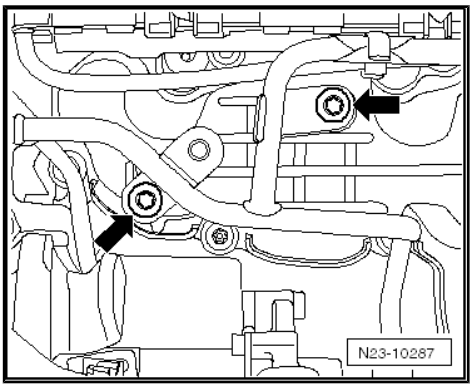
**Caution**

- ***Carefully disconnect the plug from the glow plugs.***
- ***If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).***

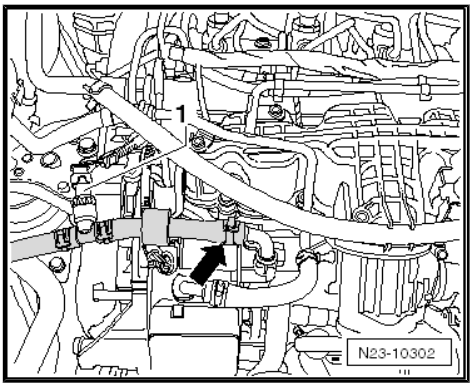
– Carefully disconnect the plug from the glow plugs. To do so use an open-end wrench, SW 12, for help.



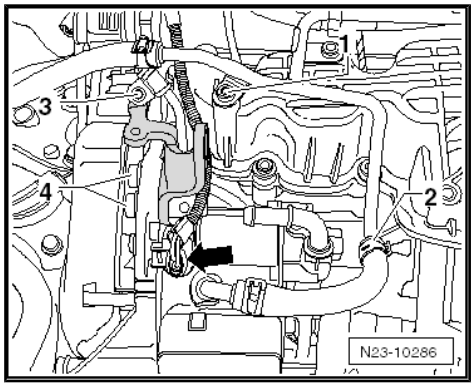

– Unscrew fixing screws -arrows-.




– Disconnect the fuel feed line -arrow- on the high pressure pump and disconnect the plug -1- at the fuel temperature sender - G81- .



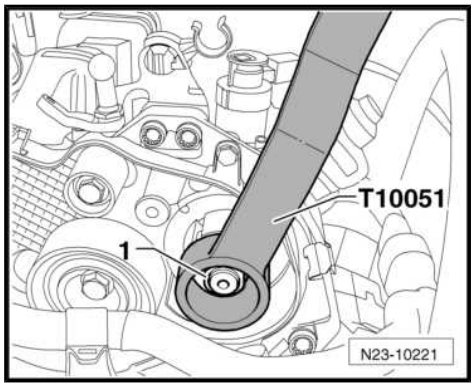
– Undo screws -1-, -3-, -4- and remove engine mount »grey«.
– Detach fuel return-flow line -2-.
– Remove the high pressure line between the high pressure pump and the fuel distributor.
– Remove the toothed belt gear from the high pressure pump.



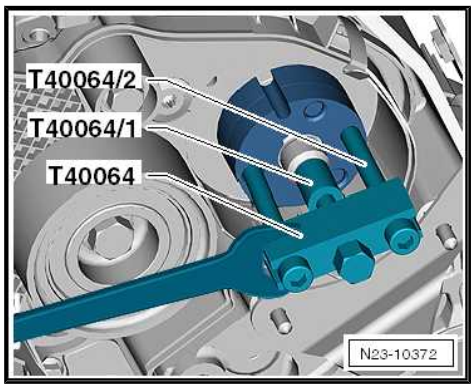

– Hold the hub of the high pressure pump with the counterholder - T10051- and unscrew the securing nut -1-.

**Note**

*Replace the basic pressure plate with the pressure plate - T40064/1- on the extractor - T40064- .*

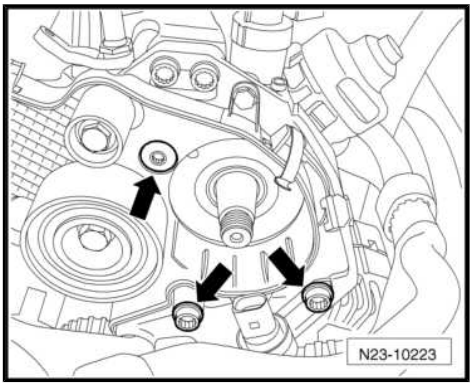



– Position the extractor - T40064- with thrust piece - T40064/1- and cylinder screws - T40064/2- as shown and pull out the hub from the high pressure pump. If necessary, counterhold with an assembly spanner SW 24.



– Unscrew fixing screws -arrows- of high pressure pump.

– Remove the high pressure pump.




**Install**

**Caution**

*Risk of damage to the high pressure pump through running dry*

- *If the high pressure pump is removed or replaced, the initial fuel filling of the high pressure pump must be carried out before the first engine start ⇒ page 382 .*

**Note**

- *When installing the high pressure pump, ensure that no dirt penetrates the fuel system.*
- *Only remove the screw plug immediately before installing the fuel lines.*

Installation is performed in the reverse order, pay attention to the following points:

- The screws for the high pressure pump must be replaced.

– Filling and bleeding the fuel system ⇒ page 382 .

– Check fuel system for tightness ⇒ page 406 .

**Tightening torques**

- ⇒ “2.1 Fuel system - Summary of components”, page 384
- ⇒ “1.6 Assembly overview - toothed belt drive”, page 82

## 2.8.2 Removing and installing high pressure pump (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Counterholder - T10051-
- Extractor - T40064-
- Thrust piece - T40064/1-
- Fillister head screws - T40064/2-

**Removing**

**Note**

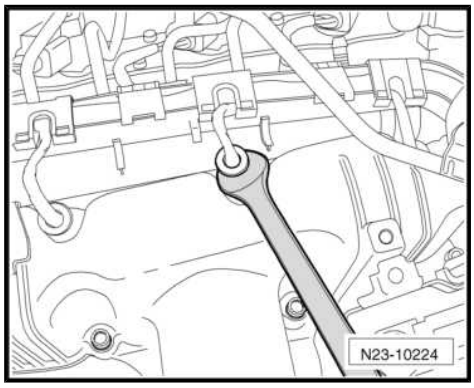
- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

– Remove the timing belt from the camshaft and the high pressure pump ⇒ page 90 .

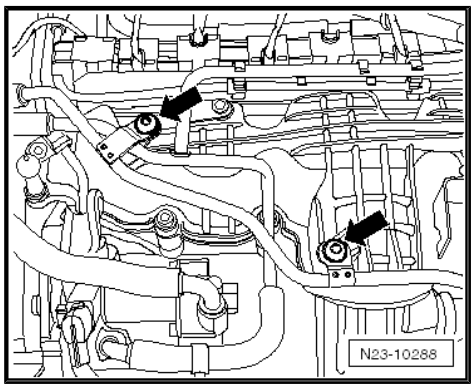
**Caution**

- *Carefully disconnect the plug from the glow plugs.*
- *If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).*

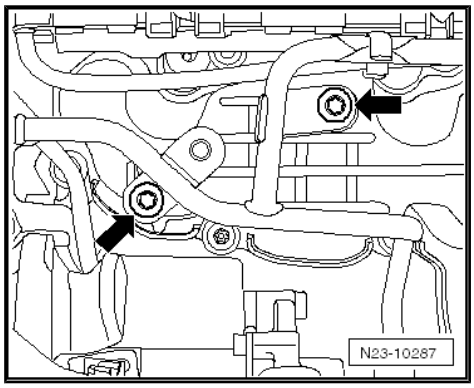
– Carefully disconnect the plug from the glow plugs. Use the assembly spanner SW 12 for help.



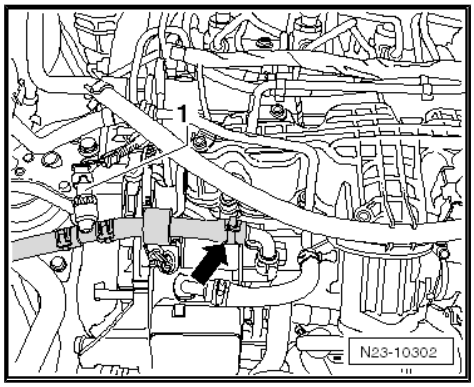

– Unscrew the fixing screws -arrows- and lay the coolant return-flow line to the side.



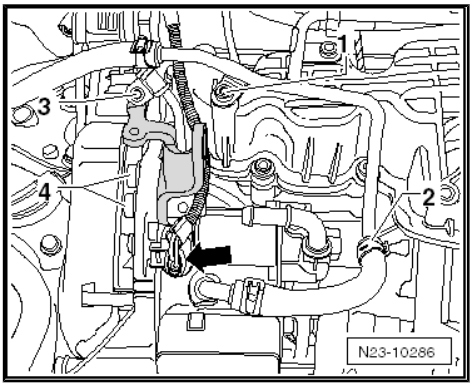

– Unscrew fixing screws -arrows-.




– Disconnect the fuel feed line -arrow- on the high pressure pump and disconnect the plug -1- at the fuel temperature sender - G81- .



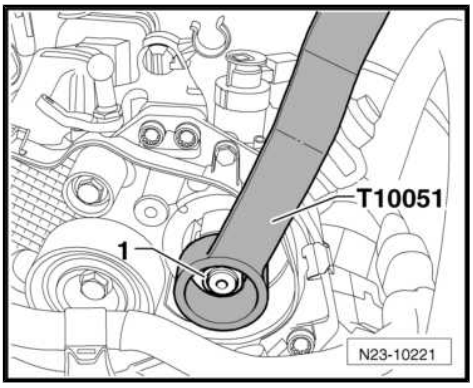
– Undo screws -1-, -3-, -4- and remove engine mount »grey«.
– Detach fuel return-flow line -2-.
– Remove the fuel high pressure line between the high pressure pump and the fuel distributor.
– Remove the toothed belt gear from the high pressure pump.



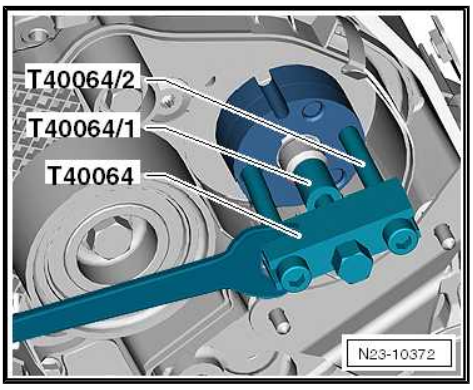

– Hold the hub of the high pressure pump with the counterholder - T10051- and unscrew the securing nut -1-.

**Note**

*Replace the basic pressure plate with the pressure plate - T40064/1- on the extractor - T40064- .*

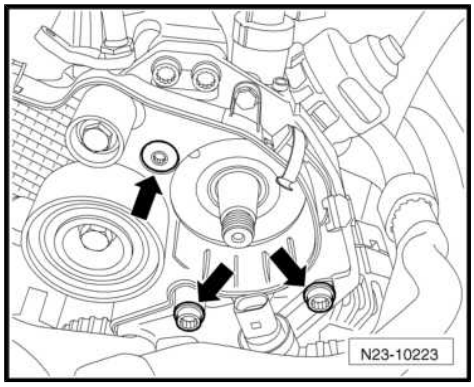



– Position the extractor - T40064- with thrust piece - T40064/1- and cylinder screws - T40064/2- as shown and pull out the hub from the high pressure pump. If necessary, counterhold with an assembly spanner SW 24.



– Unscrew fixing screws -arrows- of high pressure pump.

– Remove the high pressure pump.




**Install**

**Caution**

***Risk of damage to the high pressure pump through running dry***

- ***If the high pressure pump is removed or replaced, the initial fuel filling of the high pressure pump must be carried out before the first engine start ⇒ page 382 .***

**Note**

- *When installing the high pressure pump, ensure that no dirt penetrates the fuel system.*
- *Only remove the screw plug immediately before installing the fuel lines.*

Installation is performed in the reverse order, pay attention to the following points:

- The screws for the high pressure pump must be replaced.

– Filling and bleeding the fuel system ⇒ page 382 .

– Check fuel system for tightness ⇒ page 406 .

**Tightening torques**

- ⇒ “2.1 Fuel system - Summary of components”, page 384
- ⇒ “1.6 Assembly overview - toothed belt drive”, page 82

## 2.9 Check the fuel system for tightness

**Special tools and workshop equipment required**

- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**WARNING**

***Wear protective gloves and protective googles when working with grease remover!***

– Degrease all fuel connections.

– Let the engine run at idling speed for a few minutes.

– Carry out a visual inspection of the complete fuel system for leaks after switching off the engine.

If there is leakage despite the correct tightening torque:

– Replace the affected component part and repeat the test sequence.

If no leaks are found:

– Carry out a test drive with minimum one full load acceleration up to max. speed.

– Then once again carry out a visual inspection of the complete fuel system for leaks.

If there is leakage despite the correct tightening torque:

– Replace the affected component part and repeat the test sequence.

If no leaks are found:

– Interrogate and if necessary erase fault memory of engine control unit ⇒ Vehicle diagnostic tester.

– After deleting the fault memory of the engine control unit the readiness code must be checked, if necessary re-generated ⇒ Vehicle diagnostic tester.

## 2.10 Check fuel pressure regulating valve - N276-

**Special tools and workshop equipment required**

- Suitable auxiliary hose for connection to the fuel return-flow line
- Fuel tank, approx. 200 ml

**Test condition**

- Engine must be warm.
- Air conditioning switched off.

**Note**

- *A leaking fuel pressure regulating valve - N276- leads to an increased return flow quantity when starting.*
- *A high fuel pressure required for starting is not reached.*

**Work procedure**

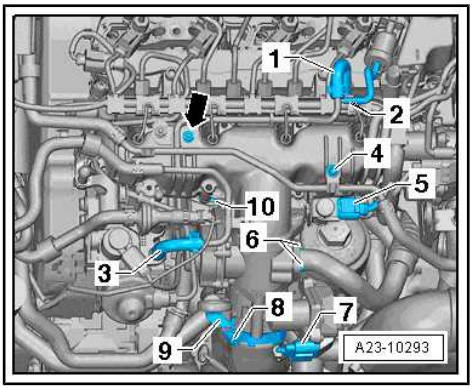
**Note**

- *Safety precautions when working on the fuel supply system* *⇒ page 3* .
- *Observe rules for cleanliness* *⇒ page 6* .

– Remove engine cover ⇒ page 10 .

– Collect the fuel which flows out with a cleaning cloth.

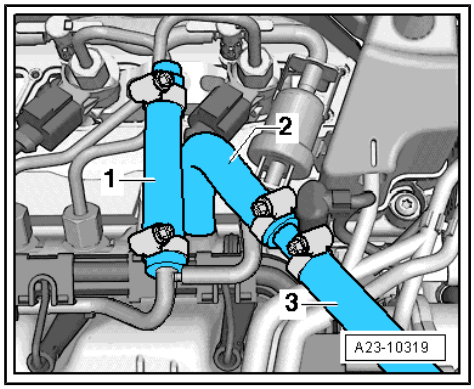
– Detach the hose -1- from the fuel return-flow line.



– Close the open connection at the pipe for the fuel return-flow line with a plug -1-.

– Connect return-flow line -2- with hose -3-.

– Hold this hose line -3- in a suitable vessel in order to measure the return flow quantity.




**1) Test with engine running**

– Start engine and run in idle.

• Specified value: in 30 seconds: ≥ 75 ml

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

**2) Test with engine running**

If the condition under point 1) is fulfilled, increase the engine speed to ≥ 2000 rpm.

• Return flow quantity specified value: 0 ml

• A drop-leakage is permissible

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

**3) The engine will no longer start**

Perform a test as start speed.

• Return flow quantity specified value: 0 ml

• A drop-leakage is permissible

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

– Replace fuel pressure regulating valve - N276- ⇒ page 397 .

## 2.11 Checking return flow quantity of injection units

**Test condition**

• Engine does not start

**Note**

◆ *Leaking switch valves in the injection units can cause irregular engine running or prevent the engine from starting.*

◆ *In order to check the switch valves for contamination and thus also for increased leakage, a vacuum test can be carried out besides the “classic” measurement of the return flow quantity* *⇒ page 410* .

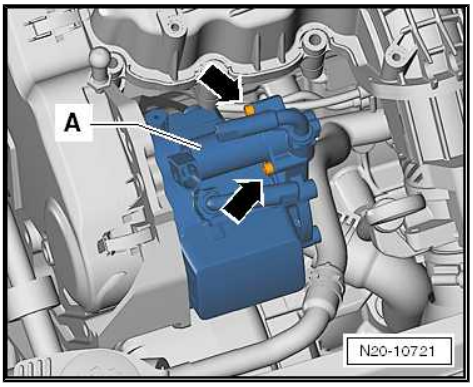
**Test sequence**

**Note**

◆ *Safety precautions when working on the fuel supply system* *⇒ page 3* .

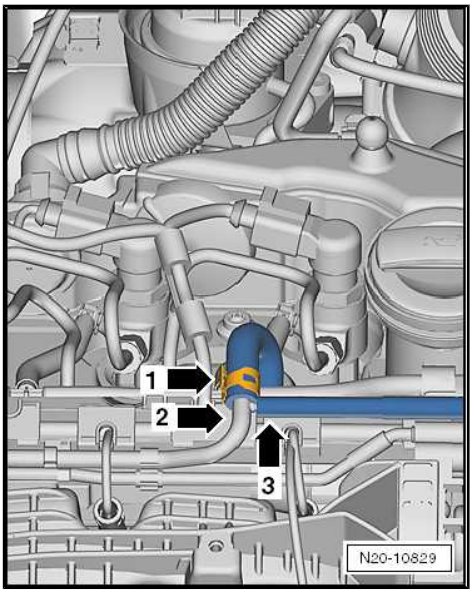
◆ *Observe rules for cleanliness* *⇒ page 6* .

– Disconnect plug at fuel dosage valve - N290- -A-.
– Collect the fuel which flows out with a cleaning cloth.



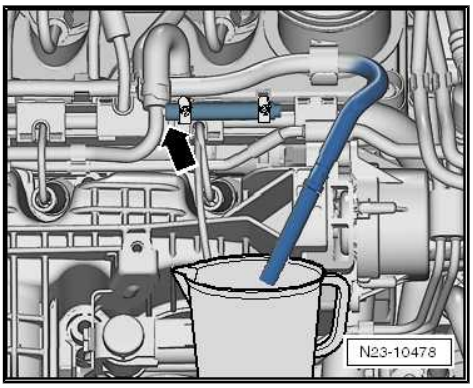

– Remove the return-flow connection -3- of the injection units at the fuel drain pipe.

**For vehicles Fabia II, Roomster, Rapid NH, Octavia II, Superb II, Yeti**




– Close the open connection at the pipe for the fuel return-flow line with a plug -arrow-.

**For Rapid India vehicles**



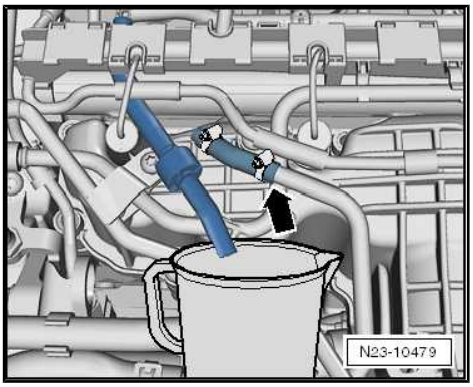

– Close the open connection at the pipe for the fuel return-flow line with a plug -arrow-.

**Continued for all vehicles**

– When starting the engine, measure at a starter speed of ≥ 230 rpm.

- Return flow quantity specified value: 0 ml
- A drop-leakage is permissible
- If a volume flow can be measured, at least one injector is defective

– Carry out the vacuum test of the injection units ⇒ page 410 .



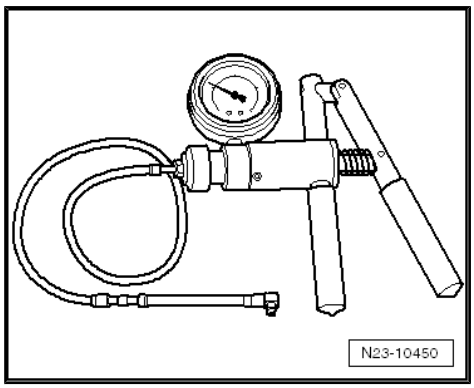
## 2.12 Carry out the vacuum test of the injection units

**Note**

- *Leaking switch valves in the injectors can cause irregular engine running or prevent the engine from starting.*
- *In order to check the switch valves for contamination and thus also for increased leakage, a vacuum test can be carried out besides the "classic" measurement of the return flow quantity.*

**Special tools and workshop equipment required**

- Hand vacuum pump , e.g. -VAS 6213-
- Make an -Adapter- out of the return-flow line.



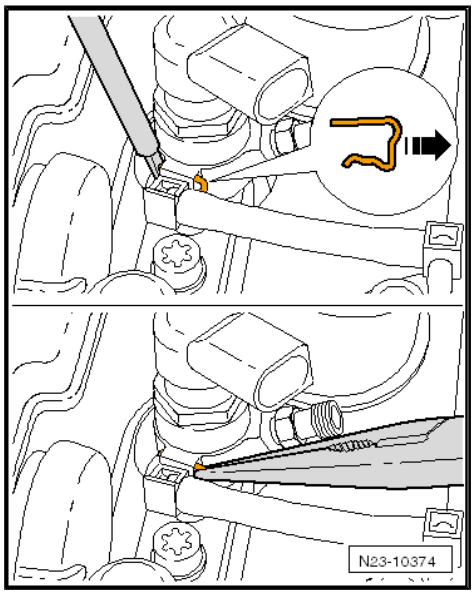

**Work procedure**

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Collect the fuel which flows out with a cleaning cloth.

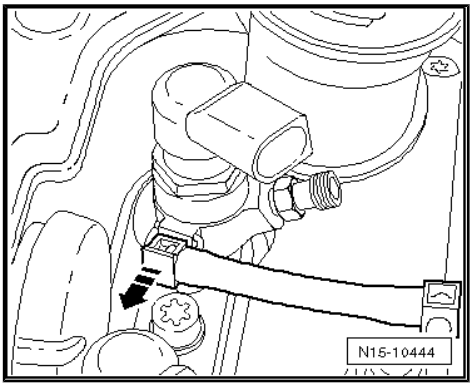
– Unlock the cleaned connection of the fuel return-flow line using a screwdriver and a set of pointed pliers.



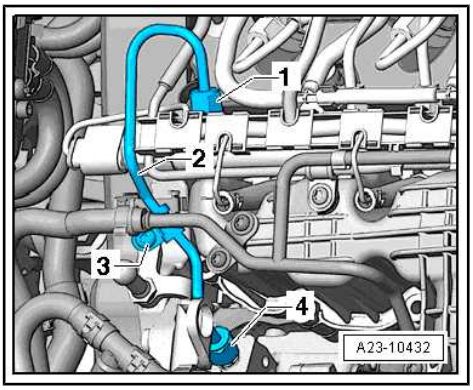

**Note**

*Always replace clamps.*

– Disconnect the connection of the fuel return-flow line at the injection unit in -direction of arrow-.

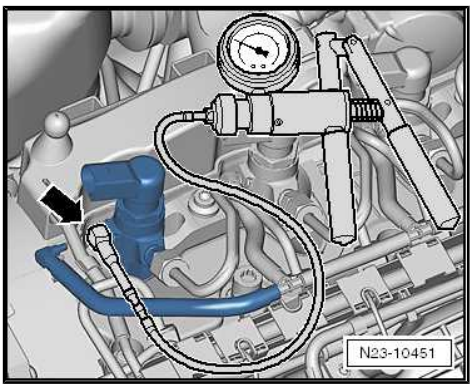



– Slacken the fuel high pressure line -2-, to do so only slacken the union nut at the fuel distributor -1-.




– Connect the clean, blown through adapter on the injection unit to be tested -arrow-.

– A vacuum of -500 mbar is built up using the hand vacuum pump - VAS 6213- .




If the injection units ar O.K, the vacuum remains constant for more than 30 s.

If the injection units are defective, the vacuum drops within 2 ... 3 s to 0 bar.

If necessary repeat the test, pay attention to the vacuum loss on the hand vacuum pump - VAS 6213- .

– Replace injection units ⇒ page 389 .

## 2.13 Check the pressure holding valve in the fuel return-flow line

The pressure holding valve has the function to always hold a remaining pressure (control quantity) of approx. 0.1 MPa (1 bar) in the fuel return-flow line.

The injection units (piezo injectors) require this control quantity for their function.

**Special tools and workshop equipment required**

- Pressure gauge , e.g. -VAS 6330-
- Adapter , e.g. -VAS 6330/3-1-
- Adapter , e.g. -VAS 6330/3-2-
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

## Test sequence

**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Remove engine cover ⇒ page 10 .

**WARNING**

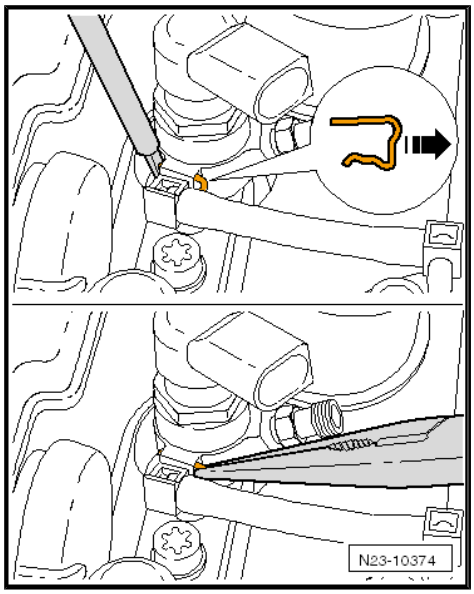
***Wear protective gloves and protective googles when working with grease remover!***

– Before removing, clean the return line connection at the injection unit of cylinder 1 with a grease remover.

– Dry the return line connection of cylinder 1.

– Cover the return line connection of cylinder 1 with a cloth.

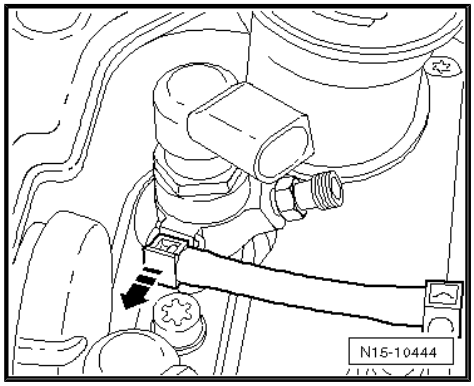
– Unlock the return line connection of cylinder 1 using a screwdriver and a set of pointed pliers.




**Note**

*Always replace clamps.*

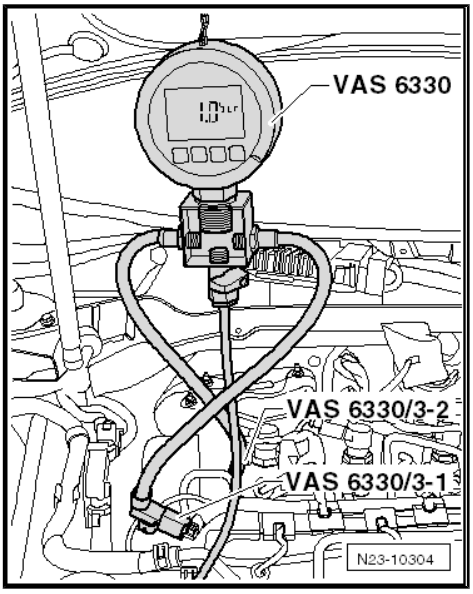
– Disconnect the connections of the fuel return-flow line at the injectors in -direction of arrow-.



– Connect the pressure gauge - 6330- with the adapters - VAS 6330/3-1- and -VAS 6330/3-2- between the return line connection at the injection unit and the return-flow line.
– Open shut-off cock of the pressure gauge.
– Start engine and run in idle.
– Read the pressure on the pressure gauge - VAS 6330- .

• Specified value: approx. 0.1 MPa (1 bar)

If the specified value is not reached, replace the pressure holding valve.



# 3 Intake manifold, air filter



## 3.1 Intake manifold with component parts



### 3.1.1 Intake manifold with component parts, vehicles with intake manifold flap -V157- - Summary of components

**1 - Intake manifold**

- ❑ with intake manifold flap motor - V157-
- ❑ with intake air-intrinsic optimisation
- ❑ must not be disassembled
- ❑ wymontowanie i zamontowanie ⇒ page 416

**2 - Screw**

- ❑ 9 Nm

**3 - Gasket**

- ❑ replace

**4 - Connecting pipe**

- ❑ to radiator for exhaust gas recirculation

> **Caution**
> *Pay attention that the damping element of the connection pipe is not bent and therefore is not overstretched. There is a risk of crack formation.*

**5 - Fixing clamp**

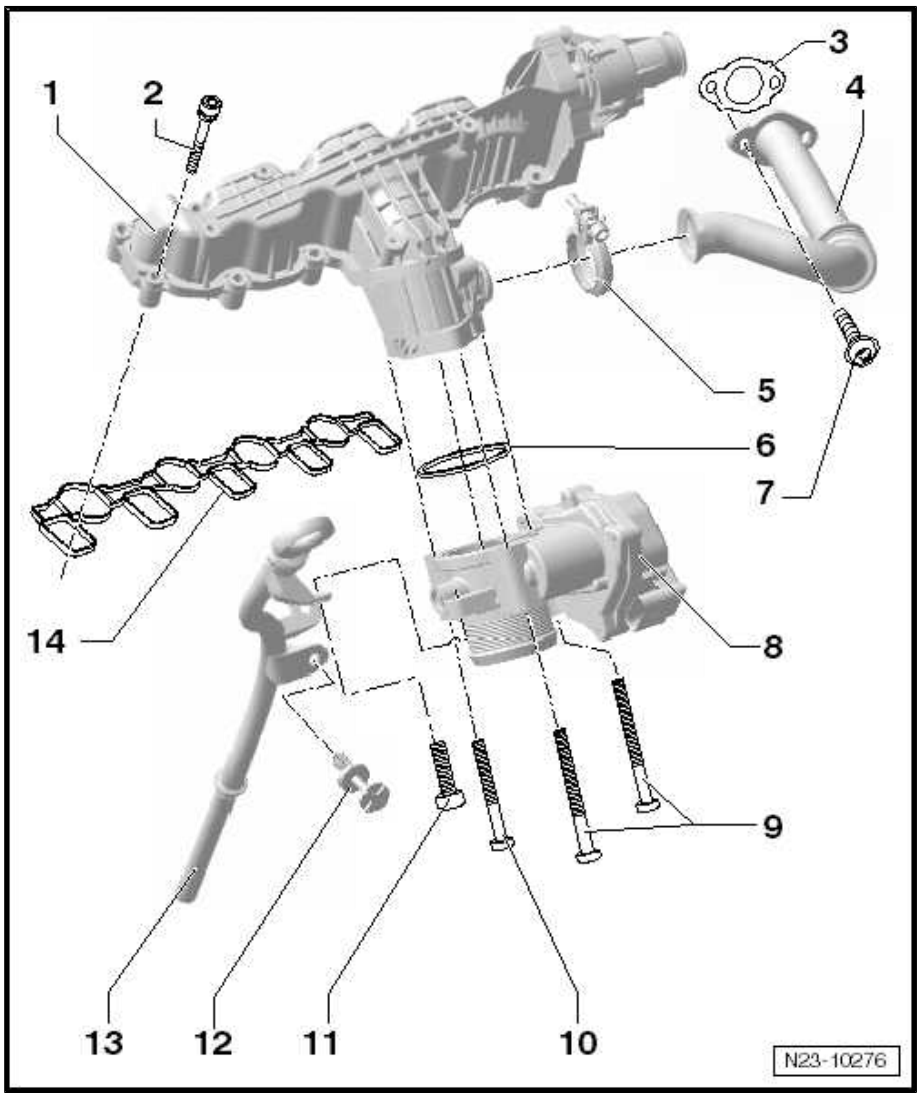
- ❑ replace
- ❑ 5 Nm

**6 - Sealing ring**

- ❑ replace

**7 - Screw**

- ❑ 20 Nm



**8 - Throttle valve control unit - J338-**
- ❑ wymontowanie i zamontowanie ⇒ page 422

**9 - Screw**
- ❑ 10 Nm

**10 - Screw**
- ❑ 10 Nm

**11 - Screw**
- ❑ 10 Nm

**12 - Clip**
- ❑ for oil dipstick guide

**13 - Guide tube**
- ❑ for the oil dipstick

**14 - Gasket**
- ❑ replace

## 3.1.2 Intake manifold with component parts, vehicles without intake manifold flap - V157- - Summary of components

**1 - Guide tube**
- ❑ for the oil dipstick

**2 - Sealing ring**
- ❑ replace

**3 - Gasket**
- ❑ replace

**4 - Screw**
- ❑ 8 Nm

**5 - Fuel return-flow line**

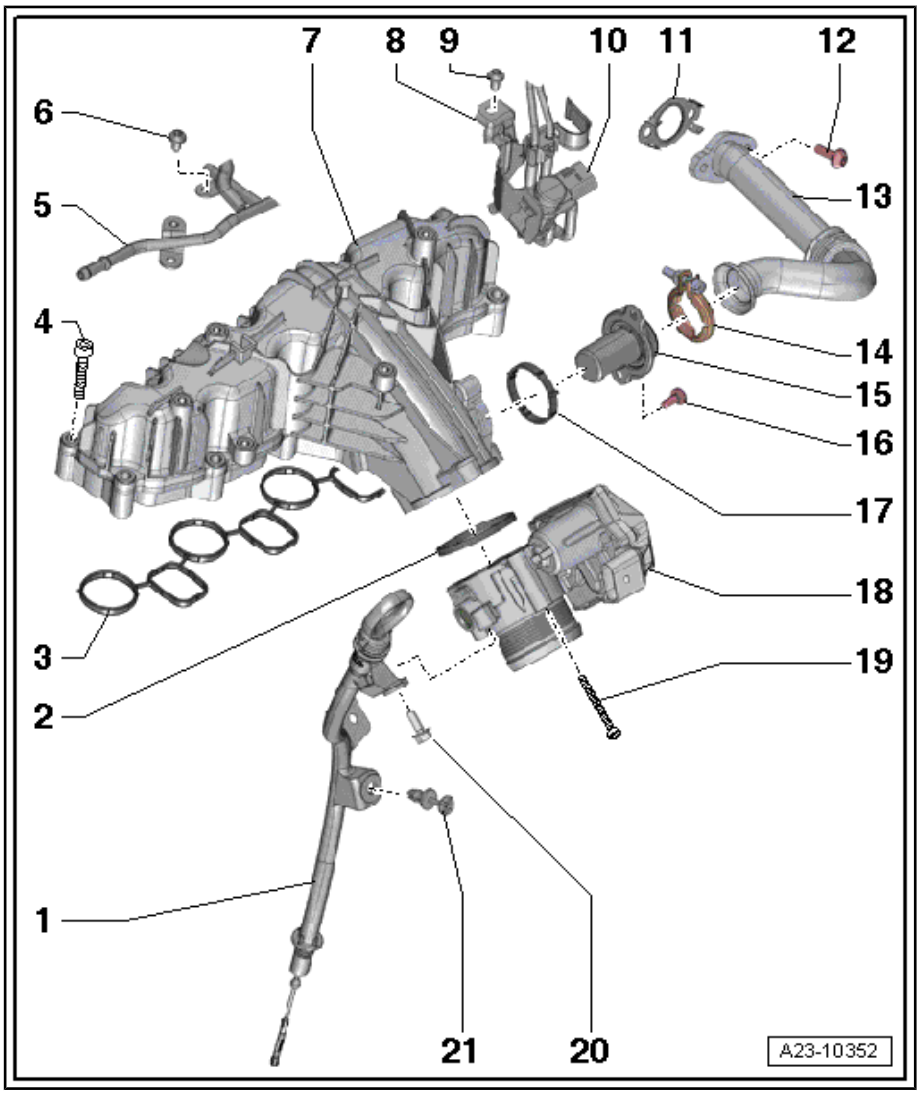
**6 - Screw**
- ❑ 9 Nm

**7 - Intake manifold**
- ❑ without intake manifold flap motor - V157-
- ❑ must not be disassembled
- ❑ wymontowanie i zamontowanie ⇒ page 416

**8 - Support**
- ❑ for changeover valve for radiator of exhaust gas recirculation - N345-

**9 - Screw**
- ❑ 9 Nm

**10 - Changeover valve for radiator of exhaust gas recirculation - N345-**
- ❑ Check change-over ⇒ page 486



**11 - Gasket**

- ❑ replace

**12 - Screw**

- ❑ 20 Nm

**13 - Connecting pipe**

- ❑ to radiator for exhaust gas recirculation

> **Caution**
> *Pay attention that the damping element of the connection pipe is not bent and therefore is not overstretched. There is a risk of crack formation.*

**14 - Fixing clamp**

- ❑ replace
- ❑ 5 Nm

**15 - Supports**

- ❑ for exhaust gas recirculation
- ❑ Component part of intake manifold

**16 - Screw**

- ❑ Component part of intake manifold
- ❑ 8 Nm

**17 - Sealing ring**

- ❑ Component part of intake manifold

**18 - Throttle valve control unit - J338-**

- ❑ wymontowanie i zamontowanie ⇒ page 422

**19 - Screw**

- ❑ 8 Nm

**20 - Screw**

- ❑ 9 Nm

**21 - Clip**

- ❑ for oil dipstick guide

## 3.2 Removing and installing intake manifold

⇒ “3.2.1 Removing and installing intake manifold (Fabia II, Roomster, Rapid India, Rapid NH)”, page 416

⇒ “3.2.2 Removing and installing intake manifold (Octavia II, Superb II, Yeti)”, page 419

### 3.2.1 Removing and installing intake manifold (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- ♦ Socket insert T30 with spherical head - T10405-

## Removing

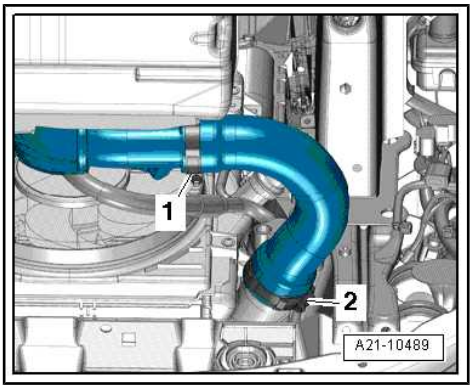
**Note**

- *Safety precautions when working on the fuel supply system* ⇒ page 3 .
- *Observe rules for cleanliness* ⇒ page 6 .

– Remove engine cover ⇒ page 10 .

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

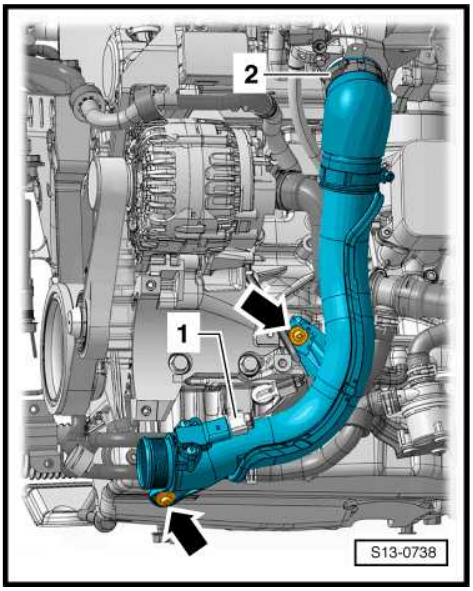
– Remove the air guide hose, to do so slacken the hose clamps -1- and -2-.




– Release screws -arrows-.

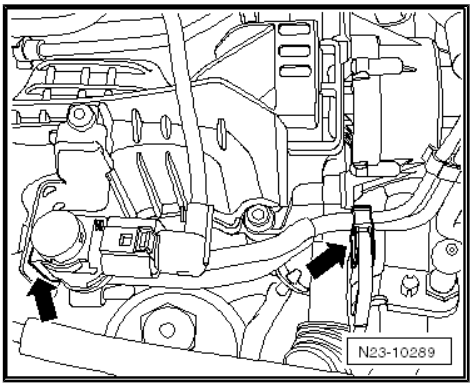
– Slacken the hose clamp -2- at the throttle valve control unit -J338- , detach the air guide pipe and leave it in the fitting position.

– Disconnect the plugs at the glow plugs ⇒ page 488 .

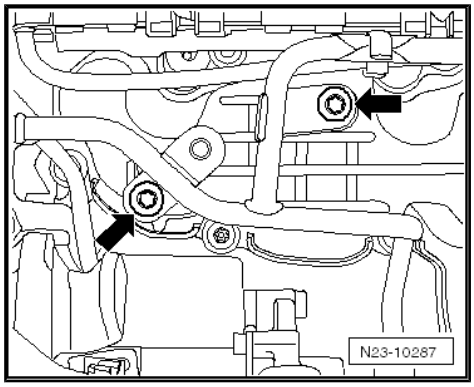



– Take the changeover valve for radiator of exhaust gas recirculation - N345- -left arrow- out of the bracket and place it to the side.

– Unclip the coolant return-flow line from the intake manifold and lay to the side.

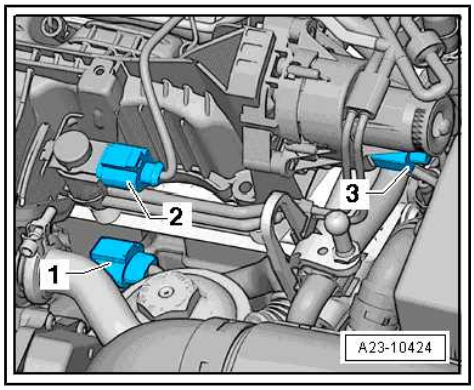


– Unscrew the fixing screws -arrows-, lay the fuel return-flow line to the side.




**Vehicles with intake manifold flap - V157-**

– Disconnect plug -3- from intake manifold flap motor - V157- .

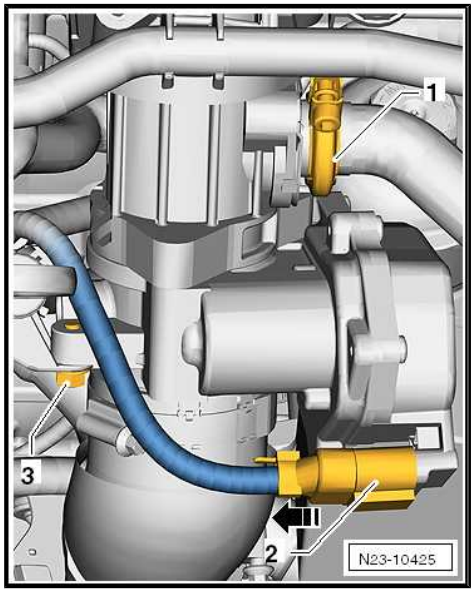



**For all vehicles**

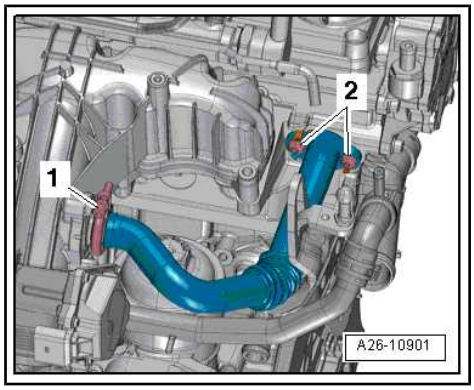
– Remove fuel distributor ⇒ page 394 .

– Disconnect the plug -2- from the throttle valve control unit - J338- .

– Release the screw -3- from the oil dipstick attachment.

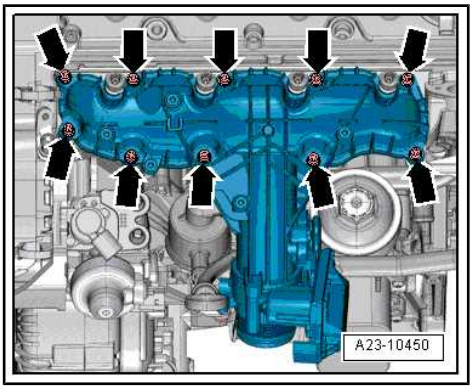



– Open clamp -1- and remove.



– Release the fixing screws -arrows- of the intake manifold crosswise from the outside to the inside. To do so, use socket insert T30 with spherical head - T10405- .

– Carefully remove intake manifold.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*For vehicles with intake manifold - V157- the intake manifold can be installed as a spare part without intake manifold flap - V157- ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Replace gasket.

– Tighten the fixing screws of the intake manifold crosswise from inside to outside.

– Install fuel distributor ⇒ page 394 .

**Tightening torques**

- ⇒ “3 Intake manifold, air filter”, page 414
- ⇒ “2.1 Fuel system - Summary of components”, page 384
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

## 3.2.2 Removing and installing intake manifold (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Socket insert , e.g. -T10405-

**Removing**

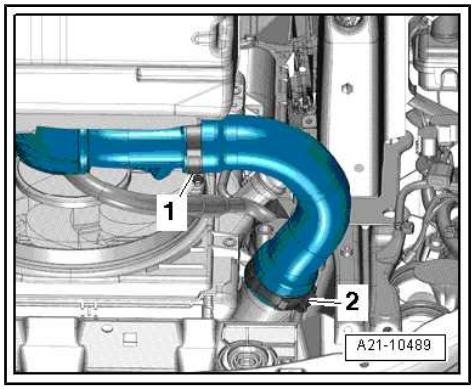
**Note**

- *Safety precautions when working on the fuel supply system ⇒ page 3 .*
- *Observe rules for cleanliness ⇒ page 6 .*

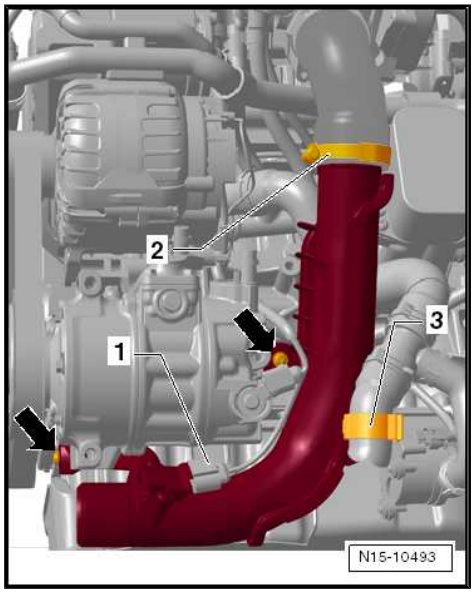
– Remove engine cover ⇒ page 10 .

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

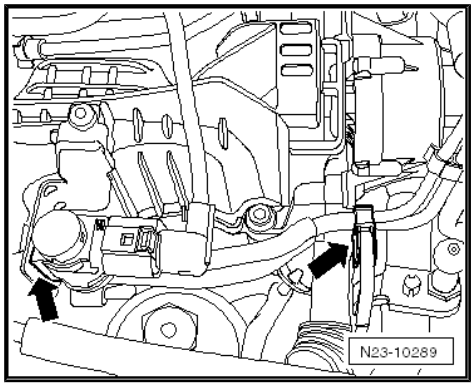
– Remove the air guide hose, to do so slacken the hose clamps -1- and -2-.



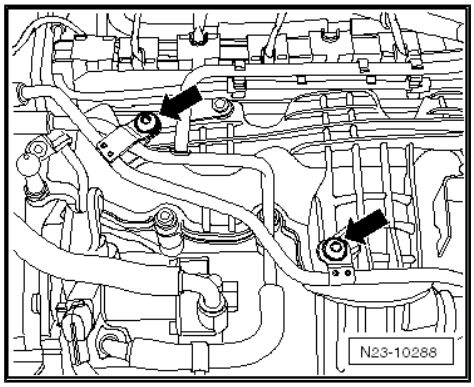

– Release screws -arrows-.
– Slacken the hose clamp -2- at the throttle valve control unit - J338- , detach the air guide pipe and leave it in the fitting position.
– Disconnect the plugs at the glow plugs ⇒ page 488 .



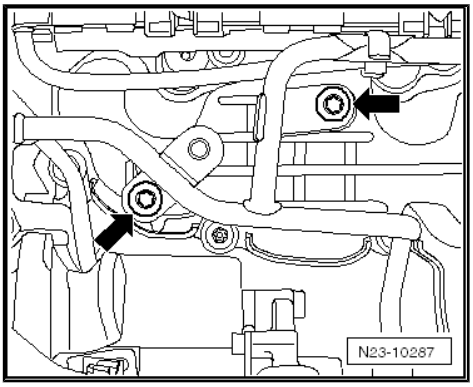

– Take the changeover valve for radiator of exhaust gas recirculation - N345- -left arrow- out of the bracket and place it to the side.




– Unscrew the fixing screws -arrows- and lay the coolant return-flow line to the side.

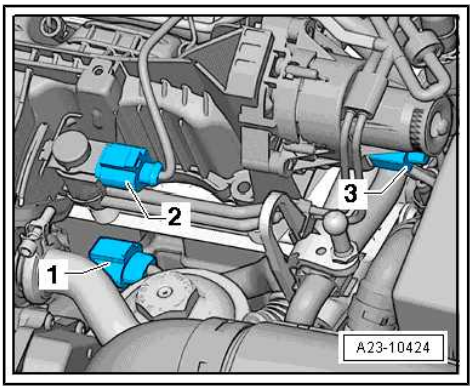


– Unscrew the fixing screws -arrows- and lay the fuel return-flow line to the side.




**Vehicles with intake manifold flap - V157-**

– Disconnect plug -3- from intake manifold flap motor - V157- .

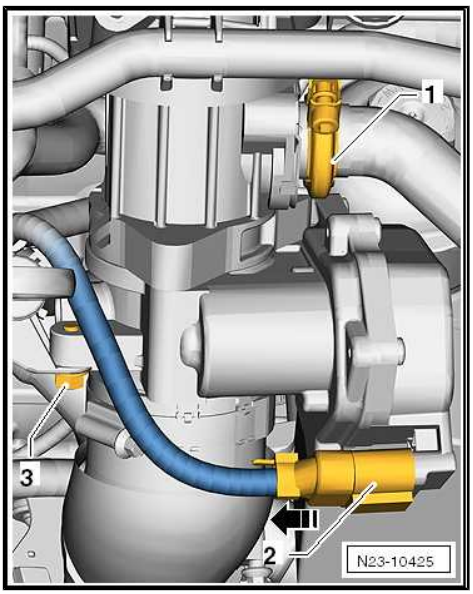



**For all vehicles**

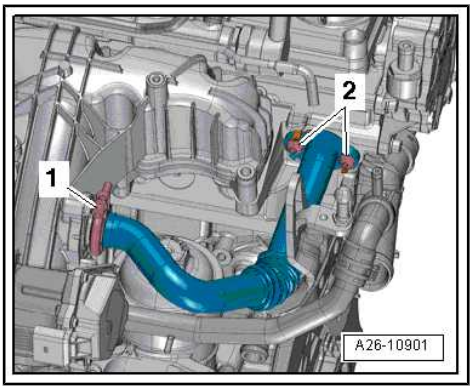
– Remove fuel distributor ⇒ page 394 .

– Disconnect the plug -2- from the throttle valve control unit - J338- .

– Release the screw -3- from the oil dipstick attachment.

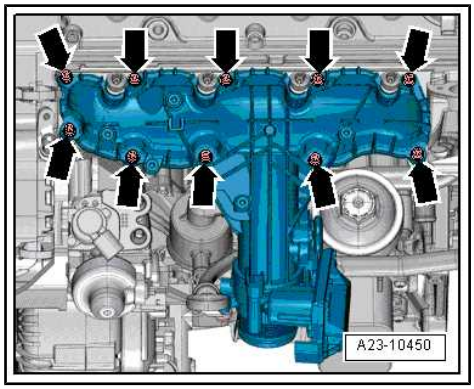



– Open clamp -1- and remove.



– Release the fixing screws -arrows- of the intake manifold crosswise from the outside to the inside using the socket insert - T10405- .

– Carefully remove the intake manifold.




**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

*For vehicles with intake manifold - V157- the intake manifold can be installed as a spare part without intake manifold flap - V157- ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Replace gasket.

– Tighten the fixing screws of the intake manifold crosswise from inside to outside.

**Tightening torques**

- ⇒ “3 Intake manifold, air filter”, page 414
- ⇒ “2.1 Fuel system - Summary of components”, page 384
- ⇒ “2.1 Charge air cooler”, page 367
- ⇒ “1.1 Removing and installing parts of the lubrication system - Summary of components”, page 189

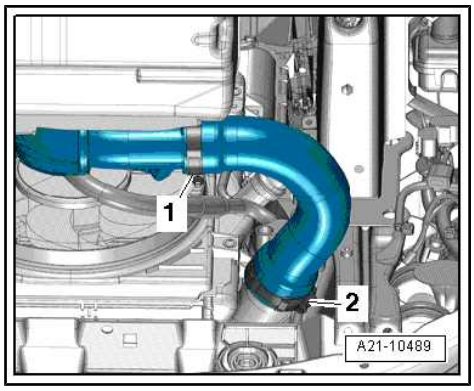
## 3.3 Removing and installing the throttle valve control unit - J338-

**Removing**

– Remove engine cover ⇒ page 10 .

– Remove the sound dampening system -1- ⇒ Body Work; Rep. gr. 50 .

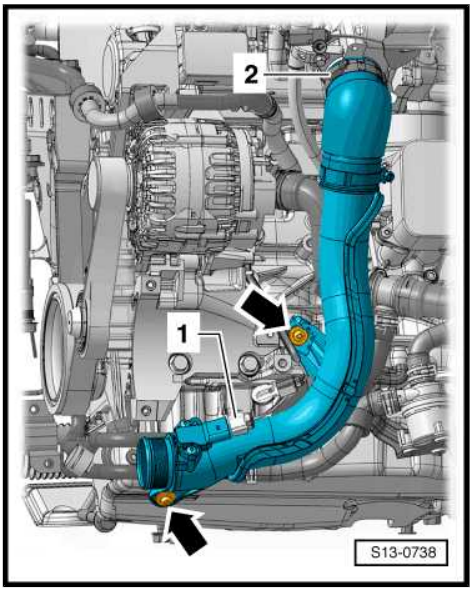
– Remove the air guide hose, to do so slacken the hose clamps -1- and -2-.




**For vehicles Fabia II, Roomster, Rapid India, Rapid NH**

– Release screws -arrows-.

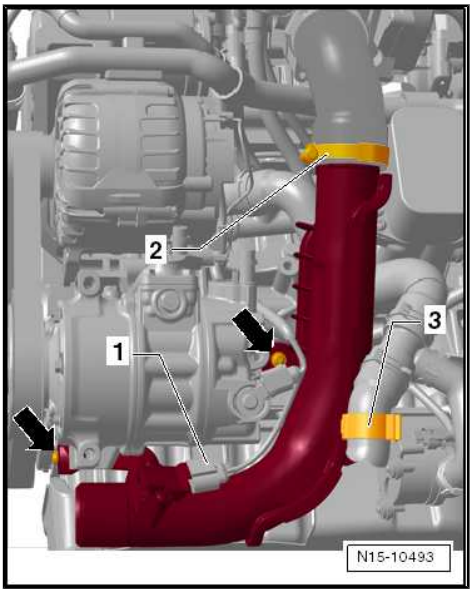
**For vehicles Octavia II, Superb II, Yeti**




– Release screws -arrows-.
– Expose coolant hose -3-.

**Continued for all vehicles**

– Loosen hose clamp -2-.
– Disconnect the plug connection -1- at the charge pressure sender - G31- with intake air temperature sender - G42- and remove the air guide pipe.

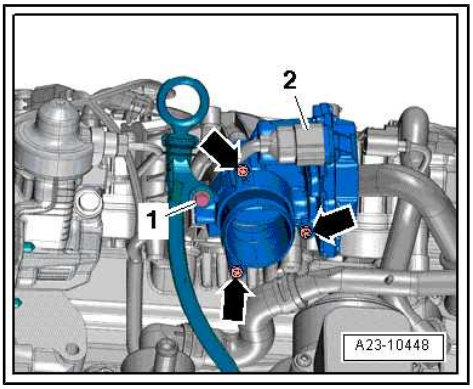



– Separate electrical plug connection -2-.
– Release screw -1- of guide pipe for oil dipstick.
– Release screws -arrows-, remove throttle valve control unit - J338- .

**Install**

Installation is performed in the reverse order, pay attention to the following points:

- Tightening torque ⇒ page 414 .




**Note**

*Renew O-ring.*

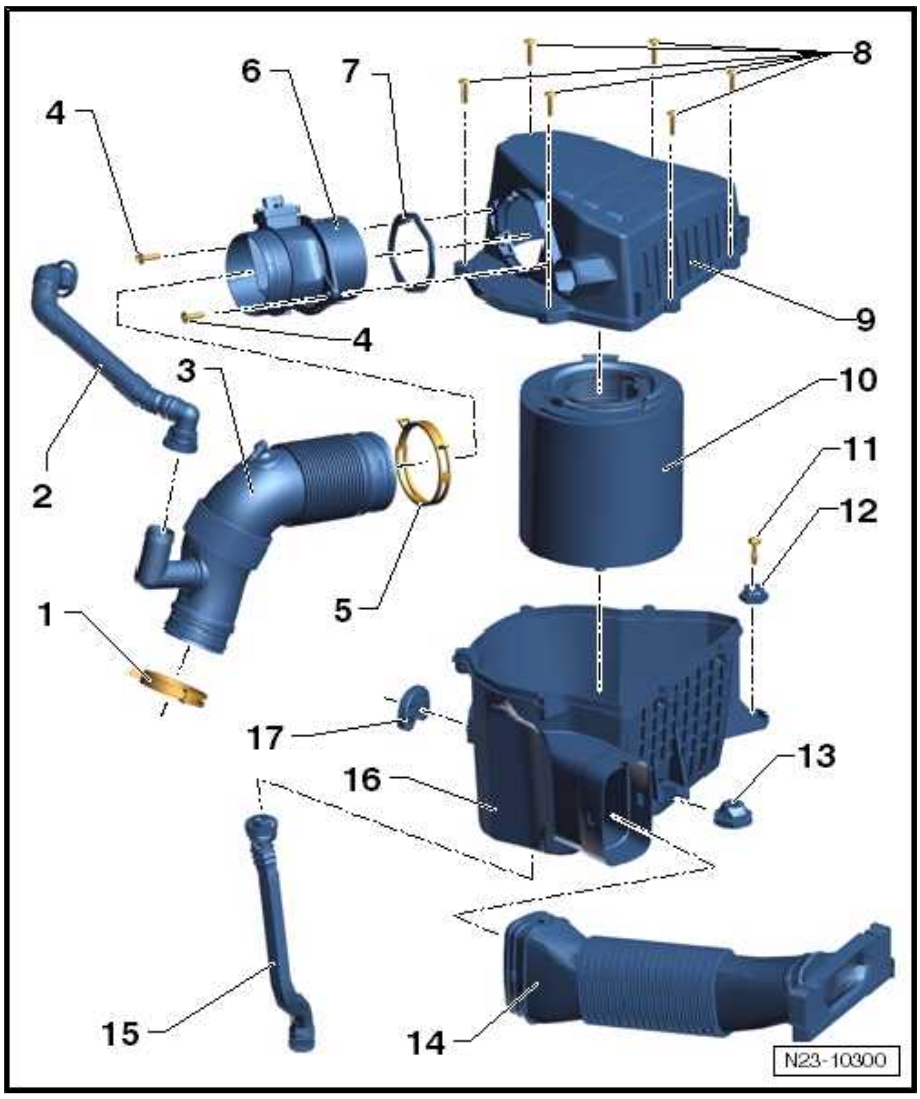
## 3.4 Air filter

⇒ "3.4.1 Summary of components - Air filter (Fabia II, Roomster, Rapid India, Rapid NH)", page 424

⇒ "3.4.2 Summary of components - Air filter (Octavia II, Superb II, Yeti)", page 425

### 3.4.1 Summary of components - Air filter (Fabia II, Roomster, Rapid India, Rapid NH)

Removing and installing air filter ⇒ page 426 .




**1 - Spring strap clamp**

**2 - Connecting pipe**

- ❑ from cylinder head cover
- ❑ for crankcase ventilation

**3 - Suction hose**

- ❑ to exhaust gas turbocharger

**4 - Screw**

- ❑ 2 Nm

**5 - Spring strap clamp**

**6 - Air mass meter - G70-**

**7 - O-ring**

- ❑ replace if damaged

**8 - Screw**

- ❑ 8 Nm

**9 - Air filter top part**

**10 - Air filter element**

- ❑ to remove, turn $^{1}/_{4}$ turn (90°) to the left
- ❑ Pay attention to change intervals:

- ♦ ⇒ Maintenance ; Booklet Fabia II .
- ♦ ⇒ Maintenance ; Booklet Roomster .
- ♦ ⇒ Maintenance ; Booklet Rapid Indie .
- ♦ ⇒ Maintenance ; Booklet Rapid NH .

**11 - Screw**

- ❑ 10 Nm

**12 - Rubber bearing**

- ❑ replace if damaged

**13 - Rubber bearing**

- ❑ replace if damaged

**14 - Suction hose with connection fitting**

- ❑ Intake hose attached to lock carrier

**15 - Drain pipe**

- ❑ Check fitting position

**16 - Air filter bottom part**

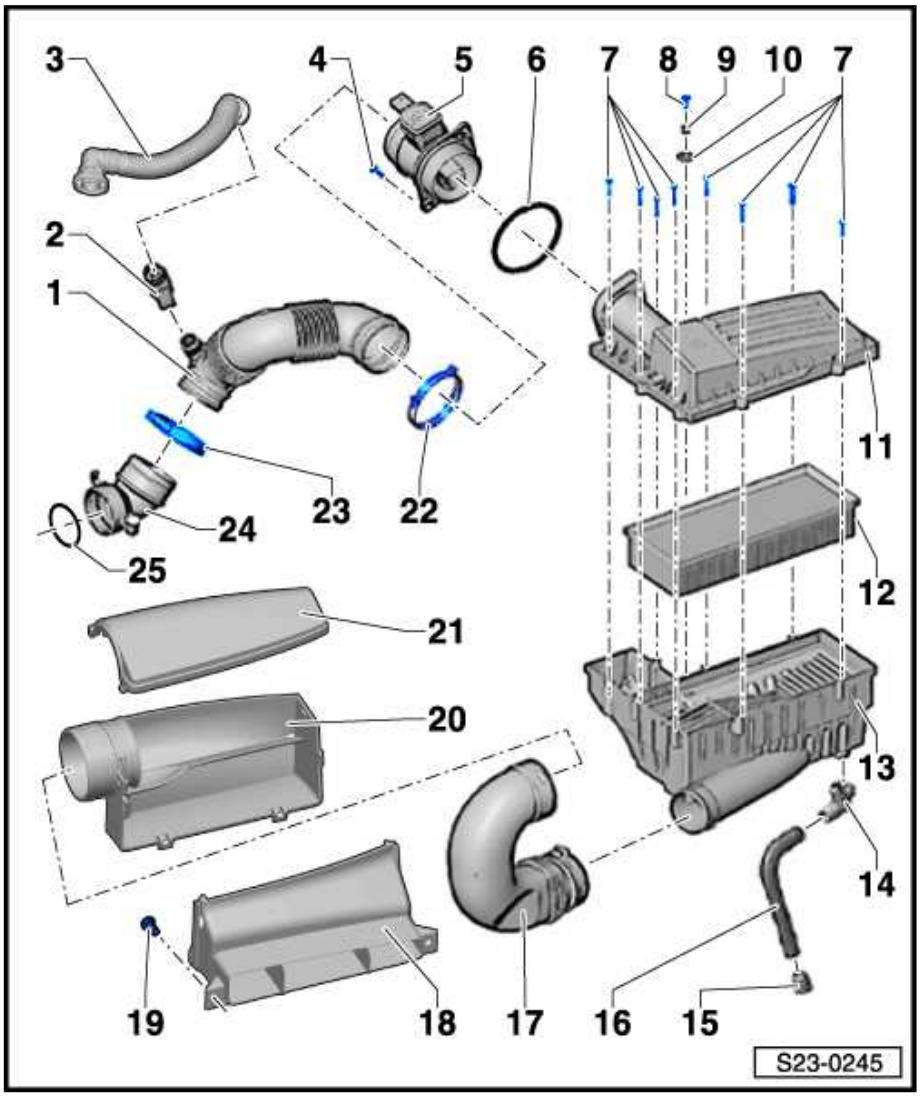
- ❑ with supports for drain pipe

**17 - Rubber bearing**

- ❑ replace if damaged

## 3.4.2 Summary of components - Air filter (Octavia II, Superb II, Yeti)

Removing and installing air filter ⇒ page 426 .




**1 - Suction hose**

- ❑ to exhaust gas turbo-charger

**2 - Vent pipe connection piece**

- ❑ With heating
- ❑ Only vehicles for cold climates

**3 - Connecting pipe**

- ❑ for crankcase ventilation
- ❑ to remove, press release buttons

**4 - Screw**

- ❑ 2 Nm

**5 - Air mass meter - G70-**

**6 - O-ring**

- ❑ replace if damaged

**7 - Screw**

- ❑ Fixing screws for air filter top
- ❑ 2 Nm

**8 - Screw**

- ❑ Fixing screw for air filter (air filter lower part)
- ❑ 8 Nm

**9 - Bushing**

**10 - Washer**

**11 - Air filter top part**

**12 - Air filter element**

- ❑ Pay attention to change intervals:

♦ ⇒ Maintenance ; Booklet Octavia II .

♦ ⇒ Maintenance ; Booklet Superb II .

♦ ⇒ Maintenance ; Booklet Yeti .

**13 - Air filter bottom part**

- ❑ with supports for drain pipe

**14 - Connection piece**
- ❑ For drainage pipe

**15 - Overrun valve**

**16 - Pipe**
- ❑ For water drainage

**17 - Connecting pipe**

**18 - Inlet connection**
- ❑ screwed onto lock carrier

**19 - Screw**
- ❑ 2 Nm

**20 - Intake air guide**

**21 - Cap**
- ❑ For intake air guide

**22 - Spring strap clamp**

**23 - Spring strap clamp**

**24 - Inlet connection**
- ❑ Observe exhaust gas turbocharger installation position
- ❑ with fixing screw
- ❑ 9 Nm

**25 - O-ring**
- ❑ replace

## 3.5 Removing and installing air filter

⇒ "3.5.1 Removing and installing air filter (Fabia II, Roomster, Rapid India, Rapid NH)", page 426

⇒ "3.5.2 Removing and installing air filter (Octavia II, Superb II, Yeti)", page 427

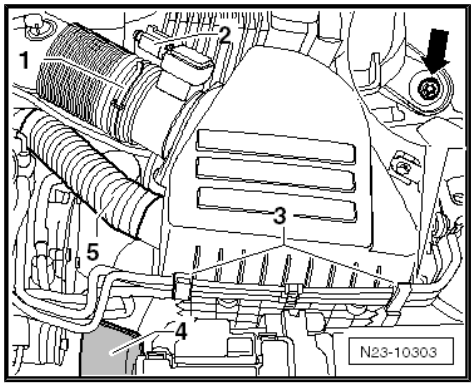
### 3.5.1 Removing and installing air filter (Fabia II, Roomster, Rapid India, Rapid NH)

**Removing**

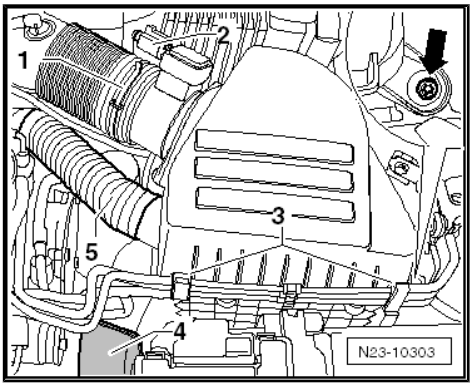
– Unplug connector -2- from air mass meter - G70- .

– Loosen the spring strap clip -1- and remove the hose from the air filter.

– Open the retaining clamps -3-, remove the vacuum lines laterally.



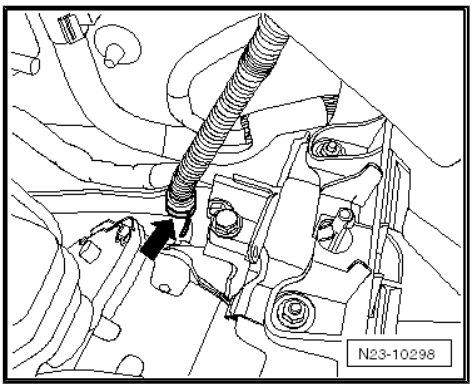
– Slacken the screwed connection at the air filter housing -arrow-.
– Remove suction hose -4-.
– Carefully remove air filter from the top.



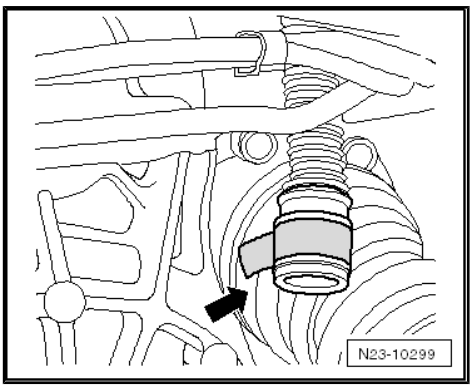

**Install**

Installation is performed in the reverse order, pay attention to the following points:

– Pull through the drain pipe -arrow- between the gearbox and the body.




– Check if the drain pipe is correctly installed by looking under the wing.




**Tightening torques**

♦ ⇒ “3.4 Air filter”, page 424

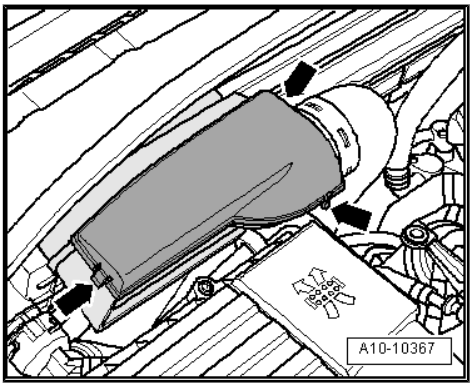
## 3.5.2 Removing and installing air filter (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

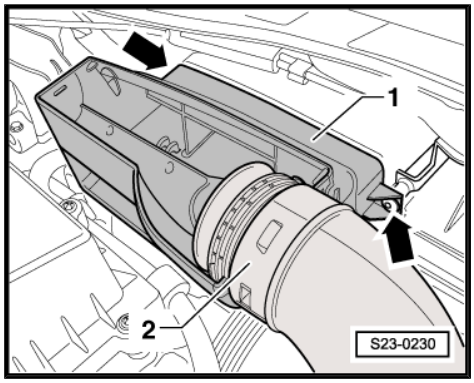
♦ Pliers for spring strap clamps

**Removing**

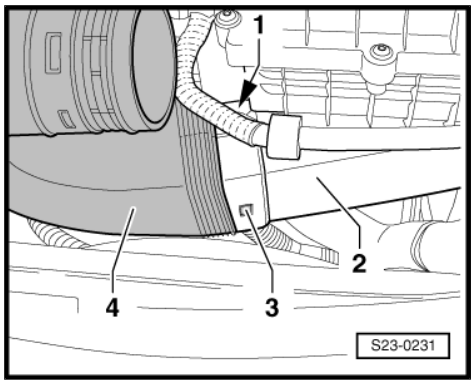
– Remove engine cover ⇒ page 10 .
– Remove cover for connection fitting, to do so release lateral retaining clasps -arrows-.



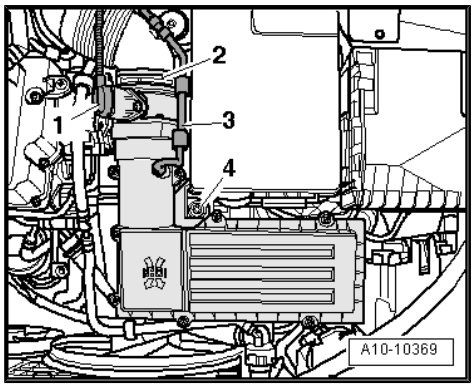
– Release screws -arrows- for connection fitting -1- and take connecting hose -2- out of the guide.




– Press in catches -1- and -3- and pull off connecting hose -4- from air filter -2-.




– Unplug connector -1- from air mass meter - G70- .
– Detach vacuum hose -3- and suction hose -2-.
– Release screw -4- and remove air filter.

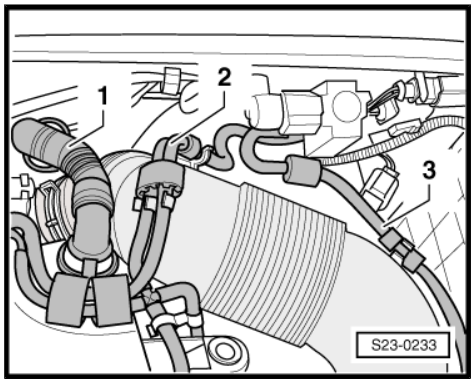



**Remove suction hose**

**Note**

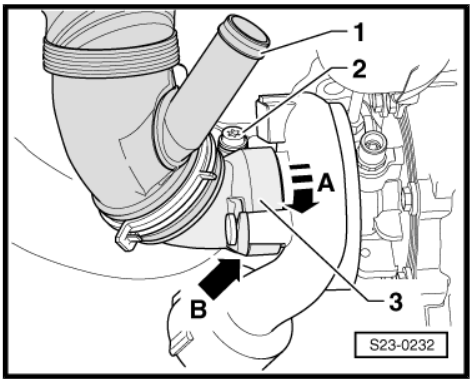
*Due to the poor access of the pliers for spring strap clips to the bottom suction hose it is preferable to remove the connection fitting from the exhaust turbocharger.*

– Unclip hoses -2- and -3- from suction hose.
– Remove the connection pipe -1-.



– Unscrew bolt -2-.

– Swivel connection fitting (pulsation dampener) -3- in direction of arrow -A- and remove with connection hose -1-.




### Install

Installation is performed in the reverse order, pay attention to the following points:

– When attaching the connection fitting -3- at the exhaust gas turbocharger make sure that the connection fitting is correctly seated on the bolt of the exhaust gas turbocharger -arrow B-.

### Tightening torques

◆ ⇒ “3.4 Air filter”, page 424

# 4 Engine control unit

⇒ “4.1 Removing and installing engine control unit J623 ”, page 430

## 4.1 Removing and installing engine control unit - J623-

⇒ “4.1.1 Removing and installing engine control unit J623 (Fabia II, Roomster, Rapid India, Rapid NH)”, page 430

⇒ “4.1.2 Removing and installing engine control unit J623 (Octavia II)”, page 431

⇒ “4.1.3 Removing and installing engine control unit J623 (Superb II, Yeti)”, page 433

### 4.1.1 Removing and installing engine control unit - J623- (Fabia II, Roomster, Rapid India, Rapid NH)

**Note**

*If the engine control unit must be replaced, connect ⇒ Vehicle diagnostic tester and perform the function “replace engine control unit”.*

**Special tools and workshop equipment required**

- Body saw e.g. body saw - V.A.G 1523/A-

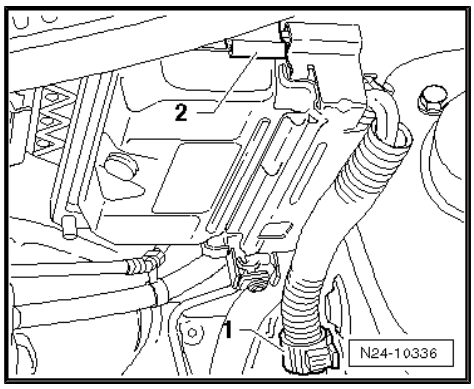
**Removing**

– Switch off ignition.

– Remove air filter ⇒ page 426 .

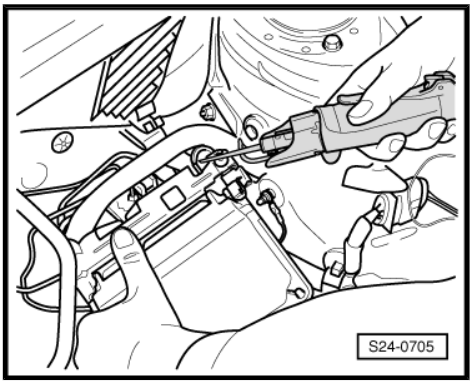
– Slacken the cable guide -1- and raise the locking mechanism -2-.

– Take the engine control unit out of the mount.




**For vehicles with protective cover**

– Cut with body saw a slot for a cross-head screwdriver in the heads of the pull-off screws.




**Note**

- *It must be sawed 2x with the body saw, so that the slot is wide enough, in order to be able to unscrew the screws with a suitable screwdriver.*
- *The pull-off screws until are inserted with locking agent.*

– Screw out the screws.

– Remove protective cover of control unit.

**For all vehicles**

– Release plug locks and unplug plug connector from engine control unit - J623- .

**Install**

Installation is carried out in reverse order.

– Connect both plugs and lock.

**For vehicles with protective cover**

– Insert protective cover and fix with new pull-off screws at engine control unit.

– Tighten pull-off screws evenly until the screw heads are pulled off.

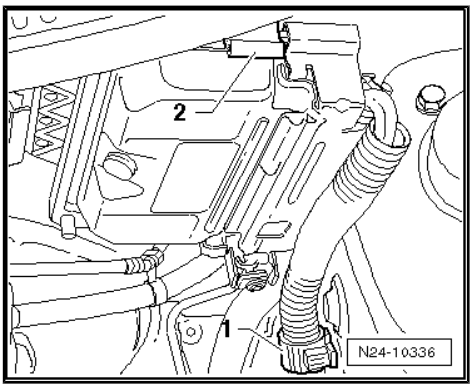
**For all vehicles**

– Insert the control unit into the holder on the body until the locking mechanism -2- clicks audibly into place.

– Press the wiring loom into the cable guide -1-.

– When replacing the control unit, adapt the engine control unit ⇒ Vehicle diagnostic tester.

– Interrogate the fault memory again ⇒ Vehicle diagnostic tester.




**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

## 4.1.2 Removing and installing engine control unit - J623- (Octavia II)

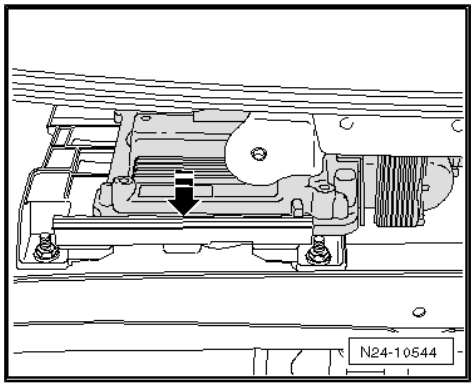
**Note**

- *In order to be able to unplug the plugs from the control unit, the control unit must always be removed.*
- *If the engine control unit is replaced, the must be ⇒ Vehicle diagnostic tester connected and the function "replace engine control unit" must be carried out.*

**Removing**

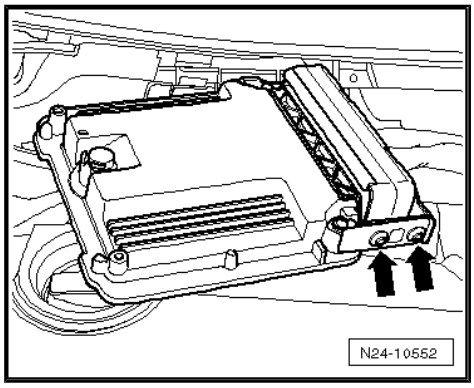
– Switch off ignition.

– Remove bulkhead plenum chamber ⇒ Body Work; Rep. gr. 66 .
– Press the retaining clip in -direction of arrow- and remove the engine control unit - J623- .

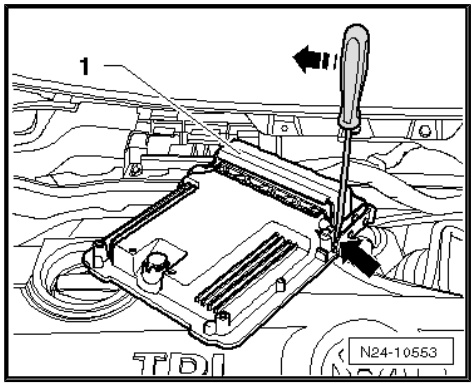



**Vehicles with protective cover for plug connections**

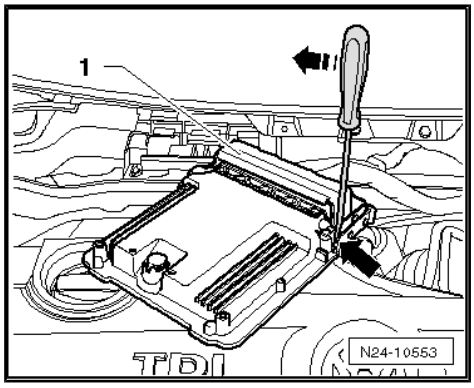
– Unscrew the pull-off screws -arrows- with pliers.



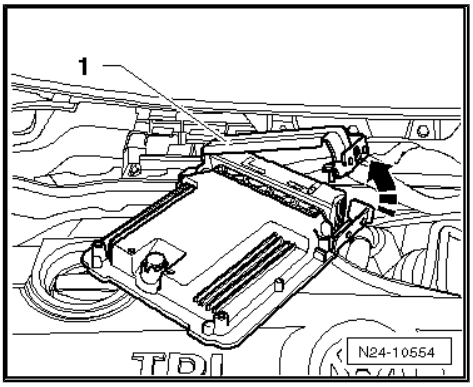

– Insert the screwdriver between both protective covers -arrow-.




– Carefully press the screwdriver in -direction of arrow- and at the same time bend up the protective cover -1-.



– Bend the protective cover -1- in -direction of arrow- until it can be removed from the plug.




**Continued for all vehicles**

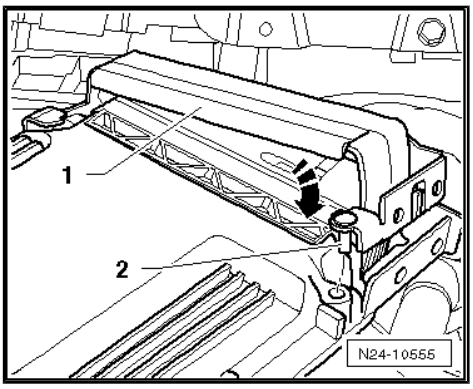
– Unlock both plugs at engine control unit and disconnect.

**Install**

– Connect both plugs and lock.

**Vehicles with protective cover for plug connections**

– Fit the protective cover -1- onto the plug and press in -direction of arrow-.



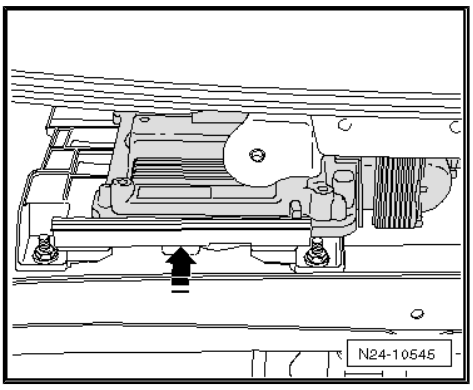

– Guide the pin -2- fully into the opening of the cover for the engine control unit.

– Fasten protective covers with new pull-off screws.

– Tighten pull-off screws evenly until the screw heads are pulled off.

**Continued for all vehicles**

– Push the engine control unit - J623- into the bracket and lock with the retaining clip -arrow-.




– Install the bulkhead plenum chamber ⇒ Body Work; Rep. gr. 66 .

## 4.1.3 Removing and installing engine control unit - J623- (Superb II, Yeti)

**Note**

- *In order to be able to unplug the plugs from the engine control unit, the engine control unit must always be removed.*
- *If the engine control unit - J623- is replaced, the ⇒ Vehicle diagnostic testermust be connected and the function "replace engine control unit" must be carried out.*

**Removing**

– Switch off ignition.

**Vehicles Superb II**

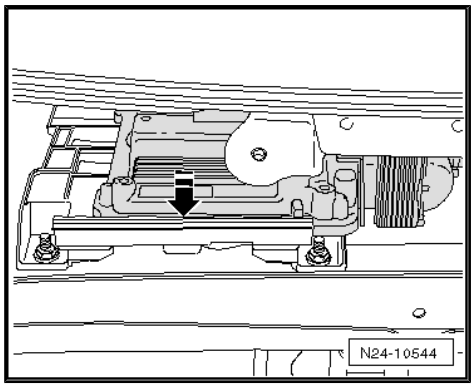
– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

**Vehicles Yeti**

– Remove bulkhead plenum chamber ⇒ Body Work; Rep. gr. 66 .

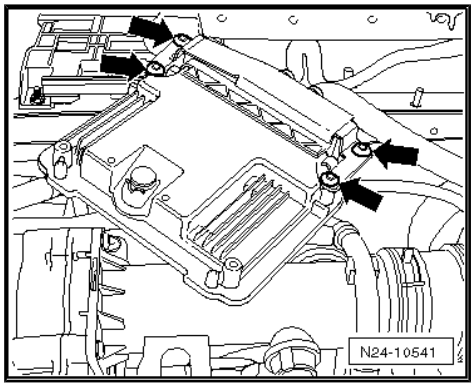
**For all vehicles**

– Press the retaining clip in -direction of arrow- and remove the engine control unit - J623- .




**Vehicles with protective cover for plug connections**

– Unscrew the pull-off screws -arrows- with pliers and remove the protective covers.




**Continued for all vehicles**

– Unlock both plugs at the engine control unit - J623- and disconnect.

**Install**

– Connect both plugs and lock.

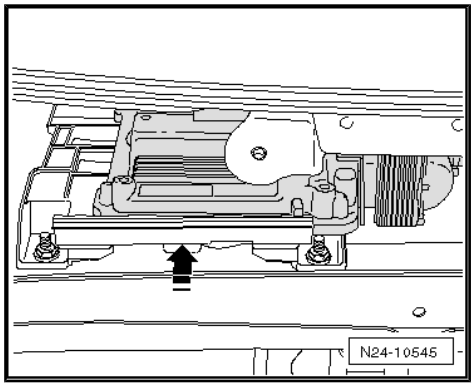
**Vehicles with protective cover for plug connections**

– Fasten protective covers with new pull-off screws.

– Tighten pull-off screws evenly until the screw heads are pulled off.

**Continued for all vehicles**

– Push the engine control unit - J623- into the bracket and lock with the retaining clip -arrow-.




**Vehicles Superb II**

– Install the plenum chamber cover ⇒ Body Work; Rep. gr. 66 .

**Vehicles Yeti**

– Install the bulkhead plenum chamber ⇒ Body Work; Rep. gr. 66 .

# 26 – Exhaust system

# 1 Removing and installing parts of the exhaust system



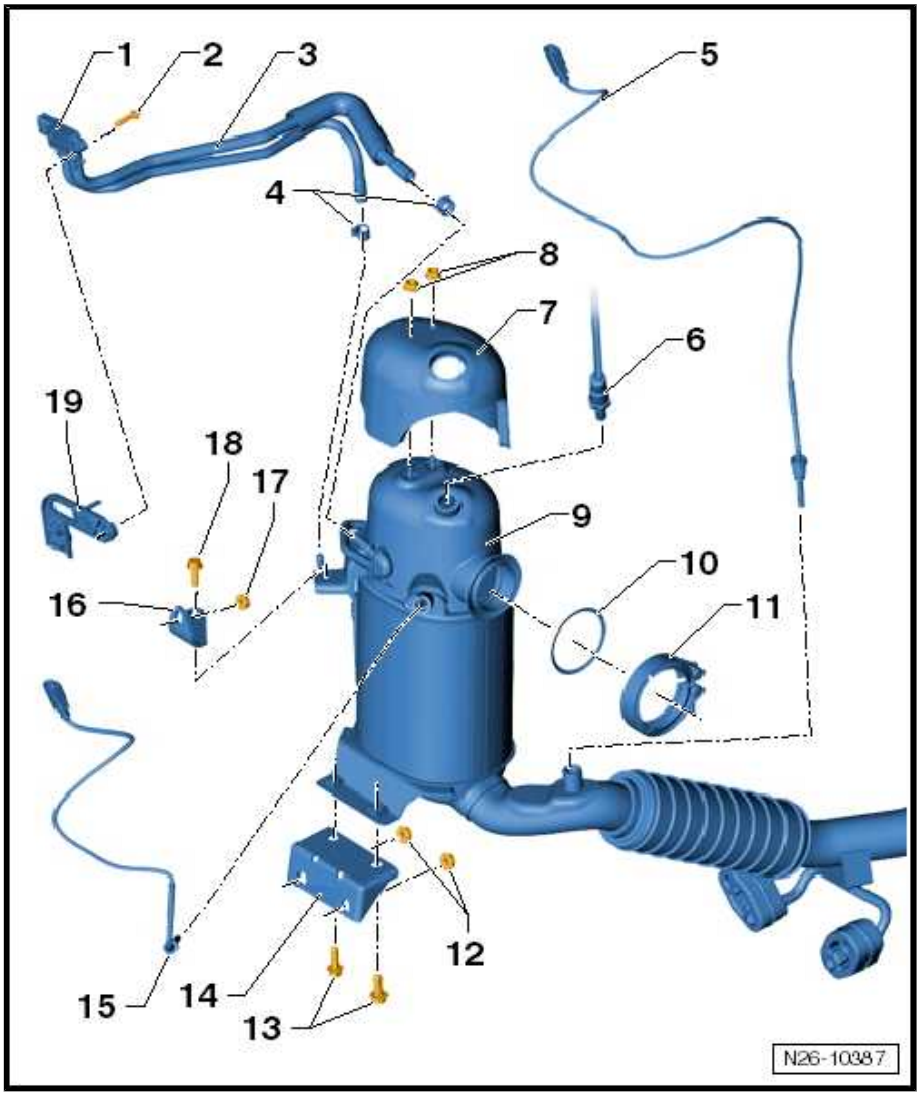
## 1.1 Pre-exhaust pipe



### 1.1.1 Summary of components - Pre-exhaust pipe with diesel particle filter (Fabia II,Roomster,Rapid NH)

**Note**

- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security -T10403- if necessary -T10404- against overtensioning.*
- *Replace the gaskets and the self-locking nuts.*
- *When performing installation work on the exhaust system, make sure the exhaust system is not mounted under tension and has adequate clearance from the vehicle body. If necessary, slacken the warm-type clamp and align the exhaust system so as to create all round adequate clearance to the body and so that the weight is evenly distributed over the hangers.*




**1 - Differential pressure sender - G505-**

- ❑ Pay attention to the part number
- ❑ wymontowanie i zamontowanie ⇒ page 447

**2 - Screw**

- ❑ 3 Nm

**3 - Control lines**

**4 - Clamps**

**5 - Exhaust gas temperature sender 4 - G648-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ 45 Nm

**6 - Lambda probe - G39-**

- ❑ the thread of new lambda probes must be coated with assembly paste
- ❑ for a re-used lambda probe, only coat the thread with hot bolt paste - G 052 112 A3-
- ❑ the hot bolt paste - G 052 112 A3- must not come into contact with the slots of the probe body
- ❑ 50 Nm

**7 - Heat shield**

**8 - Nut**

- ❑ 9 Nm

**9 - Diesel particle filter**

- ❑ with oxidation catalytic converter and pre-exhaust pipe
- ❑ Pay attention to the part number
- ❑ after replacing, the adaptation of the ash mass balance must be set to “0” ⇒ Vehicle diagnostic tester
- ❑ wymontowanie i zamontowanie ⇒ page 457

**10 - Gasket**

- ❑ replace
- ❑ Check fitting position

**11 - Open warm-type clamp**

- ❑ replace
- ❑ 7 Nm

**12 - Nut**

- ❑ 25 Nm

**13 - Screw**

- ❑ 25 Nm

**14 - Uchwyt**

- ❑ screwed onto the cylinder block

**15 - Exhaust gas temperature sender 3 - G495-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ tighten ⇒ page 445
- ❑ 45 Nm

**16 - Uchwyt**

**17 - Nut**

- ❑ 25 Nm

**18 - Screw**

- ❑ for pressure line
- ❑ 45 Nm

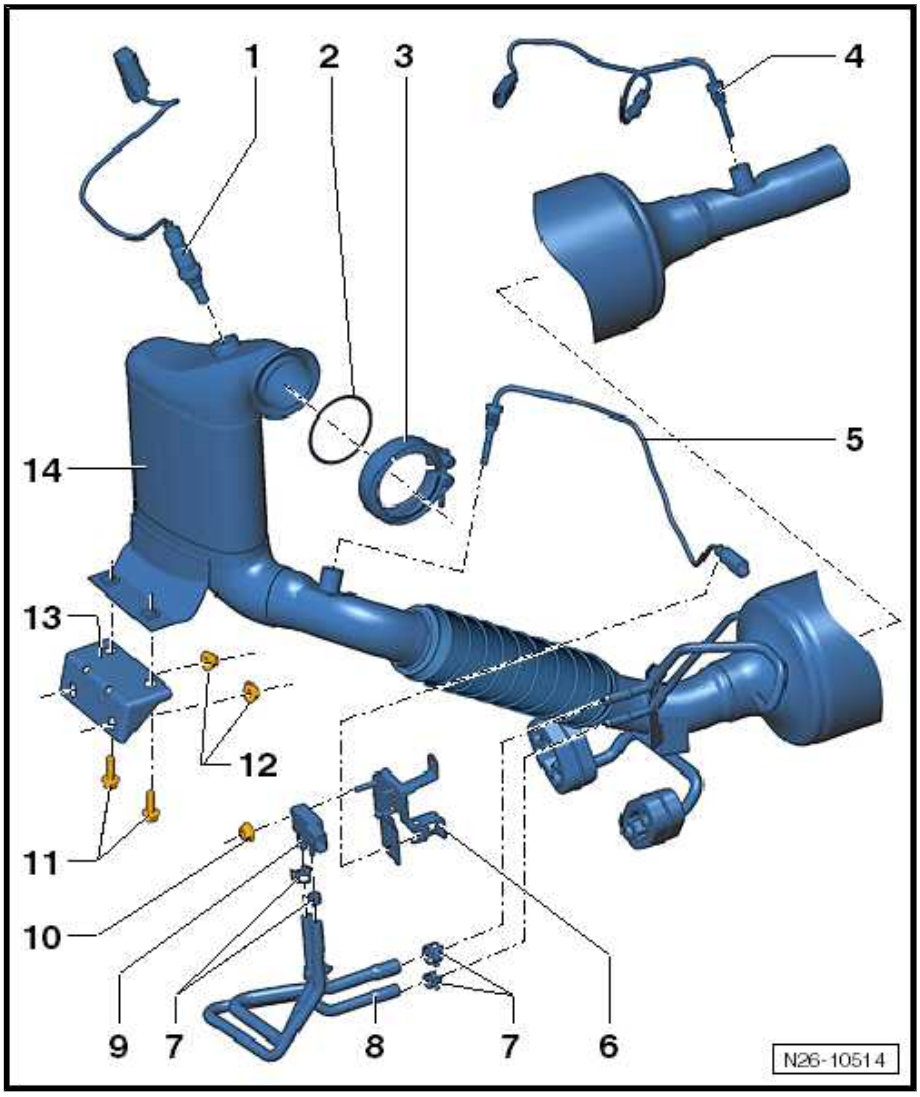
**19 - Uchwyt**

- ❑ for differential pressure indicator - G505-

## 1.1.2 Summary of components - Pre-exhaust pipe with diesel particle filter, right-hand drive (Fabia II,Roomster,Rapid NH)

**Note**

- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security -T10403- if necessary -T10404- against overtensioning.*
- *Replace the gaskets and the self-locking nuts.*
- *When performing installation work on the exhaust system, make sure the exhaust system is not mounted under tension and has adequate clearance from the vehicle body. If necessary, slacken the warm-type clamp and align the exhaust system so as to create all round adequate clearance to the body and so that the weight is evenly distributed over the hangers.*




**1 - Lambda probe - G39-**

- ❑ the thread of new lambda probes must be coated with assembly paste
- ❑ for a re-used lambda probe, only coat the thread with hot bolt paste - G 052 112 A3-
- ❑ the hot bolt paste - G 052 112 A3- must not come into contact with the slots of the probe body
- ❑ 50 Nm

**2 - Gasket**

- ❑ replace
- ❑ Check fitting position

**3 - Open warm-type clamp**

- ❑ replace
- ❑ 7 Nm

**4 - Exhaust gas temperature sender 4 - G648-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ tighten ⇒ page 448
- ❑ 45 Nm

**5 - Exhaust gas temperature sender 3 - G495-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ tighten ⇒ page 445
- ❑ 45 Nm

**6 - Uchwyt**

- ❑ for differential pressure indicator - G505-

**7 - Clamps**

**8 - Control lines**

**9 - Differential pressure sender - G505-**

- ❑ Pay attention to the part number
- ❑ wymontowanie i zamontowanie ⇒ page 447

**10 - Nut**

- ❑ 4.5 Nm

**11 - Screw**

- ❑ 25 Nm

**12 - Nut**

- ❑ 25 Nm

**13 - Support**

- ❑ screwed onto the cylinder block

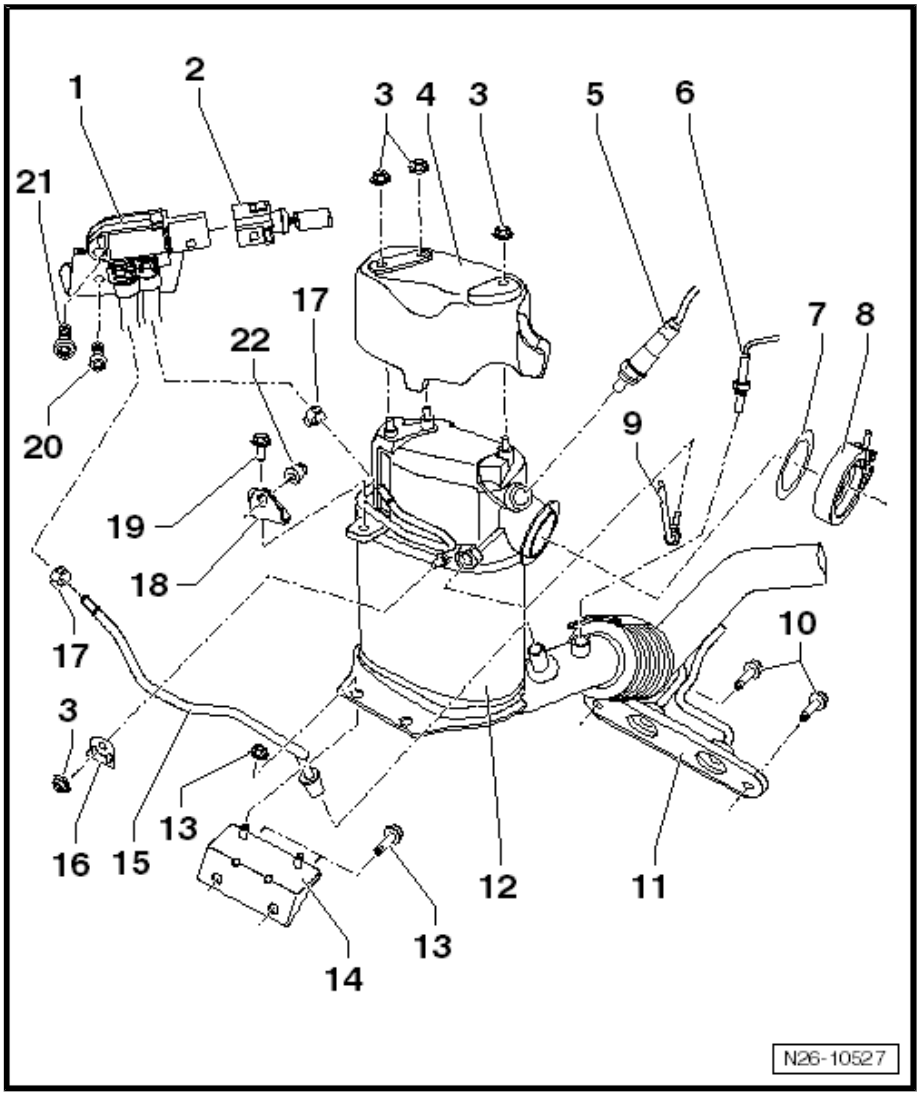
**14 - Catalytic converter with diesel particle filter**

- ❑ Pay attention to the part number
- ❑ after replacing, the adaptation of the ash mass balance must be set to “0” ⇒ Vehicle diagnostic tester
- ❑ wymontowanie i zamontowanie ⇒ page 457

## 1.1.3 Summary of components - Pre-exhaust pipe with diesel particle filter up to 09.2010 (Octavia II)

**Note**

- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security -T10403- if necessary -T10404- against overtensioning.*
- *Replace the gaskets and the self-locking nuts.*
- *When performing installation work on the exhaust system, make sure the exhaust system is not mounted under tension and has adequate clearance from the vehicle body. If necessary, slacken the warm-type clamp and align the exhaust system so as to create all round adequate clearance to the body and so that the weight is evenly distributed over the hangers.*




**1 - Differential pressure sender - G505-**

> **Caution**
>
> *Risk of damage!*
> *The differential pressure sender - G505- is very sensitive and must only be removed and replaced together with bracket and hoses.*
>
> *It must not touch somewhere when laying it down with the bracket.*

**2 - Connector**

**3 - Nut**

- ❑ 10 Nm

**4 - Screening**

**5 - Lambda probe - G39-**

- ❑ the thread of new lambda probes must be coated with assembly paste
- ❑ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ❑ 50 Nm

**6 - Exhaust gas temperature sender 4 - G648-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ 45 Nm

**7 - Gasket**

- ❑ replace
- ❑ Check fitting position

**8 - Fixing clamp**

- ❑ replace
- ❑ 7 Nm

**9 - Exhaust gas temperature sender 3 - G495-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ tighten ⇒ page 445
- ❑ 45 Nm

**10 - Screw**

- ❑ 23 Nm

**11 - Hanger**

- ❑ replace if damaged

**12 - Diesel particle filter**

- ❑ with oxidation catalytic converter and pre-exhaust pipe
- ❑ after replacing, the adaptation of the ash mass balance must be set to “0” ⇒ Vehicle diagnostic tester
- ❑ wymontowanie i zamontowanie ⇒ page 457

**13 - Screw**

- ❑ 23 Nm

**14 - Uchwyt**

- ❑ bolted to the cylinder block
- ❑ Replace bracket for diesel particle filter with riveted threaded bolts
- ❑ the required tightening torque can only be applied in this way

**15 - Control line**

- ❑ 45 Nm

**16 - Support**

- ❑ bolted to the diesel particle filter

**17 - Open warm-type clamp**

- ❑ replace

**18 - Support**

- ❑ bolted to the cylinder head

**19 - Screw**

- ❑ 23 Nm

**20 - Screw**

- ❑ 3 Nm

**21 - Screw**

- ❑ 8 Nm

**22 - Nut**

- ❑ 23 Nm

## 1.1.4 Summary of components - Pre-exhaust pipe with diesel particle filter (Octavia II from 10.2010, Superb II, Yeti)

**Note**

- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security -T10403- if necessary -T10404- against overtensioning.*
- *Replace the gaskets and the self-locking nuts.*
- *When performing installation work on the exhaust system, make sure the exhaust system is not mounted under tension and has adequate clearance from the vehicle body. If necessary, slacken the warm-type clamp and align the exhaust system so as to create all round adequate clearance to the body and so that the weight is evenly distributed over the hangers.*

**1 - Differential pressure sender - G505-**

> **Caution**
> *Risk of damage!*
> *The differential pressure sender - G505- is very sensitive and therefore requires the utmost care. It must not touch somewhere when laying it down. Only detach the hoses from the differential pressure sender - G505- if it must be replaced.*

**2 - Spring strap clamps**

**3 - Hose**

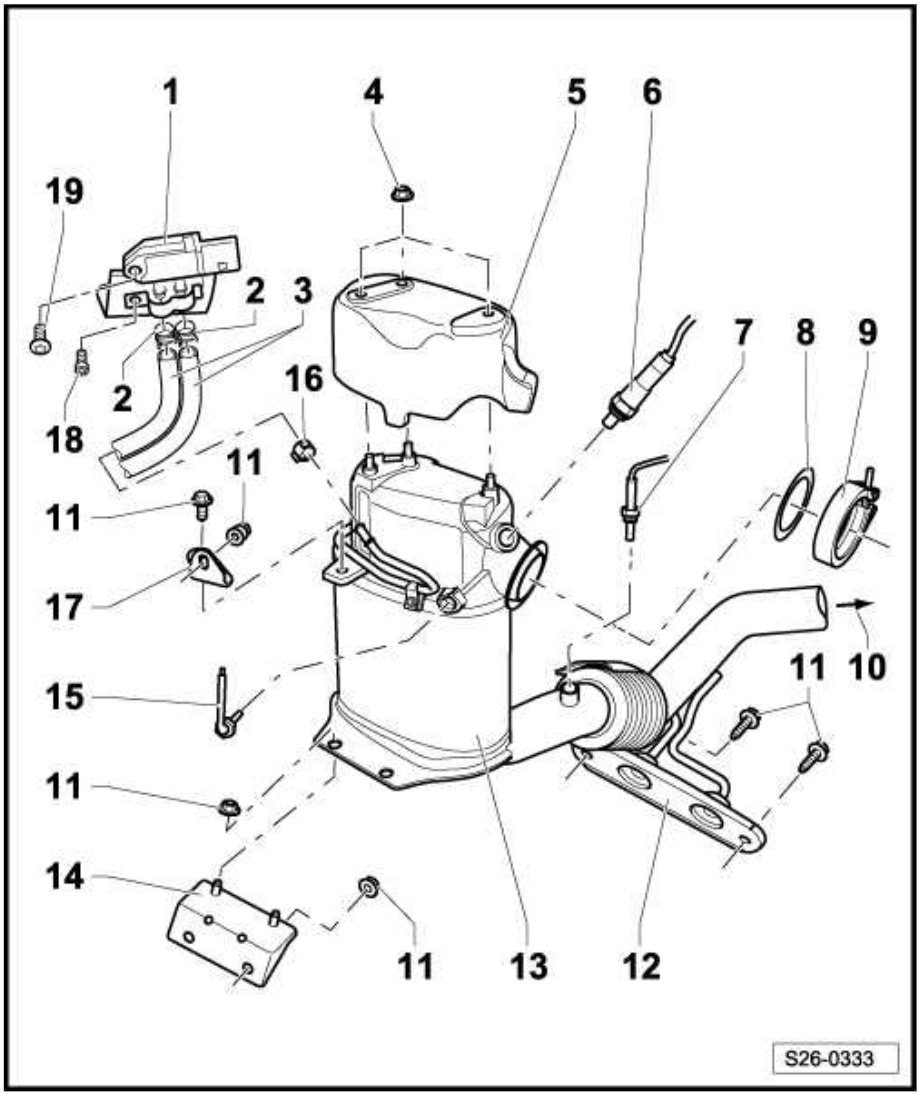
**4 - Nut**

- ❑ 10 Nm

**5 - Heat shield**

**6 - Lambda probe - G39-**

- ❑ the thread of new lambda probes must be coated with assembly paste
- ❑ if a re-used lambda probe is installed, only coat the thread with hot bolt paste - G 052 112 A3- ; the hot bolt paste - G 052 112 A3- must not get into the slots of the probe body
- ❑ 50 Nm




**7 - Exhaust gas temperature sender 4 - G648-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ 45 Nm

**8 - Gasket**

- ❑ replace
- ❑ Check fitting position

**9 - Fixing clamp**

- ❑ replace
- ❑ 7 Nm

**10 - to middle part of exhaust system**

**11 - Screw**

- ❑ 23 Nm

**12 - Hanger**

- ❑ replace if damaged

**13 - Diesel particle filter**

- ❑ with oxidation catalytic converter and pre-exhaust pipe
- ❑ after replacing, the adaptation of the ash mass balance must be set to “0” ⇒ Vehicle diagnostic tester
- ❑ wymontowanie i zamontowanie ⇒ page 457

**14 - Uchwyt**

- ❑ bolted to the cylinder block
- ❑ Replace bracket for diesel particle filter with riveted threaded bolts
- ❑ the required tightening torque can only be applied in this way

**15 - Exhaust gas temperature sender 3 - G495-**

- ❑ the thread of the exhaust gas temperature sender is coated and must not be coated additionally with hot bolt paste
- ❑ tighten ⇒ page 445
- ❑ 45 Nm

**16 - Spring strap clamp**

- ❑ replace

**17 - Support**

- ❑ bolted to the cylinder head

**18 - Screw**

- ❑ 3 Nm

**19 - Screw**

- ❑ 8 Nm

## 1.1.5 Summary of components - Pre-exhaust pipe with catalytic converter (Rapid India, Rapid NH)

**Note**

- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security -T10403- if necessary -T10404- against overtensioning.*
- *Replace the gaskets and the self-locking nuts.*
- *When performing installation work on the exhaust system, make sure the exhaust system is not mounted under tension and has adequate clearance from the vehicle body. If necessary, slacken the warm-type clamp and align the exhaust system so as to create all round adequate clearance to the body and so that the weight is evenly distributed over the hangers.*

**1 - Exhaust pipe with catalytic converter**

wymontowanie i zamontowanie ⇒ page 457

**2 - Gasket**

- ❑ replace
- ❑ Check fitting position

**3 - Open warm-type clamp**

- ❑ replace
- ❑ 7 Nm

**4 - Retaining strap**

- ❑ replace if damaged

**5 - Nut**

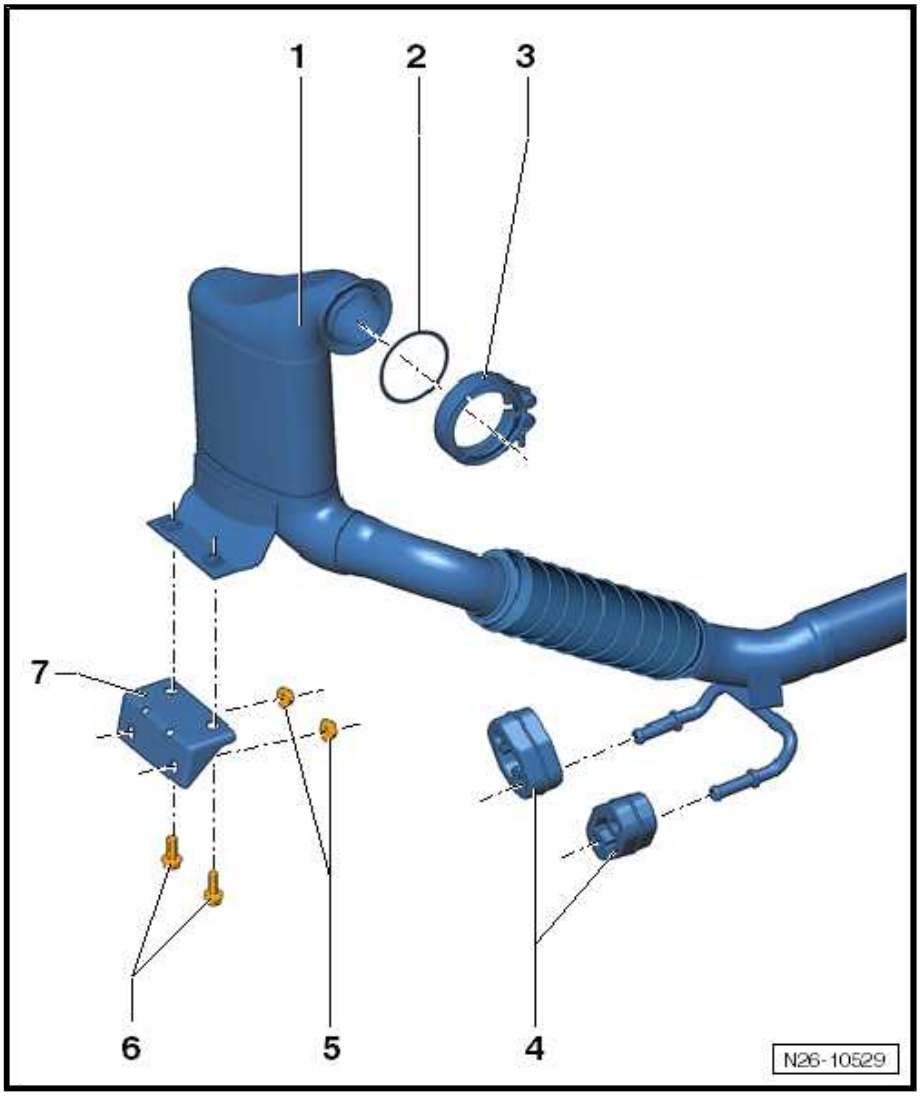
- ❑ 25 Nm

**6 - Screw**

- ❑ 25 Nm

**7 - Uchwyt**

- ❑ screwed onto the cylinder block




## 1.2 Tighten exhaust temperature sender 3 - G495-

⇒ "1.2.1 Tighten exhaust temperature sender 3 G495 , left-hand drive (Fabia II, Roomster, Rapid NH, Octavia II, Superb II, Yeti)", page 445

⇒ "1.2.2 Tighten exhaust temperature sender 3 G495 , right-hand drive (Fabia II, Roomster, Rapid NH)", page 446

### 1.2.1 Tighten exhaust temperature sender 3 - G495- , left-hand drive (Fabia II, Roomster, Rapid NH, Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- ♦ Extension SW 6 from the set of tools - T10395-
- ♦ Torque wrench - V.A.G 1331-

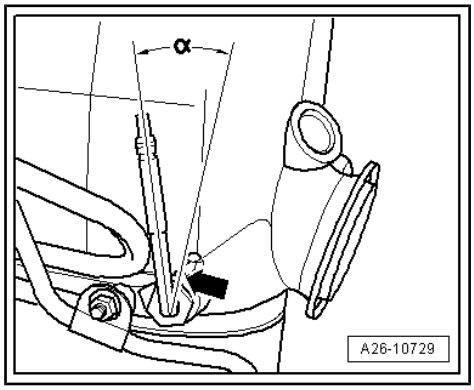
**Caution**

*Malfunction caused by loose exhaust gas temperature sender*

- *The threads of the exhaust gas temperature sender - G495- and -G648- are coated. These must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.*
- *The torque wrench - V.A.G 1331- must be used for tightening!*

Fitting position of the exhaust temperature sender - G495-

- Angled end to the left side of the vehicle
- Angle -α- to marking -arrow- = approximately 17°



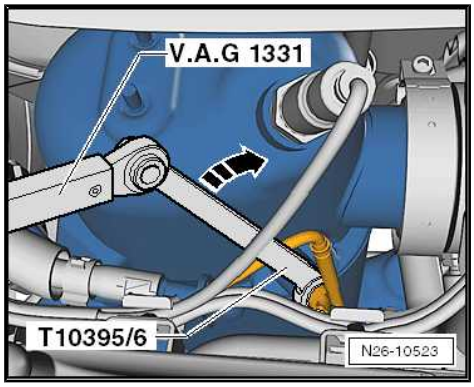

**Caution**

*The torque wrench setting must be 29 Nm in this case.*

*The correct tightening torque of 45 Nm is reached by extending torque wrench with wrench out of the set of tools - T10395/6- .*

– Screw in exhaust gas temperature sender 3 - G495- by hand.

– Then set the recommended tightening torque with the torque wrench together with the wrench from the set of tools - T10395/6- .




## 1.2.2 Tighten exhaust temperature sender 3 - G495- , right-hand drive (Fabia II, Roomster, Rapid NH)

**Special tools and workshop equipment required**

- Extension SW 6 from the set of tools - T10395-
- Torque wrench - V.A.G 1331-

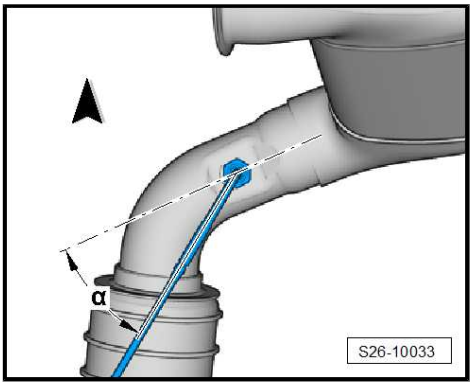
**Caution**

*Malfunction caused by loose exhaust gas temperature sender*

- *The threads of the exhaust gas temperature sender - G495- and -G648- are coated. These must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.*
- *The torque wrench - V.A.G 1331- must be used for tightening!*

Fitting position of the exhaust temperature sender - G495-

- Angle -α- = approximately 38°
- -arrow- faces driving direction



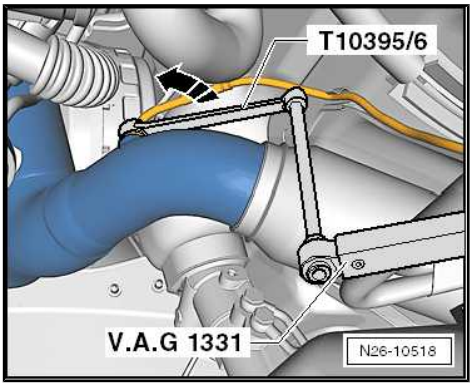

**Caution**

*The torque wrench setting must be 29 Nm in this case.*

*The correct tightening torque of 45 Nm is reached by extending torque wrench with wrench out of the set of tools - T10395/6- .*

– Screw in exhaust gas temperature sender 3 - G495- by hand.

– Then set the recommended tightening torque with the torque wrench together with the wrench from the set of tools - T10395/6- .




## 1.3 Removing and installing differential pressure sender - G505-

⇒ "1.3.1 Removing and installing differential pressure sender G505 (Fabia II, Roomster, Rapid NH)", page 447

## 1.3.1 Removing and installing differential pressure sender - G505- (Fabia II, Roomster, Rapid NH)

**The differential pressure sender - G505- is connected to the measuring points upstream and downstream particle filter via 2 pipes.**

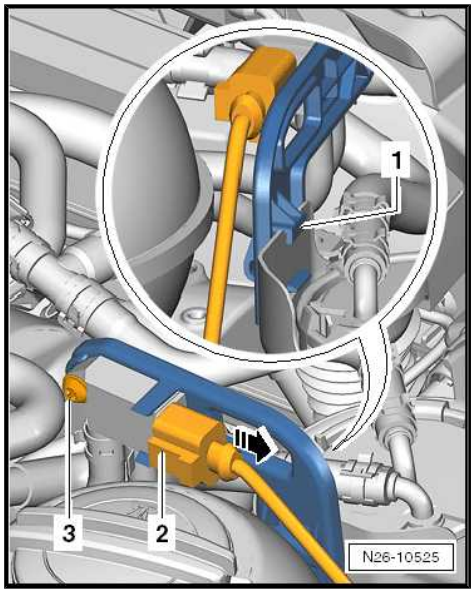
**The differential pressure sender - G505- determines the volumetric efficiency of the particle filter volume.**

**Removing**

– Remove engine cover ⇒ page 10 .

– Before detaching, spray the hoses of the differential pressure sender - G505- with solvent.

– Disconnect the plug connection -2- at the differential pressure sender - G505- .
– Pull off the hoses carefully and straight from the connection fittings (the connection fittings break off slightly from the differential pressure sender - G505- ).
– Unscrew screw -3- and remove differential pressure sender - G505- .




**Install**

– When installing, pay attention to the following points:

**Note**

- *Before installing, blow out the hoses from the differential pressure sender - G505- to the particle filter with compressed air in the direction of the particle filter (blocked or iced up by condensation water).*
- *Pay attention to the tight connection and leaktightness of the hoses.*

– After replacing the differential pressure sender - G505- , an adaption must be performed in the function “Targeted functions” ⇒ Vehicle diagnostic tester.

**Tightening torques**

- ⇒ “1.1 Pre-exhaust pipe”, page 436

## 1.4 Tighten exhaust temperature sender 4 - G648-

⇒ “1.4.1 Tighten exhaust temperature sender 4 G648 , right-hand drive (Fabia II, Roomster, Rapid NH)”, page 448

## 1.4.1 Tighten exhaust temperature sender 4 - G648- , right-hand drive (Fabia II, Roomster, Rapid NH)

**Special tools and workshop equipment required**

- Extension SW 6 from the set of tools - T10395-
- Torque wrench - V.A.G 1331-

**Caution**

*Malfunction caused by loose exhaust gas temperature sender*

- *The threads of the exhaust gas temperature sender - G495- and -G648- are coated. These must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.*
- *The torque wrench - V.A.G 1331- must be used for tightening!*

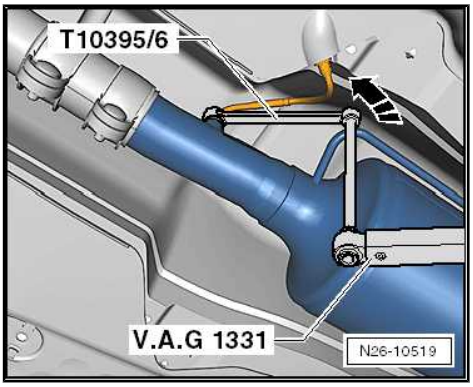
**Caution**

*The torque wrench setting must be 29 Nm in this case.*

*The correct tightening torque of 45 Nm is reached by extending torque wrench with wrench out of the set of tools - T10395/6- .*

– Screw in exhaust gas temperature sender 4 - G648- by hand.

– Then set the recommended tightening torque with the torque wrench together with the wrench from the set of tools - T10395/6- .




## 1.5 Middle and rear part of the exhaust system

⇒ “1.5.1 Summary of components - Middle and rear part of the exhaust system (Fabia II)”, page 449

⇒ “1.5.2 Summary of components - Middle and rear part of the exhaust system (Roomster)”, page 451

⇒ “1.5.3 Summary of components - Middle and rear part of the exhaust system, vehicles with front-wheel drive (Octavia II)”, page 452

⇒ “1.5.4 Summary of components - Middle and rear part of the exhaust system, vehicles with four-wheel drive (Octavia II)”, page 453

⇒ “1.5.5 Summary of components - Middle and rear part of the exhaust system (Superb II)”, page 454

⇒ “1.5.6 Summary of components - Middle and rear part of the exhaust system (Yeti)”, page 455

⇒ “1.5.7 Summary of components - Middle and rear part of the exhaust system (Rapid India)”, page 456

⇒ “1.5.8 Summary of components - Middle and rear part of the exhaust system (Rapid NH)”, page 457

### 1.5.1 Summary of components - Middle and rear part of the exhaust system (Fabia II)

**Middle and rear part of the exhaust system**

**1 - from diesel particle filter**

**2 - Clamp**

- ❑ 23 Nm

**3 - Retaining strap**

- ❑ replace if damaged

**4 - Screw**

- ❑ 25 Nm

**5 - Separation point**

- ❑ for first equipment rear part of exhaust system one building unit with middle part of exhaust system
- ❑ Replace individually when carrying out repairs
- ❑ position clamping sleeve on the marking -arrows B- when installing
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

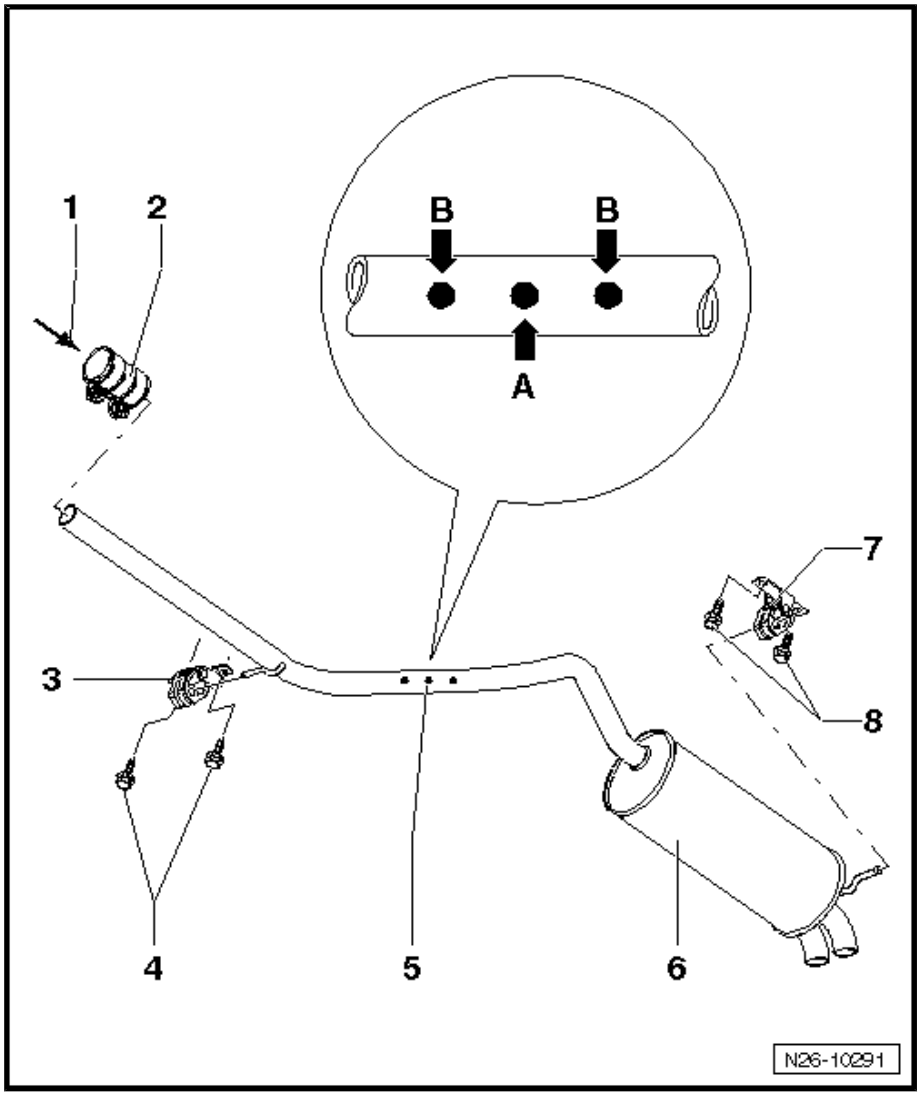
**6 - Rear part of exhaust system**

**7 - Retaining strap**

- ❑ replace if damaged

**8 - Screw**

- ❑ 25 Nm



## 1.5.2 Summary of components - Middle and rear part of the exhaust system (Roomster)

**Rear part of exhaust system**

**1 - Retaining strap**
- ❑ replace if damaged

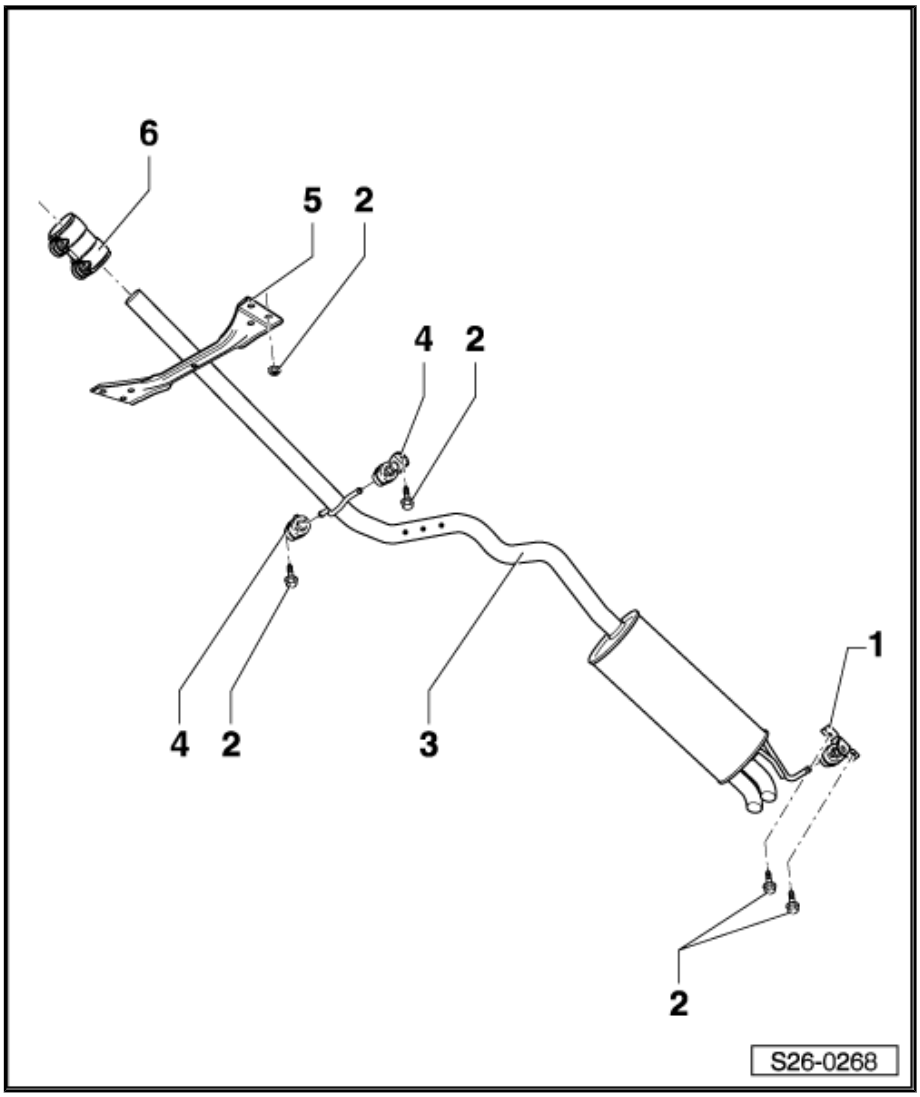
**2 - Nuts/bolts**
- ❑ 20 Nm

**3 - Rear part of exhaust system**

**4 - Retaining strap**
- ❑ replace if damaged

**5 - Tunnel bridge**

**6 - Clamp**
- ❑ 23 Nm



## 1.5.3 Summary of components - Middle and rear part of the exhaust system, vehicles with front-wheel drive (Octavia II)

**1 - Screw**

- ❑ replace
- ❑ 23 Nm

**2 - Retaining strap**

- ❑ replace if damaged

**3 - Middle and rear part of the exhaust system**

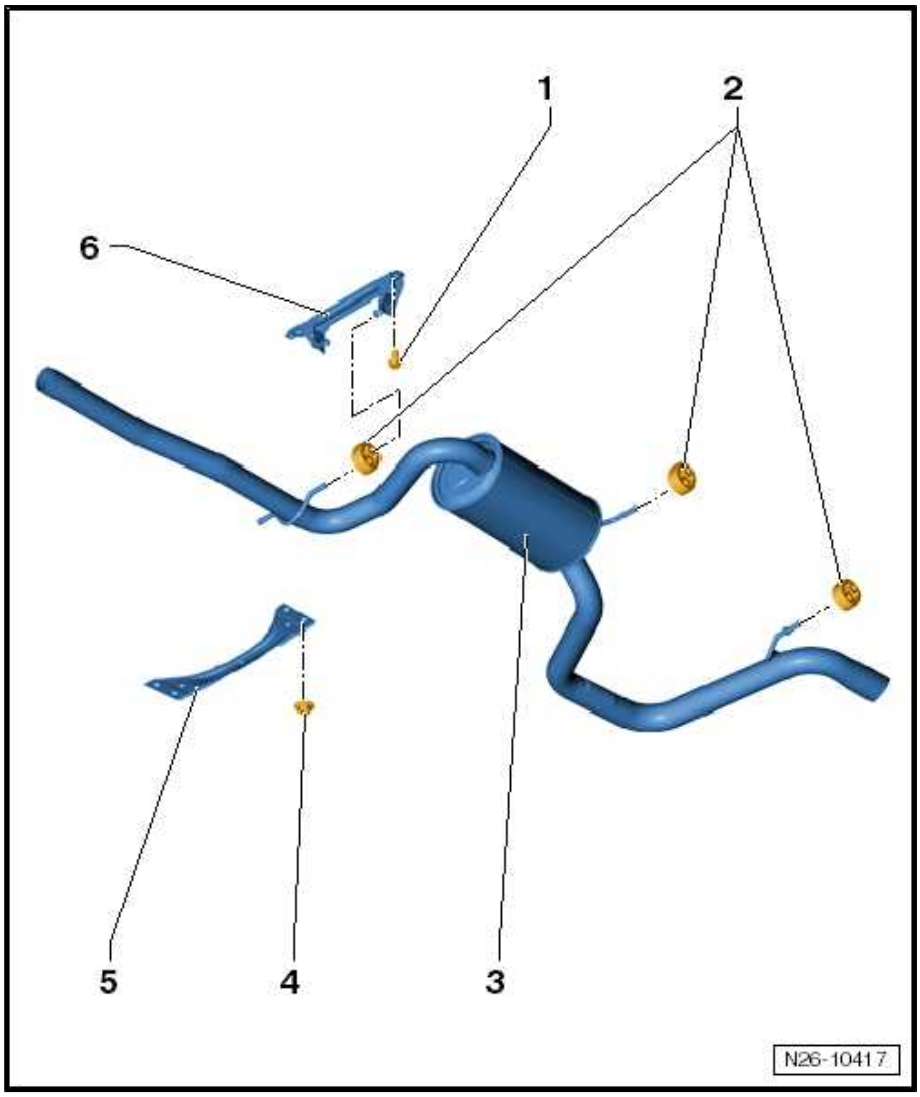
- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

**4 - Nut**

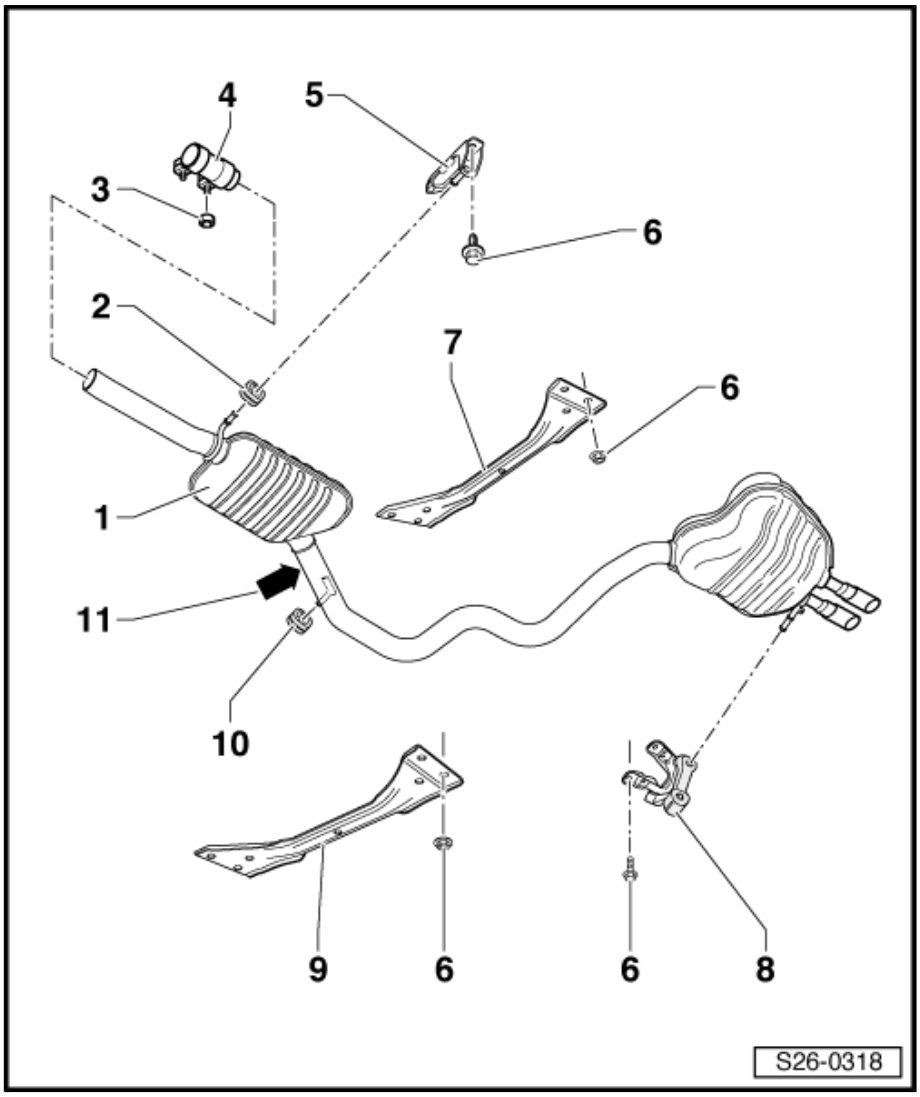
- ❑ 20 Nm

**5 - Rear tunnel bridge**

**6 - Hanger**



## 1.5.4 Summary of components - Middle and rear part of the exhaust system, vehicles with four-wheel drive (Octavia II)




**1 - Middle and rear part of the exhaust system**

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475
- ❑ Separation point ⇒ page 473

**2 - Retaining strap**

- ❑ replace if damaged
- ❑ Pay attention to the part number

**3 - Nut**

- ❑ 23 Nm

**4 - Clamp**

- ❑ align the exhaust system free of stress before tightening ⇒ page 475
- ❑ Tighten bolted connections evenly

**5 - Hanger**

**6 - Nuts/bolts**

- ❑ 20 Nm

**7 - Tunnel bridge**

- ❑ front

**8 - Retaining strap**

- ❑ replace if damaged
- ❑ Pay attention to the part number

**9 - Tunnel bridge**

- ❑ rear

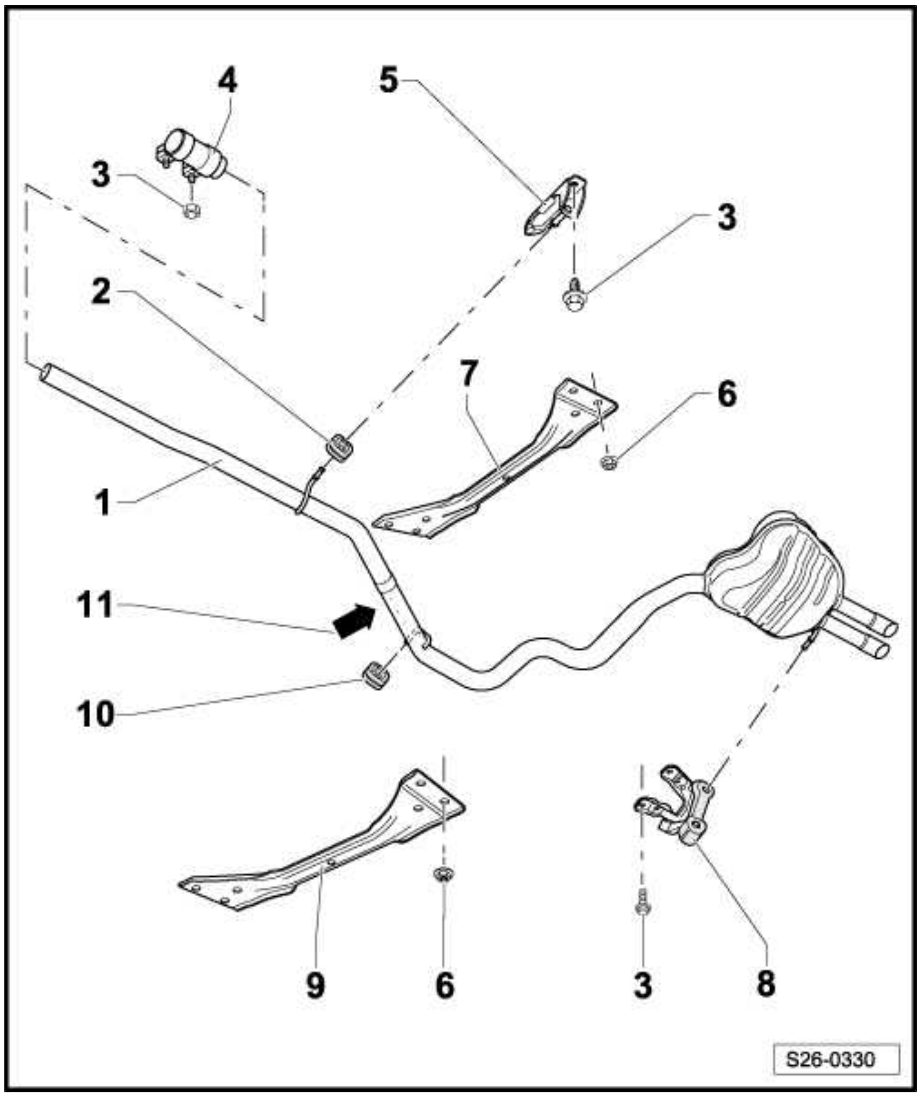
**10 - Retaining strap**

- ❑ replace if damaged
- ❑ Pay attention to the part number

**11 - Separation point**

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ page 473

# 1.5.5 Summary of components - Middle and rear part of the exhaust system (Superb II)




**1 - Middle and rear part of the exhaust system**

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

**2 - Retaining strap**

- ❑ replace if damaged

**3 - Nuts/bolts**

- ❑ 23 Nm

**4 - Clamp**

- ❑ align exhaust system free of stress before fitting on ⇒ page 475
- ❑ Tighten bolted connections evenly

**5 - Hanger**

**6 - Nut**

- ❑ 20 Nm

**7 - Front tunnel bridge**

**8 - Hanger**

- ❑ replace if damaged

**9 - Rear tunnel bridge**

**10 - Retaining strap**

- ❑ replace if damaged
- ❑ Pay attention to the part number

**11 - Separation point**

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ page 473

## 1.5.6 Summary of components - Middle and rear part of the exhaust system (Yeti)

**1 - Clamp**

- ❑ align exhaust system free of stress before fitting on ⇒ page 475
- ❑ Tighten bolted connections evenly

**2 - Middle and rear part of the exhaust system**

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

**3 - Hanger**

**4 - Screw**

- ❑ 23 Nm

**5 - Retaining strap**

- ❑ replace if damaged
- ❑ Pay attention to the part number

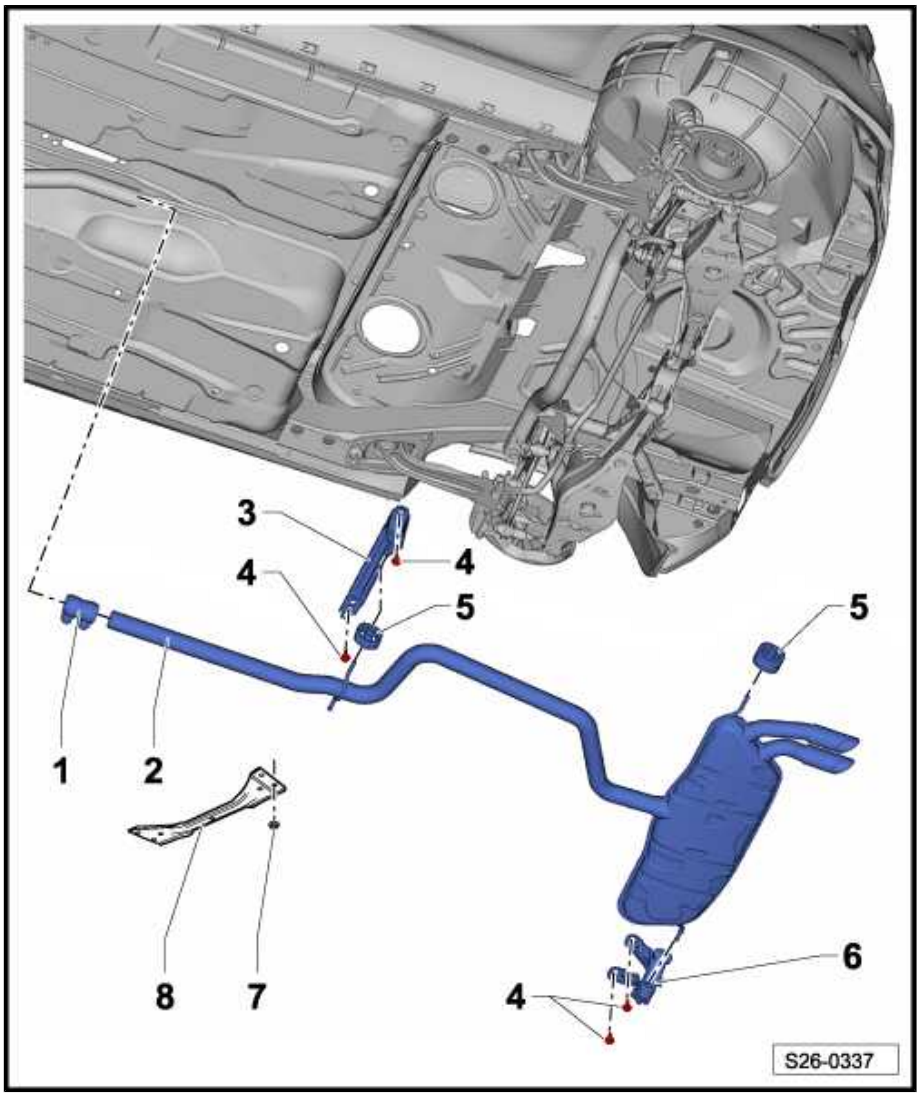
**6 - Retaining strap**

- ❑ replace if damaged

**7 - Nut**

- ❑ 20 Nm

**8 - Tunnel bridge**



# 1.5.7 Summary of components - Middle and rear part of the exhaust system (Rapid India)

**1 - Separation point**

- ❑ for first equipment rear part of exhaust system one building unit with middle and front part of exhaust system
- ❑ Replace individually when carrying out repairs
- ❑ Position clamping sleeve on the marking when installing ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

**2 - Retaining strap**

- ❑ replace if damaged

**3 - Middle and rear part of the exhaust system**

**4 - Screw**

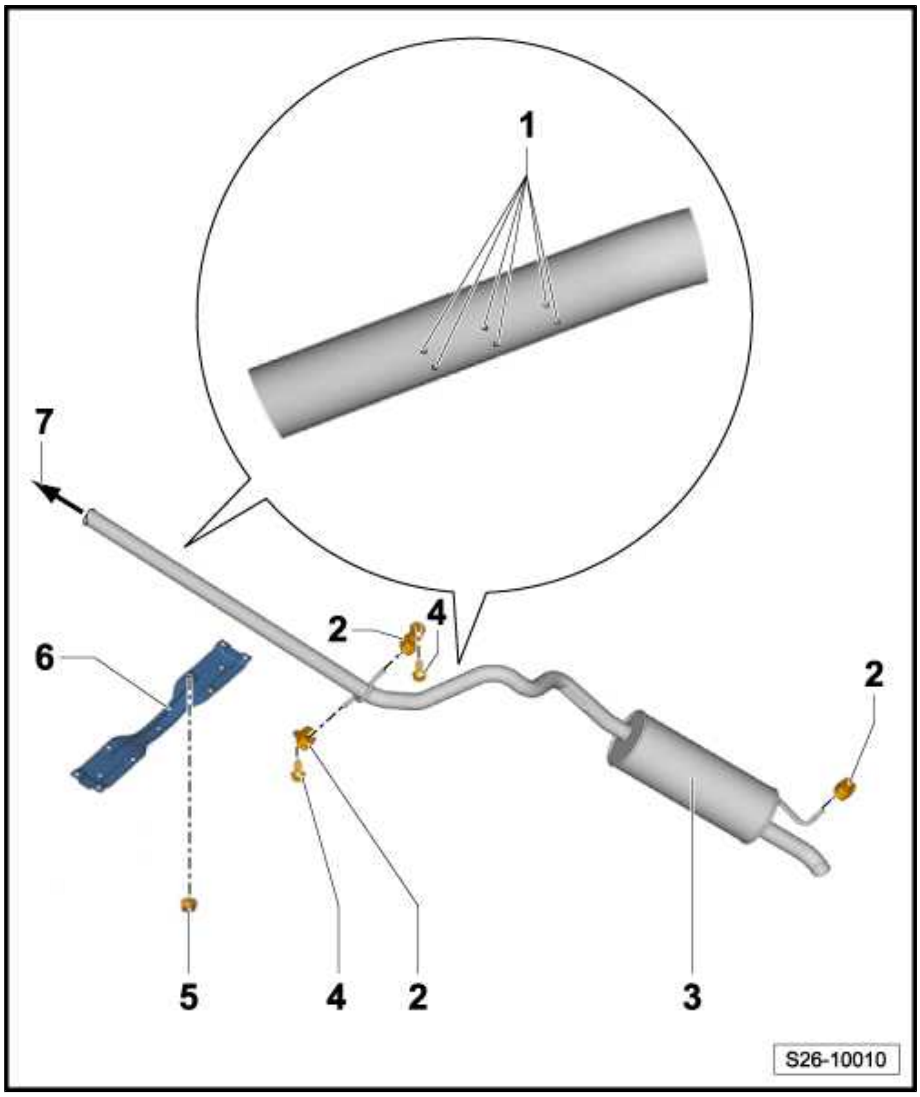
- ❑ 23 Nm

**5 - Nut**

- ❑ 20 Nm

**6 - Tunnel bridge**

**7 - to catalytic converter**



## 1.5.8 Summary of components - Middle and rear part of the exhaust system (Rapid NH)

**1 - Separation point**

- ❑ for first equipment rear part of exhaust system one building unit with middle part of exhaust system
- ❑ Replace individually when carrying out repairs
- ❑ Position clamping sleeve on the marking when installing ⇒ page 473
- ❑ ustawienie układu wydechowego bez naprężeń ⇒ page 475

**2 - Retaining strap**

- ❑ replace if damaged

**3 - Middle and rear part of the exhaust system**

**4 - Screw**

- ❑ 23 Nm

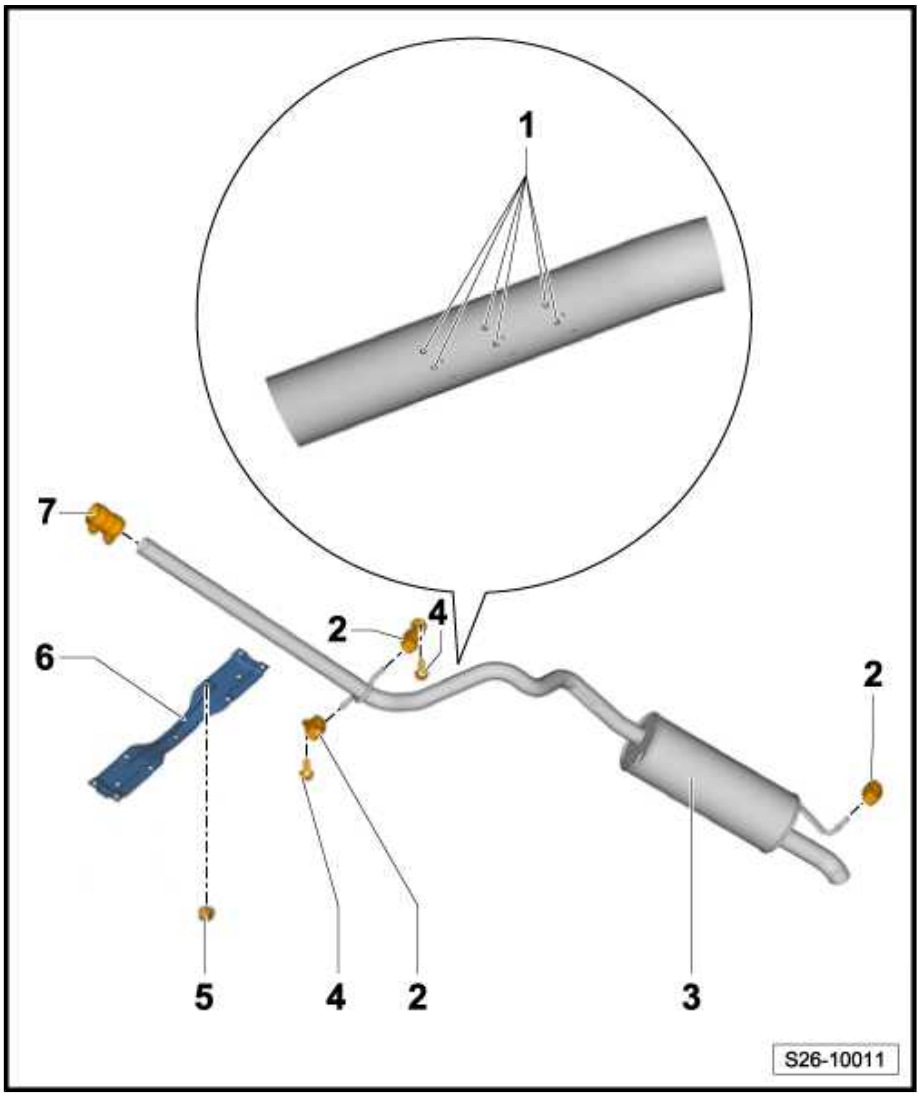
**5 - Nut**

- ❑ 20 Nm

**6 - Tunnel bridge**

**7 - Clamp**

- ❑ 23 Nm




## 1.6 Removing and installing exhaust pipe

⇒ "1.6.1 Remove and install pre-exhaust pipe with diesel particle filter (Fabia II, Roomster, Rapid NH)", page 457

⇒ "1.6.2 Remove and install pre-exhaust pipe with diesel particle filter, right-hand drive (Fabia II, Roomster, Rapid NH)", page 461

⇒ "1.6.3 Removing and installing oil pre-exhaust pipe with diesel particle filter (Octavia II, Superb II, Yeti)", page 465

⇒ "1.6.4 Removing and installing pre-exhaust pipe with catalytic converter (Rapid India, Rapid NH)", page 470

## 1.6.1 Remove and install pre-exhaust pipe with diesel particle filter (Fabia II, Roomster, Rapid NH)

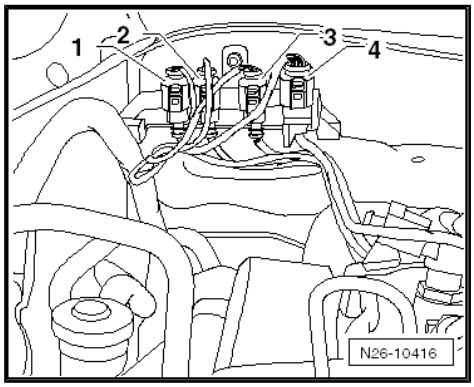
**Special tools and workshop equipment required**

- ♦ Ring spanner set for lambda probe

- Tensioning strap - T10038-
- Engine/gearbox jack - V.A.G 1383/A-
- Set of tools - T10395-
- Hot screw paste - G 052 112 A3-
- Pliers for spring strap clamps
- Transport security - T10403-

**Removing**

– Remove engine cover ⇒ page 10 .




1 - Disconnect plug connection for exhaust gas temperature sender 1 - G235- .

2 - Disconnect plug connection for exhaust gas temperature sender 3 - G495- .

3 - Disconnect plug connection for exhaust gas temperature sender 4 - G648- .

4 - Disconnect plug connection for lambda probe - G39- .

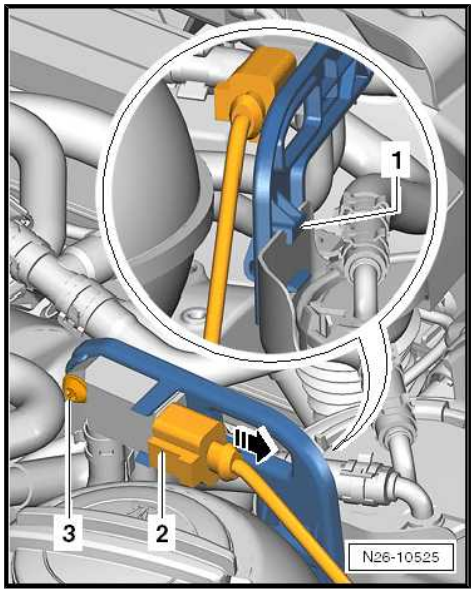
– Disconnect plug connection at differential pressure sender - G505- -2-.

– Unscrew screw -3- and remove differential pressure sender - G505- .

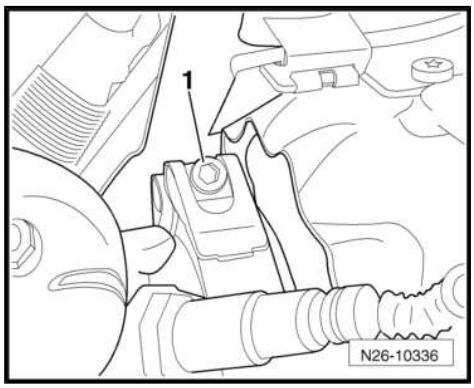
– Detach the lines from the brackets at the engine and the heat shield from the particle filter, if necessary remove installed cable straps.

– Remove the lambda probe - G39- using the ring spanner for lambda probe.

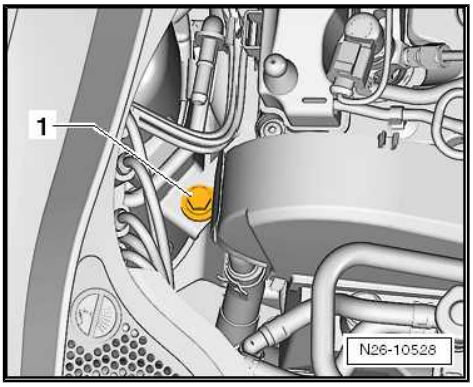
– Use the set of tools - T10395- to remove the exhaust gas temperature sender 3 - G495- .



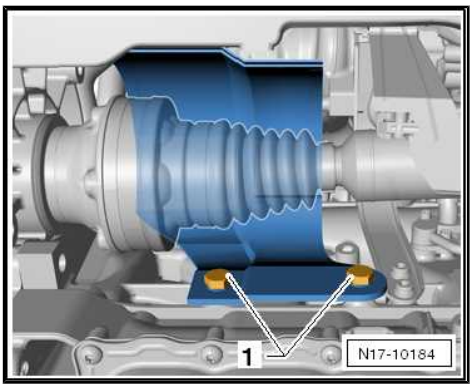

– Remove warm-type clamp -1- between diesel particle filter and exhaust turbocharger.



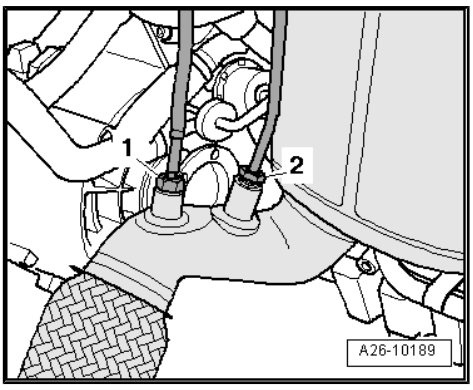
– Unscrew bolt -1-.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



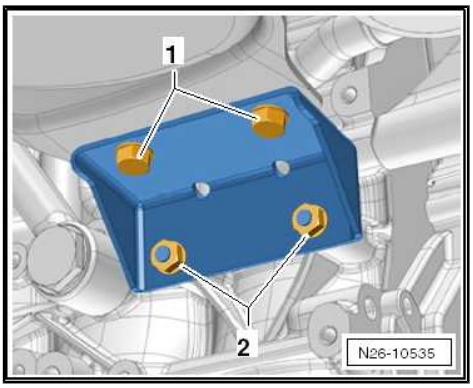

– Unscrew screws -1- of protective plate for right drive shaft, if present.
– Release assembly carrier in the service position and align ⇒ Chassis; Rep. gr. 40 .




– Unscrew exhaust gas temperature sender 4 - G648- -1- from exhaust pipe downstream diesel particle filter.

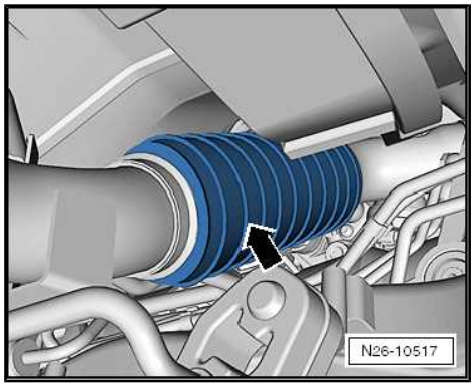



– Release the screws -1- and then the nuts -2-.
– Remove bracket for diesel particle filter.



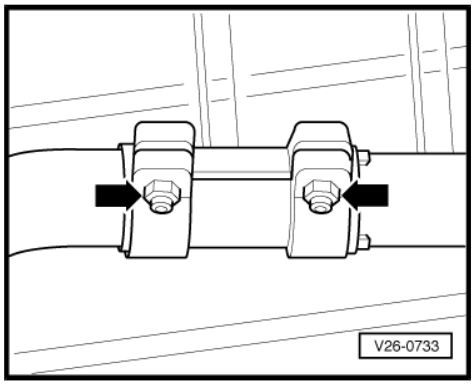
**Note**

- *The assistance of a 2nd mechanic is required for guiding out the diesel particle filter.*
- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security - T10403- against overtensioning -arrow-.*




– Slacken the fixing nuts -arrows- of the warm-type clamp and slightly push it back from the pre-exhaust pipe.

– Carefully remove the pre-exhaust pipe with particle filter above the lowered assembly carrier together with the differential pressure sender - G505- .



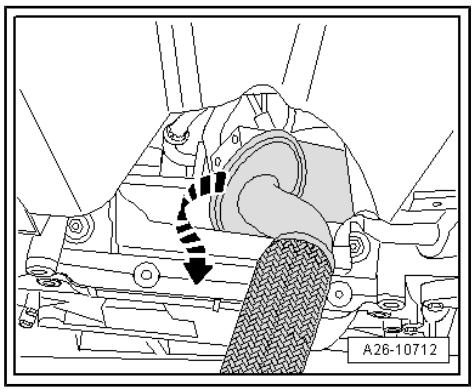

– Turn the particle filter by 180° and remove.

**Install**

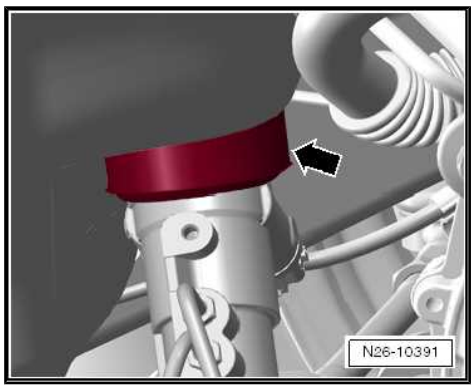
Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Before installing the assembly carrier with steering gear, make sure the seal on the steering gear is not bent on the assembly plate. In this way the footwell opening is correctly sealed, otherwise water could penetrate or noise could occur.*
- *Replace seals, self-locking nuts and the clamp for particle filter.*
- *All cable straps which are detached when removing, should be attached again in the same place when installing.*

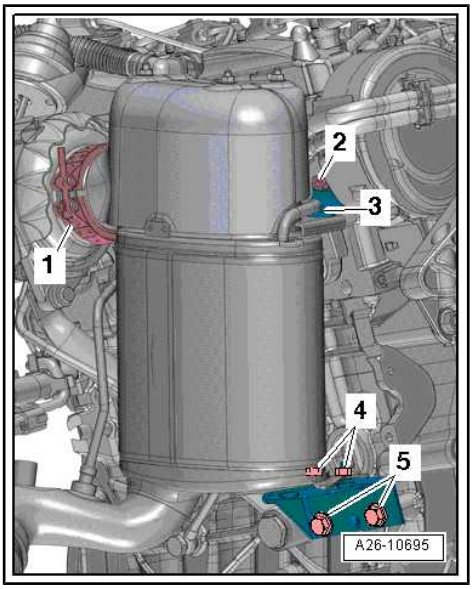



**Pay attention to the fitting position of the seal -arrow- (steering nut)**



**Observe sequence when installing the diesel particle filter:**

| | |
|---|---|
| 1. | Position diesel particle filter on exhaust gas turbocharger, loosely tighten clamp -1- |
| 2. | Insert screws and nuts -3 … 5- by hand. |
| 3. | Tighten clamp -1-. |
| 4. | Tighten nuts -5-. |
| 5. | Tighten screws and nuts -3- and -4- |




– Align exhaust system free of stress ⇒ page 475 .

– After replacing the diesel particle filter, an adaption must be performed in the function “Targeted functions” ⇒ Vehicle diagnostic tester.

**Tightening torques**

♦ ⇒ “1.1 Pre-exhaust pipe”, page 436

## 1.6.2 Remove and install pre-exhaust pipe with diesel particle filter, right-hand drive (Fabia II, Roomster, Rapid NH)

**Special tools and workshop equipment required**

♦ Ring spanner set for lambda probe

♦ Tensioning strap - T10038-

♦ Engine/gearbox jack - V.A.G 1383/A-

♦ Set of tools - T10395-

♦ Hot screw paste - G 052 112 A3-

♦ Pliers for spring strap clamps

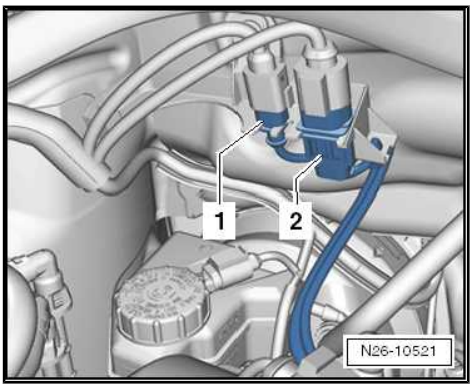
♦ Transport security - T10403-

**Removing**

– Remove engine cover ⇒ page 10 .

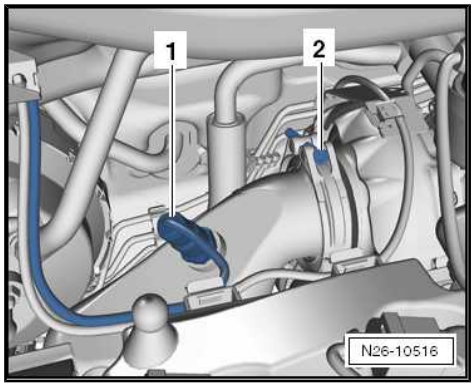
– Disconnect plug connection -1- for exhaust gas temperature sender 1 - G235- .

– Disconnect plug connections -2- of lambda probe - G39- .

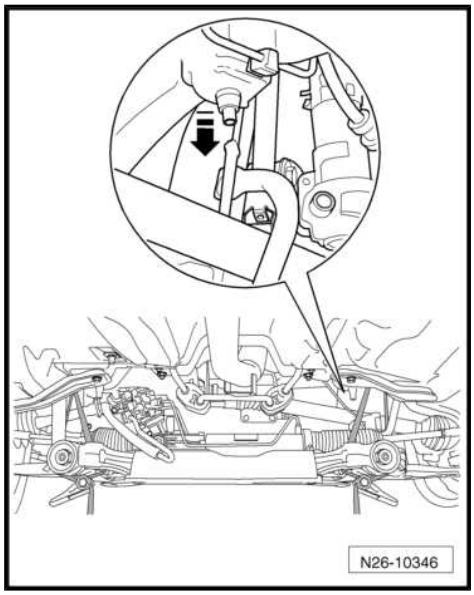


– Remove the lambda probe - G39- -1- using the ring spanner for lambda probe.
– Remove warm-type clamp -2- between catalytic converter with diesel particle filter and exhaust turbocharger.
– Release assembly carrier in the service position and align ⇒ Chassis; Rep. gr. 40 .
– Lower the assembly carrier with engine/gearbox jack - V.A.G 1383/A- ; the steering remains on the assembly carrier.

While doing so, the hydraulic circuit of the steering must not be opened.



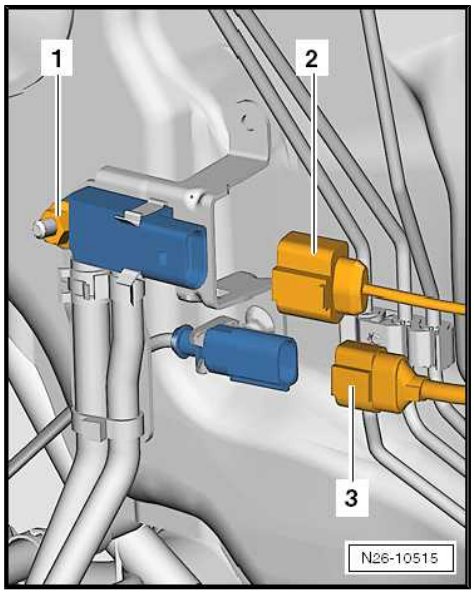

– Lower on the right side by approx. 10 cm -arrow-.
– Lower on the left side by approx. 7 cm, because of possible overtensioning of the hydraulic lines.




**Note**

*Secure assembly carrier with steering gear to the lower vehicle surface using a tension strap - T10038- .*

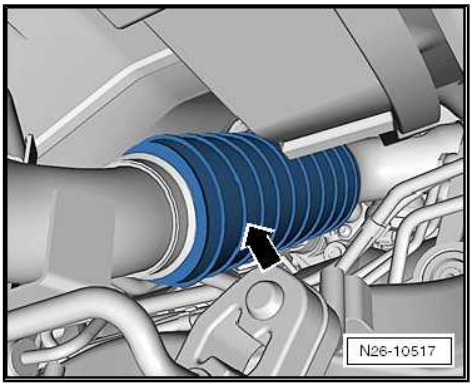
– Disconnect plug connection at differential pressure sender - G505- -2-.
– Unscrew differential pressure sender - G505- -1- from bracket.
– Disconnect plug connection -3- to differential pressure sender - G505- .
– Remove lines from bracket, if necessary remove cable straps.



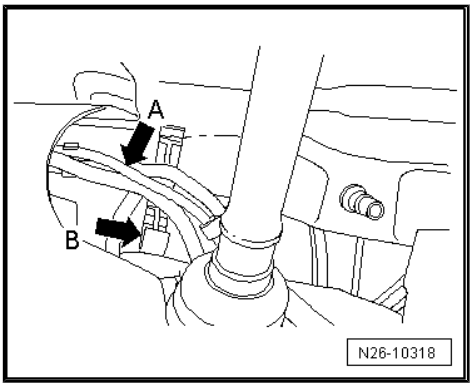

**Note**

*The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*

– If the catalytic converter with diesel particle filter should be re-installed, the transport security - T10403- -arrow- must be attached to the decoupling element in the pre-exhaust pipe.

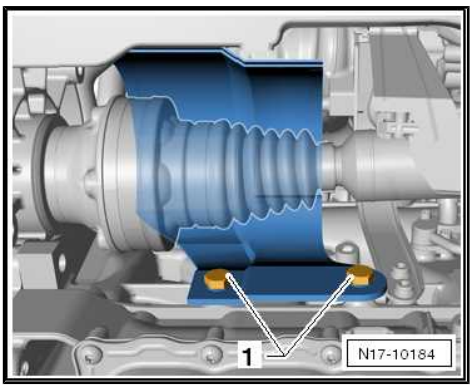



– Open the bracket -arrow B- of the hydraulic lines -A-.

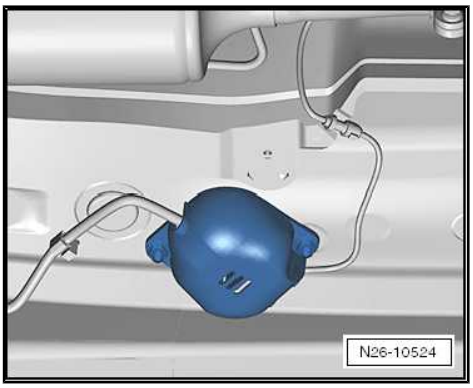



– Unscrew screws -1- of protective plate for right drive shaft, if present.

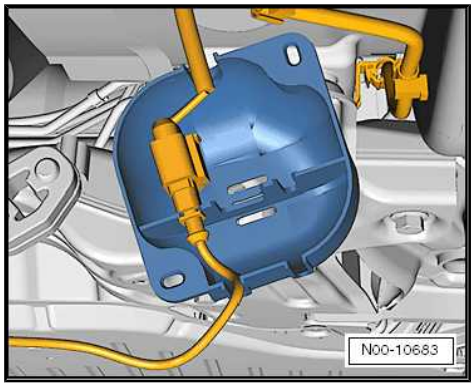
– Unscrew exhaust temperature sender 3 - G495- with - T10395/6- -Pos. 5- ⇒ page 438 from the pre-exhaust pipe.



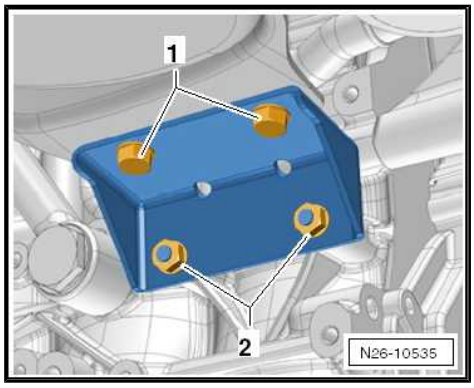

– Remove the cover of the plug connection for the exhaust gas temperature sender 4 - G648- .



– Disconnect plug connection for exhaust gas temperature sender 4 - G648- .



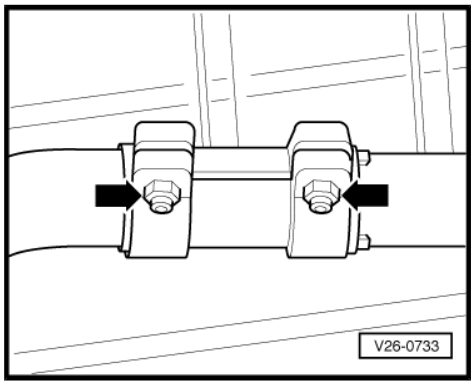

– Release the screws -1- and then the nuts -2-.
– Remove bracket for diesel particle filter.




**Note**

- *The assistance of a 2nd mechanic is required for guiding out the diesel particle filter.*
- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security - T10403- against overtensioning.*

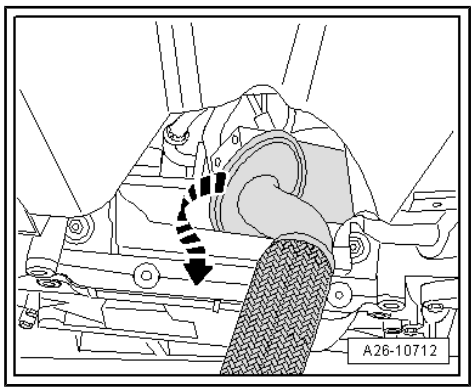
– Slacken the fixing nuts -arrows- of the warm-type clamp and slightly push it back from the pre-exhaust pipe.
– Unhook the pre-exhaust pipe from the retaining straps.
– Carefully remove the pre-exhaust pipe with particle filter above the lowered assembly carrier together with the differential pressure sender - G505- .




– Turn the particle filter by 180° and remove.

**Install**

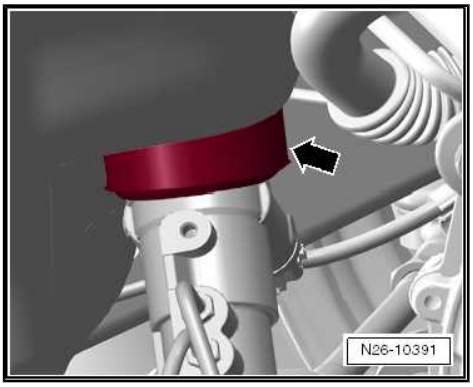
Installation is performed in the reverse order, pay attention to the following points:



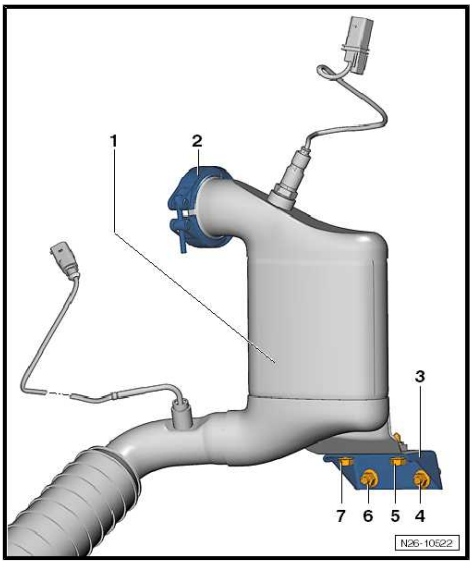

**Note**

- *Before installing the assembly carrier with steering gear, make sure the seal on the steering gear is not bent on the assembly plate. In this way the footwell opening is correctly sealed, otherwise water could penetrate or noise could occur.*
- *Replace seals, self-locking nuts and the clamp for catalytic converter.*
- *All cable straps which are detached when removing, should be attached again in the same place when installing.*

**Pay attention to the fitting position of the seal -arrow- (steering nut)**




**Observe sequence when installing the diesel particle filter:**




| | |
|---|---|
| 1. | Bearing of catalytic converter with diesel particle filter -1- at exhaust gas turbocharger, clamp -2- (only positioning) |
| 2. | Bracket to cylinder block with crankcase with nuts -4- + -6- (only positioning). Also the screws -5- and -7- (positioning). |
| 3. | Tighten clamp -2- at exhaust gas turbocharger to 7 Nm |
| 4. | Tighten nuts left -6- at cylinder block with crankcase to 25 Nm |
| 5. | Tighten nuts right -4- at cylinder block with crankcase to 25 Nm |
| 6. | Tighten the left screw -7- at the diesel particle filter to 25 Nm |
| 7. | Tighten the right screw -5- at the diesel particle filter to 25 Nm |

– Align exhaust system free of stress ⇒ page 475 .

**Tightening torques**

♦ ⇒ “1.1 Pre-exhaust pipe”, page 436

## 1.6.3 Removing and installing oil pre-exhaust pipe with diesel particle filter (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

♦ Set of tools - T10395-
♦ Ratchet ring wrench - T10384-
♦ Ring spanner set for lambda probe
♦ Hot screw paste - G 052 112 A3-
♦ Pliers for spring strap clamps
♦ Transport security - T10404-

**Removing**

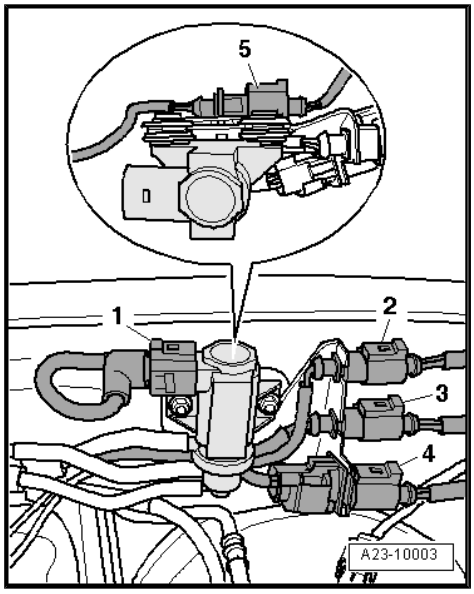
– Switch off ignition and pull out ignition key.
– Remove engine cover ⇒ page 10 .

– Disconnect the following plug connections and expose the cables.

♦ Position 2: Exhaust gas temperature sender 4 - G648-

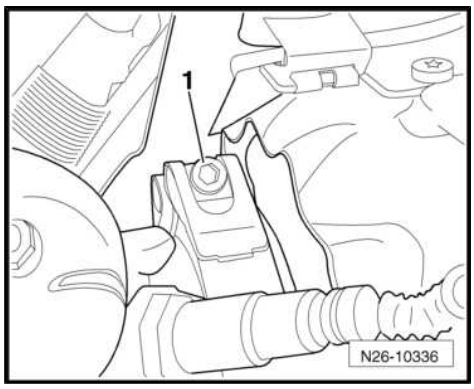
♦ Position 4: Lambda probe - G39-

♦ Position 5: Exhaust gas temperature sender 3 - G495-



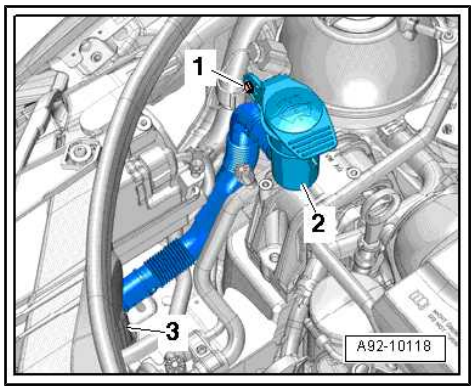

– Remove warm-type clamp -1- between diesel particle filter and exhaust turbocharger.

– Remove lambda probe - G39- .

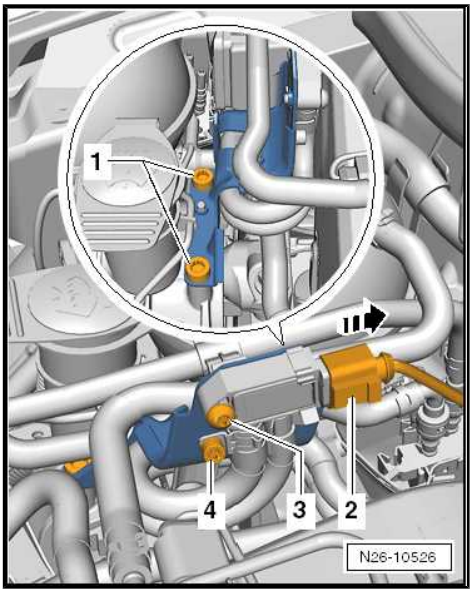



– Release screw -1-.

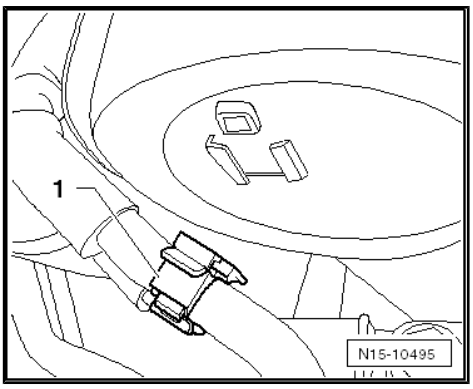
– Push the filler tube with the filler neck -2- for the washer-fluid reservoir to the side.



– Disconnect the plug from the differential pressure sender - G505- and unscrew the fixing screws -1-.




– Slacken line for differential pressure sender - G505- with bracket -1- from top timing belt guard.




**Caution**

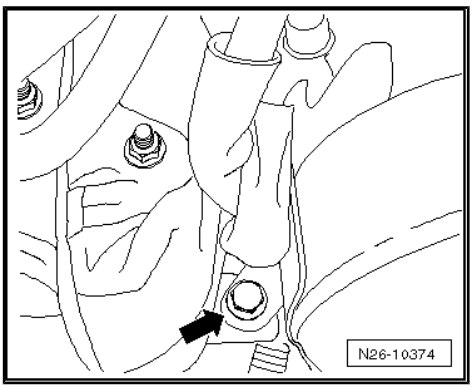
***Risk of damage!***

- ***The differential pressure indicator - G505- is very sensitive and must not touch somewhere when laying it down with the bracket.***

– Remove the bracket with the differential pressure sender - G505- and place it to the rear.

– Use the set of tools - T10395- to remove the exhaust gas temperature sender 3 - G495- .

– Release the top screw -arrow- for attaching the diesel particle filter.




– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

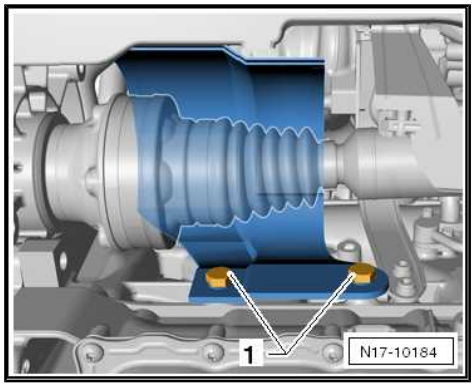
**Vehicles with auxiliary heating**

– Remove exhaust pipe of auxiliary heating (only for vehicles with extended exhaust pipe) ⇒ Heating, Air Conditioning; Rep. gr. 82 .

**Continued for all vehicles**

– Unscrew screws -1- of protective plate for right drive shaft, if present.

– Remove drive shaft to the right ⇒ Chassis; Rep. gr. 40 .




**For left-hand drive**

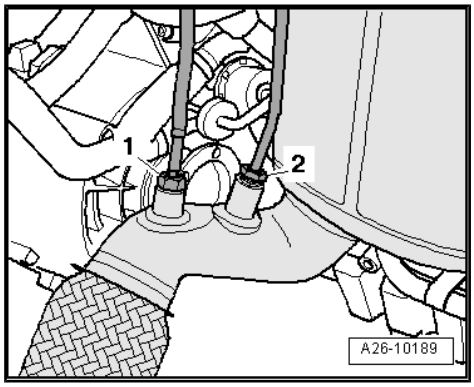
– Release assembly carrier in the service position and align ⇒ Chassis; Rep. gr. 40 .

**For right-hand drive**

– Remove the assembly carrier ⇒ Chassis; Rep. gr. 40 . Hook the steering gear on the body.

**Continued for all vehicles**

– Use the set of tools - T10395- to remove the exhaust gas temperature sender 4 - G648- -1- from the exhaust pipe.



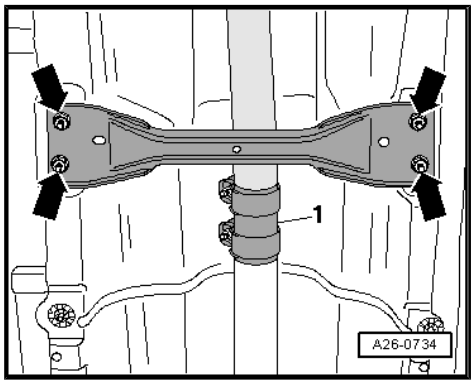

**For vehicles Octavia II until 09.2010**

– Unscrew pressure line -2- to differential pressure sender - G505- .

**Continued for all vehicles**

– Unscrew the front cross member -arrows-.

– Slacken the warm-type clamp and slide it backwards.

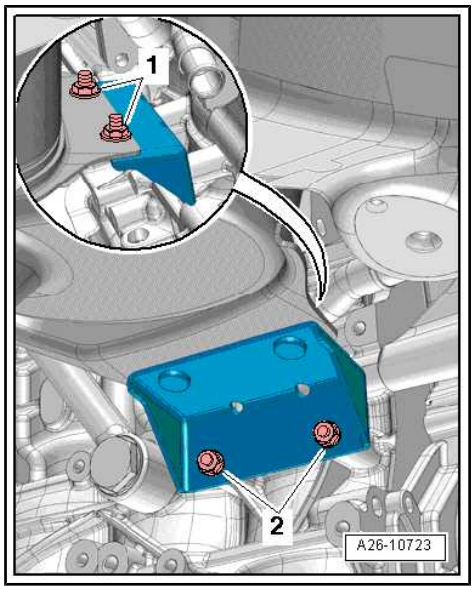



**For vehicles with front-wheel drive**

– Release nuts -1- using the ratchet ring wrench - T10384- .

– Release nuts -2- and remove bracket for diesel particle filter.

– Push the diesel particle filter towards the rear and separate the hose connection of the differential pressure sender - G505- at the pipe of the diesel particle filter.




**Caution**

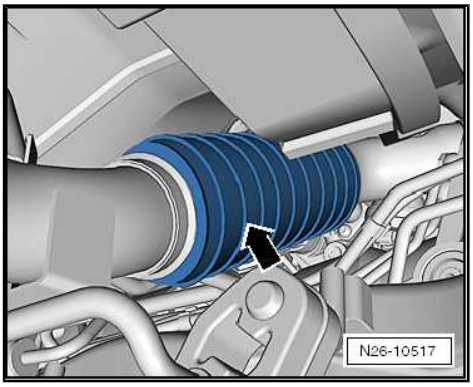
*Risk of damage!*

- *The differential pressure indicator - G505- is very sensitive and must not touch somewhere when laying it down with the bracket.*

– Remove differential pressure sender - G505- with bracket and hoses and carefully place down.

**Note**

- *The assistance of a 2nd mechanic is required for guiding out the diesel particle filter.*
- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security - T10404- against overtensioning -arrow-.*

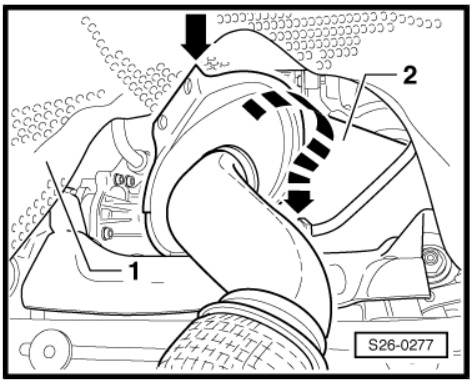



– Turn Diesel particulate filter -1- by 180° -direction of arrow- and swivel out.

**On vehicles with four-wheel drive**

– Remove the assembly carrier ⇒ Chassis; Rep. gr. 40 . Hook the steering gear on the body.

– Remove right flange shaft ⇒ Gearbox; Rep. gr. 39 .

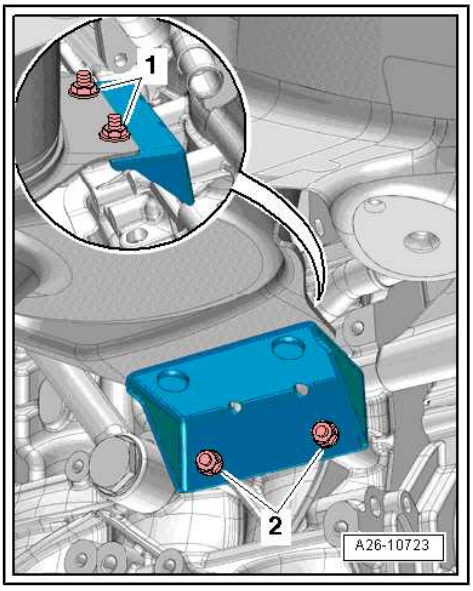



– Release nuts -1- using the ratchet ring wrench - T10384- .

– Release nuts -2- and remove bracket for diesel particle filter.

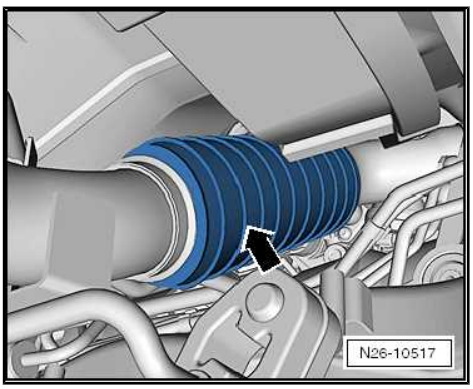
– Push the diesel particle filter towards the rear and separate the hose connection of the differential pressure sender - G505- at the pipe of the diesel particle filter.

– Remove differential pressure sender - G505- with bracket and hoses and carefully place down.

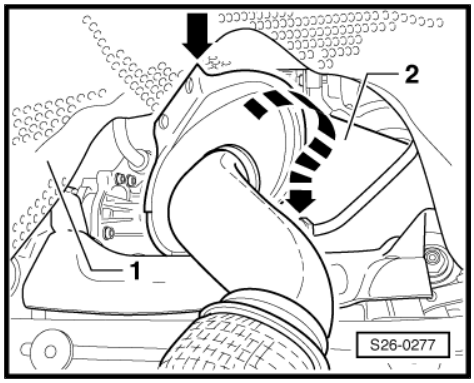



**Note**

- *The assistance of a 2nd mechanic is required for guiding out the diesel particle filter.*
- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security - T10404- against overtensioning -arrow-.*



– Press the engine/gearbox assembly towards the front and turn the diesel particle filter -1- by 180° in -direction of arrow- and swivel out.

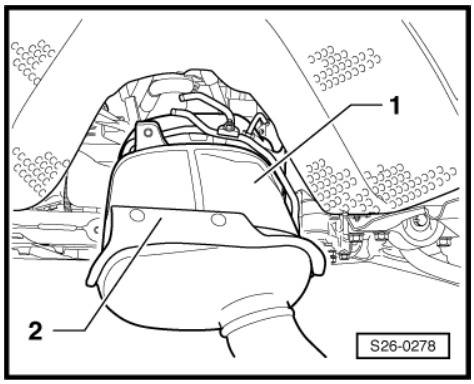



**Note**

*If the bracket of the diesel particle filter should obstruct when swivelling out -arrow-, slightly push aside the sheet metal tunnel -2- if necessary.*

**Install**

– Insert the diesel particle filter -1- with the bracket -2- upwards as shown and swivel to the left by 180°.




Further installation occurs in reverse order. However, pay attention to the following:

- Replace gasket and clamp for diesel particle filter.

– First fasten the diesel particle filter loosely to the exhaust gas turbocharger and then fasten to the bottom bracket.

– Align exhaust system free of stress ⇒ page 475 .

If the differential pressure sender - G505- is changed, the differential pressure sender - G505- must be adjusted using the diagnostic unit : Targeted functions; adjust differential pressure sender - G505- .

After replacing the diesel particle filter, the adaptation of the ash mass balance must be set to “0” ⇒ Vehicle diagnostic tester.

**Tightening torques**

- ⇒ “1.1 Pre-exhaust pipe”, page 436

## 1.6.4 Removing and installing pre-exhaust pipe with catalytic converter (Rapid India, Rapid NH)

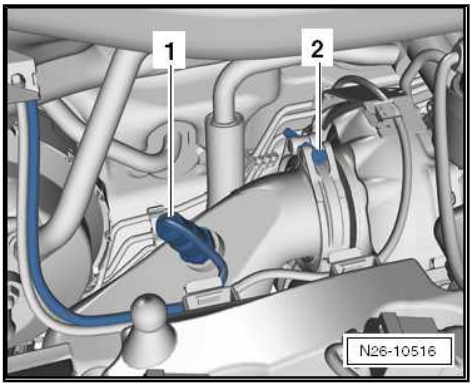
**Special tools and workshop equipment required**

- Tensioning strap - T10038-
- Engine/gearbox jack - V.A.G 1383/A-
- Hot screw paste - G 052 112 A3-
- Transport security - T10403-

**Removing**

– Remove engine cover ⇒ page 10 .

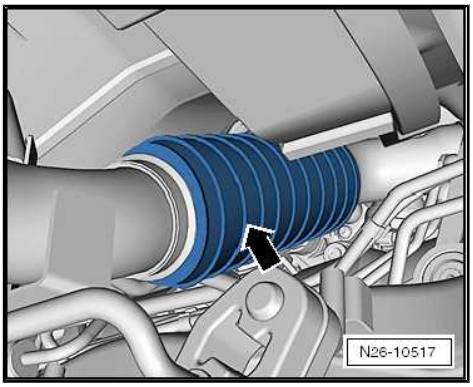
– Remove fixing clamp -2- between catalytic converter and exhaust gas turbocharger.
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Release assembly carrier in the service position and align ⇒ Chassis; Rep. gr. 40 .



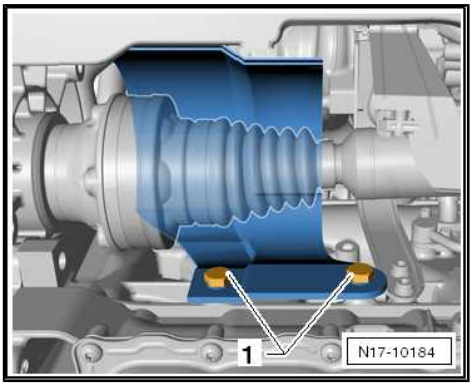

**Note**

*Secure assembly carrier with steering gear to the lower vehicle surface using a tension strap - T10038- .*

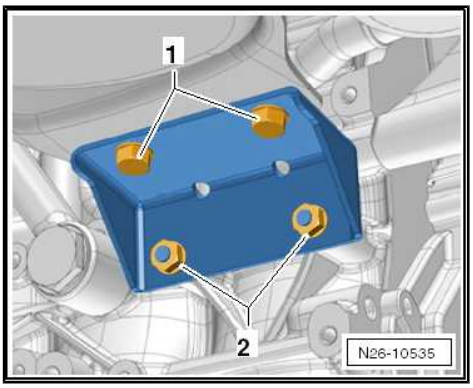
– If the catalytic converter should be reinstalled, the transport security - T10403- -arrow- must be attached to the decoupling element in the pre-exhaust pipe.




– Unscrew screws -1- of protective plate for right drive shaft, if present.



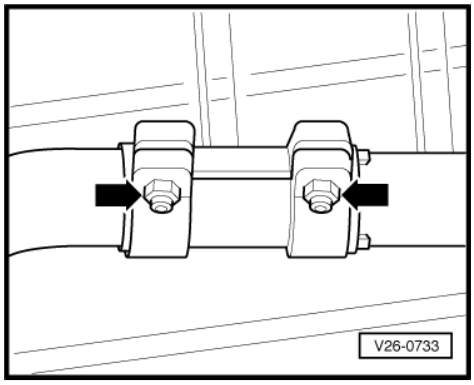

– Release the screws -1- and then the nuts -2-.
– Remove bracket of catalytic converter.




**Note**

- *The assistance of a 2nd mechanic is required for removing the catalytic converter.*
- *The decoupling element in the pre-exhaust pipe should not be bent by more than 10° - risk of damage.*
- *Secure the decoupling element with the transport security - T10403- against overtensioning.*

– Slacken the fixing nuts -arrows- of the warm-type clamp and slightly push it back from the pre-exhaust pipe.

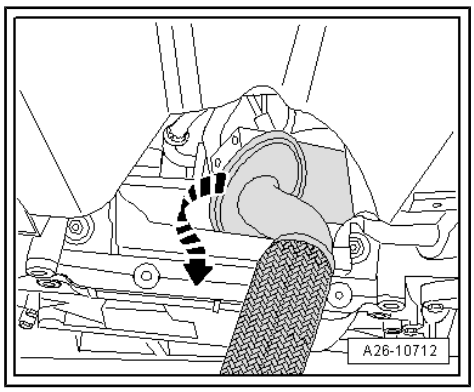



**Note**

*If necessary, the catalytic converter must be separated from the middle part of the exhaust system ⇒ page 472 .*

– Carefully remove the pre-exhaust pipe with catalytic converter above the slackened assembly carrier.

– Turn the catalytic converter by 180° and remove.



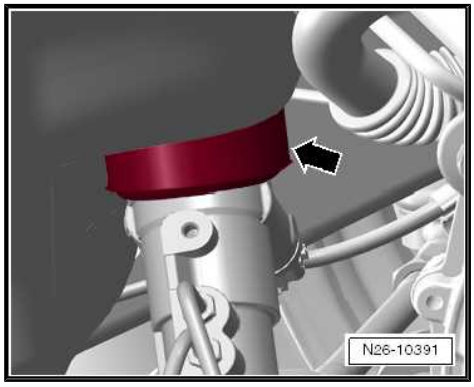

**Install**

Installation is performed in the reverse order, pay attention to the following points:

**Note**

- *Before installing the assembly carrier with steering gear, make sure the seal on the steering gear is not bent on the assembly plate. In this way the footwell opening is correctly sealed, otherwise water could penetrate or noise could occur.*
- *Replace seals, self-locking nuts and the clamp for catalytic converter.*

**Pay attention to the fitting position of the seal -arrow- (steering nut)**




**Observe the sequence when installing:**

| | |
|---|---|
| 1. | Bearing of catalytic converter at exhaust gas turbocharger, loosely fasten the clamp. |
| 2. | Loosely screw the screws and nuts for the bracket on the cylinder block with crankcase. |
| 3. | Tighten clamp at exhaust gas turbocharger to 7 Nm |
| 4. | Tighten nuts and screws at cylinder block with crankcase to 25 Nm |

– Align exhaust system free of stress ⇒ page 475 .

**Tightening torques**

- ⇒ “1.1 Pre-exhaust pipe”, page 436

## 1.7 Replacing the catalytic converter and the middle part of the exhaust system

⇒ “1.7.1 Replacing the catalytic converter and the middle part of the exhaust system (Rapid India)”, page 472

## 1.7.1 Replacing the catalytic converter and the middle part of the exhaust system (Rapid India)

**Special tools and workshop equipment required**

- Body saw e.g. -V.A.G 1523 A-
- Protective goggles

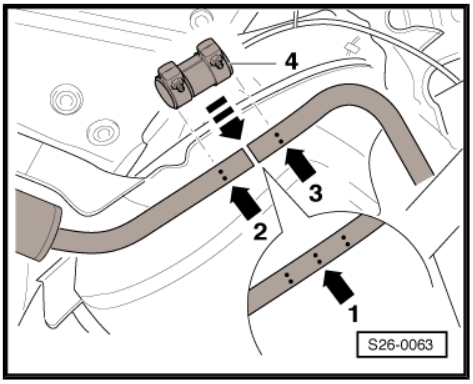
### Work procedure

For separating the pre-exhaust pipe with catalytic converter or the middle part of the exhaust system, a separation point is provided in the connecting pipe, which is marked with a recess.

> **WARNING**
>
> *In order to avoid injuries from metal swarfs, wear safety goggles and safety clothing.*

– Use body saw (e.g. - V.A.G 1523 A- ) to separate exhaust pipe at right angles at separation point -arrow 1-.

– When installing, position clamping sleeve -4- at the side markings -arrow 2- and -arrow 3-.

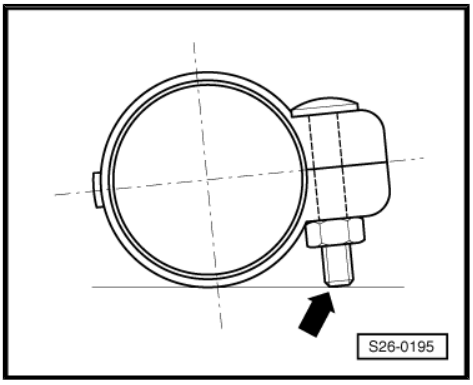



– Install clamping sleeve in such a way that the ends of the screws do not protrude beyond the bottom edge of the clamping sleeve.

– Align exhaust system free of stress ⇒ page 475 .

– Tighten bolted connections of clamping sleeve evenly.

• bolted connection points to the right.




### Tightening torques

| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.8 Replacing the middle and rear part of the exhaust system

⇒ "1.8.1 Replace middle and rear part of the exhaust system (Fabia II, Roomster, Rapid India, Rapid NH)", page 473

⇒ "1.8.2 Replace middle and rear part of the exhaust system (Octavia II, Superb II, Yeti)", page 474

## 1.8.1 Replace middle and rear part of the exhaust system (Fabia II, Roomster, Rapid India, Rapid NH)

### Special tools and workshop equipment required

♦ Body saw e.g. -V.A.G 1523 A-

♦ Protective goggles

### Work procedure

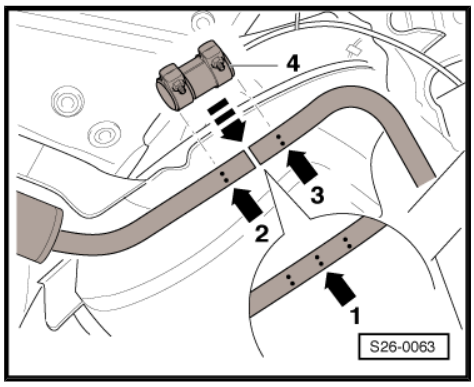
For separating the middle or rear silencer, a separation point is provided in the connecting pipe, which is marked with a recess.

**WARNING**

*In order to avoid injuries from metal swarfs, wear safety goggles and safety clothing.*

– Use body saw (e.g. - V.A.G 1523 A- ) to separate exhaust pipe at right angles at separation point -arrow 1-.

– When installing, position clamping sleeve -4- at the side markings -arrow 2- and -arrow 3-.

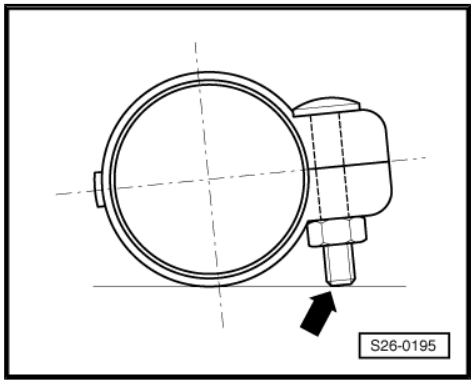



– Install clamping sleeve in such a way that the ends of the screws do not protrude beyond the bottom edge of the clamping sleeve.

– Align exhaust system free of stress ⇒ page 475 .

– Tighten bolted connections of clamping sleeve evenly.

• bolted connection points to the right.




**Tightening torques**

| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.8.2 Replace middle and rear part of the exhaust system (Octavia II, Superb II, Yeti)

**Special tools and workshop equipment required**

- Body saw e.g. -V.A.G 1523 A-
- Protective goggles

**Work procedure**

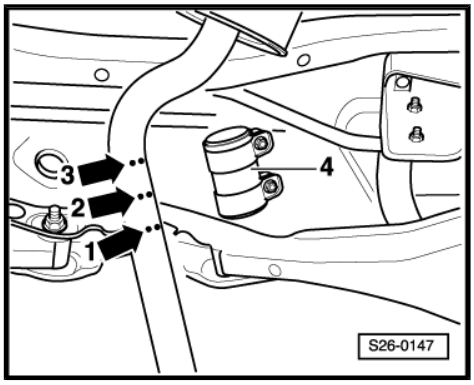
**Note**

- *For individually replacing the middle or rear part of the exhaust system, a separation point is provided in the connecting pipe.*
- *The separation point is marked by indentations on the circumference of the exhaust pipe.*

**WARNING**

*In order to avoid injuries from metal swarfs, wear safety goggles and safety clothing.*

– Separate exhaust pipe at right angles at the separation point -arrow 2-.
– When installing, position clamping sleeve -4- at the side markings -arrow 1- and -arrow 3-.
– Turn the warm-type clamp -4- in such a way that the ends of the screws are as far upwards as possible.
– Align rear part of exhaust system horizontally and tighten clamping sleeve.
– Align exhaust system free of stress ⇒ page 475 .




**Tightening torques**

| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.9 Aligning exhaust system free of stress

⇒ "1.9.1 Align exhaust system free of stress (Fabia II, Roomster, Rapid India, Rapid NH)", page 475

⇒ "1.9.2 Aligning exhaust system free of stress (Octavia II)", page 476

⇒ "1.9.3 Aligning exhaust system free of stress (Superb II, Yeti)", page 477

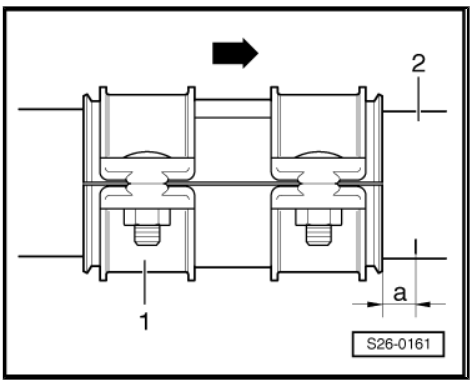
### 1.9.1 Align exhaust system free of stress (Fabia II, Roomster, Rapid India, Rapid NH)

**Precondition**

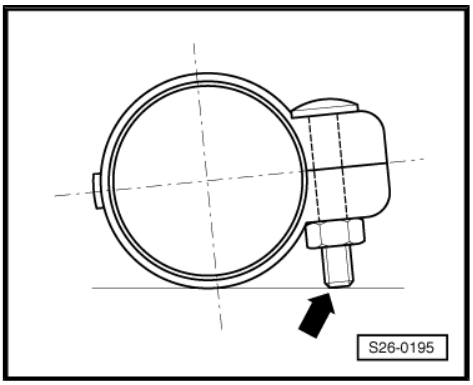
- The exhaust system is aligned when cold.

– Slacken front warm-type clamp -1- and align to pre-exhaust pipe -2- (-arrow- points in direction of travel).

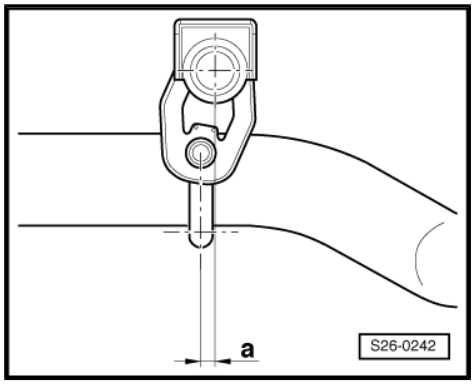
  -a- = 5 mm




– Install warm-type clamp in such a way that the ends of the screws -arrow- do not protrude beyond the bottom edge of the warm-type clamp.
– Tighten front screw by hand.



– Push the rear part of the exhaust system so far forward until the initial load -dimension a- on the retaining strap = 3 ... 7 mm.




• bolted connection points to the right.

– Tighten bolts of the front warm-type clamp evenly to 23 Nm.

**Tightening torques**

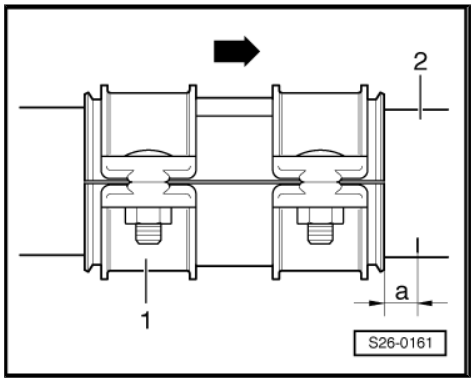
| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.9.2 Aligning exhaust system free of stress (Octavia II)

• The exhaust system is aligned when cold.

– Slacken front warm-type clamp -1- and align to pre-exhaust pipe -2- (-arrow- points in direction of travel).

-a- = 5 mm

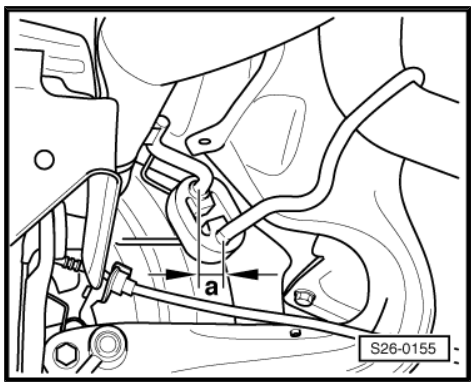



The fixing screws must be on the right. The screws must not protrude beyond the bottom edge of the warm-type clamp.

– Tighten front screw by hand.

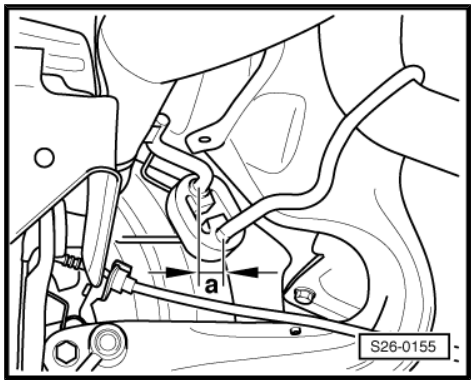
**For vehicles with front-wheel drive**

– Push the exhaust system so far forward until the initial load -dimension a- on the retaining strap at the middle part of the exhaust system is 9...11 mm.




**On vehicles with four-wheel drive**

– Push the exhaust system so far forward until the initial load -dimension a- on the retaining strap at the middle part of the exhaust system is 7...9 mm.



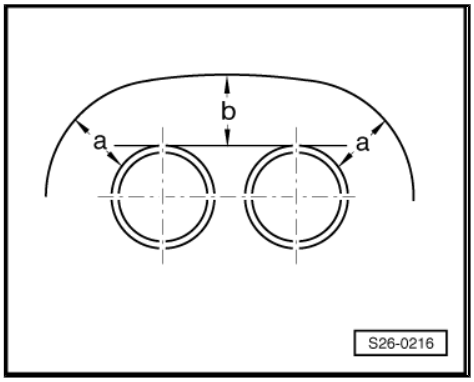

**Continued for all vehicles**

– Tighten bolted connections of clamping sleeve evenly.

**Align exhaust tailpipes**

– Align rear part of exhaust system in such a way that there is an equal distance -a- on the left and right between bumper opening and exhaust tailpipes.

  At the same time there must be an equal distance -b- from the bumper opening to the exhaust tailpipes.




For aligning, if necessary the hangers of the exhaust system must be loosened.

**Tightening torques**

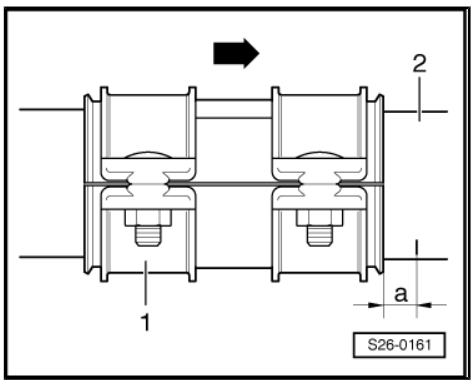
| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.9.3 Aligning exhaust system free of stress (Superb II, Yeti)

- The exhaust system is aligned when cold.

– Slacken front warm-type clamp -1- and align to pre-exhaust pipe -2- (-arrow- points in direction of travel).

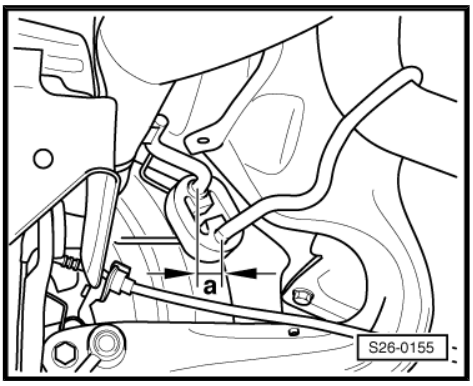
  -a- = 5 mm




The fixing screws must be on the right. The screws must not protrude beyond the bottom edge of the warm-type clamp.

– Tighten front screw by hand.

– Push the exhaust system so far forward until the initial load -dimension a- on the retaining strap at the middle part of the exhaust system is 9...11 mm.

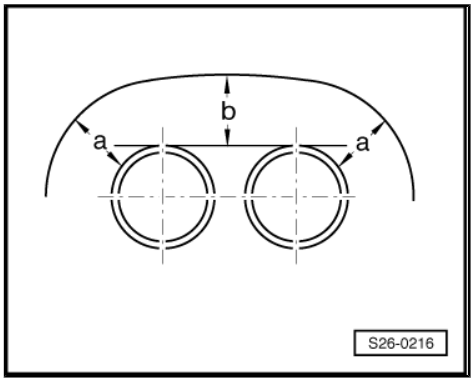



– Tighten bolted connections of clamping sleeve evenly.

**Align exhaust tailpipes**

– Align rear part of exhaust system in such a way that there is an equal distance -a- on the left and right between bumper opening and exhaust tailpipes.

  At the same time there must be an equal distance -b- from the bumper opening to the exhaust tailpipes.




For aligning, if necessary the hangers of the exhaust system must be loosened.

**Tightening torques**

| Component | Nm |
|---|---|
| Screws on clamping sleeve | 23 Nm |

## 1.10 Inspecting the exhaust system for leak-tightness

– Start engine and run in idle.

– Seal off exhaust tailpipes for the duration of the leak check (e.g. with cloth or plug).

– Inspect connection points of cylinder head/exhaust manifold, exhaust gas turbocharger/pre-exhaust pipe etc. for leaktightness by listening and visual inspection.

– Eliminate any leak found.

# 2 Exhaust gas recirculation system

⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479

⇒ “2.2 Removing and installing radiator for exhaust gas recirculation”, page 482

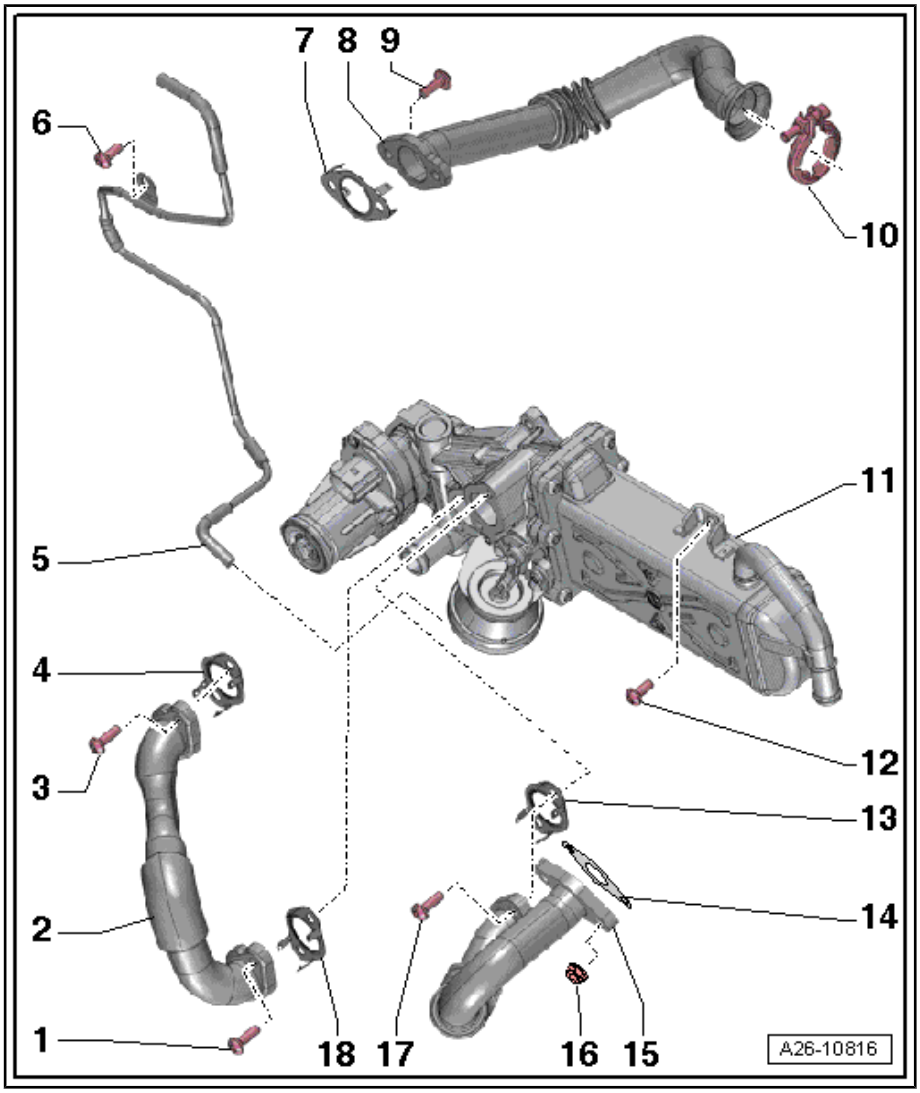
⇒ “2.3 Check changeover of radiator for exhaust gas recirculation”, page 486

## 2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation

⇒ “2.1.1 Summary of components - Exhaust gas recirculation with radiator for exhaust gas recirculation (Roomster, Rapid India, Rapid NH)”, page 479

⇒ “2.1.2 Summary of components - Exhaust gas recirculation with radiator for exhaust gas recirculation (Octavia II, Superb II, Yeti)”, page 481

### 2.1.1 Summary of components - Exhaust gas recirculation with radiator for exhaust gas recirculation (Roomster, Rapid India, Rapid NH)




**1 - Screw**
- ❑ 9 Nm

**2 - Pipe for exhaust gas recirculation**
- ❑ with decoupling element; do not bend the decoupling element - Risk of crack formation

**3 - Screw**
- ❑ 9 Nm

**4 - Gasket**
- ❑ replace

**5 - Vacuum line**
- ❑ do not change bending form
- ❑ Connection diagram for vacuum hoses ⇒ page 362

**6 - Screw**
- ❑ 9 Nm

**7 - Gasket**
- ❑ replace

**8 - Pipe for exhaust gas recirculation**
- ❑ with decoupling element; do not bend the decoupling element - Risk of crack formation

**9 - Screw**
- ❑ 9 Nm

**10 - Clamp**
- ❑ 4 Nm

**11 - Radiator for exhaust gas recirculation**

- ❑ with integrated exhaust gas recirculation valve - N18- with exhaust gas recirculation potentiometer - G212-
- ❑ Check change-over ⇒ page 486
- ❑ wymontowanie i zamontowanie ⇒ page 482

**12 - Screw**

- ❑ 9 Nm

**13 - Gasket**

- ❑ replace

**14 - Gasket**

- ❑ replace

**15 - Pipe for exhaust gas recirculation**

- ❑ with decoupling element; do not bend the decoupling element - Risk of crack formation

**16 - Nut**

- ❑ 22 Nm

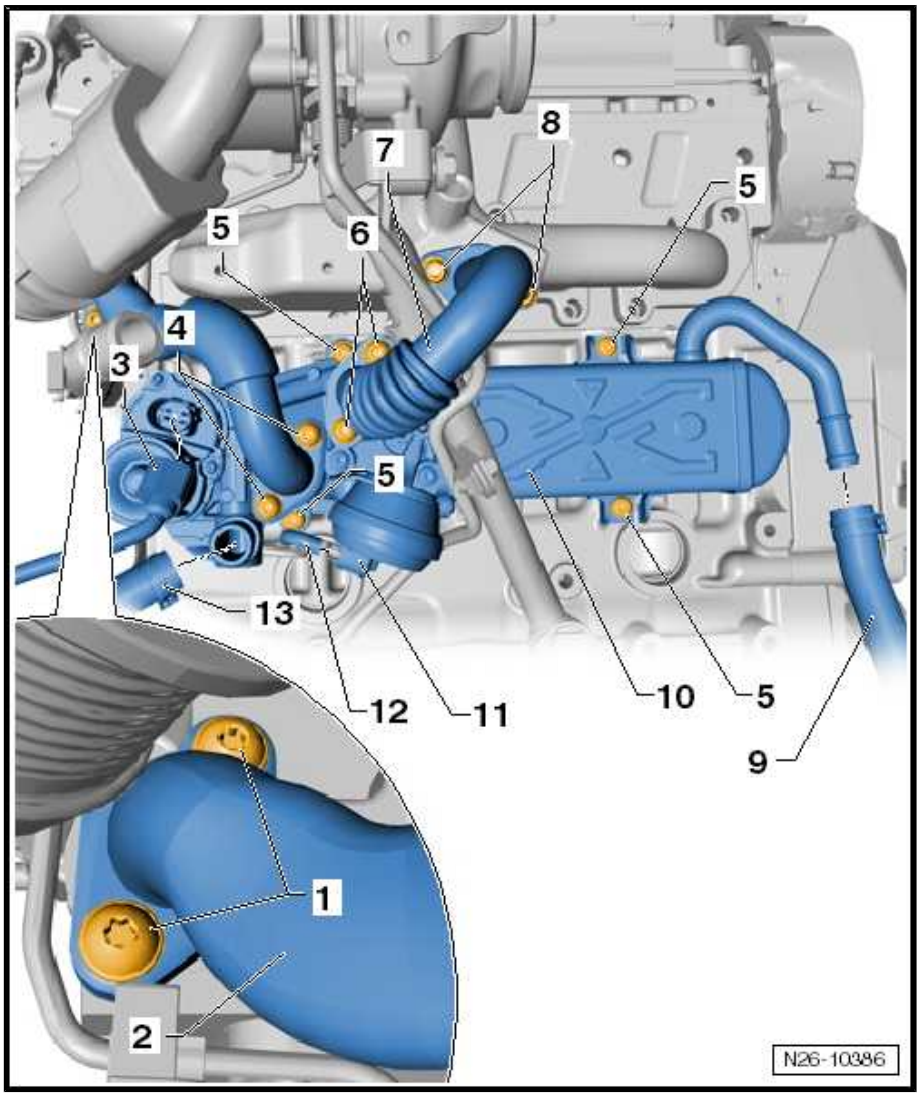
**17 - Screw**

- ❑ 9 Nm

**18 - Gasket**

- ❑ replace

## 2.1.2 Summary of components - Exhaust gas recirculation with radiator for exhaust gas recirculation (Octavia II, Superb II, Yeti)




**1 - Screw**
- ❑ 9 Nm

**2 - Connecting pipe**
- ❑ Replace gasket

> **Caution**
> *Pay attention that the decoupling element of the connection pipe is not bent and therefore is not overstretched. There is a risk of crack formation.*

**3 - Connector**
- ❑ for exhaust gas recirculation valve - N18-

**4 - Screw**
- ❑ 9 Nm

**5 - Screw**
- ❑ 10 Nm

**6 - Screw**
- ❑ 9 Nm

**7 - Connecting pipe**
- ❑ Replace gasket

**8 - Screw**
- ❑ 22 Nm

**9 - Coolant hose with clamp**

**10 - Radiator**
- ❑ for exhaust gas recirculation
- ❑ with bypass flap
- ❑ Check change-over ⇒ page 486
- ❑ wymontowanie i zamontowanie ⇒ page 482

**11 - Vacuum unit**
- ❑ for change-over of bypass flap

**12 - Vacuum line**
- ❑ Connection diagram for vacuum hoses ⇒ page 362

**13 - Coolant hose with clamp**

## 2.2 Removing and installing radiator for exhaust gas recirculation

⇒ “2.2.1 Removing and installing radiator for exhaust gas recirculation (Fabia II, Roomster, Rapid India, Rapid NH)”, page 482

⇒ “2.2.2 Remove and install the radiator for exhaust gas recirculation (Octavia II, Superb II,Yeti)”, page 484

## 2.2.1 Removing and installing radiator for exhaust gas recirculation (Fabia II, Roomster, Rapid India, Rapid NH)

**Special tools and workshop equipment required**

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Catch pan , e.g. -VAS 6208-
- Pliers for spring strap clamps
- Old oil collecting and suction equipment , e.g. -V.A.G 1782-

**Removing**

**Caution**

*When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.*

– Remove engine cover ⇒ page 10 .

– Remove air filter with air mass meter - G70- ⇒ page 426 .

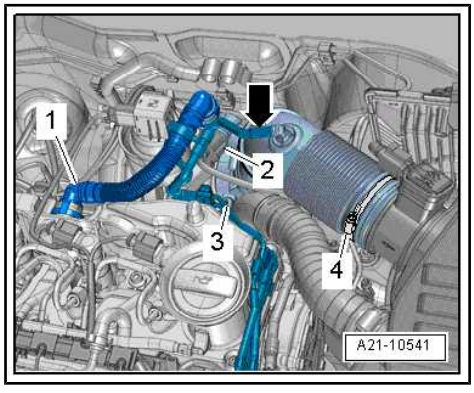
– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Remove the hose for the crankcase ventilation -1-, to do so press the release buttons.

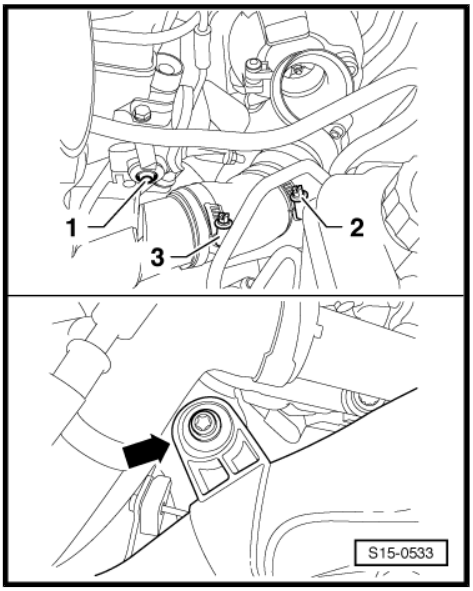
– Separate the vacuum hose -arrow- from the intake hose.

– Release screw -3- (captive), swivel intake hose with connection fitting towards the rear and detach from exhaust gas turbocharger.

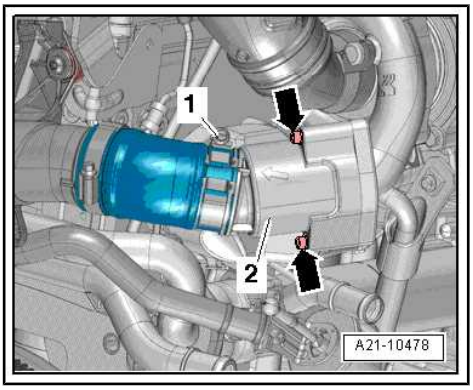
– Remove intake hose.



– Release the fixing screw -1- from the charge air pipe (if present), slacken the clamp -2-.
– Release fixing screw -arrow- from charge air pipe.




– Release the screws -arrows- and detach the connecting hose as far as possible from the pulsation dampener.
– Push the left charge air pipe as far as possible to the left.
– Remove the pulsation dampener.




**For vehicles Fabia II, Roomster, Rapid NH with engine identification characters CAYB, CAYC**

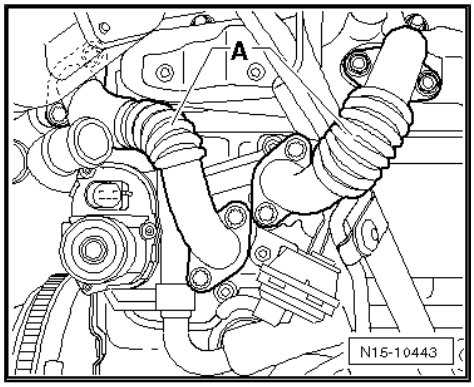
– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

**For vehicles Rapid India, Rapid NH with engine identification characters CLNA**

– Remove exhaust pipe with catalytic converter ⇒ page 457 .

**Continued for all vehicles**

– Remove the connection pipes -A- to the cylinder head.




– Remove oil feed line and oil return-flow line with support for exhaust turbocharger ⇒ page 202 .
– Collect escaping engine oil with the old oil collecting and suction equipment - V.A.G 1782- .
– Detach the vacuum line at the vacuum unit, -position 5- ⇒ page 479 .
– Disconnect the plug connection at the electrical actuator of the exhaust gas recirculation valve - N18- for the radiator for exhaust gas recirculation.
– Unclamp the coolant feed line and the return-flow line with the hose clamps up to ∅ 25 mm - MP7-602 (3094)- on the radiator for exhaust gas recirculation.
– Separate the coolant feed line and the return-flow line from the exhaust gas recirculation system.
– Collect escaping coolant with the catch pan - VAS 6208- .
– Release screws -Position 12- ⇒ page 479 and remove radiator for exhaust gas recirculation.

**Install**

Installation is performed in the reverse order, pay attention to the following points:

♦ Replace the gaskets, the sealing rings and the self-locking nuts.
♦ Secure all hose connections with corresponding hose clips.
– Inspecting engine oil level:
♦ ⇒ Maintenance ; Booklet Fabia II .
♦ ⇒ Maintenance ; Booklet Roomster .
♦ ⇒ Maintenance ; Booklet Rapid Indie .
♦ ⇒ Maintenance ; Booklet Rapid NH .
– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

**Tightening torques**

♦ ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479
♦ ⇒ “2.1 Charge air cooler”, page 367
♦ ⇒ “1.1 Exhaust gas turbocharger with component parts”, page 342

## 2.2.2 Remove and install the radiator for exhaust gas recirculation (Octavia II, Superb II,Yeti)

**Special tools and workshop equipment required**

♦ Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
♦ Catch pan , e.g. -VAS 6208-
♦ Pliers for spring strap clamps
♦ Old oil collecting and suction equipment , e.g. -V.A.G 1782-

## Removing

**Caution**

*When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:*

- *Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.*
- *In order to avoid damage to the cables, ensure that there is adequate free access to all moving or hot components.*

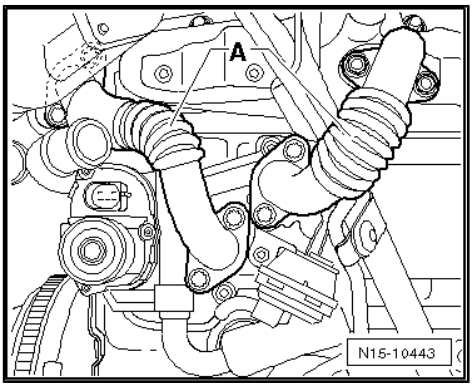
– Remove engine cover ⇒ page 10 .

– Remove air filter with air mass meter - G70- ⇒ page 426 .

– Remove battery and battery tray ⇒ Electrical System; Rep. gr. 27 .

– Remove pre-exhaust pipe with diesel particle filter ⇒ page 457 .

– Remove the connection pipes -A- to the cylinder head.

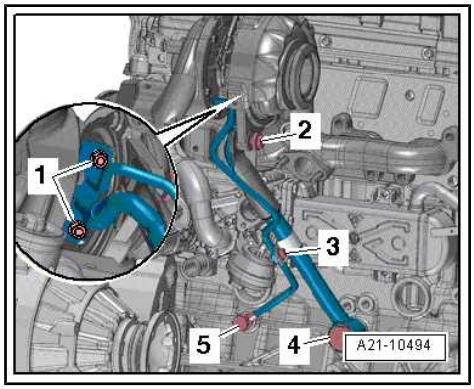



### Vehicles with front-wheel-drive

– Remove oil feed line and oil return-flow line with support for exhaust turbocharger ⇒ page 202 .

### Vehicles with four-wheel drive

– Release hollow screw -4-.
– Release screws -2- and -3-.
– Push out support for exhaust gas turbocharger downwards.
– Release screws -1-.
– Divert oil feed line from exhaust gas turbocharger. Do not slacken the hollow screw -5-.




**Continued for all vehicles**

– Collect the escaping engine oil with the old oil collecting and suction equipment - V.A.G 1782- .
– Detach the vacuum line at the vacuum unit, -position 12- ⇒ page 481 .
– Disconnect the plug connection at the electrical actuator of the exhaust gas recirculation valve - N18- for the radiator for exhaust gas recirculation.
– Unclamp the coolant feed line and the return-flow line with the hose clamps up to ∅ 25 mm - MP7-602 (3094)- on the radiator for exhaust gas recirculation.
– Separate the coolant feed line and the return-flow line from the exhaust gas recirculation system.
– Collect escaping coolant with the catch pan - VAS 6208- .
– Unscrew screws -Position 5- ⇒ page 481 and remove exhaust gas recirculation system.

**Install**

Installation is performed in the reverse order, pay attention to the following points:

♦ Replace the gaskets, the sealing rings and the self-locking nuts.
♦ Secure all hose connections with corresponding hose clips.
– Inspect coolant level, top up with coolant if necessary ⇒ page 223 .

**Tightening torques**

♦ ⇒ “2.1 Exhaust gas recirculation with radiator for exhaust gas recirculation”, page 479
♦ ⇒ “1.7 Summary of components - oil feed line, oil return line and exhaust gas turbocharger support”, page 202

## 2.3 Check changeover of radiator for exhaust gas recirculation

**Special tools and workshop equipment required**

♦ Hand vacuum pump , e.g. -VAS 6213-

**Work procedure**

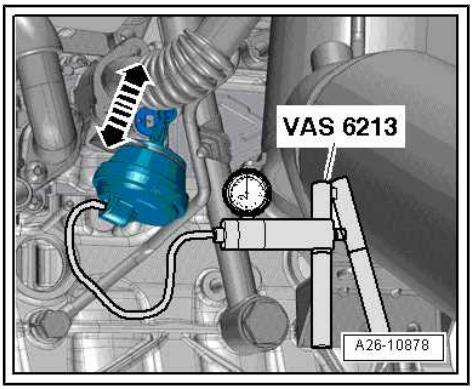
**Note**

*The vacuum setting element for change-over flap is accessible from below.*

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Unbolt heat shield for right drive shaft.
– Detach vacuum hose from vacuum setting element.
– Connect hand vacuum pump to vacuum setting element.
– Actuate the hand vacuum pump in order to generate negative pressure.

• The vacuum setting element must open the change-over flap up to the stop at maximum 0.08 MPa (0.8 bar) negative pressure and in case of ventilation close it up to the stop -arrows-.




**Note**

♦ *For this test the opening of the change-over flap can be performed in jolts. In driving mode the change-over flap opens suddenly due to the large negative pressure volume.*

♦ *The closing of the change-over flap must be carried out suddenly when ventilating (e.g. detach vacuum hose).*

If the vacuum setting element does not open or close the change-over flap up to the stop:

– Replace radiator for exhaust gas recirculation with vacuum setting element ⇒ page 482 .

# 28 – Glow plug system

## 1 Glow Plug System

⇒ “1.1 Removing and installing, testing glow plugs”, page 488

## 1.1 Removing and installing, testing glow plugs

**Note**

*Metal glow plugs are installed in this engine.*

**Special tools and workshop equipment required**

- Flexible-head wrench SW 10 -3220-
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

**Checking**

The Glow Plug System is monitored by the self-diagnosis of the engine control unit.

The necessary inspections are performed with the function “Targeted fault finding” ⇒ Vehicle diagnostic tester.

**Removing**

Observe all safety measures and notes for assembly work on the fuel system and on the injection system as well as the rules for cleanliness ⇒ page 6 .

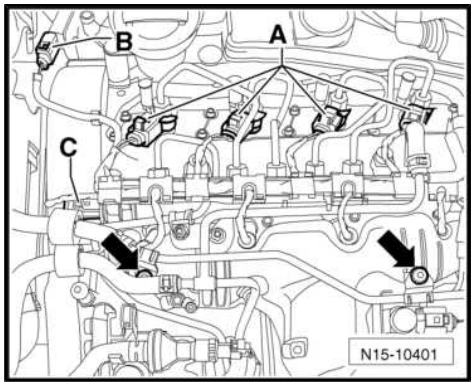
– Switch off ignition and pull out ignition key.

– Remove engine cover ⇒ page 10 .

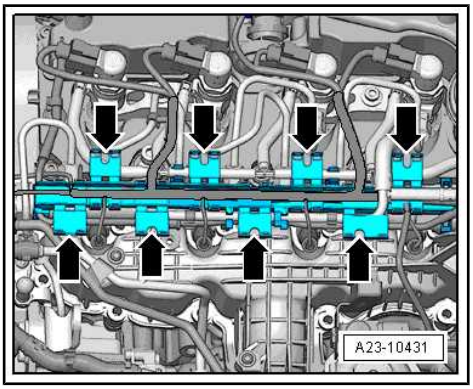
– If present, remove the noise insulation at the injection units.

– Disconnect the plugs from the injection units -A-, the differential pressure sender - G505- -B- and the fuel pressure sender - G247- -C-.

– Unscrew the fixing screws -arrows- of the coolant line from the intake manifold and lay the line in front of the intake manifold.



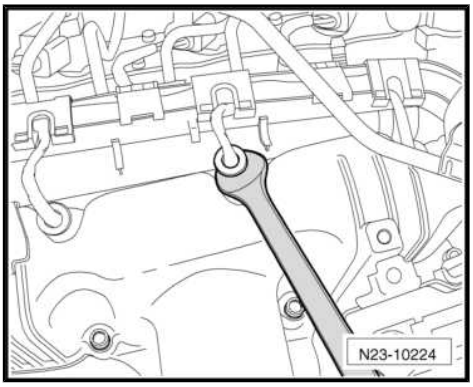
– Open the catch pegs of the wiring in order to expose the wiring loom -arrows-.




**Caution**

- *Carefully disconnect the plug from the glow plugs.*
- *If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).*

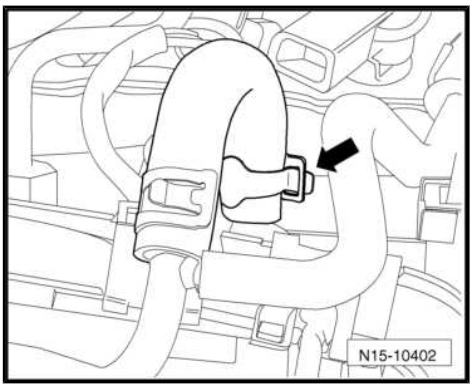
– Carefully disconnect the plug from the glow plugs. Use the assembly spanner SW 12 for help.




– Unscrew the fixing nut of the fuel return-flow line on the intake manifold, open the spring strap clamp -arrow- and remove the cable from the fuel distributor.

– Remove the complete fuel return-flow line and place it down in front of the intake manifold.

– Clean the pencil type glow plug channel in the cylinder head. No dirt must get into the cylinder.



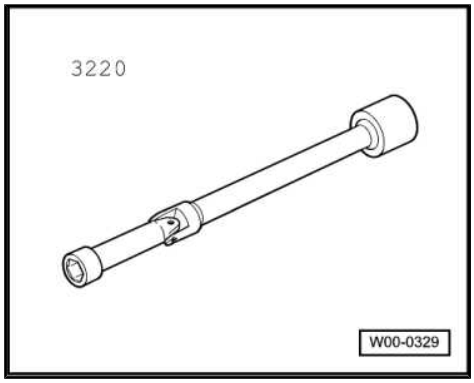

When cleaning, for example:

**WARNING**

*Wear protective gloves and protective googles when working with grease remover!*

1. Suction off heavy dirt using a vacuum cleaner.
2. Spray the pencil type glow plug channel using a brake cleaner or a suitable cleaner, let it take effect for a short period of time and blow out with compressed air.
3. Then clean the pencil type glow plug channel with a cloth which is wetted with oil.

– To release the glow plugs, use socket wrench SW 10 - 3220- .




**Install**

– To tighten the glow plugs, use socket wrench SW 10 - 3220- .

– Tighten glow plugs.

– Fit the plug again onto the relevant glow plugs and check for firm seating.

– Interrogating and erasing fault memory of engine control unit ⇒ Vehicle diagnostic tester.

**Note**

*After deleting the fault memory of the engine control unit the readiness code must be re-generated.*

**Tightening torques**

| Component | Nm |
|---|---|
| Glow plug | 18 Nm |