

1 Overview of engines

Petrol engines

Engines →	Petrol engines			
Engine code	BWA	CDLA	CDLB	BUB
Capacity	2.0 ltr.	2.0 ltr.	2.0 ltr.	3.2 ltr.
No. of cylinders / valves per cylinder	4/4	4/4	4/4	6/4
Exhaust emissions standard	EU IV	EU IV	EU IV	EU IV
Power output (kW at rpm)	147 / 5100 - 6000	195 / 6000	199 / 6000	184 / 6333
Torque (Nm at rpm)	280 / 1800 - 5000	350 / 2500 ... 5250	350 / 2500 ... 5250	320 / 2500
Bore (∅ mm)	82.5	82.5	82.5	84.0
Stroke (mm)	92.8	92.8	92.8	95.5
Compression ratio	10.5:1	9.8:1	9.8:1	10.85:1
Fuel injection / ignition	TFSI	TFSI	TFSI	MPI
RON at least	98 unleaded ¹⁾	98 unleaded ¹⁾	98 unleaded ¹⁾	98 unleaded ¹⁾

¹⁾ Unleaded RON 95 can also be used, but will result in a slight loss of power.

Engines →	Petrol engines				
Engine code	CCZA	CESA	CDA A	CDMA	CEPA
Capacity	2.0 ltr.	2.0 ltr.	1.8 ltr.	2.0 ltr.	2.5 ltr.
No. of cylinders / valves per cylinder	4/4	4/4	4/4	4/4	5/4
Exhaust emissions standard	EU V	EU V	EU V	EU IV	EU V
Power output (kW at rpm)	147 / 5100 - 6000	155 / 4300 - 6000	118 / 4500 - 6200	195 / 6000	250 / 5400 - 6500
Torque (Nm at rpm)	280 / 1800 - 5000	350 / 1600 - 4200	250 / 1500 - 4500	350 / 2500 ... 5250	450 / 1600 - 5300
Bore (∅ mm)	82.5	82.5	82.5	82.5	82.5
Stroke (mm)	92.8	92.8	84.1	92.8	92.8
Compression ratio	9.8:1	9.8:1	9.8:1	9.8:1	10:1
Fuel injection / ignition	TFSI	TFSI	TFSI	TFSI	TFSI
RON at least	98 unleaded ¹⁾	98 unleaded ¹⁾	95 unleaded	98 unleaded ¹⁾	98 unleaded ¹⁾

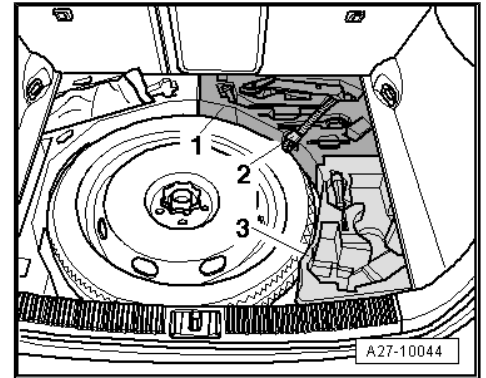
¹⁾ Unleaded RON 95 can also be used, but will result in a slight loss of power.

Diesel engines

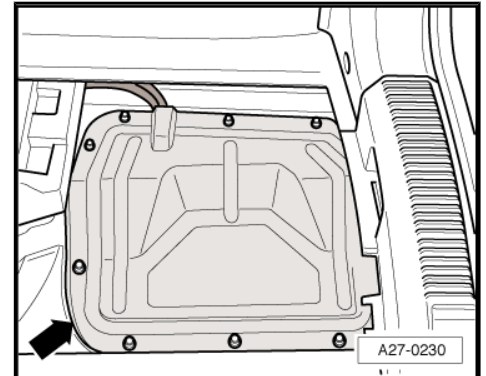
Engines →	Diesel engines	
Engine code	CBBB	CFGB
Capacity	2.0 ltr.	2.0 ltr.
No. of cylinders / valves per cylinder	4/4	4/4

- ◆ The battery must not be placed under load from connected electrical equipment for at least 12 hours before the test.
- ◆ The battery must not be charged for at least 12 hours before test.

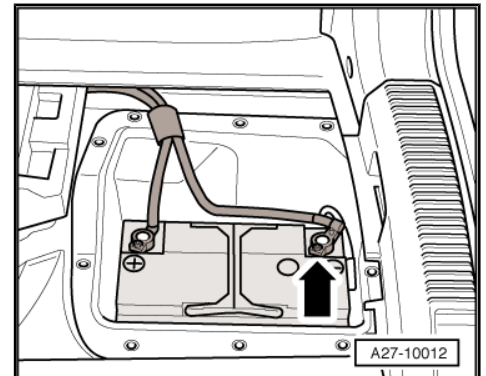
Remove rear moulded insert -3- for tools below luggage compartment floor covering.



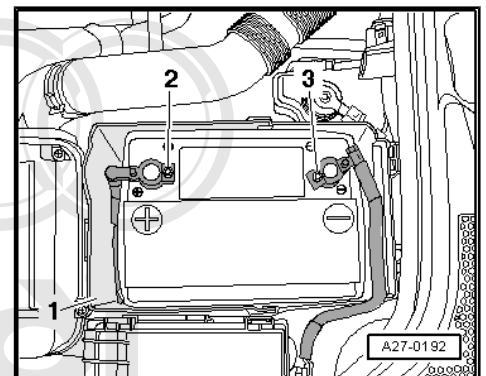
- Detach cover -arrow- for battery compartment.



- Detach moulded insert above battery.



- With ignition switched off, measure voltage between battery clamps -2- and -3-.
- 1 - If the tester indicates 12.5 V or more, then the battery is OK.
 - 2 - If the tester indicates 12.2 to 12.5 V the battery must be charged ⇒ Rep. Gr. 27 .
 - 3 - If the tester indicates between 11.6 and 12.2 V proceed as follows: Charge battery ⇒ Rep. Gr. 27 . After charging battery allow to stand with no load for 24 hours. Then carry out battery test / battery load test ⇒ [page 9](#) .
 - 4 - If tester indicates 11.6 V or less the battery must be renewed ⇒ Rep. Gr. 27 .



WARNING

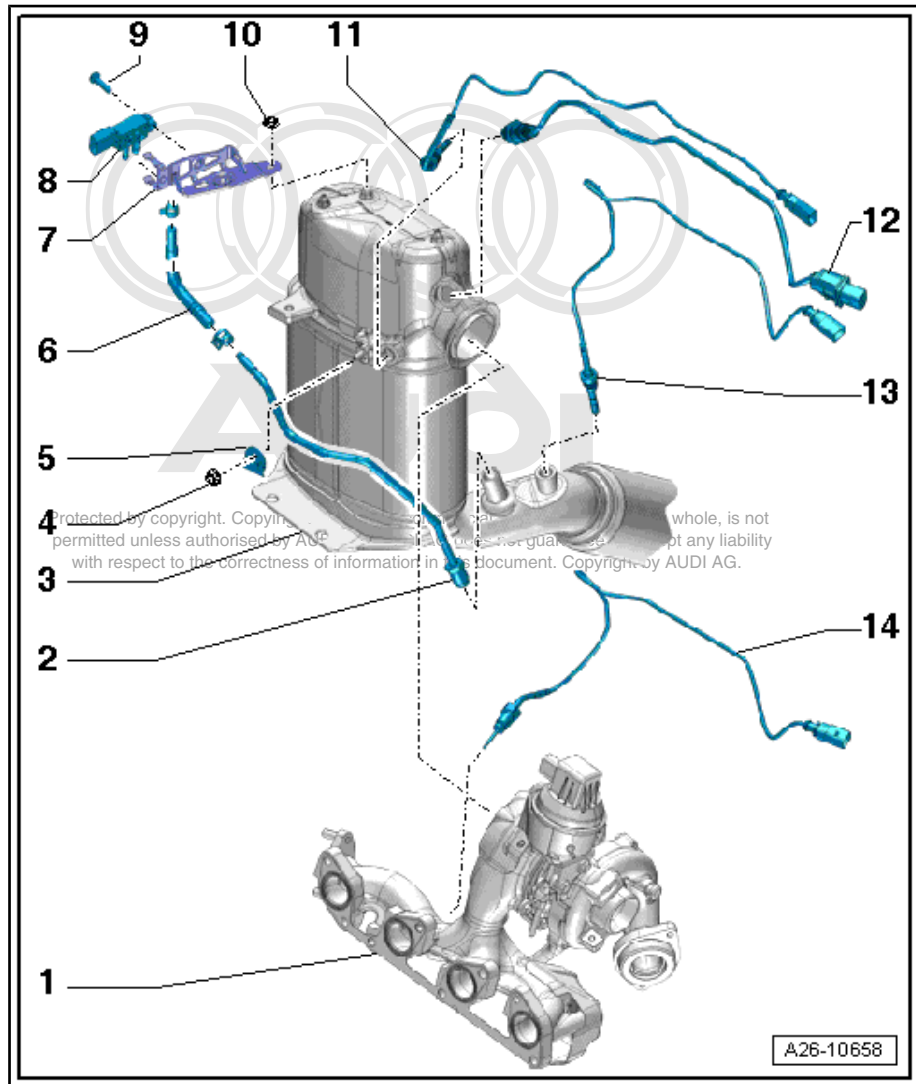
Always adhere to correct procedure, otherwise measurements will be falsified.

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2 Exhaust gas temperature control

2.1 Exhaust gas temperature control - exploded view

- 1 - Turbocharger
- 2 - Control pipe
 - 45 Nm
- 3 - Particulate filter
- 4 - Nut
 - 9 Nm
- 5 - Bracket
 - Bolted to particulate filter
- 6 - Hose
- 7 - Bracket
 - For exhaust gas pressure sensor 1 -G450-
- 8 - Exhaust gas pressure sensor 1 -G450-
 - Removing and installing ⇒ Rep. Gr. 23
- 9 - Bolt
 - 8 Nm
- 10 - Nut
 - 9 Nm
- 11 - Exhaust gas temperature sender 3 -G495-
 - Removing and installing ⇒ [page 224](#)
 - Coat with high-temperature paste; for high-temperature paste refer to ⇒ Electronic parts catalogue
 - 4.5 Nm
- 12 - Lambda probe -G39- with Lambda probe heater -Z19-
 - Removing and installing ⇒ Rep. Gr. 23
- 13 - Exhaust gas temperature sender 4 -G648-
 - Removing and installing ⇒ [page 225](#)
 - Coat with high-temperature paste; for high-temperature paste refer to ⇒ Electronic parts catalogue
 - 45 Nm
- 14 - Exhaust gas temperature sender 1 -G235-
 - Removing and installing ⇒ [page 223](#)
 - Coat with high-temperature paste; for high-temperature paste refer to ⇒ Electronic parts catalogue
 - 45 Nm

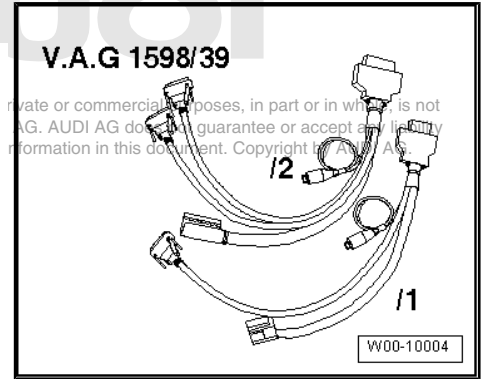


3 Engine control unit

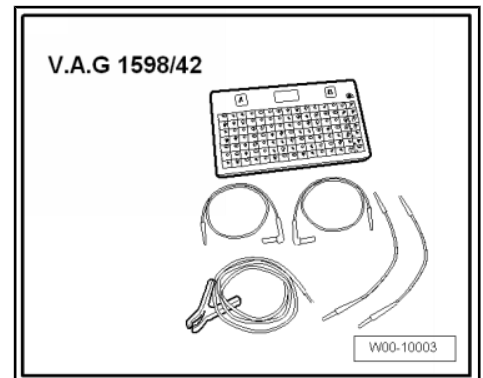
3.1 Wiring and component check with test box -V.A.G 1598/42-

Special tools and workshop equipment required

- ◆ Adapter cable -V.A.G 1598/39-



- ◆ Test box -V.A.G 1598/42-





Note the following if testers and measuring instruments have to be used during a road test:



WARNING

Accidents can be caused if the driver is distracted by test equipment while road-testing, or if test equipment is not properly secured.

Injuries can also be caused if the passenger's airbag is triggered in a collision.

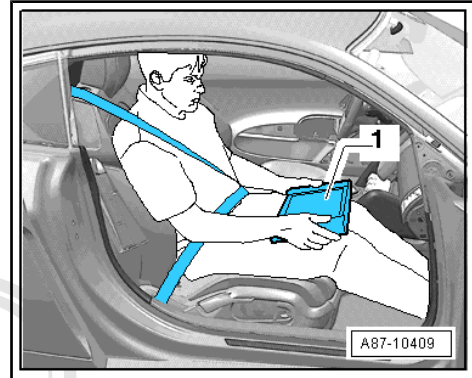
- *The use of test equipment while driving causes distraction.*
- *There is an increased risk of injury if test equipment is not secured.*

TT Coupé:

Test equipment must always be secured on the rear seat with a strap and operated from the rear seat by a second person.

TT Roadster:

- ◆ *Move the passenger's seat back as far as it will go.*
- ◆ *Use only vehicle diagnosis and service information system -VAS 5052- or diagnosis system -VAS 5053-.*
- ◆ *The test equipment -1- must rest flat on the passenger's thighs (as shown in illustration) and must be operated by the passenger.*



1.3 Exploded view of components for PAX run-flat tyres

1 - PAX tyre

2 - Support ring

3 - Wheel for PAX tyre

- Observe the fitting instructions ⇒ [page 4](#)

4 - Wheel electronics

- All batteries must be renewed together
- Remaining service life, temperature and inflation pressure can be read out via diagnosis function with vehicle diagnostic, testing and information system - VAS 5051-

5 - Metal valve body

- Use only correct valves as specified in ⇒ ETKA
- Supplied as complete unit

6 - Wheel bolt

- Observe the fitting instructions ⇒ [page 4](#)
- Tightening torque for wheel bolts ⇒ [page 9](#)
- Anti-theft wheel bolt ⇒ [page 2](#)

7 - Adapter for wheel bolt

- Attach to corresponding wheel bolt ⇒ [page 2](#)

8 - Cap

- Attach to wheel bolt

9 - Two-piece wheel bolt

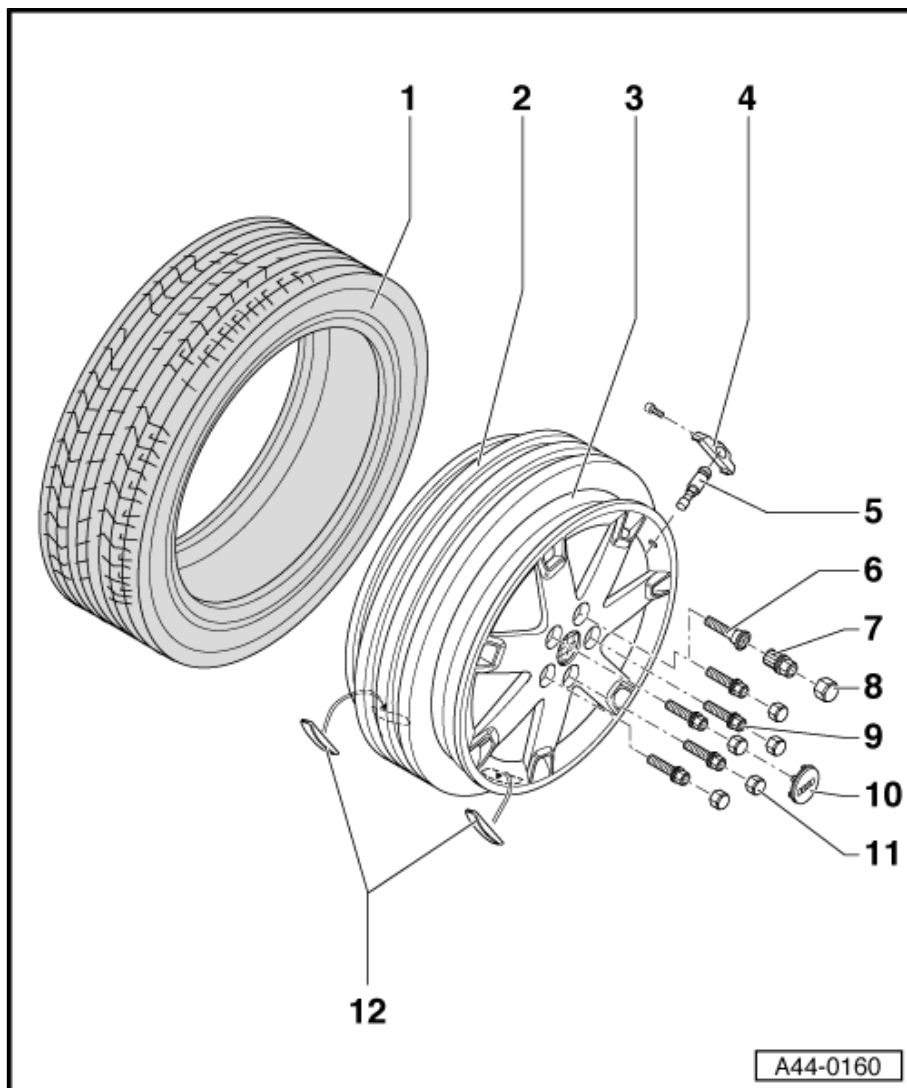
- Observe the fitting instructions ⇒ [page 4](#)
- Tightening torques for wheel bolts ⇒ [page 9](#)

10 - Trim cap

11 - Cap for wheel bolts

12 - Adhesive balancing weights

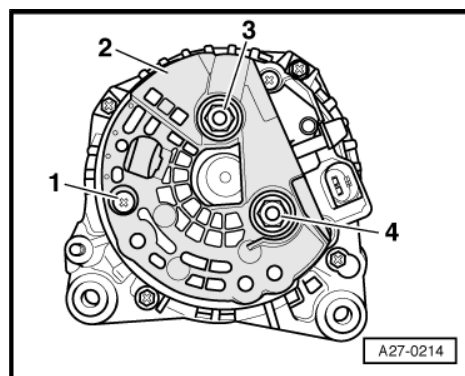
- Not more than 60 g permitted per rim
- Remove dirt and grease from wheel rim at bonding point
- Pull off backing foil
- Bond on balancing weights at surfaces provided for this purpose



7.4 Removing and installing voltage regulator - Bosch alternator from 2001 onwards

Removing

- Remove alternator ⇒ Electrical system; Rep. gr. 27 .
- Unscrew bolt -1- and nuts -3- and -4-.
- Detach cover -2- from rear of alternator.



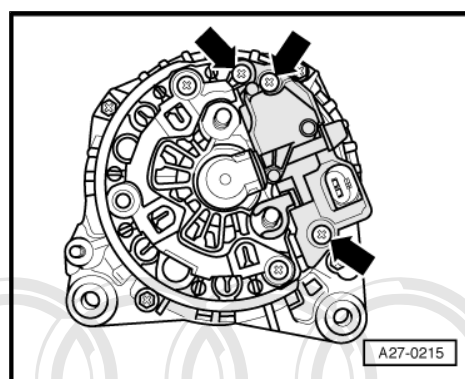
- Unscrew bolts -arrows-.
- Remove voltage regulator.

Installing

- When positioning voltage regulator, ensure carbon brushes are positioned correctly on contact surfaces.

Further installation is carried out in the reverse order; note the following:


- Install alternator ⇒ Electrical system; Rep. gr. 27 .
- Tightening torque ⇒ [page 45](#)



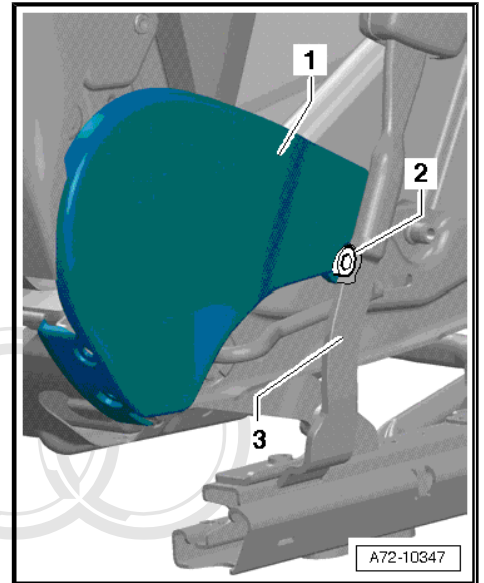
- Detach belt buckle -3- ⇒ [page 58](#) .
- Remove bolt -2-.
- Lift off trim (tunnel side) -1-.

Installing

Install in reverse order of removal. Observe the following:

 **WARNING**

- ◆ *Observe safety regulations for pyrotechnic components ⇒ [page 42](#) .*
- ◆ *Before handling pyrotechnic components (e.g. plugging in the electrical connector) the mechanic must discharge static electricity by briefly touching the door striker plate, or similar.*




 **Note**

Make sure electrical connectors are fitted correctly (as far as stop) and engage audibly.

- Switch on ignition.

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 **WARNING**

The battery must be connected with the ignition switched on. If pyrotechnic components (e.g. airbag or belt tensioner) are inexpertly repaired, this may result in unwanted triggering after connecting the battery. There must not be anyone in the vehicle while you are connecting the battery.

- Connect battery earth wire with ignition switched on ⇒ Electrical system; Rep. gr. 27 .
- If the airbag warning lamp -K75- indicates a fault following the installation, the fault memory must be interrogated, erased and interrogated again ⇒ Vehicle diagnostic, testing and information system -VAS 5051B- .

Tightening torque ⇒ [page 289](#)

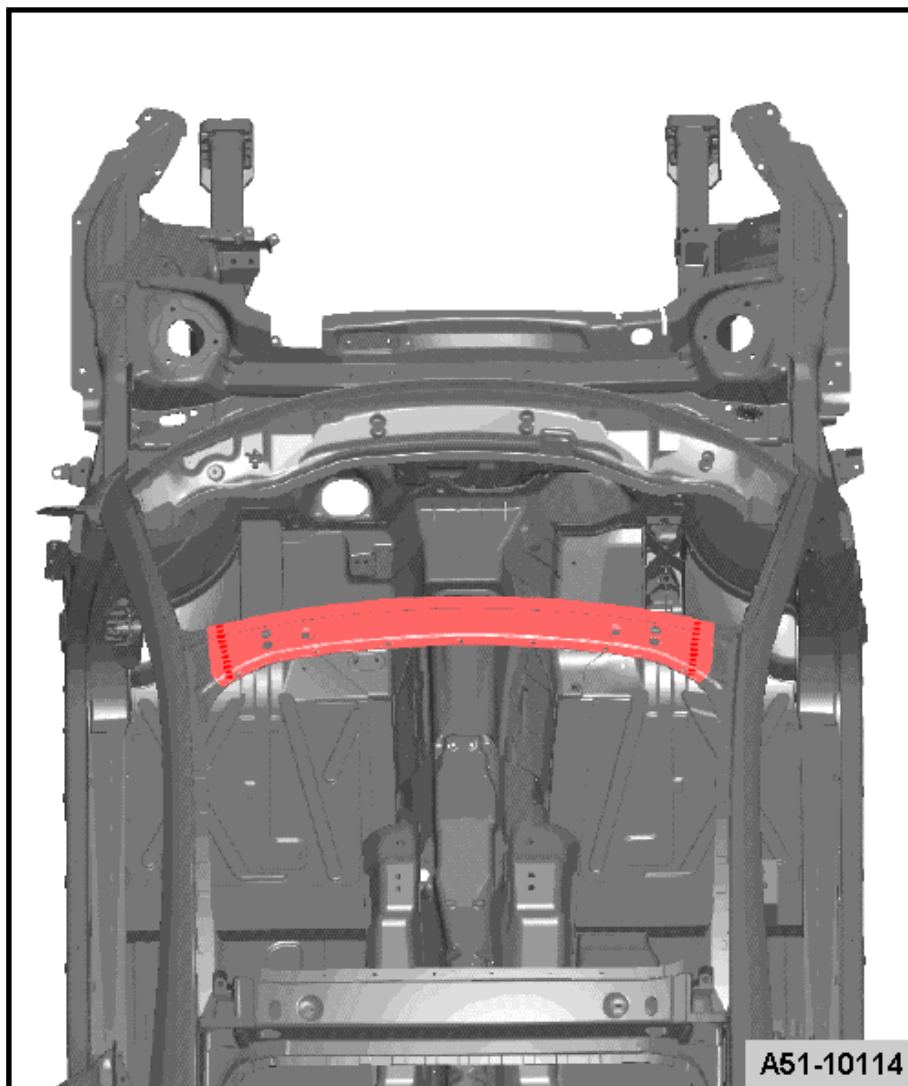
3.14 Exploded view of retaining bracket for trim (sill side)

The retaining bracket of a front seat with electric adjustment is similar to that of a front seat with manual adjustment.

Exploded view of retaining bracket for trim (sill side) ⇒ [page 256](#)

3.15 Removing and installing retaining bracket for trim (sill side)

The procedures for removing and installing the retaining bracket for the trim (sill side) are described for a front seat with manual adjustment.



Replacement parts

- ◆ Roof cross member
- ◆ Body adhesive DA 001 730 A2
- Use a brush to apply aluminium primer DA 009 801 to bonding locations.
- Apply 2-component adhesive DA 001 730 A2 to entire riveting area.

Prepare new part for riveting.

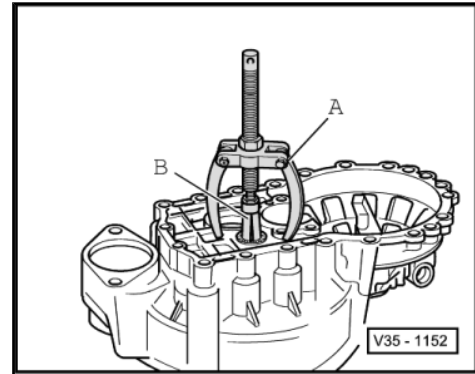
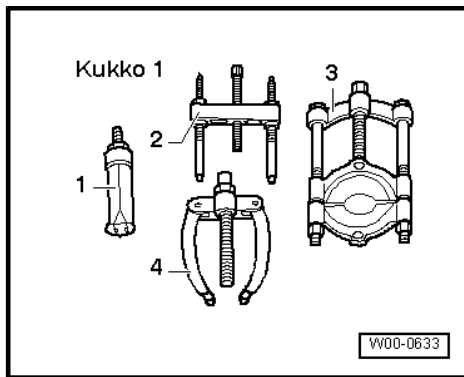
Riveting in

- Match up and fix new part in position.
- Rivet in roof cross member using rechargeable riveter -VAS 5279A- .

Countersink holes, working inwards from outside. Use rechargeable riveter -VAS 5279A- with attachments D15 and D16 from -VAS 5279/2 - or rechargeable riveter -VAS 5279B- with attachments D15 and D16 .



- ◆ Internal puller -1-
Kukko 21/2-



- ◆ Counter-support -4-
Kukko 22/1-

Pulling needle bearing out of clutch housing

A - Counter-support ,
e.g. -Kukko 22/1-

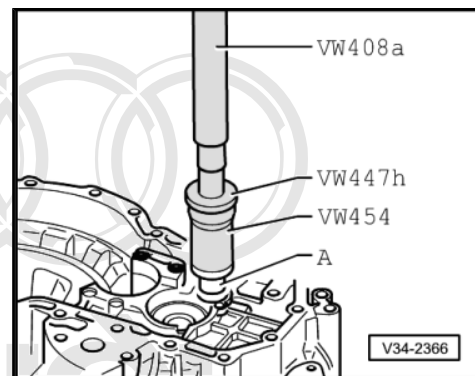
B - Internal puller 14.5 ...
18.5 mm , e.g. -Kukko
21/2-



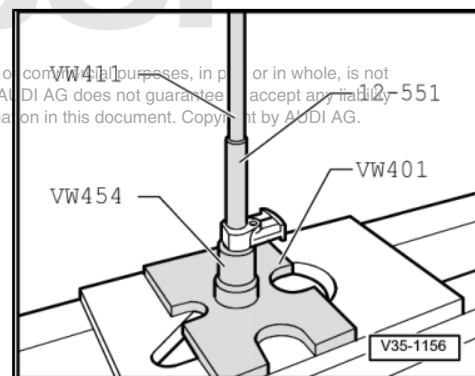
Note

*The needle bearing is
destroyed during removal
and must be renewed.*

Pressing needle bearing -A- into clutch housing



Pressing needle bearing out of reverse shaft support



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1.1 Diagram of coolant hose connections

Vehicles with manual gearbox



Note

- ◆ Blue = Large coolant circuit.
- ◆ Red = Small coolant circuit with heating circuit.
- ◆ Orange = Coolant circuit for turbocharger.
- ◆ Arrows show direction of coolant flow.

1 - Radiator

- If renewed, refill system with fresh coolant

2 - Auxiliary radiator

- If renewed, refill system with fresh coolant

3 - Non-return valve

- Arrow indicates direction of flow

4 - Thermostat with housing

5 - Coolant pump

6 - Cylinder head and cylinder block

- If renewed, refill system with fresh coolant

7 - Coolant expansion tank

- With filler cap and pressure relief valve
- Checking pressure relief valve ⇒ [page 171](#)

8 - Heat exchanger for heater

- If renewed, refill system with fresh coolant

9 - Bleeder screw

10 - Restrictor

11 - Turbocharger

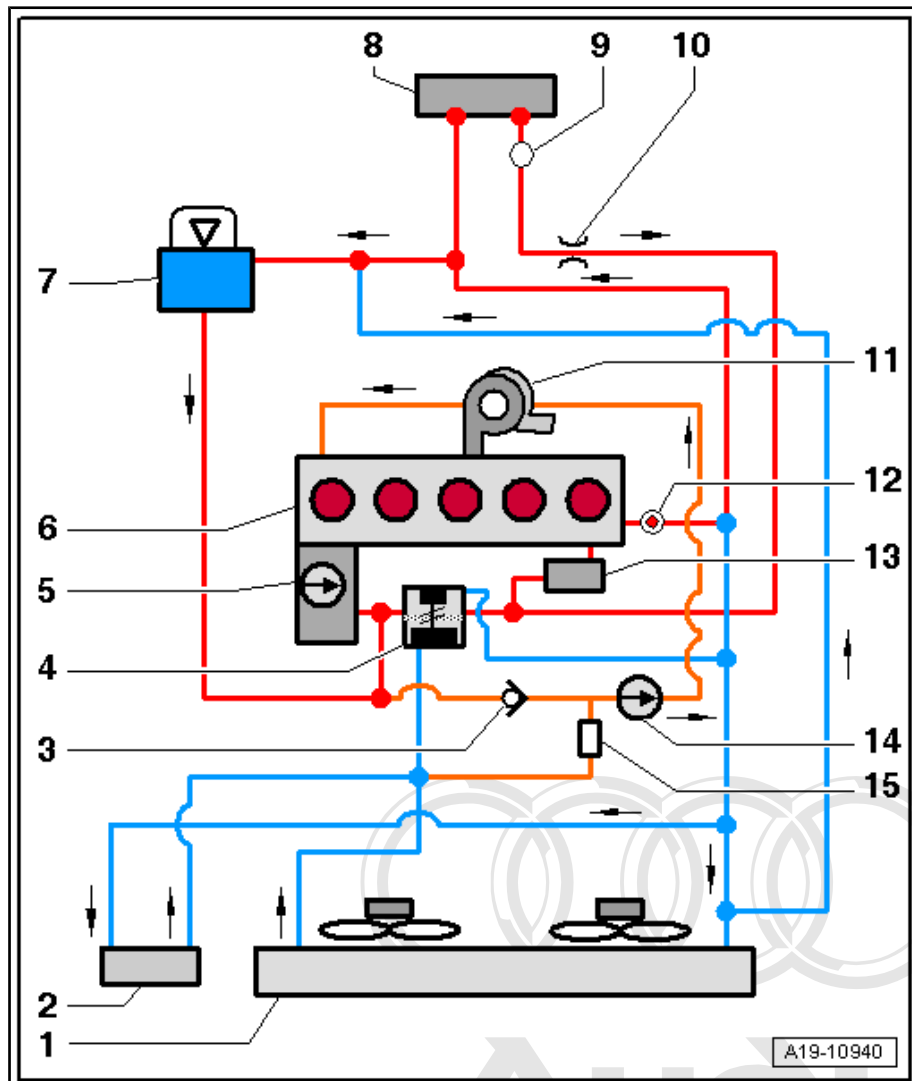
12 - Coolant temperature sender -G62-

13 - Engine oil cooler

- If renewed, refill system with fresh coolant

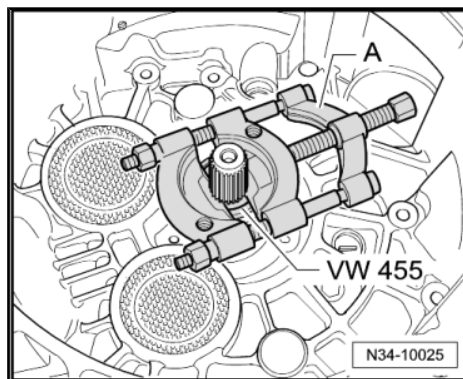
14 - Continued coolant circulation pump -V51-

15 - Solenoid for coolant circuit -N492-

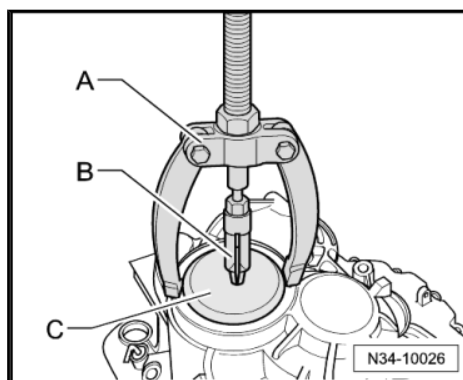




- Lock input shaft by fitting installing sleeve -VW 455- over input shaft and against clutch housing.
- Tighten splitter -A-, e.g. -Kukko 17/0- behind splines on input shaft.
- The rear side of the splitter must be in contact with installing sleeve (zero play).

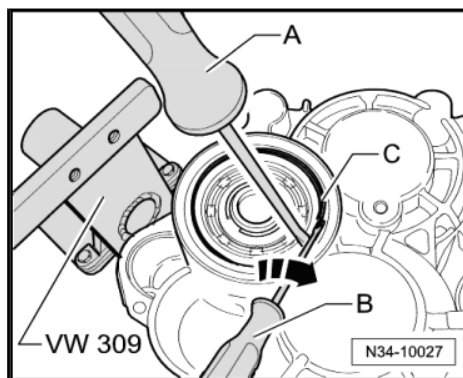


- Pierce rubber in centre of sealing cap -C- with a screwdriver.
 - Pull sealing cap out of gearbox housing.
- A - Counter-support , e.g. -Kukko 22/1-
 B - Internal puller 8 ... 12 mm , e.g. -Kukko 21/01-

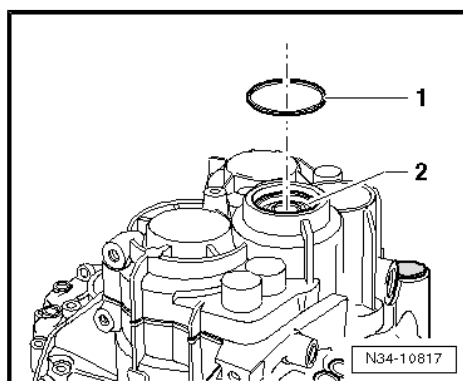


Detach circlip -C- from input shaft grooved ball bearing as follows:

- Hold one end of circlip with screwdriver -A-.
- Lever other end of circlip out of slot in ball bearing -arrow- with 2nd screwdriver -B-.
- Lever out circlip further by re-applying screwdriver -B-.



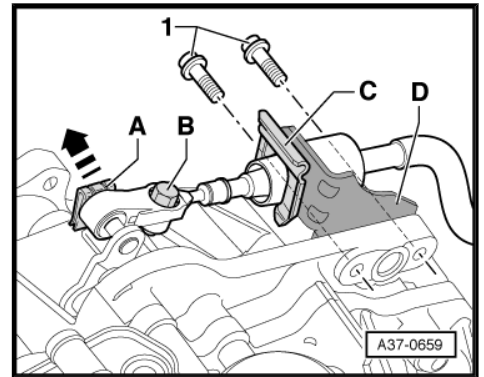
- Where fitted, detach spacer -1- from gearbox housing -2-.
- When renewing the gearbox housing, check whether the spacer has to be re-installed ⇒ [page 167](#) .



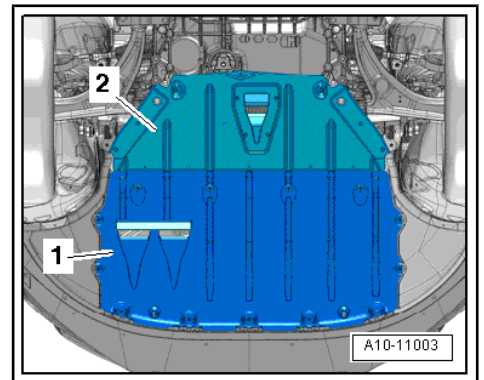
- Remove air cleaner housing (top and bottom sections) ⇒ Rep. Gr. 24 .
- Detach locking plate -C-.
- Press securing clip -A- upwards and detach.
- Press selector lever cable off selector shaft lever -arrow- and pull out of support bracket -D-.

 **Note**

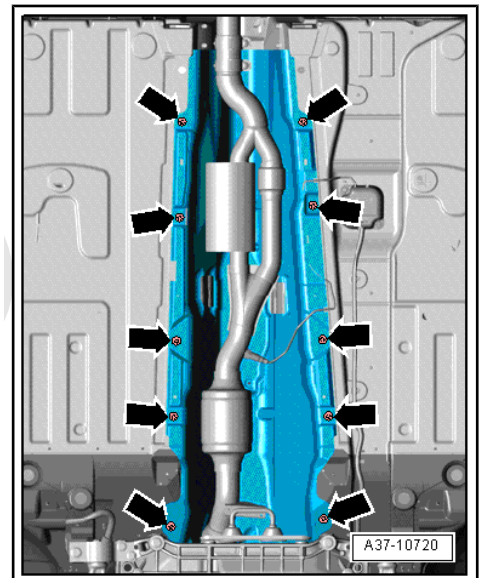
- ◆ Do not bend or kink the selector lever cable.
- ◆ -Items 1 and B- can be disregarded.



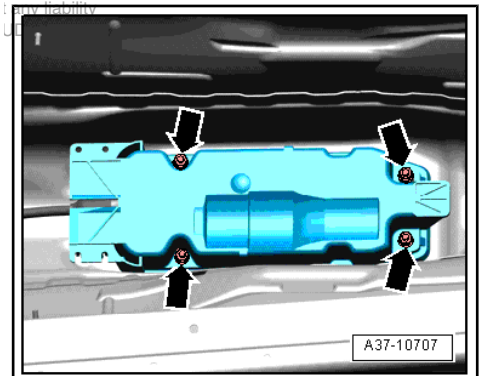
- Remove noise insulation: front -1- and rear -2- ⇒ Rep. Gr. 66 .
- Remove exhaust system ⇒ Rep. Gr. 26 .
- Remove propshaft ⇒ Rear final drive 02D and 0AV; Rep. Gr. 39 .



- Remove heat shield -arrows-.



- Detach cover for shift unit -arrows-.
- Carefully slide cover for shift unit together with sleeve along selector lever cable towards front of vehicle, taking care not to damage sleeve.

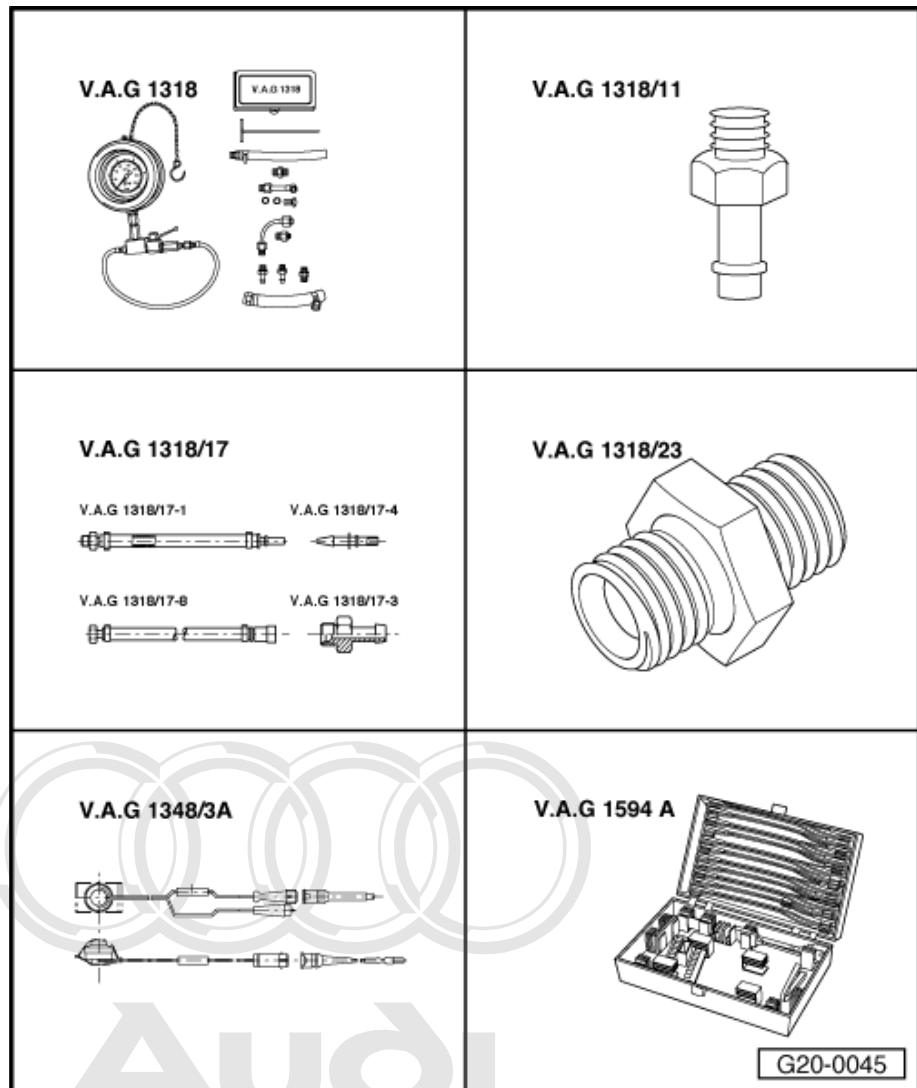




6.7 Checking fuel pump delivery rate - vehicles with 2.5 ltr. TFSI engine

Special tools and workshop equipment required

- ◆ K-Jetronic pressure tester - V.A.G 1318-
- ◆ Adapter -V.A.G 1318/11-
- ◆ Adapter -V.A.G 1318/17-1A-
- ◆ Connector -V.A.G 1318/23-
- ◆ Remote control -V.A.G 1348/3A- for V.A.G 1348 with adapter cable -V.A.G 1348/3-3-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Fuel-resistant measuring container



Procedure

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Observe test conditions ⇒ [page 4](#)

TT Coupé:

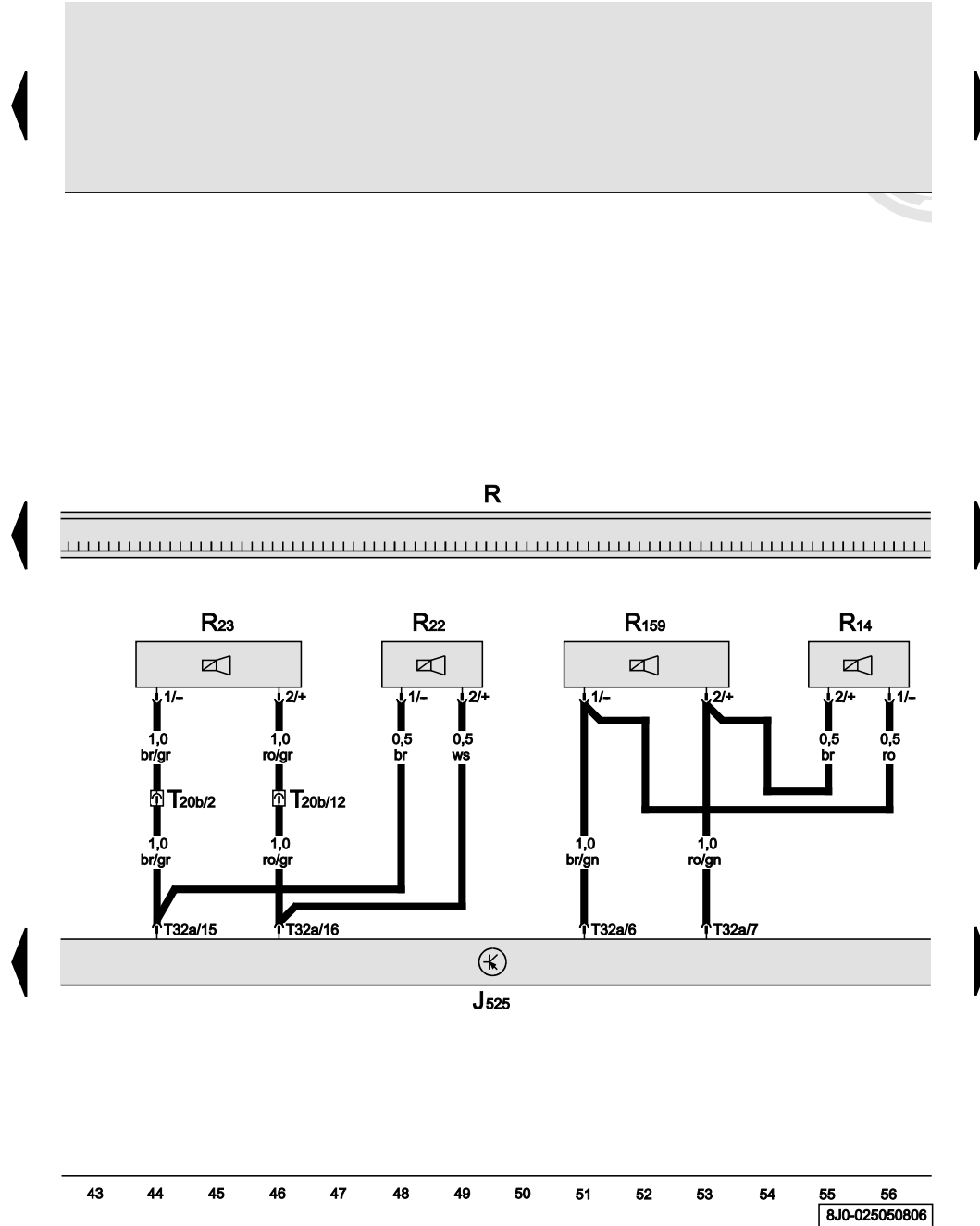
- Remove rear seat bench ⇒ Rep. gr. 72 .

TT Roadster:

- Remove back panel side trim (right-side) ⇒ Rep. gr. 70 .

Radio, digital sound package control unit, rear left treble loudspeaker, front right treble loudspeaker, front right bass loudspeaker, rear left mid-range and bass loudspeaker

- J525 Digital sound package control unit
- R Radio
- R14 Rear left treble loudspeaker
- R22 Front right treble loudspeaker
- R23 Front right bass loudspeaker
- R159 Rear left mid-range and bass loudspeaker
- T20b 20-pin connector, black, in the front right door
- T32a 32-pin connector, black, on digital sound package control unit



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