Removing and installing dash panel insert

> ***Caution***
>
> ***To disconnect and connect the battery, the procedure described in the workshop manual should be strictly adhered to → Chapter.***

Note

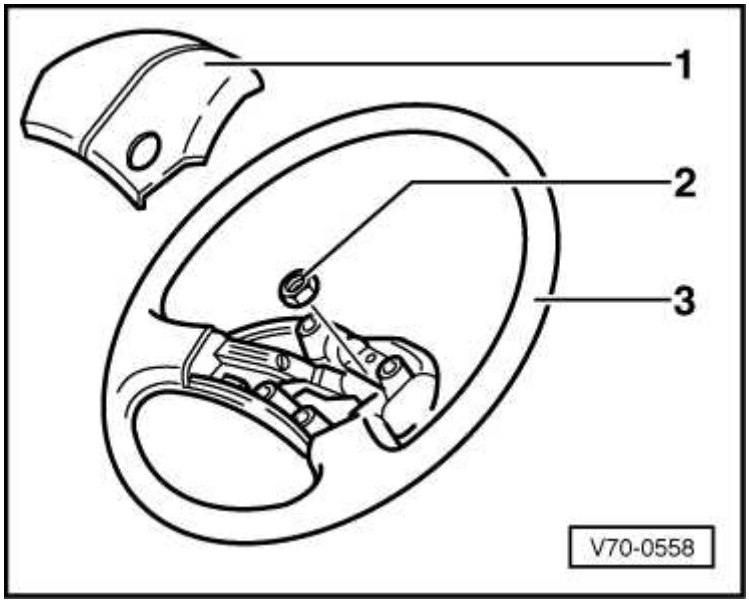
- *Pull off multi-pin connector and speedometer drive shaft without removing housing.*
- *The instruments, warning lamps with plug-in bulb holders and the illumination bulbs can be removed like the voltage stabiliser without removing the housing.*
- *The bulbs for the multi-function indicator/digital clock, odometer display and selector lever display, the contact contact plate with speed sender G54 and the multi-function indicator pressure sender can be removed only after removal of the housing.*

Remove steering wheel:

– Unclip cover cap -1-.

– Unscrew hexagon nut -2- (70 Nm).

– Mark steering wheel position and remove steering wheel -3-.



Remove steering column switch and trim:

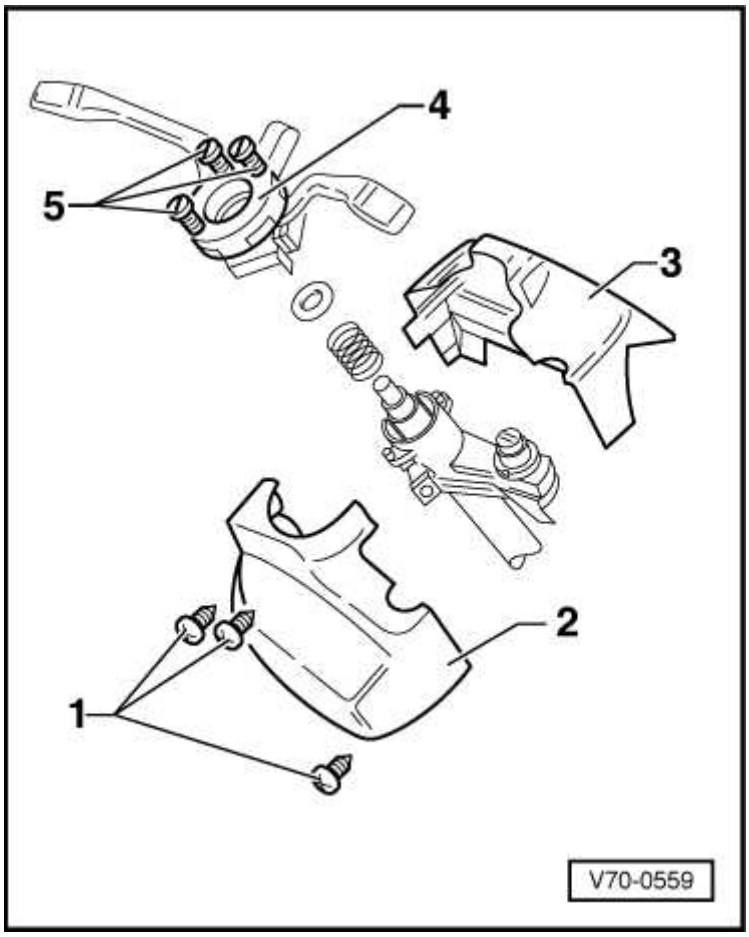
– Unscrew cross-head screws -1- and remove trim -2-.

– Pull off connectors at steering column switch -4-.

– Unscrew cross-head screws -5- and pull off steering column switch-4-.

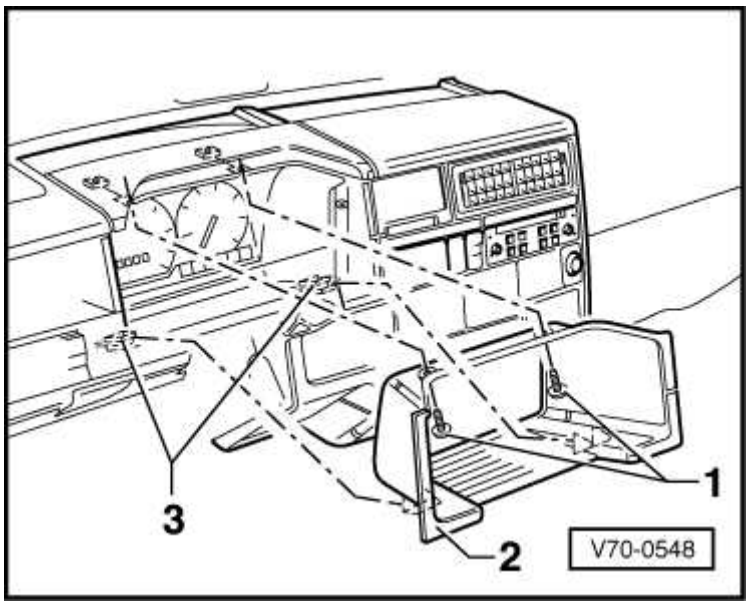
– Remove trim -3-.

Remove dash panel insert cover:



– Unscrew two panel screws -1- and remove dash panel insert cover -2- from spring clips -3-.

Remove complete dash panel insert:

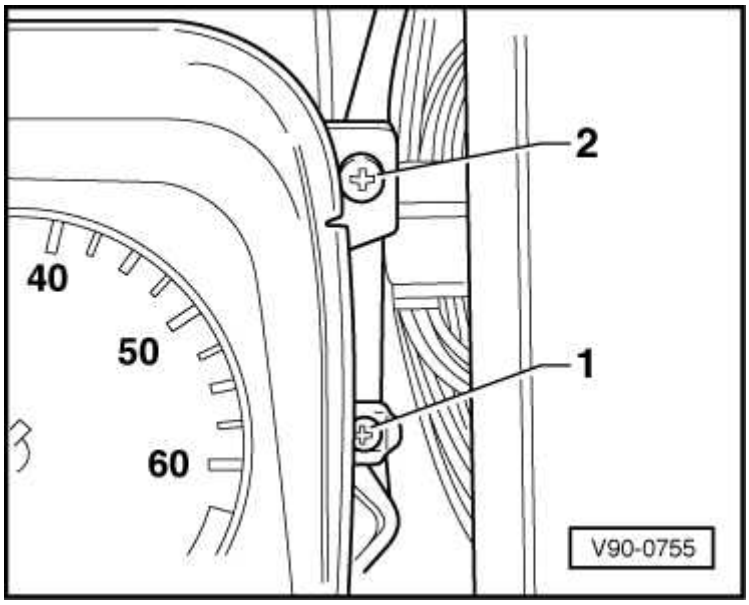


– Unscrew left and right securing bolts -2-.

– Pull out dash panel insert from dash panel and pull off multi-pin connector, multi-function indicator pressure sender hose and speedometer drive shaft on back of dash panel insert.

– Loosen transparent cover securing bolts -1-.

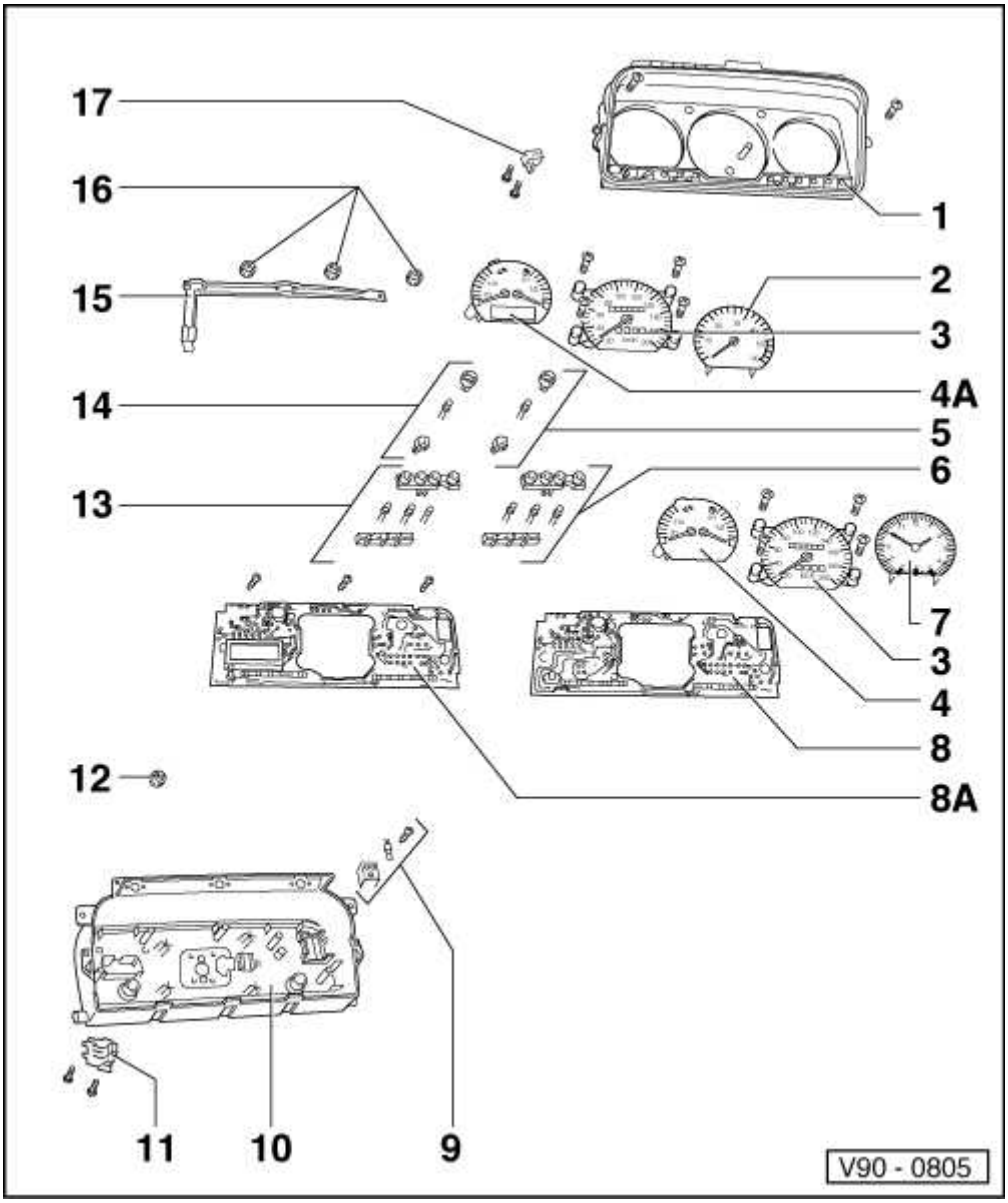
– Unscrew or pull off trip recorder reset button and pull off transparent cover.


2
1
40
50
60
V90-0755

Assembly overview - dash panel insert with rev counter or analogue clock

Note

- *Fault finding programmes for specific systems and current circuits: → Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Information on checking voltages, LEDs and bulbs with test box (basic unit) -V.A.G 1598/14- → Chapter.*



1 - Transparent cover

2 - Rev counter -G5-

- Note different versions
- Removing and installing instruments → Chapter.

3 - Speed sender (at dash panel insert) -G54-, mechanical

- Removing and installing instruments → Chapter.
- Removing and installing drive shaft → Chapter.
- Installing speed sender (at dash panel insert) -G54- → Chapter

4 - Coolant temperature gauge -G3- and fuel gauge -G1- with cut-out for digital clock -Y2- or 4 A - coolant temperature gauge -G3- and fuel gauge -G1-

- Removing and installing instruments → Chapter.

5 - Right turn signal warning lamp -K94-

- Checking LED → Chapter
- Installing → Chapter

6 - Right warning lamps

- Installation position → Chapter
- Checking LED → Chapter
- Installing → Chapter

7 - Analogue clock -Y-

- Removing and installing instruments → Chapter.

8 - Printed circuit board for analogue clock or 8 A printed circuit board with digital clock

- Renewing printed circuit board only in combination with housing
- Components on printed circuit board → Chapter

9 - Voltage stabiliser -J6- with cooling panel

- Checking → Chapter
- Removing and installing → Chapter.

10 - Housing

- Renewing housing only in combination with printed circuit board

11 - Contact plate for speed sender (at dash panel insert) -G54-

- Installing speed sender → Chapter

12 - Bulb for digital clock illumination

- Black bulb holder

- 12 V/1.2 W
- Installation position → Chapter
- Removing and installing → Chapter.

13 - Left warning lamps

- Installation position → Chapter
- Checking LED → Chapter
- Installing → Chapter

14 - Left turn signal warning lamp -K65-

- Checking LED → Chapter
- Installing → Chapter

15 - Conductor strip for illumination, dash panel insert

- Printed circuit board connector → Chapter

16 - Bulb for dash panel insert illumination -L10-

- Blue bulb holder
- 12 V/1.2 W

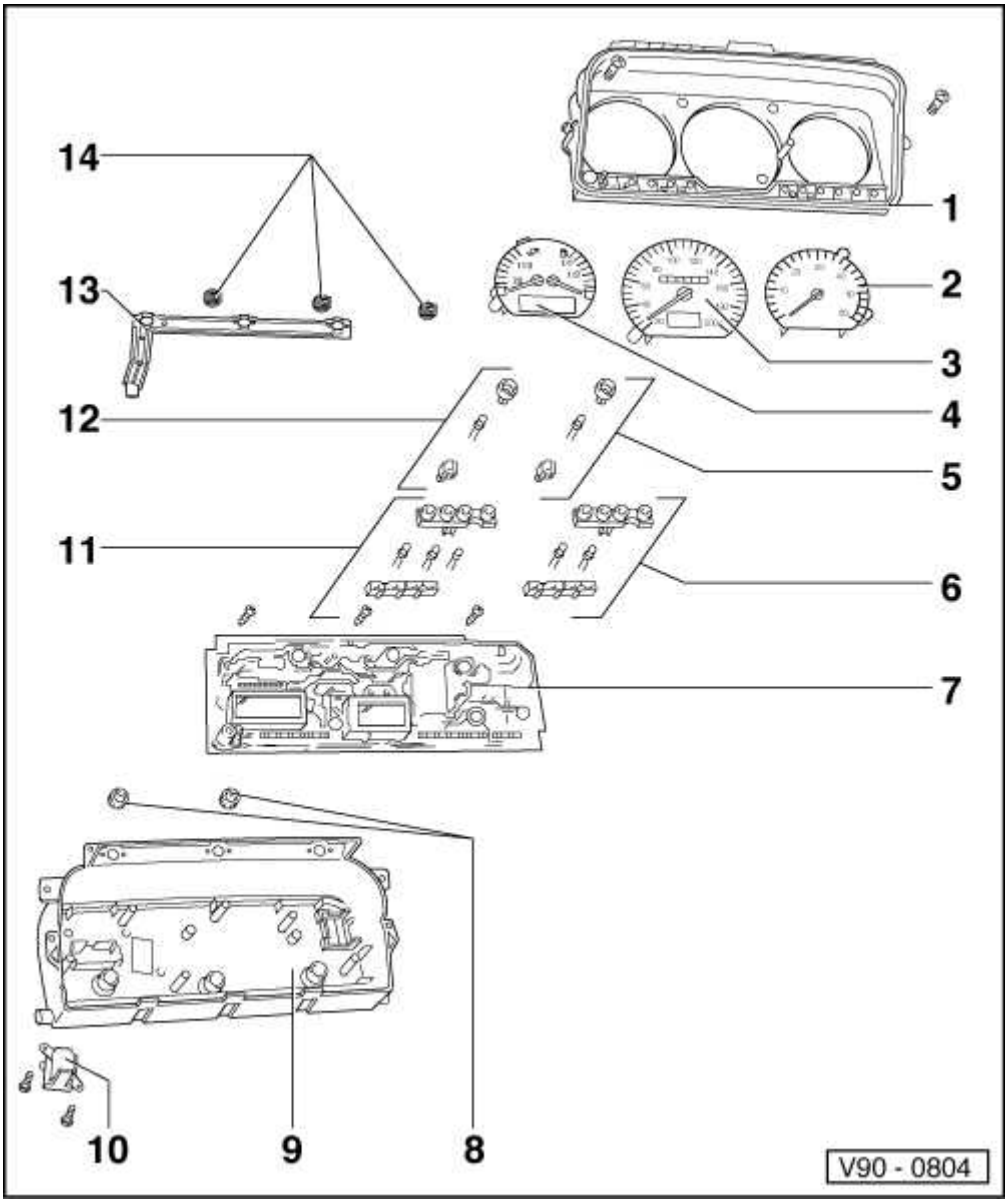
17 - Speed sender (at dash panel insert) -G54-

- Only with mechanical speedometer
- Installing → Chapter

Assembly overview - dash panel insert with multi-function indicator (MFI)

Note

- *Fault finding programmes for specific systems and current circuits: → Current flow diagrams, Electrical fault finding and Fitting locations.*
- *Information on checking voltages, LEDs and bulbs with test box (basic unit) -V.A.G 1598/14- → Chapter.*



1 - Transparent cover

2 - Rev counter -G5-

- Note different versions
- Removing and installing instruments → Chapter.

3 - Speedometer -G21-, electronic

- Removing and installing instruments → Chapter.
- Removing and installing speedometer -G22- → Chapter

4 - Coolant temperature gauge -G3- and fuel gauge -G1- with cut-out for multi-function indicator -J119-

- Removing and installing instruments → Chapter.

5 - Right turn signal warning lamp -K94-

- Checking LED → Chapter
- Installing → Chapter

6 - Right warning lamps

- Installation position → Chapter
- Checking LED → Chapter
- Installing → Chapter

7 - Printed circuit board

- Renewing printed circuit board only in combination with housing
- Components on printed circuit board → Chapter, → Chapter

8 - Bulbs for illuminating odometer display, multi-function indicator (MFI) or selector lever display

- Black bulb holder
- 12 V/1.2 W
- Installation position → Chapter
- Removing and installing → Chapter.

9 - Housing

- Renewing only in combination with printed circuit board

10 - Pressure sender for multi-function indicator -G55-

- Removing → Chapter.
- Removing dash panel insert beforehand → Chapter

11 - Left warning lamps

- Installation position → Chapter
- Checking LED → Chapter

- Installing → Chapter

12 - Left turn signal warning lamp -K65-

- Checking LED → Chapter
- Installing → Chapter

13 - Conductor strip for dash panel insert illumination

- Components on printed circuit board, back → Chapter, → Chapter

14 - Bulb for dash panel insert illumination -L10-

- Blue bulb holder
- 12 V/1.2 W

Removing and installing instruments

> ***Caution***
>
> ***To disconnect and connect the battery, the procedure described in the workshop manual should be strictly adhered to → Chapter.***

Note

Before working on components in the dash panel insert, disconnect the battery earth strap.

1 - Fuel gauge and coolant temperature gauge

- additionally with digital clock or multi-function indicator (MFI)

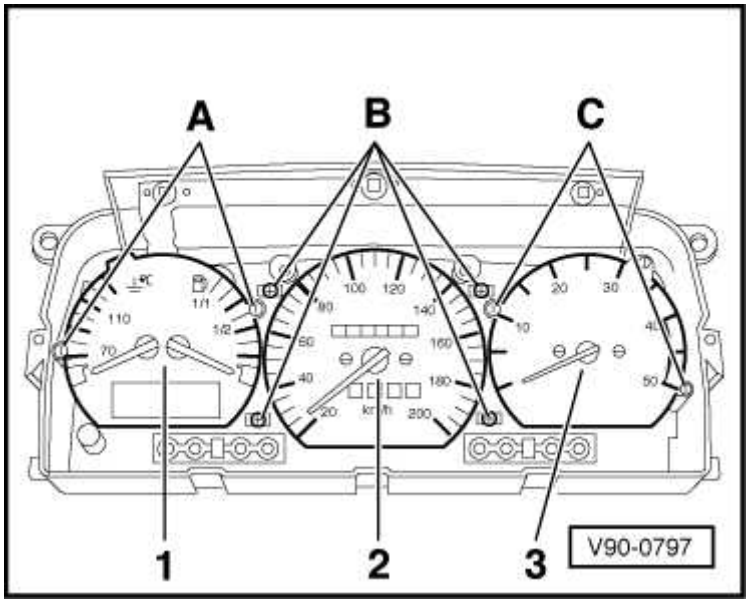
2 - Mechanical speedometer or electronic speedometer - G21-

3 - Analogue clock or rev counter

- Additionally with selector lever display

– Pull instruments -1 and 3- forwards out of housing; likewise with instrument -2- (electronic speedometer).

– Mechanical speedometer: loosen -2- securing bolts -B- and pull out instrument forwards.



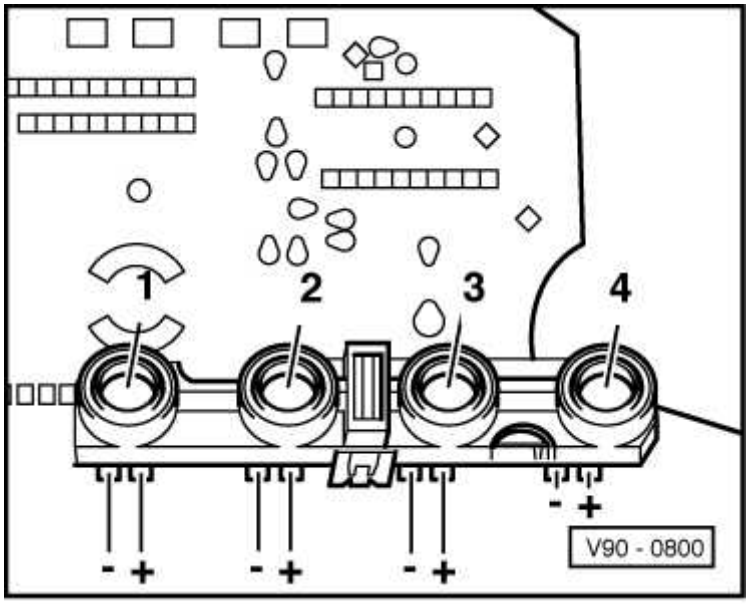
Installation positions of left warning lamps

1 - Coolant temperature/coolant shortage indicator warning lamp (red), LED

2 - No connection

3 - Oil pressure warning lamp (red), LED

4 - Main beam warning lamp (blue), bulb



Installation positions of right warning lamps

1 - Warning lamp (red) for dual circuit brake and handbrake control, LED

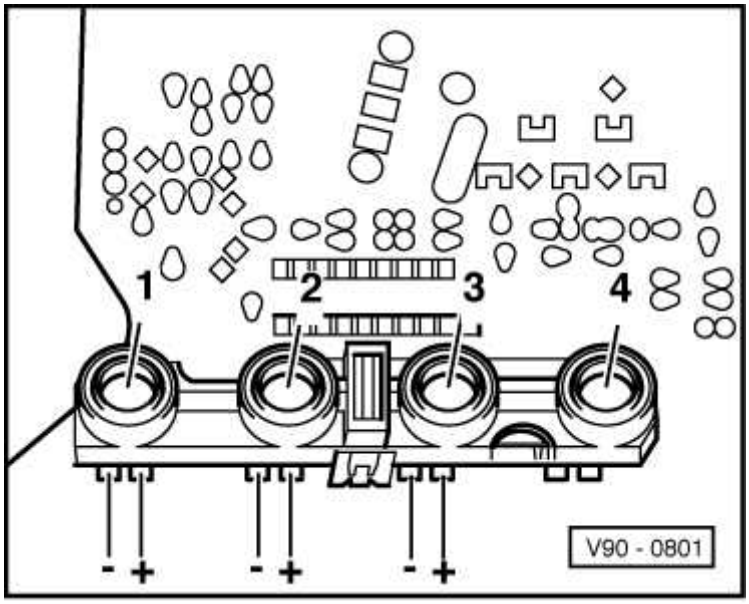
- Seat belt warning system warning lamp (red), LED

2 - Alternator warning lamp (red), LED

3 - Glow period indicator lamp (yellow), LED

- Catalytic converter monitoring warning lamp (red), LED

4 - No connection

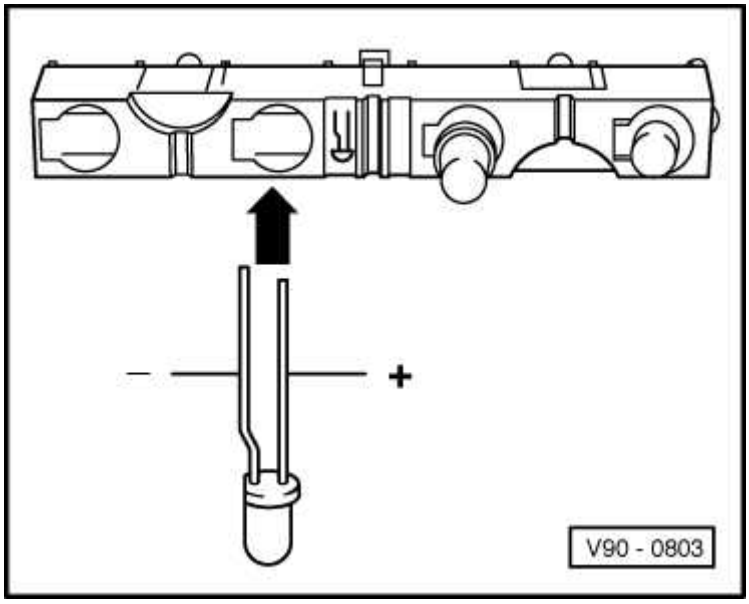


Installing left/right warning lamps

Replace left and right warning lamps after pulling off top of 4-bulb holder.

Note

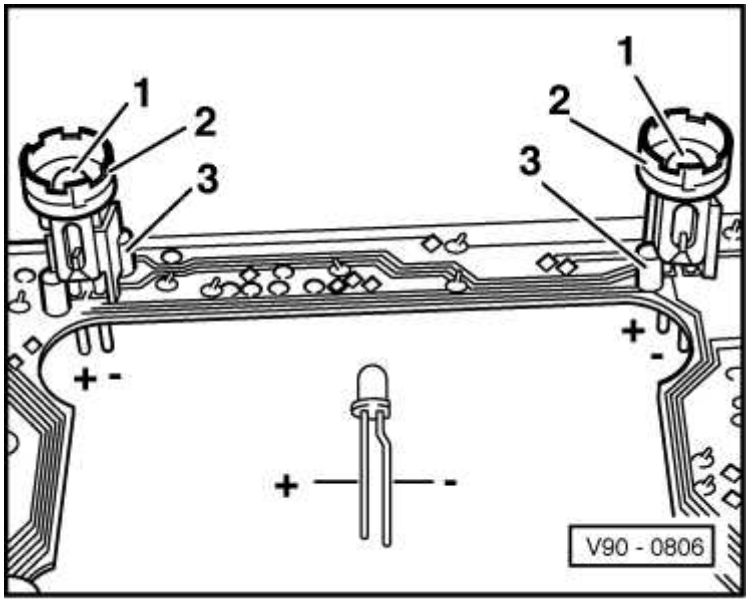
When installing the LEDs make sure polarity corresponds to figure on top of bulb holder.



Installing left/right turn signal warning lamps (K65/K94)

Insert turn signal warning lamps according to the adjacent figure.

1 - LED
2 - Top of bulb holder with catch
3 - Lower part of bulb holder



Checking voltage stabiliser -J6-

Note

Check only if fuel and coolant temperature gauges give false readings. Do not disconnect battery earth strap; multi-pin connector remains plugged into dash panel insert.

Check voltage supply:

– Remove right instrument.

– Switch on ignition.

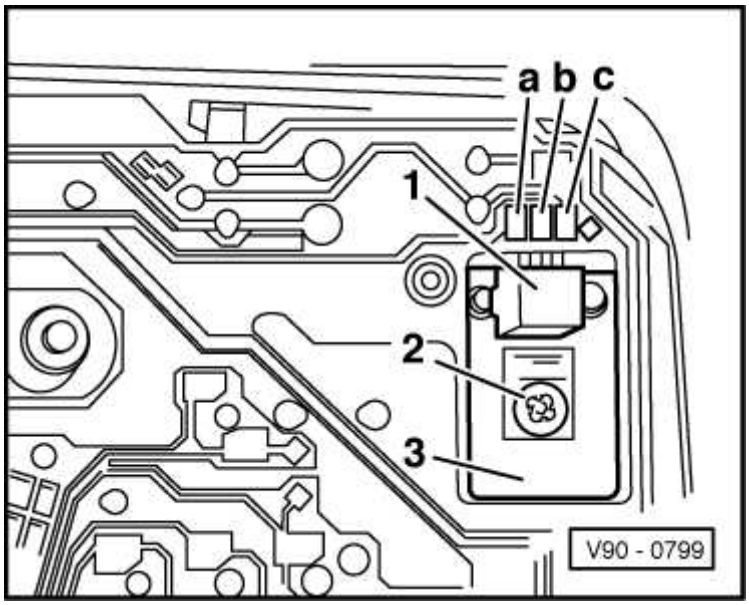
– Voltmeter between terminal 15 -a- and earth -b-. Specification: approx. battery voltage

– If the specification is not attained, check wiring according to current flow diagram.

Check output voltage:

– Voltmeter between output 15 -c- and earth -b-. Specification: 9.5...10.5 V

– If the specification is not attained, voltage stabiliser is defective; renew.



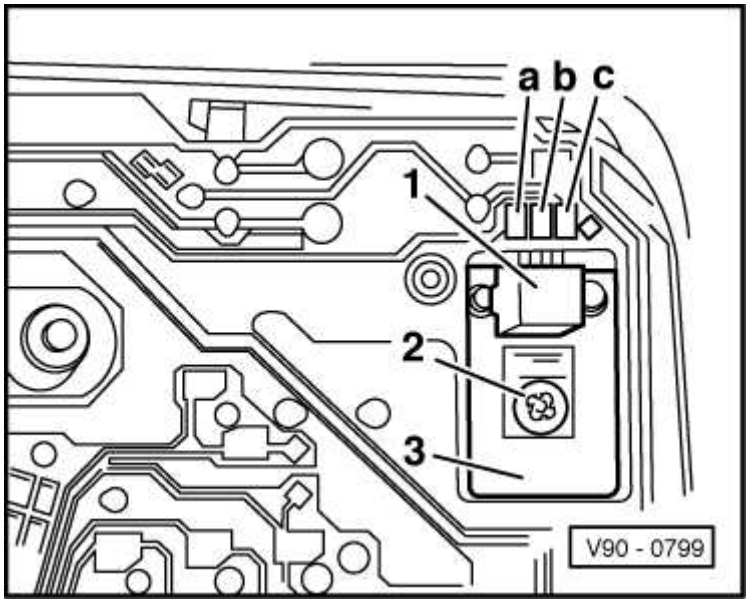
Removing and installing voltage stabiliser -J6- (mechanical speedometer)

– Remove right indicator instrument

– Unscrew securing bolt -2- and remove voltage stabiliser -1- from contacts -a, b, c- downwards.

Note

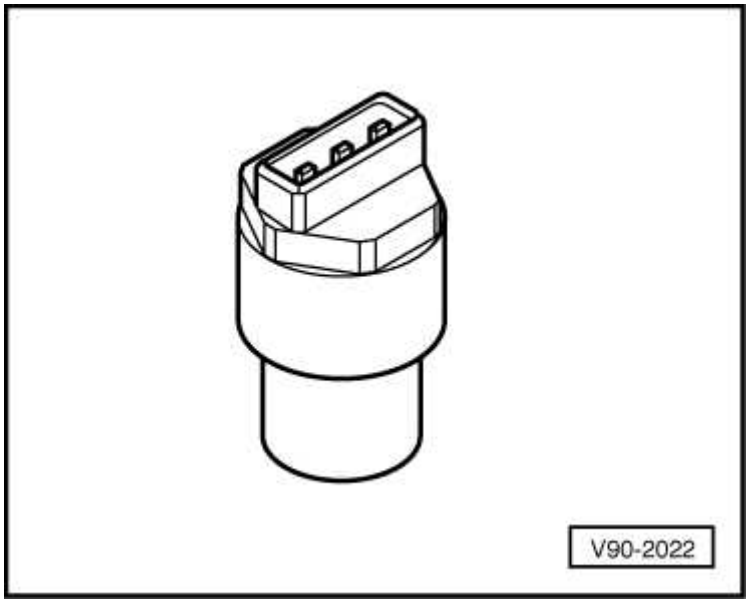
When installing make sure that the 3 connections are inserted in the contacts -a-, -b-, -c- and that the stabiliser is firmly screwed onto the cooling panel -3- (heat dissipation from the housing).



Removing and installing speedometer sender -G22-

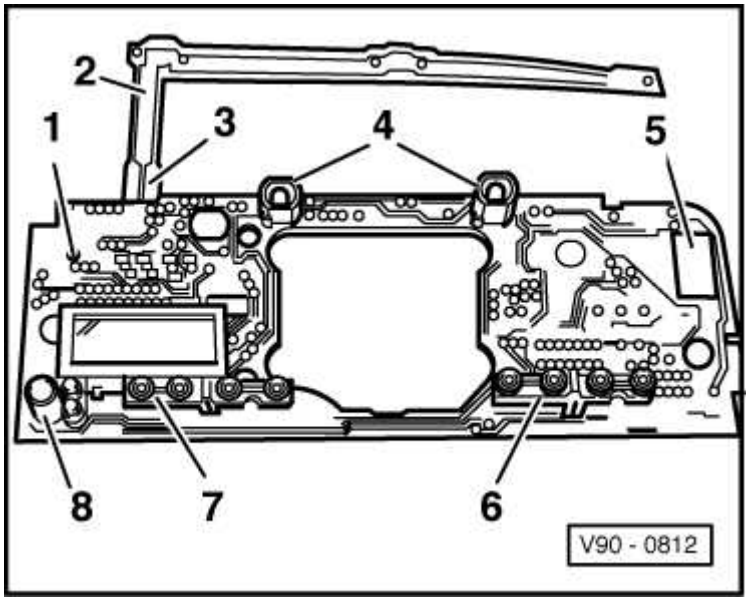
The speedometer sender -G22- is bolted to the gearbox instead of the speedometer drive shaft and supplies 4 pulses per revolution.

– After pulling off connector, loosen sender using suitable wrench, 22 mm, and unscrew by hand.



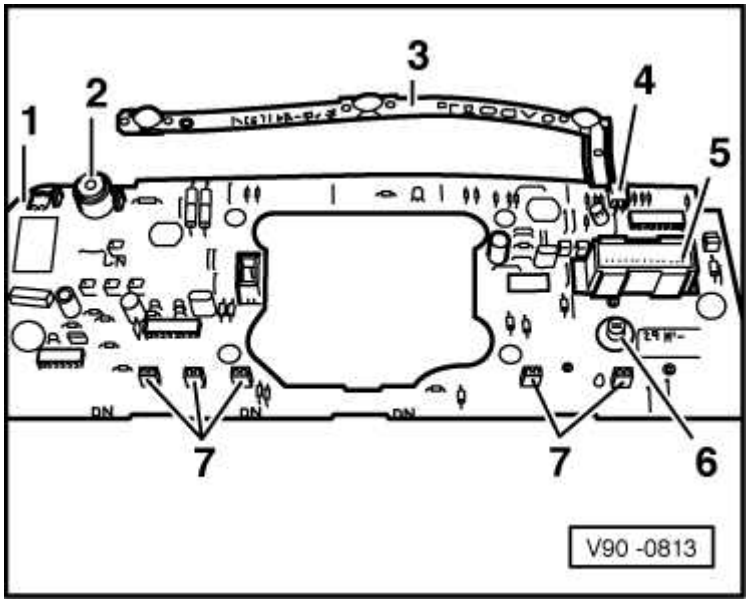
Components on printed circuit board front on vehicles with digital clock -Y2-

1 - Printed circuit board
2 - Conductor strip for dash panel insert illumination
3 - Connector for conductor strip
4 - Left/right turn signal warning lamps
5 - Recess for voltage stabiliser bolted on a cooling plate with the dash panel insert housing
6 - Right warning lamps
7 - Left warning lamps
8 - Digital clock, do not renew separately



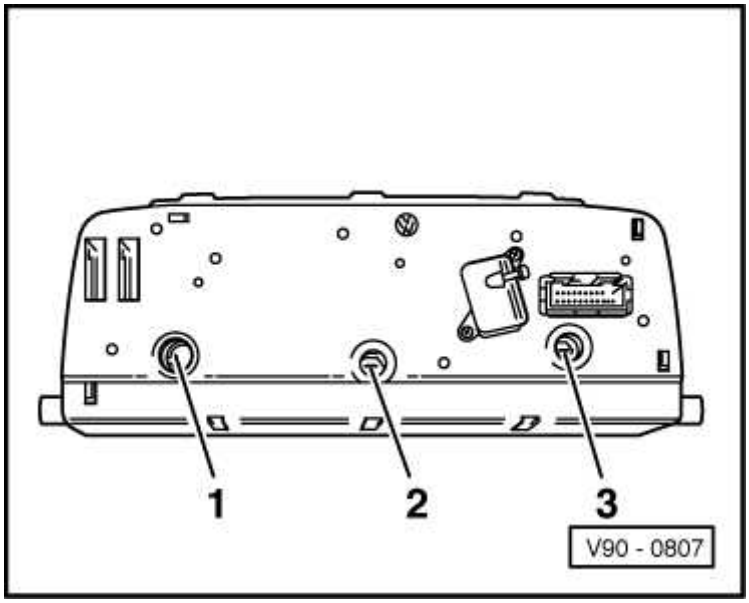
Components on printed circuit board back on vehicles with digital clock -Y2-

1 - Printed circuit board
2 - Oil pressure warning buzzer, do not renew separately
3 - Conductor strip for dash panel insert illumination
4 - Connector for conductor strip
5 - 28-pin connector for dash panel insert wiring harness
6 - Digital clock illumination
7 - Warning lamp bulb holder



Installation positions of bulbs for illuminating odometer display, multi-function indicator (MFI)/digital clock and selector lever display

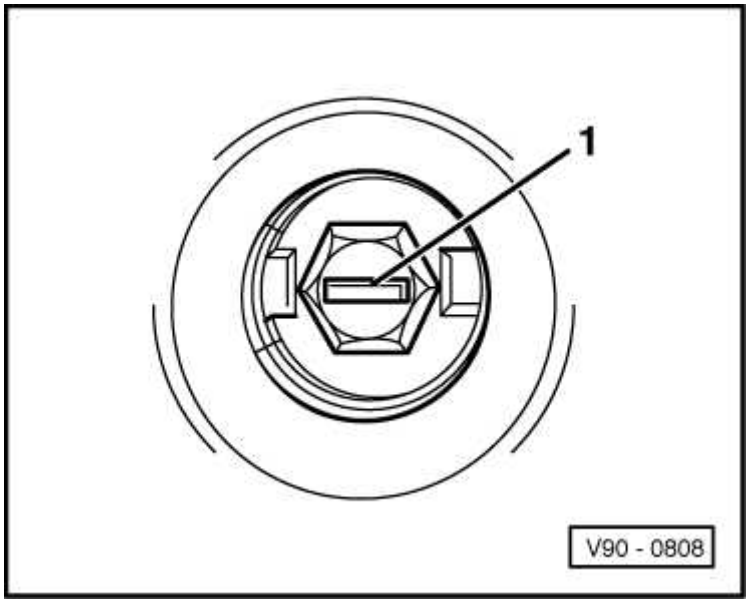
1 - Bulb for selector lever display illumination
2 - Bulb for odometer display illumination
3 - Bulb for MFI / digital clock illumination



Removing and installing bulbs for illuminating odometer display, multi-function indicator (MFI)/digital clock and selector lever display

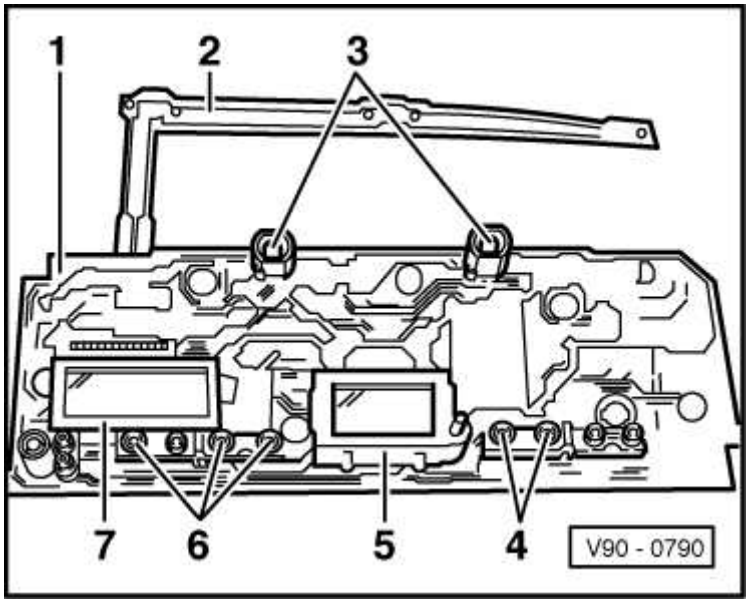
– Turn bulb holder until notch -1- is vertical (unlocked) and pull out bulb.

– Insert new bulb and turn bulb holder until notch -1- is horizontal (locked).



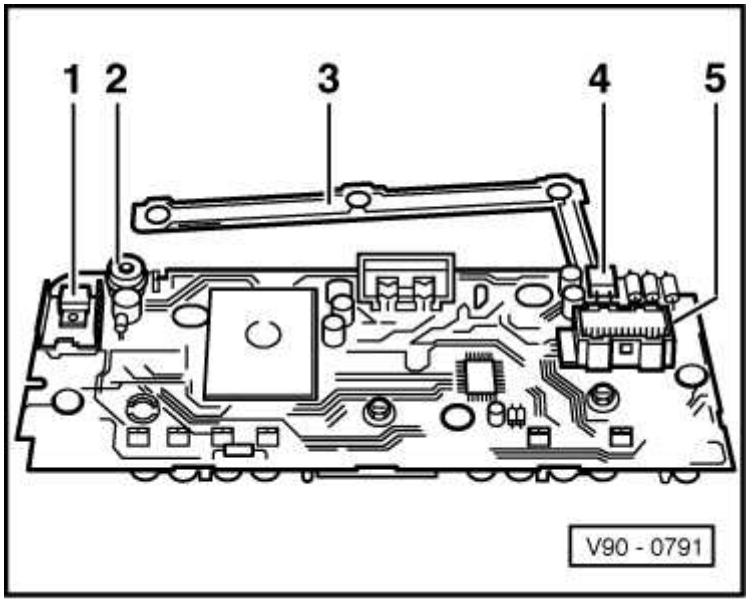
Components on printed circuit board front on vehicles with MFI

1 - Printed circuit board
2 - Conductor strip for dash panel insert illumination
3 - Left/right turn signal warning lamps
4 - Right warning lamps
5 - Odometer display, do not renew separately
6 - Left warning lamps
7 - Multi-function indicator (MFI), do not renew separately



Components on printed circuit board back on vehicles with MFI

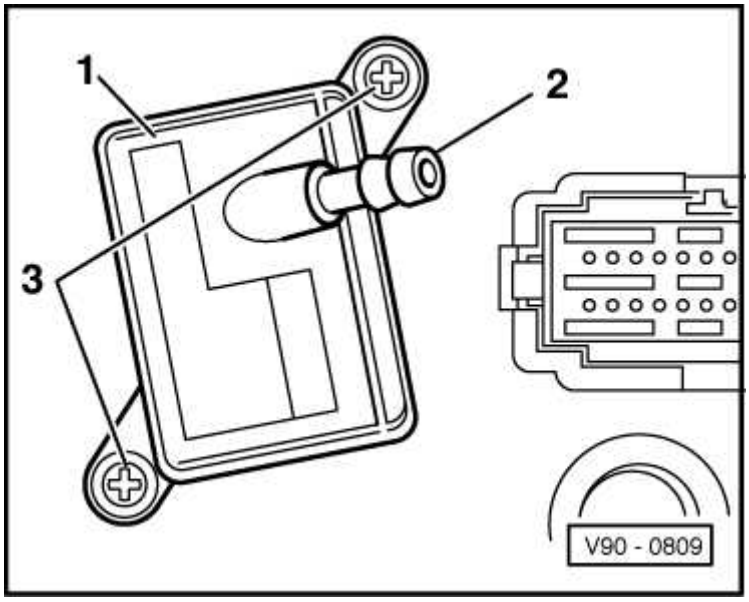
1 - Voltage stabiliser, do not renew separately
2 - Oil pressure warning buzzer
3 - Conductor strip for dash panel insert illumination
4 - Connector for conductor strip
5 - 28-pin connector for dash panel insert wiring harness



Removing and installing multi-function display pressure sender -G55-

– Loosen cross-head bolts -3-.

– Pull pressure sender off dash panel insert.



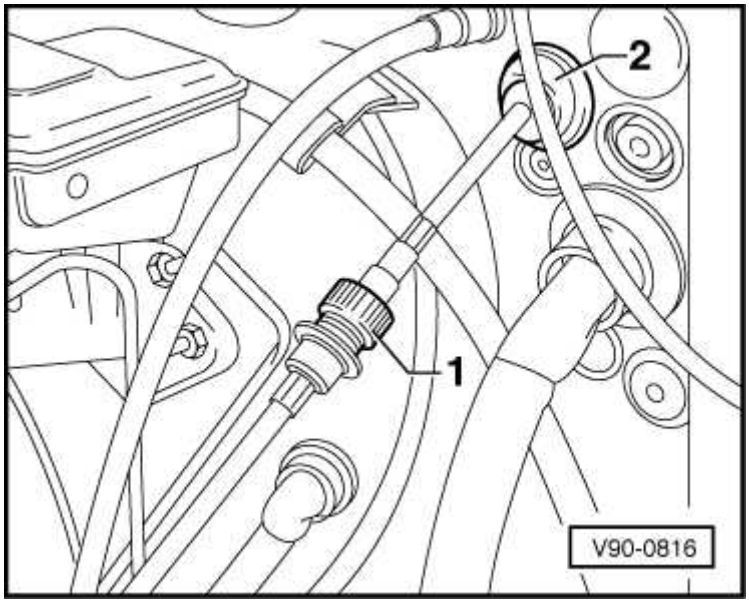
Removing speedometer drive shaft from dash panel

Note

The drive shaft is split in the engine compartment and locked on the dash panel insert.

– Release plastic coupling of drive shaft at dash panel insert by compressing the side web and pull off drive shaft from housing.

– Unscrew coupling -1- from drive shaft and pull out drive shaft with rubber gasket -2- through opening in partition to passenger compartment.



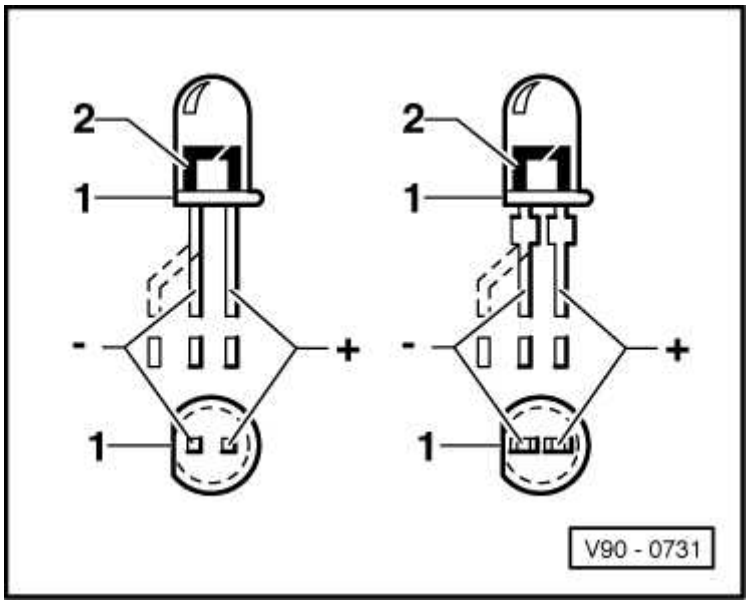
Checking LED

The negative terminal is marked by:

1 - Phase on diode housing

2 - Larger terminal in diode housing

With some diodes the negative terminal connection is also offset.

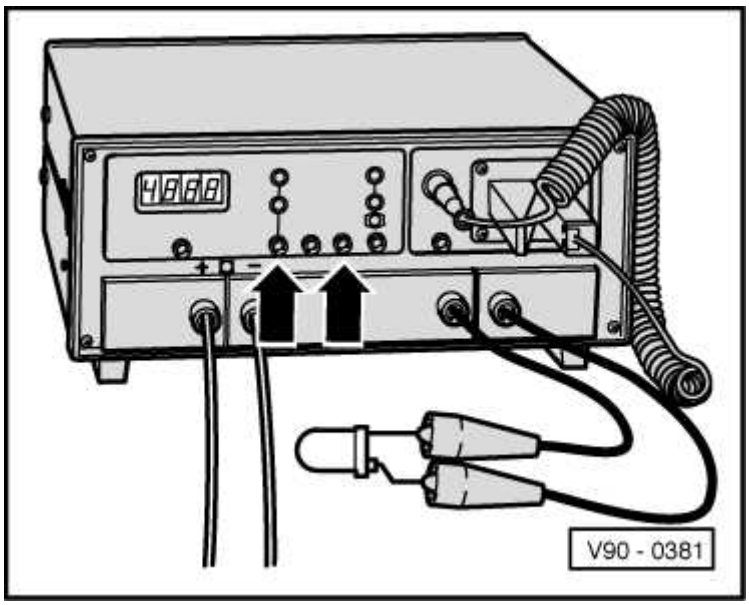


– At hand multimeter -V.A.G 1526 B- simultaneously press buttons for resistance and voltage measurement -arrows-.

– Connect red terminal “+” to LED (+).

– Connect black terminal “-” to LED (-).

LED must light up.



Installing speed sender (at dash panel insert) -G54-

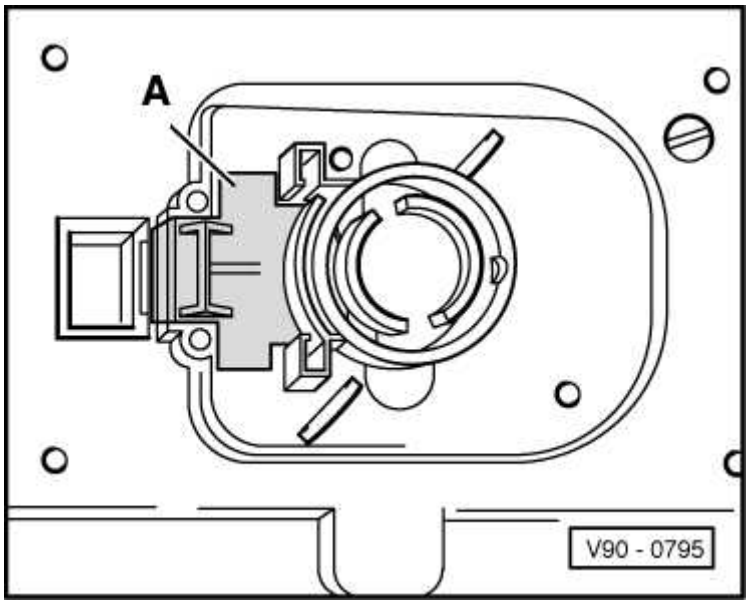
Caution

To disconnect and connect the battery, the procedure described in the workshop manual should be strictly adhered to → Chapter.

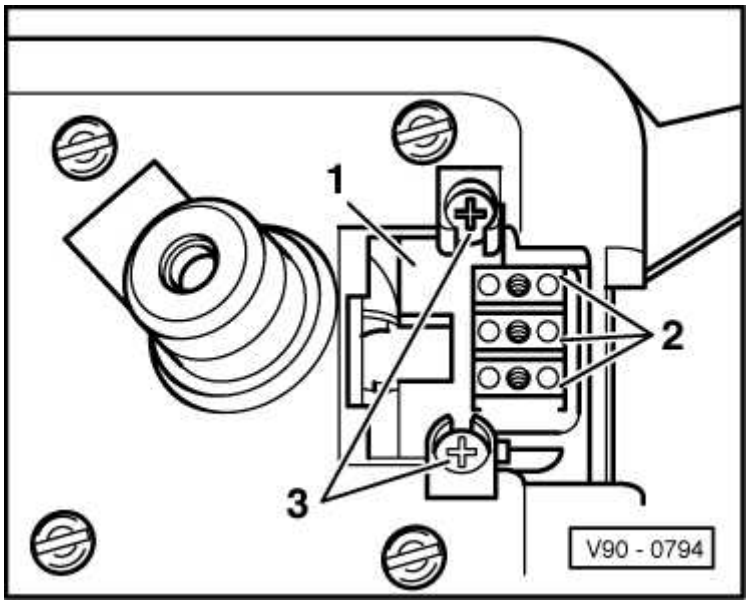
Note

Speed sender signals are required for speed-dependent systems in the vehicle. On vehicles with mechanical speedometer the sender is bolted onto back of the instrument and supplies 7 pulses per wheel revolution. Inductive senders (2-pin) or Hall sender (3-pin) are used for radio with Gala 1994 ►.

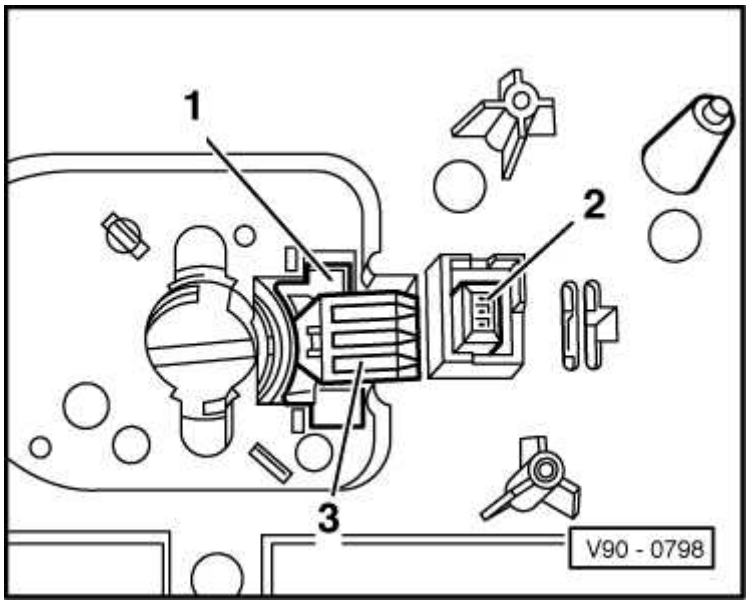
– Carefully break out part -A- at perforated separating line on back of dash panel insert.



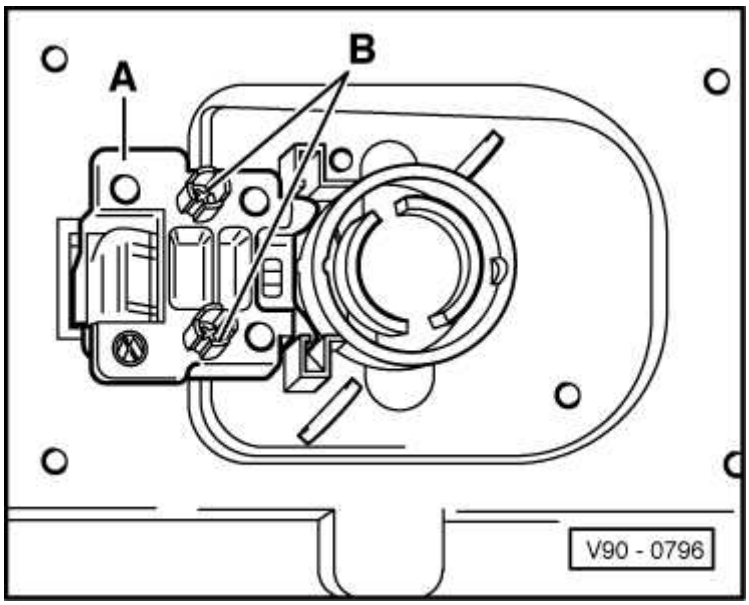
– Insert speed sender in the recess created -1- and screw firmly with cross-head bolts -3-.



– Make sure that conductor strip -3- lies without folds on sender spring contact.



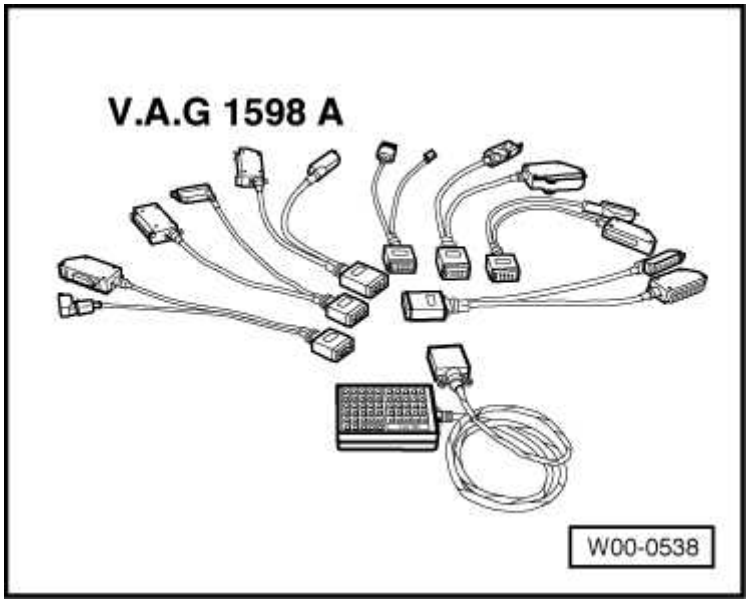
– Secure contact plate -A- with bolts -B-.



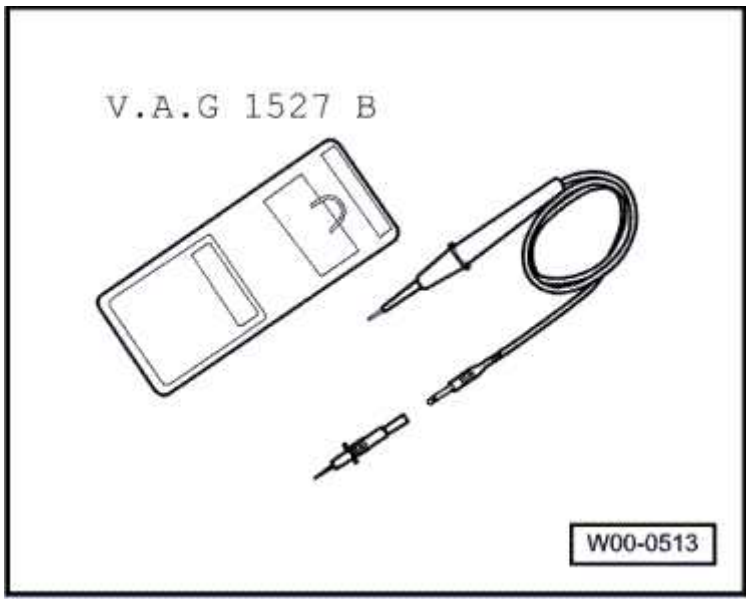
Checking voltages, LEDs and bulbs with test box (basic unit) -V.A.G 1598/14-.

Special tools and workshop equipment required

- Test box with 9 adapters -V.A.G 1598/A-
- Adapter cable -V.A.G 1598/13-



- Voltage tester -V.A.G 1527 B-



- Hand multimeter -V.A.G 1526 B-

Note

- *The bush markings on the test box (basic unit) -V.A.G 1598/14- are identical with the contact markings on the dash panel insert.*
- *If the specification is attained, check conductor strip with connectors and components.*
- *In case of deviation from specification, check wiring harness according to current flow diagram. → Current flow diagrams, Electrical fault finding and Fitting locations*

Note

Replace the dash panel wiring harness if it is found to be defective when the line positions are checked. The dash panel wiring harness must not be repaired.

Test prerequisites:

- Battery voltage OK.
- Affected fuses OK. → Current flow diagrams, Electrical fault finding and Fitting locations

1 - Dash panel insert

2 - Test box (basic unit) -V.A.G 1598/14- with connecting cable -3-

4 - Hand multimeter -V.A.G 1526 B-

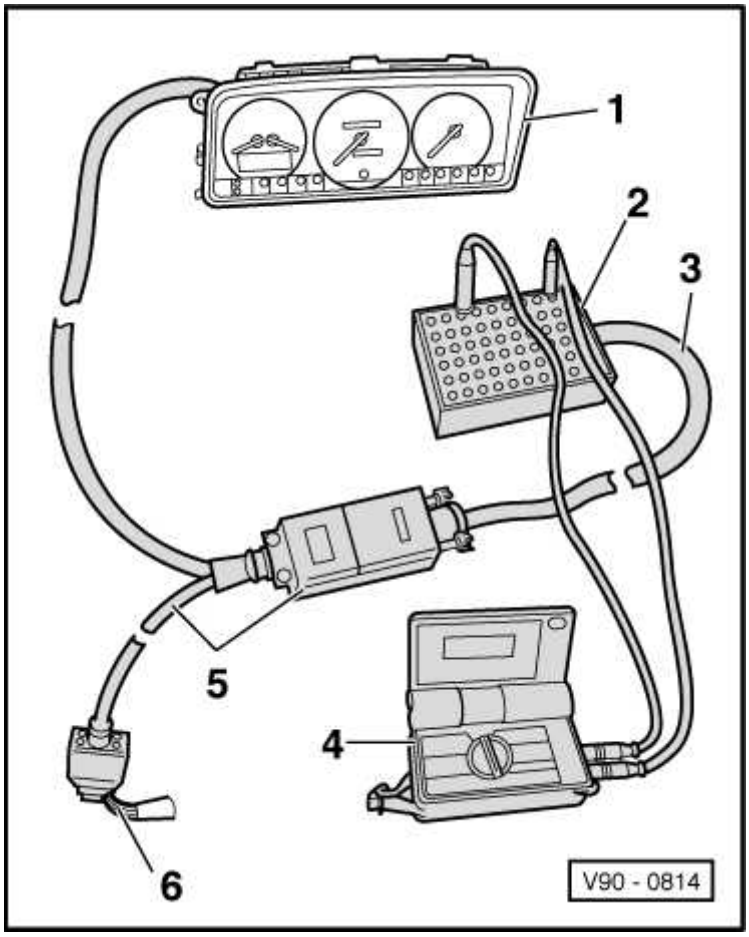
5 - Adapter line -V.A.G 1598/8-

6 - Dash panel insert wiring harness

– Fold down cover in front of relay plate.

– Disconnect multi-pin connector behind dash panel insert -1-.

– Connect test box (basic unit) -V.A.G 1598/14- with adapter line -V.A.G 1598/13- to dash panel insert and disconnected wiring harness (plug must audibly engage).



Test table:

– Measuring range: Switch on voltage measurement -V-.

Test step	Bushes - V.A.G 1598-	The voltage supply is tested	• Test conditions – Additional operations	Specifications
1	11 + 3	Terminal 30/terminal 31	• Ignition switched off	Approx. battery voltage
2	13 + 3	Terminal 15/terminal 31	– Switch on ignition.	Approx. battery voltage
3 → Note	22 + 3	Left turn signal warning lamp	• Ignition switched on – Connect test lamp. – Switch on left turn signal.	Test lamp flashes
4 → Note	24 + 3	Right turn signal warning lamp	• Ignition switched on – Connect test lamp. – Switch on right turn signal.	Test lamp flashes
5	12 + 3	Illumination for dash panel insert and digital display	• Ignition switched on – Switch on light switch.	Approx. 2.5 V to battery voltage, depending on position of controller E 20
6	25 + 3	Main beam warning lamp	• Ignition switched on – Switch on high beam.	Approx. battery voltage
7	18 + 3	Dual circuit and handbrake system warning lamp	• Ignition switched on – Apply handbrake. – Release handbrake.	Approx. battery voltage approx. 0 V approx. battery voltage
8	16 + 3	Alternator warning lamp	• Ignition switched on	Approx. 0 V

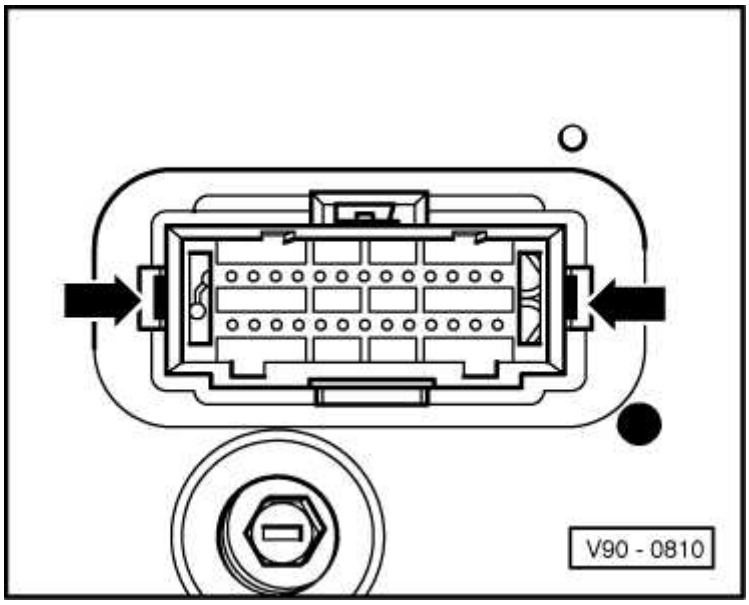
			– Start engine.	approx. battery voltage
9 → Note	13 + 20	Glow period indicator lamp	• Engine cold (below glow temperature) – Switch on ignition.	Approx. battery voltage until glow temperature is attained

1) Use test lamp -V.A.G 1527-

2) Not possible with hot engine

Pin assignment of connections on dash panel insert

28-pin connector



1 - Ambient temperature sensor, earth → Note
2 - to coolant shortage indicator sender
3 - Terminal 31, earth
4 - MFI save switch (reset) → Note
5 - Terminal 31, earth → Note
6 - MFI save switch (memory) → Note
7 - Signal from speedometer at dash panel insert -G54- or from electronic speedometer -G21-
8 - Oil pressure switch 0.9 bar / 1.4 bar / 1.8 bar
9 - Oil pressure switch 0.3 bar
10 - Terminal 1 / terminal W or speed signal from Digifant engine control unit
11 - Terminal 30, battery positive
12 - Terminal 58b, illumination
13 - Terminal 15
14 - Rear fog light
15 - MFI call-up button (mode) → Note
16 - Alternator warning lamp, terminal 61

1) Only with multi-function indicator

17 - Oil temperature sender 1)
18 - Dual circuit and handbrake system warning lamp / seat belt warning system warning lamp
19 - Ambient temperature sensor, signal1)
20 - Glow period warning lamp
21 - Fuel gauge
22 - Left turn signal warning lamp
23 - Coolant temperature gauge
24 - Right turn signal warning lamp
25 - Main beam warning lamp
26 - Consumption signal from Digifant control unit, as of 01.93 1)
27 - Speed signal from speedometer sender (G 22)
28 - Selector lever display, as of 08.92

Only with multi-function indicator