

Index

Auto-check system

- code, checking 96.9
- components 96.3
- control unit, installation location 96.5
- functional testing 96.9
- operation 96.10
- overview 96.2
- removing/installing 96.14

Automatic transmission control unit (J217)

- removing/installing 96.18

Brake fluid level warning switch

- location/checking 96.5

Coolant low level warning switch

- location/checking 96.5

Coolant temperature switch

- checking 96.7
- location 96.6

Electronic thermoswitch

- location 96.8

Engine oil pressure switches

- location/checking 96.6

Hydraulic pressure control switch

- checking 96.8

Lamp control unit

- front 96.7
- rear 96.6

Selector lever display (from 1991)

- connector terminals, checking 96.16
- connector, terminal identification 96.16
- removing/installing 96.15

Voltage supply and output signal

- checking 96.11

Warning symbols

- Canadian vehicles 96.4
- USA vehicles 96.4

Windshield washer fluid level switch

- location/checking 96.6

Auto-Check system, overview

The Auto-Check system monitors the function of individual vehicle systems and informs the driver before and during driving about these systems.

When the ignition is switched **ON**, the "OK" symbol is displayed.

If the Auto-Check button is pushed when the key is in **ON** but engine not running, the following symbols will be displayed. See page 96.4.

This will tell you if any bulbs are burned out.

Note

If the engine is running when the Auto-Check button is pushed, the symbols will not appear.

Malfunctions are classified in two groups: **Warning Display** and **Danger Display**.

Warning Display

- brake lights
- brake pad wear
- low beam headlights
- rear lights
- battery voltage
- windshield washer fluid level
- fuel level

If a defect occurs in "warning display" group, the appropriate symbol or letters will appear with or without a yellow triangle. In addition, a buzzer will sound once.

Fluid levels (brake, coolant windshield washer) are displayed as long as the alternator charge warning light (terminal 61) is connected to ground. If several defects in "Warning Display" group are present at the same time, appropriate symbols are displayed one after the other.

Only the "brake pad wear" symbol appears for as long as the ignition is switched **ON**.

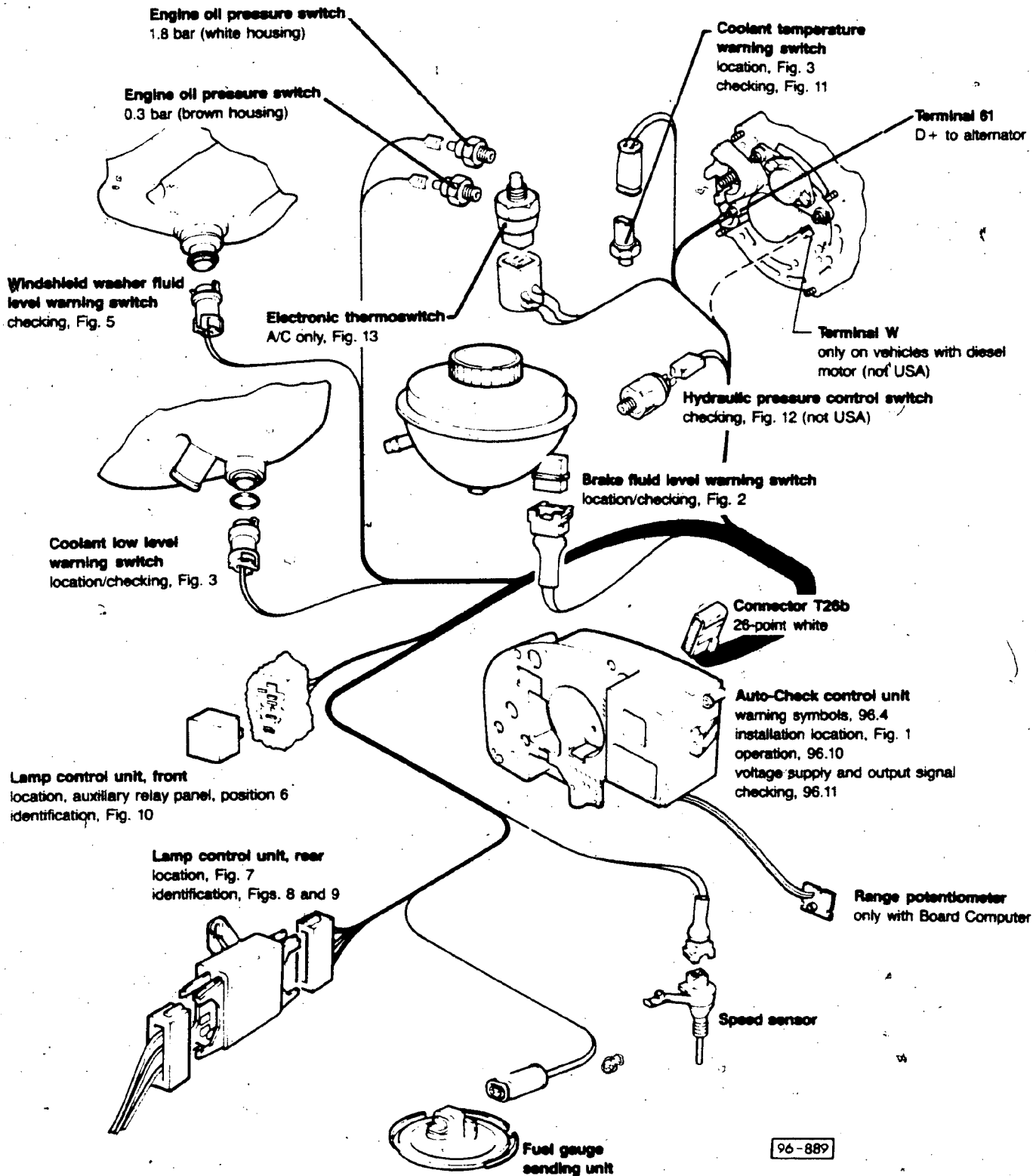
Danger Display

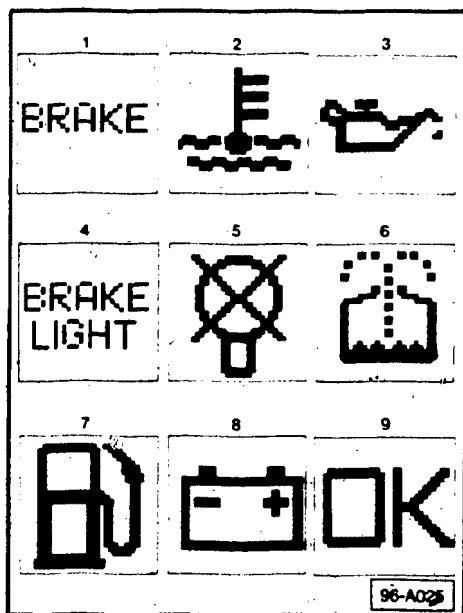
- brake fluid level
- central hydraulic system fluid level
- hydraulic pressure (not in USA)
- coolant temperature
- oil pressure

If a defect occurs in "danger display" group, appropriate symbol appears in display unit with an illuminated red triangle. In addition, a buzzer sounds three times.

Defects are not stored in the system memory.

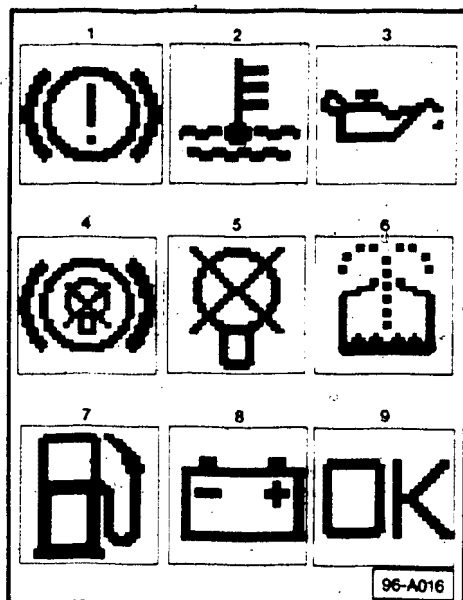
Other defect displays are suppressed whenever there is more than one defect in this group.





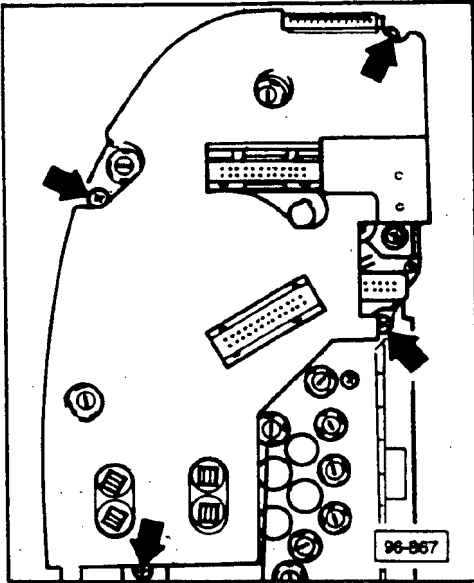
Warning symbols for USA vehicles only

- 1 — Brake fluid level too low
- 2 — Coolant level too low
Coolant temperature too high
- 3 — Engine oil pressure too low
- 4 — Brake light defective
(fuse, switch, wiring)
- 5 — Low beam headlight, tail light defective
(fuse, switch, wiring)
- 6 — Windshield washer fluid level too low
- 7 — Fuel tank level too low
- 8 — Battery voltage too low
- 9 — OK



Warning symbols for Canadian vehicles only

- 1 — Brake fluid level too low
- 2 — Coolant level too low
Coolant temperature too high
- 3 — Engine oil pressure too low
- 4 — Brake light defective
(fuse, switch, wiring)
- 5 — Low beam headlight, tail light defective
(fuse, switch, wiring)
- 6 — Windshield washer fluid level too low
- 7 — Fuel tank level too low
- 8 — Battery voltage too low
- 9 — OK

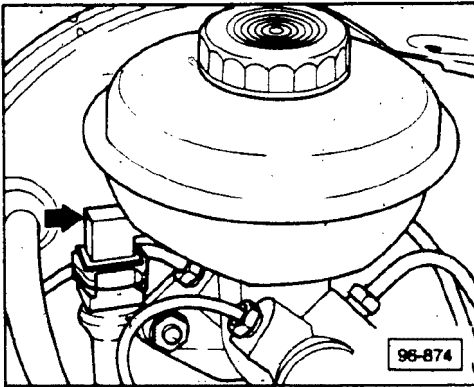


► **Fig. 1 Auto-Check control unit, installation location**

Located in module on back of instrument cluster.

The control unit and display are integrated in a single module.

If the Auto-Check control unit is replaced, the coding must always be checked and re-coded if necessary, page 96.9



► **Fig. 2 Brake fluid level warning switch, location/checking**

Warning contact is located on brake fluid reservoir (arrow).

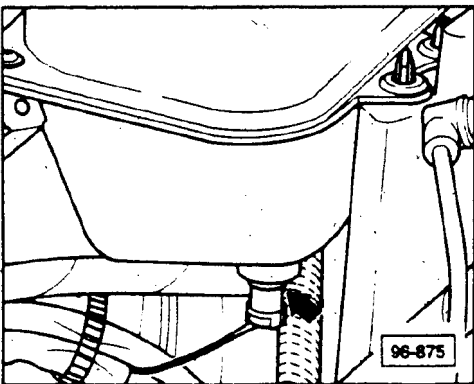
Note

Fill brake fluid reservoir before checking.

- remove connector
- connect ohmmeter between contacts of switch
 - ∞ ohms
- remove cover of brake fluid reservoir
- press and hold in pin of switch
 - 0.0 ohms

If specified value is **NOT** obtained,

- replace switch



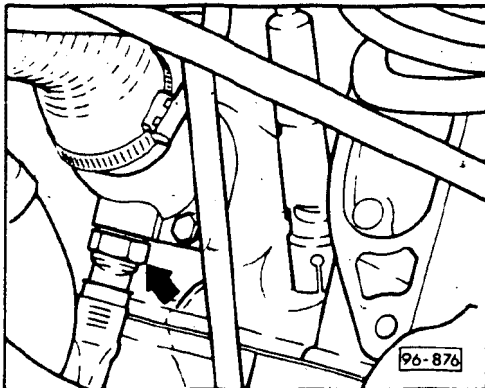
► **Fig. 3 Coolant low level warning switch, location/checking**

Located in coolant overflow bottle (arrow).

- remove connector from switch
- connect ohmmeter between contacts of switch
 - ∞ ohms

If specified value is **NOT** obtained,

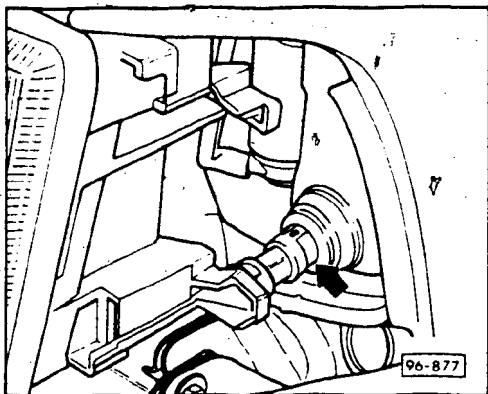
- replace switch



► **Fig. 4** Coolant temperature switch (vehicles without A/C)

Located on bottom of water connector at cylinder head.

Checking, see Fig. 11



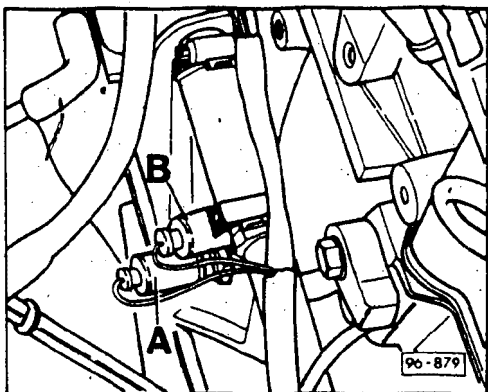
► **Fig. 5** Windshield washer fluid level switch, location/checking

Note

Windshield fluid reservoir must be full before test.

- remove electrical connector
- connect ohmmeter between contacts of switch
 - ∞ ohms

If specified value is **NOT** obtained,
 ■ replace switch

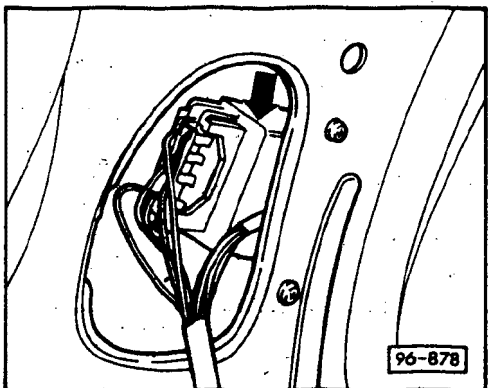


► **Fig. 6** Engine oil pressure switches, location/checking

- A = 1.8 bar (white housing)
- B = 0.3 bar (brown housing)

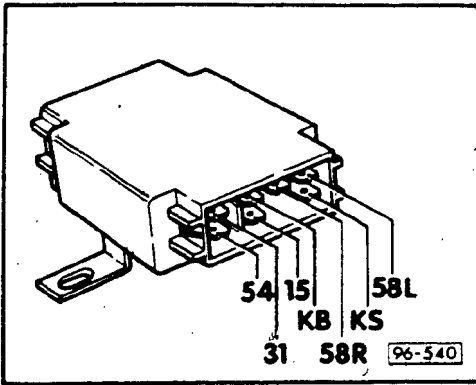
- remove wire from switch A
- connect ohmmeter between ground and oil pressure switch
 - ∞ ohm
- remove wire from switch B
- connect ohmmeter between ground and oil pressure switch
 - 0.0 ohm

If specified values are **NOT** obtained,
 ■ replace respective oil pressure switch



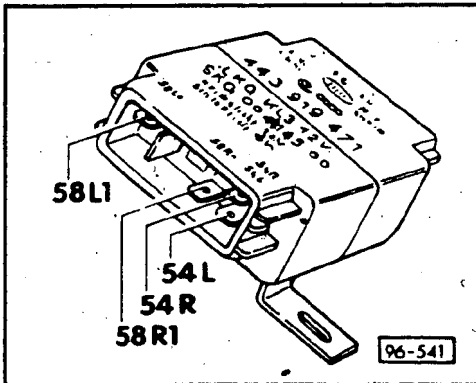
► **Fig. 7** Lamp control unit, rear

Located in left side of luggage compartment.



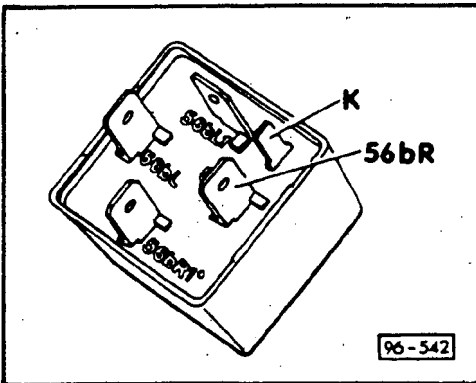
► Fig. 8 Lamp control unit, rear
(white connector — input)

Terminal	Connected to
KB	T26b (white, contact 25)
KS	T26b (white, contact 18)
15a	T26a (blue, contact 16)
31	ground
54	to brake light switch
58R	fuse/relay panel H58R
58L	fuse/relay panel H58L



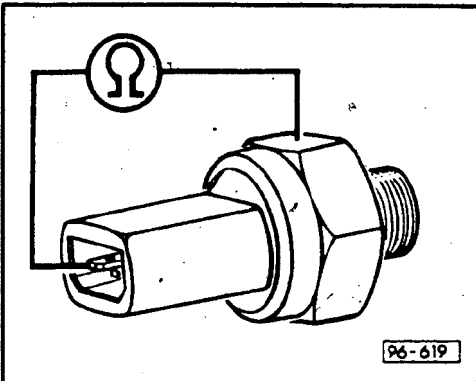
► Fig. 9 Lamp control unit, rear
(black connector — output)

Terminal	Connected to
54R	brake light, right
54L	brake light, left
58R1	back-up light, right
58L1	back-up light, left



► Fig. 10 Lamp control, front connections on relay

Terminal	Connected to
K	KS lamp control unit, rear T26b (white — contact 18)
56br	fuse/relay panel D 56br
56bl	fuse/relay panel D 56bl
56br1	headlight, right
56bl1	headlight, left



► Fig. 11 Coolant temperature switch, checking

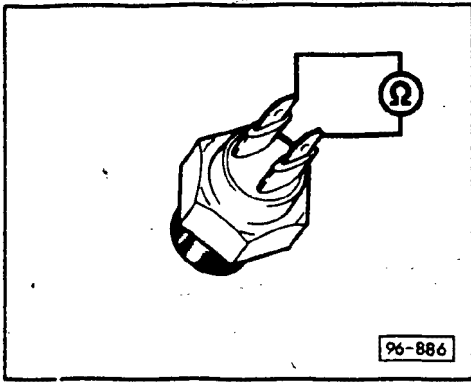
Note

This does not apply to vehicles with A/C.

- remove electrical connector
- connect ohmmeter to contacts of switch
 - up to 120°C (248°F) ∞ ohms
 - over 120°C (248°F) 0.0 ohms

If specified values are **NOT** obtained,

- replace coolant temperature switch



► Fig. 12 Hydraulic pressure control switch, checking (not in USA)

Note

The hydraulic and brake systems must be OK before performing this test.

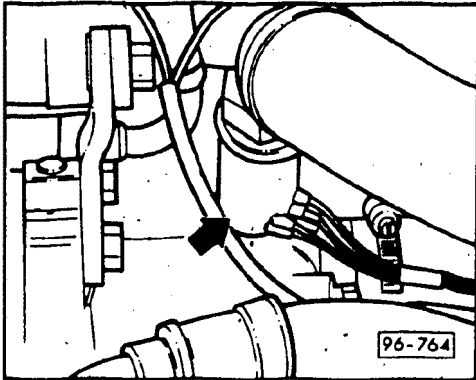
- remove wire from switch
- connect ohmmeter between the contacts

With engine **NOT** running

- pump brake pedal about 20 times
 - approximately 0.0 ohms

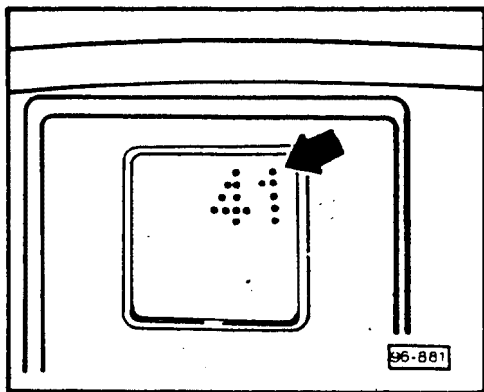
- start motor and run at idle for approximately one minute
 - ∞ ohms

If the specified values are **NOT** obtained,
■ replace hydraulic pressure control switch



► Fig. 13 Electronic thermoswitch, location

Located on water connector at cylinder head.



Auto-Check system, functional testing

Note

The functional testing can be done only when the vehicle is not moving.

Auto-Check system code, checking

- push and hold Auto-Check button down
- switch ignition **ON**
- read code displayed

Auto-check codes:

41 to 46 = 4-cylinder motor

51 to 56 = 5-cylinder motor

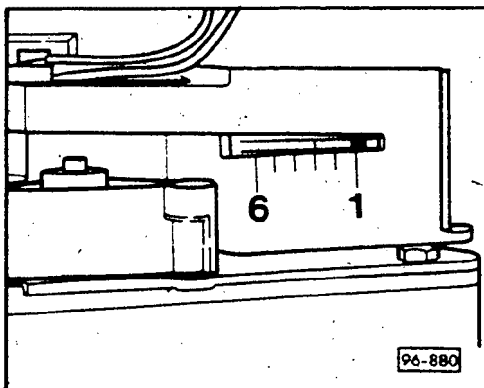
The coding is always given in two numbers. The first number indicates the number of cylinders. The second number indicates the country variant and type of engine.

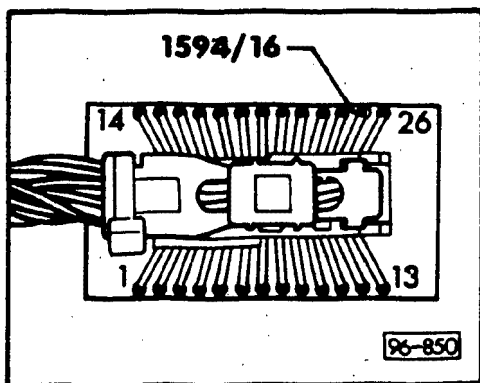
Code Table

Switch position	Country variation	Engine
1	German speaking	gas
2	USA	gas
3	non-German speaking	gas
4	German speaking	diesel
5	USA	diesel
6	non-German speaking	diesel

If the coding is **NOT** correct,

- switch ignition **OFF**
- remove instrument cluster
- do not remove connectors
- adjust code switch to match code table above





If the code for number of cylinders does not match the engine in the car,

- remove T26b (white) from Auto-Check system and attach to VW 1594/16

- connect ohmmeter between contact 3 and engine ground

- 4-cylinder engine — ∞ ohms
- 5-cylinder engine — 0.0 ohms

If the specified value is **NOT** obtained,

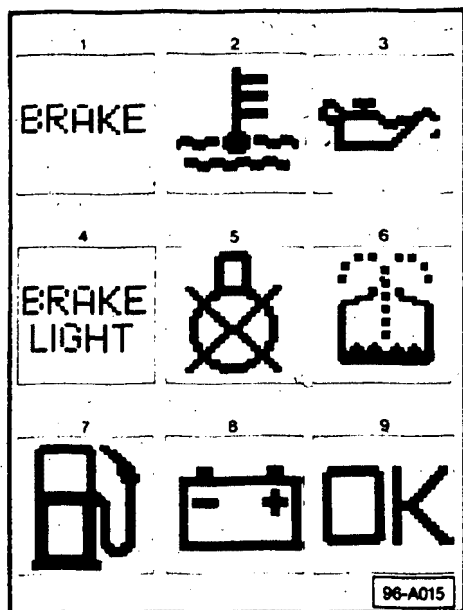
- repair short circuit or open circuit according to wiring diagram

If the specified value is obtained but proper coding is still not displayed,

- check voltage supply and output signals, 96.11
- repeat code test

If code is still not properly displayed,

- replace Auto-Check module



Auto-Check, operation

- switch ignition ON

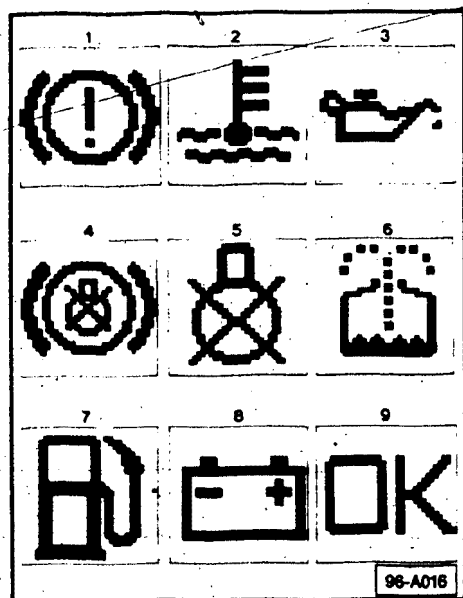
If a defect in one of the monitored systems occurs, the appropriate warning light will light after about one second.

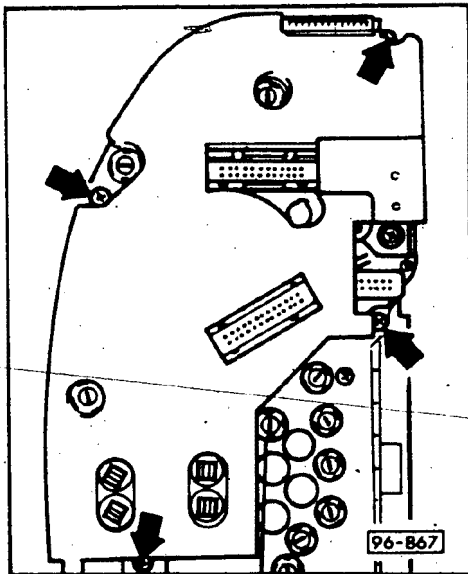
If there are no defects, the "OK" symbol will light for about five seconds.

If "OK" symbol does not light up, there is a problem with the Auto-Check system or a light bulb has burned out.

If the "OK" symbol lights,

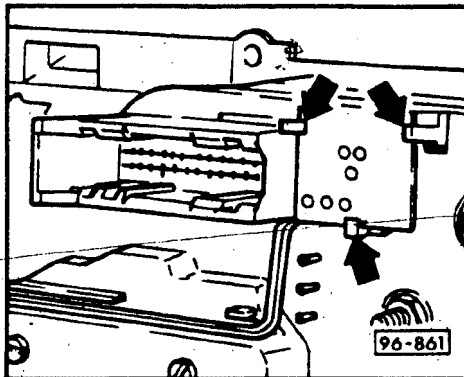
- push the Auto-Check button
 - symbols will be displayed





▶ Voltage supply and output signal, checking

- remove instrument cluster
- remove connectors T26 (yellow) and T26b (white)

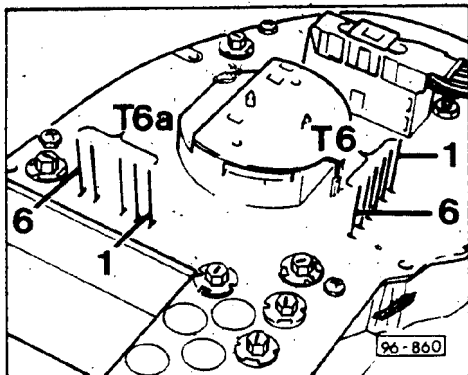


Note

On vehicles with Board Computer,

- remove 10 point connector (black) and unclip range calibration potentiometer (arrows)

- remove module from instrument cluster



- install connector T26 (yellow)
 - connect voltmeter between contacts T6/6 and T6a/3
 - 12.0V
 - connect voltmeter between contacts T6a/2 and T6a/3
 - switch ignition **ON** and leave **ON** for remaining tests
 - approximately 12.0V
 - connect voltmeter between T6/1 and T6a/3
 - 9.75V-10.3V
- If specified values are **NOT** obtained,
- repair break in wiring **OR**
 - replace voltage stabilizer
- connect voltmeter between contacts T6/1 and T6/2
 - specified value: 1.5V-5.0V (depending on fuel volume in tank)

If specified value is **NOT** obtained,

- repair break in wiring **OR**
- check fuel gauge

- connect voltmeter between contacts **T6/4** and **T6a/3**

- switch parking lights **ON**
 - approximately 12.0V

- connect voltmeter between contacts **T6/5** and **T6a/3**

- switch parking lights **ON** and turn instrument panel light dimmer to full bright position
 - approximately 12.0V

If specified voltages are **NOT** obtained,

- repair break in wiring according to current flow diagram

- connect voltmeter between contacts **T6a/1** and **T6a/3**
 - specified value: 0-4.0V

- start engine and let idle
 - specified value: 14.0V

If the specified values are **NOT** obtained,

- repair break in wiring **OR**
- check alternator output

- connect voltmeter between contacts **T6a/2** and **T6a/5**

- press brake fluid level warning switch in brake fluid reservoir
 - specified value: approximately 12.0V

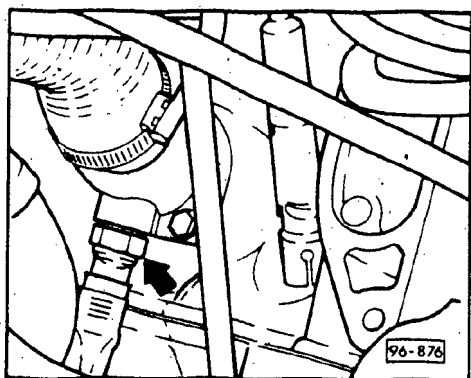
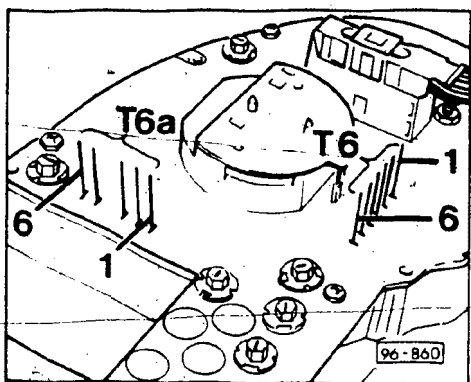
- connect voltmeter between contacts **T6a/2** and **T6a/6**

For vehicles without A/C

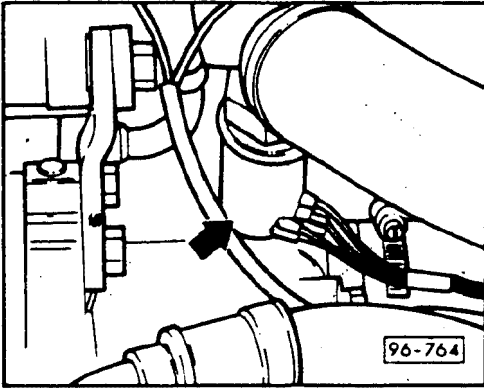
- remove connector from coolant temperature sensor
- connect blue/white wire in cavity 2 to ground with jumper wire
 - approximately 12.0V

If the specified values are **NOT** obtained,

- repair break in wiring according to current flow diagram

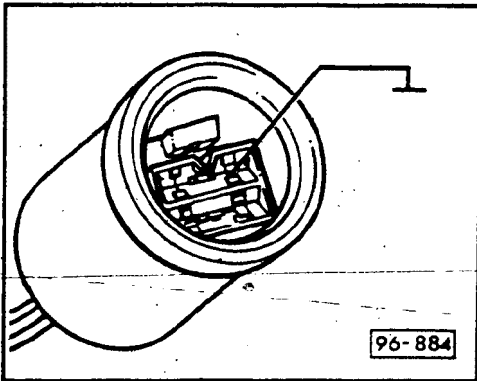


Electrical System – Interior Lights



For vehicles with A/C

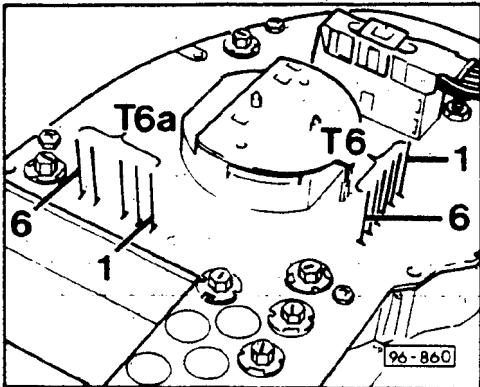
- remove connector from electronic thermostatic switch (arrow)



- connect blue/white wire to ground with jumper wire
 - approximately 12.0V

If specified values are **NOT** obtained,

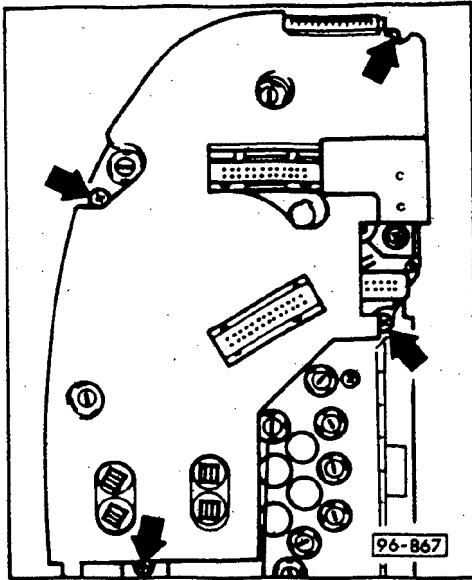
- repair break in wiring according to current flow diagram



- connect voltmeter between contacts T6/3 and T6a/3
- place transmission in neutral and apply parking brake
- secure vehicle with wheel chocks to prevent rolling
- raise left front of vehicle at proper lift point until wheel turns freely
- place jack stand under vehicle for safety
- slowly rotate wheel
 - reading must alternate between 0.0 ohms and ∞ ohms

If specified values are **NOT** obtained,

- repair break in wiring according to current flow diagram **OR** replace speed sensor



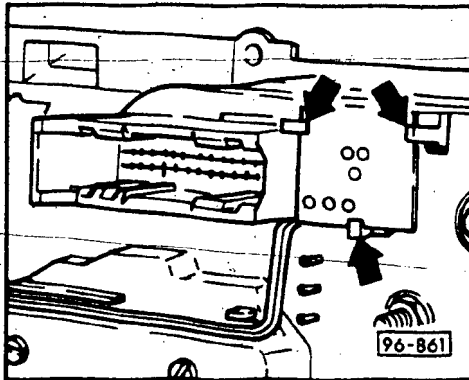
- If specified values from all tests are obtained,
 - install Auto-Check module and all connectors
 - perform Auto-Check test

If all specified values were obtained and defects are still indicated on the Auto-Check display,

- replace Auto-Check module

Auto-Check system, removing/installing

- remove instrument cluster
- remove electrical connectors



Note

On vehicles with Board Computer,

- remove range potentiometer (arrows)
- remove Auto-Check module from instrument cluster

Auto-Check system, removing/installing from module

(only for vehicles with Auto-Check system and Board Computer)

- remove coding terminal from Board Computer
- remove screws (arrows)
- separate module halves without distorting them
- store module and protect from dirt

Note

Be sure module halves are not distorted during installation.

Selector lever display, removing/installing, terminal identification/checking

General notes

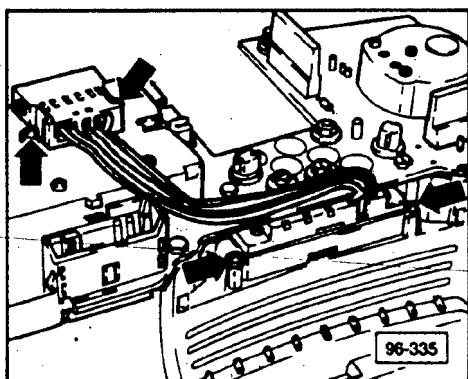
Beginning with 1991 m.y., a selector lever display is installed in the instrument cluster on vehicles equipped with the four-speed automatic transmission.

The selector lever display uses the following inputs:

- selector lever signal from automatic transmission control unit
- ground (–), terminal 31
- instrument illumination (terminal 58b)
- plus (+), terminal 15a

Note

Always use appropriate wiring diagram when troubleshooting.

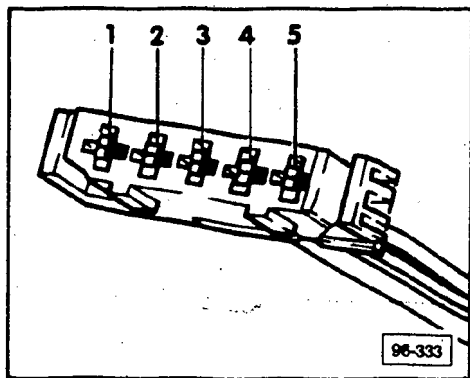


Selector lever display, removing/installing

- remove instrument cluster, see Repair Group 90
- disconnect five-point selector lever display connector
- remove connector securing screws (upper arrows)
- remove selector lever display screws (lower arrows)
- remove selector lever display
- install in reverse order of removal

Note

If the instrument cluster is replaced, remove the cover over the selector lever display window on the new instrument cluster before installing.

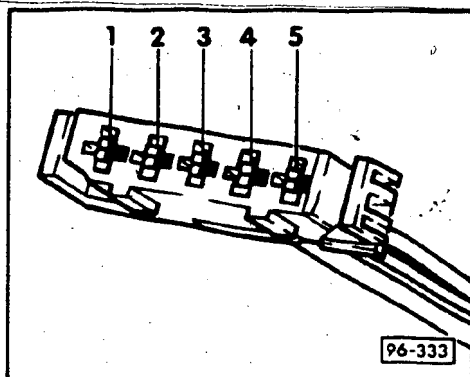


Five-point selector lever display connector, terminal identification

- 1 Selector lever (gear) signal (from automatic transmission control unit, J217)
- 2 Ground (-)
- 3 Instrument illumination, terminal 58b
- 4 Plus (+), terminal 15a
- 5 Open

Five-point selector lever display connector terminals, checking

- remove instrument cluster (leave instrument cluster connectors attached), see Repair Group 90
- disconnect five-point selector lever display connector



Terminal 1 — Selector lever (gear) signal

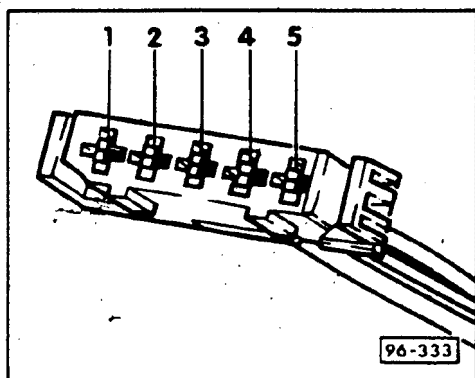
- connect digital multimeter **Fluke 83 (US 1119)** set to volt range between terminal 1 of selector lever display connector and ground
- switch ignition **ON**

Gear selector position Specified value

P	approximately 6.0 V
R	approximately 4.2 V
N	approximately 3.4 V
D	approximately 2.8 V
3	approximately 2.5 V
2	approximately 2.2 V
1	approximately 2.0 V

Terminal 2 — Ground (-)

- switch ignition **OFF**
- connect digital multimeter **Fluke 83 (US 1119)** set to Ohm range between terminal 2 of selector lever display connector and ground
 - must be 0 Ohm (continuity)



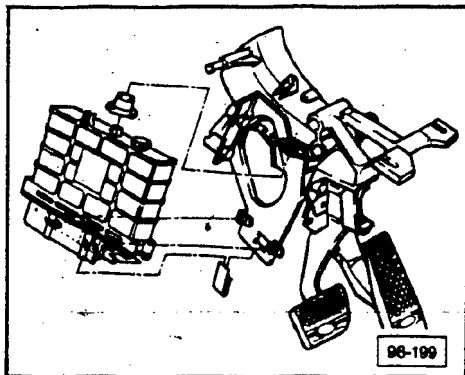
Terminal 3 — Instrument Illumination, terminal 58b

- connect digital multimeter **Fluke 83 (US 1119)** set to volt range between terminal 3 of selector lever display connector and ground
- switch parking lights **ON**
 - must be approximately 2.75-12.0 V depending on position of instrument panel light dimmer

Terminal 4 — Plus (+), terminal 15a

- connect digital multimeter **Fluke 83 (US 1119)** set to volt range between terminal 4 of selector lever display connector and ground
- switch ignition **ON**
 - must be approximately 12 V (battery voltage)

Terminal 5 — Open



Automatic transmission control unit (J217), removing/installing

- remove lower left instrument panel cover
- unlatch control unit connector securing clip
- remove connector from control unit
- remove control unit from bracket on brake pedal assembly
- install in reverse order of removal