

# **INSTRUMENT PANEL**

## **Article Text**

1991 Volkswagen Passat  
For Volkswagen Technical Site  
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Wednesday, August 25, 1999 08:46PM

### **ARTICLE BEGINNING**

1990-92 SAFETY EQUIPMENT  
Instrument Panels

1990-92 Passat  
1991-92 Cabriolet, Corrado, Fox, Golf,  
GTI, Jetta, Vanagon

### **DESCRIPTION & OPERATION**

Instrument cluster for most models includes speedometer, fuel gauge and temperature gauge. Optional instruments include clock, tachometer, voltmeter and oil temperature gauge. See Fig. 3.

Printed circuit provides voltage to gauges. A voltage regulator attached to printed circuit controls voltage to fuel and temperature gauges. Most warning lights are a Light Emitting Diode (LED). To replace diode, pull from printed circuit socket.

### **TESTING**

**NOTE:** Volkswagen Tester (VW 1301) is required for resistance tests. Tester settings are numerical. Settings do not indicate resistance in ohms. Manufacturer does not supply resistance values in ohms.

#### **VOLTAGE REGULATOR TEST**

1) If only one gauge is inoperative, regulator is not defective. If both fuel and temperature gauges are inoperative, voltage regulator may be faulty or have a bad ground connection.

2) Partially remove instrument cluster. Position cluster so regulator can be reached with voltmeter probes. Leave chassis harness connected. Ensure ground connection at regulator is tight.

3) On all except Cabriolet, turn ignition on. Connect voltmeter negative(-) lead to terminal No. 2 of regulator. Connect positive (+) lead to terminal No 1. See Figs. 1 and 2. Meter reading should be 9.5-10.5 volts. If reading exceeds specification, replace voltage regulator.

4) For Cabriolet, turn ignition on. Connect voltmeter negative (-) lead to terminal No. 2 of regulator. Connect positive lead (+) to terminal No 3. See Figs. 1 and 2. Meter reading should be 9.5-10.5 volts. If reading exceeds specification, replace voltage regulator.

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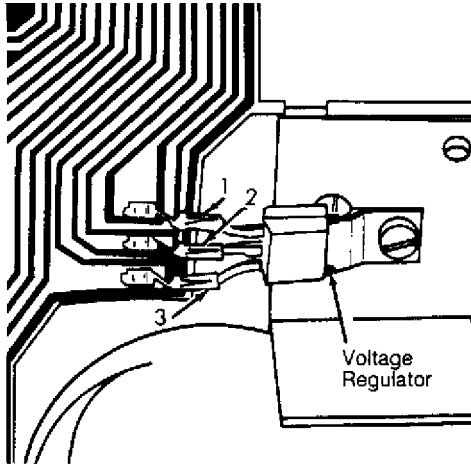
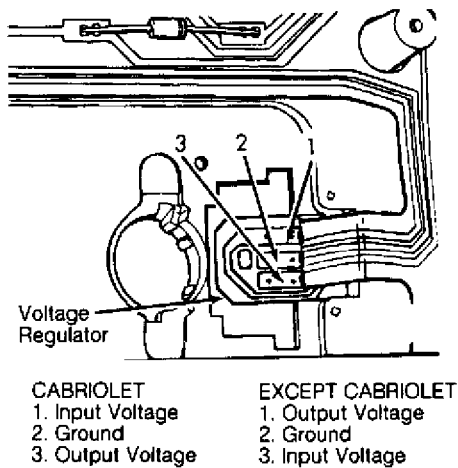


Fig. 1: Testing Voltage Regulator  
Courtesy of Volkswagen United States, Inc.



**Fig. 2: Testing Voltage Regulator**  
Courtesy of Volkswagen United States, Inc.

## FUEL & TEMPERATURE GAUGE TEST

1) Disconnect wire from fuel tank or temperature sending unit. Connect VW Tester (VW 1301) between wire and ground. Turn ignition on and allow 2 minutes for gauge reading to stabilize. Use FUEL GAUGE TESTING or TEMPERATURE GAUGE TESTING table to compare gauge reading. Gauge should be within one pointer width of specification.

2) If gauge needle does not move, check continuity between sender wire and gauge. If needle moves but does not match specifications, replace gauge. If gauge works correctly with tester but not sending unit, replace sending unit.

## FUEL GAUGE TESTING

[illegible]

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Application	Dial Setting	Indicator
Cabriolet & Fox .....	55 .....	Full
.....	560 .....	Empty
Corrado & Passat .....	50 .....	Full
.....	160 .....	Half
.....	350 .....	Empty
Golf, GTI & Jetta .....	52 .....	Full
.....	550 .....	Empty
Vanagon .....	50 .....	Full
.....	320 .....	Empty
AA		

#### TEMPERATURE GAUGE TESTING

AA		
Application	Dial Setting	Indicator
Cabriolet & Fox .....	500 .....	Cold
.....	62 .....	Hot
Corrado & Passat .....	80 .....	Normal
.....	50 .....	Hot
Golf, GTI, Jetta & Vanagon .....	510 .....	Cold
.....	50 .....	Hot
AA		

#### WIPER/WASHERS

For testing information on wipers, see **WIPER/WASHER SYSTEMS** article in **SAFETY EQUIPMENT**.

## REMOVAL & INSTALLATION

### INSTRUMENT CLUSTER (CABRIOLET)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system operation. See **SYSTEM OPERATION CHECK** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See **SERVICE PRECAUTIONS** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

#### Removal & Installation

- 1) Disconnect battery ground cable. Disable air bag. Remove steering wheel.
- 2) Tilt shelf downward, remove mounting screws and remove shelf. Remove instrument panel cover screws and mounting clips. Remove

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instrument panel cover. Remove instrument panel insert trim screws and pull off instrument panel insert trim.

3) Remove instrument panel insert screw and tip instrument panel insert forward. Press speedometer cable lugs together and disconnect speedometer cable from instrument panel insert.

4) Disconnect multi-point connector, and remove instrument panel insert. To install, reverse removal procedure.

#### INSTRUMENT CLUSTER (CORRADO)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system operation. See SYSTEM OPERATION CHECK in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See SERVICE PRECAUTIONS in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

#### Removal & Installation

1) Disconnect battery ground cable. Remove steering wheel only when removing complete instrument cluster housing. Remove trim screw caps and screws located on lower part of instrument cluster trim. Remove instrument cluster trim.

2) Remove trip odometer reset button. Remove trim cover retaining screws. Remove trim cover from instrument cluster. Remove instrument cluster housing retaining screws. Pull instrument cluster from dash panel. Disconnect multi-point connector, MFI vacuum hose (if equipped) and speedometer drive cable. Remove instrument cluster housing.

**NOTE:** All components in instrument cluster, except for printed circuit, can be removed from front, without removing complete instrument cluster housing.

3) Disconnect speedometer cable, remove mounting screws and pull speedometer from housing. Squeeze locating pins on other instruments and pull from housing. To install, reverse removal procedure.

#### INSTRUMENT CLUSTER (FOX)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system operation. See SYSTEM OPERATION CHECK in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

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**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See SERVICE PRECAUTIONS in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

#### Removal & Installation

1) Disconnect battery ground cable. Remove steering wheel. Carefully remove covers from vacant switch positions. Depress switch spring retainer and remove switches from instrument panel. Mark for reassembly and disconnect wire connectors from switches.

2) Remove 4 instrument cluster trim retaining screws. Remove instrument cluster trim panel. Remove 2 instrument cluster retaining screws. Remove speedometer cable. Disconnect cluster wire connector and remove instrument cluster. To install, reverse removal procedure.

#### INSTRUMENT CLUSTER (GOLF, GTI & JETTA)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system operation. See SYSTEM OPERATION CHECK in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See SERVICE PRECAUTIONS in AIR BAG RESTRAINT SYSTEM article in SAFETY EQUIPMENT.

#### Removal & Installation

1) Disconnect battery ground cable. Remove steering wheel. Remove lower instrument panel retaining screws, and lower on left side. Remove remaining retaining screws, and lower instrument panel tray on right side.

2) Remove gearshift lever knob and boot. Remove retaining screw(s) and slide console rearward. Separate all electrical connections and lift out console.

3) Pull off all temperature control knobs/levers. Unclip trim plate and remove. Remove radio (or tray). Remove switches from instrument panel trim plate. Remove all retaining screws and remove instrument panel trim plate.

4) Remove instrument cluster retaining screws. Squeeze clips and remove speedometer cable from instrument cluster. Disconnect all vacuum hose connections and separate all electrical connectors. Remove instrument cluster. To install, reverse removal procedure.

#### INSTRUMENT CLUSTER (PASSAT)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system

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operation. See **SYSTEM OPERATION CHECK** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See **SERVICE PRECAUTIONS** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

#### Removal & Installation

1) Remove battery ground cable. Remove instrument cluster trim. Remove instrument cluster trim cover. For tachometer and combination gauge, carefully pull gauge from housing and connector. For mechanical speedometer, remove mounting screws and carefully pull speedometer from housing.

2) To install, reverse removal procedure. Carefully guide plugs on rear of instruments into connector on printed circuit board.

**CAUTION:** DO NOT damage printed circuit when installing instruments.

#### INSTRUMENT CLUSTER (VANAGON)

**CAUTION:** To disable air bag system, disconnect negative battery cable and wait 20 minutes before working on vehicle. To activate system, reconnect negative battery cable. Perform a system operational check to ensure proper system operation. See **SYSTEM OPERATION CHECK** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

**WARNING:** Failure to follow air bag service precautions may result in air bag deployment and personal injury. See **SERVICE PRECAUTIONS** in **AIR BAG RESTRAINT SYSTEM** article in **SAFETY EQUIPMENT**.

#### Removal & Installation

Disconnect battery ground cable. Reach behind cluster hood and pull back of hood upward. Pull hazard switch forward. Pull brake warning light housing toward front of vehicle. Remove 4 mounting screws and remove cluster. To install, reverse removal procedure.

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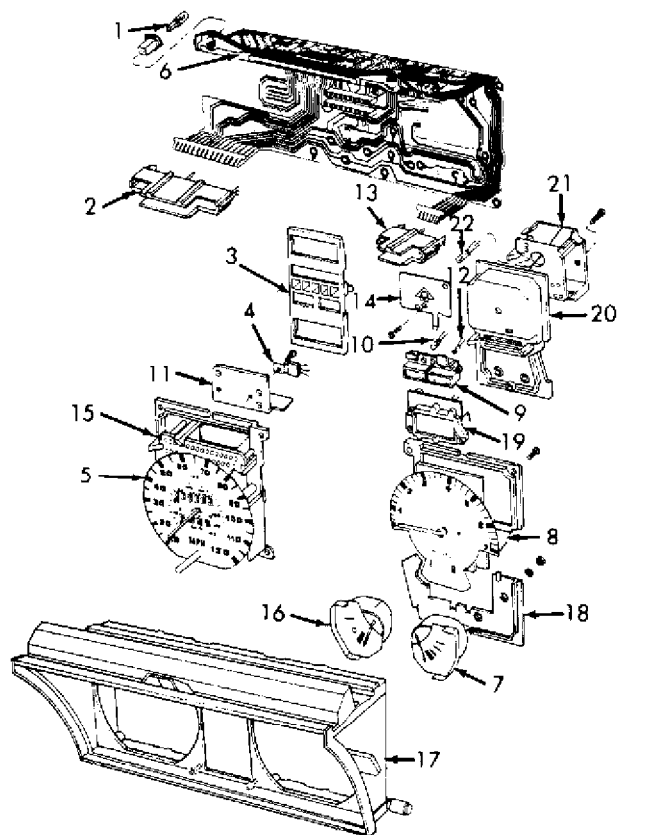
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- |                                   |   |
|-----------------------------------|---|
| 1. Instrument Cluster Light Bulb  | 12. Warning LED   |
| 2. Wire Terminal Housing          | 13. Wire Terminal Housing   |
| 3. Trim                           | 14. Upshift Indicator (If Equipped)                               |
| 4. Voltage Regulator              | 15. Oil Pressure Warning System Control Unit                      |
| 5. Speedometer                    | 16. Coolant Temperature Gauge                                     |
| 6. Flexible Printed Circuit       | 17. Instrument Cluster Insert                                     |
| 7. Fuel Gauge                     | 18. Support Plate For Gauges                                      |
| 8. Tachometer                     | 19. Digital Clock   |
| 9. LED Holder                     | 20. Instrument Cluster Housing Cover                              |
| 10. LED Indicator Light           | 21. Parking Brake/Brake Fluid Level Warning Light Printed Circuit |
| 11. Voltage Regulator Heat Shield | 22. Upshift Indicator LED (If Equipped)                           |

Fig. 3: Exploded View of Instrument Cluster (Fox Shown/Others Similar)

Courtesy of Volkswagen United States, Inc.

## PRINTED CIRCUIT CONNECTORS

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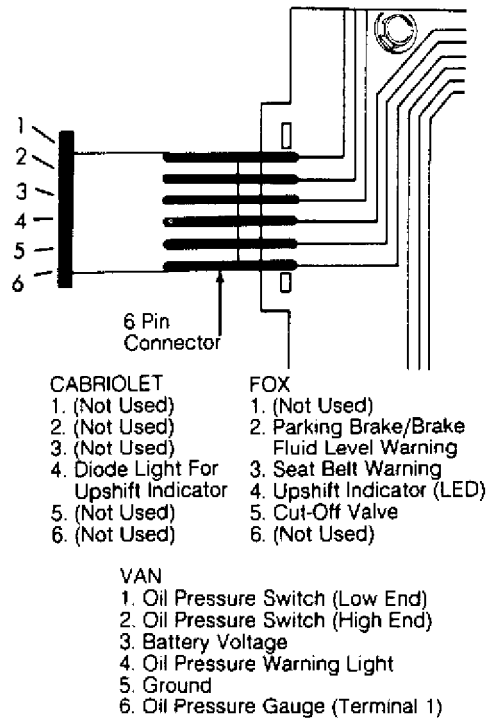


Fig. 4: Identifying Printed Circuit Connector (6 Pin)  
Courtesy of Volkswagen United States, Inc.

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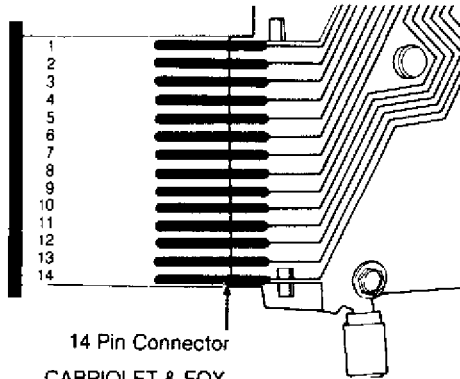
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#### CABRIOLET & FOX

1. Instrument Lights
2. Ground
3. Fuel Gauge (To Sender)
4. Coolant Gauge (To Sender)
5. Tachometer (Terminal 1)
6. Clock
7. High Beam
8. (Not Used)
9. Oil Pressure Warning System
10. O<sub>2</sub> Sensor System (If Equipped)
11. Oil Pressure Indicator (LED)
12. Alternator Warning Light
13. Turn Signal Indicator
14. Battery Voltage (Terminal 15)

#### VAN

1. Instrument Illumination
2. High Beam Warning (Terminal 56a)
3. Ground (Terminal 31)
4. (Not Used)
5. Clock
6. Coolant Temperature Gauge (To Sender)
7. Fuel Gauge (To Sender)
8. Battery Voltage (Terminal 15)
9. Tachometer (Terminal 1/w)
10. Turn Signal Flasher (Terminal 49a)
11. Alternator Warning (Terminal 61)
12. (Not Used)
13. Oil Pressure Warning
14. O<sub>2</sub> Indicator Light (If Equipped)

**Fig. 5: Identifying Printed Circuit Connector (14 Pin)**  
Courtesy of Volkswagen United States, Inc.

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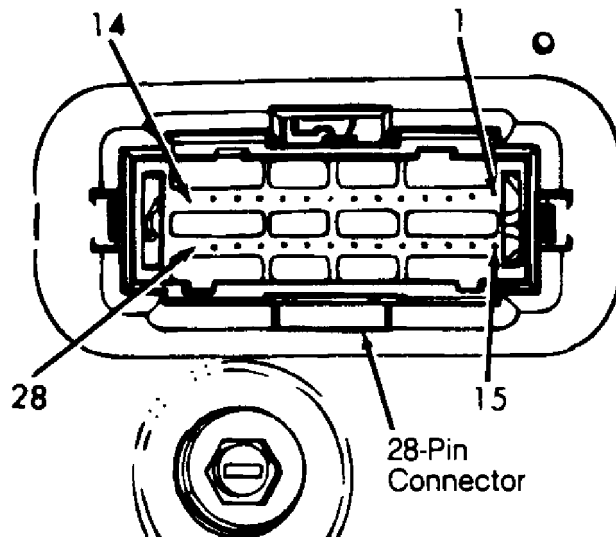
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1. Outside Temperature Sensor Ground (If Equipped)
2. To Coolant Low Level Sensor
3. Ground (Terminal 31)
4. Multifunction Indicator Memory Reset Switch (If Equipped)
5. Ground (Terminal 31)
6. Multifunction Indicator Memory Reset Switch (If Equipped)
7. Hall Speed Sensor Signal
8. From Oil Pressure Switch (High Side)
9. From Oil Pressure Switch (Low Side)
10. Tachometer Input Signal (Terminal 1/W)
11. Battery Voltage (Terminal 30)
12. Battery Voltage For Instrument Lighting (Terminal 58b)
13. Battery Voltage (Terminal 15)
14. (Not Used)
15. To MFI Mode Switch (If Equipped)
16. Alternator Warning Light (Terminal 61)
17. From Oil Temperature Sensor (If Equipped)
18. To Seat Belt Warning Light/Brake Warning Light (If Equipped)
19. Outside Temperature Sensor Signal (If Equipped)
20. Glow Plug (Diesel Only)
21. Fuel Gauge
22. Left Turn Signal
23. Coolant Temperature Sensor
24. Right Turn Signal
25. High Beam Indicator
26. (Not Used)
27. Signal From Speedometer Sensor (If Equipped)
28. A/T Selector Display (If Equipped)

92I01635

Fig. 6: Identifying Printed Circuit Connector (28 Pin)  
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## **WIRING DIAGRAMS**

See appropriate chassis wiring diagram in **WIRING DIAGRAMS**.

**END OF ARTICLE**