

620 Instruments

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GENERAL

This repair group covers removal and installation of the instrument cluster and the on-board computer (OBC). Bulb replacement information for these units is also included.

NOTE—

A quick check of the temperature gauge and its electrical circuit is given in **170 Radiator and Cooling System**. Use this procedure to diagnose a faulty temperature gauge.

INSTRUMENT CLUSTER

Two versions of instrument clusters are used on the E32 cars. The two clusters are not interchangeable. On the early cluster, installed in cars built up to February 1989, the odometer coding plug is in the main harness connector in the wiring loom. On the later cluster, the odometer coding plug is integrated within the instrument cluster.

When servicing the instrument cluster, always disconnect the negative (–) cable from the battery and insulate the cable end to prevent accidental re-connection.

CAUTION—

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.

NOTE—

- If the battery has failed or become disconnected, it may be necessary to reset the language designation of Check Control display to U.S. English. Whenever the battery is disconnected, the instrument cluster check control display defaults to U.K. English. To change U.S. English, turn the ignition to the "Radio On" position. Press the Check Control button on the right side of the instrument cluster until the designated language appears. Release the Check Control button and repeat the process until the correct language is displayed.
- If there is a difference between MPG Check Control display and the OBC display, the OBC will have to be reset by disconnecting the battery for one minute.

Instrument cluster, self-testing

It is possible to perform a cluster system test and display system test information. On clusters manufactured from February 1989, the self-test also includes a dynamic test of the instruments.

- With the ignition off, press and hold Check Control button on right side of instrument cluster.
- While holding down Check Control button, turn ignition to the ON position.
- Release Check Control button. Instrument cluster self test information will be displayed. See **Table a**.

**Table a. Instrument Cluster Self-Test Diagnostics
(cars built from February 1989)**

Self-test information	Typical self-test readout (example from 1990 750iL)
Internal BMW no.	1388766
Coding plug no.	13093
K number	7296
Chassis no.	DC78195
Software version	0.83
Internal modification index	14

**Instrument cluster,
removing and installing**

Removal of the instrument cluster requires removal of the steering wheel and the driver side airbag.

- Disconnect negative (–) battery cable. See **020 Maintenance**.

CAUTION—

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.

- Remove airbag unit from steering wheel. See **721 Airbag System (SRS)**. Store the airbag unit in a safe place.

WARNING—

The airbag is an explosive device and should be treated with extreme caution. Improper handling of the airbag could cause serious injury or death. Store the airbag with the horn pad facing up. If stored facing down, accidental deployment could propel it violently into the air, causing injury.

- With front wheels pointed straight ahead, remove steering wheel. See **320 Steering and Wheel Alignment**.

- Remove two instrument cluster retaining screws.



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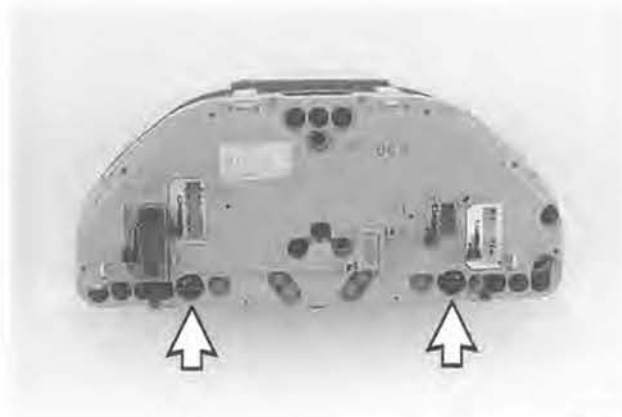
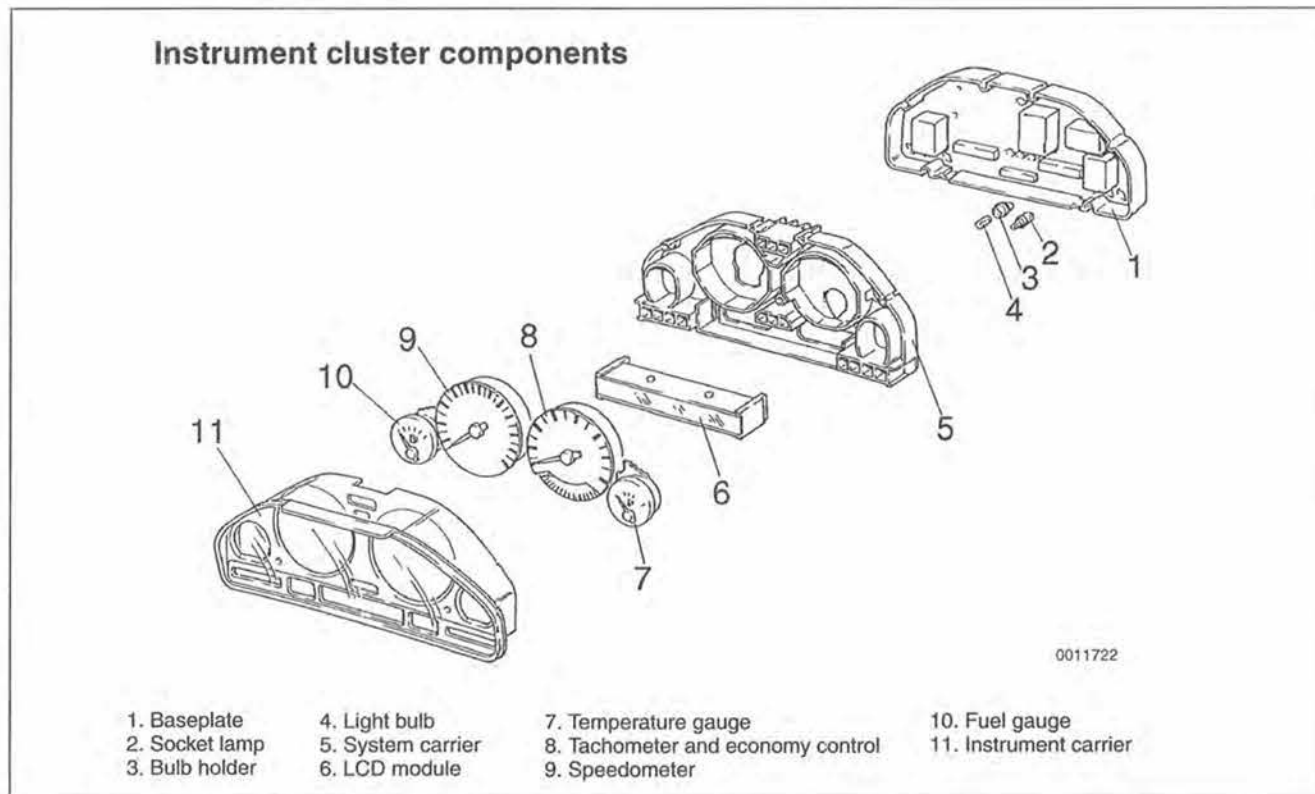
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- Place towel over steering column. Carefully tilt top of cluster forward out of dash panel. Pull up on locking lever (**arrow**) to release instrument cluster connector. Locking lever must be in up position before installing connector.

- Installation is reverse of removal.
 - Install airbag to steering wheel as described in **721 Airbag System (SRS)**.
 - Reconnect negative (–) battery cable last, once all harness connectors have been reconnected.

Instrument cluster, disassembling and assembling

Individual instruments, illumination bulbs and the LCD module are available from an authorized BMW dealer as replacement parts.



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- Remove instrument cluster as described earlier.
- Pull off odometer reset button and Check Control button from front of instrument cluster.
- Instrument cluster base plate toggle locks (**arrows**).
 - Turn 90° to unlock/lock.
 - Pivot cluster base plate up off instrument carrier.
- Unhook base plate from instrument carrier and disconnect wiring connector (if applicable).
- Remove screws from perimeter of cluster. Carefully lift off cluster cover from instrument carrier.

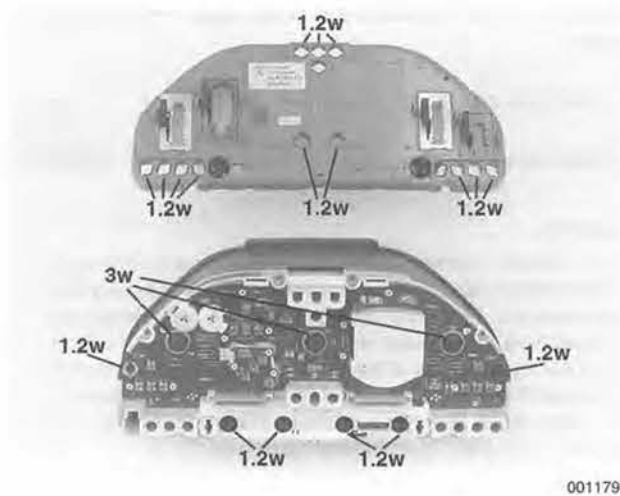
CAUTION—

LCD module can fall out once cluster cover is separated from instrument carrier.

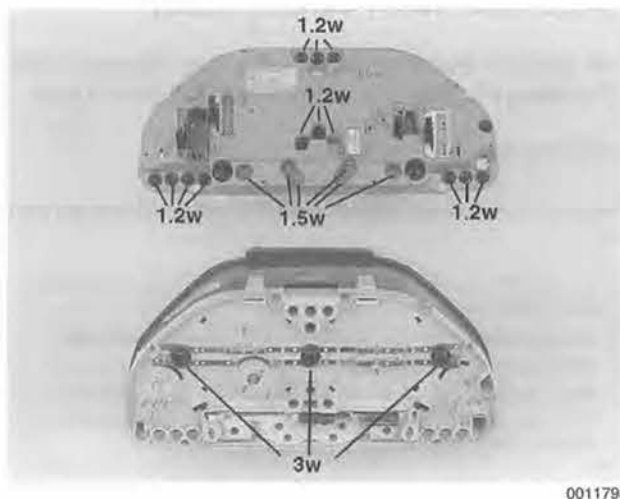
- Remove individual instruments by carefully pulling them straight out of instrument carrier.
- Instrument cluster assembly is reverse of disassembly.

Instrument cluster bulbs, replacing

Instrument cluster bulb arrangement for early production cars (built up to February 1989).



Instrument cluster bulb arrangement for redesigned cluster (cars built from February 1989).

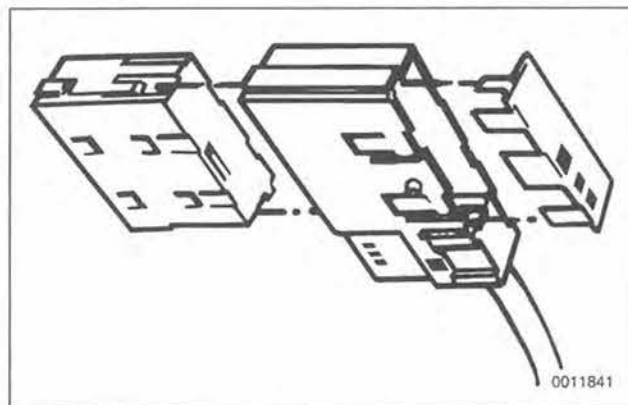


- Remove instrument cluster as described earlier.
- Remove faulty bulb by turning bulb base 90° in its mount. To access bulbs behind base plate, release toggle locks and pivot cluster base plate up off instrument carrier.

Odometer coding plug, replacing (cars built up to February 1989)

On cars with the early instrument cluster (cars built up to February 1989), the vehicle mileage is retained in the coding plug. The coding plug is located in the brown harness connector at the rear of the cluster.

- Remove instrument cluster.
- Record mileage of vehicle.
- Coding plug on earlier model (cars built up to February 1989) instrument cluster.
 - Remove rear portion of brown connector.
- Insert special removing tool (supplied with replacement coding plug) into backside of plug, releasing coding plug retaining tangs.



620-6 INSTRUMENTS

- Remove coding plug from front of plug.
- Remove silver identification code label from new coding plug.
- Insert new coding plug from side of connector.
- Install new protective cap onto back of harness connector.

NOTE—

The Federal Odometer Disclosure Requirement 92-513 states that whenever an odometer is replaced, the mileage prior to its replacement along with the date that the replacement occurred must be recorded on the left door frame of the vehicle. It is the responsibility of the person making this replacement to record this information on the vehicle. A "non-removable" label is available from BMW to record this information (part no. 89 89 1 000 500).

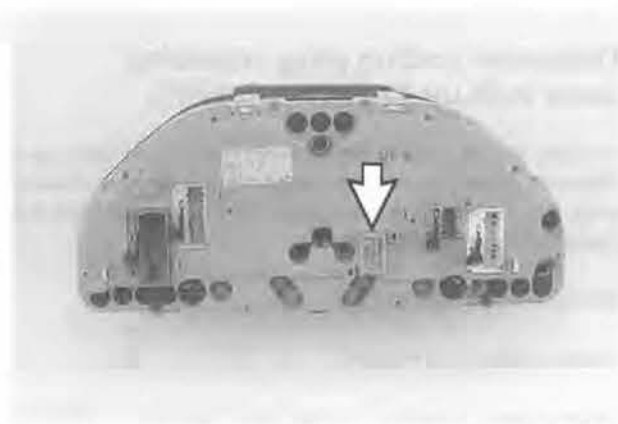
Odometer coding plug, replacing (cars built from February 1989)

On cars with the redesigned cluster (from February 1989), the coding plug has been integrated into the cluster itself.

- Record mileage of vehicle.
- Remove instrument cluster. See procedure described earlier.

CAUTION—

Before removing the coding plug from the instrument cluster, wait at least for one minute after removing the cluster. This will allow residual voltage to be discharged. If this is not done, there is a possibility of data loss or damage to the cluster and/or coding plug.



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- Use a knife to cut out coding plug locking frame (arrow) on rear of instrument cluster.
- Remove coding plug by pulling it straight out of printed circuit board.
- Install new coding plug and install locking frame.

NOTE—

The coding plug supplies data to the on-board computer (OBC). In order to ensure that the correct data is transferred, the OBC must be disconnected from its multi-pin connector for a least one minute after the replacement of the coding plug.

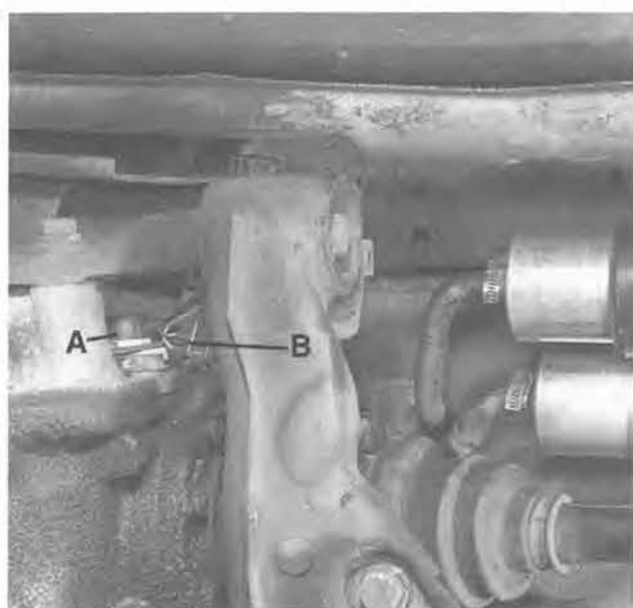
INSTRUMENT CLUSTER

Vehicle speed sender, replacing

The vehicle speed sender supplies an electronic pulsed speed signal to the speedometer. The sender is mounted beneath the rear of the car, on the differential cover plate.

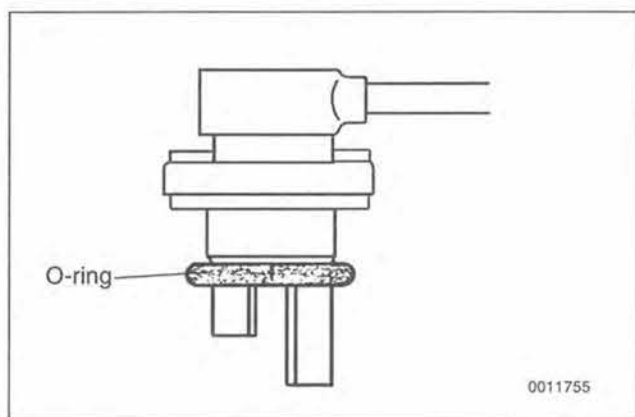
NOTE—

If the speedometer is malfunctioning, check the vehicle speed sender harness connector on the rear differential. Water damage, frayed wires and corrosion of the connector contacts are often the cause of speedometer malfunction.



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- Locate vehicle speed sender (A) electrical connector at back of differential. Detach electrical harness connector (B).
- Remove vehicle speed sender retaining screws and remove sender from differential cover.



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- O-ring correctly installed on vehicle speed sender.

- On installation, replace O-ring and coat with oil (90W oil). Install O-ring up to first land on sender. Install sender into differential and tighten mounting bolts evenly in stages until sender is firmly seated.

Tightening Torque

- Vehicle speed sender
to differential cover 6.6 - 8.4 Nm (53 - 74 in-lb)

ON-BOARD COMPUTER (OBC)

On-board computer (OBC), removing and installing

The on-board computer (OBC) is illuminated by two bulbs. It must be removed to replace the bulbs.

- Remove radio. See **650 Radio**.

➤ Reach inside radio cavity and slide release lever (**arrow**) toward you to release OBC from instrument panel.

- Installation is reverse of removal.

