

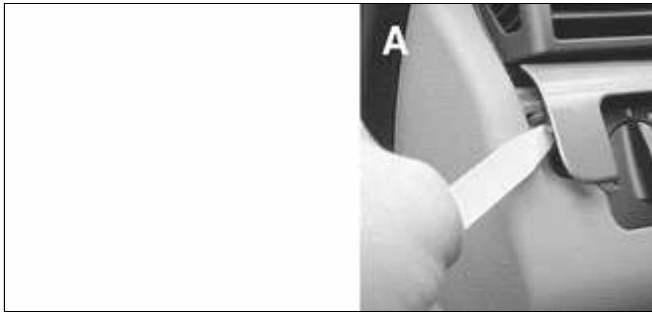
## General

This section covers the BMW factory-installed sound system, including radio, amplifier and speaker removal. Radio antenna information is also included.

## Special tools

Use BMW special tool 00 9 321 or equivalent plastic prying tool to pry out plastic interior parts without damage or marring.

- Plastic prying tool BMW 00 9 321

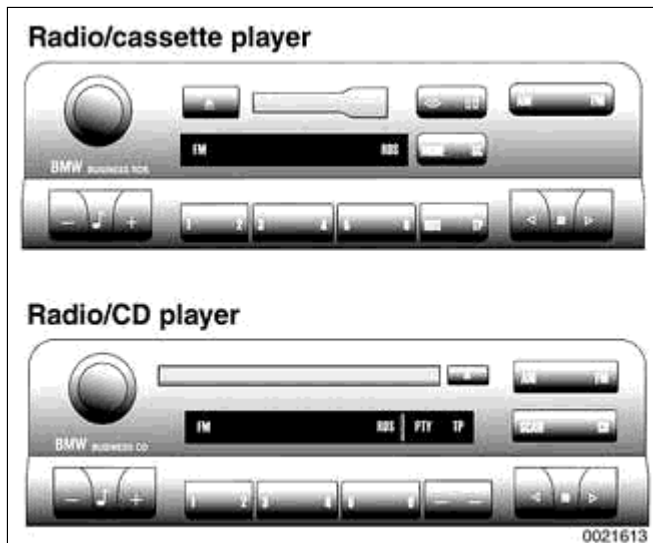


## General

- A tag on the bottom of the radio contains the serial number (A) and model number (B).



## Sound system



The standard E46 radio features a cassette player. The optional radio has a single in-dash CD player. Both radios are prewired for the optional CD changer that mounts in the trunk. Another option, the On-Board Monitor, integrates GPS navigation with radio and IHKA controls. Basic radio controls are also incorporated in the steering wheel.

Sound system components are interconnected via K-bus. Theft proofing of the radio by code is no longer required as the radio will not function without the K-bus connection and a valid signal from the instrument cluster.

Other features of the sound system include:

- ◆ Autostoring of stations
- ◆ Speed dependent volume
- ◆ Telephone muting

Diversity antenna, described later in this group, is optional on some models and standard on the Convertible and Sport Wagon.

## RDS

Radio Data System (RDS) is a transmit and receive system operated in the FM band. It is a data service offered by radio stations in which the information is transmitted inaudibly with the audio programs. The name of the station is displayed in the radio when the RDS system is active. Program identification, program service name and RDS quality are also displayed.

## Troubleshooting

Although electronic radio and sound system troubleshooting is beyond the scope of this manual, there are number of self-tests that are possible with the standard BMW radio installed in E46 cars.

Radio test functions are activated by pressing the M button within 8 seconds of switching the radio on. Hold it pressed in for 8 seconds to start the tests.

The test functions include:

- ◆ Radio serial number
- ◆ Software version display
- ◆ Speed dependent volume control adjustment
- ◆ Station signal strength, including FM frequency set, signal strength and quality of signal received
- ◆ AM frequency set and signal strength

The test also checks antenna functions:

- ◆ Antenna signal strength (F number) indicates the quality of the signal received by the antenna. The scale ranges from 0 to 15, with the optimum value being 15. If the value falls below 10, radio stations can not be listened to in stereo.

## Radio and Audio Accessories

### Radio, removing and installing

#### **CAUTION!**

- ♦ *Before beginning work on the radio or sound system, verify that the radio is an original equipment BMW radio and that the wiring harness has not been modified.*
- ♦ *Servicing of aftermarket sound equipment should be referred to an authorized agent of the equipment's manufacturer.*

#### **Note:**

On-Board Monitor removal is covered in ⇒ [640 Heating and Air Conditioning](#).

- Prying gently, remove right dashboard trim, then center dashboard trim.

#### **CAUTION!**

*To avoid marring interior trim, work with a plastic prying tool.*



Remove radio mounting screws (arrows).

- Pull radio out of instrument panel opening. Detach electrical harness connector and antenna lead.
- Installation is reverse of removal.

## Amplifier

In all models the sound system amplifier is installed behind the trim on the left side of the car.

- Sedan or Coupe: To access amplifier, carefully remove trunk trim clips on left side and peel back trim.



- ✦ Sport Wagon: Remove left cargo compartment trim cover. Sound system amplifier (**arrow**) is behind sound insulation.

- Convertible:

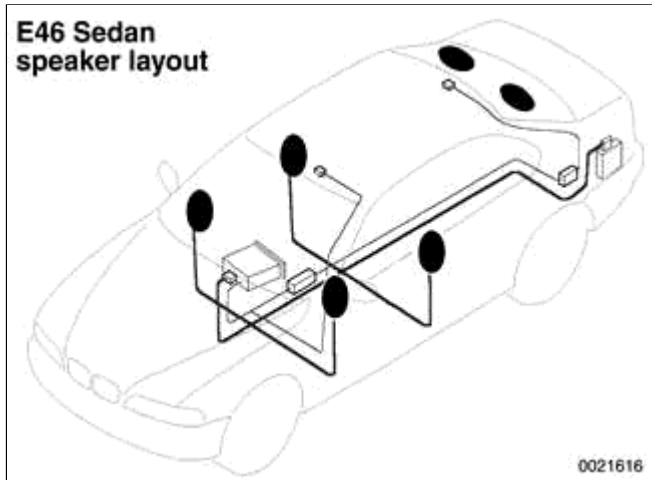
- ◆ Disconnect battery negative terminal.
- ◆ Remove lower section of rear seat left side trim.
- ◆ If necessary, remove convertible top module. See ⇒ [541 Convertible Top](#).
- ◆ Amplifier is attached to side wall.

## CD changer

The optional CD changer is located in the left side of the trunk behind the trim panel. An access door allows loading of up to 6 CDs.

## Speakers

Each model in the E46 model line-up features a slightly different speaker setup. Speaker and other component locations also vary depending on the type of sound system installed. Some of the common speaker installations are covered in this section.



**Sedan and Sport Wagon:** The standard installation is six speakers, one in each door and two in the rear. The rear speakers in the Sedan are in the parcel shelf. The rear speakers in the Sport Wagon are mounted on the left and right wheel housings behind trim covers.

**Coupe:** A tweeter and a mid-range speaker are installed in one housing unit in each front door panel. Another speaker pair is in the left and right rear side trim panels.

**Convertible:** The standard speaker set-up consists of four speakers mounted in the rear side trim panels, two on each side. One speaker on each side is a 130 mm wide band and the other is a tweeter.

The Harman/Kardon system incorporates an additional subwoofer installed in the trunk. The amplification for this subwoofer comes from the main sound system amplifier.

In the Convertible, the subwoofer is installed in the ski bag cover. It is hinged so that it can be swung aside when the ski bag is used. A magnet on the subwoofer cover holds it in place against the rear bulkhead while the ski bag is used. The subwoofer functions in either position.

Also in the Convertible, the sound system receives a signal from the rear

window defroster relay when the top is lowered. This switches off the stereophonic function.

## Door mounted speaker, removing

### **WARNING!**

*All E46 cars are equipped with front door airbags. Rear door airbags are optional. Before performing any work involving airbags, disconnect the negative (-) battery cable. See ⇒ [721 Airbag System \(SRS\)](#).*

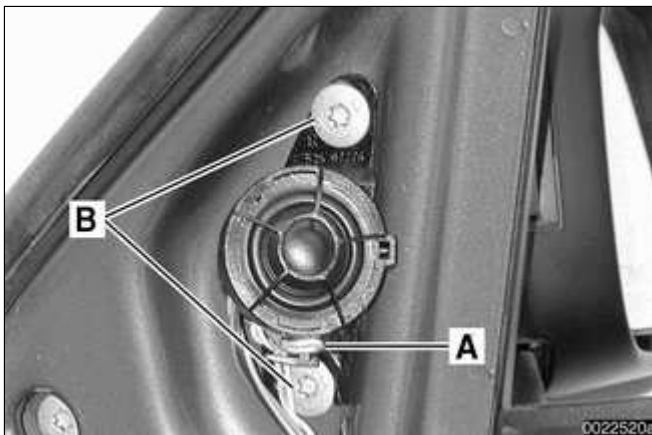
### **CAUTION!**

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

- Remove interior door panel as described in ⇒ [411 Doors](#).

⚡ Detach electrical harness connector (A) and remove speaker mounting screws (B).

- Remove speaker.



## Rear side panel speaker, removing

- Disconnect battery negative terminal.

### **CAUTION!**

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

- Remove lower section of rear seat side trim.
- If necessary, remove convertible top module. See ⇒ [541](#) [Convertible Top](#) (left side only).
- Speaker is attached to side wall.

## Rear speaker, removing and installing



- ◀ Working at rear parcel shelf, pry speaker cover by inner edge and remove.

### **CAUTION!**

**To avoid marring interior trim, work with a plastic prying tool.**

- Remove mounting screws, lift up speaker and detach electrical harness connector.
- When reinstalling, make sure speaker and harness are seated as before.

## Subwoofer, removing

- Coupe:
- ◆ Working in trunk under parcel shelf, remove subwoofer mounting

screws.

- ◆ Unhook and pull subwoofer down. Remove electrical harness connector.
- Convertible:
  - ◆ Working in trunk, unhook and swing out subwoofer.
  - ◆ Squeeze plastic harness cover and remove.
  - ◆ Detach electrical harness connector.
  - ◆ Using plastic pry tool, gently pry subwoofer at bottom left and pull out.

## Antenna

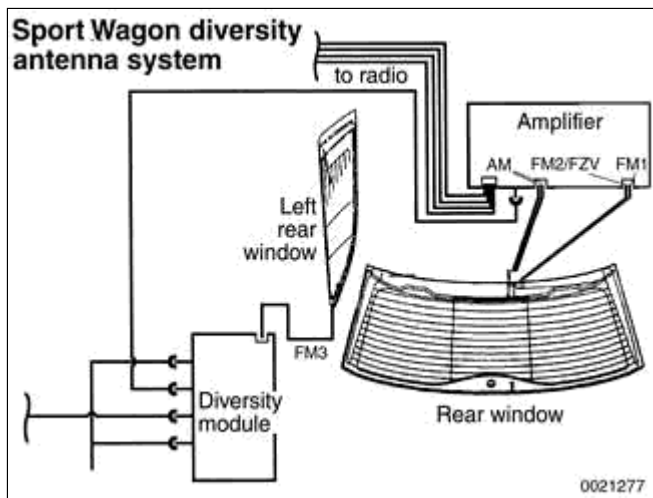
### Antenna and diversity

The antenna used for the radio, telephone and FZV remote entry system is integrated with the rear window defogger in the Sedan and Coupe models.

Convertible and Sport Wagon models feature a diversity antenna system to provide the strongest possible radio station signal to the sound system.

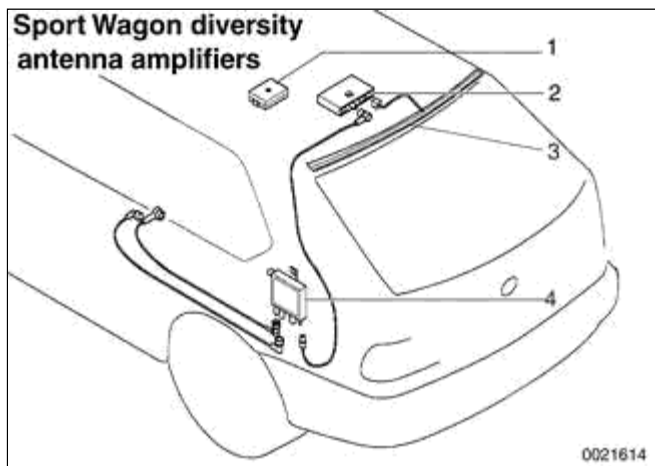
In this system there are two (or more) antennas. Both the main and the auxiliary antenna(s) receive radio signals and both signals are amplified in separate amplifiers. The signals are then transmitted to the diversity switching module, which locks onto the strongest signal and sends it to the radio receiver.

### Sport Wagon antenna system



✦ The diversity antenna system on the E46 Sport Wagon consists of the following;

- ◆ FM1 antenna in rear window (right half)
- ◆ FM2 antenna in rear window (center)
- ◆ FM3 antenna in left rear side window
- ◆ AM antenna in rear spoiler



- ◆ FZV (keyless entry) antenna combined with FM2 antenna

✦ The FM1/FM2 antenna amplifier is located beneath the rear spoiler. The signal from this amplifier is transmitted to the diversity module in the cargo compartment behind the left trim panel.

- 1 - Suppression filter
- 2 - Antenna amplifier
- 3 - AM antenna
- 4 - Diversity module

The FM3 antenna has a separate amplifier integrated into the diversity module. The module will select the clearest signal from the three antennas and transmit that to the sound system.

The AM antenna is glued to the bottom of the rear spoiler.

## Convertible antenna system

The diversity antenna system on the E46 Convertible consists of the following:

- ◆ Main antenna mast on left rear fender
- ◆ Auxiliary antenna in convertible top storage cover
- ◆ Main antenna amplifier, mounted directly below the antenna mast
- ◆ Auxiliary antenna amplifier, mounted on convertible top storage cover and powered through antenna lead

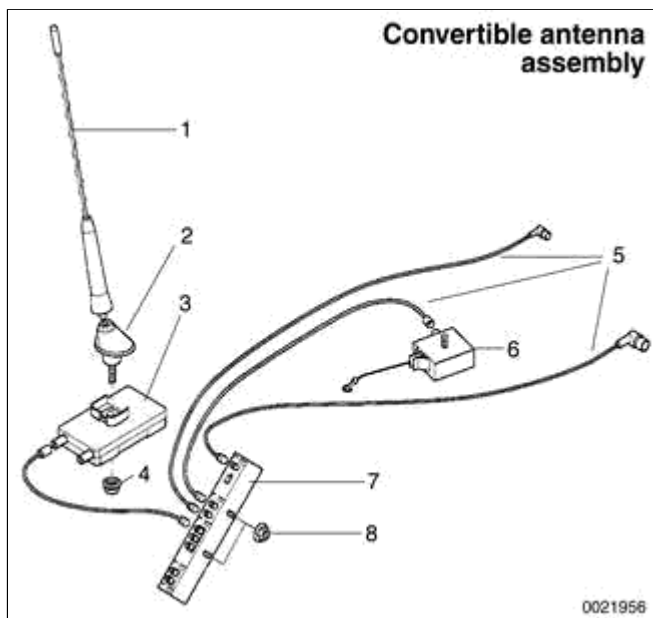
- ◆ Diversity switching module, mounted below antenna mast in trunk

More information on the rear window defogger/antenna system is in ⇒ [640 Heating and Air Conditioning](#).

**Note:**

*The telephone antenna is wound around the main antenna mast.*

## Antenna, removing (Convertible models)



- ✦ Unscrew and remove antenna mast.

- 1 - Antenna mast
- 2 - Antenna head
- 3 - Antenna base
- 4 - Nut (M5)
- 5 - Antenna cable
- 6 - Antenna FM amplifier
- 7 - Antenna diversity amplifier
- 8 - Nut (M6)

- Detach and remove wheel housing trim liner in left side of trunk.
- Through elongated hole of antenna retaining bracket, unscrew M5 nut.
- ◆ This releases antenna head from base.

- ◆ Place antenna base down on bracket.
- ◆ Remove antenna head from above fender.
- To remove base, slide toward rear of car, then detach cable connections.
- When installing, make sure the offset of antenna head points toward back of car.

### Antenna amplifier, accessing

- Convertible main antenna amplifier:
  - ◆ Detach and remove wheel housing trim liner in left side of trunk.
  - ◆ Antenna amplifier is mounted below antenna bracket.
- Convertible auxiliary antenna amplifier:
  - ◆ Open convertible top compartment lid.
  - ◆ Auxiliary amplifier is attached to left rear corner of lid.



- ⚡ Sedan or Coupe antenna amplifier:
  - ◆ Remove left roof pillar (C-pillar) trim panel as described in ⇒ [513 Interior Trim](#) to access amplifier.



- Sedan or Coupe antenna suppressor:

- ◆ Remove right roof pillar (C-pillar) trim panel to access suppressor.



- ◆ Sport Wagon FM3 antenna/diversity module:

- ◆ Remove left cargo compartment trim cover to gain access to module (**arrow**).

- Sport Wagon FM1/FM2 antenna amplifier:

- ◆ Remove rear spoiler. See ⇒ [412 Trunk Lid, Tailgate](#).

- ◆ Amplifier is in center of rear window beneath spoiler.