2003-06 ACCESSORIES & BODY, CAB

Audio - SI Techniques - E60, E61, E63, E64, E65, E66

FUNCTIONS CHANGED AFTER VEHICLE PROGRAMMING E60, E61, E63, E64, E65, E66, E87, E90, E91

NOTE: **Refer to FUNCTIONS CHANGED AFTER VEHICLE PROGRAMMING E60, E61, E63, E64, E65, E66, E87, E90, E91 .**

FUNCTIONS CHANGED AFTER VEHICLE PROGRAMMING E60, E61, E63, E64

NOTE: **Refer to FUNCTIONS CHANGED AFTER VEHICLE PROGRAMMING E60, E61, E63, E64 .**

SATELLITE DIGITAL AUDIO RADIO SERVICE E60, E61, E63, E64, E90, E91



Fig. 1: Identifying Satellite Digital Audio Radio Service
Courtesy of BMW OF NORTH AMERICA, INC.

INTRODUCTION

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In the USA, BMW supports the digital radio reception system SDARS (Satellite Digital Audio Radio Service). The following providers offer SDARS:

- "Sirius Satellite Radio Inc."
- "XM Satellite Radio Inc."

BMW uses the SDARS system of "Sirius Satellite Radio Inc.". For system overview, refer to **SDARS SYSTEM OVERVIEW: E60, E61, E63, E64, E90, E91** .

The installation of special equipment creates the prerequisites in the car for using SDARS. These items of special equipment include the hardware and software for digital radio reception.

- Option 655 "BMW satellite tuner" together with
- Option 645 "Radio Control US"

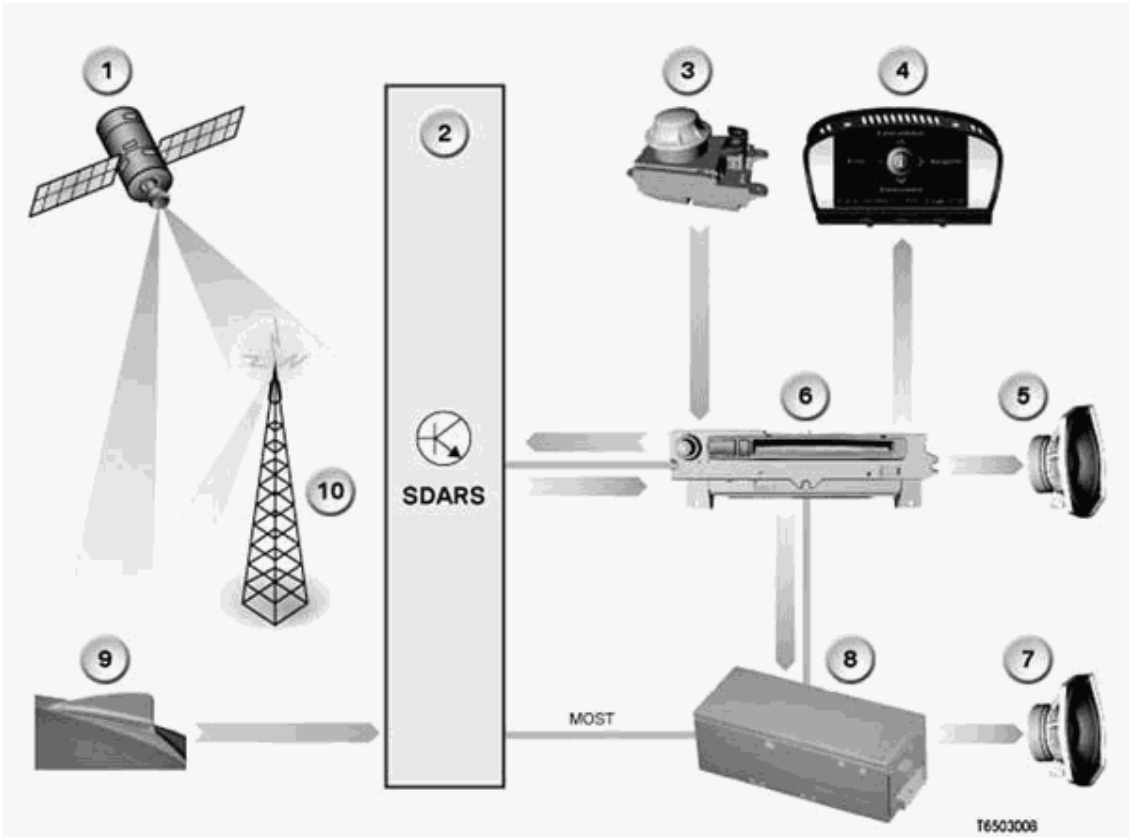
SDARS System Overview: E60, E61, E63, E64, E90, E91

This system overview contains the following overviews:

- Input/output
- System circuit diagram
- Overview of control units and busses
    - > E60, E61, E63, E64 up to 09/2005
    - > E60, E61, E63, E64 from 09/2005
    - > E90, E91

Inputs/Outputs

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Item	Description	Item	Description
1	Sirius satellite 1	2	Satellite tuner (SDARS: Satellite Digital Audio Radio Service)
3	Controller (CON)	4	Central Information Display (CID)
5	Loudspeaker	6	Multi-audio system controller (M-ASK)
7	Loudspeakers (TOP-HiFi system)	8	TOP-HiFi amplifier (optional) "Logic 7"
9	Telephone and GPS antenna on vehicle (includes SDARS antennas)	10	Stationary antennae for terrestrial reception
MOST	Media Oriented System Transport		

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Fig. 2: SDARS Inputs/Outputs Component Block Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

System Circuit Diagram

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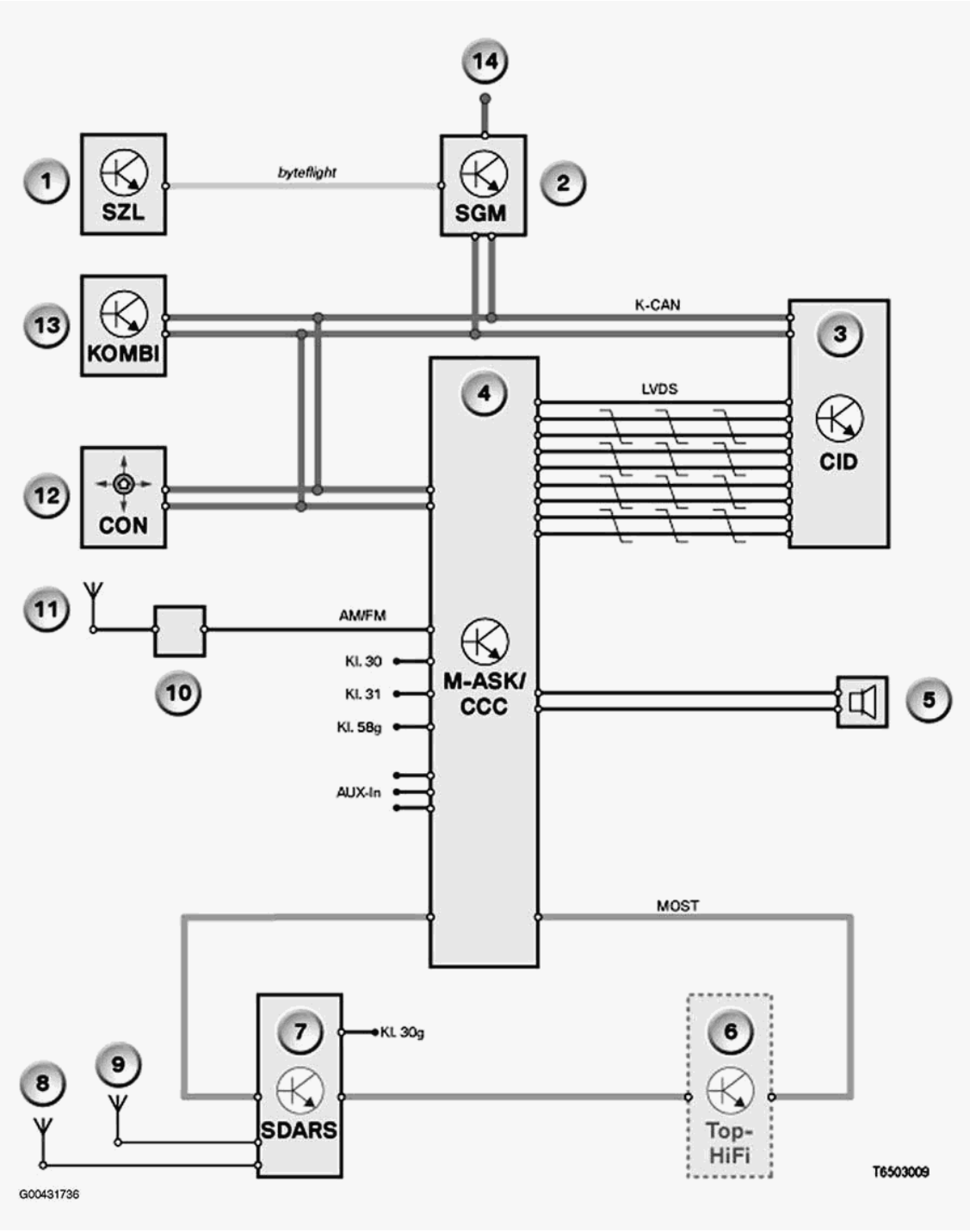


Fig. 3: SDARS System Circuit Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

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Item	Description	Item	Description
1	Steering column switch cluster (SZL) with buttons for volume control and station selection	2	Safety and gateway module (SGM)
3	Central Information Display (CID)	4	M-ASK or CCC (M-ASK = "multi-audio system controller"; CCC = "Car Communication Computer")
5	Loudspeaker	6	TOP-HiFi amplifier (optional) "Logic 7"
7	Satellite tuner (SDARS)	8	Antenna connector for SDARS antenna for terrestrial reception
9	Antenna connector for SDARS antenna for satellite reception	10	Antenna diversity
11	Radio antennas (AM/FM)	12	Controller (CON)
13	Instrument cluster (KOMBI)	14	Diagnostic wire
K-CAN	Body CAN	LVDS	LVDS (Low Voltage Differential Signalling) data line
MOST	Media Oriented System Transport	AUX-In	Input for AUX-In connection
Kl. 58 g	Terminal 58g	Kl. 31	Terminal 31, earth
Kl. 30	Terminal 30, battery plus	AM/FM	AM and FM signal input (AM: amplitude modulation; FM: frequency modulation)
byteflight	**byteflight** fibre optics		

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Fig. 4: Legend For SDARS System circuit diagram
Courtesy of BMW OF NORTH AMERICA, INC.

Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 up to 09/2005)

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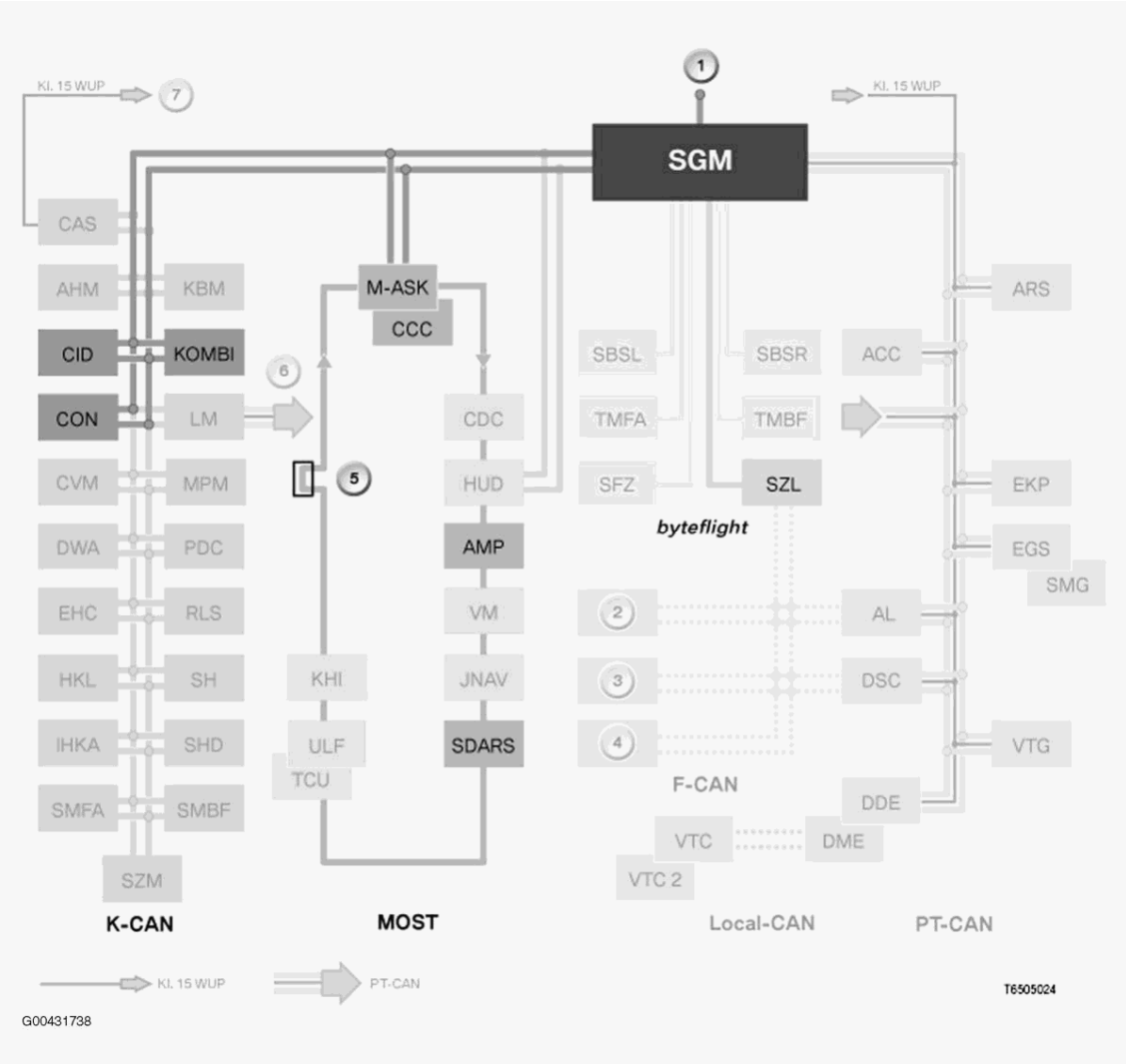


Fig. 5: Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 up to 09/2005)
Courtesy of BMW OF NORTH AMERICA, INC.

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Control units on the K-CAN data bus	
Item	**Description**
CID	Central Information Display
CON	Controller
KOMBI	Instrument cluster
SGM	Safety and gateway module

Control units on the MOST data bus	
Item	**Description**
AMP	Amplifier
CCC	Car Communication Computer
M-ASK	Multi-audio system controller (with navigation system)
SDARS	Satellite tuner (SDARS = "Satellite Digital Audio Radio Service")
The arrows show the direction of the light waves in the MOST bus.	

Control units on the byteflight data bus	
Item	**Description**
SGM	Safety and gateway module
SZL	Steering column switch centre (with steering-angle sensor)

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Fig. 6: Legend For Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 up to 09/2005)

Courtesy of BMW OF NORTH AMERICA, INC.

Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 from 09/2005)

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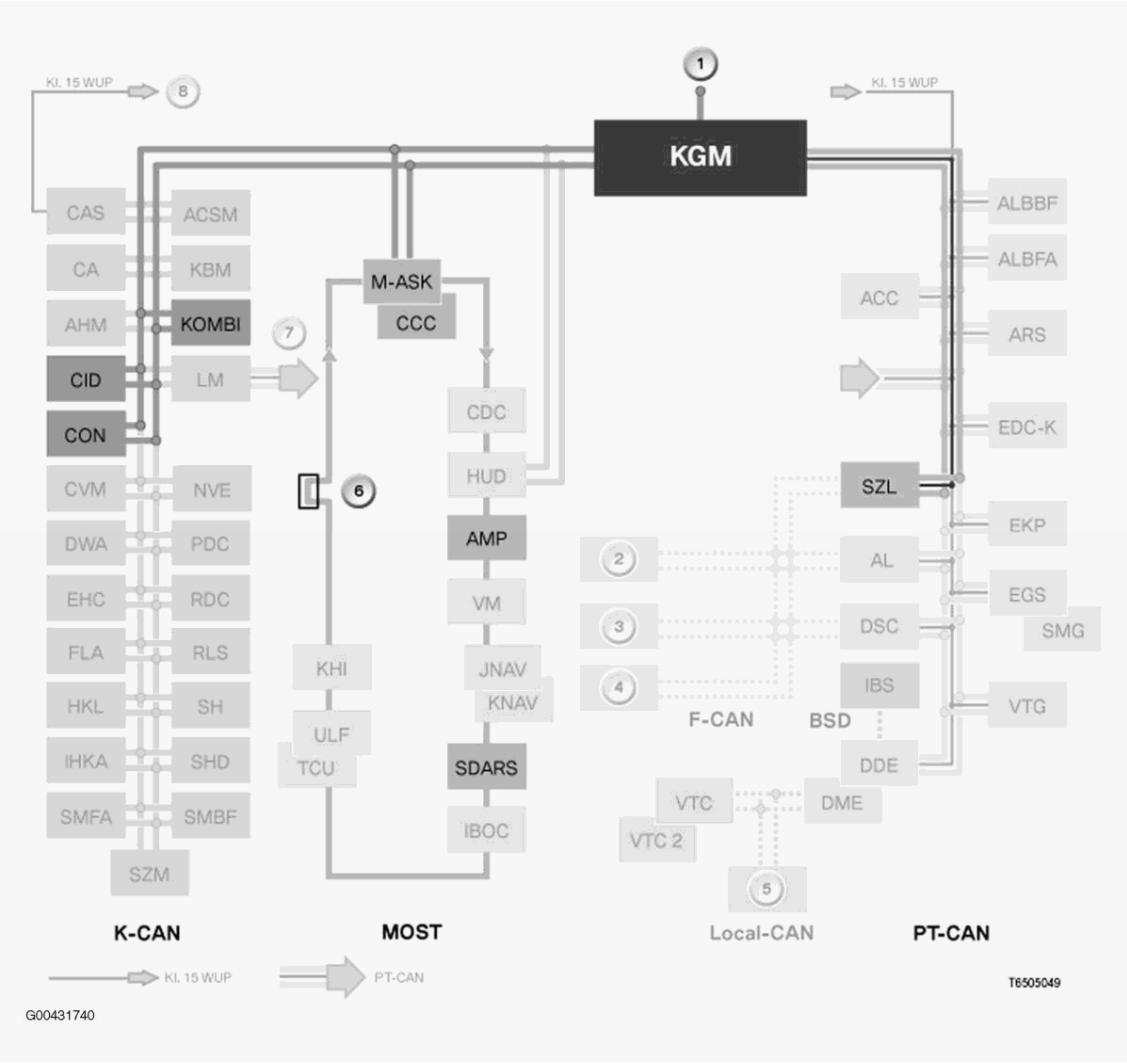


Fig. 7: Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 from 09/2005)
Courtesy of BMW OF NORTH AMERICA, INC.

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Control units on the K-CAN data bus	
Item	**Description**
CID	Central Information Display
CON	Controller
KGM	Body-gateway module
KOMBI	Instrument cluster

Control units on the MOST data bus	
Item	**Description**
AMP	Amplifier
CCC	Car Communication Computer
M-ASK	Multi-audio system controller (with navigation system)
SDARS	Satellite tuner (SDARS: Satellite Digital Audio Radio Service)
The arrows show the direction of the light waves in the MOST bus.	

Control units on the PT-CAN data bus	
Item	**Description**
KGM	Body-gateway module
SZL	Steering column switch centre (with steering-angle sensor)

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Fig. 8: Legend For Overview Of Control Units And Buses Involved In SDARS (E60, E61, E63, E64 from 09/2005)
Courtesy of BMW OF NORTH AMERICA, INC.

Overview Of Control Units And Buses Involved In SDARS (E90, E91)

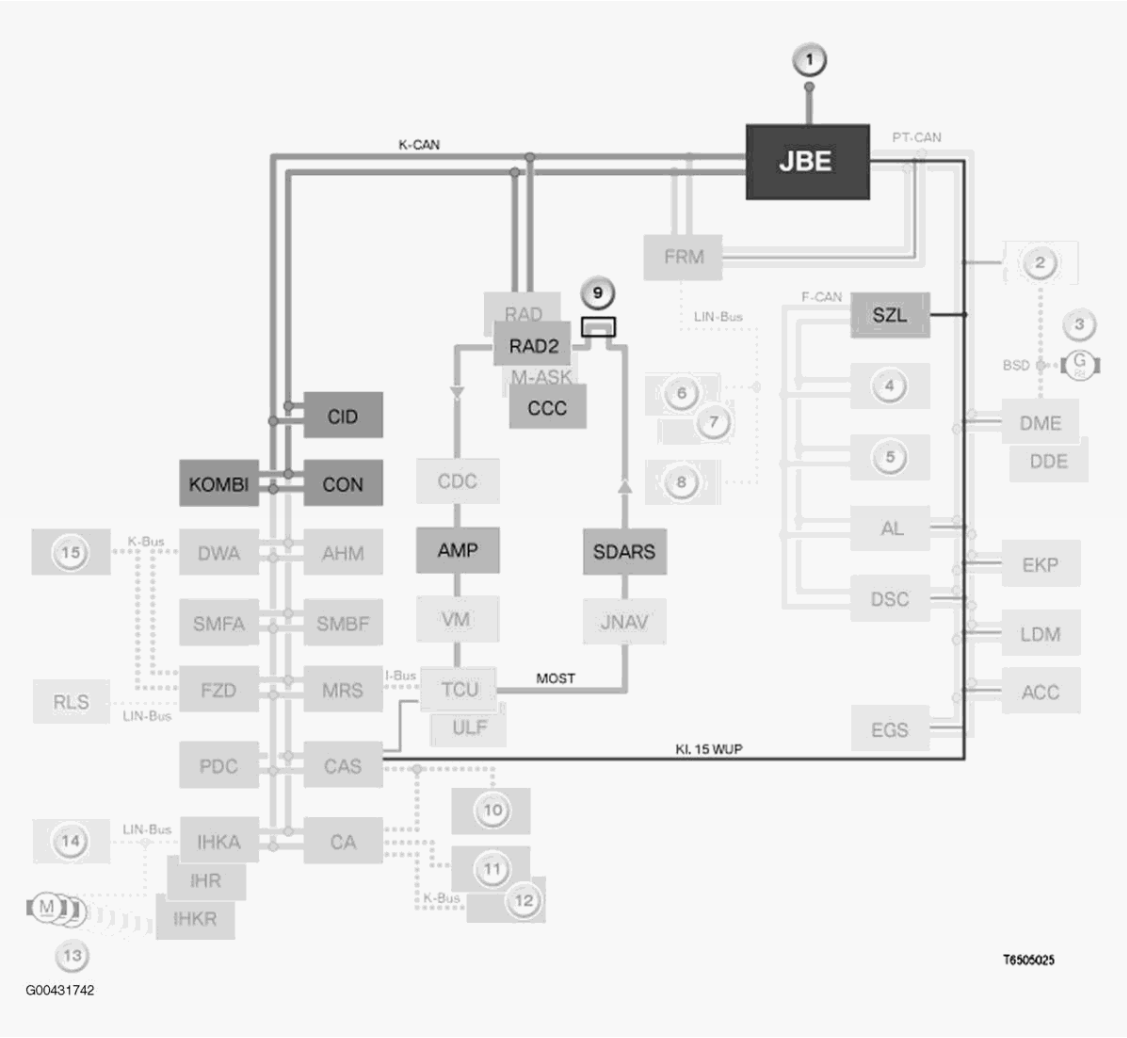


Fig. 9: Overview Of Control Units And Buses Involved In SDARS (E90, E91)
Courtesy of BMW OF NORTH AMERICA, INC.

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Control units on the K-CAN data bus	
Item	**Description**
CID	Central Information Display
CON	Controller
JBE	Junction box electronics
KOMBI	Instrument cluster

Control units on the MOST data bus	
Item	**Description**
AMP	Amplifier
CCC	Car Communication Computer
RAD2	Radio 2 (BMW "Professional" radio)
SDARS	Satellite tuner (SDARS = "Satellite Digital Audio Radio Service", US version only)
The arrows show the direction of the light waves in the MOST bus.	

Control units on F-CAN and PT-CAN data bus	
Item	**Description**
JBE	Junction box electronics
SZL	Steering column switch cluster

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Fig. 10: Legend For Overview Of Control Units And Buses Involved In SDARS (E90, E91)
Courtesy of BMW OF NORTH AMERICA, INC.

NEW FEATURES:

- Digital radio reception from satellites and stationary antennae for terrestrial reception. For more information, refer to **SDARS TECHNOLOGY: E60, E61, E63, E64, E90, E91** .
- Radio text: Information concerning radio programs are displayed.

SDARS Technology: E60, E61, E63, E64, E90, E91

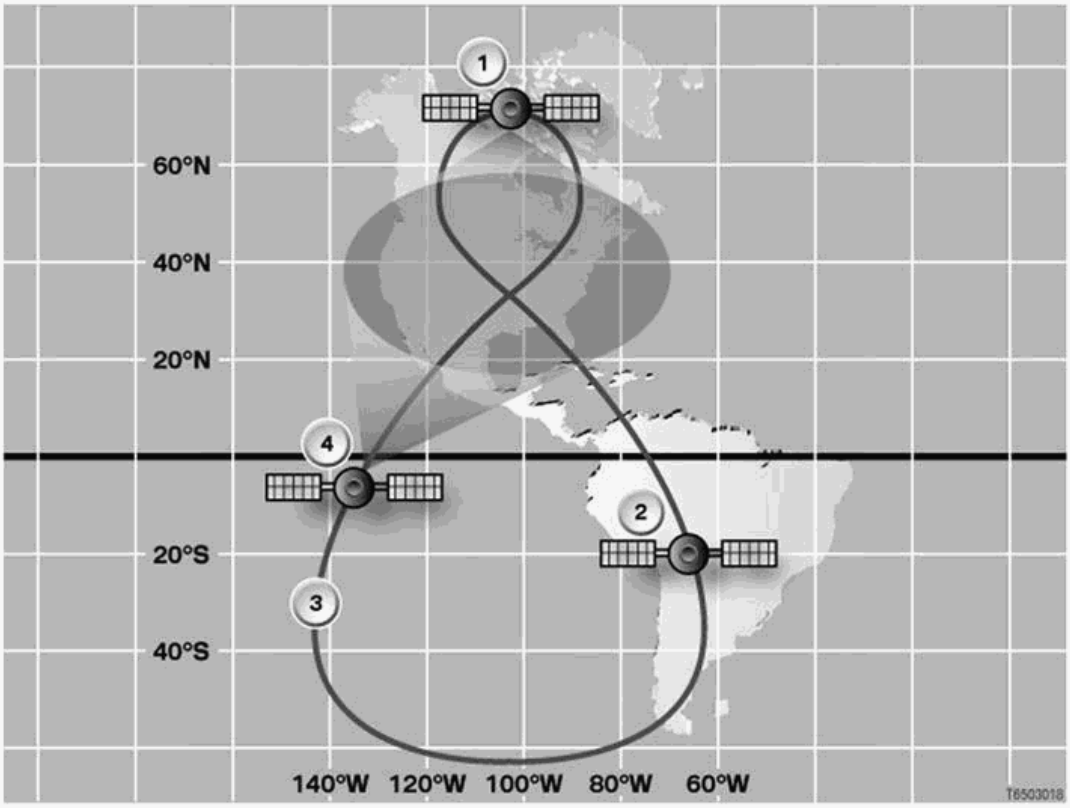
Satellite Technology

The following firms in the USA supply the Satellite Digital Audio Radio Service (SDARS):

- "Sirius Satellite Radio Inc."
- "XM Satellite Radio Inc."

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BMW uses "Sirius Satellite Radio Inc.". With "Sirius Satellite Radio Inc." 3 Sirius satellites circle the earth on an elliptical orbit. The orbit around the earth and the positions of the Sirius satellites were deliberately selected so that 2 Sirius satellites always transmit to the reception area. The illustration below shows the orbit and satellites.



Item	Description	Item	Description
1	Sirius satellite 1	2	Sirius satellite 2
3	Elliptical orbit	4	Sirius satellite 3

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Fig. 11: Identifying Satellite Orbit Of SDARS System
Courtesy of BMW OF NORTH AMERICA, INC.

The advantages of "Sirius Satellite Radio Inc." (as compared to "XM Satellite Radio Inc.") are:

- Higher orbit, eliminating screening from mountains and buildings.
- Fewer stationary antennae for terrestrial reception are required.

Sirius needs approx. 105 stationary antennae for terrestrial reception. "XM Satellite Radio Inc." requires 1500 stationary antennae for terrestrial reception.

"Sirius Satellite Radio Inc." System

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Generates and distributes the radio program through:

- National "Sirius Satellite Radio Inc." station
- Transmitting antennae (parabolic antennae)
- Satellites
- Satellite control centre
- Stationary antennae for terrestrial reception

The vehicle needs:

- SDARS antenna for satellite reception
- SDARS antenna for terrestrial reception
- Satellite tuner (SDARS)
- Audio system (HiFi system or TOP-HIFI system)

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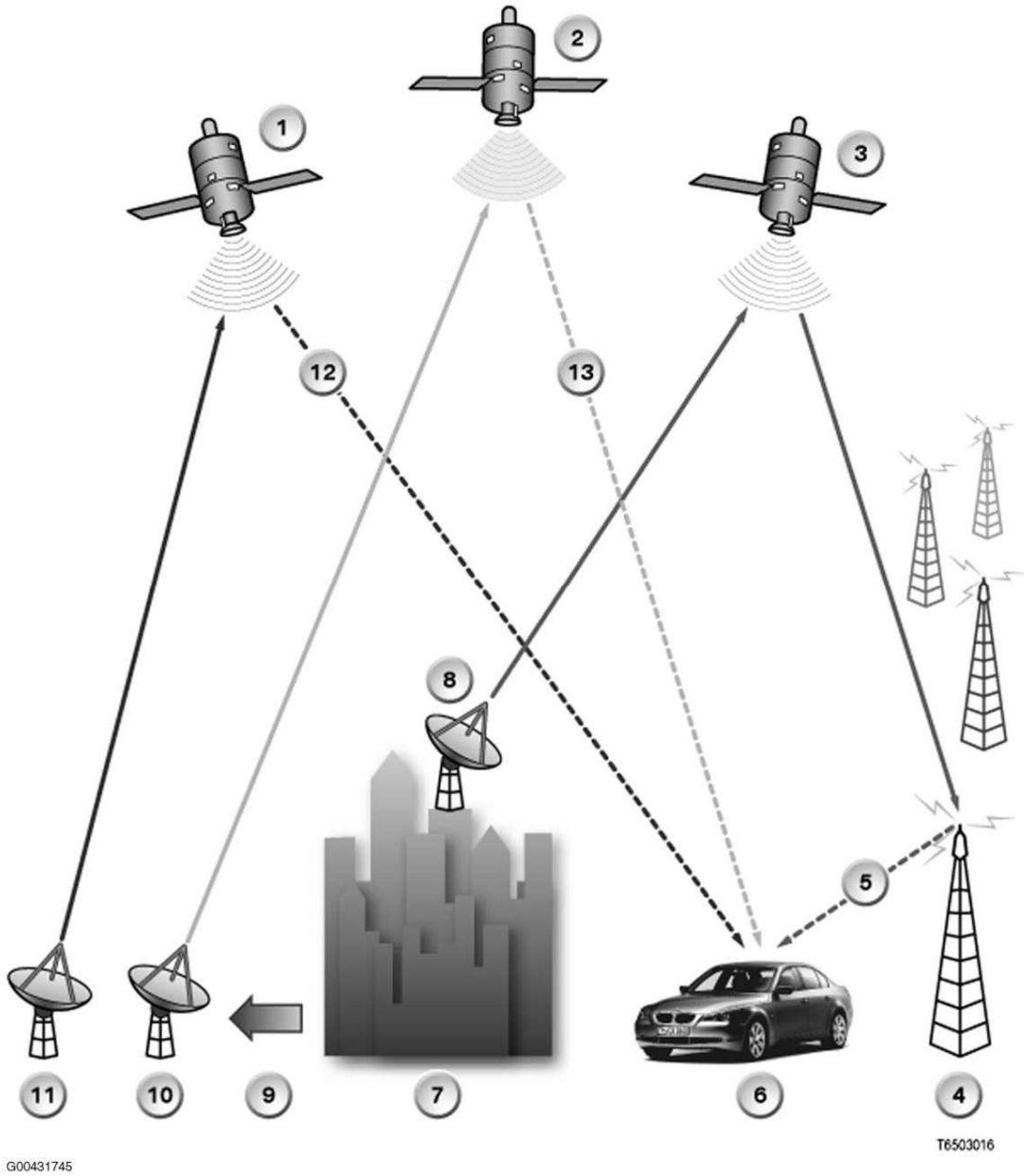


Fig. 12: SDARS Signal Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

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Item	Description	Item	Description
1	Sirius satellite 1	2	Sirius satellite 2
3	Sirius satellite 3	4	Terrestrial (stationary) antennae
5	Signal path: Stationary antenna for terrestrial reception -->Satellite tuner (in luggage compartment)	6	Satellite tuner (in luggage compartment)
7	Radio station	8	Transmitter antenna (parabolic antenna)
9	Data transmission: "Sirius Satellite Radio Inc." national radio station studio -> other transmitting antennae	10	Transmitting antenna for Sirius satellite 2
11	Transmitting antenna for Sirius satellite 1	12	Signal path: Sirius satellite 1 -->Satellite tuner (in the luggage compartment)
13	Signal path: Sirius satellite 2 -->Satellite tuner (in the luggage compartment)		

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Fig. 13: Legend For SDARS Signal Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

National Radio Station "Sirius Satellite Radio Inc." is located in the Rockefeller Center, New York City. The radio programs are transmitted by cable from the studios to the transmitting antennae.

Transmitting Antennae The transmitting antennae are parabolic antennae to focus the antenna beam onto the satellites. The transmitting antennae are connected by cable to the national radio station in New York. Digital signals are transmitted to the 3 Sirius satellites from the transmitting antennae.

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Fig. 14: Identifying SDARS Ground Transmitting Antenna
Courtesy of BMW OF NORTH AMERICA, INC.

The digital signals are transmitted to the 3 Sirius satellites from the transmitting antennae as follows:

- 2 antennae in New Jersey transmit to 2 satellites.
- 1 antenna at the radio station in New York transmits to 1 satellite.

Satellite Control Station The satellite control station continually monitors the 3 Sirius satellites of the "Sirius Satellite Radio Inc.".

Stationary Antennae For Terrestrial Reception The stationary antennae disperse the signals from the satellites into reception areas where there is no satellite reception.

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Fig. 15: Identifying SDARS System Stationary Antenna Signal
Courtesy of BMW OF NORTH AMERICA, INC.

Frequency Range The SDARS systems work in the frequency range 2320 MHz to 2345 MHz. The SDARS system used by BMW uses the frequency range 2320 MHz to 2332.5 MHz.

NOTE: ***SDARS can only be received by digital tuners.*** **Radios for AM (Amplitude Modulation: medium waves, long waves, short waves) or FM (Frequency Modulation: VHF) are not able to pick up digital signals.**

BENEFITS:

- Low degree of interference from outside sources (no noise) because signals are transmitted digitally.
- Reception of the national radio station is possible over the whole of mainland USA.
- Sound quality is nearly as good as from Compact Disk or MiniDisk.
- Radio program not interrupted for commercials.
- At present, some 100 radio programs can be received digitally.
- Approximately 20 current affairs and "talk" radio programs can be received digitally.
- Dividing the stations into groups allows a particular musical style or information station to be found quickly.
    - The selection "Preset" creates and stores a list of favourite stations.

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- Additional information is available with radio text: Station name, artist, song title.

BRIEF DESCRIPTION OF COMPONENTS

The components involved can be split into the following functional areas:

- Master control unit and aerials
- Central display and control
- Audio

Master Control Unit And Aerials

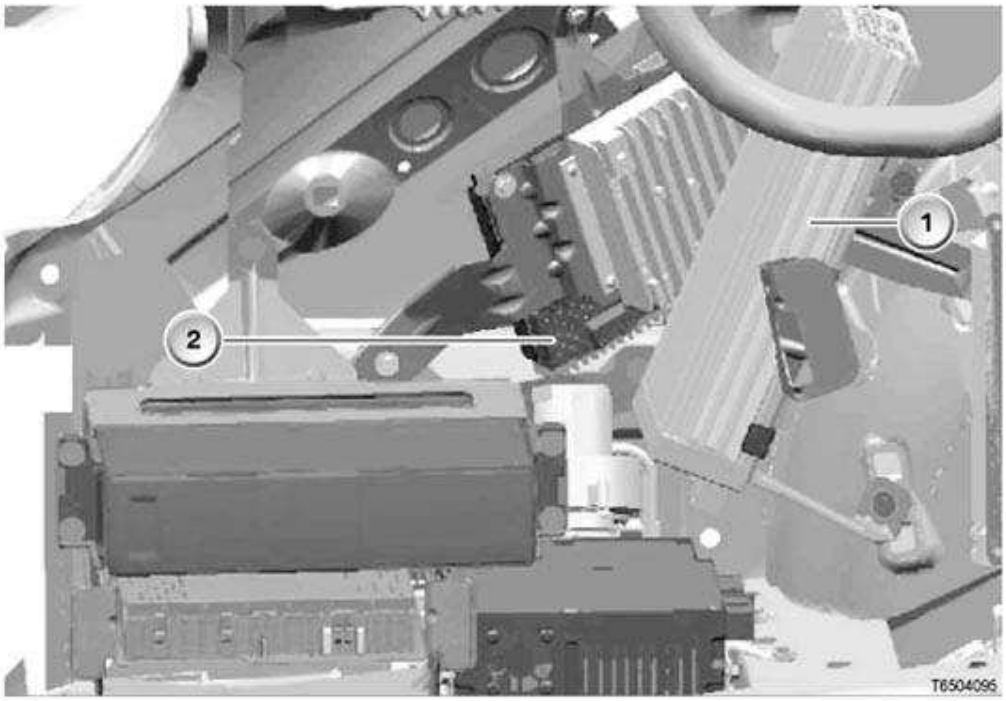
Satellite Tuner: Tuner For Satellite Digital Audio Radio Service

The satellite tuner converts the digital signals from the SDARS aerials into optical signals (light signals). The satellite tuner transmits these optical signals onto the MOST bus (Media-Oriented System Transport).

Installation Location

On E60, E61, E63, E64 the satellite tuner is located on the side panel on the left-hand side of the luggage compartment.

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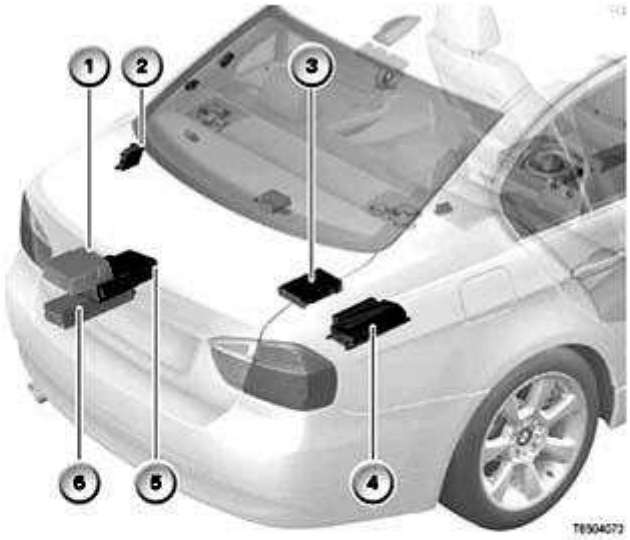
Item	Description	Item	Description
1	Top-HiFi amplifier (AMP) (optional)	2	Satellite tuner (SDARS)

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Fig. 16: Locating Satellite Tuner (E60, E61, E63, E64)
Courtesy of BMW OF NORTH AMERICA, INC.

On E90, E91 the satellite tuner is located on the base plate in the luggage compartment.

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Item	Description	Item	Description
1	Video module (EUROPE version only)	2	Line compensator for telephone antenna
3	Satellite tuner (SDARS)	4	Telematics control unit (TCU)
5	CD changer (CDC)	6	Audio amplifier (HiFi amplifier or TOP-HiFi amplifier)

Fig. 17: Locating Satellite Tuner (E90, E91)
Courtesy of BMW OF NORTH AMERICA, INC.

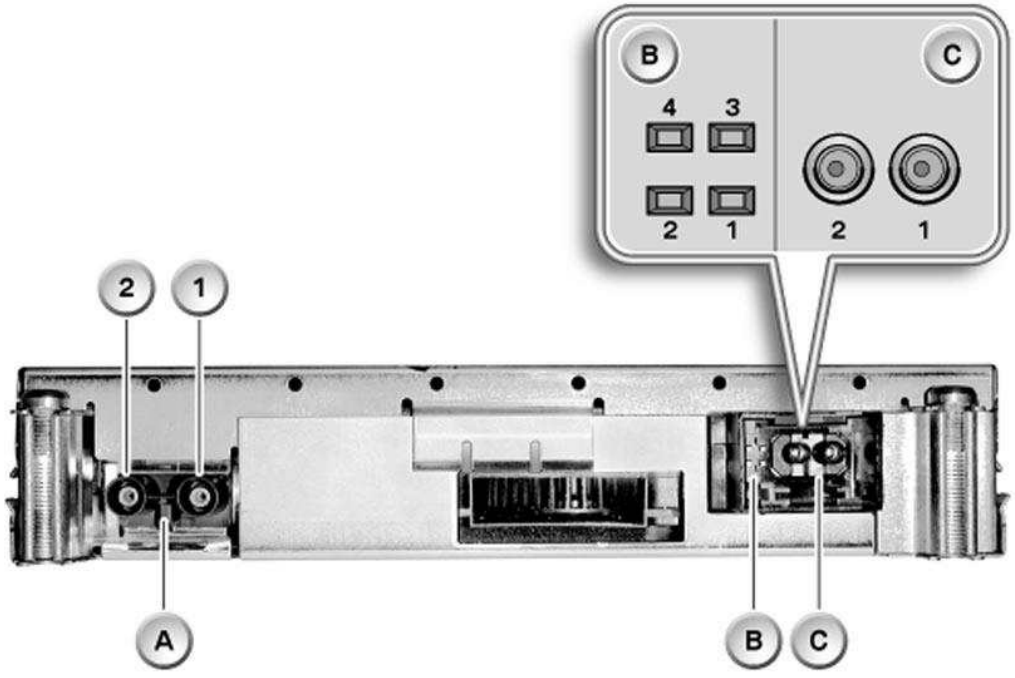
Design

The satellite tuner has connections for 2 SDARS antennas:

- 1 antenna connector for SDARS antenna for satellite reception
- 1 antenna connector for SDARS antenna for terrestrial reception

The satellite tuner is connected to the MOST bus via an internal interface. The same plug is also used for the power supply.

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Item	Description	Item	Description
A	Connection for SDARS antennas, connector X14066		
1	Connection for antennas for satellite reception	2	Connection for antennas for terrestrial reception
B	Power supply for satellite tuner with 4-pin connector, X14062		
C	MOST interface > E60, E61, E63, E64: Connector X14063 > E90, E91: Connector X10636		
1	Output from MOST bus	2	Input to MOST bus

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Fig. 18: Rear View Of Satellite Tuner & Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Pin Assignment

PIN ASSIGNMENTS FOR SATELLITE TUNER CONNECTOR X14062, 4-PIN

Pin	Type	Description
1	V	Terminal 30g (= terminal 30 active), activation of the Car Access System (CAS)
2	-	-
3	M	Terminal 31, earth
4	-	-

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M = Ground
V = Supply
For current specifications regarding pin assignments, please refer to BMW diagnosis system.

How It Works

The digital signals (high-frequency signals) are fed to the satellite tuner from the following 2 SDARS antennas:

- SDARS antenna for terrestrial reception
- SDARS antenna for satellite reception The digital signals have a varying modulation (frequency or time modulation) but carry the same information. They are first processed separately and then evaluated to ensure the best possible quality of data transmission.

After they have been amplified, the digital signals are routed to an intermediate-frequency amplifier and converted into intermediate-frequency signals (ZF signals).

The ZF signals are then sent separately to two analogue/digital converters and converted into digital signals.

The separate processing and evaluation of the signals ensures that the best possible combination of signals from the 3 separate sources (Sirius satellite 1, Sirius satellite 2 and stationary antennae for terrestrial reception) is always used.

The processed signals are converted into optical signals (light signals) in an integrated MOST transmitter/receiver. The optical signal generated in the MOST transmitter/receiver is emitted on the MOST bus.

SDARS Antennas

High-frequency signals (digital signals) from satellites and stationary aerials for terrestrial reception are picked up by 2 SDARS aerials on the vehicle. Separate aerial cables route the signals to the satellite tuner.

SDARS aerials:

- 1 SDARS aerial for terrestrial reception from stationary aerials
- 1 SDARS aerial for satellite reception

Installation Location

On E60, E61, E90, E91, the antennas are located in the fin on the rear edge of the roof.

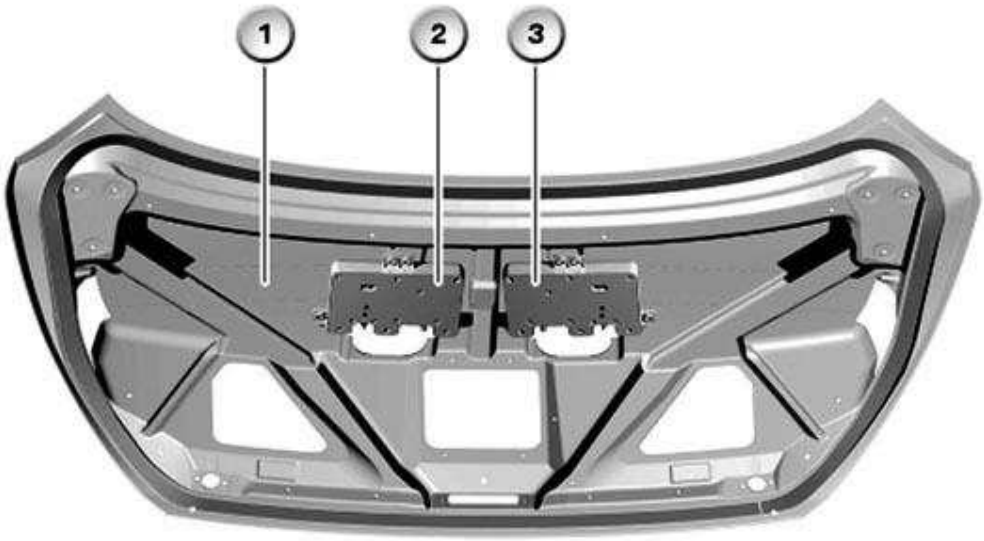
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Fig. 19: Locating SDARS Antennas (E60, E61, E90, E90)
Courtesy of BMW OF NORTH AMERICA, INC.

On E63, E64, the antennas are located under the interior trim of the tailgate. As the tailgate is made of plastic, there is no interference with reception.

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Item	Description	Item	Description
1	Rear lid	2	Telephone and GPS antenna
3	SDARS antenna		

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Fig. 20: Locating SDARS antennas (E63, E64)
Courtesy of BMW OF NORTH AMERICA, INC.

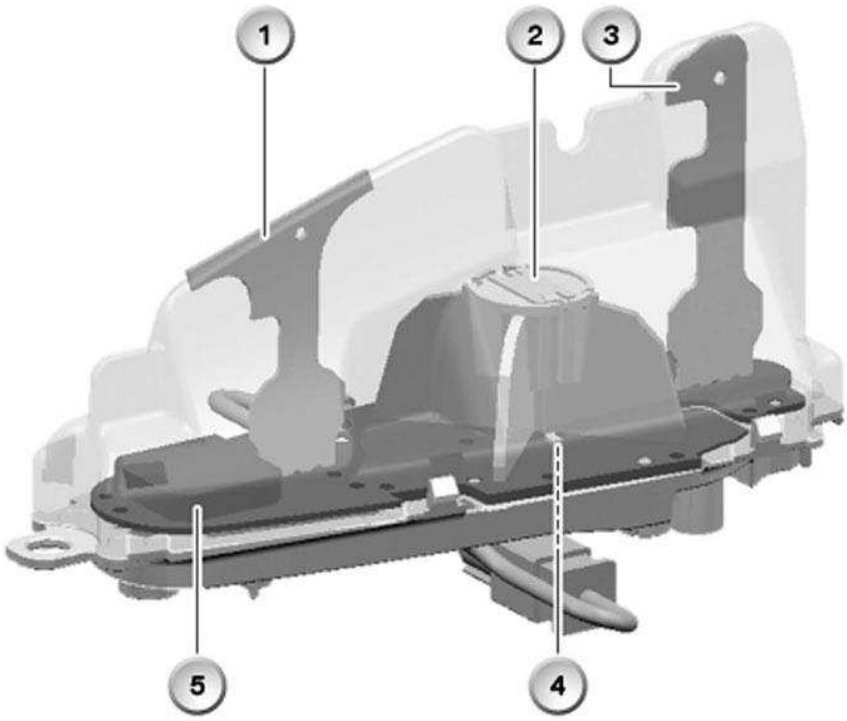
Design

The fin can house the following antennas:

- Telephone antenna 1
- Telephone antenna 2
- SDARS antenna for terrestrial reception
- SDARS antenna for satellite reception
- GPS antenna for navigation systems (GPS: Global Positioning System).

The individual antennas are combined as a single casing as follows.

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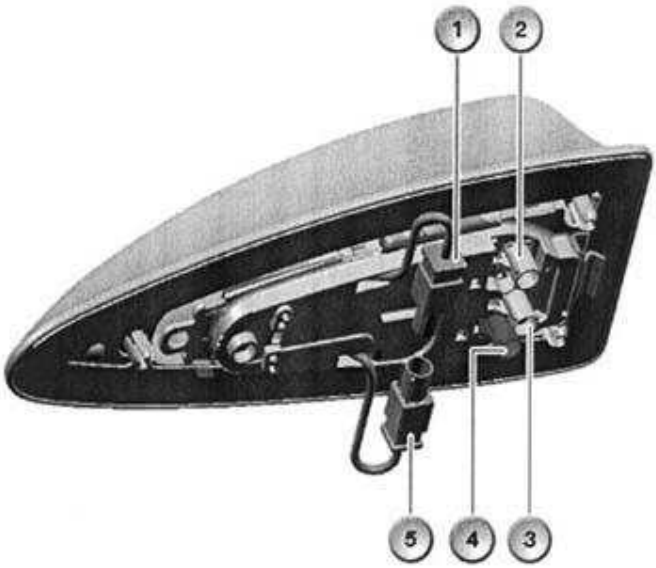
Item	Description	Item	Description
1	Telephone antenna 1	2	SDARS antenna for terrestrial reception
3	Telephone antenna 2	4	SDARS antenna for satellite reception (below the SDARS antenna for terrestrial reception)
5	GPS antenna for navigation systems		

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Fig. 21: Sectional View Of "Fin" Type Antenna
Courtesy of BMW OF NORTH AMERICA, INC.

The antenna connectors for the individual antennas are shown in the following illustration.

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Item	Description	Item	Description
1	Antenna connector for the GPS antenna	2	Antenna connector for the SDARS antenna for terrestrial reception
3	Antenna connector for telephone antenna 2	4	Antenna connector for the SDARS antenna for satellite reception
5	Antenna connector for telephone antenna 1		

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Fig. 22: Identifying Connectors For "Fin" Type Antenna
Courtesy of BMW OF NORTH AMERICA, INC.

How It Works

The SDARS antennas are receiving antennas.

- **SDARS Antenna For Terrestrial Reception** The SDARS antenna for terrestrial reception picks up the signals from the terrestrial antennae. Terrestrial antennae are stationary antennae located, for example on masts or in tunnels. The stationary antennae for terrestrial reception are needed as satellite signals cannot be received everywhere.
- **SDARS Antenna For Satellite Reception** The SDARS antenna for the satellite reception picks up the signals direct from the 3 Sirius satellites.

Central Display And Operation

RAD2: BMW "Professional" Radio

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> E90, E91

The BMW "Professional" radio is an item of special equipment.

The radio serves as the gateway (data interface) between the MOST bus and the K-CAN.

SDARS is controlled on the radio.

SDARS is only available in conjunction with the following equipment:

- BMW "Professional" radio (RAD2)
- Car Communication Computer (CCC)

M-ASK: Multi-audio system controller

> E60, E61, E64, E65

M-ASK is an item of special equipment.

M-ASK is the interface for operating the satellite tuner. The radio stations and other SDARS information are displayed on the Central Information Display (CID).

CCC: Car Communication Computer

The CCC is installed in connection with one of the following options:

- Navigation system "Professional"
- "Voice recognition system"
- "TV function" (not US version)

On the CCC, several control units and the CD-ROM/MD/DVD drives are integrated into a single housing. The CCC is used to control all information and communication systems, including SDARS.

CID: Central Information Display

The menus for the M-ASK and CCC are displayed on the CID.

CON: Controller

The menus on the CID are selected with the controller.

Audio

AMP: TOP-HiFi Amplifier (Optional)

Option 677 "HiFi system Professional LOGIC7" guarantees the best possible interior sound. The TOP-HiFi amplifier is connected to the MOST-bus.

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Loudspeaker

Tweeters, mid-range loudspeakers and woofers are arranged to give the best possible interior sound.

SYSTEM FUNCTIONS

The following SDARS system functions are described:

- Digital radio reception
- Optimised radio reception
- Wide selection of radio programs, grouped according to musical style

Digital Radio Reception

The "Sirius Satellite Radio Inc." radio station records the radio programs in digital form. Parabolic antennae transmit the signals to the 3 Sirius satellites.

The digital signals are transmitted back to Earth as follows:

- 2 satellites transmit to all parts of the Earth. The signals are received by the car's SDARS aerial for satellite reception.
- 1 satellite transmits the digital signals to stationary antennae for terrestrial reception. The aerials transmit digital signals in all directions. The vehicle's SDARS aerial for terrestrial reception receives these digital signals.

Different reception paths for digital signals ensure that reception is good even if there is no direct visual contact between the vehicle and the Sirius satellites.

If there is not direct visual contact, the signal will be received via the stationary antennae for terrestrial reception.

Satellite reception can be prevented by topographical and constructional features (e.g. valleys, skyscrapers, tunnels).

Very good reception across the entire region covered is achieved through the following measures:

- Satellites positioned in a high elliptical orbit
- Use of additional stationary antennae for terrestrial reception

Optimised Radio Reception

The quality of the signal is further improved by a special process for evaluating the signal.

Wide Selection Of Radio Programs, Grouped According To Musical Style

- A wide selection of musical styles can be grouped together in the following categories:
  - "Rock"

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- "Hip-Hop"
- "Country"
- "Dance"
- "Jazz/Standards"
- "Popular"
- "Rhythm and Blues"
- "Variety"
- "Classical"
- "News"
- "Sports"
- "Entertainment"

OPERATION

NOTE: ***"Sirius Satellite Radio Inc." may only be used with a valid contractual agreement.***

- **A contract must be signed with the company before the "Sirius Satellite Radio Inc." service can be used.**
- **"Sirius Satellite Radio Inc." may block the service through the satellite contact: e.g. if payment obligations are not met.**

NOTE: ***SDARS must be enabled.***
After enablement, perform initial operation of SDARS as described in the operating instructions. How to use the satellite tuner is described in detail in the operating instructions.

Depending on the vehicle's equipment, the SDARS will be operated as follows:

- On the BMW "Professional" radio (RAD2)
- On the M-ASK or CCC: with the Central Information Display (CID) and Controller (CON)
- With the multi-function steering wheel (buttons for station-search: upwards/downwards)
- With voice input (only if Car Communication Computer (CCC) is fitted)
- With buttons in the centre console (selection of radio station: upwards/downwards)

NOTES FOR SERVICE STAFF

Service staff should note the following points:

- General information: refer to **SDARS, GENERAL INFORMATION FOR SERVICE STAFF (E60, E61, E63, E64, E90, E91)** .
- Diagnosis: refer to **SDARS DIAGNOSIS (E60, E61, E63, E64, E90, E91)** .

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- Encoding/programming: refer to **ENCODING/PROGRAMMING SDARS (E60, E61, E63, E64, E90, E91)** .
- Car and Key Memory: refer to **CAR & KEY MEMORY FOR SDARS (E60, E61, E63, E64, E90, E91)** .

  E90, E91: Almost all Car & Key Memory functions are programmed inside the vehicle itself. (See "Personal Profile" in the Owner's Handbook: Individual settings for a maximum of 3 remote control units via the display in the instrument cluster or via the Central Information Display)

Subject to change.

SDARS, General Information For Service Staff (E60, E61, E63, E64, E90, E91)

IMPORTANT: Do not subject fibre-optic cables to mechanical loads during assembly work.

When performing assembly work on the satellite tuner and on the M-ASK or CCC, make sure the fibre-optic cables (for the MOST bus) are handled correctly:

- **Do not pull on the fibre-optic cable.**
- **Do not crush the fibre-optic cable.**
- **Do not kink the fibre-optic cable.**

Incorrect handling could affect the function of the fibre-optic cables. A total failure of the SDARS system is the result of a broken fibre-optic cable.

Using A Satellite Tuner For The First Time

The first time a satellite tuner decodes a signal from a satellite, the so-called "Preview Channel" can be heard for a period of 6 months without a contract. ("Preview Channel: selected station for trials purposes) Once this period has been exceeded, the radio station will block sound output. (The list of stations will still be displayed.) Continued use of the radio station requires enablement. To this end, a contract must be concluded with "Sirius Satellite Radio Inc.".

For reasons of quality assurance, some satellite tuners are tested by the manufacturer. These satellite tuners are marked with a blue label. The date of manufacture is shown on the white label. That means: The trials period with the "Preview Channel" has been running since the date of manufacture. For this reason, it may occasionally happen that the trials period has expired before the satellite tuner is first used in the vehicle.

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1) Satellite tuner

2) Date of manufacture on white label

3) Blue label

(indicates a satellite tuner that has been tested by the manufacturer)

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Fig. 23: Identifying Satellite Tuner & Label
Courtesy of BMW OF NORTH AMERICA, INC.

SDARS Diagnosis (E60, E61, E63, E64, E90, E91)

Option 645 "Radio Control US" together with option 655 "BMW satellite tuner" can be diagnosed with the BMW diagnosis system over the vehicle's diagnosis interface. The BMW diagnosis system displays the necessary operations as it guides the user through the menus.

Software update, maintenance and troubleshooting: Like all other subscribing control units the satellite tuner has read and write access to the diagnosis operations. In the CAS control unit, the saved profile can be actively

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changed via the diagnosis log.

Encoding/Programming SDARS (E60, E61, E63, E64, E90, E91)

Programming/Replacing Control Unit

Most of the selected settings for SDARS are retained even if the relevant control units are reprogrammed. The following procedure is executed:

- Before programming or encoding starts, the data is automatically read off by CIP (Encoding, Individualisation, Programming) into the intermediate memory.
- After programming, the data is stored again in the respective control units.

Car & Key Memory For SDARS (E60, E61, E63, E64, E90, E91)

With the Car & Key Memory, 12 channels can be stored as individual default settings ("Presets"). The presets are stored in the satellite tuner (SDARS). The presets are specified for a specific ignition key by means of a code. When the car is started the satellite tuner finds the last radio station that was being listened to prior to switching off.

NOTE: ***Personal Profile on the E90, E91.*** **Please refer to the Personal Profile section in the Owner's Handbook: Individual default settings are stored for p to 3 remote controls.**

DIGITAL AND ANALOGUE TELEVISION E60, E61, E63, E64, E65, E66

NOTE: **Television in front is inactive while the vehicle is being driven.**
For safety reasons television is forbidden in the front when the vehicle is in motion. For this reason the television is switched off in the front when the vehicle is in motion. The sound is not switched off.

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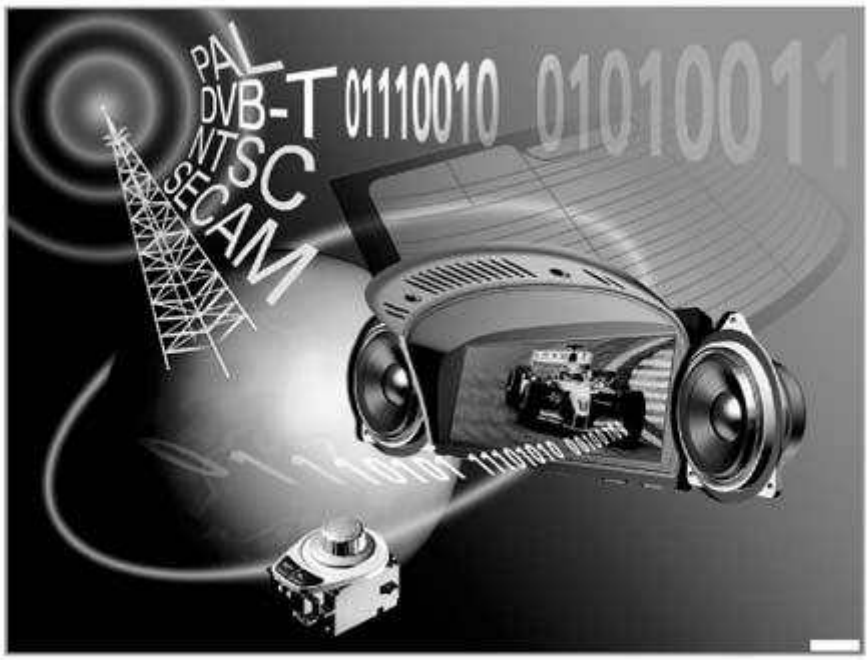


Fig. 24: Identifying Digital And Analogue Television System
Courtesy of BMW OF NORTH AMERICA, INC.

INTRODUCTION

The television can be ordered as special equipment (option 601). The Control Display or Central Information Display in the instrument panel act as a monitor for the television (control display in the E65, E66; Central Information Display in the E60, E61, E63, E64).

With option 603, "Rear monitor", it is possible to use the television in the rear seat area too. Option 603 is not available for the E65 or E66.

New feature: The newly developed video modules receive both analogue and digital television in accordance with the international standard DVB-T. The abbreviation "DVB-T" stands for "Digital Video Broadcasting - Terrestrial".

Depending on the series there are the following equipment versions for analogue and digital television:

1. Front television:

   Viewing television in the front is only possible when the vehicle is stationary.

   - E60, E61, E63, E64 - Television in front without amplifier (AMP)

     For System Overview, refer to **E60, E61, E63, E64 - SYSTEM OVERVIEW OF TV IN FRONT WITHOUT AMPLIFIER** .

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- E60, E61, E63, E64 - Television in front with amplifier (AMP)

  For System Overview, refer to **E60, E61, E63, E64 - SYSTEM OVERVIEW OF TV IN FRONT WITH AMPLIFIER** .

- E65, E66: Television in front without navigation system

  For System Overview, refer to **E65, E66: SYSTEM OVERVIEW OF TV IN FRONT WITHOUT NAVIGATION SYSTEM** .

- E65, E66: Television in front with navigation system

  For System Overview, refer to **E65, E66 - SYSTEM OVERVIEW OF TV IN FRONT WITH NAVIGATION SYSTEM** .

2. Television in front and rear is only available with E65, E66.

   When the vehicle is in motion it is only possible to watch television in the rear seat area. It is only possible to watch television in the front when the vehicle is stationary.

   - E65, E66: television in front and rear, with or without navigation system

     For System Overview, refer to **E65, E66: SYSTEM OVERVIEW OF TELEVISION IN FRONT AND REAR** .

NOTE: **The Japan national version has its own system overview. There is a separate television system overview for the Japan national version. Please refer to the NATIONAL VERSION section.**

E60, E61, E63, E64 - System Overview Of TV In Front Without Amplifier

NOTE: ***The overviews also include the Japan version of the television with navigation system.*** **On the Japan version, the navigation system has its own control unit: JNAV (Japan navigation system) The RGB wire for this navigation system (JNAV) is controlled by the video module.**

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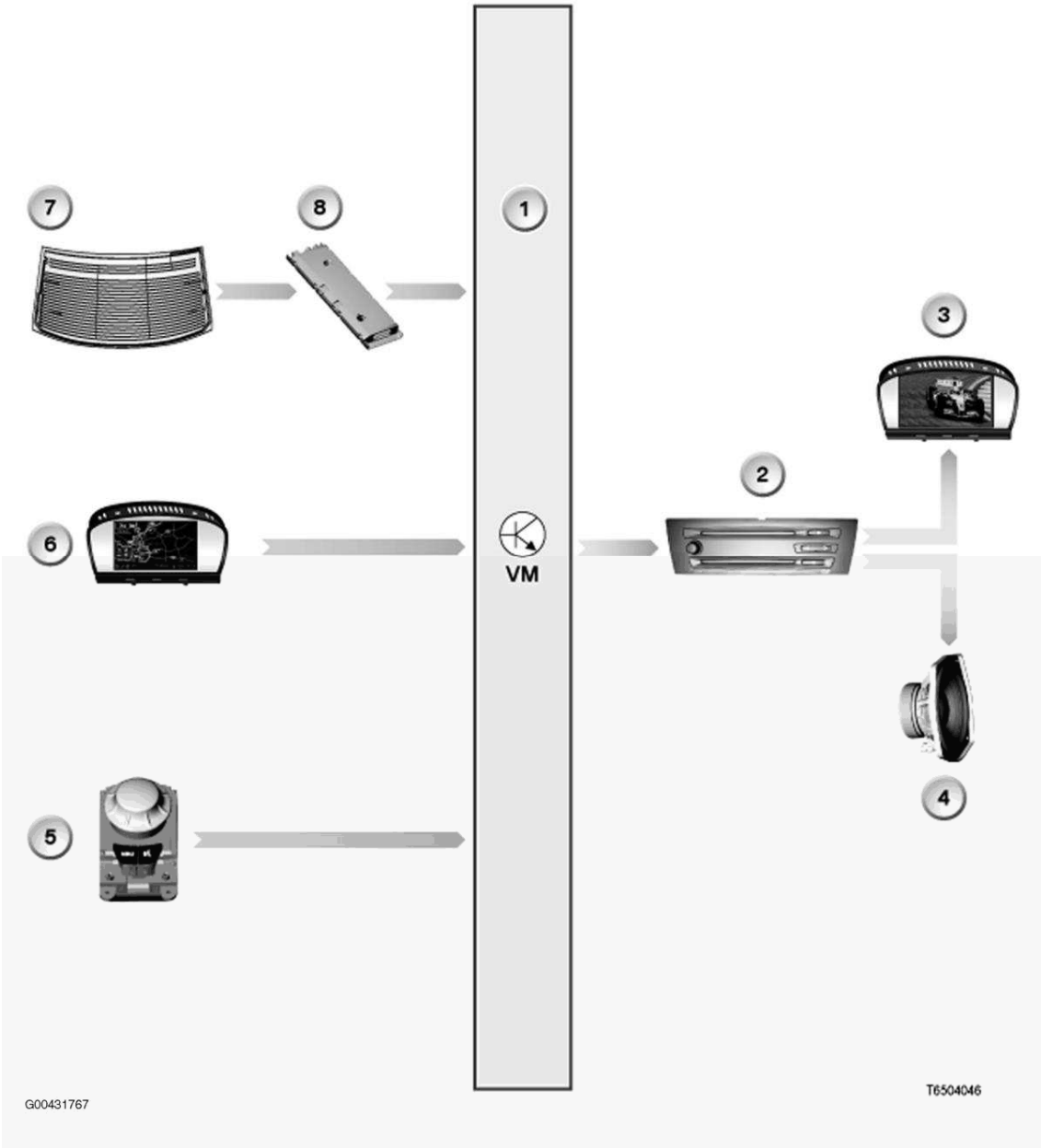


Fig. 25: Inputs/Outputs Block Diagram - E60, E61, E63, E64 (Television In Front Without Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Video module (VM)	2	Car Communication Computer (CCC)
3	Central Information Display (CID)	4	Loudspeaker
5	Controller (CON)	6	Japan navigation system (JNAV, only on Japan version)
7	TV aerial in heated rear window (TV 1, TV 2)	8	Aerial amplifier (TV tuner, 2 pcs)

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Fig. 26: Legend For Inputs/Outputs Block Diagram - E60, E61, E63, E64 (Television In Front Without Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

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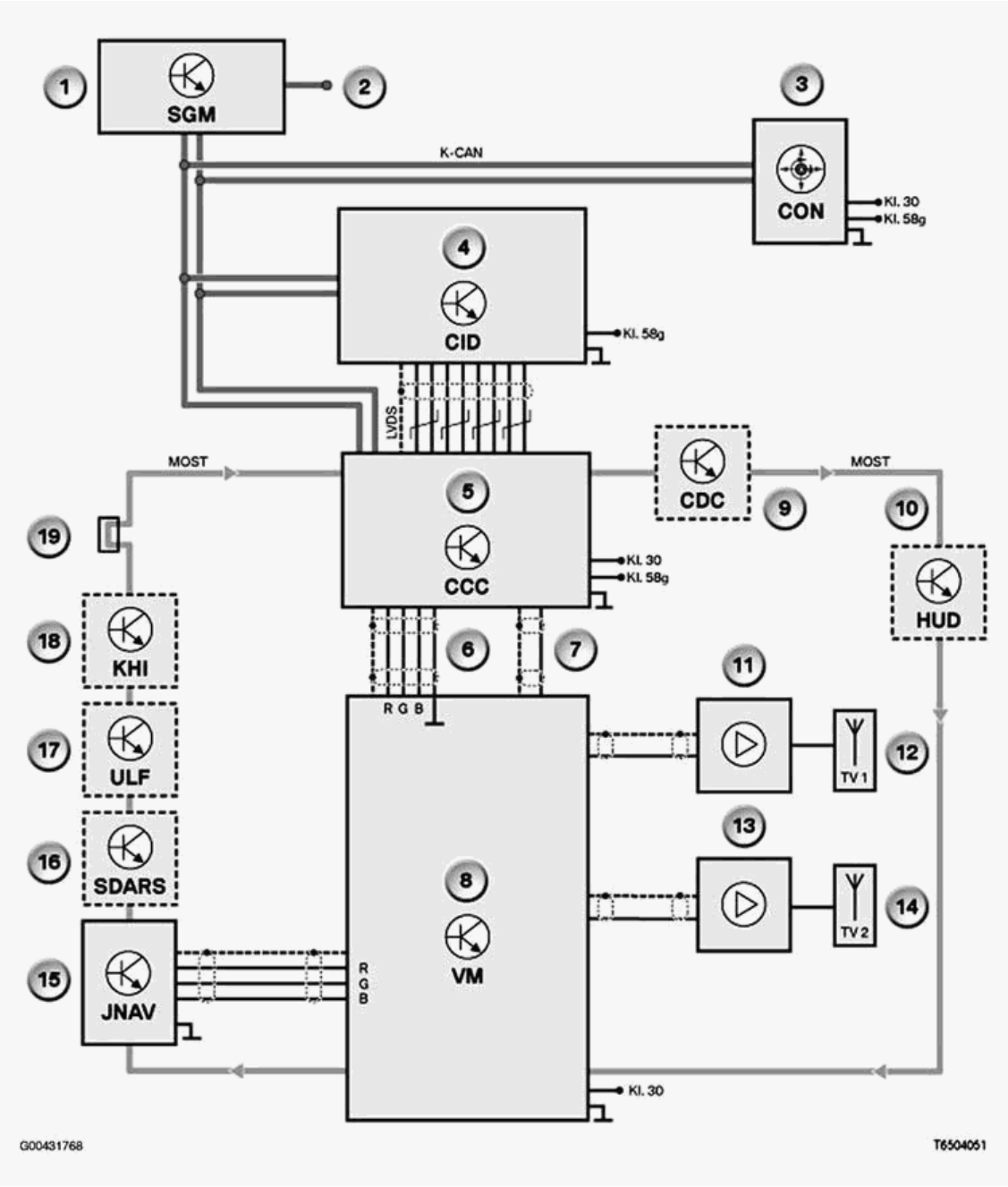


Fig. 27: System Circuit Diagram - E60, E61, E63, E64 (Television In Front Without Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Controller (CON)	2	Safety and gateway module (SGM)
3	Diagnosis lead	4	Loudspeaker
5	Aerial amplifier (TV tuner)	6	TV aerial (TV 1)
7	Aerial amplifier (TV tuner)	8	TV aerial (TV 2)
9	Video module (VM)	10	FBAS wire (FBAS: Composite Video Burst Synchronisation; only on vehicles **without** Japan navigation system)
11	RGB wire with earth wire and screening (only on Japan version **with** Japan navigation system)	12	Japan navigation system (JNAV, only on Japan version)
13	MOST port	14	Car Communication Computer (CCC)
15	Central Information Display (CID)		
K-CAN	Body controller area network	Kl. 30	Terminal 30 (power supply)
Kl. 58g	Terminal 58g (locating light)	LVDS	Low Voltage Differential Signalling
MOST	Media-Oriented Systems Transport (arrow indicates direction of light in MOST)	RGB	Red-green-blue (RGB wire)

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Fig. 28: Legend For System Circuit Diagram - E60, E61, E63, E64 (Television In Front Without Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

E60, E61, E63, E64 - System Overview Of TV In Front With Amplifier

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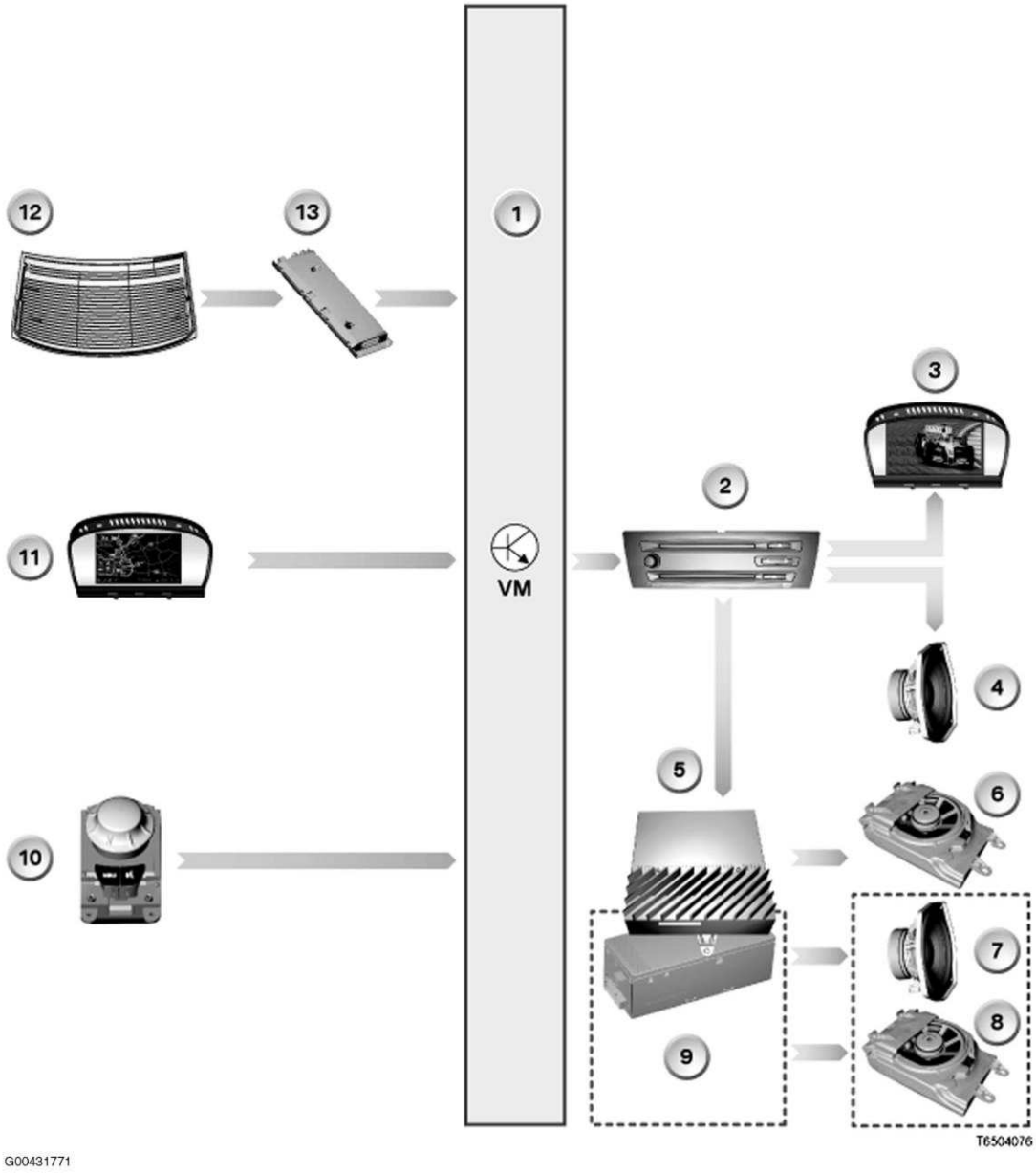


Fig. 29: Inputs/Outputs Block Diagram - E60, E61, E63, E64 (Television In Front With Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Video module (VM)	2	Car Communication Computer (CCC)
3	Central Information Display (CID)	4	Mid-range loudspeakers and tweeters:
5	Amplifier (AMP) (HiFi amplifier)	6	Woofers
7	Mid-range loudspeakers and tweeters: (dotted line: Mid-range loudspeakers and tweeters are actuated by TOP-HiFi amplifier)	8	Woofers (dotted line: The woofer is actuated by the TOP-HiFi amplifier.)
9	Amplifier (AMP): Alternatively also TOP-HiFi amplifier (dotted line means "alternative" to HiFi amplifier)	10	Video module (VM)
10	Controller (CON)	11	Japan navigation system (JNAV, only on Japan version)
12	TV aerial in heated rear window (TV 1, TV 2)	13	Aerial amplifier (TV tuner, 2 pcs)

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Fig. 30: Legend For Block Diagram - E60, E61, E63, E64 (Television In Front With Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: ***The overviews also include the Japan version of the television with navigation system.*** **On the Japan version, the navigation system has its own control unit: JNAV: Japan navigation system. The RGB wire for the navigation system is controlled by the video module.**

The illustration shows the television in the front with HiFi amplifier. On the television with HiFi amplifier, the amplifier (AMP) only actuates the woofer. The mid-range loudspeakers and tweeters are actuated by the Car Communication Computer (CCC). On vehicles with TOP-HiFi amplifier ("LOGIC 7"), the TOP-HiFi amplifier actuates all loudspeakers.

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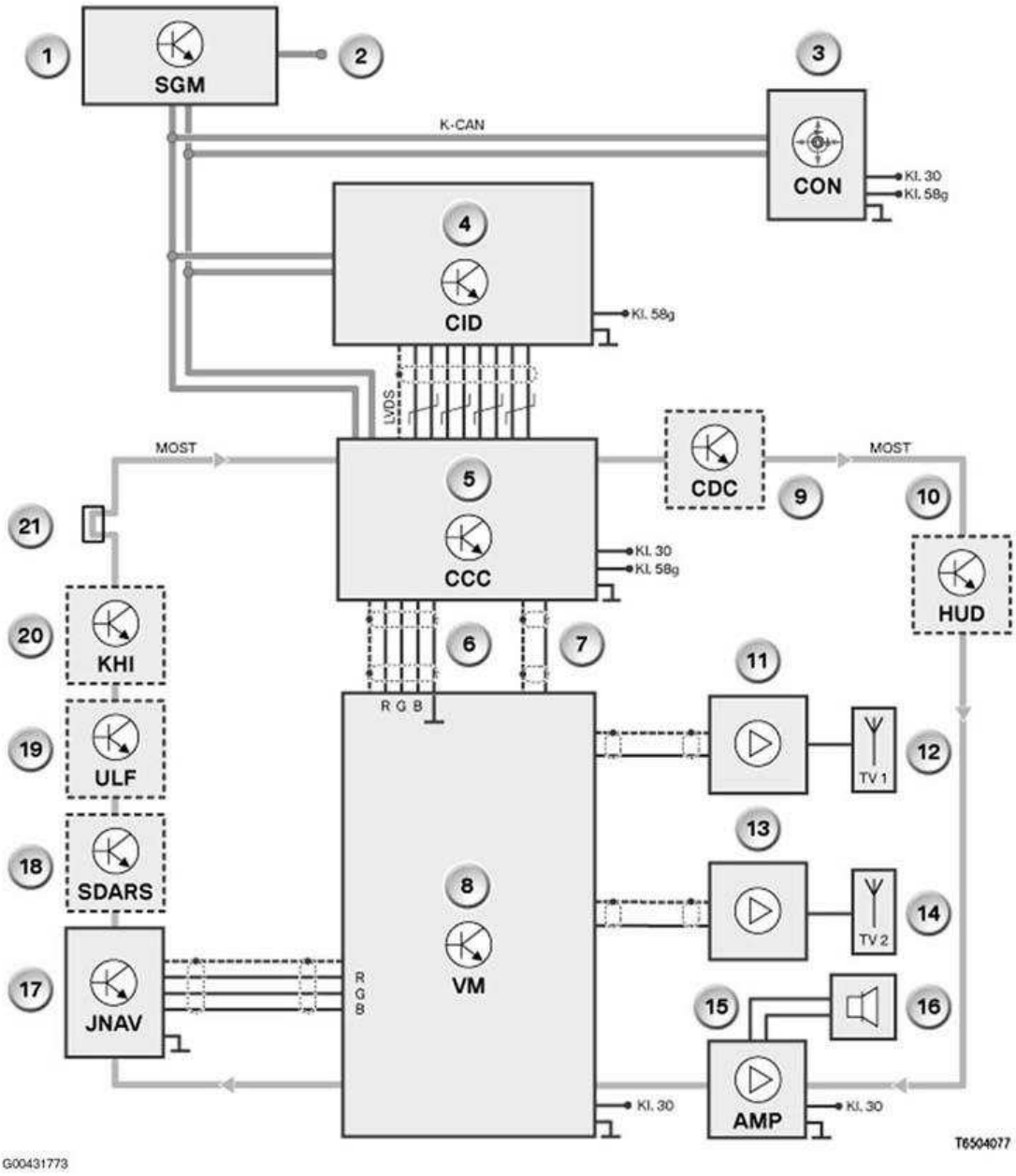


Fig. 31: System Circuit Diagram - E60, E61, E63, E64 (Television In Front With Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Controller (CON)	2	Safety and gateway module (SGM)
3	Diagnosis lead	4	Mid-range loudspeakers and tweeters:
5	Aerial amplifier (TV tuner)	6	TV aerial (TV 1)
7	Aerial amplifier (TV tuner)	8	TV aerial (TV 2)
9	Woofers	10	Amplifier (AMP): Alternatively HiFi amplifier or TOP-HiFi amplifier The illustration shows the HiFi amplifier
11	Video module (VM)	12	FBAS wire (Composite Video Burst Synchronisation): Only on vehicles **without** Japan navigation system (JNAV)
13	RGB wire with earth wire and screening: only on Japan version	14	Japan navigation system (JNAV)
15	MOST port	16	Car Communication Computer (CCC)
17	Central Information Display (CID)		
K-CAN	Body controller area network	Kl. 30	Terminal 30 (power supply)
Kl. 58g	Terminal 58g (locating light)	LVDS	Low Voltage Differential Signalling
MOST	Media-Oriented Systems Transport (arrow indicates direction of light in MOST)	RGB	Red-green-blue (RGB wire)

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Fig. 32: Legend For System Circuit Diagram - E60, E61, E63, E64 (Television In Front With Amplifier)
Courtesy of BMW OF NORTH AMERICA, INC.

E65, E66: System Overview Of TV In Front Without Navigation System

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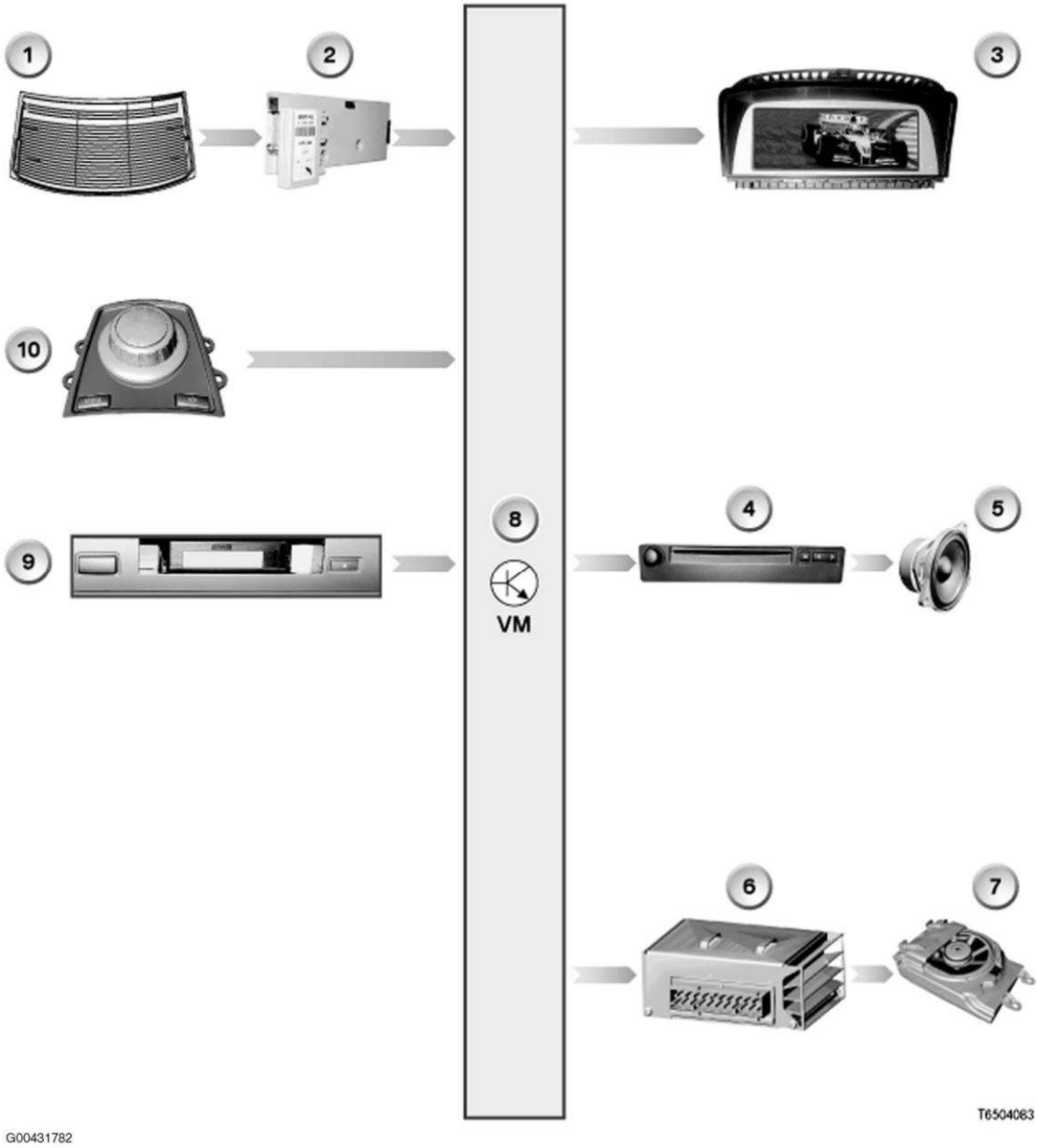


Fig. 33: Inputs/Outputs Block Diagram - E65, E66 (Television In Front Without Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	TV aerial in rear window	2	Aerial amplifier (TV tuner, 2 pcs)
3	Control Display (CD)	4	Audio system controller (ASK)
5	Mid-range loudspeakers and tweeters:	6	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")
7	Woofers	8	Video module (VM)
9	DVD changer (DVDC)	10	Controller (CON)

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Fig. 34: Legend For Inputs/Outputs Block Diagram - E65, E66 (Television In Front Without Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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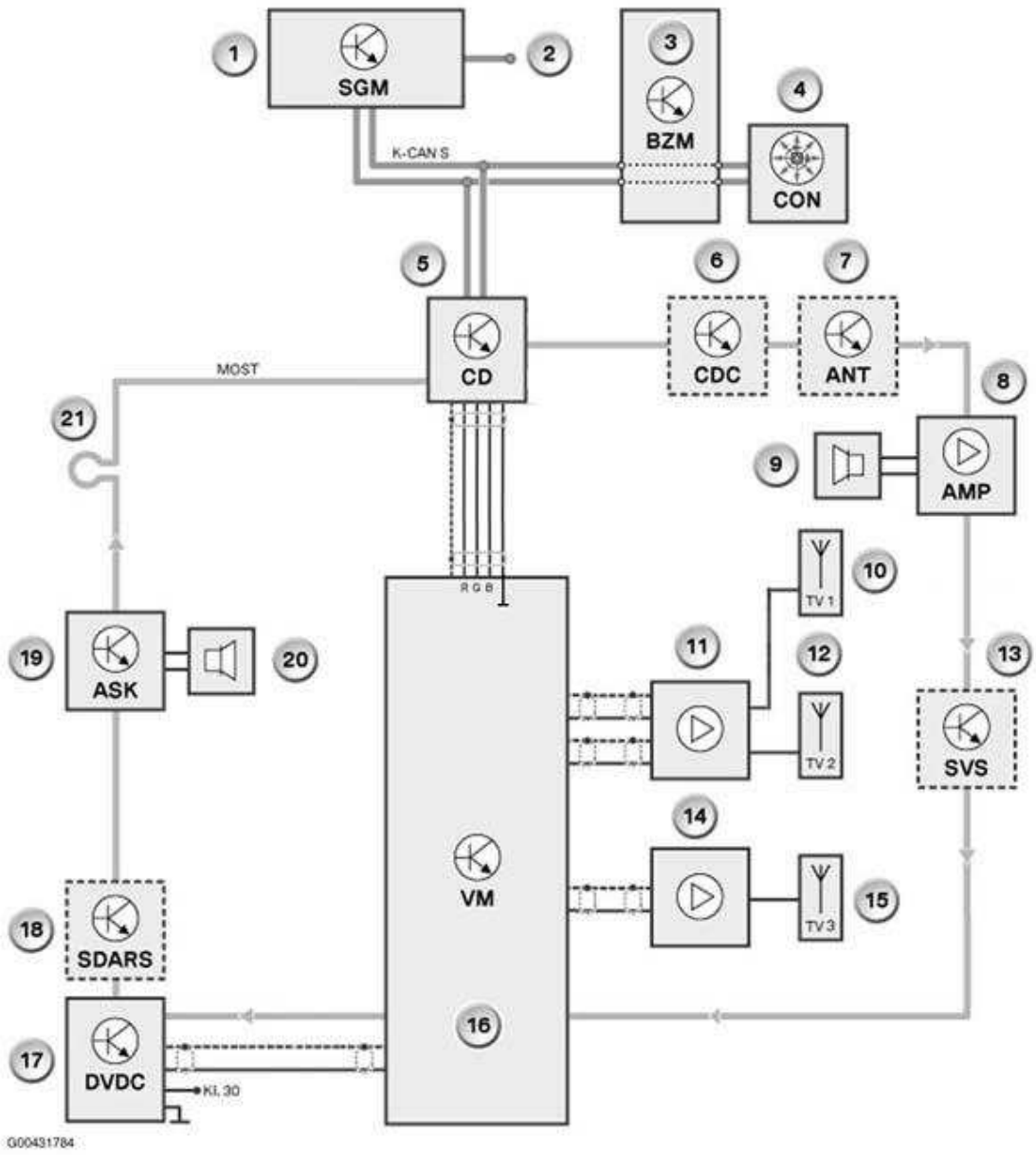


Fig. 35: System Circuit Diagram - E65, E66 (Television In Front Without Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Controller (CON)	2	Safety and gateway module (SGM)
3	Diagnosis lead	4	Control display (CD)
5	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")	6	Woofers
7	TV aerial 1 (TV 1)	8	Aerial amplifier (TV tuner, 2 pcs. in 1 housing)
9	TV aerial 2 (TV 2)	10	Aerial amplifier (TV tuner)
11	TV aerial 3 (TV 3)	12	2 coaxial cables with screening
13	Coaxial cable with screening	14	Video module (VM 5 Hybrid Drive, for analogue and digital television. Please refer to enclosure headed "Video module")
15	DVD changer (DVDC)	16	Audio system controller
17	Mid-range loudspeakers and tweeters:	18	MOST port
Kl. 30	Terminal 30 (power supply)	K-CAN S	CAN SYSTEM body
MOST	Media-Oriented Systems Transport (arrow indicates direction of light in MOST)	RGB	Red-green-blue (RGB wire with screening)

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Fig. 36: Legend For System Circuit Diagram - E65, E66 (Television In Front Without Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

E65, E66 - System Overview Of TV In Front With Navigation System

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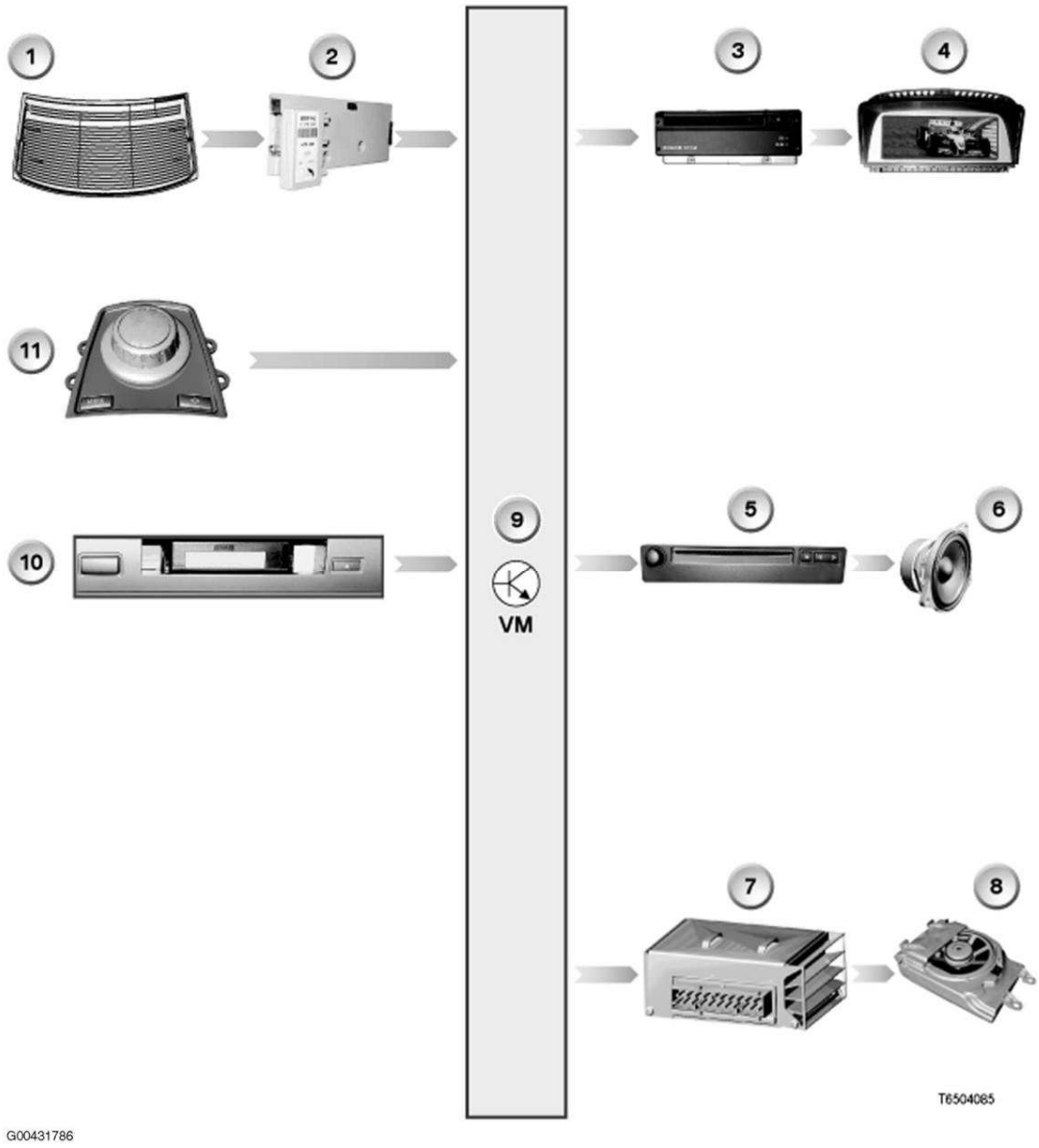


Fig. 37: Inputs/Outputs Block Diagram - E65, E66 (Television In Front With Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	TV aerial in rear window	2	Aerial amplifier (TV tuner)
3	Control unit for navigation system (NAV)	4	Control display (CD)
5	Audio system controller (ASK)	6	Mid-range loudspeakers and tweeters:
7	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")	8	Woofers
9	Video module (VM)	10	DVD changer (DVDC)
11	Controller (CON)		

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Fig. 38: Legend For Inputs/Outputs - E65, E66 (Television In Front With Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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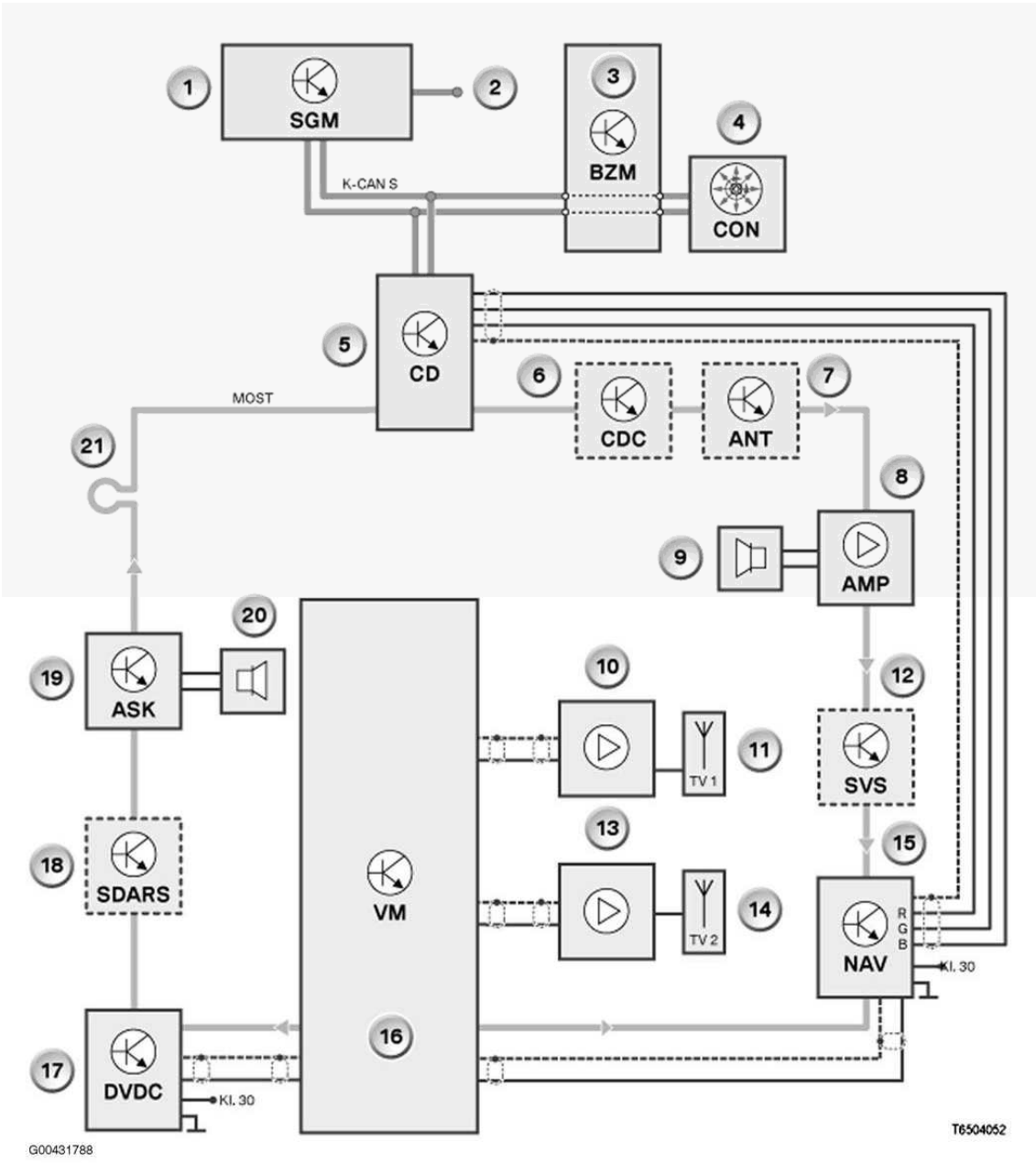


Fig. 39: System Circuit Diagram - E65, E66 (Television In Front With Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Controller (CON)	2	Safety and gateway module (SGM)
3	Diagnosis lead	4	Control Display (CD)
5	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")	6	Woofers
7	Navigation system (NAV)	8	Coaxial cable
9	Aerial amplifier (TV tuner)	10	TV aerial 1 (TV 1)
11	Coaxial cable	12	Aerial amplifier (TV tuner)
13	TV aerial 2 (TV 2)	14	Video module (VM)
15	DVD changer (DVDC)	16	Audio system controller (ASK)
17	Mid-range loudspeakers and tweeters:	18	MOST port
K-CAN S	CAN SYSTEM body	Kl. 30	Terminal 30 (power supply)
MOST	Media-Oriented System Transport (arrow shows direction of light in MOST)	RGB	Red-green-blue (RGB wire with earth wire and screening)

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Fig. 40: Legend For System Circuit Diagram - E65, E66 (Television In Front With Navigation System)
Courtesy of BMW OF NORTH AMERICA, INC.

E65, E66: System Overview Of Television In Front And Rear

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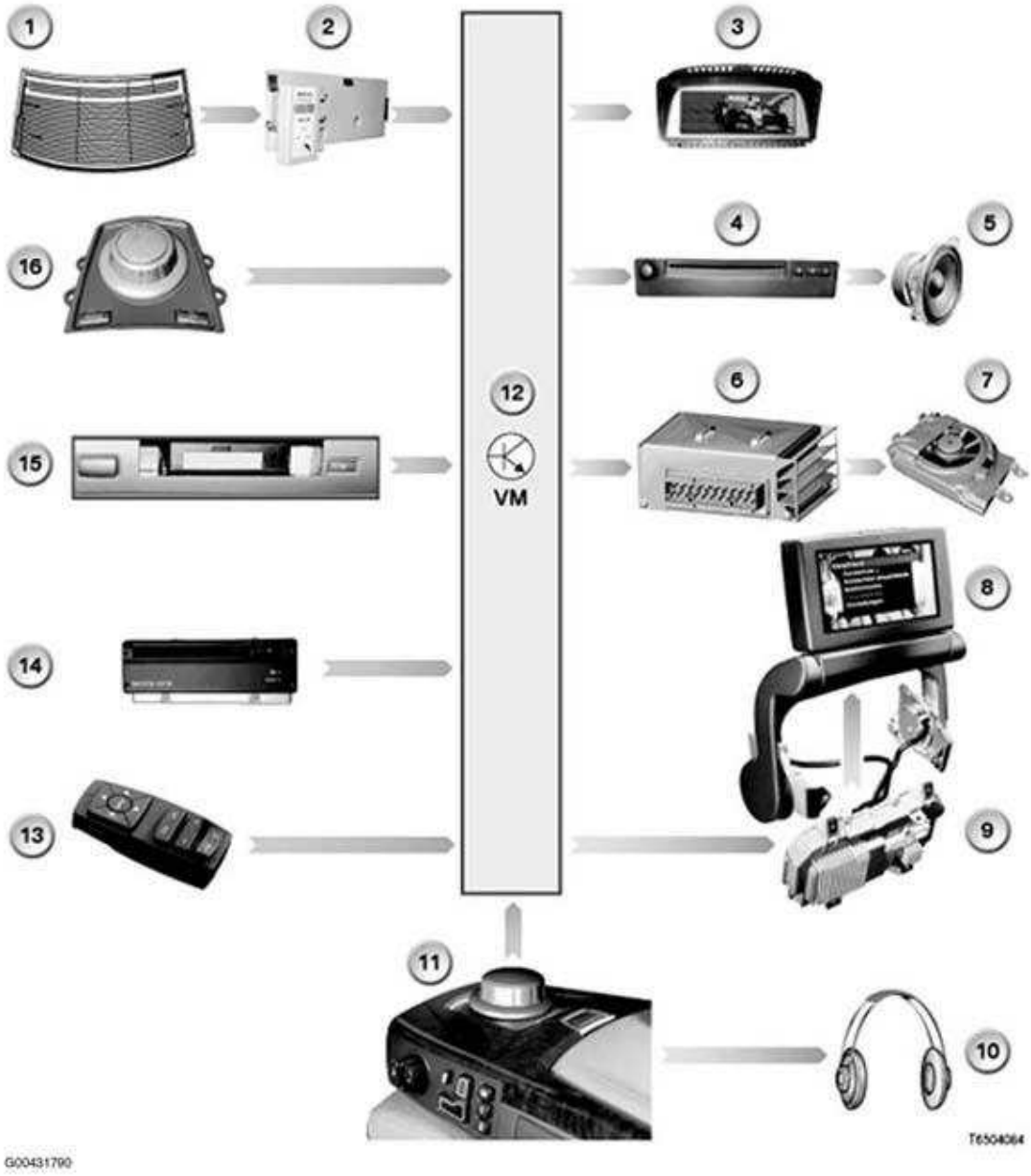


Fig. 41: Inputs/Outputs Block Diagram - E65, E66 (Television In Front And Rear)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	TV aerial in rear window	2	Aerial amplifier (TV tuner, 3 aerial amplifiers in 2 housings)
3	Control Display (CD)	4	Audio system controller (ASK)
5	Mid-range loudspeakers and tweeters:	6	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")
7	Woofers	8	Rear display (FD)
9	Rear display control unit (SG-FD)	10	Headphones
11	Rear compartment centre armrest control centre (BZMF) with rear controller (FCON)	12	Video module (VM)
13	Remote control for set-top box (only if digital television reception has been retrofitted)	14	Navigation system (NAV), if fitted
15	DVD changer (DVDC)	16	Controller (CON)

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Fig. 42: Legend For Inputs/outputs - E65, E66 (Television In Front And Rear)
Courtesy of BMW OF NORTH AMERICA, INC.

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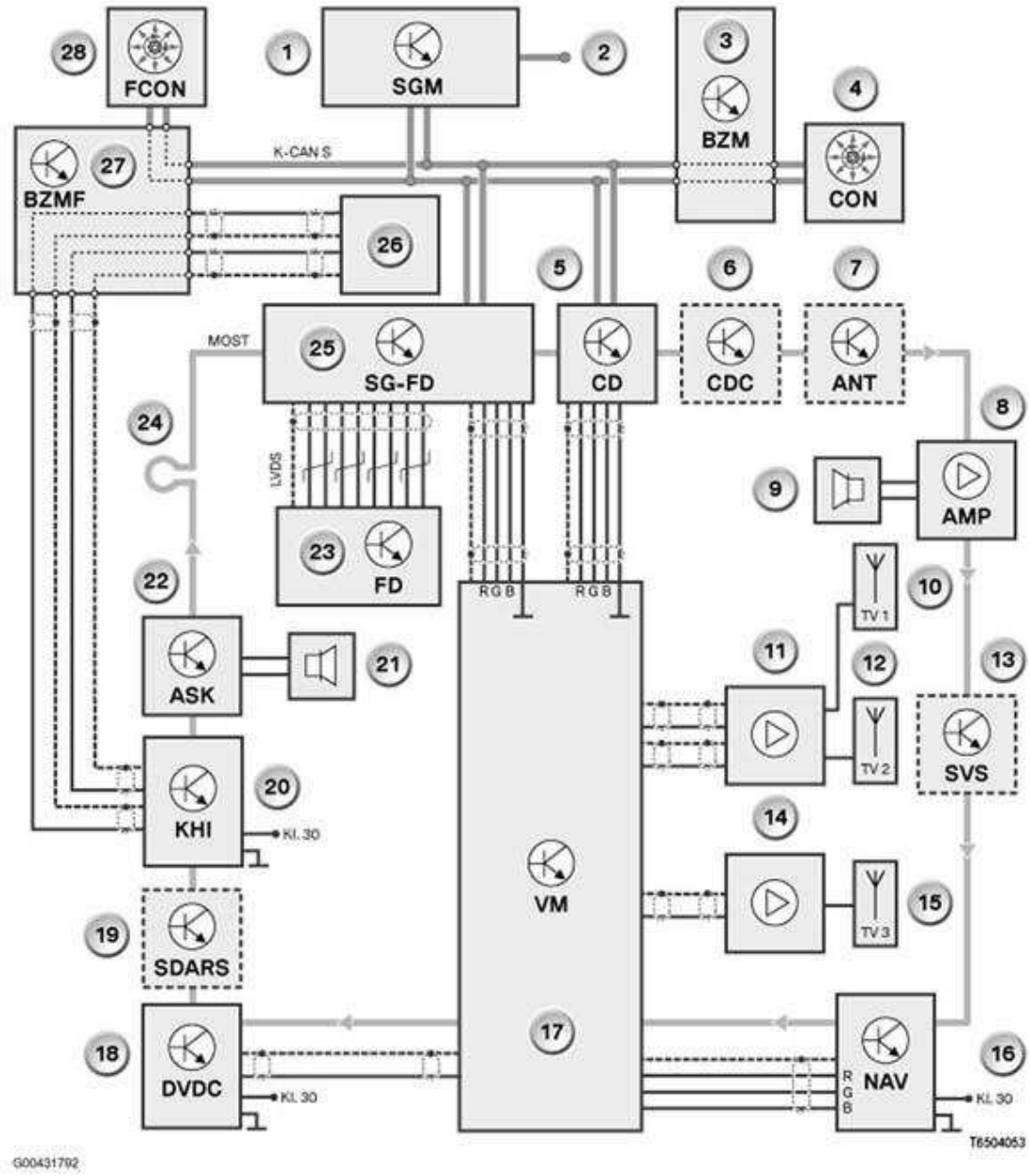


Fig. 43: System Circuit Diagram - E65, E66 (Television In Front And Rear)
Courtesy of BMW OF NORTH AMERICA, INC.

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Key	Explanation	Key	Explanation
1	Controller (CON)	2	Safety and gateway module (SGM)
3	Diagnosis lead	4	Rear controller (FCON)
5	Control centre, rear compartment centre armrest (BZMF)	6	Rear display control unit (SG-FD)
7	Control Display (CD)	8	Headphones connector module
9	Woofers	10	Amplifier (AMP) The illustration shows the TOP-HiFi amplifier ("LOGIC 7")
11	Headphone interface (KHI)	12	TV aerial 1 (TV 1)
13	Aerial amplifier (TV tuner, 2 pcs. in 1 housing)	14	TV aerial 2 (TV 2)
15	Aerial amplifier (TV tuner)	16	TV aerial 3 (TV 3)
17	2 coaxial cables with screening for the two aerial amplifiers in housing	18	Coaxial cable wire with screening
19	Navigation system (NAV), if fitted	20	Video module (VM)
21	DVD changer (DVDC)	22	Audio system controller (ASK)
23	Mid-range loudspeakers and tweeters:	24	Rear display (FD)
25	MOST port		
K-CAN S	CAN SYSTEM body	Kl. 30	Terminal 30 (power supply)
LVDS	Low Voltage Differential Signalling	MOST	Media-Oriented Systems Transport (arrow indicates direction of light in MOST)
RGB	Red-green-blue (RGB wire with earth wire and screening)		

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Fig. 44: Legend For System Circuit Diagram - E65, E66 (Television In Front And Rear)
Courtesy of BMW OF NORTH AMERICA, INC.

BRIEF DESCRIPTION OF COMPONENTS

The following components supply signals or data for the television:

TV Aerial

The TV aerial receive the signals for the television.

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2 or 3 TV aerials are used as follows for the best possible TV reception under varying reception conditions:

- E60, E61, E63, E64 - Television in front, digital and analogue 2 TV aerials
- E65, E66 without navigation system: Television in front, digital and analogue 3 TV antennae
- E65, E66: Television in front and rear, analogue: 2 TV aerials
- E65, E66: Television in front and rear, analogue and digital: 3 TV aerials

2 TV aerials are used at all times to guarantee optimum reception.

The TV aerials are in the rear window. The heating areas for the rear-window heater are also used as TV aerials.

MOST port

Control units for the television are programmed and encoded via the MOST port.

Aerial Amplifier

There are always 2 aerial amplifiers (TV tuners) installed.

On equipment versions with 3 TV aerials, 2 TV aerials are amplified by one aerial amplifier. One more TV aerial is amplified by the 2nd aerial amplifier.

The aerial amplifiers are to the right and left of the rear window.

The aerial signals are transmitted to the video module via coaxial cables.

Diagnosis Lead

Control units for the television are diagnosed via the diagnosis lead.

AMP: Amplifier

NOTE: ***The following control units are involved in the television system (in alphabetical order):***

The amplifier issues the audio signals to the loudspeakers.

The following amplifier is fitted, depending on equipment variant:

- HiFi amplifier without AMP control unit
- TOP-HiFi amplifier with AMP control unit:

  This amplifier belongs to the "TOP-HiFi amplifier" option (Logic 7).

  The TOP-HiFi amplifier is a control unit in the MOST network.

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The audio signals are transmitted to the TOP-HiFi amplifier via the MOST bus.

ASK: Audio System Controller

> E65, E66

The audio system controller controls the sound.

The audio system controller is a control unit in the MOST network.

BZMF: Control centre, rear compartment centre armrest

> E65, E66

The rear compartment centre armrest control centre controls the headphones.

The BZMF is a control unit in the K-CAN system.

CCC: Car Communication Computer

> E60, E61, E63, E64

The Car Communication Computer controls the information and communication systems.

Depending on the equipment and national version, the CCC processes RGB signals or FBAS signals (RGB: red-green-blue; FBAS: Composite Video Burst Synchronisation).

The CCC converts the analogue picture signals into digital LVDS signals (LVDS: Low Voltage Differential Signalling). The LVDS signals are transmitted to the screen via a special LVDS data wire (monitor is the CD or the CID).

The CCC is a control unit in the MOST network.

For more information, please refer to SI Technology bulletin (SBT) 84 06 03 053. Refer to **CAR COMMUNICATION COMPUTER (CCC) E60, E61, E64, E65** .

CD: Control Display

> E65, E66

The Control Display is the screen for the television and other information and communication systems (e.g. navigation system).

The CD is a control unit in the MOST network.

CID: Central Information Display

> E60, E61, E63, E64

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The Central Information Display is the screen for the television and other information and communication systems (e.g. for the navigation system).

The CID is a control unit on the K-CAN.

For more information, please refer to SI Technology bulletin (SBT) 62 01 03 027. Refer to **iDRIVE, CENTRAL INFORMATION DISPLAY AND CONTROLLER E60, E61, E63, E64, E87, E90, E91** .

CON: Controller

The controller is integrated in the centre console switch centre (BZM). The CON is the operating unit and the control unit for operating the screen (Control Display or Central Information Display, see below).

The controller is a control unit on the K-CAN system or K-CAN

(K-CAN-S for E65, E66; K-CAN for E60, E61, E63, E64).

For more information, please refer to SI Technology bulletin (SBT) 62 01 03 027. Refer to **IDRIVE, CENTRAL INFORMATION DISPLAY AND CONTROLLER E60, E61, E63, E64, E87, E90, E91** .

DVD Changer

> E65, E66

The E65 and E66 also have a DVD changer (DVDC). The films on DVD use the components and software of the television.

FCON: Rear Compartment Controller

> E65, E66

The rear compartment controller is part of the "Rear seat area entertainment" option.

The rear compartment controller is integrated into the rear compartment centre armrest control centre (BZMF).

The rear compartment controller is the operating unit and control unit for operating the rear display.

The rear compartment controller is a control unit on the K-CAN system

Signal path when operating the FCON:

FCON -> K-CAN SYSTEM -> BZMF -> K-CAN SYSTEM -> SG-FD -> VM.

KHI: Headphone Interface

> E65, E66

The headphones interface is part of the "Rear seat area entertainment" option.

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The headphones interface transmits audio data to the headphones connection module.

The headphones interface is a control unit in the MOST network.

NAV: Navigation System

The navigation system is important for the equipment variant "Television in front" (E60, E61, E63, E64, E65, E66).

With the equipment variant "Television in front", the NAV control unit works as an RGB decoder:

The navigation system converts FBAS signals into RGB signals.

The navigation system is a control unit in the MOST network.

SG-FD: Rear Display Control Unit

> E65, E66

The rear compartment controller control unit is only provided with the option "Rear seat area entertainment".

The SG-FD is installed beneath the rear display.

The SG-FD is a control unit on the K-CAN system

The SG-FD converts the image signal into the screen display on the rear display: e.g. RGB signals into LVDS signals.

The SG-FD is actuated by the video module.

Signal path: VM -> RGB wire -> SG-FD -> LVDS data wire -> FD

SGM: Safety And Gateway Module

The safety and gateway module is the data interface between the K-CAN or K-CAN system and the diagnosis cable.

The control units are diagnosed via the SGM.

VM: Video module

The video module is the central receiver unit for the picture signals from the TV aerials. In addition, the video module is a selector switch for the video sources.

- The video module is the master control unit for the television.
- The video module edits the picture signals from the TV aerials and from the DVD drive or DVD changer.

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The video module is a control unit in the MOST network.

The video module (VM) is the master control unit for the television.

Installation Location

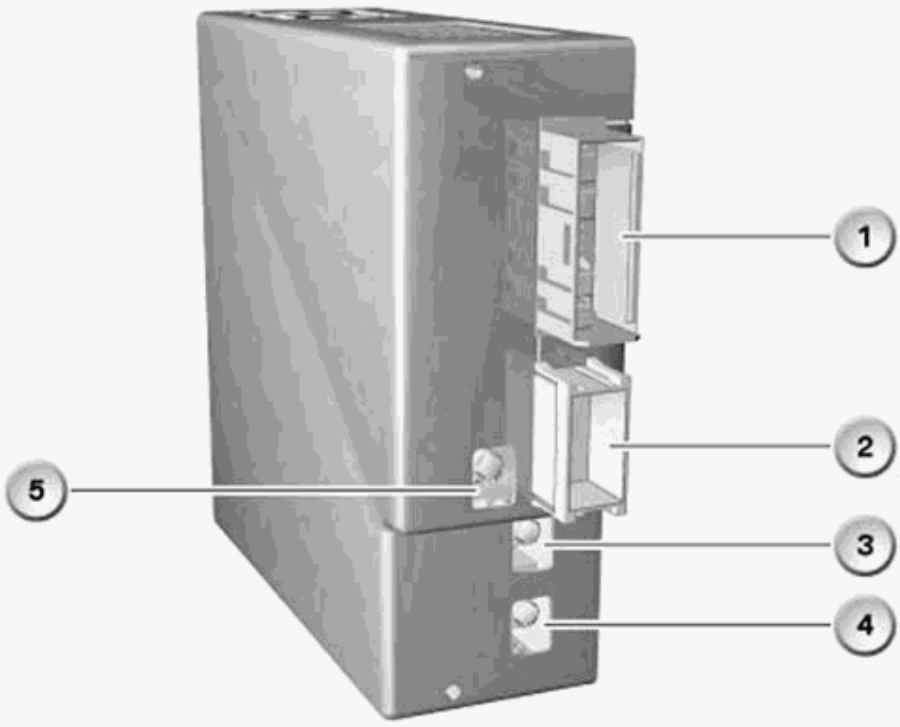
Video module is fitted at the rear left in the luggage compartment.

Construction

The video module comprises the following components:

- 2 Or 3 Aerial Connectors
- TV Tuner
- 2 Large Connectors
- Electronic Circuitry For Signal Processing

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Key	Explanation	Key	Explanation
1	Connector X18803 for MOST, power supply and outputs	2	Connector X18804 for image signal inputs, e.g. on JNAV or DVDC (JNAV: Japan navigation system; DVDC: DVD changer)
3	Aerial connector	4	Aerial connector
5	Aerial connector		

G00431775

Fig. 45: Identifying Video Monitor
Courtesy of BMW OF NORTH AMERICA, INC.

The illustration shows the video module on the E65, E66 for digital and analogue television in the front and rear. The video module with Japan navigation system has a different housing and different aerial inputs (VM5 RGB). For details of the classification of the equipment variants for video modules, see below.

Aerial Connector

Depending on the equipment variant, the following aerial connectors may be fitted:

On vehicles with television in the front and rear, the video module has 2 aerial inputs.

The video module has 3 aerial input with the following equipment variants:

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- E65, E66: with analogue and digital television in the front and rear
- E65, E66: Television in front without navigation system

These 3 aerial inputs use the following aerial connectors:

- Aerial connector FAKRA E, green: TV 1 with signal and screening (item "3" in illustration)
- Aerial connector FAKRA F, brown: TV 2 with signal and screening (item "4" in illustration)
- Aerial connector FAKRA F, pink: TV 3 with signal and screening (equipment variant television in front and rear; this connector is shown as item "5" in the illustration)

FAKRA is the name of a standard. FAKRA stands for "Fachausschuss Kraftfahrzeuge" (technical committee for motor vehicles).

The video module also receives TV signals if only one aerial is working. However, signal processing will then be restricted.

Aerial Amplifier

Each aerial amplifier (TV tuner) is connected to its own aerial input.

- Vehicles with television in the front: The video module has 2 aerial amplifiers.
- Vehicles with television in the front and rear: The video module has 3 aerial amplifiers in 2 housings.

The aerial amplifiers work as follows:

Each aerial amplifier is independent of the other aerial amplifiers.

The aerial amplifiers are flexibly used as follows:

- Flexible reception: Depending on reception conditions, each aerial amplifier is able to receive a TV program in the foreground. The best reception quality is then used.
- Flexible background search: An aerial amplifier conducts a background search to find a new frequency for the current TV station. The other aerial amplifier receives the current TV program.

Each aerial amplifier is able to search for new frequencies. This means that the frequency range is scanned as quickly as possible. The list of stations is thus kept as current as possible. Alternative frequencies for the TV program selected are kept on standby.

2 Large Connectors

Depending on equipment variant, the two large connectors have different pin assignments:

- Pin assignment of video module for television in front: X18803 and X18804
- Pin assignment of video module for television in front and rear: X18803 and X18804

Television In Front:

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PIN ASSIGNMENT X18803, 18+2-PIN WITH MOST, ENCODING C (BLUE)

Pin	Type	Description
1	M	Terminal 31
2	-	-
3	-	-
4	A	Composite Video Burst Synchronisation (FBAS), output
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	V	Terminal 30
12	A	Screening 1: The wire for the image signal to the Car Communication Computer (CCC) has additional screening (for improved electromagnetic compatibility).
13	A	Composite Video Burst Synchronisation (FBAS), terminal 31, earth
14	-	-
15	-	-
16	-	-
17	A	Screening 2: The wire for the image signal to the Car Communication Computer (CCC) has additional screening (for improved electromagnetic compatibility).
18	-	-
19	-	-
20	-	-
MOST	E/A	2 pins

A = Output
E/A = Input/output
M = Earth
V = Supply voltage
For current specifications regarding pin assignment, please refer to BMW diagnosis system.

PIN ASSIGNMENT X18804, 18-PIN, ENCODING B (NATURAL, I.E. COLOURLESS)

Pin	Type	Description
1	-	-
2	-	-
3	E	DVD changer (DVDC), Composite Video Burst Synchronisation (FBAS)
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-

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10	-	-
11	M	DVD changer (DVDC), Composite Video Burst Synchronisation (FBAS), terminal 31, earth
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	-	-
18	-	-

E = Input
M = Earth
For current specifications regarding pin assignment, please refer to BMW diagnosis system.

Television In Front And Rear:

PIN ASSIGNMENT X18803, 18-PIN WITH MOST, ENCODING C (BLUE)

Pin	Type	Description
1	M	Terminal 31
2	-	-
3	A	Red 1, 75 ohm
4	A	Green 1, 75 ohm
5	A	Blue 1, 75 ohm
6	M	Red-green-blue 2
7	-	-
8	-	-
9	-	-
10	-	-
11	V	Terminal 30
12	A	Screening 1: The wire for the image signal to the Car Communication Computer (CCC) has additional screening (for improved electromagnetic compatibility).
13	M	Composite Video Burst Synchronisation (FBAS), terminal 31, earth
14	A	Red 2, 75 ohm
15	A	Green 2, 75 ohm
16	A	Blue 2, 75 ohm
17	A	Screening 2: The wire for the image signal to the Car Communication Computer (CCC) has additional screening (for improved electromagnetic compatibility).
18	-	-
19	-	-
20	-	-
MOST	E/A	2 pins

A = Output

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E/A = Input/output
M = Earth
V = Supply voltage
For current specifications regarding pin assignment, please refer to BMW diagnosis system.

PIN ASSIGNMENT X18804, 18-PIN, ENCODING B (NATURAL, I.E. COLOURLESS)

Pin	Type	Description
1	-	-
2	-	-
3	E	DVD changer (DVDC), Composite Video Burst Synchronisation (FBAS)
4	-	-
5	E	Red-green-blue, terminal 31
6	-	-
7	-	-
8	E	AUX-In connection (if fitted)
9	-	-
10	-	-
11	M	DVD changer (DVDC), Composite Video Burst Synchronisation (FBAS), terminal 31, earth
12	E	Red, 75 ohm
13	E	Green, 75 ohm
14	E	Blue, 75 ohm
15	-	-
16	-	-
17	E	AUX-In connection, Composite Video Burst Synchronisation (FBAS), terminal 31, earth (if fitted)
18	E	Synchronisation pulse from Japan navigation system (if fitted): The JNAV has an external synchronisation pulse. This synchronisation pulse is transmitted by the JNAV to the video module. The current video modules (VM hybrid) no longer need this synchronisation pulse.

E = Input
M = Earth
For current specifications regarding pin assignment, please refer to BMW diagnosis system.

How It Works

The following functions are described:

- Power Supply
- Various Equipment Variants (List)
- Video Modules And Aerial Inputs

Power Supply A cycled current supply (switching power unit) provides power. The power unit creates very little power loss. Voltage peaks are avoided by switching on and off (hence the name "switching power unit").

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In addition, a power supply is also created in standby mode.

Various Equipment Specifications Depending on the model series and equipment variant, the video module can work in different ways. In general, the following as described:

- "Analogue": The video module is only suitable for analogue television.
- "Hybrid": The video module is suitable for analogue and digital television.
- "Drive": The video module is suitable for watching television while the vehicle is moving. It is only possible to watch television in the rear while the vehicle is moving.
- "FBAS": The video module is connected to an FBAS wire. Inputs and outputs have FBAS wires. This video module is always hybrid, i.e. suitable for analogue and digital television.
- "RGB": The video module is connected to RGB wires. This video module supports analogue television.

To date, only analogue video modules have been fitted. The analogue video modules work either on the basis of FBAS or on the basis of RGB (FBAS: Composite Video Burst Synchronisation; RGB: red-green-blue).

ANALOGUE VIDEO MODULES: HOW IT WORKS AND MODEL SERIES

How it works	E name	E60, E61, E63, E64	E65, E66	Japan E60, E61, E63, E64	Japan E65, E66
RGB	VM5 RGB	0	0	1 with JNAV	1
FBAS	VM5 ECE	1	1	0	0
DRIVE (with RGB outputs)	VM5 DRIVE	0	1	0	1 With TV in rear and as video switch with rear seat area entertainment with external navigation

1: fitted
0: not fitted
E name: development code

Since 09/2004, hybrid video modules have been fitted in countries with DVB-T (in model series E60, E61, E63, E64, E65, E66). Hybrid video modules process analogue and digital television. The hybrid video modules also work on the basis of either FBAS or RGB.

HYBRID VIDEO MODULES: HOW IT WORKS AND MODEL SERIES

How it works	E name	E60, E61, E63, E64	E65, E66	Japan E60, E61, E63, E64	Japan E65, E66
FBAS	VM hybrid FBAS	1	1 Without TV in rear	0	0
DRIVE (RGB)	VM hybrid DRIVE	0	1 with TV in rear	0	0

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			or with TV in front without NAV		

1: fitted
0: not fitted
E name: development code

NOTE: ***In Japan there is only analogue television.*** **Japan does not have DVB-T. For this reason, an analogue video module is fitted for television in the front in Japan (on RGB basis). With equipment variant television in front and rear, the video module VM5 DRIVE is fitted in Japan (analogue video module on RGB basis).**

Video Modules And Aerial Inputs All video module have 2 aerial inputs, except: video module 5 hybrid DRIVE.

Monitors: Control Display or Central Information Display

NOTE: **The following components are controlled:**

> E65, E66: Control Display

> E60, E61, E63, E64: Central Information Display

FD: Rear Display

> E65, E66

The rear display is part of the "Rear seat area entertainment" option.

The rear display is the monitor for the television in the rear.

The rear display is mounted on the centre console between the driver's and front passenger's seats.

The rear display is actuated by the SG-FD (rear display control unit, via the LVDS data wire).

The rear display is a control unit on the K-CAN system

Loudspeakers

The following loudspeakers are actuated for television sound output:

- Tweeters and medium-range loudspeakers: The loudspeakers are actuated by the CCC or ASK.

  (CCC: Car Communication Computer: E60, E61, E63, E64)

  (ASK: audio system controller: E65, E66)

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- Woofers: If an amplifier (AMP) is fitted (HiFi amplifier or TOP-HiFi amplifier), the woofers are actuated by the amplifier.

KHA: Headphones Connector Module

> E65, E66:

The headphones connector module is integrated into the rear compartment centre armrest control centre.

The headphones are connected to the KHA.

FBAS Wire

NOTE: The following wires are important:

FBAS: Farbbild-Austast-Synchronsignal,

English CVBS: Composite Video Burst Synchronisation

> E60, E61, E63, E64:

The FBAS wire connects the video module to the Car Communication Computer.

The FBAS wire consists of 2 wires:

- One wire is used to transmit all three 3 RGB signals (red-green-blue) together.

  The synchronisation pulse (for a sharp TV picture) are also transmitted on the wire for RGB signals.

- The other wire is used for screening and earthing.

Coaxial cable

The coaxial cables transmit high-frequency signals, e.g. between the aerial amplifier and the video module (VM):

- E60, E61, E63, E64, E65, E66: between the video module and the aerial amplifier
- E65, E66: between the DVD changer and video module

Construction of coaxial cable:

- Inner conductor ("core"), insulated
- The outer conductor forms a mantle around the inner conductor

LVDS Data Wire

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LVDS stands for "Low Voltage Differential Signalling".

There is always a LVDS data wire between the display control unit and the monitor:

- E60, E61, E63, E64:

  Between the Car Communication Computer and Central Information Display

- E65, E66:

  Between the rear display control unit and the rear display

LVDS is a special technology for fast and secure data transmission:

There are 2 wires for each signal. The signal is transmitted positively on one wire, negatively on the other (inverted). This means that each pair of wires is electrically neutral.

Interference from outside has **no** effect on the signal transmission: such interference affects both wires equally. The signal information is thus unaffected. This is because:

The control unit processes the difference between the positive and negative signals. This difference remains unchanged even in the event of interference from outside.

The LVDS data wire for the television consists of the following wires:

- 2 wires for red
- 2 wires for green
- 2 wires for blue
- 2 earth wires
- Screening

The synchronised pulses are transmitted on the wire for image signals.

RGB Wire

> E60, E61, E63, E64: between the video module and the CCC

> E60, E61, E63, E64: between the NAV and CD

> E65, E66: between the video module and the CD

> E65, E66: between the video module and SG-FD

The RGB wire has 3 wires for image signals: red-green-blue. The synchronised pulse is transmitted on the wire for the green signal.

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The RGB wire is screened. The screening carries no current.

In addition, the RGB wire has its own earth wire for improved electromagnetic compatibility. The earth wire conducts current.

MOST Bus

The MOST bus connects the control units for the vehicle's information and communication systems. These control units are programmed via the MOST port.

K-CAN or K-CAN SYSTEM: Body CAN or Body CAN SYSTEM:

> E60, E61, E63, E64: K-CAN

> E65, E66: K-CAN SYSTEM

For more information, please refer to SI Technology bulletin (SBT) 61 02 03 015]**BUS DIAGNOSIS ALL MODELS FROM E60** .

SYSTEM FUNCTIONS

The video module comprises the following functions:

- Digital and analogue television
- Television when the vehicle is stationary (front)
- Television when the vehicle is in motion (rear compartment only)
- Television reception
- Image buildup
- Sound reception
- Transmission of image signals in the vehicle
- Sound output
- Mute
- Station selection
- Aerial diversity for TV aerials TV 1, TV 2 and TV 3 (only E65, E66 with television in front and rear):

  Aerial diversity for TV aerials is not a separate component, but rather a software component within the video module.

- Video switch

NOTE: Digital television: Basic principles and introduction in various countries
This SI Technology bulletin (SBT) describes digital television as used by BMW.
The enclosures also include the following information:

- **Fundamental information about digital television**

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- **An overview of the conversion from analogue to digital television in various countries**

Overview Of E60, E61, E63, E64, E65, E66: Digital Television

This SI Technology bulletin (SBT) principally describes digital television as used by BMW. In addition, the following information is provided:

- Fundamental information: Advantages of and standards for digital television
- An overview of the conversion from analogue to digital television in various countries

Basic Principles Of Digital Television

Advantages of digital television:

- **Number of TV Programs**

  Digital television makes better use of the band-width when broadcasting TV programs than analogue television:

  The digital signals can be transmitted and compressed without loss. Example: A TV picture with 625 lines (PAL) has an uncompressed data transmission rate of 216 Mbit/s.

  With MPEG-2, this TV picture is compressed at least to 8 MBit/s.

  Data compression is variable and dynamic, depending on the content of the TV picture.

  This provides the following possibilities:

  - Multiplex: Several TV stations on one channel:

    Because of the data compression, up to 5 TV stations can be digitally broadcast on a single conventional UHF or VHF channel.

    This transmission is known as "Bouquet".

  - Specification of UHF and VHF channels:
    - VHF channel for television: 48-67 MHz

      VHF: Very High Frequency, frequency range: 30-300 MHz

    - UHF channel for television: 471-860 MHz

      UHF: Ultra High Frequency, frequency range: 300 MHz to 3 GHz

  - Higher transmission quality due to data compression:

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The band-width is used for TV stations with higher resolution (HDTV: High Definition Television, previously only used in Australia).

- **Improved Transmission Performance**

  DVB-T has a better transmission performance than analogue television:

  Digital television is some 10 dB "better" than analogue television. This means that a lower transmission output is needed for the same range.

- **Interference-Free Data Transmission Due To Multipath Reception**

  Analogue television produces "shadows" when a TV program is received more than once (caused by the reflection of the signal): A TV picture appears superimposed on top of the same TV picture, shifted slightly to one side and significantly weaker.

  Multipath reception is useful for digital reception: Even reflected signals are used for building up the picture.

- **Mobility**

  Because digital television is resistant to interference, is also supports mobile reception: Stable reception is possible at speeds of up to 200 km/h under favourable conditions.

- **Universal Coverage Of Large Areas With Single-Frequency Network**

  Several geographically separate TV stations are linked in a single-frequency network (SFN). The single-frequency network functions as follows:

  All TV stations work on the same transmission frequency. The TV stations are synchronised by GPS so that exactly the same information is transmitted to within 100 nanoseconds. Because the information is precisely synchronised, only one frequency is needed for a TV program, even in a large reception area.

- **Loss-Free Recording**

  TV Programs can be stored without loss on CD, PC and laptop.

  Digital television (DVB: Digital Video Broadcasting) has the following standards:
  - DVB-S: Digital television for data transmission via satellite
  - DVB-C: Digital television for data transmission via cable networks
  - DVB-T: Digital television for data transmission via stationary antennae for terrestrial reception (frequency ranges: VHF or UHF).
    - Terrestrial, digital television in USA: Standard for digital television in USA: ATSC (Advanced Television Systems Committee).
    - Terrestrial, digital television in Japan: Standard for digital television in Japan: ISDB (Integrated Services Digital Broadcasting).

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- DVB-H: Digital television for asynchronised transmission onto mobile final devices (handheld units), also terrestrial.

Digital And Analogue Television

Depending on the equipment variant, analogue and/or digital television can be received.

For digital television the DVB-T standard is supported. Only terrestrial reception is possible.

The abbreviation "DVB-T" stands for "Digital Video Broadcasting" - Terrestrial. In other words "DVB-T" means: digital television transmitted via antenna ("terrestrial").

There are two equipment specifications for analogue and digital television:

1. Television when the vehicle is stationary
2. Television when the vehicle is in motion

Television When The Vehicle Is Stationary (Front)

Viewing television in the front is only possible when the vehicle is stationary.

The television is deactivated when the vehicle reaches walking pace. The sound remains unaffected.

Television in the front is available for the following model series:

> E60, E61, E63, E64, E65 and E66

Television When The Vehicle Is In Motion (Rear Compartment Only)

Television in the rear is only available with the model series E65 and E66.

It is also possible to watch television in the rear when the vehicle is in motion.

Television Reception

The analogue television supports the following television standards:

- NTSC: NTSC is most common in North and South America and in Japan. NTSC is an analogue television standard for colour transmission.

  NTSC stands for "National Television Standards Committee".

- PAL: PAL is most common in Europe.

  PAL is also used in Australia and in most African and Asian countries (except for Japan). PAL is common in all countries that **do not have** NTSC and SECAM.

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PAL is an analogue television standard for colour transmission.

PAL is a further development of NTSC. As with NTSC, the TV pictures are transmitted in lines. PAL, however, evens out colour faults.

PAL stands for "Phase Alternating Line".

- SECAM: SECAM is most common in France and Eastern Europe.

  SECAM stands for "Sequentielle Couleur a Memoire", i.e. "sequential colour memory".

Digital television supports data transmission via MPEG.

MPEG stands for "Motion Picture Experts Group". MPEG is the designation of a data compression standard for image signals.

Transmission Of Image Signals In Vehicle

Image signals are transmitted as follows, depending on equipment fitted:

- E65, E66: Television in front:

  Depending on the vehicle's equipment, the video module or the navigation system will transmit the RGB signals to the control unit for the monitor (CD or SG-FD:

  Control Display or rear display control unit):

  If a navigation system is fitted, the navigation system will transmit the RGB signals to the monitor (exception: Japan navigation system)

  The red-green-blue image signals are transmitted via the RGB wire.

  Signal path: Aerial -> Aerial cable -> Aerial amplifier -> Video module (VM) -> FBAS wire -> Navigation system (NAV) -> RGB wire -> CD (Control Display).

  If there is **no** navigation system fitted, the video module will transmit the image signal to the monitor as follows:

  - E60, E61, E63, E64: from the video module through the FBAS wire to the Car Communication Computer (CCC).

    A LVDS data wire transmits the image signal between the CCC and the CID (Central Information Display).

  - E65, E66: From the video module through the RGB wire to the Control Display
- Television in front and rear (E65, E66 only)

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The navigation system transmits its image data to the video module.

The image signals are transmitted between the SG-FD and rear display through a LVDS data wire.

Image Buildup

E60, E61, E63, E64, E65, E66:

The TV picture is built up as follows:

- Colours are made up of individual red, green and blue pixels.
- The TV picture is built up line by line.
- Synchronisation of image signals: For a sharp TV picture, the pixels must be precisely synchronised. The synchronisation works as follows:
  - Horizontal synchronisation defines when a line ends and a new line starts.
  - Vertical synchronisation defines when a new image buildup is to start (in the top left corner.

  A separate electrical pulse is provided for synchronisation: The synchronisation pulse. The synchronisation pulse is transmitted with the green signal (all model series).

Sound Reception

The sound signal is received together with the image signal in the TV signal.

Signal path for sound: Aerial -> Aerial cable -> Aerial amplifier -> Coaxial cable -> Video module -> MOST bus -> Radio or amplifier (AMP) -> Loudspeakers.

The video module processes the sound for the television.

Sound Output

Sound is output in mono or stereo as follows:

- Analogue TV sound in mono:

  The video module receives the analogue TV sound in mono.

  The analogue TV sound is digitalised.

  The video module lays the digitalised signal on both the left and right synchronous channel of the MOST bus.

  The ASK or CCC emit the audio signals to the loudspeakers (via the amplifier, depending on equipment variant).

- Digital TV sound in stereo:

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The digital TV sound is received and emitted in stereo.

Precondition: The TV program is transmitted in stereo.

- 2-channel sound:

  2-channel sound is only available with digital television reception.

  2-channel sound allows, for example, a foreign-language broadcast to be overdubbed in English. With 2-channel sound, the language of the country concerned will be output through the loudspeakers. The other language will be muted.

Depending on the equipment variant, the loudspeakers are actuated by amplifiers are follows:

- HiFi amplifier

  > E60, E61, E63, E64, E65, E66

  The HiFi amplifier actuates the woofers. CCC or ASK actuate the mid-range loudspeakers and the tweeters.

- TOP-HiFi amplifier "Logic 7"

  > E60, E61, E63, E64, E65, E66

  The TOP-HiFi amplifier actuates all loudspeakers.

Mute

If necessary, sound output can be switched between navigation system and television.

The sound signals from the radio and television are muted under the following conditions:

- Telephone call
- Navigation system announcements
- Traffic reports

The CCC or the ASK controls the muting.

Station Selection

The video module manages a list of all the television stations that can currently be received.

This list of stations is shown on the Control Display (CD) or Central Information Display (CID) as follows:

- Where station names for individual TV programmes can be determined, the list starts with the station names arranged in alphanumeric order (e.g. ARD, BR3, SAT1 ...).

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- After this, a list will appear showing the reception channels with unknown station names. This list is also alphanumerically ordered: e.g. CH3, CH7, CH12, ... for Channel 3, Channel 7, Channel 12.

> E65, E66: Front and rear seat television: The list of stations is updated automatically.

> E60, E61, E63, E64 and E65, E66 with television in front: The list of stations is updated manually by selecting "Autostore".

The list of stations is also updated if another entertainment module is selected (e.g. if you change to the radio or CD changer). When the television is called up again the current list of stations is offered automatically.

Aerial Diversity

> E65, E66 Only: television in front and rear, analogue and digital

The "aerial diversity" function is only available with 3 TV aerials.

To ensure optimum reception, these 3 TV antennae work as follows:

- 2 TV aerials receive the required television station.
- 1 TV aerial searches in the background for other transmission frequencies for this television station.

The required television station is received on the transmission frequencies with the highest signal strength.

Aerial diversity works as follows:

If more than one station have the same name when analogue TV is in use, then there are alternative frequencies. e.g. "Television station 1" is being received on 3 different analogue frequencies. In this case the television station is displayed just once.

Aerial diversity automatically selects the best frequency. "Television station 1" is shown in the display.

If, however, a television station is transmitting "Television station 1" analogue on several frequencies and "1st digital" digitally on another frequency, then the display shows the following:

- Aerial diversity combines all frequencies for analogue television.

  The best frequency is selected and displayed. e.g.: "Television station 1".

- However, aerial diversity is **not** able to combine the following TV stations: Analogue reception for "Television station 1" and digital reception for the "1st digital".

  This is because: The video module cannot assign the two different notations and meanings to one another.

This means "Television station 1" appears twice in the list of stations: Once analogue as "Television station 1" and once digitally as the "1st digital".

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Video Switch

The video module switchers between the various video sources, e.g. between television and video.

This function is called "video switch".

OPERATION

The following operations are described:

- Adjusting screen settings
- Selecting television stations
- Updating list of stations

NOTE: ***Please comply with instructions in Owner's Handbook.***
Detailed instructions for the television can be found in the vehicle's Owner's Handbook.

Adjusting Screen Settings

Users can adjust the screen settings for colour, contrast and brightness: Call up the corresponding menu (using the CD and controller on the E65, E66; using the CID and controller on the E60, E61, E63, E64).

The controller controls the monitor settings.

Depending on the equipment specification, the screen setting is processed in the following control units:

- Vehicles with television in the front:

  > E60, E61, E63, E64: Car Communication Computer (CCC)

  > E65, E66:

  For vehicles with a navigation system the screen setting is processed in the control unit for the navigation system (NAV).

  On vehicles **without** navigation system, the video module processes the monitor settings.

- Vehicles with rear display (E65, E66 only): The video module processes the monitor settings.

Selecting Television Stations

- Select country

  (On the Control Display or Central Information Display; CD on E65, E66; CID on E60, E61, E63, E64):

  When a country is selected, the video module will set the correct television standard.

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- Select the required television station from the list of stations.

  The video module administers a list of stations with all receivable television stations. This list is displayed on the CD or CID.

Updating List Of Stations

On vehicles with television in the front, the list of stations is manually updated as follows: Call up "Autostore".

SWITCH-ON CONDITIONS

The television is available from terminal R ON.

NOTES FOR SERVICE STAFF

The following information is available for service staff:

- General information: N/A
- Diagnosis: refer to **E60, E61, E63, E64, E65, E66: TELEVISION DIAGNOSIS** .
- Encoding/programming: N/A
- Car & Key Memory: The last settings made remain stored when the vehicle is shut down. The video module remembers the last TV station selected. The colour settings are also stored (in either the video module or navigation system, depending on equipment variant).

E60, E61, E63, E64, E65, E66: Television Diagnosis

The following information is available for diagnosis on the television:

- Measuring With And Without Adapter
- Check Signal Paths Of FBAS Signal And RGB Signal
- Self-Diagnosis For Aerials And Aerial Amplifiers

Measuring With And Without Adapter

IMPORTANT: Only connect control units to oscilloscope using adapter. If measurements are made without an adapter, the voltage values will be twice as high as they would be with an adapter. The adapter works as a power diplexer.

Measuring Without Adapter

When measuring without an adapter, the second control unit (SG2, e.g. NAV) is disconnected. The signal is only measured using the resistance R. This means that the signal a voltage that is twice as high as it would be if measured with an adapter.

The illustration shows a measurement without adapter.

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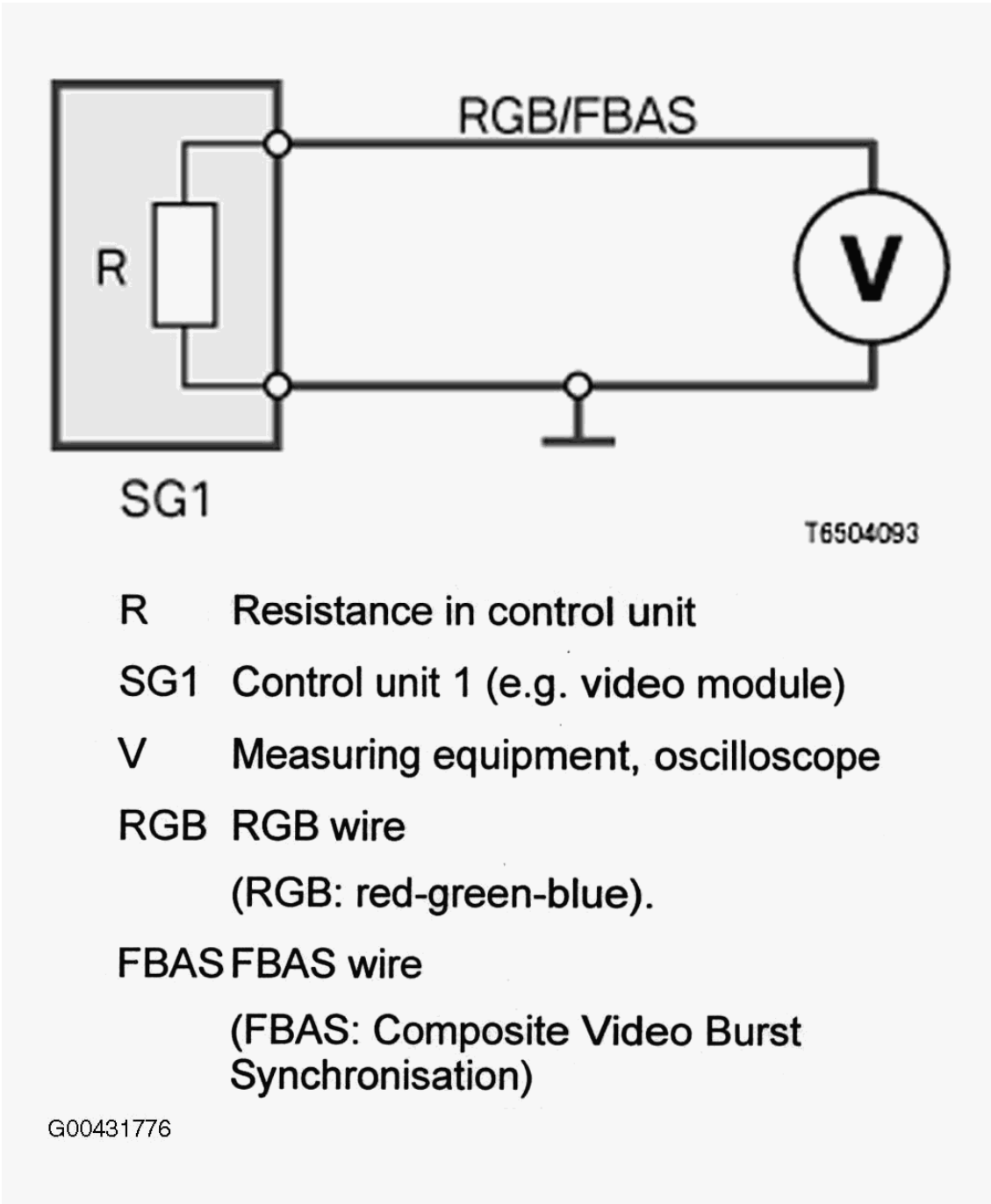
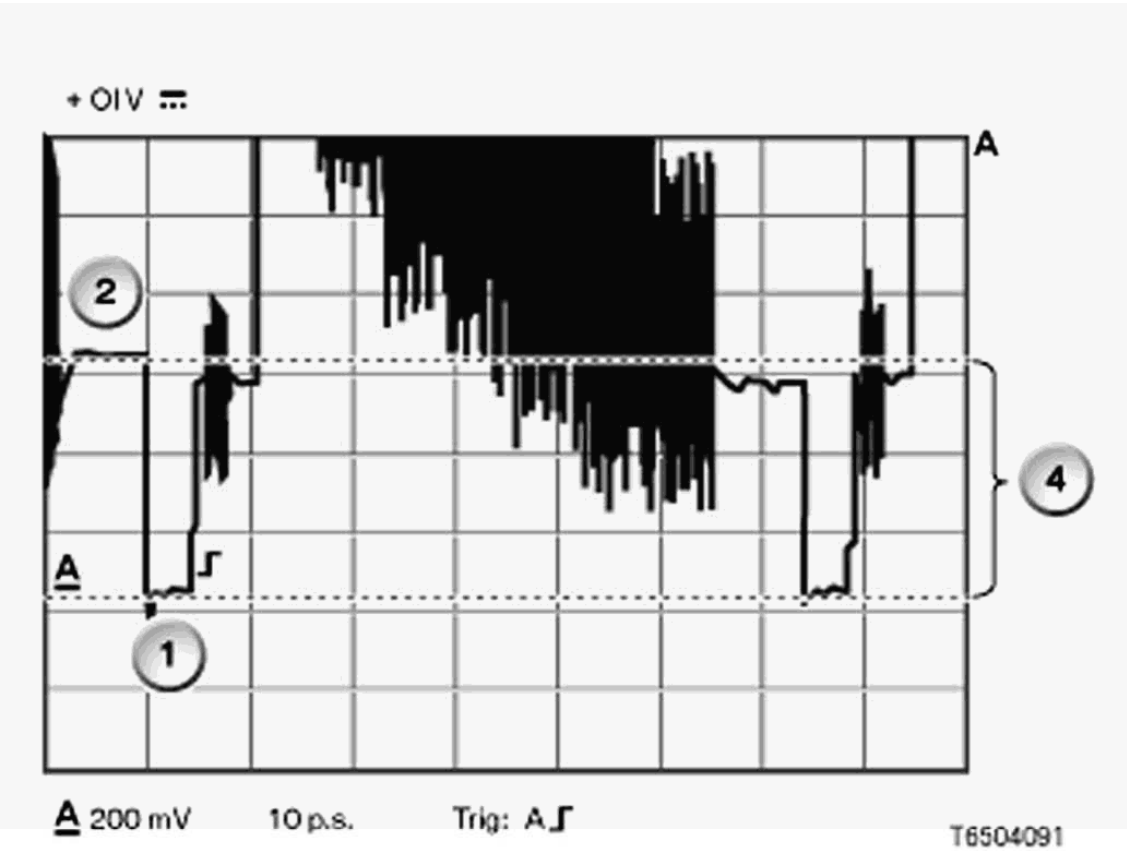


Fig. 46: Measuring Signal Without Adapter
Courtesy of BMW OF NORTH AMERICA, INC.

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... and this is the signal path of an FBAS signal on oscilloscope, measured **without** an adapter:

1. 0 volt
2. 0.6 V measurement **without** adapter

   0.3 V measurement **with** adapter
3. The signal path marked with number 3 is for a measurement taken **without** an adapter at top of the oscillograph.
   For oscillograph for measurement with adapter
4. Voltage between 1 and 2

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Fig. 47: Signal Path Of An FBAS Signal On The Oscilloscope (Measured Without An Adapter)

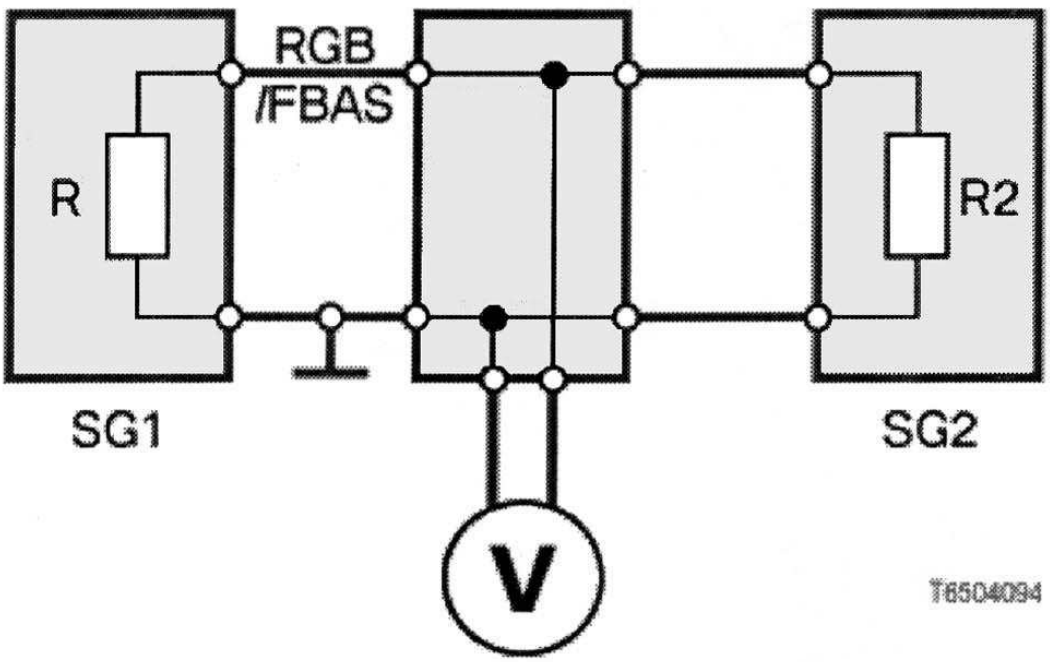
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Courtesy of BMW OF NORTH AMERICA, INC.

Measuring With Adapter

When measuring with an adapter, the second control unit (SG2, e.g. NAV) remains connected. The signal is only measured across the parallel circuit of the two resistances R1 and R2. This means that the signal a voltage that is half that it would be if measured without an adapter.

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R	Resistance in control unit
R2	Resistance on adapter
SG1	Control unit 1 (e.g. video module)
SG2	Control unit 2 in adapter (e.g. NAV)
V	Measuring equipment, oscilloscope
RGB	RGB wire
FBAS	FBAS wire

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Fig. 48: Measuring Signal With Adapter
Courtesy of BMW OF NORTH AMERICA, INC.

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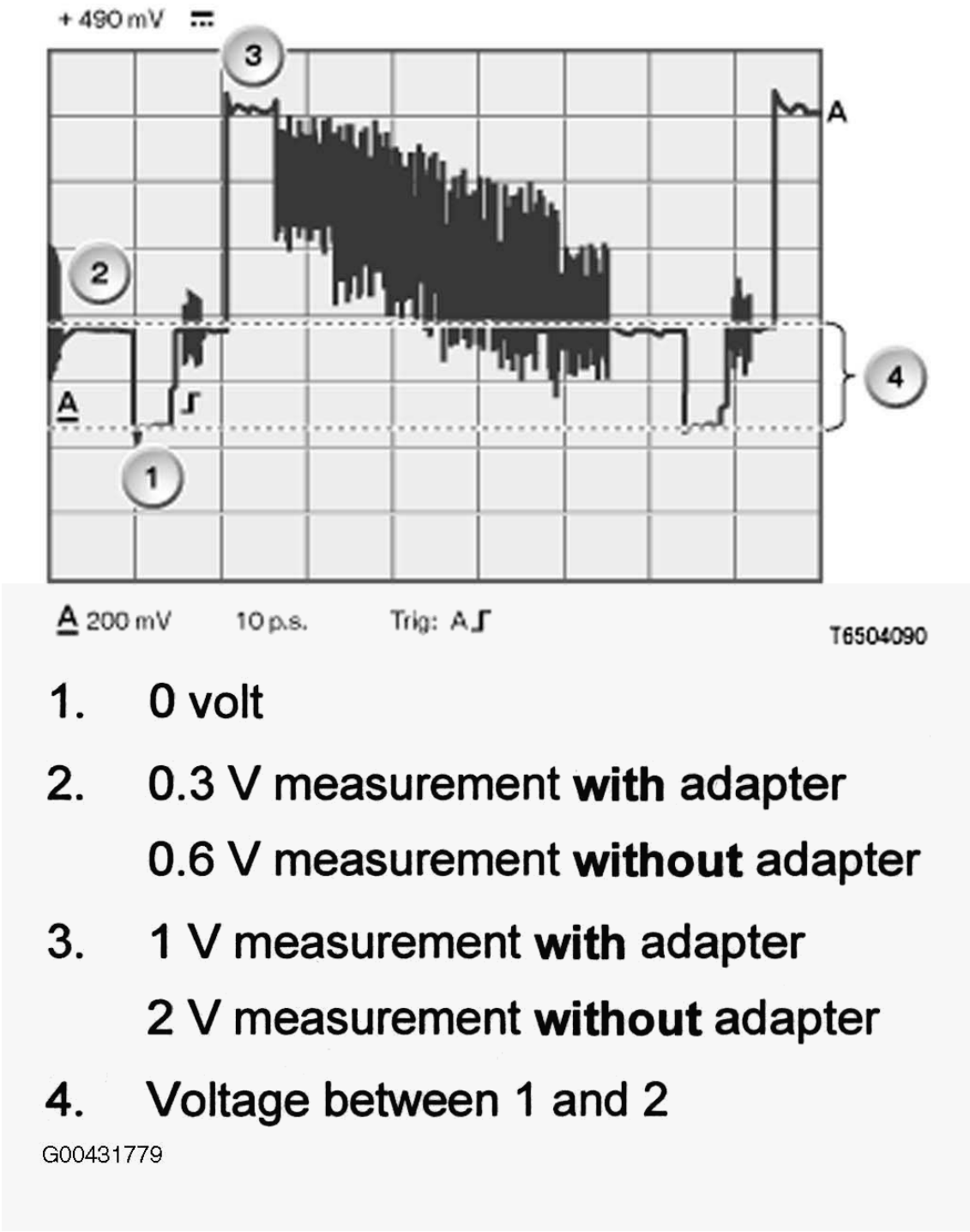


Fig. 49: Signal Path Of An FBAS Signal On The Oscilloscope (Measured With An Adapter)
Courtesy of BMW OF NORTH AMERICA, INC.

Check Signal Paths of FBAS Signal and RGB Signal

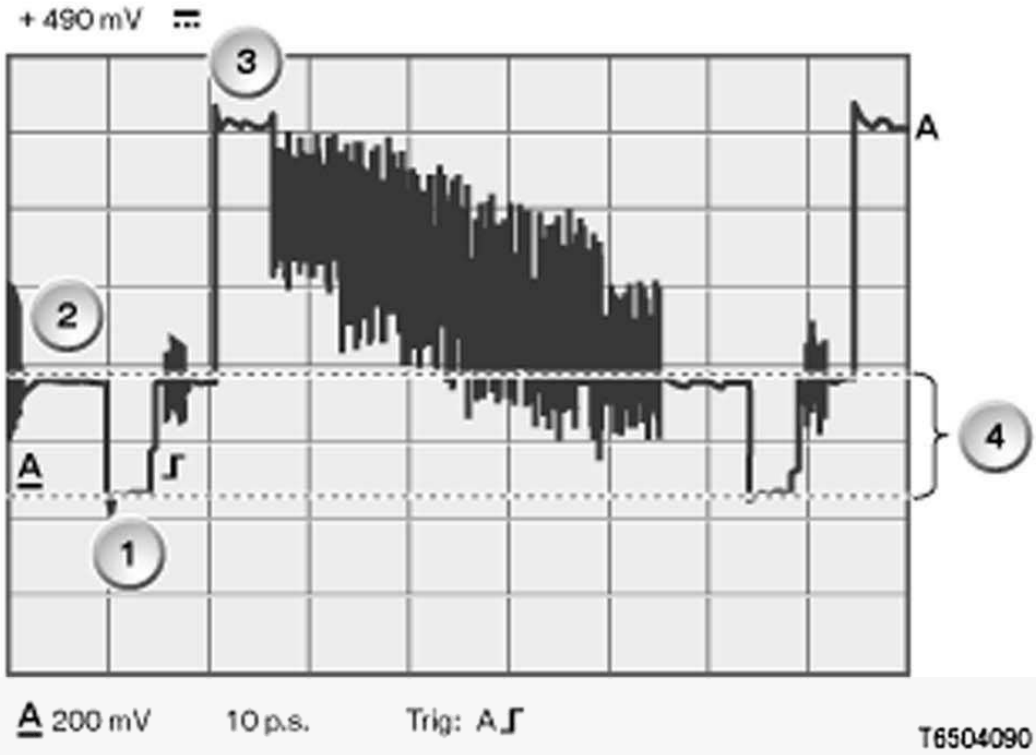
The following signal paths may differ from the voltage values. However, the path must agree at the points

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marked.

Checking FBAS Signal

FBAS signal path:



1. 0 volt
2. 0.3 V measurement **with** adapter
   0.6 V measurement **without** adapter
3. 1 V measurement **with** adapter
   2 V measurement **without** adapter
4. Voltage between 1 and 2

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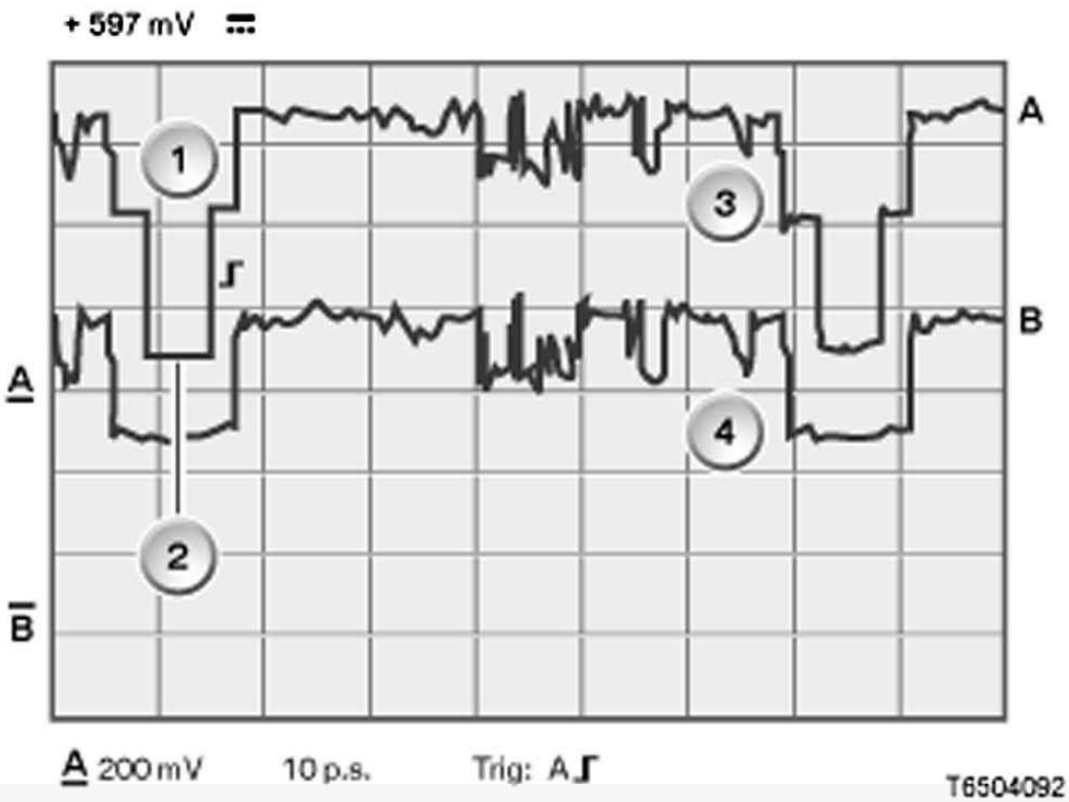
Fig. 50: Checking FBAS Signal Path
Courtesy of BMW OF NORTH AMERICA, INC.

Composite Video Burst Synchronisation With FBAS, the image signals (red-green-blue) are transmitted via a single wire. The signal path has 3 important points. These points are independent of the oscillograph displayed. These points are meaningful for the measurement.

Checking RGB Signal

RGB signal path: red-green-blue

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1. With green signal, red signal and blue signal:
   0.5 V measurement **with** adapter,
   1 V measurement **without** adapter
2. With green signal:
   0.1 V measurement **with** adapter,
   0.2 V **without** adapter
3. Signal path of green signals **with** synchronisation. The pulse synchronisation pulse is marked number 2.
4. Signal path of blue and red signals **without** synchronisation pulse

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Fig. 51: Checking RGB Signal Path
Courtesy of BMW OF NORTH AMERICA, INC.

With the RGB signal, the image signals are separated according to colour and transmitted through 3 wires: green, yellow and blue.

The synchronisation pulse for the RGB signals is carried on the green signal. The signal path has 2 important points. These points are independent of the oscillograph displayed. These points are meaningful for the measurement.

Self-Diagnosis For Aerials And Aerial Amplifiers

The video module recognises how many aerial amplifiers are fitted in the vehicle.

The video module diagnoses the aerial inputs by measuring the supply voltage and supply current.

With hybrid video modules (VM5 hybrid), each aerial input is diagnosed individually. The range 20 mA to 100 mA is recognised as valid. This means that diagnosis is independent of the different aerial amplifiers and their supply currents.

The video module recognises the following states:

- Short circuit: In the event of a short circuit, the power supply from the video module to the aerial amplifier remains switched off until the video module is restarted.
- 1 aerial amplifier connected (all other aerial amplifiers failed or electrically disconnected)
- 2 aerial amplifiers connected (depending on equipment variant, 3rd aerial amplifier failed or electrically disconnected)
- 3 aerial amplifiers connected (only with analogue and digital television in rear)

The video module recognises the following states as faults:

- The aerial amplifiers draw too little current (less than 20 mA).
- The aerial amplifiers draw too much current (more than 100 mA).

Self-diagnosis cannot be deactivated.

NATIONAL VERSIONS

Digital television is already available in many countries.

There are numerous analogue television standards worldwide. The video module supports these television standards and frequencies.

NOTE: Subscription TV is not supported.
Because special cards and decoders are needed for subscription TV (pay TV), pay TV is not supported.

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**Pay TV is available, for example in the Netherlands and in the UK.
Free TV stations in the UK are supported.**

The following details are available with regard to national versions:

- US national version
- Japan national version
- Different switch-off conditions when driving in different national versions

NOTE: **The Japan national version is also valid for China and Korea.
The equipment specifications for the Japanese national version also support television reception in China and Korea.**

US National Version

In the US version, the television is deactivated by encoding.

Reason: watching television in cars is forbidden in the USA.

However, a video module is fitted, depending on the equipment. This video module serves as a video switch between the different entertainment sources (e.g. radio, CD changer).

ANTI-THEFT ALARM SYSTEM E63/E64

NOTE: **Refer to AUDIO, NAVIGATION & ANTI-THEFT - SI TECHNIQUES .**

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ACCESSORIES AND EQUIPMENT

Audio, Navigation and Anti-Theft - Repair Instructions - X3

11 MONO RADIO

65 11 ... INSTRUCTIONS ON SETTING THE INSTALLATION LOCATION ON THE CD CHANGER

NOTE: **To ensure trouble-free CD changer operation, ensure both suspension springs are correctly positioned (horizontal/vertical).**
If necessary, correct adjustment.
To avoid premature contamination of the CD changer, make sure the magazine compartment flap is permanently closed.

NOTE: **For purposes of clarity, the following graphics show the CD changer removed.**

NOTE:

- **Observe the following repair instructions if the magazine cannot be removed from the CD changer.**
  - **E83:**

    Ejection via self-diagnosis

Remove cover cap (1) from CD changer (2).

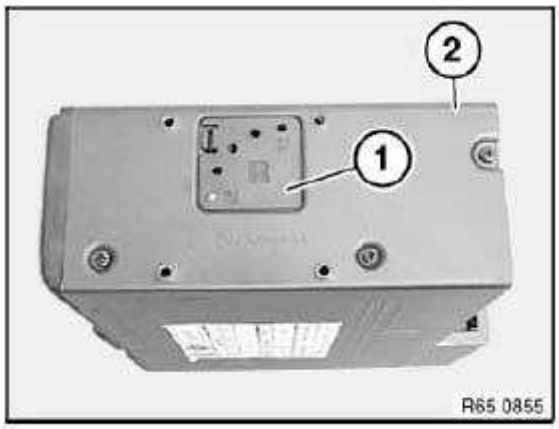


Fig. 1: Cover Cap And CD Changer
Courtesy of BMW OF NORTH AMERICA, INC.

Arrange installation location of CD changer (2) with a suitable tool by sliding suspension spring (1) into required position.

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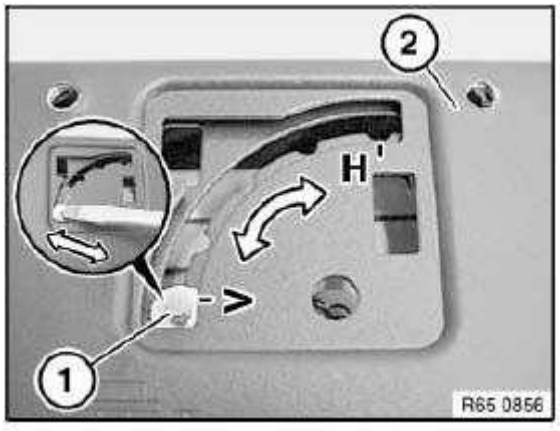


Fig. 2: Suspension Spring
Courtesy of BMW OF NORTH AMERICA, INC.

65 11 045 REMOVING AND INSTALLING/REPLACING RADIO/NAVIGATION CONTROL PANEL

This operation is described under:

"Removing and installing/replacing radio receiver", see **65 11 080 Removing and installing/replacing radio receiver**.

65 11 070 REMOVING AND INSTALLING/REPLACING CD CHANGER

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove CD magazine
- Remove storage compartment, see **51 16 200 REMOVING AND INSTALLING/REPLACING STORAGE COMPARTMENT (WITH CD CHANGER)** .

Release screws (1) on both sides.

Tightening torque: 65 11 1AZ. , see **65 11 CD CHANGER**

Pull CD changer (2) up and out.

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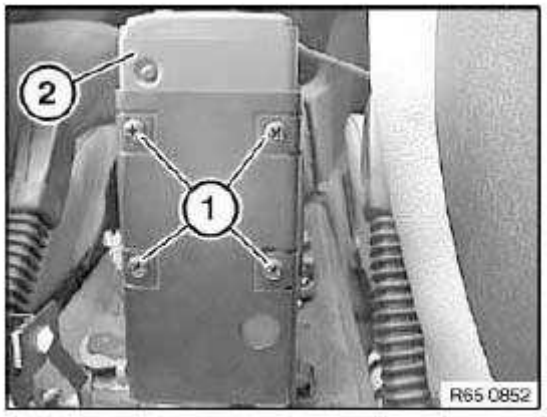


Fig. 3: Screws And CD Changer
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1) and remove CD changer (2).

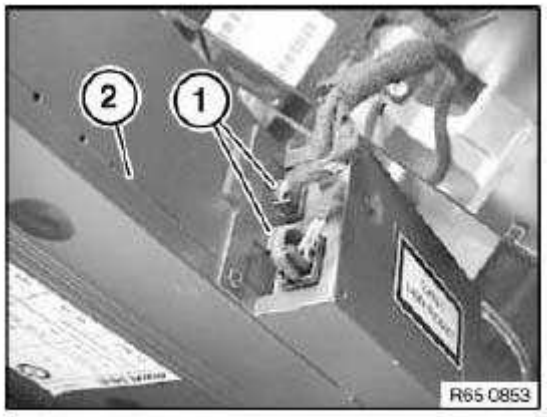


Fig. 4: Plug Connections And CD Changer
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Before installation, remove all transport securing screws on equipment floor and seal openings with adhesive spots.

Follow instructions on setting the installation location on the CD changer, see **65 11 ... Instructions on setting the installation location on the CD changer**.

65 11 080 REMOVING AND INSTALLING/REPLACING RADIO RECEIVER

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

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- Remove operator unit for heater/air conditioner, see **64 11 377 REMOVING AND INSTALLING CONTROL PANEL FOR HEATER - A/C SYSTEM (REPLACING, AUTOMATIC AIR CONDITIONING)** .

Release screws (1).

Pull back radio receiver (2) slightly.

Unlock and disconnect associated plug connections, remove radio receiver (2).

Installation:

Make sure guide pin (3) is correctly seated in associated fixture.

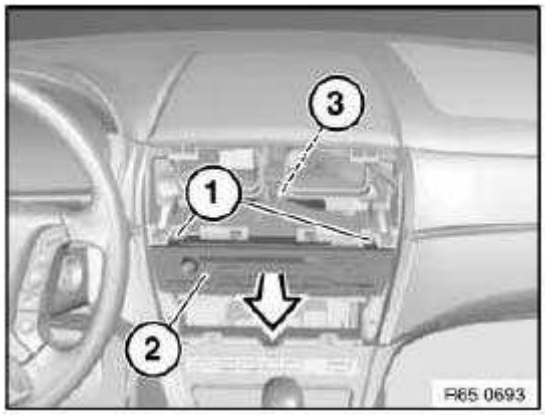


Fig. 5: Radio Receiver And Guide Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

12 STEREO RADIO, AMPLIFIER

65 12 050 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT CENTRAL BASS SPEAKER (UNDER FRONT SEAT)

Necessary preliminary tasks:

- Remove front seat, see **13 FRONT SEAT NORMAL, MA** .
- Remove panel for door pillar, see **51 43 150 REMOVING AND INSTALLING OR REPLACING TRIM FOR LEFT OR RIGHT DOOR PILLAR (BOTTOM)** .

Fold back carpet (1) in direction of arrow.

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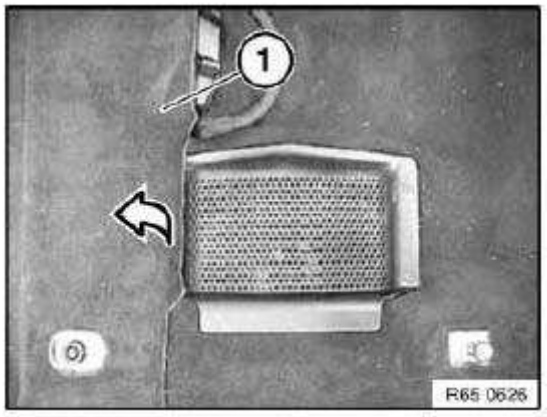


Fig. 6: Carpet
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove central bass speaker trim (2) from floor trim (3).

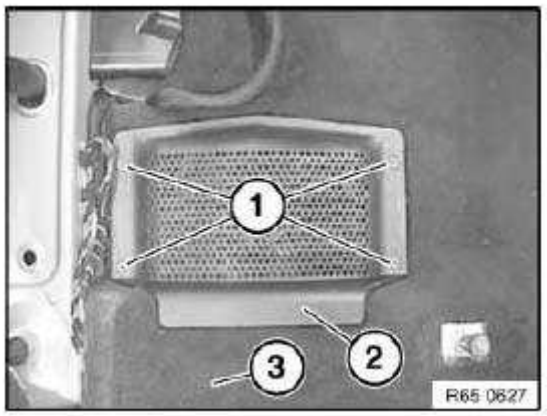


Fig. 7: Screws And Central Bass Speaker Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out floor trim (1) under rear compartment heating duct (2) and fold back in direction of arrow.

Feed electrical lead (3) out of floor trim (1).

Installation:

Ensure correct cable routing.

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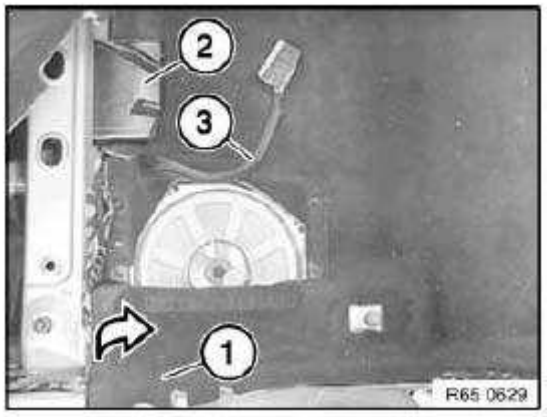


Fig. 8: Floor Trim And Electrical Lead
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

Unscrew nuts (2).

Feed out central bass speaker (3) in direction of arrow and remove.

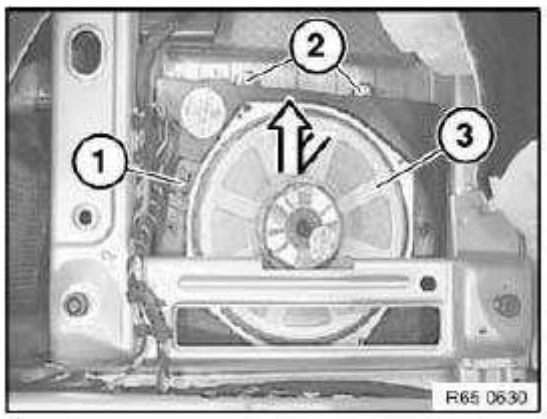


Fig. 9: Plug Connection And Bass Speaker
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure seal (1) is correctly seated on central bass speaker (2).

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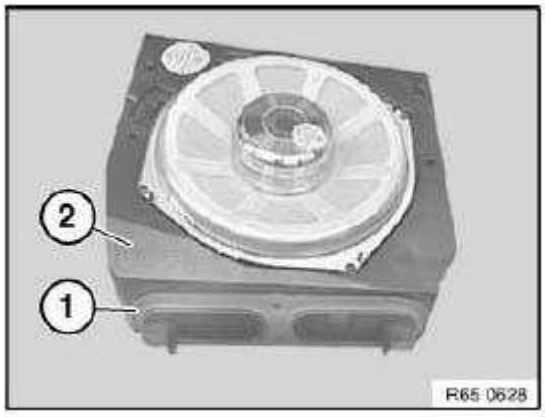


Fig. 10: Central Bass Speaker And Seal
Courtesy of BMW OF NORTH AMERICA, INC.

65 12 070 REMOVING AND INSTALLING/REPLACING AMPLIFIER

Necessary preliminary tasks:

- Remove luggage compartment wheel arch trim on left, see **51 47 151 REMOVING AND INSTALLING / REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** .

Unfasten plug connection (1) and disconnect.

Release screws (2).

Remove amplifier (3) with holder in direction of arrow.

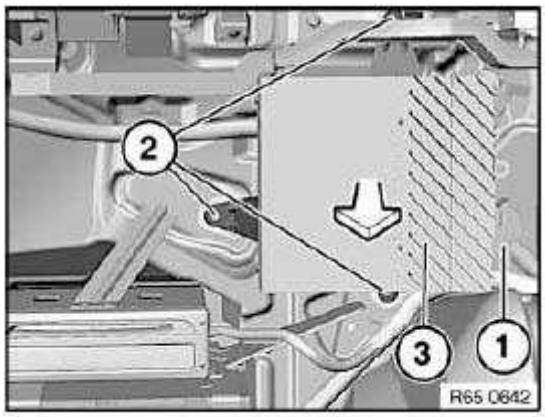


Fig. 11: Screws And Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Unscrew nuts (2).

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Remove amplifier (3) from holder (4).

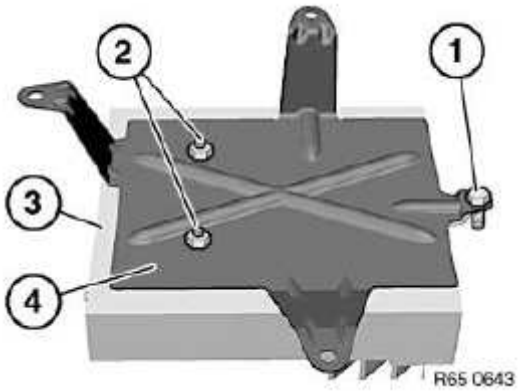


Fig. 12: Screw, Nuts And Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

65 12 072 REMOVING AND INSTALLING (REPLACING) AMPLIFIER (TOP HI-FI SYSTEM)

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove luggage compartment wheel arch trim on left, see **51 47 151 REMOVING AND INSTALLING / REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** .

Unfasten plug connection (1) and disconnect.

Release screws (2).

Remove amplifier (3) with holder in direction of arrow.

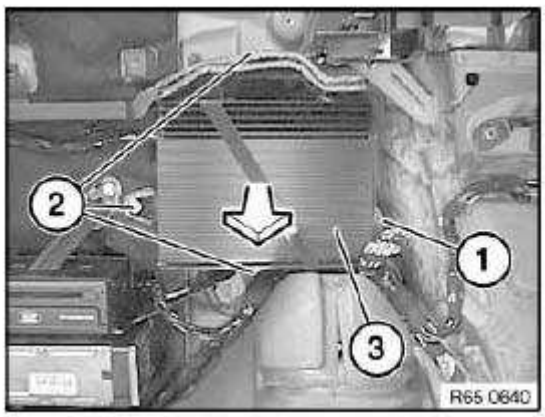


Fig. 13: Screws And Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

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Release screw (1).

Fold back retaining bracket (2) in direction of arrow and remove.

Remove amplifier (3) from holder (4).

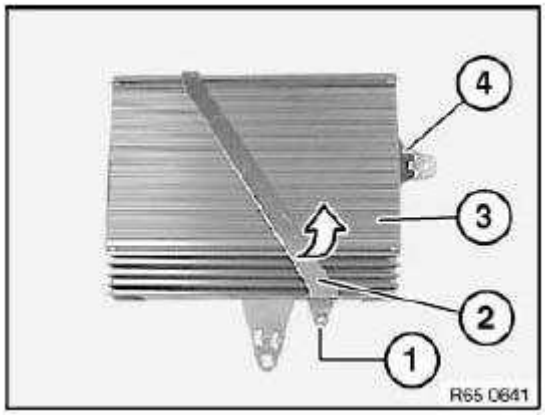


Fig. 14: Retaining Bracket And Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

13 SPEAKER AND COVER

65 13 050 REMOVING AND INSTALLING/REPLACING SPEAKER (TWEETER IN FRONT DOOR)

Necessary preliminary tasks:

- Remove front door trim panel, see **51 41 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT DOOR TRIM PANEL** .

Unlock catches (1) in direction of arrow and remove tweeter (2) from front door trim panel (3).

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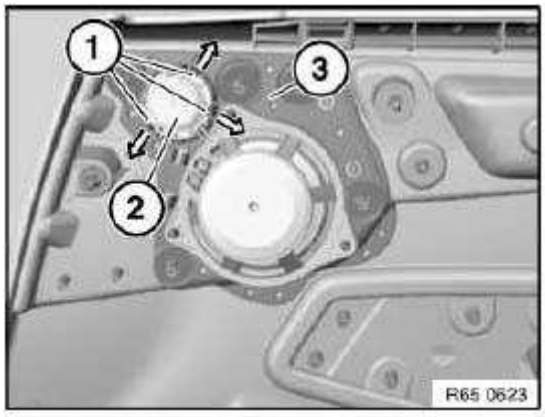


Fig. 15: Catches And Front Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

65 13 070 REMOVING AND INSTALLING/REPLACING SPEAKER (MID-RANGE SPEAKER IN FRONT DOOR)

Necessary preliminary tasks:

- Remove front door trim panel, see **51 41 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT DOOR TRIM PANEL** .

NOTE: Secure mid-range speaker against falling out.

Release nuts (1) and remove mid-range speaker (2) in direction of arrow from door trim panel (3).

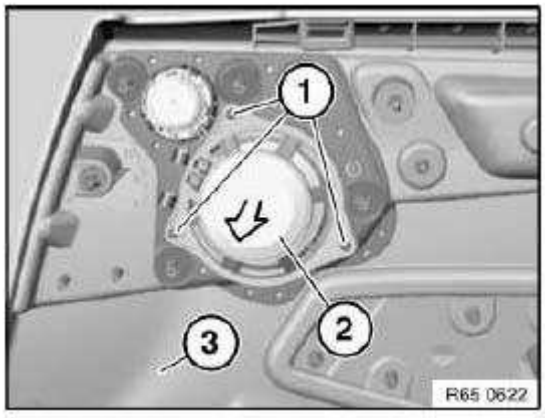


Fig. 16: Nuts And Mid-Range Speaker
Courtesy of BMW OF NORTH AMERICA, INC.

65 13 080 REMOVING AND INSTALLING/REPLACING SPEAKER (TWEETER IN REAR DOOR)

Necessary preliminary tasks:

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- Remove rear door trim, see **51 42 000 REMOVING AND INSTALLING LEFT OR RIGHT REAR DOOR TRIM PANEL** .

Unlock catches (1) in direction of arrow and remove tweeter (2) from rear door trim panel (3).

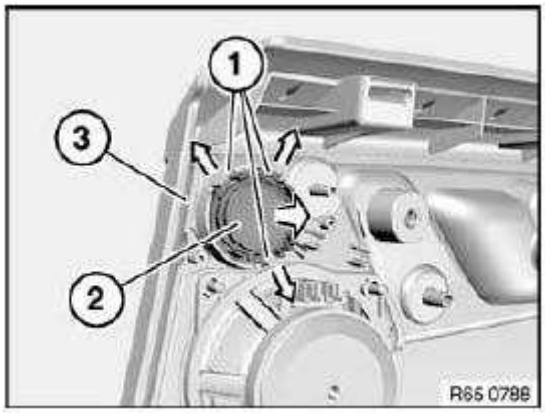


Fig. 17: Catches And Rear Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

65 13 090 REMOVING AND INSTALLING/REPLACING SPEAKER (MID-RANGE SPEAKER IN REAR DOOR)

Necessary preliminary tasks:

- Remove rear door trim, see **51 42 000 REMOVING AND INSTALLING LEFT OR RIGHT REAR DOOR TRIM PANEL** .

NOTE: Secure mid-range speaker against falling out.

Release nuts (1) and remove mid-range speaker (2) in direction of arrow from rear door trim panel (3).

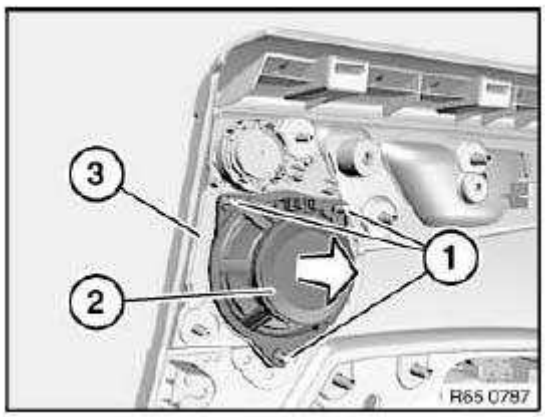


Fig. 18: Nuts And Mid-Range Speaker
Courtesy of BMW OF NORTH AMERICA, INC.

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20 AERIAL/ANTENNA

65 20 035 REMOVING AND INSTALLING/RENEWING ROOF AERIAL

Necessary preliminary tasks:

- Detach **empty housing** for roof-mounted aerial.

Release screw (1) and feed out roof aerial (2) towards top.

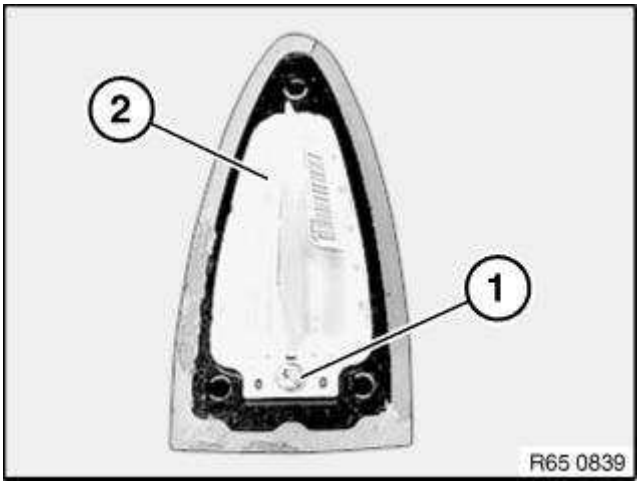


Fig. 19: Release Screw (1) And Feed Out Roof Aerial (2) Towards Top
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1) and remove aerial (2).

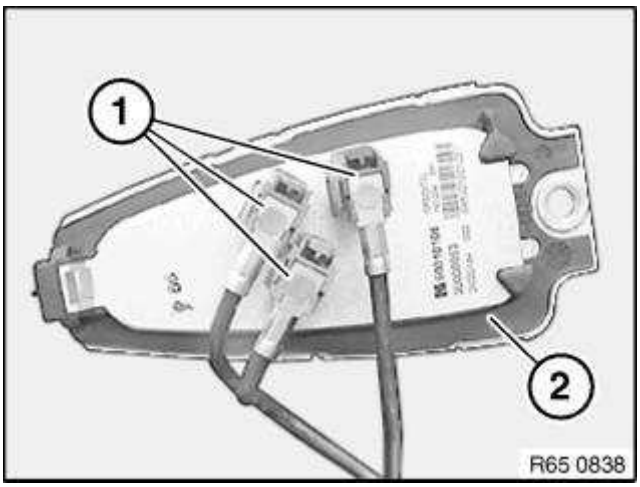


Fig. 20: Disconnect Plug Connections (1) And Remove Aerial (2)
Courtesy of BMW OF NORTH AMERICA, INC.

After installation: Stick on **empty housing** for roof-mounted aerial.

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65 20 030 REMOVING AND INSTALLING/REPLACING EMPTY HOUSING FOR ROOF-MOUNTED

Special tools required:

- 65 2 010 (Knife)

WARNING:

- **Risk of injury!**
- **Special tool has sharp edges!**
- **Adapt working height to vehicle height with non-tilting and non-slip platform.**
- **Handle special tool correctly and make sure it is positioned without tilting or slipping on the vehicle.**
- **Special tool 65 2 010 is only permitted in conjunction with a suitable stepladder.**
- **Risk of damage!**
- **In order to prevent dents in the roof, do not exert any pressure on the roof.**

IMPORTANT: In order to guarantee a permanent connection and adhesive curing: After bonding the empty housing for the roof-mounted aerial, wait 24 hours before driving the vehicle through a car wash.

NOTE: Clean roof. Mask roof (2) around empty housing for roof-mounted aerial (3) with yellow plastic adhesive tape (1). To do so, slide plastic adhesive tape under empty housing (3) slightly.

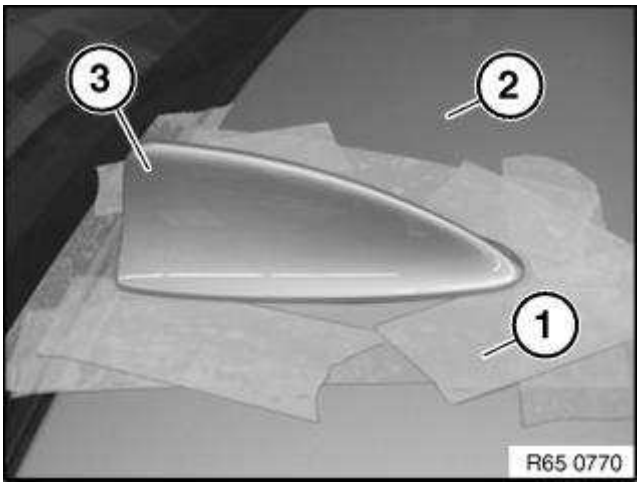


Fig. 21: Mask Roof (2) Around Empty Housing
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of damage! Make sure your arms do not cross over (1) when holding

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special tool 65 2 010. Pull handle must always be ahead of the guiding hand (2).

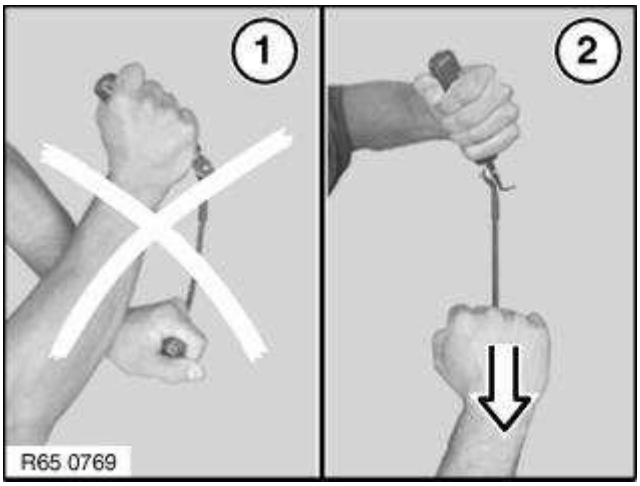


Fig. 22: Pull Handle Must Always Be Ahead Of The Guiding Hand (2)
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of damage! To avoid damaging the paintwork on the roof and empty housing (3), do not fit special tool 65 2 010 skew.

Cut through adhesive bead all round with special tool 65 2 010. Pull on handle (1) and align blade on handle (2).

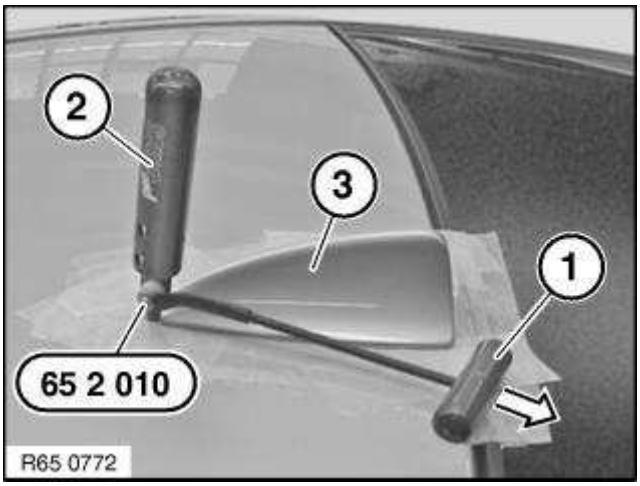


Fig. 23: Pull On Handle (1) And Align Blade On Handle (2)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Use sharp blades only. Replace blade if necessary.

Remove empty housing (3).

Installation: Empty housing for roof-mounted aerial is secured with window glass adhesive. All preparatory operations correspond to the Window cementing instructions.

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NOTE: Replace empty housing for roof-mounted aerial if centering pins (1) on empty housing are damaged.

Bonding surface (2) must be clean and free from grease.

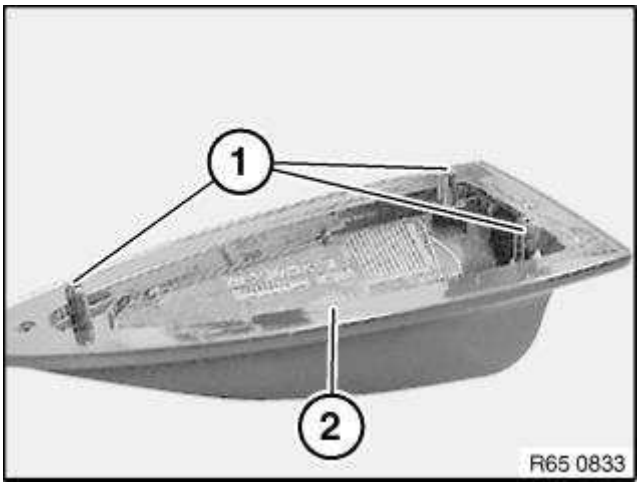


Fig. 24: Bonding Surface (2) Must Be Clean And Free From Grease
Courtesy of BMW OF NORTH AMERICA, INC.

Position two spacers (1) on cleaned empty housing.

Dimensions:

- A. 10 mm
- B. 14 mm

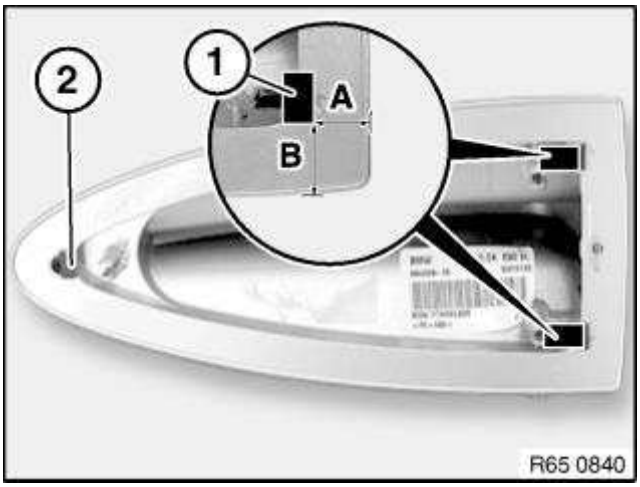


Fig. 25: Position Two Spacers (1) On Cleaned Empty Housing
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Use spacers without fail!

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Apply trace of adhesive bead all around outer contour as follows. Distance between adhesive bead and edge of aerial cover: A = 6.5 mm ±1 mm

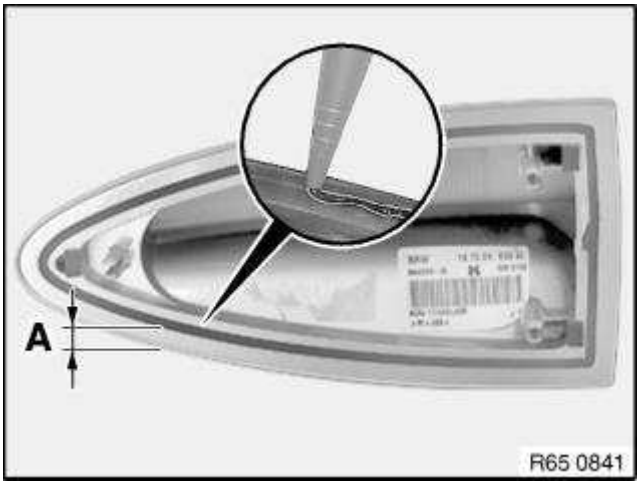


Fig. 26: Apply Trace Of Adhesive Bead All Around Outer Contour
Courtesy of BMW OF NORTH AMERICA, INC.

Start and end of bead trace must have an overlap length of max. 10 mm.

IMPORTANT: To prevent the adhesive from escaping, the adhesive bead diameter must not exceed max. 1.5 mm to 2.5 mm.

NOTE: Attach the empty housing coated with adhesive by hand. To spread the adhesive better, move the housing back and forth horizontally slightly when pressing down. Secure empty housing if necessary with adhesive tape and press down uniformly. After bonding, leave vehicle to stand for at least 3 hours at room temperature.

65 20 090 REMOVING AND INSTALLING OR REPLACING ANTENNA AMPLIFIER

Necessary preliminary tasks:

- Remove trim for rear window frame at top, see **51 49 015 REMOVING AND INSTALLING/REPLACING TRIM FOR REAR WINDOW FRAME AT TOP** .

Unlock plug connections (1) and disconnect.

Unscrew bolt (2).

Remove antenna amplifier (3) in direction of arrow from rear lid (4).

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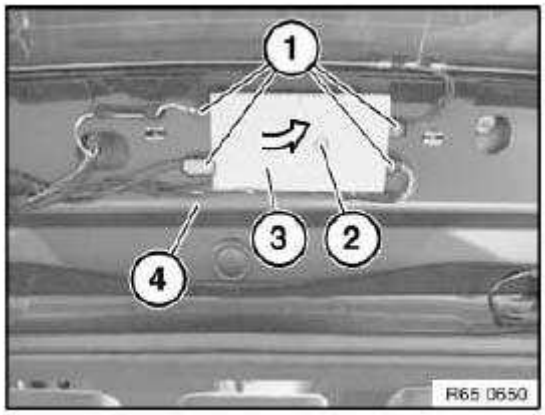


Fig. 27: Antenna Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Tab (2) of antenna amplifier (1) must be inserted in cutout (3) for rear lid (4).

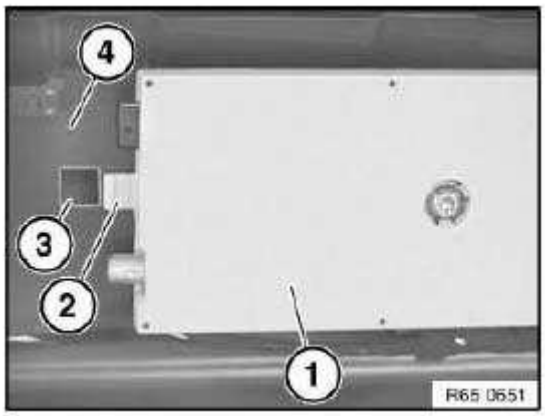


Fig. 28: Tab Of Antenna Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

65 20 350 REMOVING AND INSTALLING/REPLACING SUPPRESSION FILTER

Necessary preliminary tasks:

- Remove rear grab handles, see **51 16 450 REMOVING AND INSTALLING/REPLACING REAR LEFT/RIGHT GRAB HANDLE** .
- Remove trim for rear left and right roof pillar (C-pillar), see **51 43 251 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR REAR LEFT OR RIGHT ROOF PILLAR (C - PILLAR)** .
- Remove trim for rear left and right roof pillar (D-pillar), see **51 43 252 REPLACING TRIM PANEL FOR REAR LEFT OR RIGHT ROOF PILLAR (D-PILLAR)** .
- Remove left and right interior lights, see **63 31 015 REMOVING AND INSTALLING/REPLACING**

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LEFT OR RIGHT INTERIOR LIGHT (SIDE ROOFLINER) .

- Detach mucket in area of roofliner

IMPORTANT: Do not under any circumstance kink roofliner (1).

Unclip roofliner (1) at retaining point (2) towards bottom and lower.

Unlock plug connections (3) and disconnect.

Release screw (4) and remove suppression filter (5).

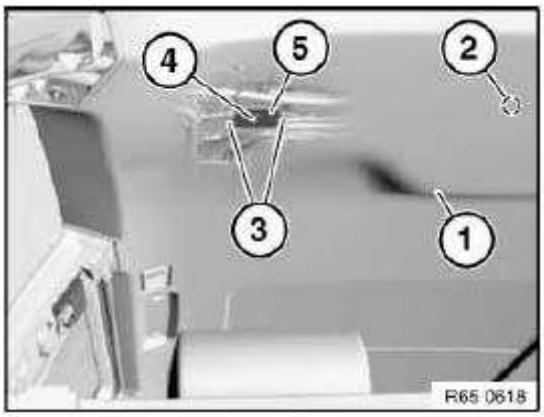


Fig. 29: Roofliner And Suppression Filter
Courtesy of BMW OF NORTH AMERICA, INC.

65 20 380 REMOVING AND INSTALLING/REPLACING RADIO REMOTE CONTROL RECEIVER

NOTE: This operation is described in:
"Removing antenna amplifier." See 65 20 090 Removing and installing or replacing antenna amplifier.

24 REAR WINDOW AERIAL/ANTENNA

65 24 020 REMOVING AND INSTALLING OR REPLACING BLOCKING CIRCUIT

Necessary preliminary tasks:

- Remove panel for rear lid, see **51 49 008 REMOVING AND INSTALLING/REPLACING PANEL FOR REAR LID** .

Unlock plug connections (1) and disconnect.

Unscrew bolt (2).

Remove blocking circuit (3) in direction of arrow.

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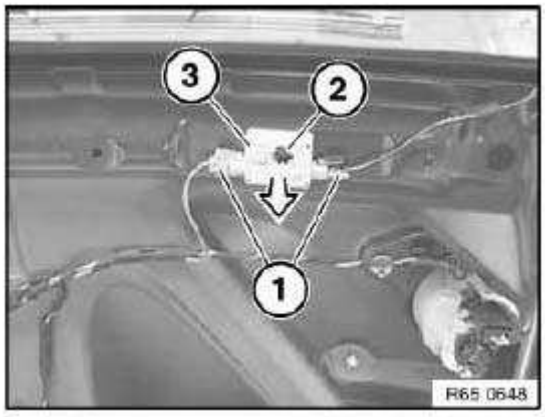


Fig. 30: Bolt And Blocking Circuit
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit blocking circuit (1) so that screw (2) engages thread (3) and locating pin (4) engages bore (5).

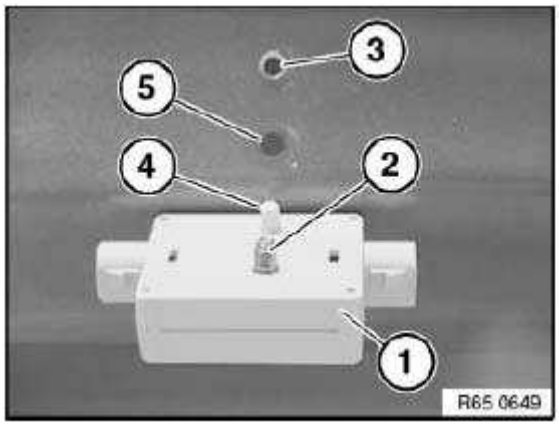


Fig. 31: Blocking Circuit And Locating Pin
Courtesy of BMW OF NORTH AMERICA, INC.

65 24 030 REMOVING AND INSTALLING/REPLACING TV AMPLIFIER (LEFT OR RIGHT)

Necessary preliminary tasks:

- Remove inner window cavity cover strip for rear side window, see **51 37 261 REMOVING AND INSTALLING/REPLACING WINDOW CAVITY COVER STRIP FOR DOOR WINDOW, REAR LEFT OR RIGHT** .

Unlock plug connections (1) and disconnect.

Release screw (2) and remove TV amplifier (3) in direction of arrow.

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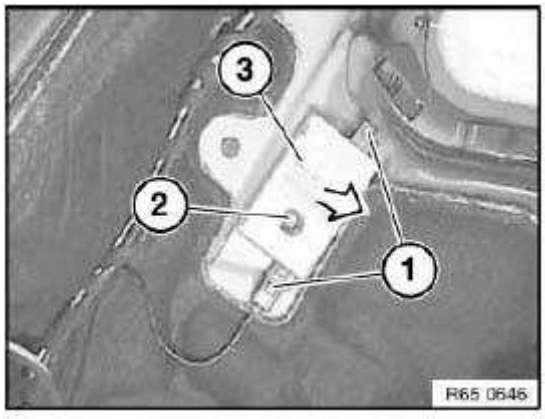


Fig. 32: Screw And TV Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit TV amplifier (1) so that screw (2) engages thread (3) and locating pin (4) engages bore (5).

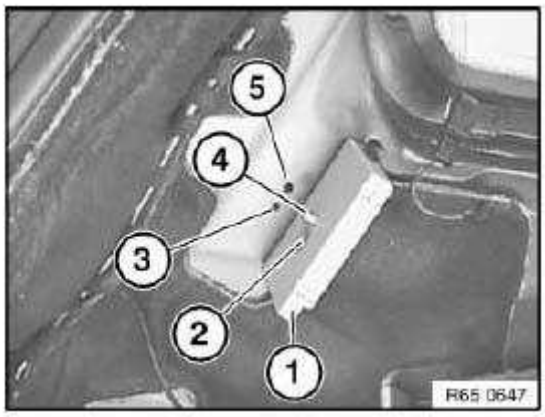


Fig. 33: TV Amplifier
Courtesy of BMW OF NORTH AMERICA, INC.

50 VIDEO AND TV EQUIPMENT

65 50 011 REMOVING AND INSTALLING (REPLACING) VIDEO MODULE FOR ON-BOARD MONITOR

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Disconnect battery negative lead, see**THE BATTERY** .
- Remove flap in luggage compartment panel on left, see **51 47 172 REMOVING AND**

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INSTALLING/REPLACING FLAP IN LUGGAGE COMPARTMENT TRIM, LEFT OR RIGHT .

Unlock plug connections (1) and disconnect.

Installation:

Do not mix up antenna connectors (2).

Mark antenna plugs (2) and disconnect.

Release screws (3).

Release nut on stud (4).

Guide video module for on-board monitor (5) with holder over stud (4) and feed out in direction of arrow.

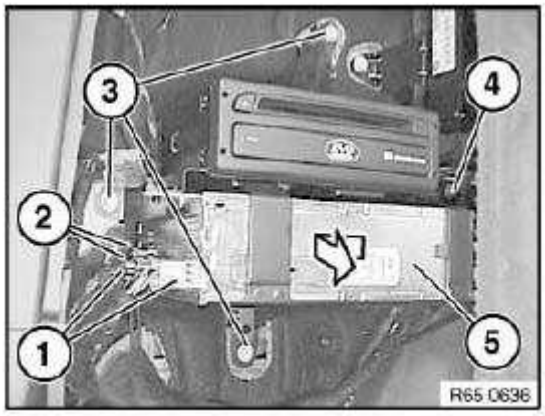


Fig. 34: Antenna Connectors
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Unclip wiring harness (2) at point (3) and pull video module for on-board monitor (4) with holder (5) out of side recess slightly.

Feed video module for on-board monitor (4) in direction of arrow out of holder (5) and remove.

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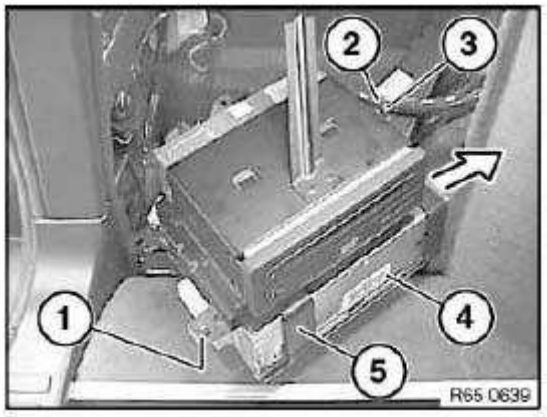


Fig. 35: Wiring Harness And On-Board Monitor With Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

65 50 055 REMOVING AND INSTALLING/REPLACING CENTRAL INFORMATION DISPLAY

Necessary preliminary tasks:

- Remove operator unit for heater/air conditioner, see **64 11 377 REMOVING AND INSTALLING CONTROL PANEL FOR HEATER - A/C SYSTEM (REPLACING, AUTOMATIC AIR CONDITIONING)** .

Fold monitor (1) open.

Loosen screws (2).

Unlock plug connection for central information display (3) and disconnect.

Raise central information display (4) on passenger side.

Feed out associated wiring harness and remove central information display (4).

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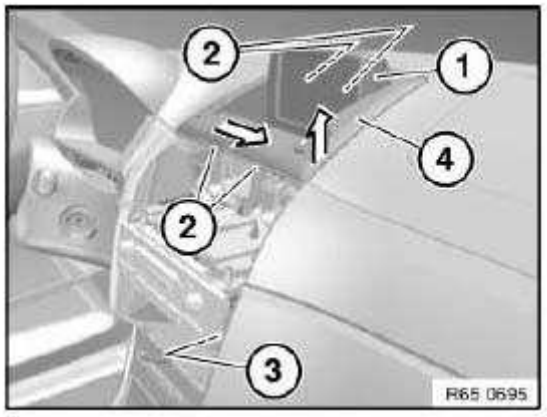


Fig. 36: Central Information Display
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure wiring harness of central information display (4) is correctly routed.

75 ANTI-THEFT ALARM SYSTEM

65 75 055 REMOVING AND INSTALLING/REPLACING EMERGENCY POWER SIREN WITH TILT SENSOR

Necessary preliminary tasks:

- Remove heater bulkhead, see **51 71 080 REMOVING AND INSTALLING/REPLACING HEATER BULKHEAD** .

Unfasten plug connection (1) and disconnect.

Release screw (2) and remove emergency power siren (3) with emergency power siren holder in direction of arrow.

Installation:

Make sure emergency power siren holder is in correct installation position.

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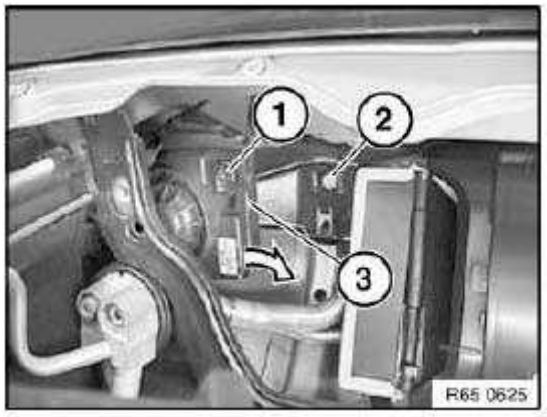


Fig. 37: Emergency Power Siren
Courtesy of BMW OF NORTH AMERICA, INC.

Release nut (1) and remove emergency power siren (2) from holder (3).

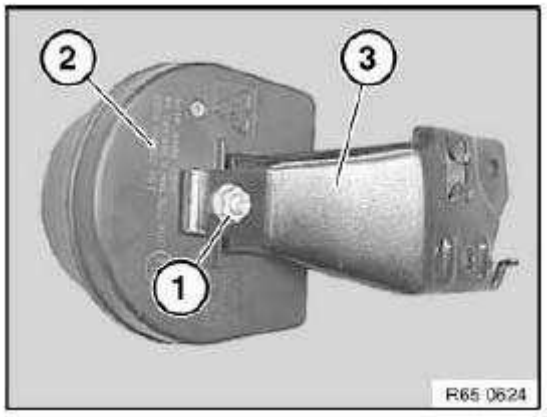


Fig. 38: Nut And Emergency Power Siren
Courtesy of BMW OF NORTH AMERICA, INC.

65 75 071 REMOVING AND INSTALLING (REPLACING) MODULE FOR PASSENGER COMPARTMENT SENSOR

Necessary preliminary tasks:

- Remove front roofliner trim, see **51 44 ... REMOVING AND INSTALLING FRONT ROOFLINER TRIM** .

Open detent lugs (1) in direction of arrow and remove module for passenger compartment sensor (2) from front roofliner trim (3).

Installation:

Arrow (4) on module for passenger compartment sensor (2) points in direction of travel.

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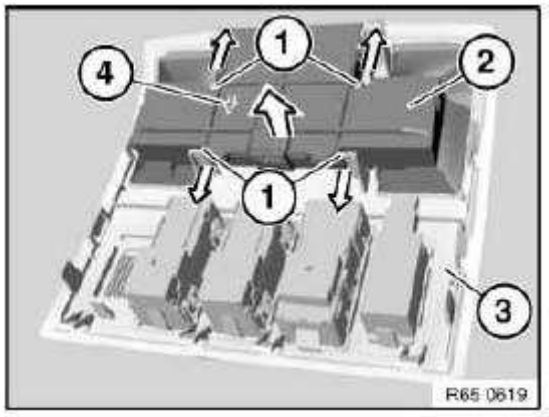


Fig. 39: Detent Lugs And Passenger Compartment Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

65 75 551 REMOVING AND INSTALLING/REPLACING TILT SENSOR

Necessary preliminary tasks:

- Remove luggage compartment floor trim panel, see **51 47 102 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL** .

Remove clips (1) and fold up front luggage compartment floor trim panel (2) slightly.

Installation:

Make sure front luggage compartment floor trim panel (2) is correctly seated.

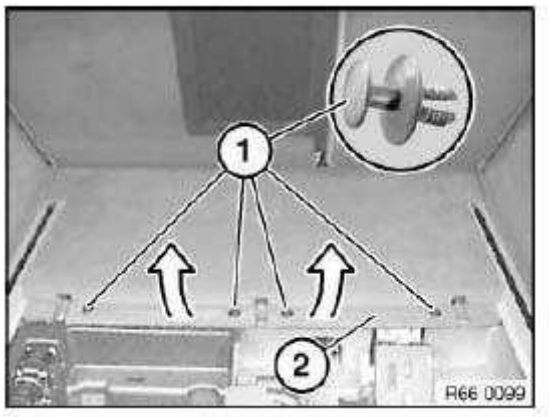


Fig. 40: Front Luggage Compartment Floor Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Front luggage compartment floor trim panel shown removed for purposes of clarity.

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Unfasten plug connection (1) and disconnect.

Unscrew nuts (2).

Remove tilt sensor (3) in direction of arrow.

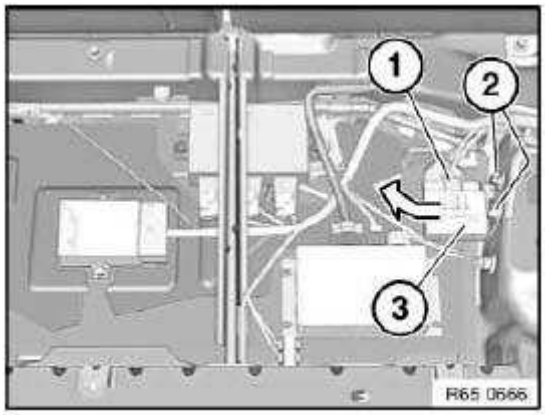


Fig. 41: Nuts And Tilt Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

77 AIRBAG TRIGGER DEVICE

65 77 ... NOTES ON SCRAPPING BMW VEHICLES WITH GAS GENERATORS (CENTRAL AIRBAG CONTROL UNIT, AIRBAG SYSTEM)

The gas generator is a pyrotechnic component of:

- Airbag module
  - Driver's/passenger airbag
  - Side airbags
  - Head airbag
  - Knee airbag
- Belt pretensioner
- Belt buckle tensioner
- Safety battery terminal

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Gas generators that have not fired constitute a hazard (also to the environment)!

In accordance with accident prevention regulations and specific national regulations, gas generators must be rendered unusable before they are scrapped. This is necessary because pyrotechnical objects can cause injury if improperly activated (e.g. scrapping with flame cutters).

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With above-mentioned vehicles which are scheduled for scrapping, it is always essential prior to draining and further stripping work to ensure that all the gas generators **in the vehicle** are fired. The fired gas generators can then be scrapped together with the vehicle.

Triggering failure

If correct triggering is not possible, the relevant components must (while observing the safety regulations for handling airbag system components) be removed and disposed of by special disposal companies!

If a triggering operation has failed:

- Disconnect the triggering device from the battery and
- only approach the vehicle after a few minutes have elapsed

The components of an airbag system must always be disposed of. Such components must not be sold on as used parts.

Triggering

Triggering of the gas generators may only be carried out by expert personnel and under the supervision of a responsible person. Other standard accident prevention regulations (safety goggles, ear defenders etc.) must also be observed.

The gas generators must be fired from the outside in the vehicle scheduled for scrapping with the doors closed but with the tailgate, door windows and sunroof open. To fire the gas generators, use the BMW-developed triggering device with the corresponding cables.

WARNING: Once gas generators have been fired, observe a ventilation period of 10 minutes with the doors opened.
Only then is it permitted to continue work inside the vehicle.
Wear protective goggles and protective gloves when handling a fired gas generator!
The burning of solid fuel will heat up airbag unit - danger of burning hands!
Wash skin with water after contact with fired gas generators!

1. **Vehicles with central airbag control unit (all airbags, seat belt pretensioners, safety battery terminal)**

   1.1 Expose airbag control unit, see **65 77 016 Removing and installing/replacing airbag control unit**.
   1.2 Connect "Airbagmaster".

65 77 016 REMOVING AND INSTALLING/REPLACING AIRBAG CONTROL UNIT

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

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WARNING: Note airbag safety instructions! See AIR BAG DEACTIVATION PROCEDURES .
Incorrect handling can activate airbag and cause injury.

Necessary preliminary tasks:

- Remove luggage compartment floor trim, see **51 47 102 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL** .
- Disconnect battery negative lead, see**THE BATTERY** .
- Remove center console, see **51 16 200 REMOVING AND INSTALLING STORAGE COMPARTMENT** .

Unfasten plug connection (1) and disconnect.

Unscrew nuts (2).

Installation:

Before screwing down airbag control unit, make sure negative lead (3) is resting on associated stud bolt.

Tightening torque: 65 77 1AZ, see **65 77 AIRBAG TRIGGERING CONTROL** .

Remove airbag control unit (4) in direction of arrow.

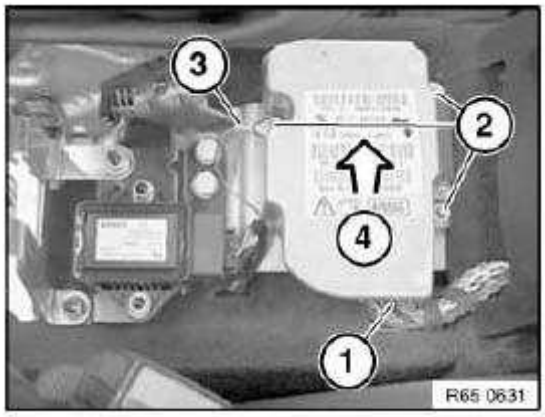


Fig. 42: Airbag Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

65 77 532 REMOVING AND INSTALLING/REPLACING FRONT LEFT SENSOR

Necessary preliminary tasks:

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- **M54 only:**

  Remove intake filter housing.

Unfasten plug connection (1) and disconnect.

Tightening torque: 65 77 3AZ, see **65 77 AIRBAG TRIGGERING CONTROL** .

Remove front sensor (3).

Installation:

Position negative lead (4) before screwing sensor on.

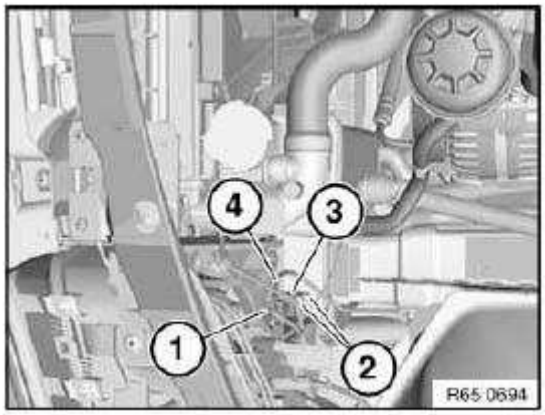


Fig. 43: Front Sensor And Negative Lead
Courtesy of BMW OF NORTH AMERICA, INC.

65 77 534 REMOVING AND INSTALLING/REPLACING FRONT RIGHT SENSOR

Necessary preliminary tasks:

- **M57 only:**

  Remove fluid reservoir for windscreen washer system and place to one side, see **61 71 061 REPLACING FLUID RESERVOIR FOR WINDSHIELD WASHER SYSTEM** .

NOTE: Subsequent work is described in:
"Removing front left sensor". See 65 77 532 Removing and installing/replacing front left sensor.

65 77 560 REMOVING AND INSTALLING/REPLACING CONTROL ELECTRONICS FOR PASSENGER SEAT OCCUPANCY DETECTOR

Necessary preliminary tasks:

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- Move seat into most upward position
- Unlock and remove first aid kit under passenger seat

NOTE: Seat removed for purposes of clarity.

Turn control electronics for passenger seat occupancy detector (2) approx. 45° in direction of arrow and unclip from seat frame.

Disconnect plug connections (1) and remove control electronics for passenger seat occupancy detector (3).

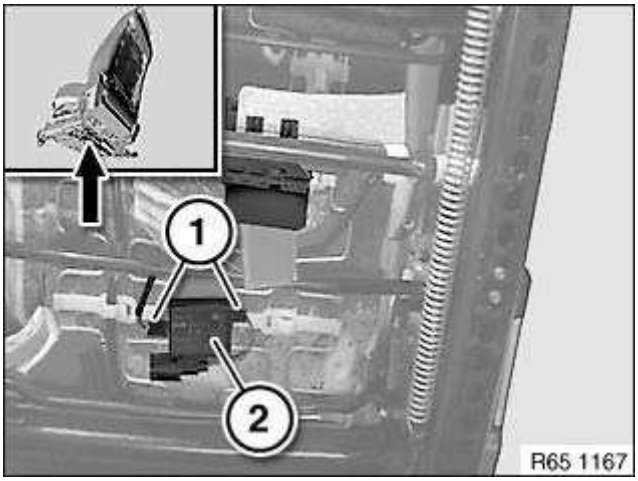


Fig. 44: Disconnecting Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

65 77 600 REPLACING SENSOR MAT FOR PASSENGER SEAT OCCUPANCY DETECTOR

**WARNING: US/CND front passenger seat (with OC3 mat) only:
Seat cover must not be separated from padding.
All parts must be replaced completely and released with the diagnosis system in event of defective fan, seat cover, seat heating, OC3 mat or padding.**

This operation is described in:

"Replacing seat cover for left or right front seat". See **52 13 400 REPLACING SEAT COVER ON LEFT OR RIGHT FRONT SEAT (NORMAL/MANUAL)** .

65 77 604 REPLACING SENSOR MAT (OC3 MAT) FOR PASSENGER SEAT OCCUPANCY DETECTOR

WARNING: US/CDN front passenger seat (with OC3 mat) only: The OC3 mat can only be removed in conjunction with the padding from the seat cover. If OC3 mat or padding is defective, both parts may only be replaced together. After fitting seat cover, enable OC3 mat with BMW diagnosis system.

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The operation for removing the OC3 mat is described in:

52 13 400 REPLACING SEAT COVER ON LEFT OR RIGHT FRONT SEAT (NORMAL/MANUAL)

52 14 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

52 15 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

52 16 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (SPORTS/ELECTRIC)

65 77 720 REMOVING AND INSTALLING (REPLACING) LEFT B-PILLAR SENSOR

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

WARNING: Note airbag safety instructions! See AIR BAG DEACTIVATION PROCEDURES .
Incorrect handling can activate airbag and cause injury.

Necessary preliminary tasks:

- Remove luggage compartment floor trim, see **51 47 102 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL** .
- Disconnect battery negative lead, see**THE BATTERY** .
- Remove trim panel for door pillar (bottom), see **51 43 150 REMOVING AND INSTALLING OR REPLACING TRIM FOR LEFT OR RIGHT DOOR PILLAR (BOTTOM)** .

Release screw (1).

Loosen screw (2).

Installation:

Tightening torque: 65 77 5AZ, see **65 77 AIRBAG TRIGGERING CONTROL** .

Raise B-pillar sensor (3) slightly through opening in B-pillar and feed out towards rear.

Unfasten plug connection (4) and disconnect.

Remove B-pillar sensor (3) from B-pillar.

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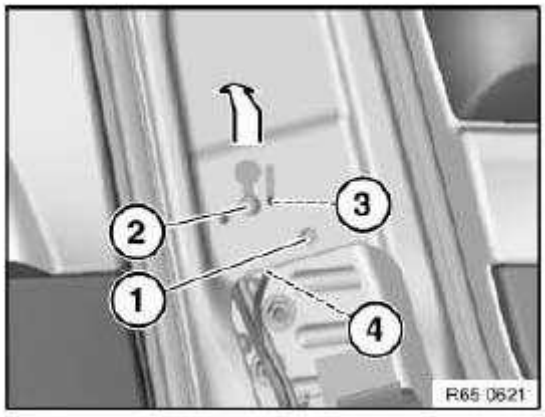


Fig. 45: B-Pillar Sensor And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Establish correct positioning of B-pillar sensor (1) by means of guide pin (2) and screw (3).

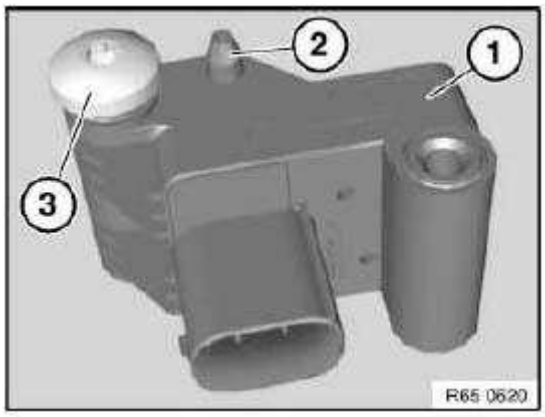


Fig. 46: B-Pillar Sensor And Guide Pin
Courtesy of BMW OF NORTH AMERICA, INC.

65 77 725 REMOVING AND INSTALLING/REPLACING RIGHT B-PILLAR SENSOR

Operation is identical to: **Removing and installing left B-pillar sensor**

65 77 740 REMOVING AND INSTALLING (REPLACING) LEFT FRONT DOOR SENSOR

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

WARNING: Note airbag safety instructions!

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Incorrect handling can activate airbag and cause injury.

Necessary preliminary tasks:

- Disconnect battery negative lead, see**THE BATTERY** .
- Detach sound insulation in work area, see **51 48 060 REMOVING AND INSTALLING/REPLACING SOUND INSULATION IN LEFT OR RIGHT FRONT DOOR** .

Unfasten plug connection (1) and disconnect.

Tightening torque: 65 77 7AZ, see **65 77 AIRBAG TRIGGERING CONTROL** .

Remove front door sensor (3) in direction of arrow.

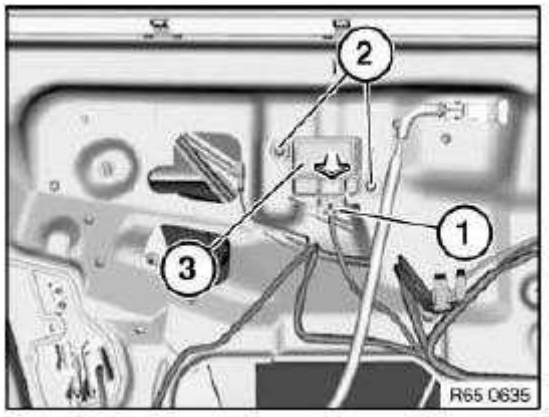


Fig. 47: Front Door Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

81 ON-BOARD COMPUTER

65 81 050 REMOVING AND INSTALLING/REPLACING GONG

Necessary preliminary tasks:

- Remove panel for pedal assembly, see **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

Disconnect plug connection (1) and unclip catches (2) on both sides.

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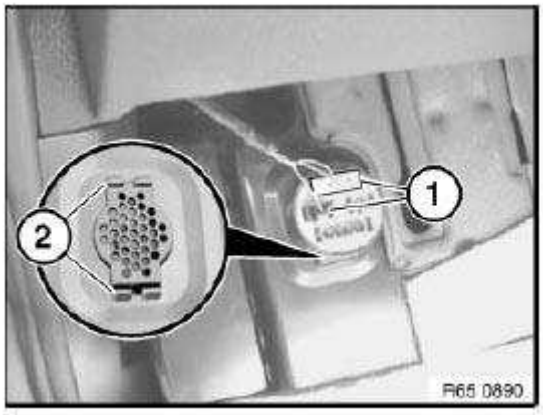


Fig. 48: Plug Connection And Catches
Courtesy of BMW OF NORTH AMERICA, INC.

65 81 060 REMOVING AND INSTALLING/REPLACING EXTERNAL TEMPERATURE SENSOR

Special tools required:

- **64 1 020 RELEASE HOOK**

Expand mount for outside temperature sensor with special tool 64 1 020 and feed out outside temperature sensor (1) in direction of arrow.

Pull out ambient temperature sensor (1).

Disconnect plug connection and remove ambient temperature sensor (1).

Installation:

Make sure ambient temperature sensor (1) engages correctly in its mount.

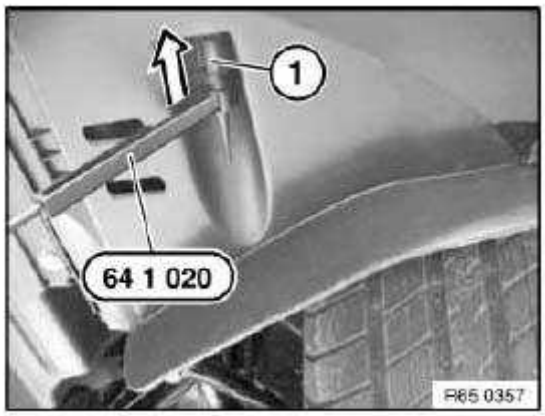


Fig. 49: Special Tool (64 1 020)
Courtesy of BMW OF NORTH AMERICA, INC.

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90 NAVIGATION SYSTEMS

65 90 ... NOTES ON HANDLING NAVIGATION COMPUTERS

All model series:

CAUTION: Risk of damage!
The navigation computer must not be disconnected from the power supply while the LED on the computer remains lit (the LED goes out after approx. 1 minute).

NOTE: To ensure full operation of all the communications components, it is necessary in new cars to insert a Road Map CD in the navigation computer.
This is absolutely essential as certain functions are disabled for distribution channels.
These functions will only be available again after a Road Map CD has been inserted. The mode preset at the factory is automatically reset when this CD is inserted.

Software installation:

The navigation software must be loaded with terminal 15 activated and the navigation system ready for operation.

Make sure there is a stable power supply. If necessary, connect a battery charger to the vehicle.

The charging operation must not be interrupted (terminal 15 remains activated).

When replacing navigation computer:

From E65/66:

- Carry out coding of navigation computer with aid of Diagnosis and Information System via "CIP".

To E65/66:

- Carry out coding of navigation computer with aid of Diagnosis and Information System in path "1 Recoding".

E46 (with radio navigation) only:

When replacing navigation computer:

- Connect Diagnosis and Information System to vehicle.
- Switch on ignition.
- Select Coding/Programming.

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- Select path "3 Coding ZCS".
- Select vehicle.
- Select path "4 Retrofitting".
- Select menu item "3 Instrument cluster".
- Select menu item "2 Language".
- Select the desired languages following the user prompting.
- Start coding of the instrument cluster.
- After the prompt from the Diagnosis and Information System "Now follow the instructions on the on-board monitor", insert the operating software CD.
- The following note appears from DIS CD 25 software (and higher):

  "With radio navigation insert the operating software CD in the computer and wait until it is ejected. Then follow the instructions on the display. This procedure takes several minutes".

NOTE: The ignition must not be turned off and then on again during this procedure. The software is loaded when the operating software CD is ejected.

- Carry out coding of navigation computer with aid of Diagnosis and Information System in path "1 Recoding".

  If the software is updated at a later stage, the last step is omitted if the navigation computer is already configured for a navigation system (radio navigation or navigation system).

65 90 511 REMOVING AND INSTALLING (REPLACING) NAVIGATION COMPUTER WITH CD DRIVE

Special tools required:

- **65 5 400 RELEASE BRACKET**

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove flap in luggage compartment panel on left, see **51 47 172 REMOVING AND INSTALLING/REPLACING FLAP IN LUGGAGE COMPARTMENT TRIM, LEFT OR RIGHT** .

Unlock navigation computer (1) with special tool 65 5 400 and pull out in direction of arrow.

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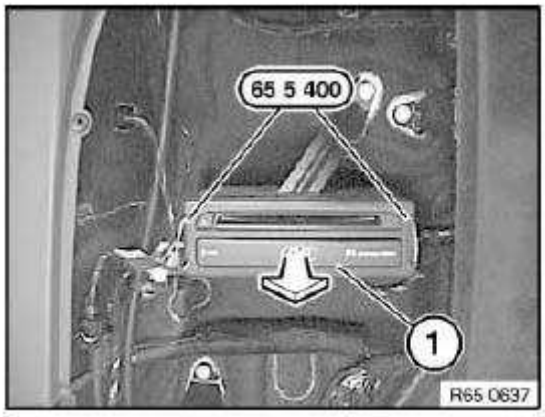


Fig. 50: Navigation Computer With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect antenna connector (1).

Unlock plug connections (2) and disconnect.

Remove navigation computer (3).

Installation:

Make sure navigation computer (3) is correctly seated.

Wires (4) must not be trapped between navigation computer (3) and insert frame (5).

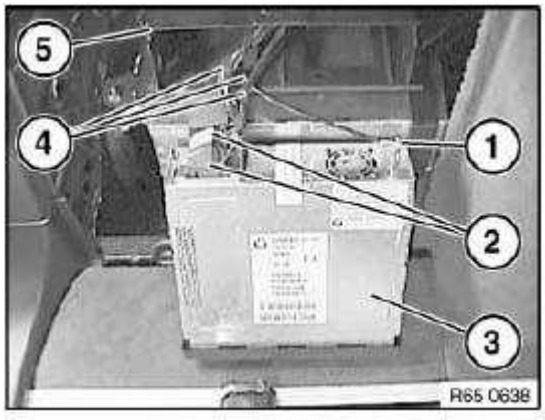


Fig. 51: Antenna Connector And Navigation Computer
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

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65 90 550 REPLACING CD/DVD DRIVE FOR NAVIGATION COMPUTER

Special tools required:

- 00 9 318

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Comply with notes and instructions on handling navigation computers, see **65 90 ... Notes on handling navigation computers**.

Replace the destroyed seal on all devices with the new seal supplied.

Necessary preliminary tasks:

- Remove navigation computer, see **65 90 511 Removing and installing (replacing) navigation computer with CD drive**.

MK II version:

Cut through seal (1).

Release screws (2) on both sides and carefully fold down front panel (3).

Installation:

Replace the destroyed seal with the new seal supplied.

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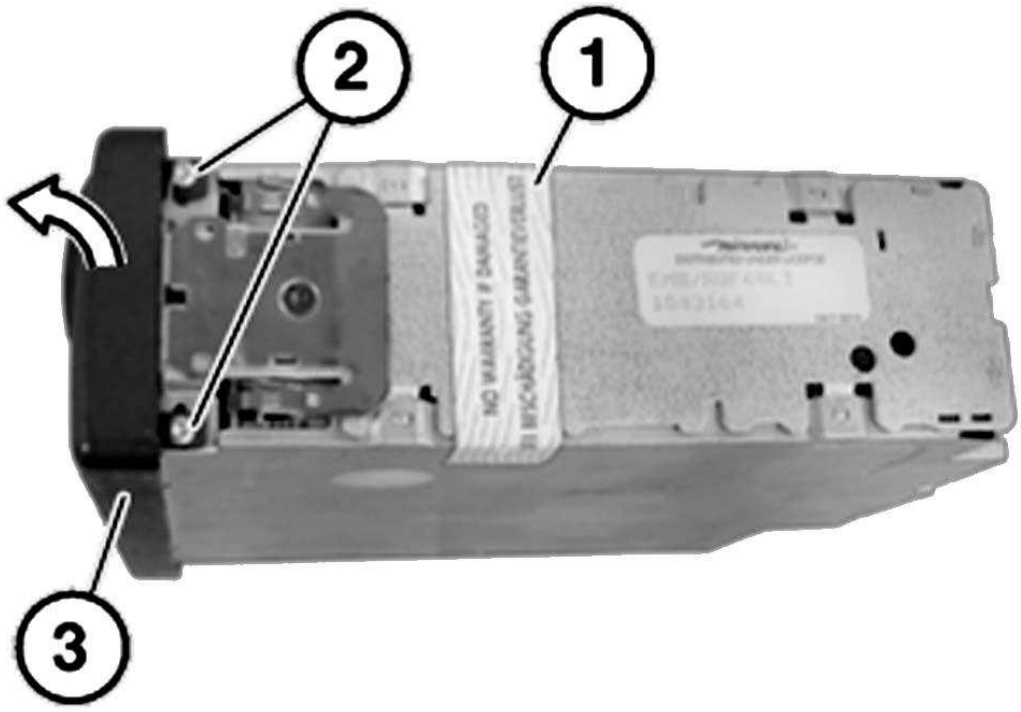


Fig. 52: Screws On Both Front Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Lever cover (1) with special tool 00 9 318 upwards out of side catches.

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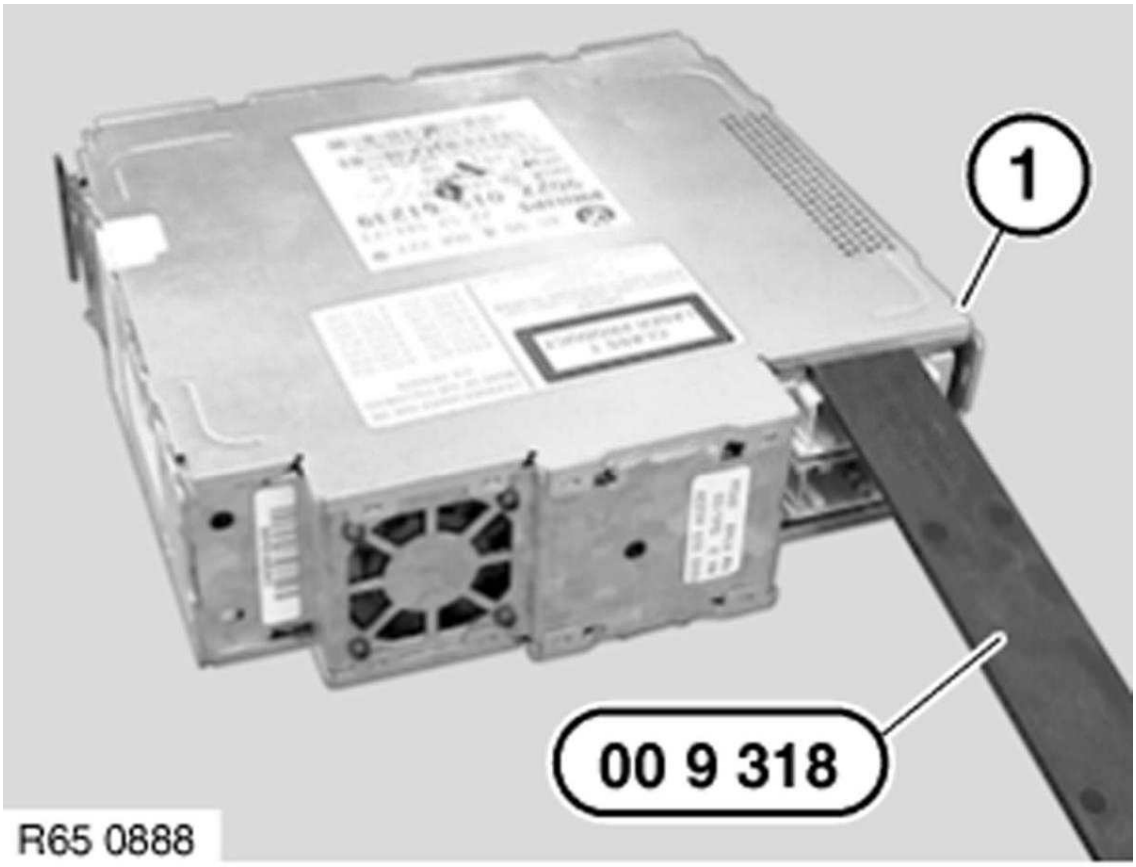
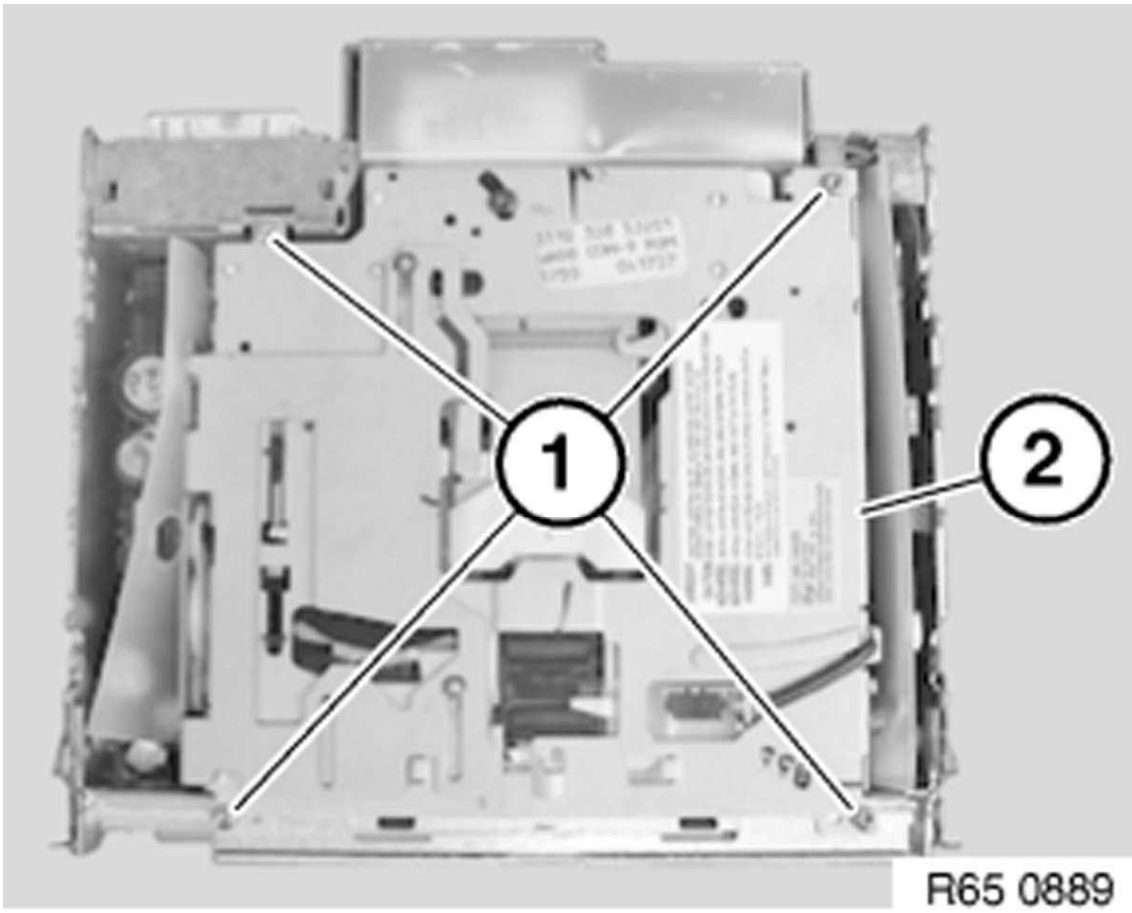


Fig. 53: Special Tool (00 9 318)
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and carefully lift out CD drive (2).

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G00426805

Fig. 54: Screws And CD Drive
Courtesy of BMW OF NORTH AMERICA, INC.

MK III and MK IV versions:

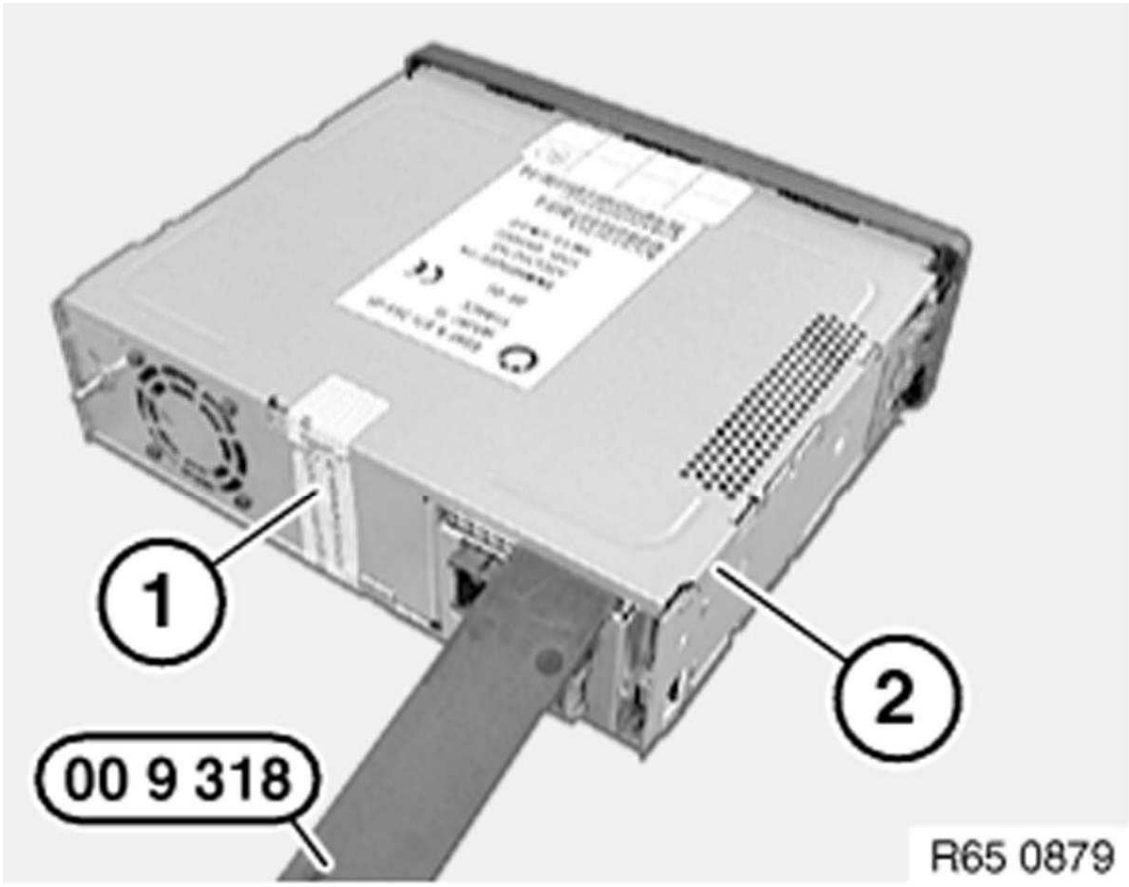
Cut through seal (1).

Carefully lever off cover (2) with special tool 00 9 318.

Installation:

Replace the destroyed seal with the new seal supplied.

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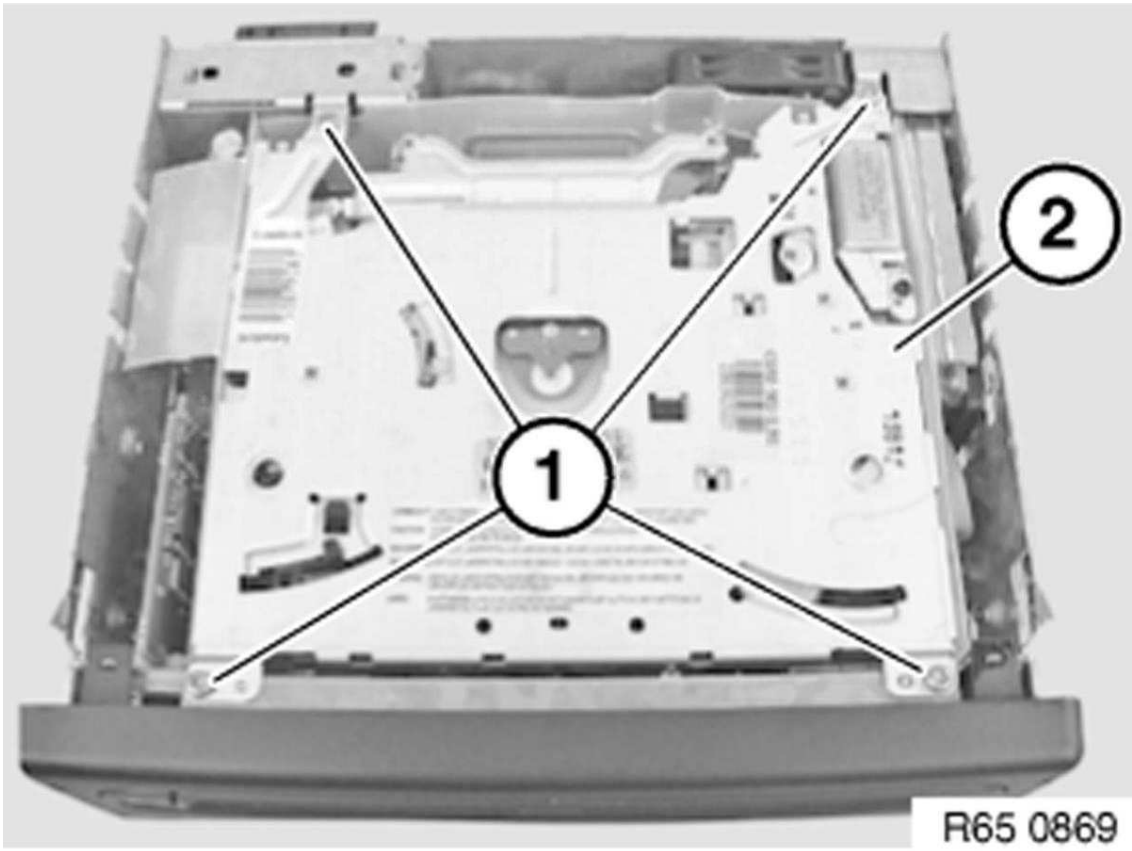
G00426806

Fig. 55: Special Tool (00 9 318)
Courtesy of BMW OF NORTH AMERICA, INC.

MK III version:

Release screws (1) and carefully lift out drive (2).

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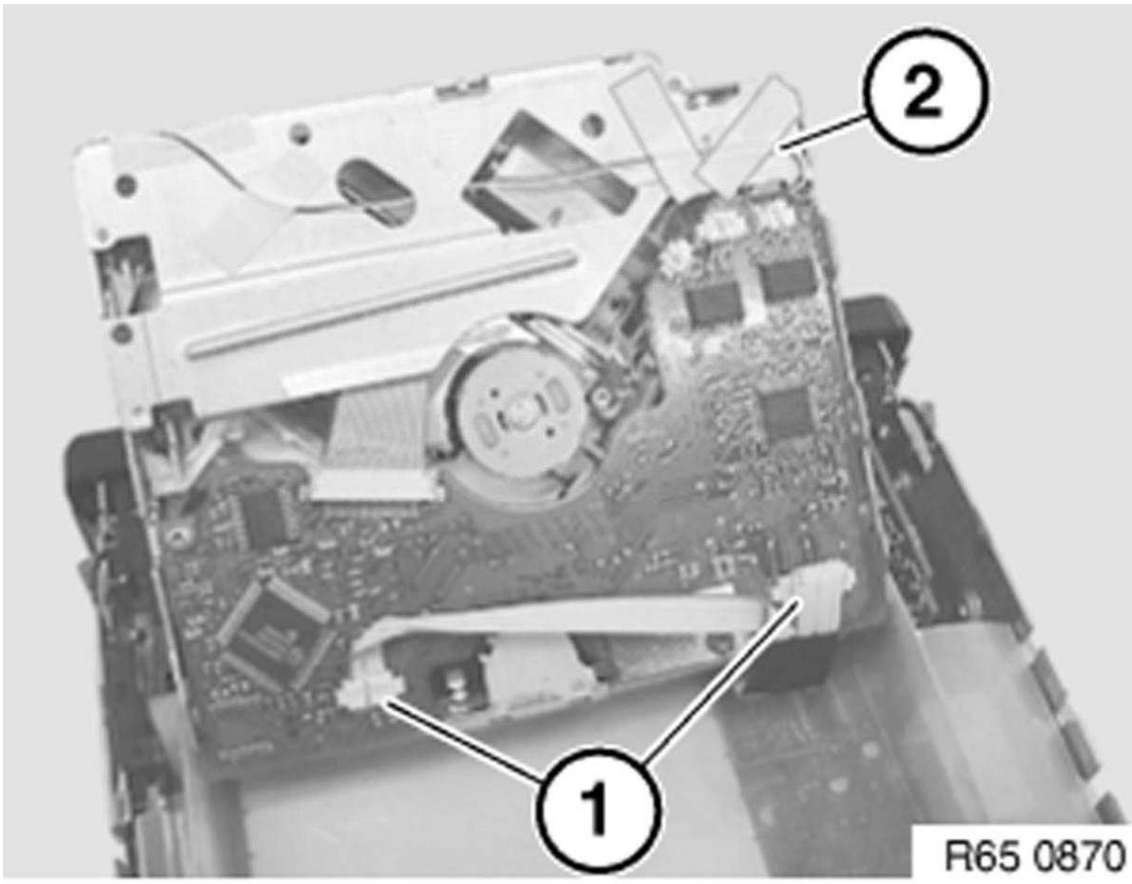
G00426807

Fig. 56: Screws And Drive
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Ribbon cables and connectors must not be damaged!

Disconnect plug connections (1) and remove drive (2).

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G00426808

Fig. 57: Plug Connections And Drive
Courtesy of BMW OF NORTH AMERICA, INC.

MK IV version:

Release screws (1).

Carefully lift out DVD drive (2).

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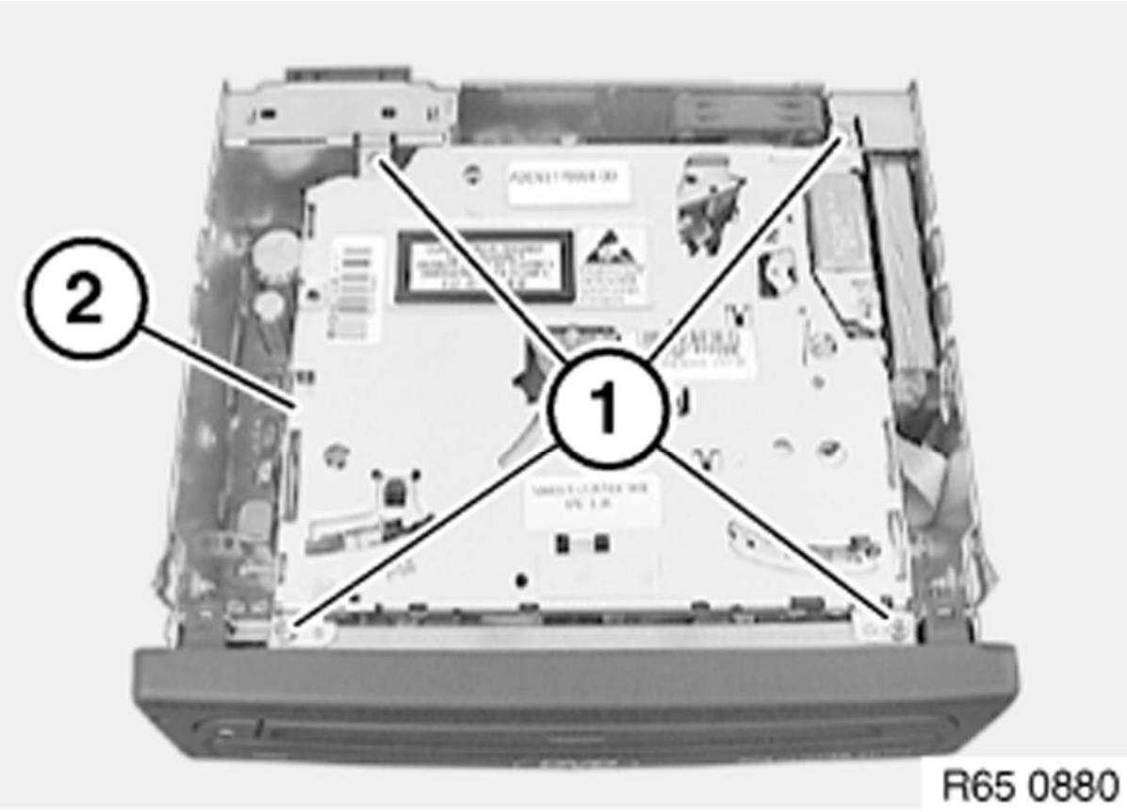
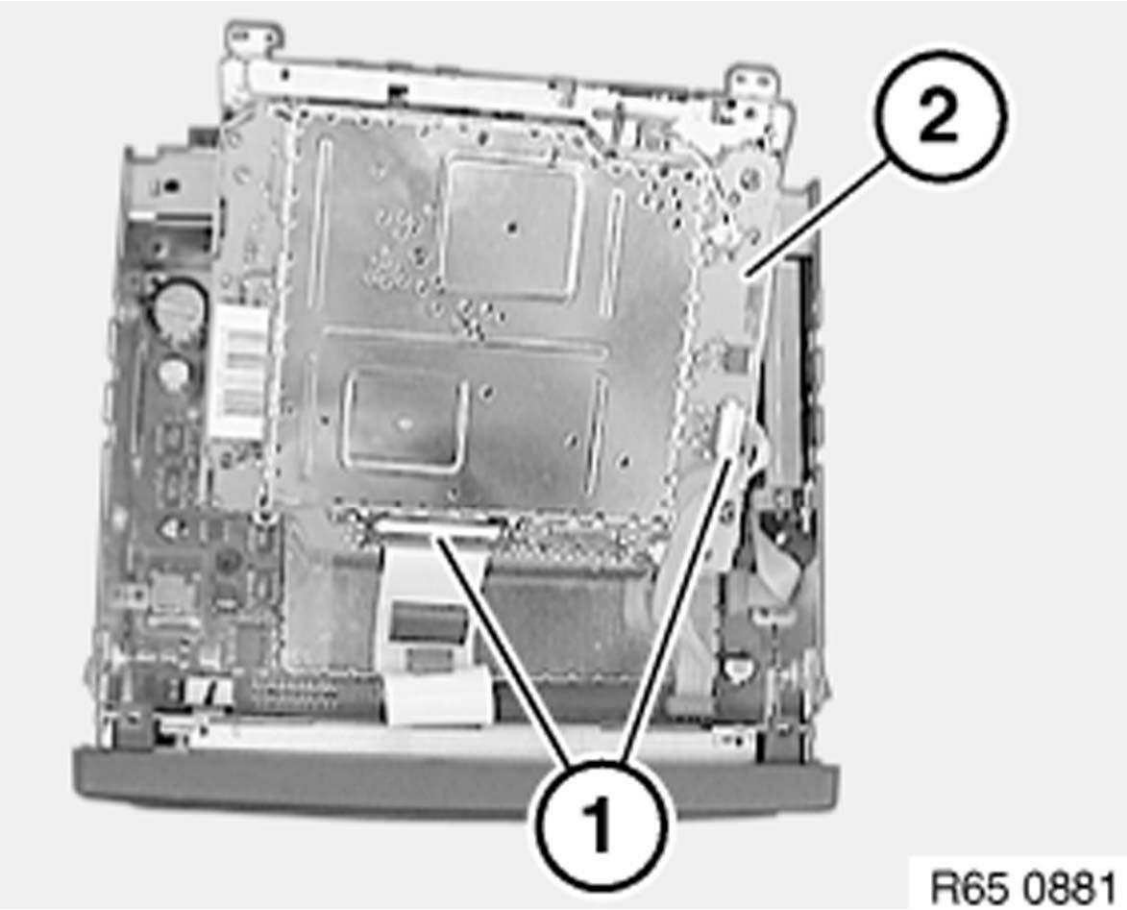


Fig. 58: Screws And DVD Drive
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Ribbon cables and connectors must not be damaged!

Disconnect plug connections (1) and remove DVD drive (2).

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Fig. 59: Plug Connections And DVD Drive
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Audio, Navigation and Anti-Theft - SI Techniques - X3

MULTIPLE RESTRAINT SYSTEM 4

E83

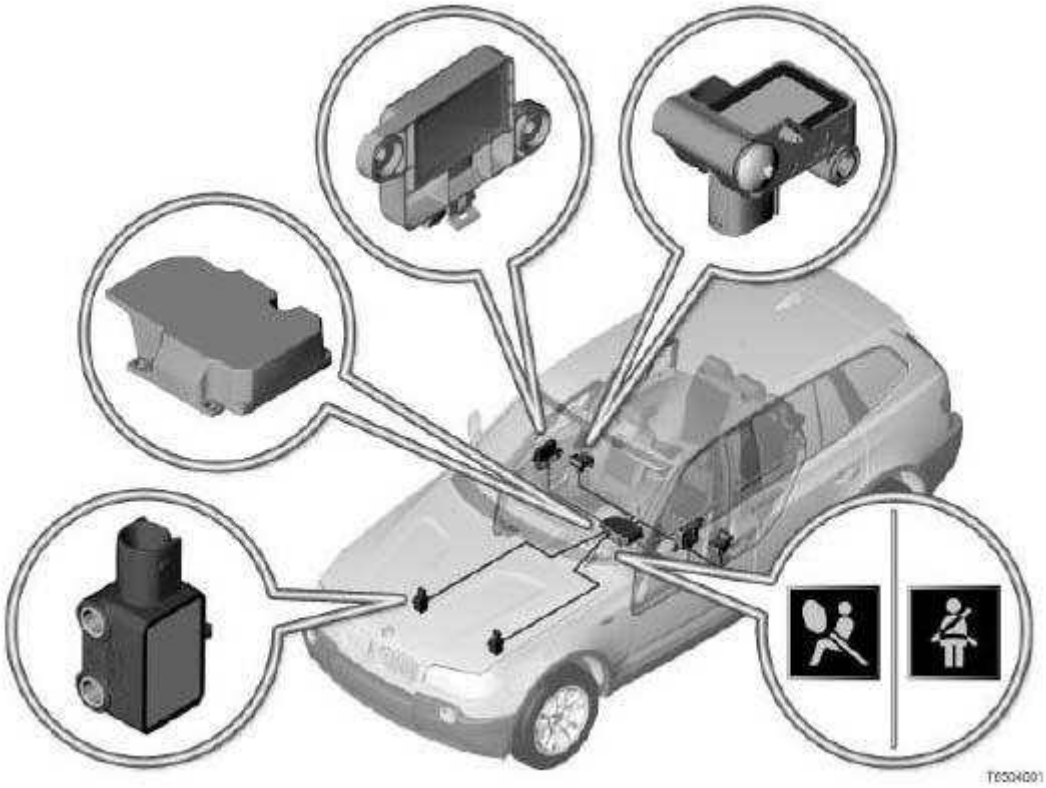


Fig. 1: Multiple Restraint System 4
Courtesy of BMW OF NORTH AMERICA, INC.

INTRODUCTION

Multiple restraint system 4 is a further development of the multiple restraint system (MRS) in the E46.

The MRS performs the following functions:

- Detects an accident situation which could be critical for the occupants
- Activates the necessary restraint systems (selectively, depending on the severity and type of accident)

New features, compared to the previous MRS (E46):

- 2 airbag front sensors
- Front left door satellite and front right door satellite

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- Left-hand B-pillar satellite and right-hand B-pillar satellite with lateral and longitudinal acceleration sensors
- The MRS control unit interfaces have been expanded to 75 pins (50 pins in the E46).
- Discontinuation of the MRS acceleration sensors under the front seats

  The lateral acceleration sensors are now in the left and right-hand B-pillar satellites.

An advantage compared to the previous multiple restraint system is more precise airbag trigger control

BRIEF DESCRIPTION OF COMPONENTS

The following sensors detect the direction and severity of an impact:

- **Airbag front sensors**

  The airbag front sensors are longitudinal acceleration sensors. The front airbag sensors detect a head-on collision.

- **Front left door satellite and front right door satellite**

  There is a pressure sensor in each satellite door. The pressure sensors detect a side impact.

- **Left-hand B-pillar satellite and right-hand B-pillar satellite**

  The B-pillar satellites each contain a lateral acceleration sensor and a longitudinal acceleration sensor. The sensors are arranged at 90 degrees to each other.

- **Acceleration sensors in the MRS control unit**

  There is a lateral acceleration sensor and a longitudinal acceleration sensor in the MRS control unit. The sensors are arranged at 90 degrees to each other.

The following components provide input signals for the multiple restraint system (MRS):

- **Seat-belt-lock switch (driver and passenger seat)**

  The seat-belt-lock switch indicates whether the seat belt is engaged or not.

  The seat-belt-lock switch is powered by the MRS control unit. The power consumption of the switch forms the signal for the switch position (seat belt engaged or not engaged).

  The seat-belt-lock switches on the driver and passenger seats are permanently monitored when terminal R is ON. For example, if a seat belt is released while the vehicle is in motion, there is a seat-belt warning.

  A seat-belt warning is started when terminal 15 is ON.

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The seat-belt warning indicates to the occupants that they should fasten their seat belts.

The seat-belt warning is an extension of the previous time-dependent display (seat-belt warning lamp in the instrument cluster for approximately 6 seconds after terminal 15 is switched ON).

- **Seat-belt-lock switch (US version)**

  When terminal 15 is ON, a seat-belt warning lamp lights up and a warning sounds if the driver and passenger seat belts are not engaged. Once the driver and passenger seat belts are engaged in the corresponding buckles, the seat-belt warning lamp and the audible warning are switched off.

  If a seat belt is released while the vehicle is in motion, the seat-belt warning lamp lights up and a warning signal sounds for approximately 90 seconds.

  The MRS control unit uses the signal from the seat-belt-lock switch to determine whether an airbag should be triggered at stage 1 (seat belt not engaged) or at stage 2 (seat belt engaged).

- **Passenger seat occupancy detector**

  The passenger seat-occupancy detector recognizes whether the seat is occupied or not. When a weight is placed on the seat, resistance in the seat-occupancy mat changes.

  If the multiple restraint system (MRS) triggers the driver's airbag, the passenger airbag and belt tensioner will not be triggered if the passenger seat is unoccupied.

- **Passenger seat-occupancy detector (US version)**

  Due to legal requirements in the USA, a child seat securing a one-year-old child which is placed on the passenger seat must be automatically detected. Upon detection, the airbags on the passenger side are automatically deactivated (passenger airbag and front right-hand side airbag).

  The passenger seat-occupancy detector is based on an evaluation of the surface pressure generated by the person sitting down. The electronic evaluation decides whether a person or a child seat is occupying the seat. If a one-year-old child in a child seat is detected, the airbags on the passenger side are deactivated (warning lamp for passenger-airbag deactivation lights up).

Several control units make up the multiple restraint system (MRS):

- **Multiple restraint system control unit**

  All gas generators and sensors in the multiple restraint system (MRS) are connected to the MRS control unit.

  The MRS control unit evaluates the data it receives from the sensors. In the event of a head-on or side impact, the control unit determines whether it is necessary to deploy any airbags and which airbags should be deployed.

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- **Digital motor electronics or digital diesel electronics**

  When an airbag is triggered, the electric fuel pump is switched off by the DME or DDE (DME = Digital Motor Electronics, DDE = Digital Diesel Electronics).

  Signal path: MRS control unit -> K bus -> instrument cluster -> PT-CAN -> DME or DDE -> direct line -> fuel-pump relay> electric fuel pump

- **Instrument cluster**

  The instrument cluster triggers the optical and audible seat-belt warning.

  The MRS control unit only sends a message on the status of the seat belts and the seat-occupancy detector.

  The instrument cluster receives the status message from the MRS control unit via the body bus when terminal R is ON. Depending on the status, the optical and audible warning is triggered when terminal 15 is ON.

The following components are controlled:

- **Ignition circuit for the airbags**

  With the maximum amount of equipment, the multiple restraint system consists of the following ignition circuits:

  - Driver's airbag (stage 1)
  - Passenger airbag (stage 1)
  - Driver's airbag (stage 2)
  - Passenger airbag (stage 2)
  - Side airbag in the front left door
  - Side airbag in the front right door
  - Side airbag in the left rear door (option 261)
  - Side airbag in the right rear door (option 261)
  - Left-hand head airbag
  - Right-hand head airbag
  - Belt tensioner, front left
  - Belt tensioner, front right
  - Safety battery terminal

Driver and passenger airbag

The driver and passenger airbag reduce the risk of injury to the occupants in the event of a head-on collision.

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The driver airbag is located in the center pad on the steering wheel. The passenger airbag is integrated into the instrument panel above the glove compartment. The driver and passenger airbags each have a dual-stage gas generator. The airbags are triggered at different levels depending on the severity of the accident.

Side airbags

The side airbags reduce the risk of injury to the occupants in the event of a side collision. The side airbags are located behind the door trim panel. The side airbags are always triggered at stage 1.

Head airbags

The head airbags protect the occupants' head in the event of an impact to the side body panels. They also protect the head from objects that may enter the vehicle.

Belt tensioners

The pyrotechnic belt tensioners pull the front seat belts tight against the occupants' body in the event of a head-on or rear-end collision.

In a normal situation, the seat belt does not sit completely tight against the body. The seat belt always has a small degree of play to guarantee the occupants an adequate degree of comfort. The play of a fastened seat belt is know as slack. The prevent the negative effects of this slack, the seat belt buckle is pulled down several centimeters by gas generators in the event of an accident. This pulls the seat belt tight.

Safety battery terminal

Depending on the severity of the accident, the safety battery terminal disconnects the starter motor and the alternator from the power circuit. This minimizes the risk of short circuits in a serious accident. The trigger signal comes from the MRS control unit.

- **Airbag warning lamp**

  The airbag warning lamp shows the operational capability of the multiple restraint system (MRS). The airbag warning lamp is located in the instrument cluster and is controlled by the MRS control unit (via the K bus).

  After the ignition is switched on, the MRS performs a self test. While this is being run, the airbag warning lamp lights up (approximately 3 to 5 seconds). When the system is ready, the airbag warning lamp goes out.

  If, during the self test or while the vehicle is in motion, the MRS control unit detects an existing fault or one that has been stored, the airbag warning lamp remains on.

  If the MRS detects a fault, the operational capability is partially maintained, if possible, subject to the following:

  - If a fault is detected in an MRS circuit, only the affected circuit is deactivated. The other airbags and belt tensioners remain operational.

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- If there is a fault in the airbag warning lamp circuit, the lamp does not light up. If there is no other fault, the MRS remains fully operational.

If there is an internal fault in the MRS control unit or in the power supply, the entire system is deactivated.

- **Deactivation of the passenger airbag and the front right-hand side airbag**

  The passenger airbag and the front right-hand side airbag are deactivated by a coding procedure.

- **Warning lamp for passenger-airbag deactivation (US version)**

  If the warning lamp for passenger-airbag deactivation (passenger airbag off lamp) is lit, both airbags on the passenger side have been deactivated: the passenger airbag and the front right-hand side airbag The passenger airbag off lamp is constantly monitored by the MRS control unit. A fault in the power supply or a defective lamp is stored in the MRS control unit's fault memory. If this occurs, the airbag warning lamp is switched on.

  The passenger airbag OFF lamp is located in the control panel in the overhead console.

- **Shutting off the fuel pump**

  When an airbag is triggered, the fuel feed is also shut off.

Mechanical components in the multiple restraint system (MRS):

- **Seat belts**

  The seat belts are the primary restraint system for all occupants. A lap and diagonal automatic belt is fitted on each seat.

  If there is a very severe impact, the seat belt strap may cause injuries to the chest of the person it is securing. To minimize this risk, the front seat belts are fitted with belt force limiters as standard. The belt force limiters allow the seat belt to be unrolled in a controlled fashion if the belt force exceeds a critical value. The risk of injury due to the belt force acting on the body is therefore reduced.

- **Passive knee protection (US version)**

  Not every state in the USA has a requirement for seat belts to be worn. Therefore, the E83 also has additional plastic impact protection on the driver and passenger sides. In the event of an impact, the passive knee protection provides a flat support for the lower leg, especially if the front passengers are not wearing their seat belts. This causes the forwards movement of the upper body to be controlled towards the relevant airbag (driver or passenger airbag).

SYSTEM FUNCTIONS

The following system functions of the multiple restraint system (MRS) are described:

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- Triggering the multiple restraint system
- Emergency call (EURO version)
- Emergency call (US version)

Triggering the multiple restraint system

Extensive testing has allowed the triggering thresholds to be determined for all possible types of accidents.

Various triggering thresholds were set for activating the different restraint systems:

The multiple restraint system comprises:

- Belt tensioners
- Front airbags
- Side airbags
- Head airbags
- Safety battery terminal
- Electric fuel pump

The following examples illustrate how the various restraint systems are triggered:

- **Head-on collision**

  The belt tensioners, the front airbags and the safety battery terminal are triggered if the head-on collision is so severe that the triggering threshold of the MRS control unit is exceeded.

  The belt tensioners have a lower triggering threshold than the front airbags. The belt tensioners are therefore triggered earlier.

  If the seat-belt-lock switch is faulty, the triggering threshold for the front airbag on this side is lowered. Even though there is a fault message, the MRS control unit will try to trigger the belt tensioners.

  If the seat-occupancy detector is faulty, the control unit assumes that the passenger seat is occupied. The restraint systems are activated.

  The electric fuel pump is switched off. An automatic emergency call is initiated (only in vehicles with the relevant equipment fitted).

- **Side impact**

  The side impact must be severe enough for the triggering threshold in the MRS control unit to be exceeded.

  The side airbag and the head airbag are deployed on the side affected. The safety battery terminal is also triggered.

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The electric fuel pump is switched off. An automatic emergency call is initiated (only in vehicles with the relevant equipment fitted).

- **Front diagonal impact**

  The airbags and belt tensioners are triggered depending on the impact speed and the angle of the impact. If several triggering thresholds are exceeded (e.g. the triggering thresholds for a head-on collision and a side collision), the corresponding restraint systems for head-on and side collisions are triggered.

- **Rear-end collision**

  The belt tensioners and the safety battery terminal are triggered if the rear-end collision is so severe that the triggering threshold of the MRS control unit is exceeded. An automatic emergency call is initiated (only in vehicles with the relevant equipment fitted).

- **Rollover**

  The MRS control unit does not detect the vehicle rolling over. If there is a collision after the vehicle has rolled and the triggering thresholds are exceeded for a head-on and side collision, the relevant restraint systems are triggered.

  The electric fuel pump is switched off.

  An automatic emergency call is initiated (only in vehicles with the relevant equipment fitted).

Emergency call (EURO version)

In vehicles equipped with BMW Assist, the multiple restraint system (MRS) has an additional function: the automatic emergency call

If at least one airbag is triggered in the event of an accident, BMW Assist automatically initiates an emergency call. The vehicle data and its exact location, which is determined by the GPS navigation system, are transmitted to the emergency call center.

Emergency call (US version)

All vehicles have the emergency control function as follows:

- Telematic control unit (TCU)
- Telephone aerial
- Hands-free device
- GPS aerial for location determination

The E83 has the following types of emergency call as standard:

- **Manual emergency call**

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The emergency call button is directly connected to the telephone. Pressing the emergency call button establishes a voice connection with the provider. The voice connection is indicated by a flashing LED in the emergency call button.

The emergency call button is integrated into the control panel in the overhead console.

- **Automatic emergency call:**

If the accident is of corresponding severity, the MRS control unit sends a signal to the Telematics Control Unit (TCU). The TCU initiates an emergency call which also contains the location of the vehicle. The TCU receives the location determination for the navigation system. If a navigation system has not been installed, the location is determined by an internal GPS receiver in the TCU.

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ACCESSORIES AND EQUIPMENT

Audio, Navigation and Anti-Theft - Special Tools - X3

65 AUDIO, NAVIGATION AND ANTI-THEFT

65 5 400 RELEASE BRACKET

Note: For navigation operating unit

Series: E34, E34tou, E36, E36/2, E36/3, E36/5, E36/7, E36/C, E36tou, E38, E38/3, E39, E39PL, E39tou, E46, E46/16, E46/2, E46/3, E46/5, E46/C, E52, E53, E60, E61, E63, E64, E65, E66, E67, E83, E85, E86, E87, E90, R50, R52, R53, RR1, RR2

Order number: 65 5 400 Release bracket

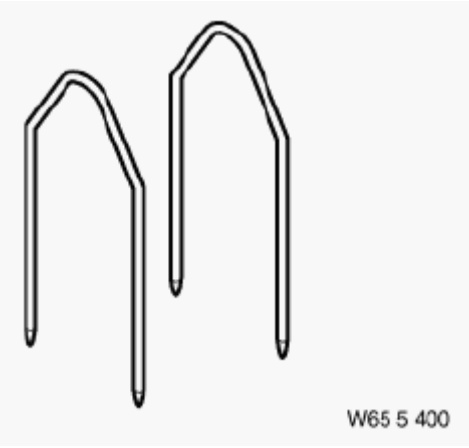


Fig. 1: Release Bracket (65 5 400)
Courtesy of BMW OF NORTH AMERICA, INC.

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2007 ACCESSORIES AND EQUIPMENT

Audio, Navigation and Anti-Theft - Tightening Torques - X3

52 VIDEO MONITOR

65 52 CD/DVD DRIVES AND SPECIAL DEVICES

CD/DVD DRIVES AND SPECIAL DEVICES TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Retaining screw, CD/DVD changer to bracket	E60, E61, E63, E64			0.7 Nm
	E65, E66, E67, E70			0.8 Nm
	E83			1.0 Nm
	E53, E85, E90, E91, E92, E93			1.2 Nm
2AZ Mounting bracket CD/DVD changer to body	E83			6.0 Nm
	E90, E91, E92, E93			3.3 Nm
	E53			4.9 Nm
	E60, E61, E63, E64			5 Nm
	E85, E86			4.4 Nm
3AZ CD/DVD drive to Car Communication Computer	E61, E60, E63, E64, E81, E87, E90, E91, E92, E93, R56			0.4 Nm
4AZ Rear cabin DVD player to center console	E70			3 Nm
5AZ CD/DVD changer to glovebox	E70			6 Nm

77 AIRBAG TRIGGER DEVICE

65 77 AIRBAG TRIGGERING CONTROL

AIRBAG TRIGGERING CONTROL TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Airbag control unit	E36, E38, E39, E46, E52, E53			8.8 Nm
	E85			4.6 Nm
	E60, E61, E63, E64, E83, E81, E87, E90, E91, E92, E93			8.0 Nm
	E60 / from 09/2005, E61 / from 09/2005			8.0 Nm
2AZ Impact sensor for side airbag	E36, E38, E39, E46, E52, E53			5.5 Nm

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3AZ Sensor, front	E83, E85, E86			8.0 Nm
4AZ Sensor, A-pillar	E65, E66			4.5 Nm
5AZ Sensor, B-pillar	E60, E61, E63, E64, E65, E66, E85, E86			4.6 Nm
	E81, E83, E87, E90, E91, E92, E93			8.0 Nm
6AZ Sensor, vehicle center	E65, E66			5.5 Nm
	E60, E61, E63, E64			8.0 Nm
7AZ Sensor, front door	E65, E66			8.2 Nm
	E60, E61, E90, E91, E92, E93			8.0 Nm
	E85, E86			5.6 Nm
	E83			4.6 Nm
8AZ Sensor, rear seat	E65, E66			8.0 Nm
9AZ Acceleration sensor, front	E63, E64, E90, E91, E92, E93		Replace screws	8.0 Nm
	E60, E61		Replace screws	7.0 Nm

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ACCESSORIES AND EQUIPMENT

Cellular Phone Systems - Repair Instructions - X3

11 TRANSCEIVER, HANDSET AND SUPPORT, CARD READER

84 11 519 REMOVING AND INSTALLING/REPLACING EJECT BOX

Special tools required:

See **00 9 340 DISASSEMBLY AID (2)**

- 00 9 341

Insert special tool 00 9 341 as shown between eject box (1) and trim (2).

Pull out eject box (1).

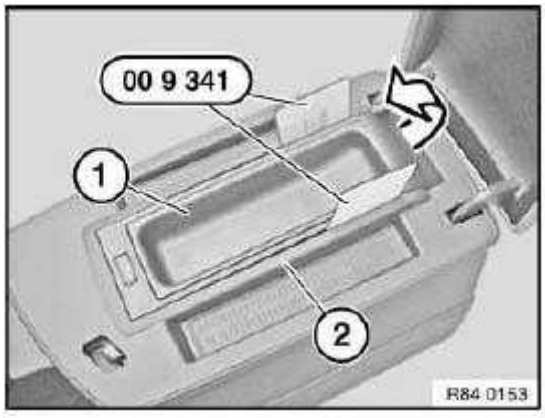


Fig. 1: Special Tool (00 9 341)
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1 and 2).

Remove eject box.

Installation:

Catches (3) must not be damaged or missing.

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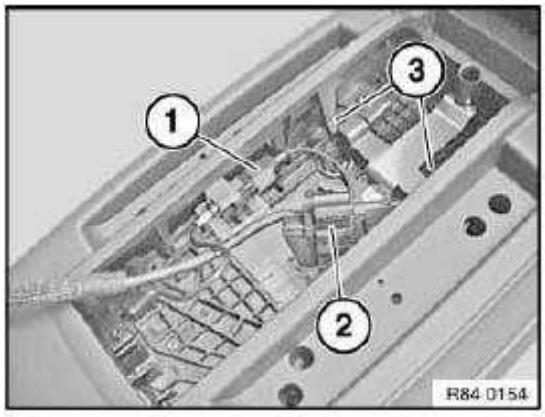


Fig. 2: Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

84 11 550 REMOVING AND INSTALLING/REPLACING HANDS - FREE MICROPHONE

Necessary preliminary tasks:

- Remove Front Roofliner Trim, see **51 44 ... REMOVING AND INSTALLING FRONT ROOFLINER TRIM** .

Expand catch (1) and feed hands-free microphone (2) in direction of arrow out of front roofliner trim (3).

Installation:

Arrow (4) on hands-free microphone (2) points in direction of travel.

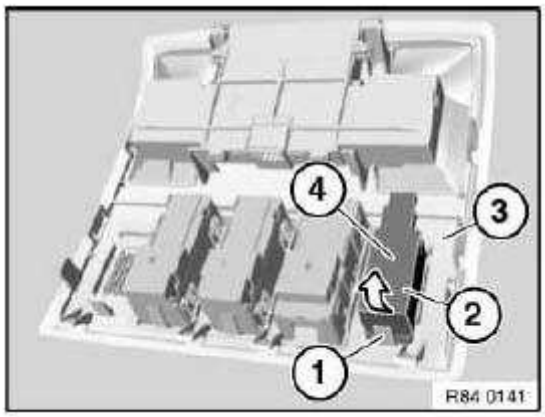


Fig. 3: Catch And Feed Hands-Free Microphone
Courtesy of BMW OF NORTH AMERICA, INC.

84 11 650 REMOVING AND INSTALLING/REPLACING TELEMATIC CONTROL UNIT (TCU) (OPTION SA633/SA638/SA639)

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IMPORTANT: Replacement with option SA638:

- Carry out programming/coding using appropriate BMW scan tool.

Replacement with option SA633/SA639:

- Carry out programming/coding using appropriate BMW scan tool.
- Via Diagnosis and Information System (DIS):
  - Service functions
  - Start subsequent assessment

Replacement with option SA633/SA638/SA639:

- If necessary, carry out coupling procedure
- Remove sticker (Bluetooth passkey) from front of TCU and stick to Service Booklet insert

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Disconnect the battery negative lead, see **THE BATTERY** .
- Remove luggage compartment wheel arch trim on left, see **51 47 151 REMOVING AND INSTALLING / REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** .

Disconnect antenna plug (1).

Disconnect plug connection (3).

Release nuts (4) and remove TCU (2).

Installation:

Observe color coding of aerial/antenna plugs (1).

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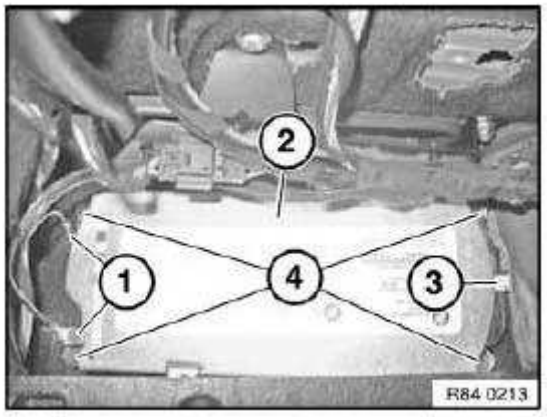


Fig. 4: Antenna Plug And TCU
Courtesy of BMW OF NORTH AMERICA, INC.

21 HANDHELD COMPUTER

84 21 522 REMOVING AND INSTALLING/REPLACING LINE COMPENSATOR

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove hands - free electronics, see **84 21 535 Removing and installing charging hands - free electronics (optional extra 644)**.

Turn retaining clip (2) in clockwise direction and remove from holder (5).

Release wiring harness fastener (3).

Release bolt (1) and nut (4).

Slacken nut (6) and remove holder (5).

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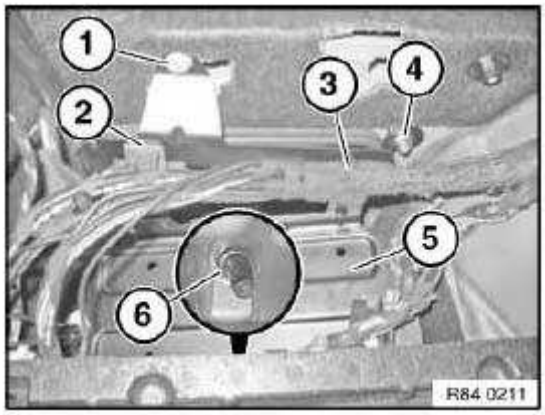


Fig. 5: Wiring Harness Fastener And Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Release screws (2).

Remove line compensator (3).

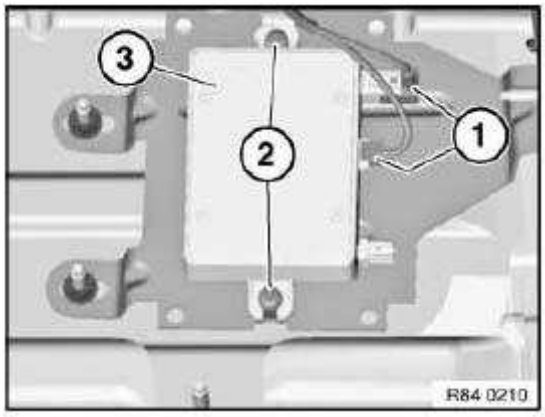


Fig. 6: Screws And Line Compensator
Courtesy of BMW OF NORTH AMERICA, INC.

84 21 535 REMOVING AND INSTALLING CHARGING HANDS - FREE ELECTRONICS (OPTIONAL EXTRA 644)

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove control unit for voice input system, see **84 41 510 Removing and installing/replacing control unit for voice input system**.

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Disconnect antenna lead plug connection (1).

Disconnect plug connection (3).

Release screws (4).

Remove hands-free charging electronics (2).

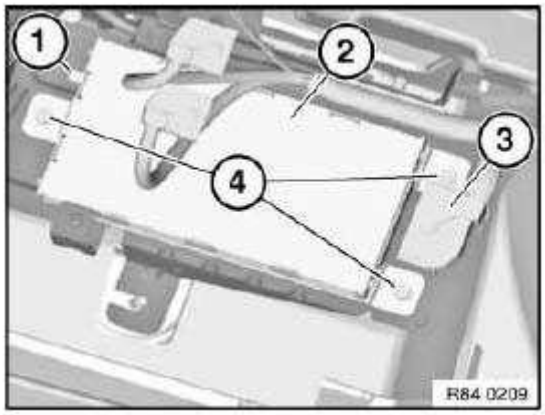


Fig. 7: Hands-Free Charging Electronics
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Carry out vehicle programming/coding using appropriate BMW scan tool.
- If necessary, carry out coupling procedure

41 CONTROL UNIT FOR VOICE

84 41 510 REMOVING AND INSTALLING/REPLACING CONTROL UNIT FOR VOICE INPUT SYSTEM

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove flap in luggage compartment panel on left, see **51 47 172 REMOVING AND INSTALLING/REPLACING FLAP IN LUGGAGE COMPARTMENT TRIM, LEFT OR RIGHT** .

Disconnect plug connection (1).

Release screw (2).

Loosen screw (3).

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Remove control unit for voice input system (4).

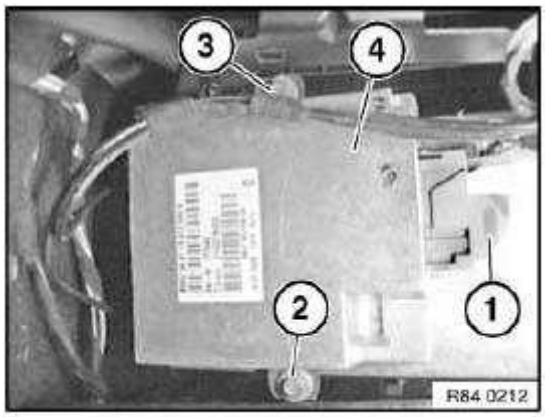


Fig. 8: Plug Connection And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Carry out vehicle programming/coding using appropriate BMW scan tool.

50 ANTENNA

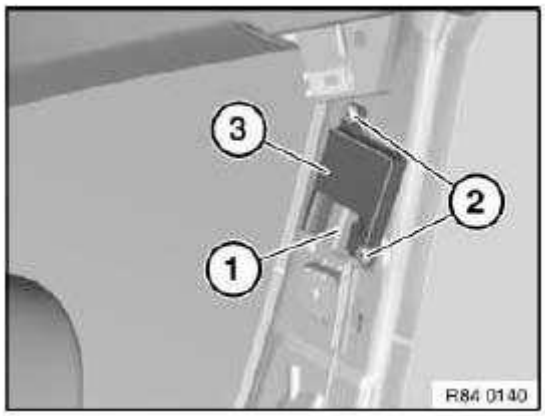
84 50 060 REMOVING AND INSTALLING/REPLACING BLUETOOTH ANTENNA

Necessary preliminary tasks:

- Remove trim for rear left roof pillar (C-pillar), see **51 43 252 REPLACING TRIM PANEL FOR REAR LEFT OR RIGHT ROOF PILLAR (D-PILLAR)** .

Unfasten plug connection (1) and disconnect.

Release screws (2) and remove bluetooth antenna (3).



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Fig. 9: Screws And Bluetooth Antenna
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Cruise Control - Special Tools - X3

66 DISTANCE SYSTEMS, CRUISE CONTROL

66 3 140 OPS PACKAGE

Note: (complete set)

Order number: 66 3 140

OPS package

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ACCESSORIES AND BODY, CAB

Cruise Control Systems - Repair Instructions - X3

20 PARK DISTANCE CONTROL

66 20 508 REMOVING AND INSTALLING (REPLACING) CONTROL UNIT (PARK DISTANCE CONTROL)

IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

Necessary preliminary tasks:

- Remove Luggage Compartment Floor Trim Panel, see **51 47 102 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL** .

Remove clips (1) and fold up front luggage compartment floor trim panel (2) slightly.

Installation:

Make sure front luggage compartment floor trim panel (2) is correctly seated.

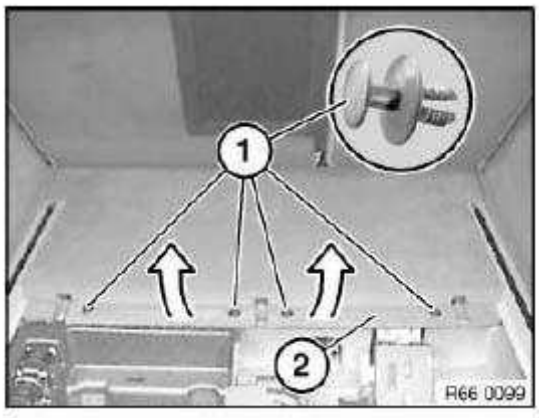


Fig. 1: Clips And Front Luggage Compartment Floor Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Front luggage compartment floor trim panel shown removed for purposes of clarity.

Unlock plug connections (1) and disconnect.

Lift control unit (2) out of mounting for control units (3).

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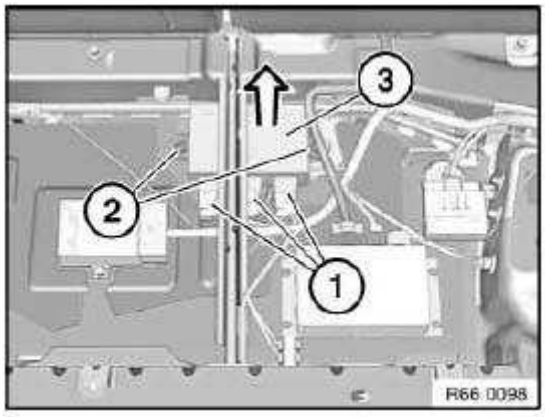


Fig. 2: Plug Connections And Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW service tool.

66 20 520 REMOVING AND INSTALLING/REPLACING AN ULTRASONIC TRANSDUCER AT FRONT (PARK DISTANCE CONTROL)

Necessary preliminary tasks:

- Remove Front Bumper Trim, see **51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM (FROM 09/2006)** .

Unlock catches (1) in direction of arrow and pull ultrasonic transducer (2) out of bracket (3).

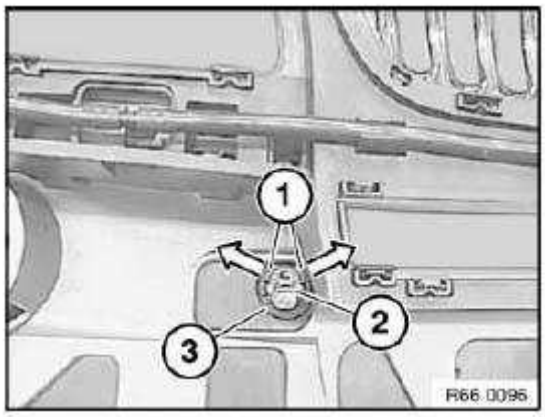


Fig. 3: Catches And Ultrasonic Transducer
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

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Retaining hooks (1) of ultrasonic transducer (2) must engage exactly in mountings (3).

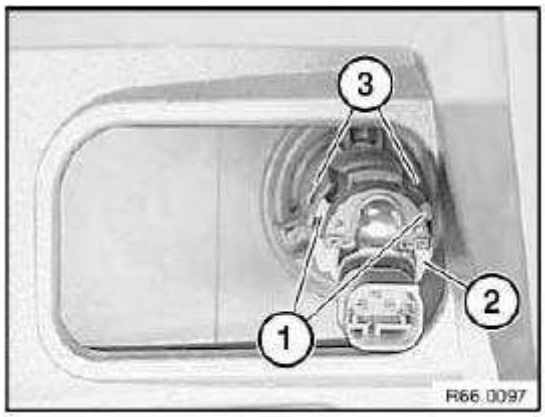


Fig. 4: Retaining Hooks Of Ultrasonic Transducer
Courtesy of BMW OF NORTH AMERICA, INC.

66 20 540 REMOVING AND INSTALLING/REPLACING A REAR ULTRASONIC TRANSDUCER (PARK DISTANCE CONTROL)

Necessary preliminary tasks:

- Remove Rear Bumper Trim, see **51 12 156 REMOVING AND INSTALLING REAR BUMPER TRIM (FROM 09/2006)** .

Unlock catches (1) in direction of arrow and pull ultrasonic transducer (2) out of bracket (3).

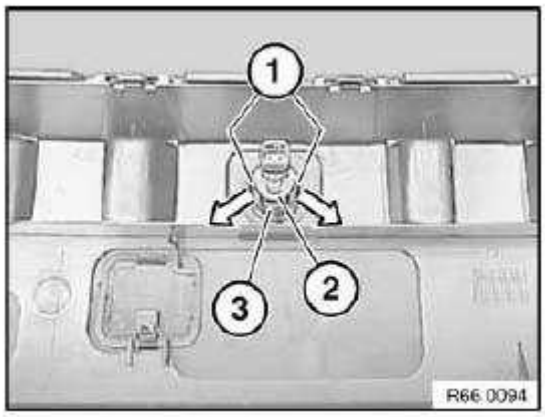


Fig. 5: Catches And Ultrasonic Transducer
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retaining hooks (1) of ultrasonic transducer (2) must engage exactly in mountings (3).

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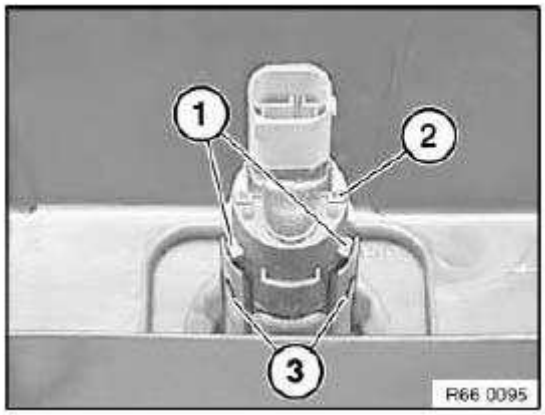


Fig. 6: Retaining Hooks Of Ultrasonic Transducer
Courtesy of BMW OF NORTH AMERICA, INC.

66 20 560 REMOVING AND INSTALLING/REPLACING REAR SIGNAL SENSOR (PARK DISTANCE CONTROL)

Necessary preliminary tasks:

- Remove Right Luggage Compartment Wheel Arch Trim, see **51 47 161 REMOVING AND INSTALLING/REPLACING RIGHT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** .

Unfasten plug connection (1) and disconnect.

Release nut (2) and remove rear signal sensor (3).

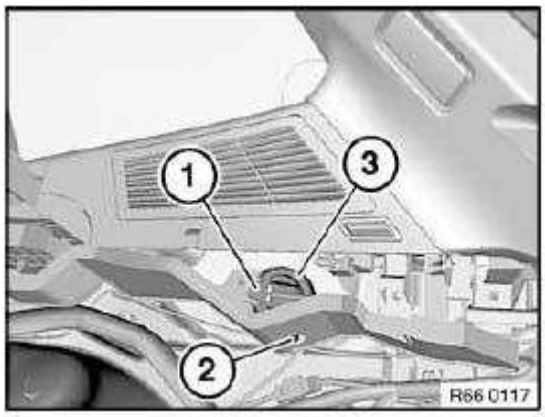


Fig. 7: Rear Signal Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

53 REVERSING CAMERA

66 53 ... INSTRUCTIONS FOR ADAPTING ADJUSTMENT UNIT FOR REVERSING CAMERA (CORGHI KDS QUICK - ACTION CLAMP)

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The following operations should only be carried out when using the tool kit for calibrating the reversing camera for the first time.

NOTE: The operation is described for the left-hand side; proceed in the same way for the right-hand side.

Remove support plate (1) from spindle (2).

Replace spindle (2) by spindle (3).

Press support plate (1) on to spindle (3).

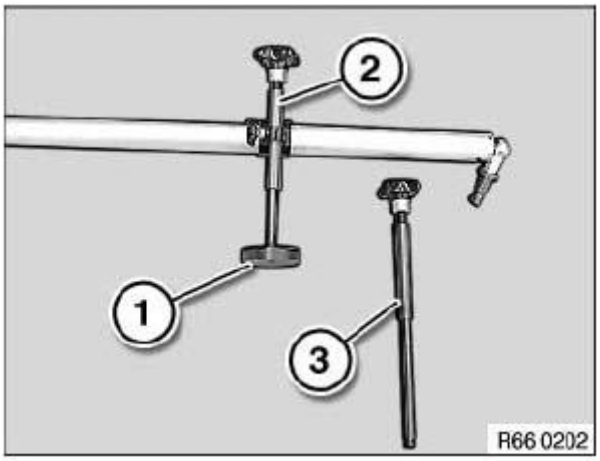


Fig. 8: Support Plate And Spindle
Courtesy of BMW OF NORTH AMERICA, INC.

Release retaining clip (1).

Remove ball pin (2) from rod (3).

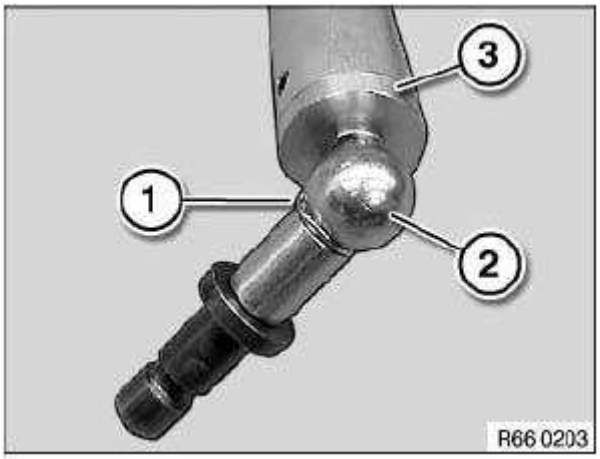


Fig. 9: Retaining Clip And Ball Pin

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Courtesy of BMW OF NORTH AMERICA, INC.

Fit new ball pin (1) on rod (2) and secure with retaining clip (3).

Fit ball pin (1) on CORGHI KDS quick-release clamp and secure.

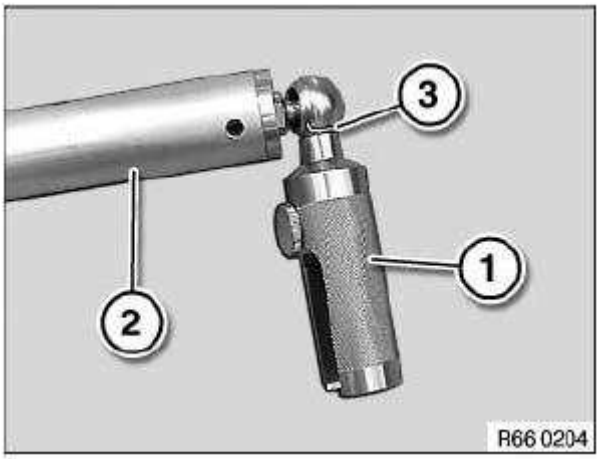


Fig. 10: Ball Pin, Rod And Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Remove all spacers (1) on cross bar (2).

NOTE: Follow the same procedure for calibrating the reversing camera.

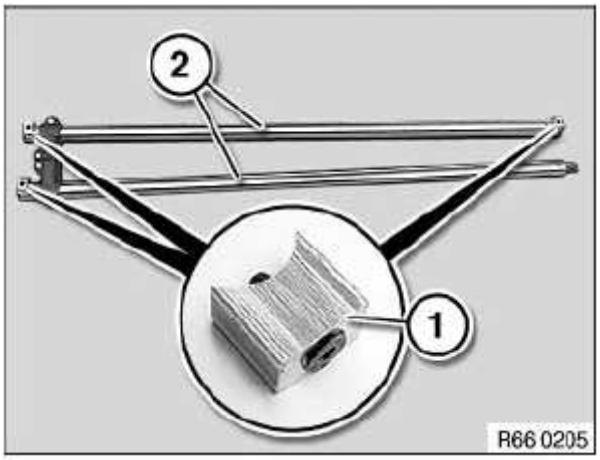


Fig. 11: Spacers On Cross Bar
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Electrical Drives - Repair Instructions - X3

11 CENTRAL LOCKING UNIT/UNLOCKING UNITS

67 11 510 REMOVING AND INSTALLING/REPLACING SERVODRIVE FOR FRONT LEFT OR RIGHT DOOR LOCKING MECHANISM

NOTE: Servodrive for door locking mechanism is integrated in door lock in front door.

Procedure is described in the document 51 21 090 REMOVING AND INSTALLING/REPLACING DOOR LOCK IN LEFT OR RIGHT FRONT DOOR .

67 11 530 REMOVING AND INSTALLING/REPLACING SERVODRIVE FOR REAR LEFT OR RIGHT DOOR LOCKING MECHANISM

This operation is described in:

51 22 090 REMOVING AND INSTALLING/REPLACING DOOR LOCK IN LEFT OR RIGHT REAR DOOR .

67 11 555 REMOVING AND INSTALLING/REPLACING SERVODRIVE FOR TANK FILLER FLAP

Necessary preliminary tasks:

- Remove Right Luggage Compartment Wheel Arch Trim, see **51 47 161 REMOVING AND INSTALLING/REPLACING RIGHT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** .

Unclip emergency actuator (1) on emergency actuator pull strap (2).

Feed out emergency actuator pull strap (2) through opening (3).

Slacken screws (4) and feed servodrive for tank filler flap (5) towards rear out of retaining plate.

If necessary, carry out adjustment of servodrive for tank filler flap (5) via elongated holes of retaining plate. It must be possible to lock or unlock the fuel filler flap completely.

Disconnect associated plug connection and remove servodrive for tank filler flap (5).

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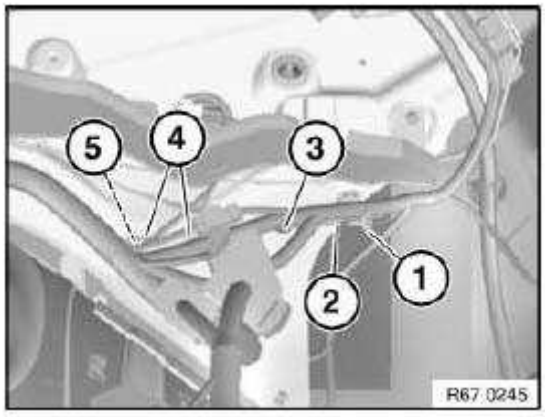


Fig. 1: Emergency Actuator And Strap
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert servodrive for tank filler flap (1) in direction of arrow into gaiter (2).

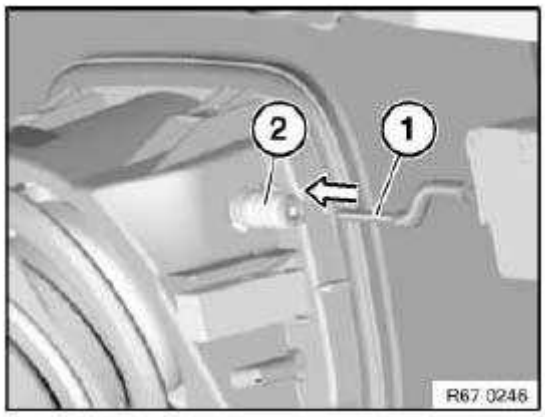


Fig. 2: Tank Filler Flap
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Unhook emergency actuator pull strap (1) from clip (2) and remove from locking pin (3) of servodrive for fuel filler flap (4).

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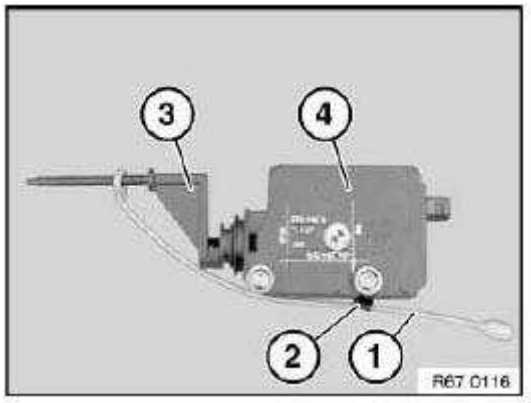


Fig. 3: Servodrive For Fuel Filler Flap
Courtesy of BMW OF NORTH AMERICA, INC.

67 11 560 REPLACING SERVODRIVE FOR REAR LID LOCK

This operation is described under:

51 24 105 REMOVING AND INSTALLING/REPLACING REAR LID LOCK (LOWER SECTION OF LOCK) .

13 MIRROR ADJUSTMENT

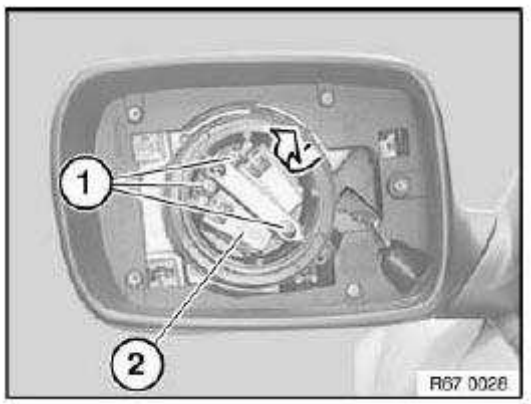
67 13 001 REPLACING DRIVE UNIT FOR ELECTRICALLY OPERATED LEFT OR RIGHT DOOR MIRROR

Necessary preliminary tasks:

- Remove Mirror Glass, see **51 16 026 REPLACING MIRROR GLASS** .

Release screws (1).

Fold out drive unit for electrically operated door mirror (2) in direction of arrow.



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Fig. 4: Screws And Electrically Operated Door Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) and remove drive unit for electrically operated door mirror (2).

IMPORTANT: In order to avoid ingress of water in non-sealed plug housing, coat plug housing (1) at cable and connection ends with battery terminal grease.

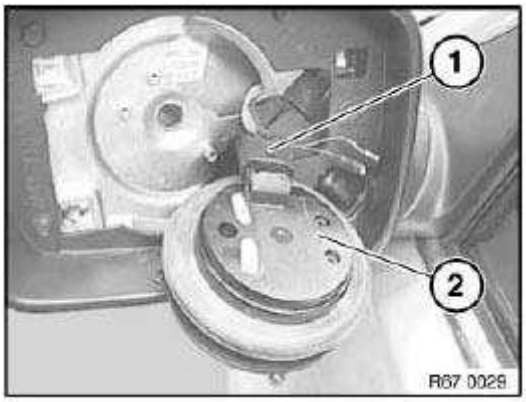


Fig. 5: Plug Connection And Electrically Operated Door Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

67 13 005 REPLACING DRIVE UNIT FOR ELECTRICALLY ADJUSTABLE LEFT OR RIGHT DOOR MIRROR (WITH MEMORY)

Special tools required:

- **61 1 150 RELEASING TOOL KIT**

Necessary preliminary tasks:

- Remove Mirror Glass, see **51 16 026 REPLACING MIRROR GLASS** .
- Remove Mirror On Left Or Right Front Door, see **51 16 000 REMOVING AND INSTALLING/REPLACING MIRROR ON LEFT OR RIGHT FRONT DOOR** .

Release screws (1).

Remove drive unit for electrically adjustable door mirror (2) in direction of arrow.

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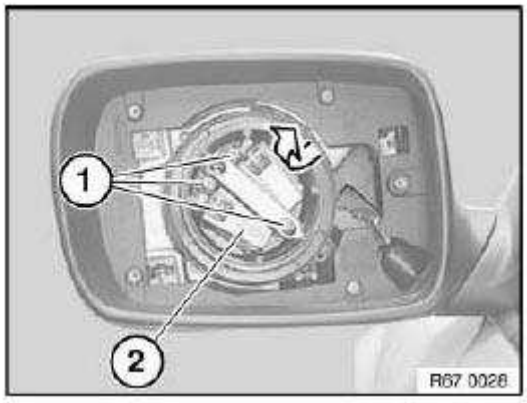


Fig. 6: Screws And Electrically Operated Door Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip cap (1) with a suitable tool.

Remove sound insulation (2) from mirror. Correctly disconnect cable plug (3) with special tool 61 1 150 .

Feed out cable (4).

Installation:

Make sure ribbon cable (4) is correctly routed. Cable must not be kinked!

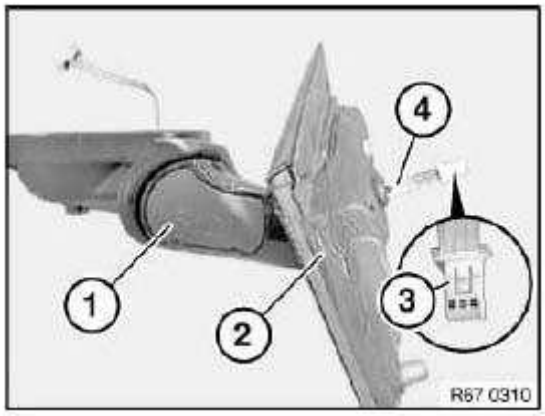


Fig. 7: Sound Insulation And Cable Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Sound insulation (1) on mirror (2) must not be damaged.

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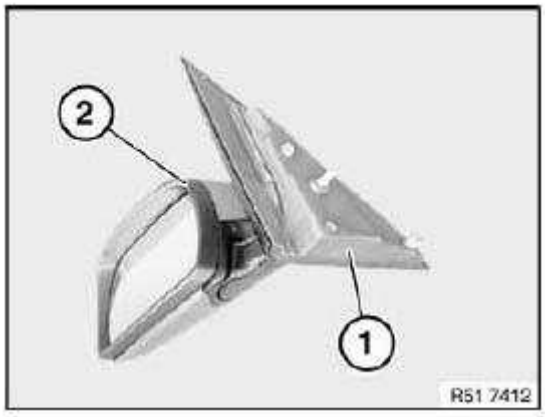


Fig. 8: Sound Insulation On Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

31 DRIVE, SEAT ADJUSTMENT

67 31 501 REMOVING AND INSTALLING/REPLACING DRIVE FOR LONGITUDINAL SEAT ADJUSTMENT (FRONT SEAT REMOVED)

Disconnect plug connection (1).

Unclip plug housing (2) in direction of arrow from retaining fixture underneath.

NOTE: Secure drive for longitudinal seat adjustment (4) against falling out.

Release screws (3) and remove drive for longitudinal seat adjustment (4) in direction of arrow from flange (5).

If necessary, remove inner drive shaft from drive for longitudinal seat adjustment (4).

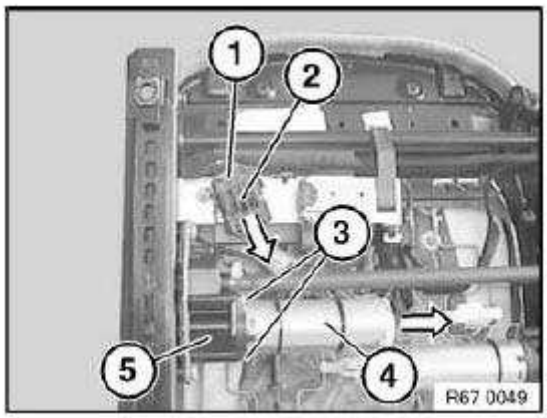


Fig. 9: Plug Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

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Make sure drive shaft (1) is correctly seated.

Make sure drive for longitudinal seat adjustment (2) is correctly seated on flange (3).

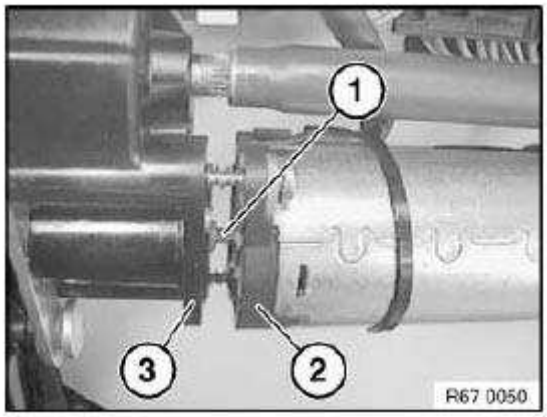


Fig. 10: Drive Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

67 31 511 REMOVING AND INSTALLING/REPLACING DRIVE FOR SEAT TILT ADJUSTMENT (FRONT SEAT REMOVED)

Disconnect plug connection (4).

NOTE: Secure drive for seat tilt adjustment (5) against falling out.

Loosen screws (1).

Remove drive for seat tilt adjustment (5) with fixture for plug connection (3) in direction of arrow from flange (2).

If necessary, remove inner drive shaft from drive for seat tilt adjustment (5).

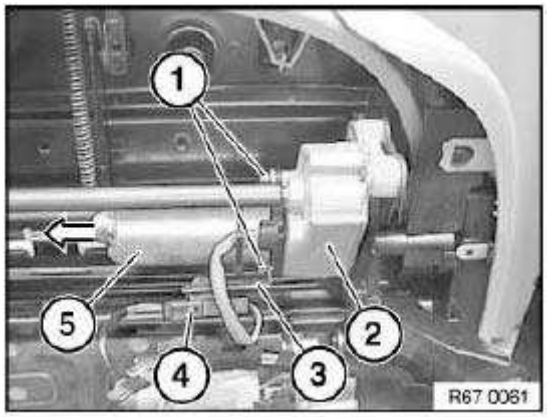


Fig. 11: Seat Tilt Adjustment

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Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure drive shaft (1) is correctly seated.

Ensure fixture for plug connection (3) and drive for seat tilt adjustment (4) on flange (2) are correctly seated.

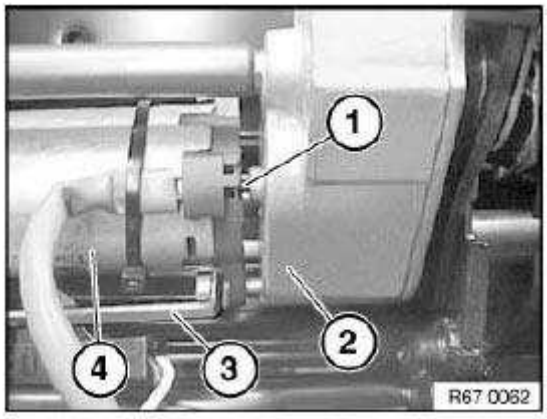


Fig. 12: Drive Shaft And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

67 31 521 REMOVING AND INSTALLING/REPLACING DRIVE FOR SEAT HEIGHT ADJUSTMENT (FRONT SEAT REMOVED)

Disconnect plug connection (2).

NOTE: Secure drive for seat height adjustment (3) against falling out.

Release screws (1).

Remove drive for seat height adjustment (3) with fixture for plug connection (4) in direction of arrow from flange (5).

If necessary, remove inner drive shaft from drive for seat height adjustment (3).

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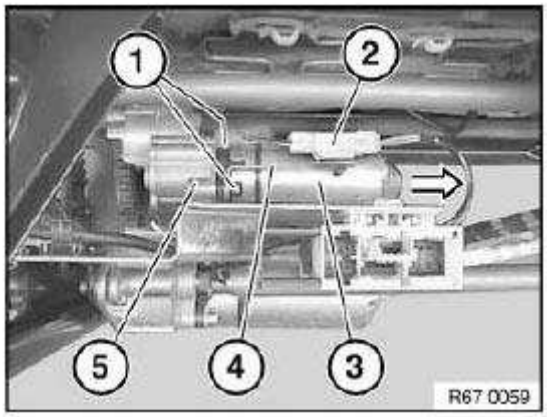


Fig. 13: Seat Height Adjustment And Inner Drive Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure drive shaft (1) is exactly seated.

Ensure fixture for plug connection (2) and drive for seat height adjustment (3) on flange (4) are correctly seated.

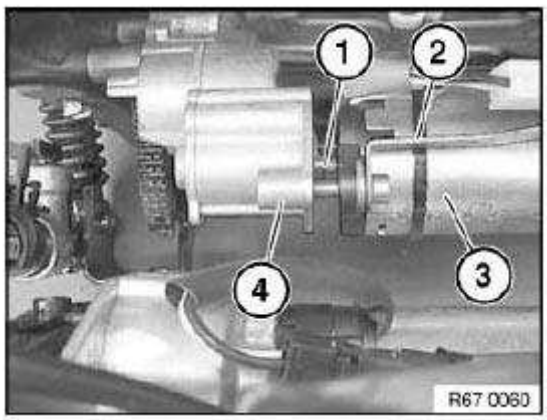


Fig. 14: Drive Shaft And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

67 31 531 REMOVING AND INSTALLING/REPLACING DRIVE FOR BACKREST ANGLE ADJUSTMENT (FRONT SEAT REMOVED)

Disconnect plug connection (1).

NOTE: Secure drive for backrest angle adjustment (5) against falling out.

Release screws (3).

Remove drive for backrest angle adjustment (5) with fixture for plug connection (2) in direction of arrow from

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flange (4).

If necessary, remove inner drive shaft from drive for backrest angle adjustment (5).

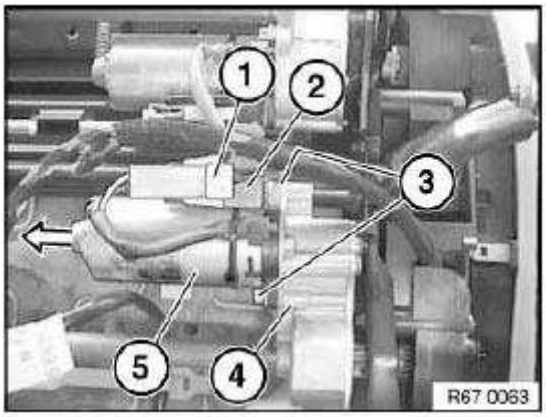


Fig. 15: Backrest Angle Adjustment
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure drive shaft (1) is exactly seated.

Ensure fixture for plug connection (3) and drive for backrest angle adjustment (4) on flange (2) are correctly seated.

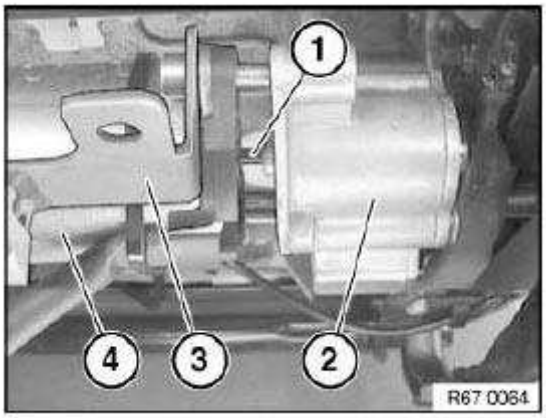


Fig. 16: Drive Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

61 DRIVE, SLIDE-TILT SUNROOF/CONVERTIBLE TOP

67 61 515 REPLACING DRIVE WITH GEAR (FRONT) FOR ACTUATING SLIDE/TILT SUNROOF (PANORAMA GLASS SUNROOF)

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Necessary preliminary tasks:

- **E53:** Remove mounting bracket from roofliner at front.
- **E83:** Remove Front Roofliner Trim, see **51 44 ... REMOVING AND INSTALLING FRONT ROOFLINER TRIM** .

NOTE: Secure drive with gear for actuating slide/tilt sunroof (2) against falling out.

Release screws (1), tightening torque: 1AZ, see**54 13 ELECTRIC SUN ROOF COMPONENTS** .

Lower drive with gear for actuating slide/tilt sunroof (2).

NOTE: Screws (1) are microencapsulated.

Unlock plug connection (3), disconnect and remove drive with gear for actuating slide/tilt sunroof (2).

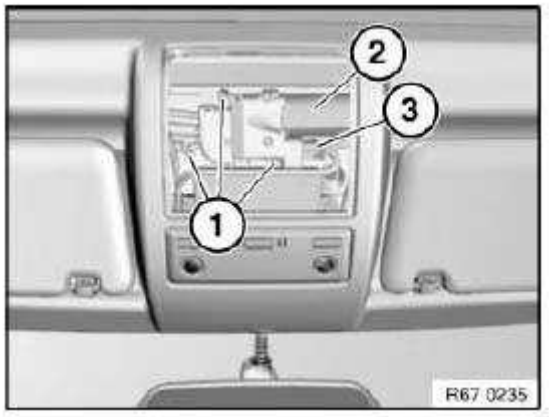


Fig. 17: Screws And Actuating Slide/Tilt Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert gear wheel (1) of drive with gear for actuating slide/tilt sunroof (2) exactly in gear teeth (3).

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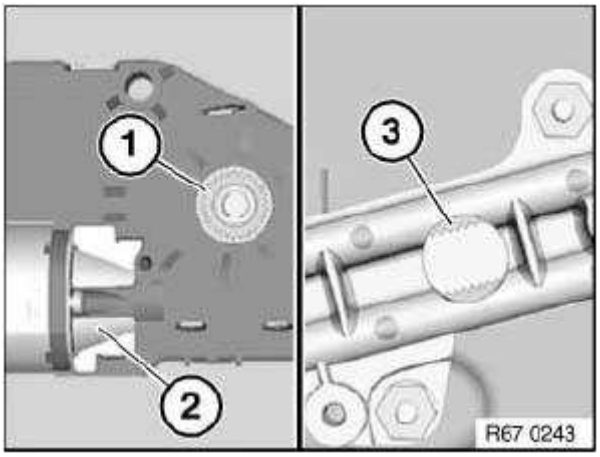


Fig. 18: Gear Wheel And Gear Teeth
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Initialize Panorama Glass Roof, see **54 0 ... NOTES ON PANORAMA GLASS ROOF (INITIALIZATION/NORMALIZATION/LEARNING OF CHARACTERISTIC CURVE)** .

67 61 517 REPLACING DRIVE WITH GEAR (REAR) FOR ACTUATING SLIDE/TILT SUNROOF

Necessary preliminary tasks:

- Remove rear grab handles, see **51 16 450 REMOVING AND INSTALLING/REPLACING REAR LEFT/RIGHT GRAB HANDLE** .
- Remove trim for rear left and right roof pillar (C-pillar), see **51 43 251 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR REAR LEFT OR RIGHT ROOF PILLAR (C - PILLAR)** .
- Remove trim for rear left and right roof pillar (D-pillar), see **51 43 252 REPLACING TRIM PANEL FOR REAR LEFT OR RIGHT ROOF PILLAR (D-PILLAR)** .
- Remove left and right interior lights, see **63 31 015 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT INTERIOR LIGHT (SIDE ROOFLINER)** .
- Detach mucket in area of roofliner

IMPORTANT: Do not under any circumstance kink roofliner (1).

Unclip roofliner (1) at retaining point (2) towards bottom and lower.

NOTE: Secure drive with gear for actuating slide/tilt sunroof (4) against falling out.

Release screws (3), tightening torque: 1AZ, see **54 13 ELECTRIC SUN ROOF COMPONENTS** .

Lower drive with gear for actuating slide/tilt sunroof (4).

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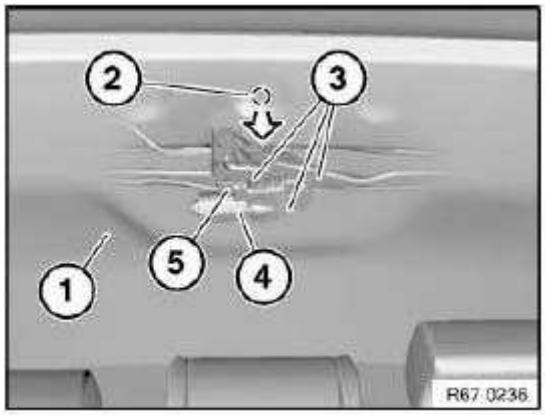


Fig. 19: Roofliner And Actuating Slide/Tilt Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Screws (3) are microencapsulated.

Unlock plug connection (5), disconnect and remove drive with gear for actuating slide/tilt sunroof (4).

Installation:

Insert gear wheel (1) of drive with gear for actuating slide/tilt sunroof (2) exactly in gear teeth (3).

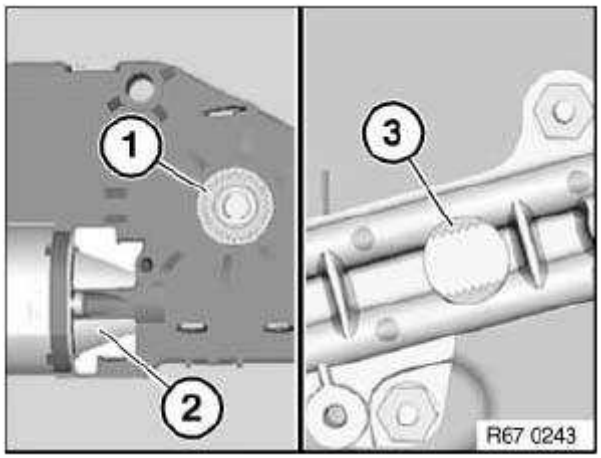


Fig. 20: Gear Wheel And Gear Teeth
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Initialize Panorama Glass Roof, see **54 0 ... NOTES ON PANORAMA GLASS ROOF (INITIALIZATION/NORMALIZATION/LEARNING OF CHARACTERISTIC CURVE)** .

62 DRIVE, WINDOW REGULATOR

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67 62 000 REMOVING AND INSTALLING / REPLACING FLAT MOTOR FOR FRONT LEFT OR RIGHT POWER WINDOW UNIT

Special tools required:

- **00 9 310 ASSEMBLY WEDGES (SET IN PLASTIC CASE)**

Necessary preliminary tasks:

- Detach sound insulation on front door in working area, see **51 48 060 REMOVING AND INSTALLING/REPLACING SOUND INSULATION IN LEFT OR RIGHT FRONT DOOR** .

NOTE: For clearer illustration, shown with sound insulation removed.

Disconnect plug connection (1).

Unfasten screws (2).

Detach flat motor (3) in direction of arrow from power window unit (4) and remove.

IMPORTANT: If necessary, use special tool 00 9 310 to release flat motor (3) from power window unit (4).

Guide wheel must not be pulled out of power window unit (4).

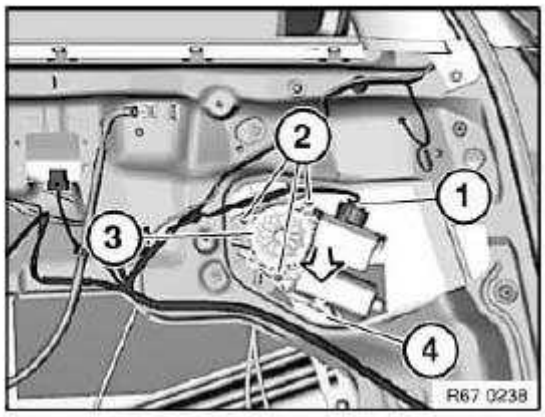


Fig. 21: Screws And Flat Motor
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit flat motor (3) exactly on teeth of power window unit.

Replacement:

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A normalization must be carried out in order to activate anti - trapping protection.

Operating sequence for normalization:

- Open corresponding window completely.
- Operate corresponding power window switch in "Close" position (second switch stage).
- Once the upper end position has been reached, hold power window switch down for approx. 1 second more.

Normalization is thus completed.

NOTE: Carry out function check (one-touch function, anti-trapping protection and, if necessary, comfort function).

67 62 020 REMOVING AND INSTALLING/REPLACING FLAT MOTOR FOR REAR LEFT OR RIGHT POWER WINDOW UNIT

Necessary preliminary tasks:

- Detach sound insulation on rear door in working area, see **51 48 070 REMOVING AND INSTALLING/REPLACING SOUND INSULATION ON LEFT OR RIGHT REAR DOOR** .

NOTE: For clearer illustration, shown with sound insulation removed.

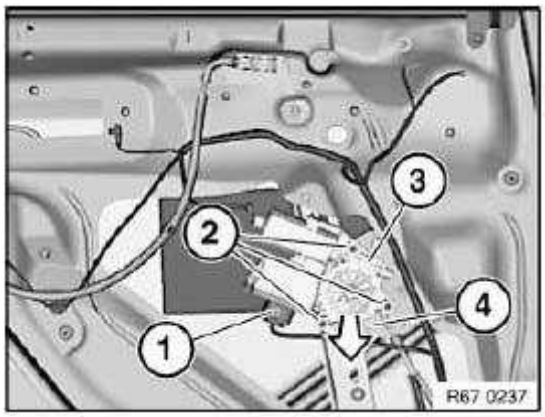
Unfasten plug connection (1) and disconnect.

Release screws (2).

Detach flat motor for power window unit (3) in direction of arrow from power window unit (4) and remove.

Installation:

Fit flat motor for power window unit (3) exactly on teeth of power window unit.



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Fig. 22: Screws And Flat Motor
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

A normalization must be carried out in order to activate anti - trapping protection.

Operating sequence for normalization:

- Open corresponding window completely.
- Operate corresponding power window switch in "Close" position (second switch stage).
- Once the upper end position has been reached, hold power window switch down for approx. 1 second more.

Normalization is thus completed.

NOTE: Carry out function check (one-touch function, anti-trapping protection and, if necessary, comfort function).

66 DRIVE, SEAT ADJUSTMENT

67 66 010 REMOVING AND INSTALLING/REPLACING LUMBAR SUPPORT DRIVE MECHANISM ON FRONT SEAT, LEFT OR RIGHT

Necessary preliminary tasks:

- Remove rear panel on front seat backrest, see **52 13 198 REMOVING AND INSTALLING / REPLACING REAR PANEL ON LEFT OR RIGHT FRONT SEAT BACKREST (NORMAL/MANUAL)** .

E53 comfort seat:

- Remove rear panel at bottom.

Detach backrest cover (1) in direction of arrow from backrest frame (2).

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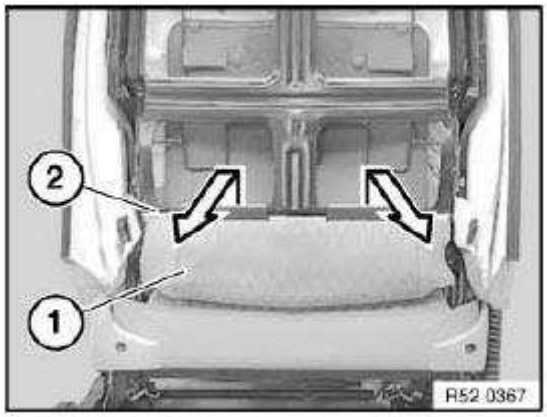


Fig. 23: Backrest Cover And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Detach transparent hose (2) from valve housing (3).

NOTE: If necessary, gently heat transparent hose (2) if firmly seated.

If necessary, detach fabric adhesive tape (4).

Detach drive unit for lumbar support (5) with jacket in direction of arrow.

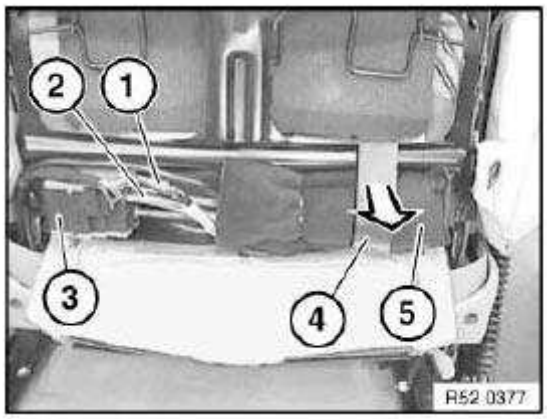


Fig. 24: Transparent Hose And Valve Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clean adhesive area (1) on backrest frame (2).

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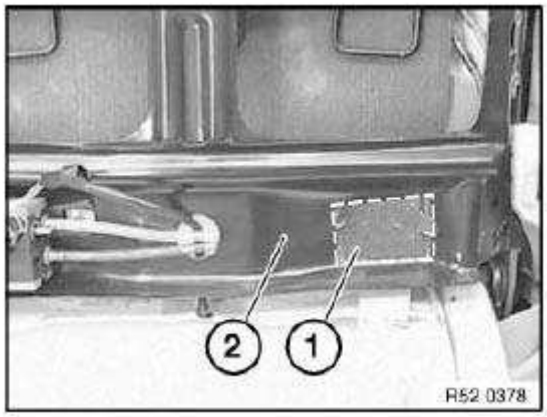


Fig. 25: Adhesive Area On Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Transparent hose (1) of drive unit for lumbar support must not be kinked.

Pull off protective film (3) from jacket (2). Stick drive unit for lumbar support to backrest frame.

If necessary, secure jacket (2) with cable strap.

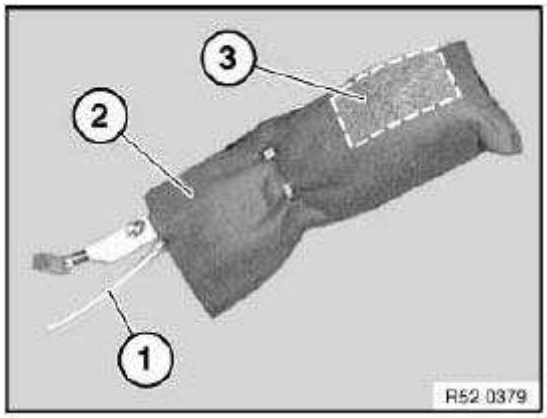


Fig. 26: Transparent Hose And Protective Film
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Electrical Drives - Tightening Torques - X3

62 DRIVE, WINDOW REGULATOR

67 62 DRIVES, POWER WINDOWS

DRIVES, POWER WINDOWS TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Motor to window regulator	E46, E85, E86, E93			4.5 Nm
	E31, E36, E65, E66			5 Nm
	E81, E83			3 Nm
	E60, E61, E63, E64, E87, E90, E91, E92			6 Nm
	E70		Observe screwing sequence	6 Nm

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ACCESSORIES AND BODY, CAB

Instruments - Repair Instructions - X3

11 INSTRUMENT CLUSTER

62 11 280 REMOVING AND INSTALLING (REPLACING) INSTRUMENT CLUSTER

IMPORTANT: Read and comply with 61 35... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .

NOTE: Extend steering wheel completely and lower.

Tape off instrument panel trim (1) and upper steering column casing (2) with crepe tape.

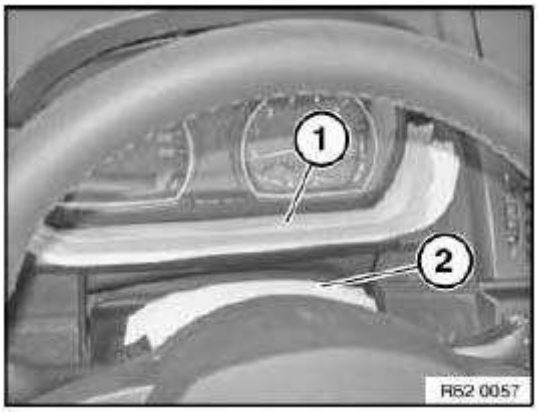


Fig. 1: Identifying Instrument Panel Trim And Upper Steering Column Casing
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Carefully pull back instrument cluster (2).

Disconnect associated plug connection.

Remove instrument cluster (2).

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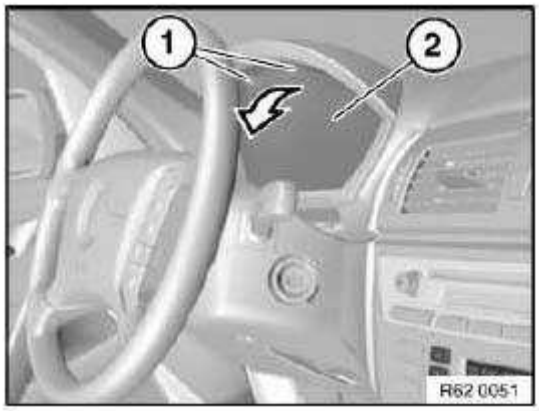


Fig. 2: Identifying Instrument Cluster
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

Carry out programming/coding using appropriate BMW scan tool.

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ACCESSORIES & BODY, CAB

Remote Keyless Entry - SI Techniques - All Models (Model Year 09/1999 And Up)

NEW RADIO REMOTE CONTROL (RKE)

All Models Beginning 09/99

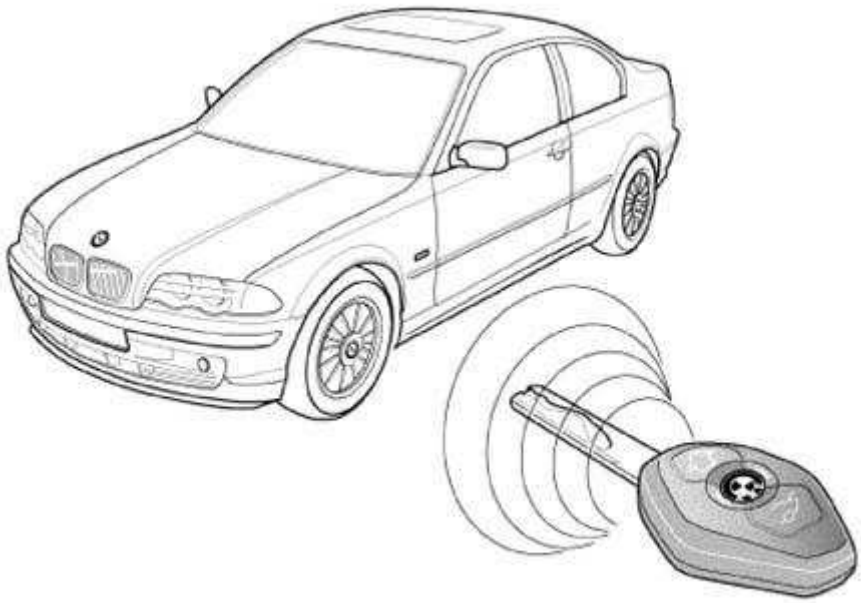


Fig. 1: Identifying New Radio Remote Control
Courtesy of BMW OF NORTH AMERICA, INC.

1. RADIO TECHNOLOGY

Radio technology is a comprehensive term covering all areas of cordless telecommunication such as telephone, radio, television. Transmission is by means of electromagnetic waves.

Due to the fact that the radio waves are not limited to one single direction and have a wider range than the infrared waves, this technology is also being increasingly employed in remote controls.

The same remote-control technology is used in motor vehicle construction as, for example, in construction site cranes, in model construction, alarm systems, garage-door opening systems etc.

These remote controls are operated on the same approved frequency (315 MHz or 433.92 MHz).

2. RADIO REMOTE CONTROL, GENERAL INFORMATION

The radio remote control for the central locking system (FZV) is a further development of the radio-compact

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remote control, or the radio remote control which first appeared in the E38.

The radio transmitter is still located in the grip of the car key, the receiver module is installed in the vehicle. All radio telegrams are encoded by means of a constantly changing code. This ensures that the vehicle cannot be opened by someone who has eavesdropped telegrams.

Depending on vehicle type, equipment and country-specific version, in addition to the functions "opening/closing central locking system" and "central arrest" the following functions are also available: "activating/deactivating alarm system", "deactivating tilt sensor/passenger-compartment sensor", "convenient opening/closing window and sliding roof", "switching on interior lighting" and "opening/closing luggage compartment lid".

The remote control keys can be initialized at the vehicle without visiting a BMW Service point when, for example, the owner requires additional keys or, for security reasons, following the loss of a radio remote control key. The initialization procedure is described in the respective Owner's Handbooks.

The radio remote control is available as standard equipment in the models E38, E39, E46 and as an option in the E36 models (option 302).

Up to 4 radio transmitters can be operated per vehicle.

In many countries, radio remote controls are subject to radio-technical registration specifications. The required designation is on the key grip.

3. SYSTEM OVERVIEW

The radio remote control consists of:

1. Radio transmitter (integrated in the key grip)
2. General module of the central body electrics (ZKE)
3. Receiver module (integrated in aerial amplifier or aerial diversity)
4. Aerial in rear window or rear side window on touring

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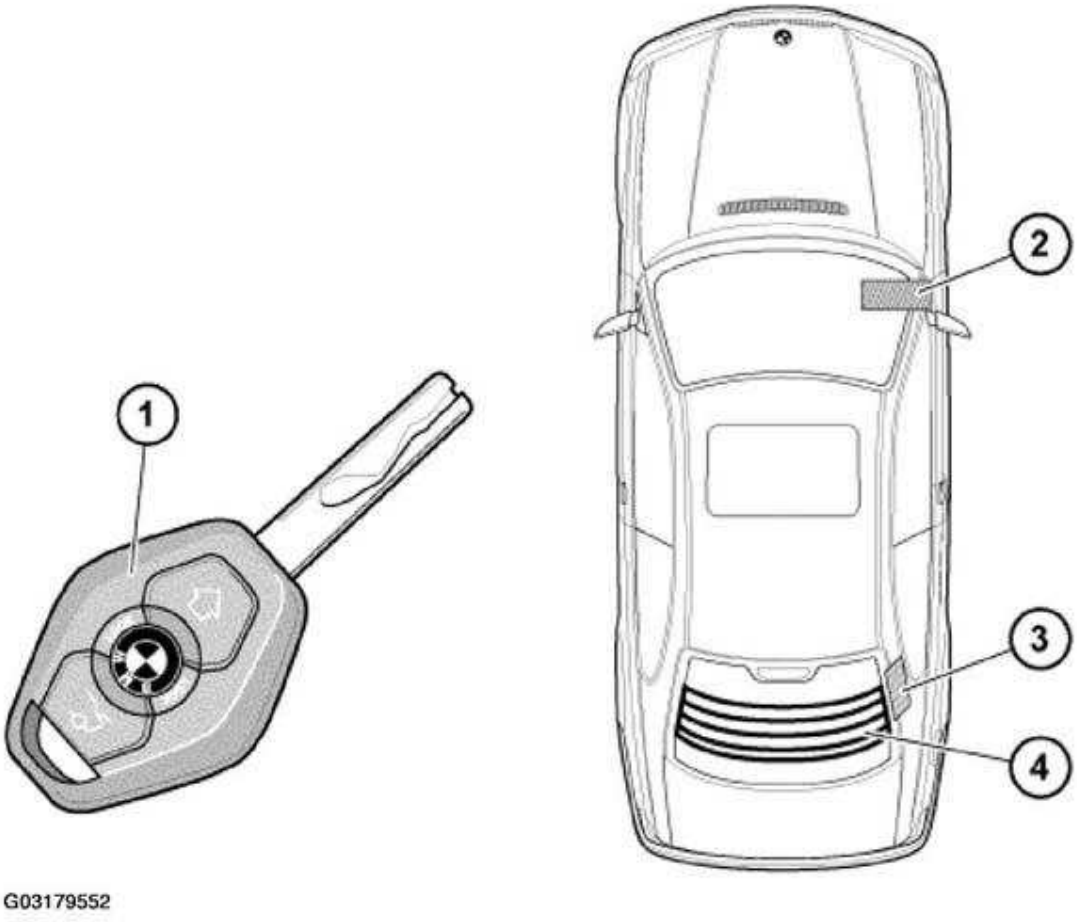


Fig. 2: Identifying RKE Components & Locations
Courtesy of BMW OF NORTH AMERICA, INC.

The reception of the radio signals from the transmitter varies according to location in relation to vehicle. The rear area (aerial) of the vehicle is the reference point.

External influences can cause the range or operation of the remote control to deviate from the mean distances specified below either **positively** (through reflection) or **negatively** due to sources of interference (radio-technical systems).

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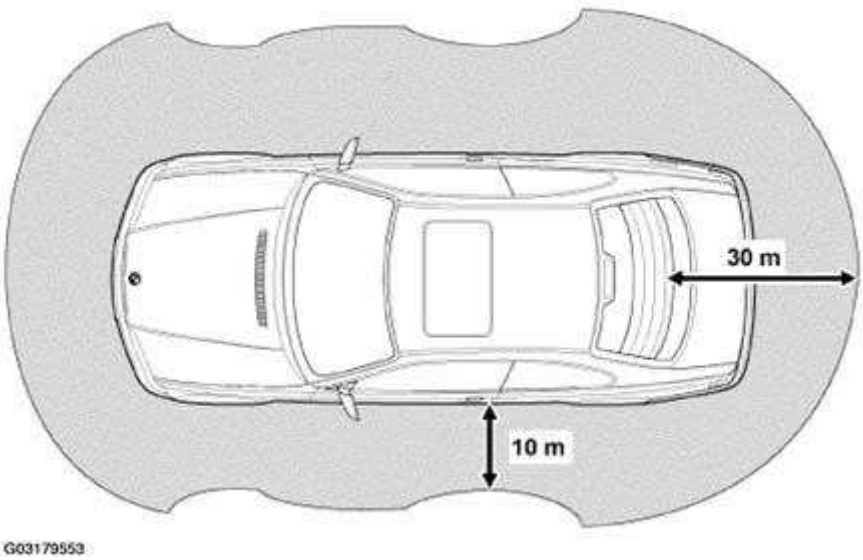


Fig. 3: Identifying RKE Range Of Operation
Courtesy of BMW OF NORTH AMERICA, INC.

External radio-technical systems/equipment that are operated on the same frequency (433.92 MHz; 315 MHz; 70 cm band) with a higher output can interfere with the remote control function. Possible sources of interference are:

- Radio Headphones (Known As Cordless Headphones)
- Radio Sets (Amateur Radio; Radio Telephone; Toy Models)
- Radio Modems
- Garage-Door Remote Controls
- Telemetry Transmitters, E.G. Weather Station With Temperature Sensor
- House Burglar Alarm Systems With Sensors
- Remote-Controlled Sockets
- Radio Bells (For Paging)
- TV Radio Systems (Reverse Channel For Television Remote Control)
- Industrial Plants
- Non-Suppressed Electric Motors

4. REMOTE CONTROL FUNCTIONS

- Opening/closing central locking system (ZV)
- Switching on interior lighting
- Activating/deactivating anti-theft alarm system (DWA)
- Activating/deactivating tilt sensor and interior protection of the anti-theft alarm system
- Opening/closing side windows

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- Opening/closing sliding roof
- Opening/closing luggage compartment lid
- Activating/deactivating Panic Mode - only US models

If required, this function can be used to trip an alarm via the DWA.

5. OPERATING RELIABILITY

As of ignition lock position 1 (terminal "R", no more remote control functions are carried out.

If the ignition lock switches to position 1 following "Central arrest" of the central locking system (ZV), the ZV changes "Central arrest" to "Central locking".

If there is a key in the ignition lock which is recognised as valid by the electronic immobiliser III, the central locking system cannot be actuated in "Central arrest".

Due to the high range, "Convenient closing" of the rear vent windows is not possible on the E46 coupe as these windows do not have an anti-trap function.

All of the comfort functions and closing of the automatic luggage compartment lid operate only as long as the appropriate button is actuated on the remote control key.

6. NEW RADIO TRANSMITTER (KEY)

Beginning in September 1999, a new generation of radio transmitters will be introduced into series production.

The most important basic functions are the same as those of the present transmitters.

The operating functions will still be actuated via three buttons.

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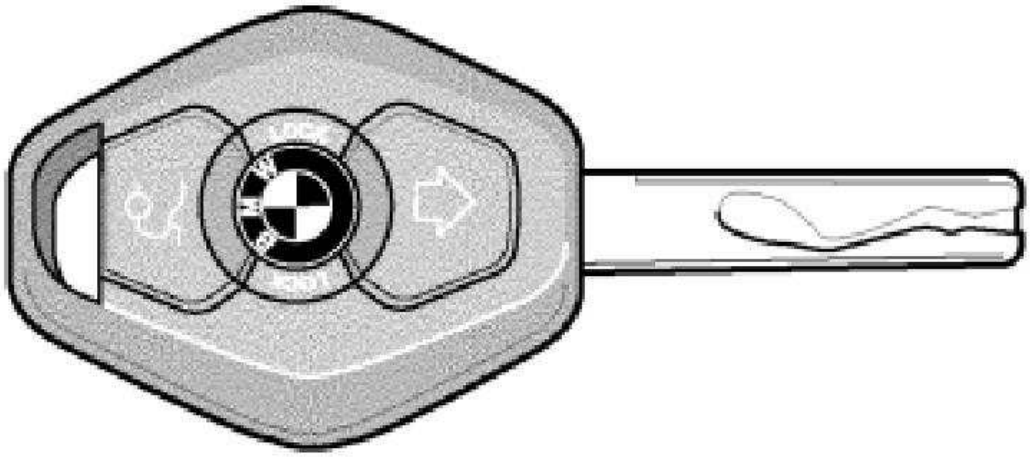


Fig. 4: Identifying New Radio Transmitter (Front Of Key)
Courtesy of BMW OF NORTH AMERICA, INC.

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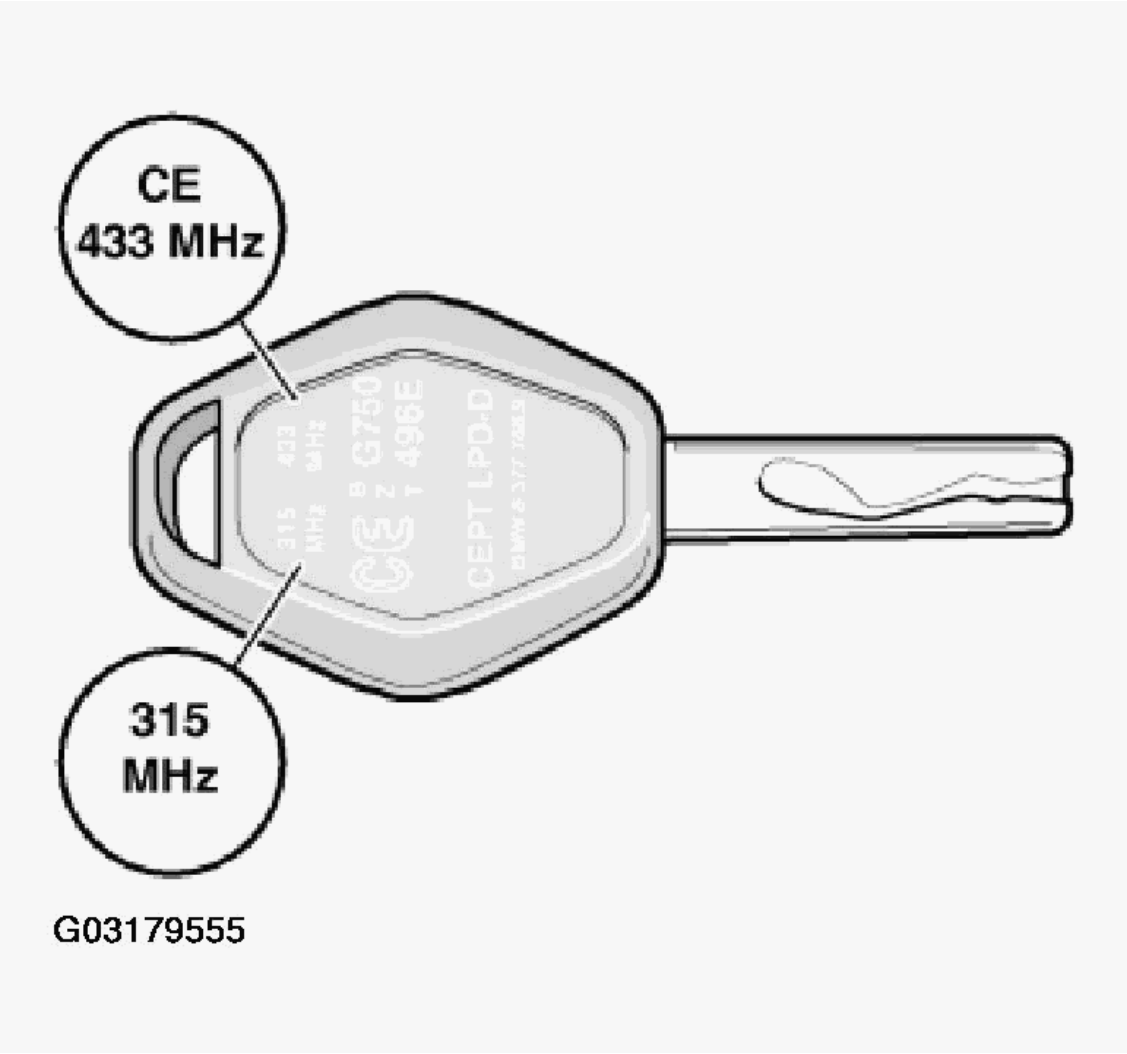


Fig. 5: Identifying New Radio Transmitter (Back Of Key)
Courtesy of BMW OF NORTH AMERICA, INC.

Overview Of Modifications:

1. New appearance with coloured BMW logo.
2. New keyboard arrangement and larger keys.
3. A storage battery instead of a regular battery, charged via the ring aerial at the ignition lock.
4. The key casing is waterproof, dustproof, sealed and cannot be opened.
5. The function display (red LED) has been omitted.

6.1 Operating Principles Of Input Keys

(Basic Functions)

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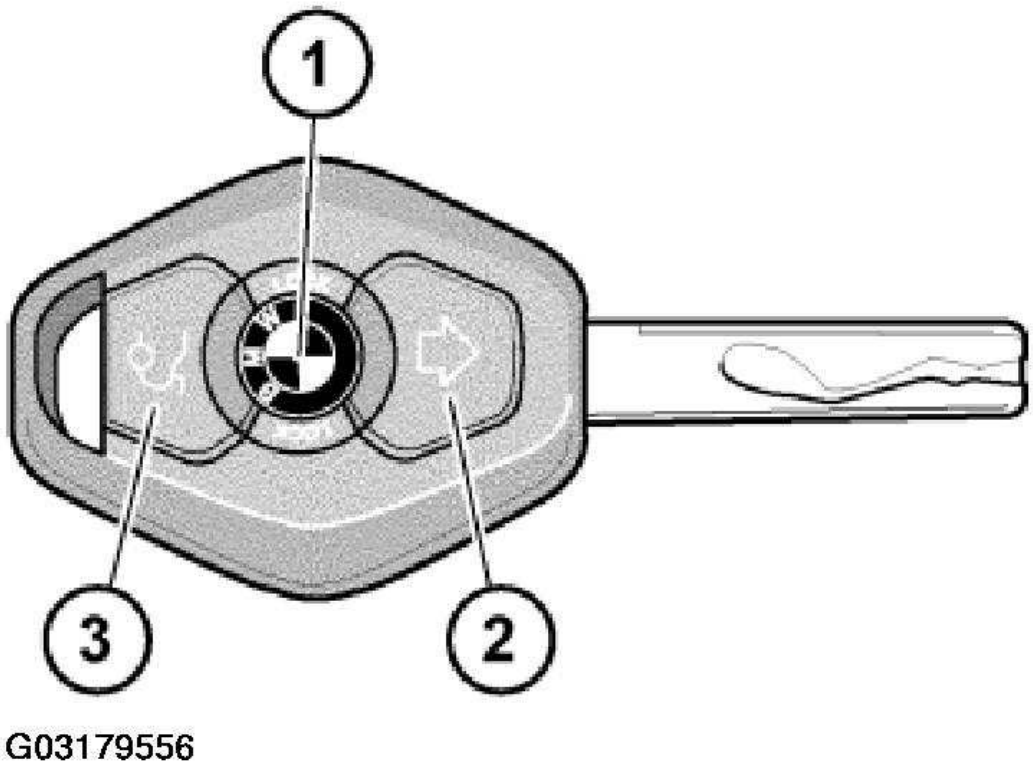


Fig. 6: Identifying RKE Input Buttons
Courtesy of BMW OF NORTH AMERICA, INC.

Press **button 1** briefly:

- Central locking system closes, moves into central arrest, the DWA may be activated.
- The interior lighting is switched on when the vehicle is locked.
- Panic Mode (on US models) is deactivated again.

Press **button 1** a second time after a short interval:

- The interior protection and tilt sensor of the DWA are deactivated

Press **button 1** and hold in:

- Central locking system, side windows and sliding roof close ("Convenient closing").
- This function is encoded differently from country to country and is not available in all national versions.

Press **button 2** briefly:

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- Central locking system opens, interior lighting switches on, the DWA may be deactivated.

Press **button 2** and hold in:

- Central locking system, side windows and sliding roof open ("Convenient opening").

Press **button 3** briefly:

- Luggage compartment lid opens.

Press **button 3** and hold in:

- Panic Mode (on US models) is active again.
- Automatic luggage compartment lid closing.

Individual functions may deviate from those described above; this depends on the respective country-specific encoding and the settings made via Car & Key Memory.

6.2 Signal Processing

Signal processing is by means of a microprocessor on the printed circuit board in the key casing. This microprocessor:

- Evaluates The Key Actuations,
- Generates The New Key Code,
- Relays The Key Code,
- Controls Transmitter Output Stage,
- Monitors Power Supply (Storage Battery) For Radio Transmitter.

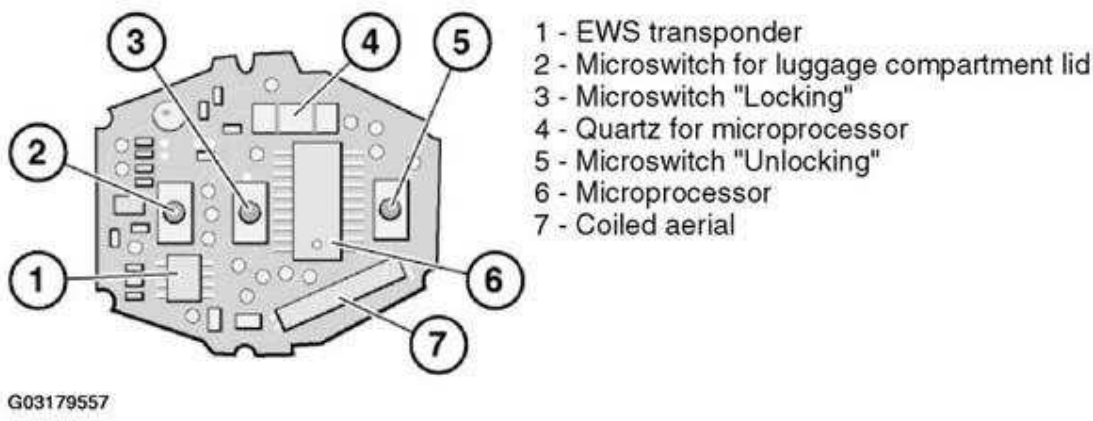


Fig. 7: Identifying RKE Components On Printed Circuit Board Of Key
Courtesy of BMW OF NORTH AMERICA, INC.

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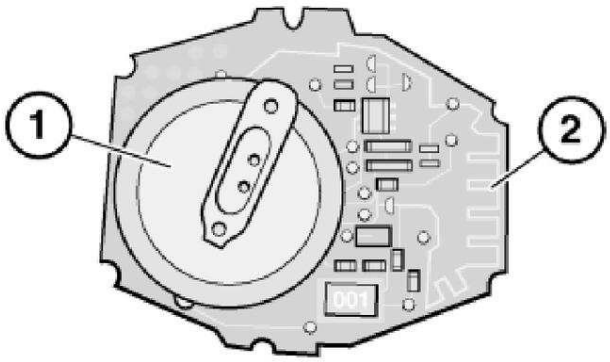
The signals transmitted via the transmitter output stage are radiated via an aerial integrated on the printed circuit board. The carrier frequency is 433.92 MHz (ECE) or 315 MHz (US), depending on country-specific registration.

When the system is being initialized, a key code is created and stored in the microprocessor of the radio transmitter. Following every key actuation at the radio transmitter, a new key code is transmitted (changing code). The codes are recalculated according to a specified process so that the receiver module can differentiate reliably between its own and external radio transmitters.

NOTE: Each transmitter can "lose" its key code if, e.g., someone inadvertently actuates buttons in the initialization sequence outside the car. In this case, all radio transmitters belonging to the car must be re-initialized.

6.3 Power Supply

The new radio transmitter does not use regular batteries but rather a rechargeable vanadium-lithium storage battery. New radio transmitters will be supplied with charged storage batteries.



1 - Storage battery
2 - High-frequency aerial
(433.92 MHz or 315 MHz)

Fig. 8: Identifying Storage Battery And High-Frequency Aerial
Courtesy of BMW OF NORTH AMERICA, INC.

As of ignition lock position 1 (terminal "R"), the storage battery is charged inductively. The charging process is realized via the ring aerial of the ignition lock and via the coiled aerial integrated in the radio transmitter. An electronic charging unit on the printed circuit board controls the charging process.

The battery is designed for a very long service life. A prerequisite is that the radio transmitter is used.

If radio transmitters are not used, the storage battery is discharged after approx. 18 months.

With severely discharged storage batteries, the charging period is approx. 30 hours up to maximum capacity. After charging for approx. 30 minutes, the remote control can be actuated approx. 15 times.

6.4 Voltage Monitoring

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If cell-end voltage has been reached, the central locking system, for example, can no longer be locked using the remote control. The "Convenient closing" can no longer be used, nor can the radio transmitter be initialized.

Every time a button is actuated, the storage battery voltage in the radio transmitter is monitored. Once the storage battery signal is contained in three consecutive telegrams, it is stored together with the corresponding radio transmitter key number for diagnostic purposes in the general module of the central body electrics. The entry is deleted when five consecutive radio transmitter telegrams no longer contain the storage battery signal.

In the case of E38 and E39 models, this status is already indicated by a signal in the check control.

7. SYSTEM INITIALIZATION

In order that the radio transmitters can communicate with the vehicle, each individual radio transmitter must be initialized with the receiver module.

Up to four radio transmitters can be initialized and used per vehicle.

Since each radio transmitter has its own key code, all existing radio transmitters must be reinitialized when, for example, a new radio transmitter is to be added.

Initialization Procedure:

1. Open central locking system (ZV) using the car key.
2. Get into the car and close all doors.
3. Using the car key, switch the ignition lock briefly to ignition lock position 1 and then switch off again. The switching time must remain under 5 seconds, otherwise the system is not ready for initialization.
4. At the radio transmitter: Press button 2 and hold in.
5. Press button 1 three times (in a space of 10 seconds). Button 2 must remain held in.
6. Release button 2.
7. The ZV signals by means of "Locking" and immediate "Unlocking" that a radio transmitter has been successfully initialized.

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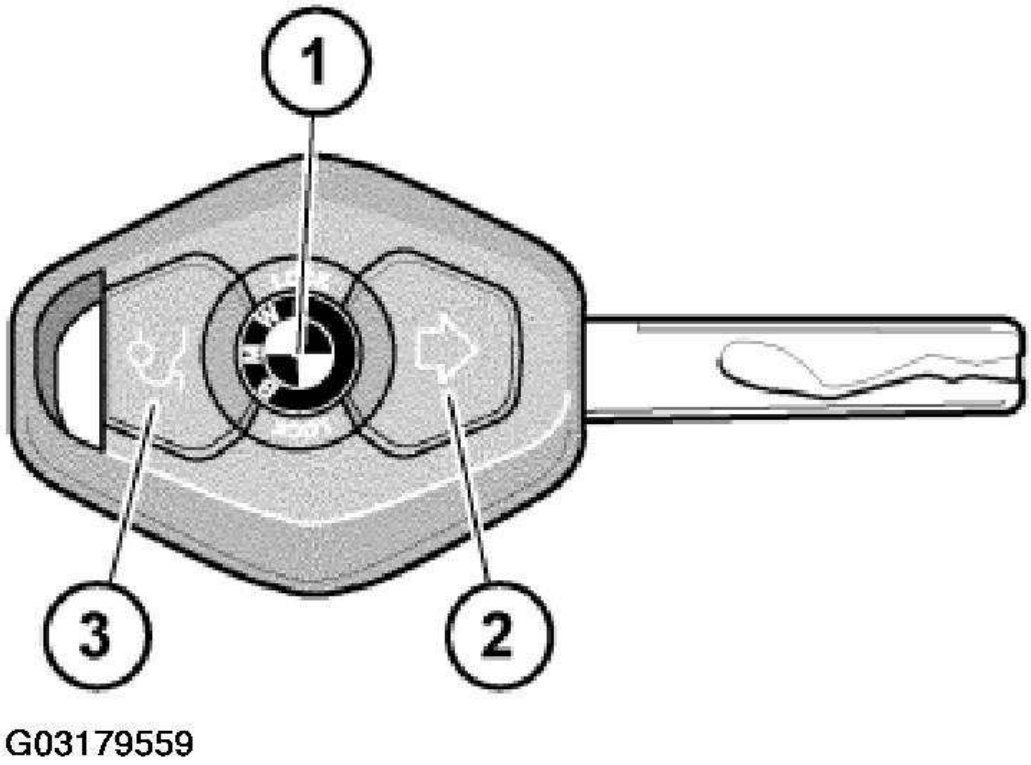


Fig. 9: Identifying RKE Input Buttons
Courtesy of BMW OF NORTH AMERICA, INC.

If the ZV does not send a return signal, initialization must be restarted.

Once the first initialization process has been completed, another three radio transmitters can be initialized.

For every other radio transmitter, the procedure described under step 4) above must be repeated within 30 seconds, otherwise initialization stand-by is switched off.

During initialization, all other existing radio transmitters must be initialized. The ignition lock must never be reactivated during the initialization process. If this were to happen, then all radio transmitters would have to be re-initialized.

8. DIAGNOSIS

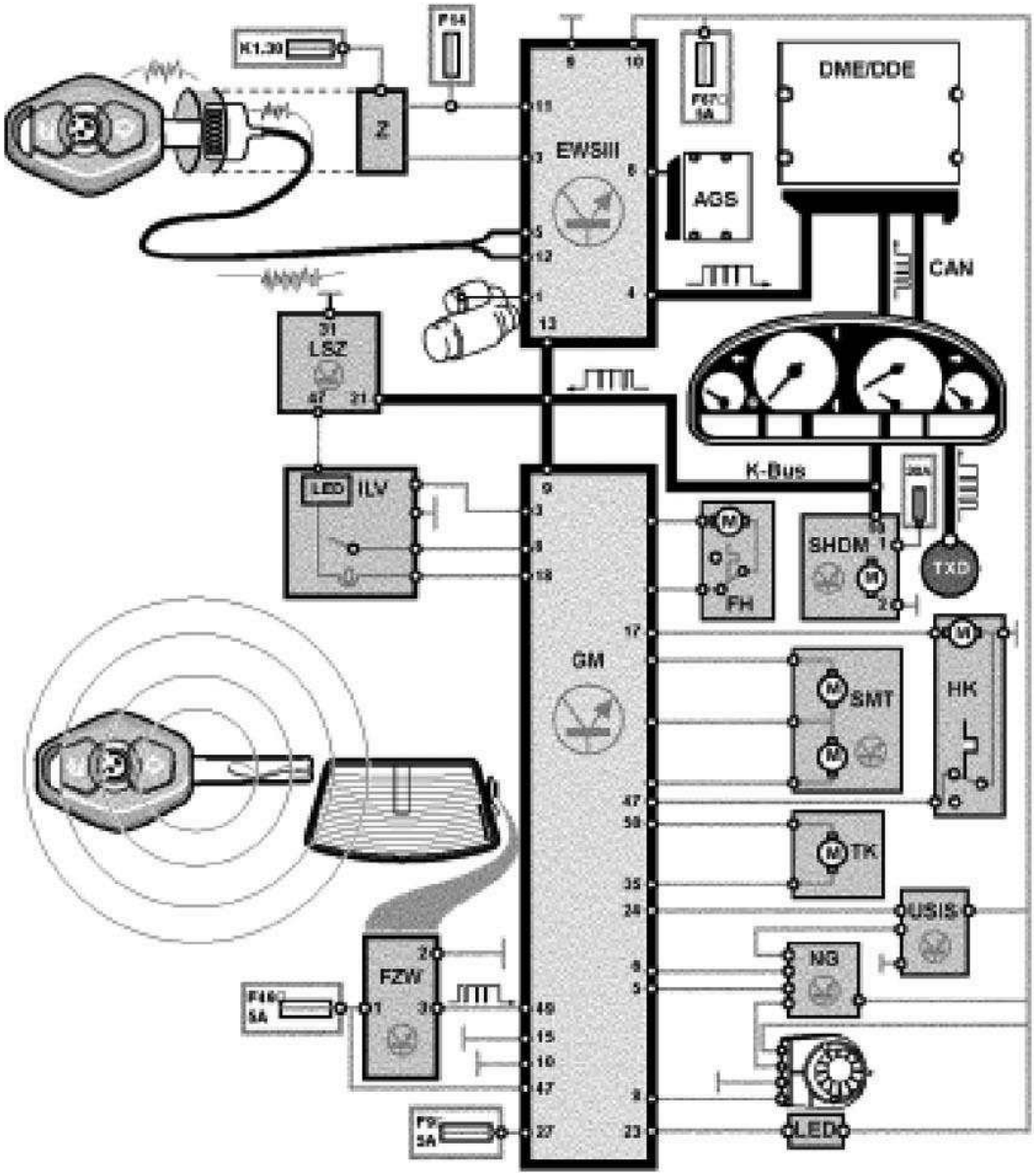
The radio remote control can be diagnosed via DIS and MoDiC under "Central body electrics - ZKE".

9. SYSTEM INTERCONNECTIONS

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Various functions in the central body electrics, the anti-theft alarm system (DWA) and the electronic immobiliser (EWS) can be activated or deactivated by means of the radio transmitters.

During vehicle diagnosis, it is important to know how the radio transmitter influences the total system.



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Fig. 10: Identifying System Interconnections And Function (E46 Shown)
Courtesy of BMW OF NORTH AMERICA, INC.

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SYSTEM INTERCONNECTION LEGEND

Component	Designation
Z	Ignition lock, electromechanical part
EWSIII	Electronic immobiliser, control unit
EWSIII/1	Output - starter signal (X1659)
EWSIII/3	Input - ignition/starter switch signal (X1659)
EWSIII/4	Output - engine control unit signal, uni-directional (X1659)
EWSIII/5	Output - ring coil signal (X1659)
EWSIII/6	Input - transmission control unit switch signal (X1659)
EWSIII/9	Ground/earth (X1659)
EWSIII/10	Input - terminal 30 of fuse F67 (X1659)
EWSIII/11	Input - terminal R from ignition lock via fuse F14 (X1659)
EWSIII/12	Output - ring coil signal (X1659)
EWSIII/13	Input/output - K bus signal (X1659)
F9	Terminal 30/5A fuse
F46	Terminal 30/30A fuse
F49	Terminal 30/5A fuse
F67	Terminal 30/5A fuse
LSZ	Central light switch
LSZ/21	Input/output K bus (X12)
LSZ/31	Ground/earth (X12)
LSZ/47	Output - search light signal (58g) (X12)
ILV	Interior lighting, front
ACS	Automatic transmission control unit
DME/DDE	Digital Engine Electronics/Digital Diesel Electronics
DME/33	Input - EWS release signal (X6004)
CAN	Controller Area Network (CAN bus)
K-Bus	Bodyshell bus
FH	Window lift (stands for all window lifts in vehicle)
SHDM	Sunroof module
SMT	Lock module (stands for all doors)
HK	Luggage compartment lid motor
TK	Fuel filler cap drive
USIS	Ultrasonic interior protection
NG	Tilt sensor
FZV	Radio central locking receiver
FZV/1	Input - terminal 30 signal of fuse F49 (X1143)
FZV/2	Ground/earth - (X1143)

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FVZ/3	Input/output - radio transmitter signal (X1153)
GM	General module V
GM/3	Output - electric consumer cut-out signal (X332)
GM/5	Output - tilt sensor monitoring signal (X254)
GM/6	Input - tilt sensor monitoring, immobiliser signal (X254)
GM/8	Input - interior lighting switch signal, front, continuous operation (X253)
GM/8	Output - control signal, DWA emergency power siren alarm (X254)
GM/9	Input/output - K bus signal (X253)
GM/10	Ground/earth (X253)
GM/17	Output - luggage compartment lid unlocking motor signal to luggage compartment lid drive (X253)
GM/18	Input - interior lighting signal (X253)
GM/23	Output - DWA light emitting diode signal (X254)
GM/24	Input - passenger-compartment sensor signal (USIS) (X254)
GM/27	Input - terminal R of fuse F9 (X253)
GM/35	Output - fuel filler cap unlocking signal (X253)
GM/42	Input - luggage compartment lid contact signal from luggage compartment lid drive (X253)
GM/47	Input - terminal 30 signal of fuse F49 (X253)
GM/49	Input/output - radio remote control data line signal (X253)
GM/50	Output - fuel filler cap locking signal (X253)
TXD	Diagnostic bus to diagnostic connector

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ACCESSORIES & EQUIPMENT

Seats - Operating Fluids

1.0 SEAT LEATHER CARE

"Karneol" leather care cleans the leather upholstery of mild stains or dirt. It also provides conditioners to prevent drying out. Not suitable for suede.

BMW Part No. 81 22 9 400 901.

2.0 PREMIUM LEATHER CARE KIT

BMW Part No. 81 11 024 455.

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ACCESSORIES AND EQUIPMENT

Seats - Repair Instructions - X3

13 FRONT SEAT NORMAL, MANUAL

52 13 ... REMOVING AND INSTALLING/REPLACING GUIDE FOR FRONT LEFT OR RIGHT HEAD RESTRAINT

Remove rear panel on front seat backrest:

Basic seat, refer to **52 13 198**.

Sports seat, refer to **52 15 198**.

Guide for head restraint with pushbutton:

Release catches (1) and (2) and slide guide (3) upwards.

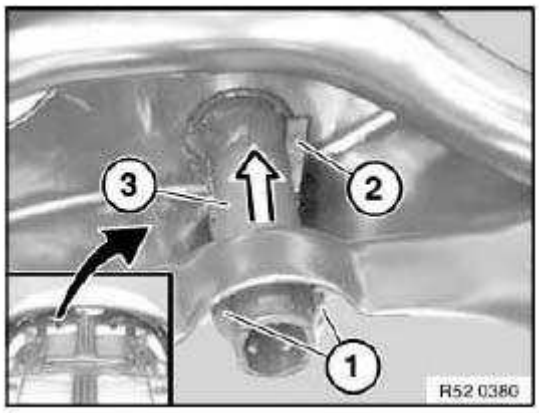


Fig. 1: Releasing Catches And Slide Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Pull guide (1) out of backrest (2).

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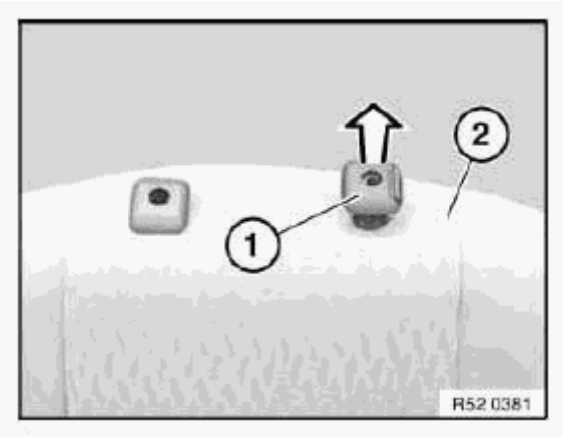


Fig. 2: Pulling Guide Out Of Backrest
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catches (1) and (2) on guide (3) must not be damaged.

Check that pushbutton (4) works properly.

After installing guide (3), make sure it is properly seated.

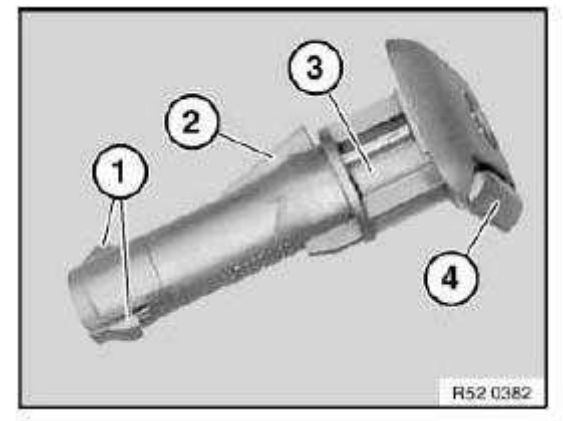


Fig. 3: Catches And Pushbutton
Courtesy of BMW OF NORTH AMERICA, INC.

Guide for head restraint without pushbutton:

Release catches (1) and slide guide (2) upwards.

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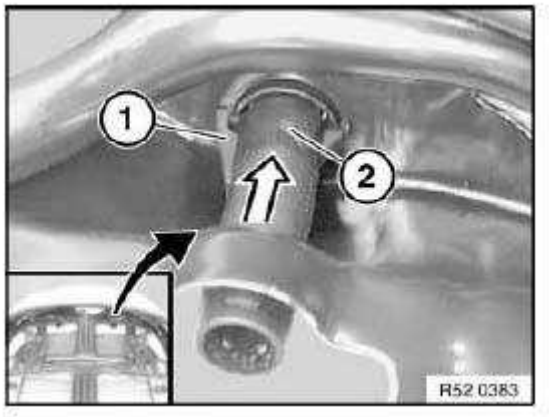


Fig. 4: Releasing Catches And Slide Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Pull guide (1) out of backrest (2).

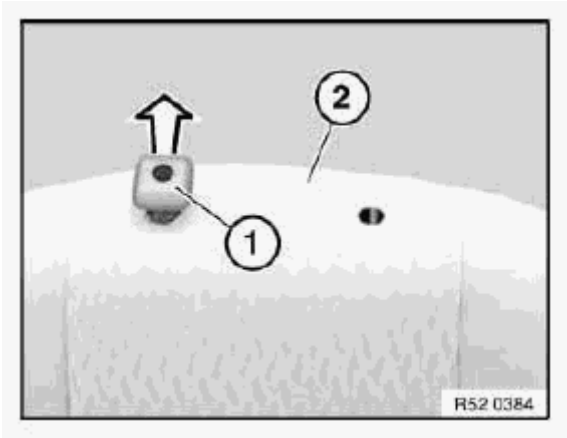


Fig. 5: Pulling Guide Out Of Backrest
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catch (1) on guide (2) must not be damaged.

After installing guide (2), make sure it is properly seated.

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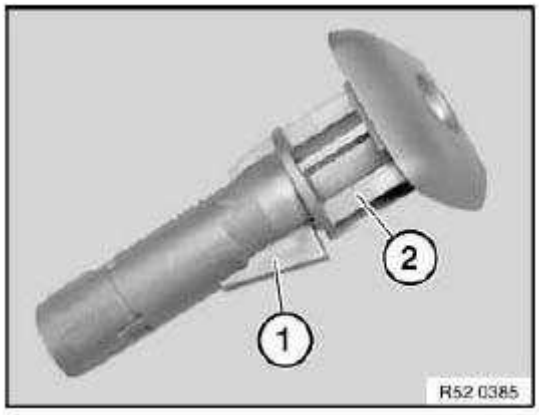


Fig. 6: Catches And Installing Guide
Courtesy of BMW OF NORTH AMERICA, INC.

52 13... REMOVING AND INSTALLING/REPLACING SEAT PAN AND FLEXMAT (NORMAL/MANUAL), LEFT OR RIGHT

Remove seat cover with support,

refer to 52 13 400.

Release left screw (1) and slacken right screw only.

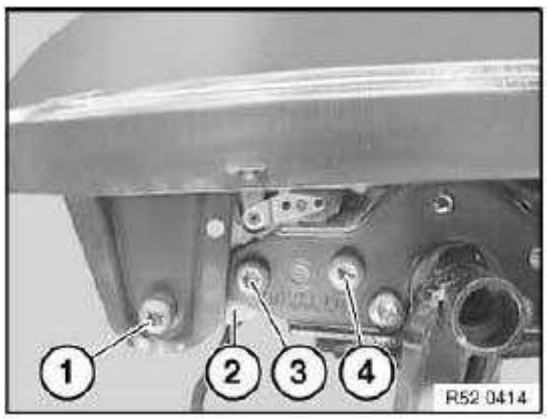
Release left/right screws (3).

Slacken left/right screws (4) only.

Remove left retaining plate (2) downwards.

Installation:

Tightening torque: 52 10 9AZ, see **52 10 FRONT SEATS** .



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Fig. 7: Left Retaining Plate And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Press seat pan (1) upwards, thereby relieving tension on flexmat.

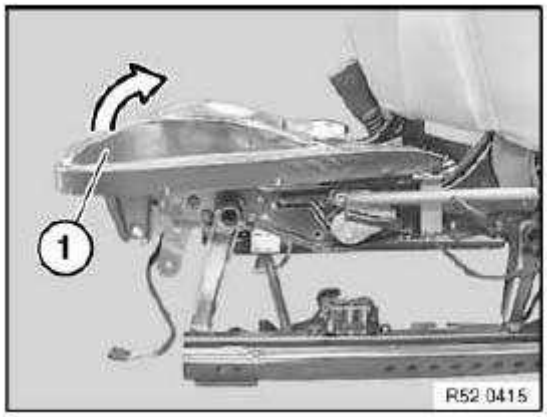


Fig. 8: Pressing Seat Pan Upwards
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove retaining plates (2).

Installation:

Tightening torque: 52 10 9AZ, see **52 10 FRONT SEATS** .

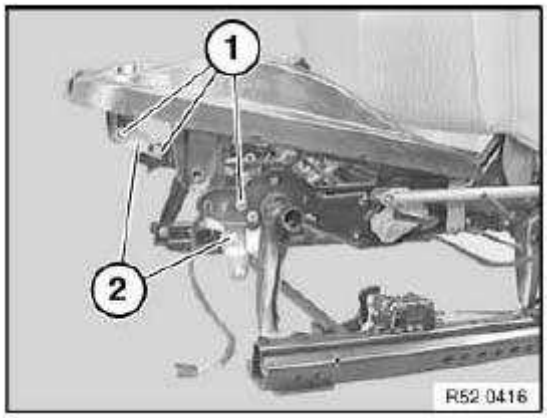


Fig. 9: Retaining Plates And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook cable (1) from holder (2).

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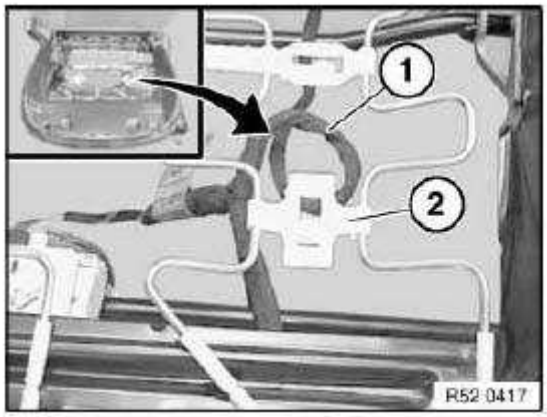


Fig. 10: Releasing Cable From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Turn seat pan (1) upwards.

Detach flexmat (2) at rear from mounts (3).

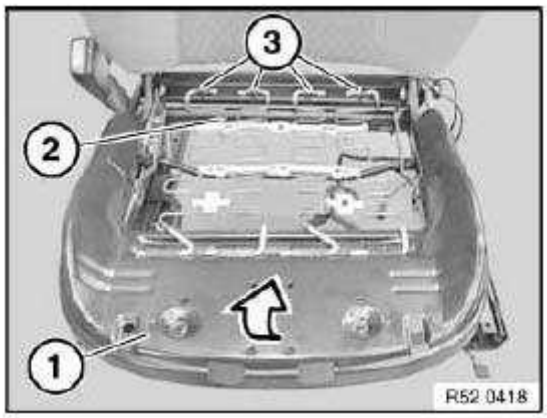


Fig. 11: Turning Seat Pan Upwards
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seat pan (1) on left/right backwards/top from mount (2) and remove.

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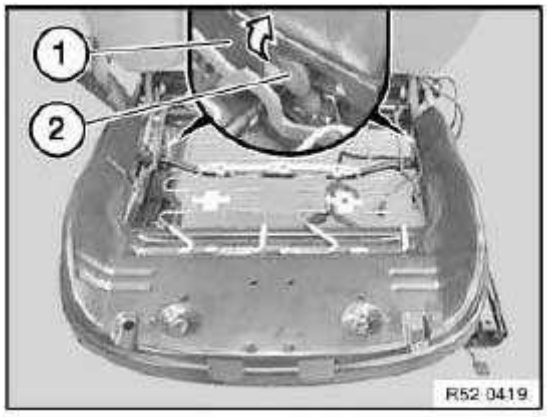


Fig. 12: Separating Seat Pan
Courtesy of BMW OF NORTH AMERICA, INC.

Detach flexmat (1) from mounts (2) on seat pan (3).

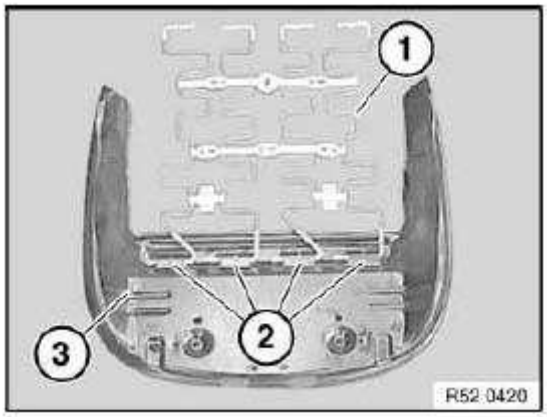


Fig. 13: Separating Flexmat From Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 015 REMOVING AND INSTALLING / REPLACING CONTROLS ON LEFT / RIGHT FRONT SEAT (NORMAL / MANUAL)

WARNING: The actuating unit for front seats which was fitted during car production is different from the spare part.

Actuating unit version (A):

The two adjusting screws (1) and (2) for eccentric disks, have a commercially available Torx screw head which is sealed with hot-melt adhesive.

- The adjusting screws (1) and (2) must not be adjusted in the workshop.
- The actuating unit may only be removed from and refitted to the same front seat.

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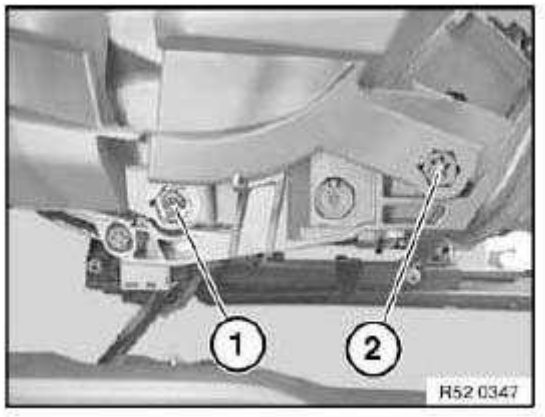


Fig. 14: Adjusting Screws And Eccentric Disks (Actuating Unit Version A)
Courtesy of BMW OF NORTH AMERICA, INC.

Actuating unit version (B):

The two adjusting screws (1) and (2) for eccentric disks, are secured with tamper protection in the screw head.

- The adjusting screws (1) and (2) must not be adjusted in the workshop.
- The actuating unit may only be removed from and refitted to the same front seat.

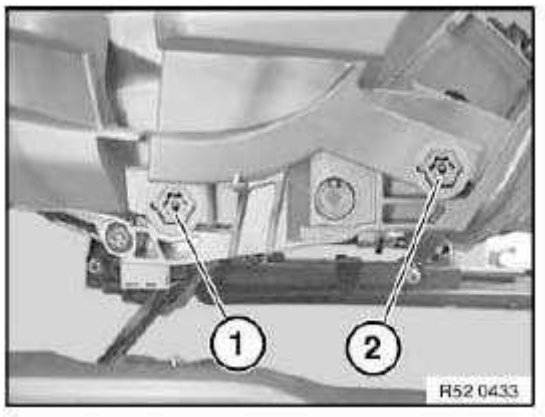


Fig. 15: Adjusting Screws And Eccentric Disks (Actuating Unit Version B)
Courtesy of BMW OF NORTH AMERICA, INC.

Actuating unit version (C) (spare part):

The two adjusting screws for the eccentric disk have conventional Phillips heads.

- The adjusting screws (1) and (2) can be adjusted in the workshop.
- The actuating unit may be fitted to either front seat.
- Prior to installation, apply an acid-free grease to thread; the grease forces the eccentric disk upwards during adjustment

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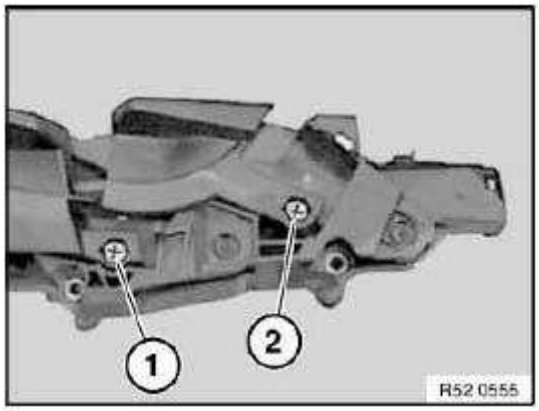


Fig. 16: Adjusting Screws And Eccentric Disks (Actuating Unit Version C
Courtesy of BMW OF NORTH AMERICA, INC.

Removing and installing actuating unit:

Remove front seat,

refer to .

Remove outer cover on front seat,

refer to **52 13 040**.

Move front seat to basic position:

CAUTION: One seat runner is spring-loaded, risk of injury when unlocking.

Operate actuating lever (1) and snap seat runners (2) into position by sliding.

Operate actuating lever (3) and snap seat cushion (4) into position by loading.

Operate actuating lever (5) and snap seat backrest (6) into position by moving.

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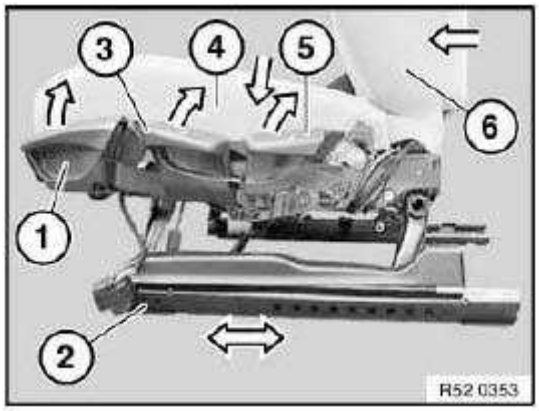


Fig. 17: Removing Actuating Lever And Snap Seat Backrest
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out rear trim (1), unclip clips (2) and remove trim (1).

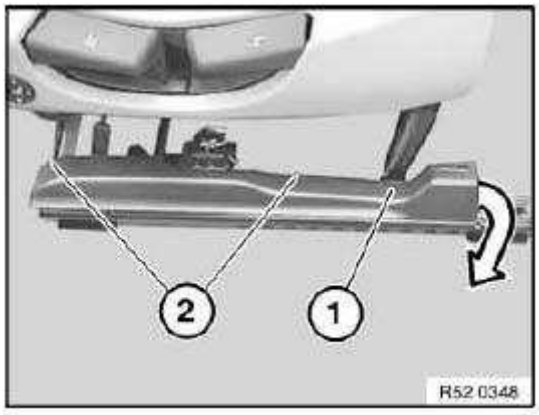


Fig. 18: Removing Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catch (1) and clips (2) on trim (3) must not be damaged; replace if necessary.

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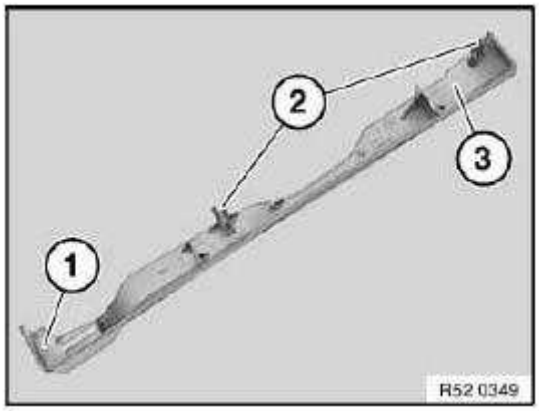


Fig. 19: Catch, Clips And Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heater and/or lumbar support:

Slide cable (1) out of fixture (2) of actuating unit (3).

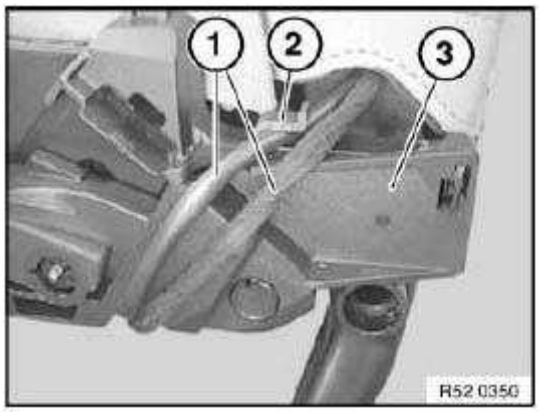


Fig. 20: Slide Cable And Actuating Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heater and/or lumbar support:

Slide cable (1) out of fixture (2) of actuating unit (3).

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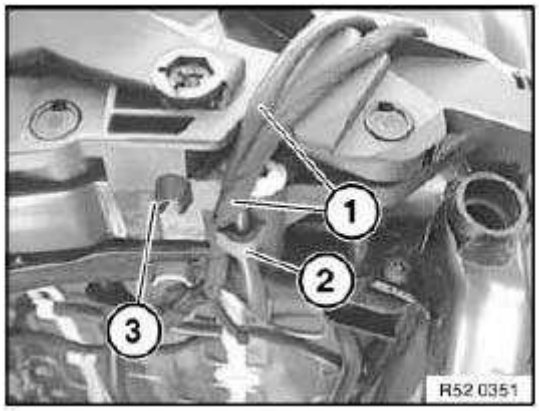


Fig. 21: Slide Cable And Fixture
Courtesy of BMW OF NORTH AMERICA, INC.

Model with lumbar supports:

If necessary, slide cable (1) out of fixture (2) of actuating unit (3).

If necessary, disconnect switch (4).

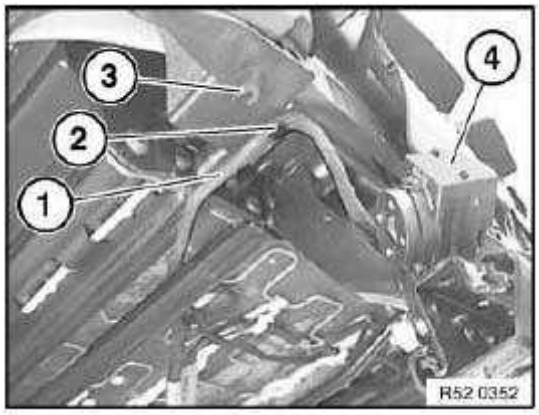


Fig. 22: Slide Cable And Actuating Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Release expansion rivet (1) and detach rocker (2) (adjustment lever) from lever (3).

CAUTION: Do not turn adjustment lever (2) on threaded rod (2).

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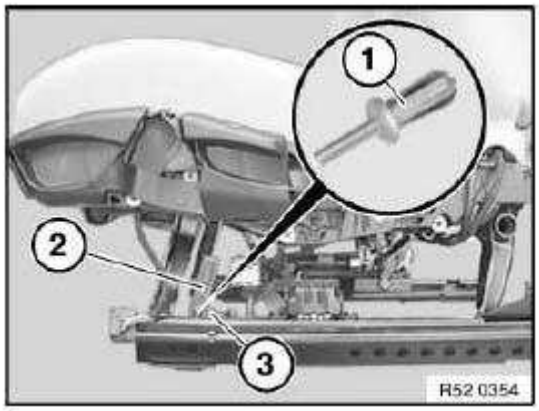


Fig. 23: Releasing Expansion Rivet
Courtesy of BMW OF NORTH AMERICA, INC.

Lift actuating lever (1) and release screw (2).

Release screws (3) and (4) and detach actuating unit (5).

Installation:

Screw (3) is shorter than the others.

Insert screw (3) for assembly into actuating unit (5).

Tightening torque: 52 10 7AZ, see **52 10 FRONT SEATS** .

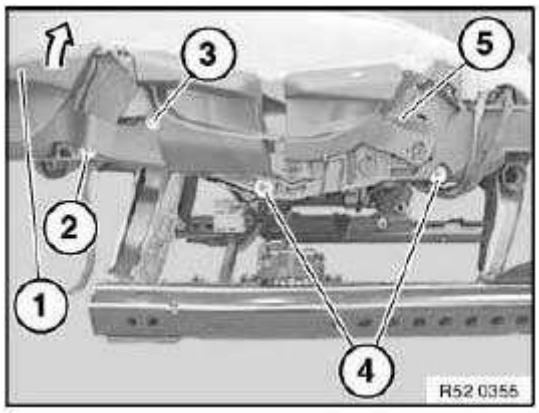


Fig. 24: Lifting Actuating Lever
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Front guide (1) and eccentric disks (2) on actuating unit (3) must not be damaged.

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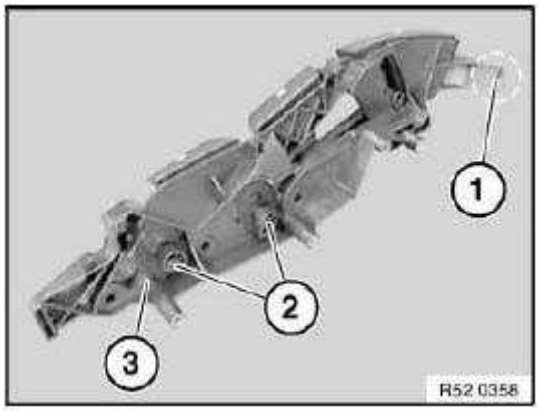


Fig. 25: Eccentric Disks And Actuating Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of actuating unit version (C) (spare part) only:

Installation:

For adjustment, coat threads (1) with acid-free grease.

The eccentric disks (2) and (4) are carried upwards for adjustment by the grease.

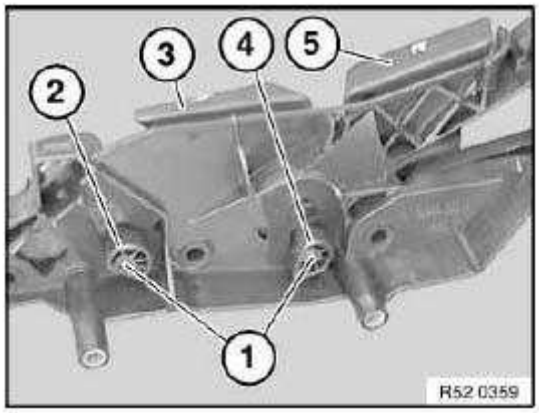


Fig. 26: Coat Threads And Eccentric Disks
Courtesy of BMW OF NORTH AMERICA, INC.

1. Threads for eccentric disks
2. Eccentric disk for backrest adjustment
3. Actuating lever for backrest adjustment
4. Eccentric disk for seat height adjustment
5. Actuating lever for seat height adjustment

Adjusting actuating unit, actuating unit version (C) (spare part) only:

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Adjusting seat height and backrest inclination:

- The screw heads of threads (2) must remain clipped in place
- Unscrew eccentric disk (1)
- Apply acid-free grease to threads (2)
- Screw on eccentric disk (1)
- Turn eccentric disk (1) to zero position: straight surface (3) of eccentric disk (1) must be at top.

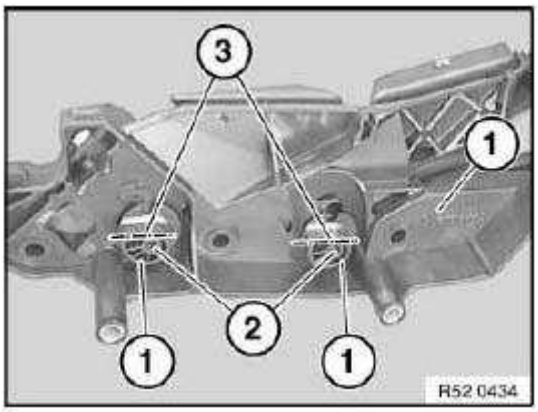


Fig. 27: Actuating Unit And Eccentric Disk
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The picture does not match the replacement unit, the replacement unit has Phillips screws.

- Install actuating unit.
- Press screws (1) and (2) out of hexagon head to seat center and screw down.

Tightening torque: 51 12 8AZ, see **51 12 REAR BUMPER** .

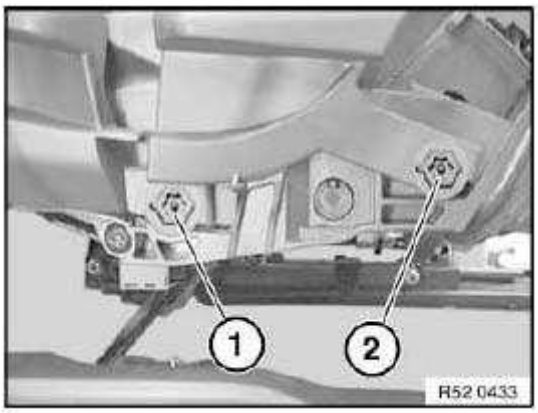


Fig. 28: Adjusting Screws And Eccentric Disks (Actuating Unit Version B)
Courtesy of BMW OF NORTH AMERICA, INC.

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Adjust longitudinal seat setting:

- Compress unlocking plates (1) and (2) on seat runner on left/right with gripping pliers (3) (free of play)

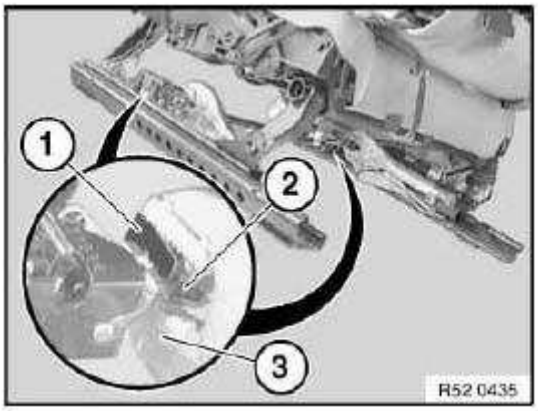


Fig. 29: Unlocking Plates And Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust longitudinal seat setting:

- Push new coupling link (1) (adjustment lever) onto threaded rod (3) and secure with expansion rivet (2)

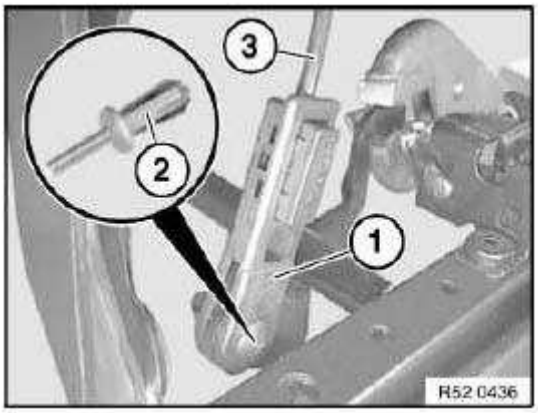


Fig. 30: Coupling Link And Expansion Rivet
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust longitudinal seat setting:

- Press actuating lever (1) for longitudinal seat adjustment downwards and press together locking clip (3) on coupling link (4)

  (coupling link (4) is now firmly connected to threaded rod (2))

- Install front seat in the car.

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- If necessary, release expansion rivet (5) and readjust by turning coupling link (4)

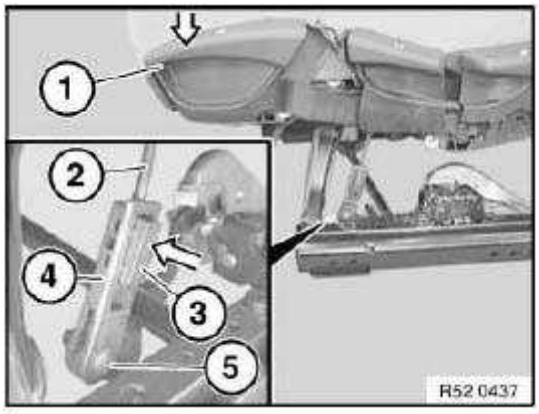


Fig. 31: Pressing Actuating Lever
Courtesy of BMW OF NORTH AMERICA, INC.

Move front seat to basic position:

- Operate actuating lever (1) and snap seat runners (2) into position by sliding.
- Operate actuating lever (3) and snap seat cushion (4) into position by loading.
- Operate actuating lever (5) and snap seat backrest (6) into position by moving.
- Each actuating lever must have clearance until the mechanism is unlocked
- If there is no clearance, the mechanism may be in a semi - unlocked state (risk of injury in event of an accident)
- If there is excessive clearance, the mechanism may not unlock completely (no adjustment possible)

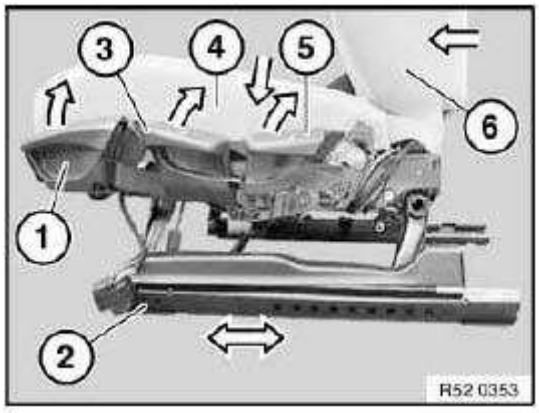


Fig. 32: Removing Actuating Lever And Snap Seat Backrest
Courtesy of BMW OF NORTH AMERICA, INC.

Carrying out checks of seat height and backrest inclination adjustment (danger to life of vehicle occupants):

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Check backrest inclination:

- Front seat must be in basic position
- Actuating lever (1) must be in zero position
- Pin (2) must rest against pull rod (3)
- There must be a clearance (A)

(A) 0 to 0.5 mm

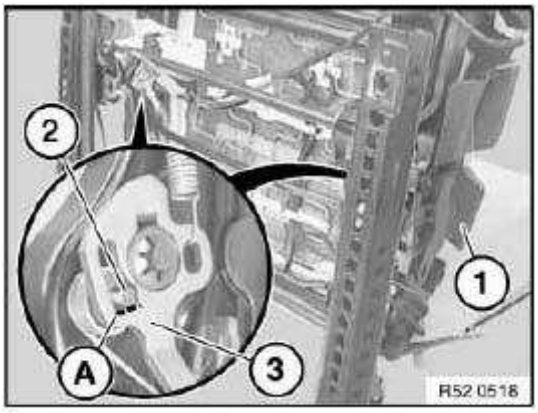
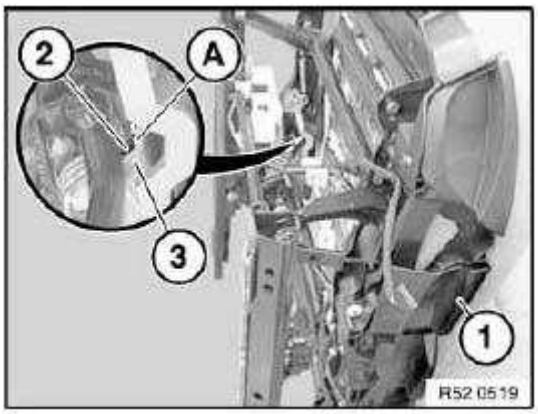


Fig. 33: Actuating Lever And Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Check seat height:

- Front seat must be in basic position
- Actuating lever (1) must be in zero position
- Metal lever (2) must rest against metal lever (3)
- There must be a clearance (A)

(A) 0 to 0.5 mm



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Fig. 34: Actuating Lever And Metal Lever
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 025 REMOVING AND INSTALLING/REPLACING SEAT MECHANISM (ON FRONT SEAT NORMAL/MANUAL), LEFT OR RIGHT

Remove seat pan and flexmat on front seat,

refer to **52 13...**

Remove backrest frame on front seat,

refer to **52 13 030**.

Remove seatbelt tensioner,

refer to **72 11 030** .

Release screw (1) and cable tie (3).

Remove retaining bracket (2) with seat wiring harness from seat mechanism (4).

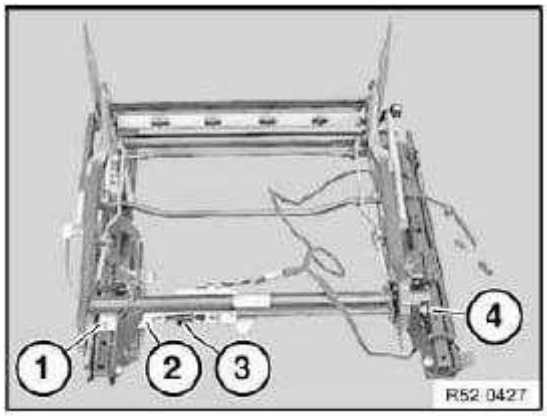


Fig. 35: Releasing Screw And Cable Tie
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 030 REMOVING AND INSTALLING / REPLACING BACKREST FRAME ON LEFT OR RIGHT FRONT SEAT (NORMAL / MANUAL).

Remove backrest frame and backrest cover with support,

refer to **52 13 405**.

Model with lumbar supports:

If necessary, remove lumbar cushion on front seat,

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refer to **52 13 050**.

If necessary, remove valve housing for lumbar support, front,

refer to .

If necessary, remove lumbar support drive mechanism on front seat,

refer to **67 66 010** .

If necessary, release screw (1) and remove metal nut (2).

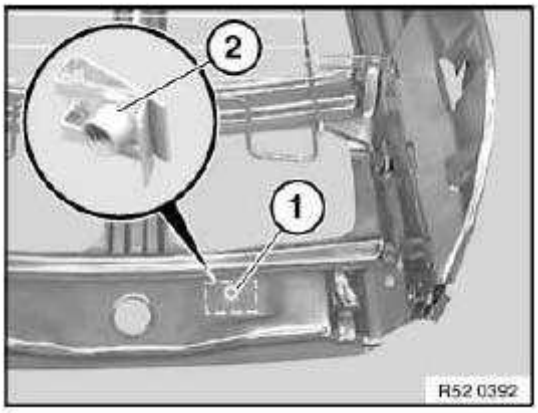


Fig. 36: Metal Nut
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, remove mat (1) from spring wire (2) of backrest frame (3).

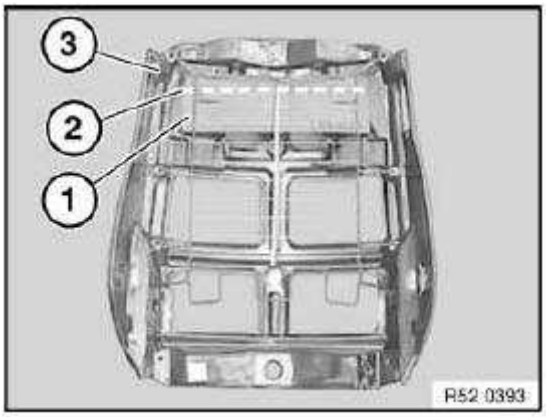


Fig. 37: Mat And Spring Wire
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, suspend mat (1) on uppermost spring wire (2) on backrest frame (3).

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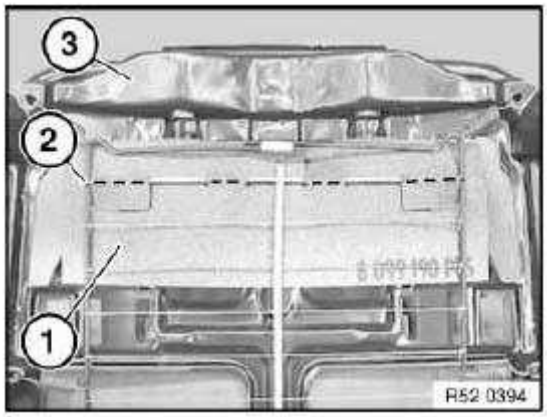


Fig. 38: Spring Wire And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 040 REMOVING AND INSTALLING / REPLACING OUTER COVER ON LEFT OR RIGHT FRONT SEAT BACK-REST (NORMAL / MANUAL)

Unscrew bolt (1).

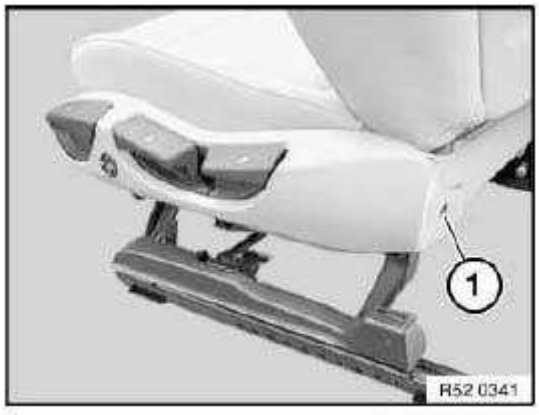


Fig. 39: Outer Cover Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

Snap out catches (1) at front/rear

and tongue (2) at rear

from cover (3) towards top and

pull outwards a little.

Installation:

Slide tongue (2) into mounts and snap into place.

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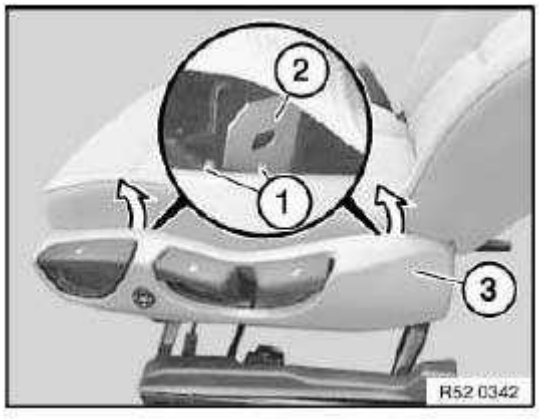


Fig. 40: Removing Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Lever lugs (1) on cover (3) out of brackets (2).

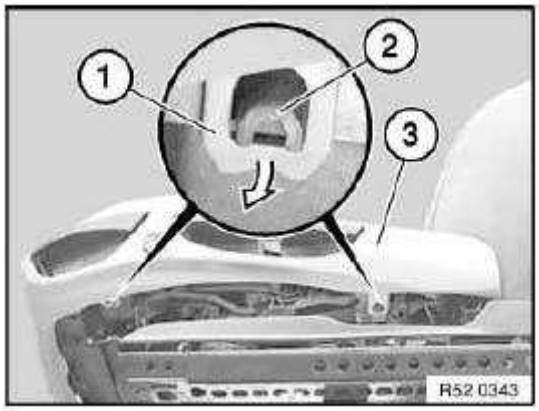
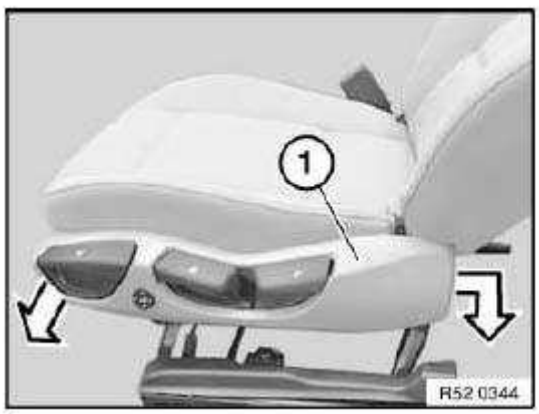


Fig. 41: Removing Lever Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out cover (1) at rear, detach at front from guide and remove.



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Fig. 42: Removing Front From Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Model with lumbar supports:

If necessary, press down catches (1) on left/right and remove switch (2) from cover (3).

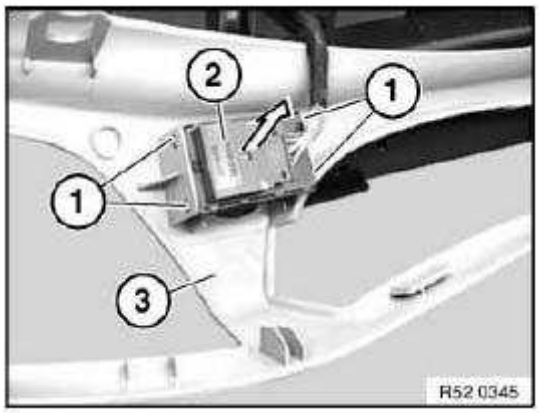


Fig. 43: Removing Switch From Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts must not be damaged,

replace cover (4) if necessary:

1. Catches, top
2. Guide, front
3. Lugs, bottom

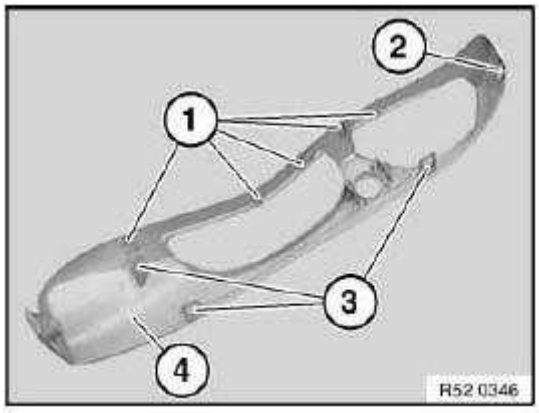


Fig. 44: Catches, Guide And Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

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52 13 041 REMOVING AND INSTALLING / REPLACING INNER COVER ON LEFT OR RIGHT FRONT SEAT BACKREST (NORMAL/ MANUAL)

NOTE: Shown removed for purposes of clarity.
Release screw (1) and remove trim (2).

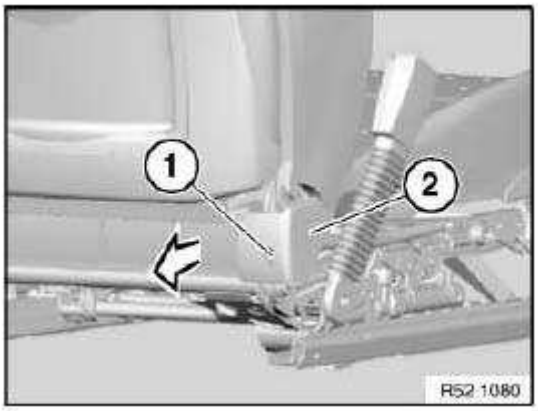


Fig. 45: Removing Trim
Courtesy of BMW OF NORTH AMERICA, INC.

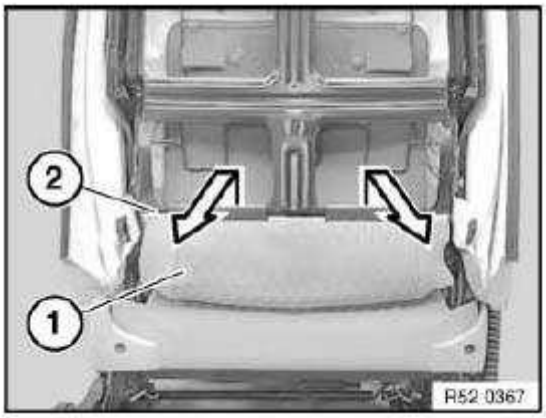
52 13 050 REPLACING LUMBAR CUSHION ON FRONT LEFT OR RIGHT SEAT

Carry out following tasks beforehand:

Removing rear panel on front seat backrest:

- Basic seat, see **52 13 198 Removing and installing / replacing rear panel on left or right front seat backrest (normal/manual)**
- Sports seat, see **52 15 198 Removing and installing/replacing rear panel on front left or right seat backrest (sports/manual)**.

Detach backrest cover (1) from backrest frame (2).



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Fig. 46: Removing Backrest Cover From Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: If necessary, gently heat air hose when firmly seated. Housing (valve block) must not be unclipped (leaks). If it is unclipped, release screw and clip housing together.

Disconnect hoses (2) and (3) from valve housing (1).

2 Hose (blue) top cushion

3 Hose (red) bottom cushion

Installation:

Air hoses (2) and (3) must be laid without kinks.

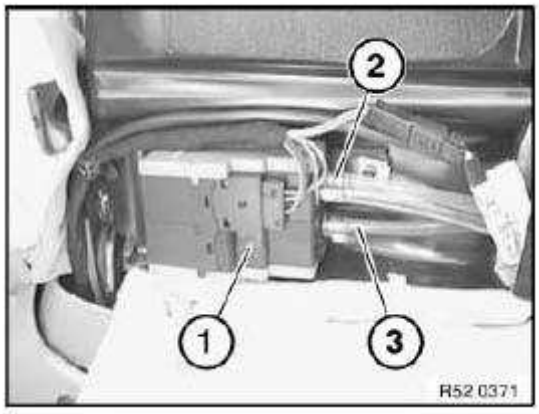


Fig. 47: Hoses And Valve Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook lumbar cushion (1) from spring wire (2).

Version with seat heating:

Slide cable (3) for backrest heating to one side a little.

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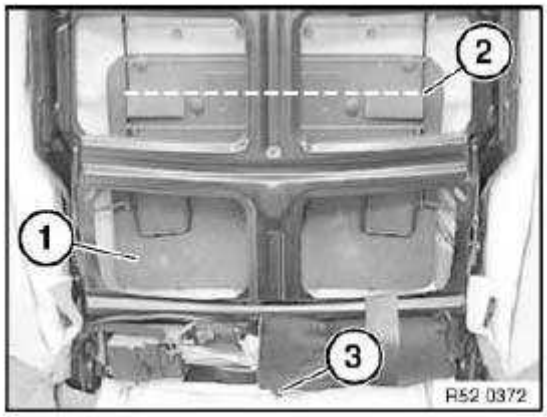


Fig. 48: Spring Wire And Slide Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Press back support (1) a little.

Turn lumbar cushion (2) and pull out downwards.

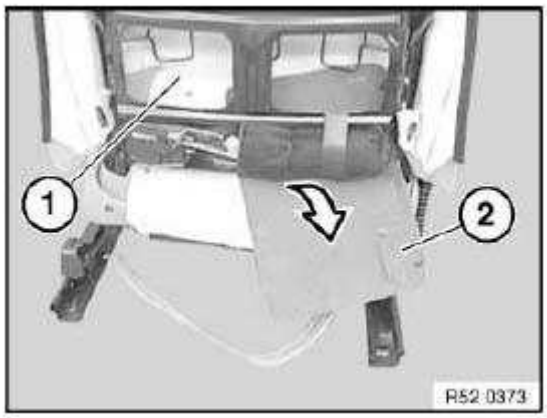


Fig. 49: Pulling Out Lumbar Cushion
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check lumbar cushion (1) at top and (2) bottom for damage.

Air hoses (3) must not be kinked.

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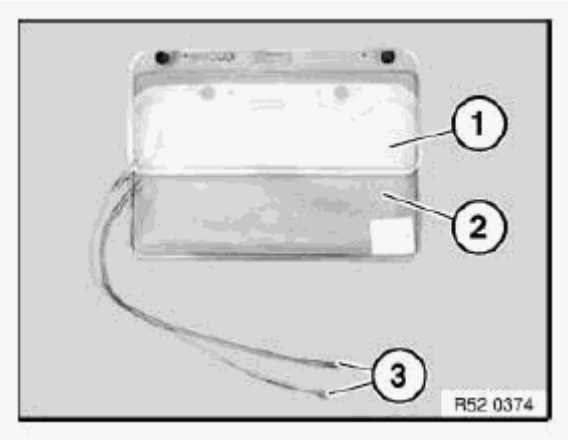


Fig. 50: Air Hoses And Lumbar Cushion
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Attach lumbar cushion (1) to third wire (2) above spring (3).

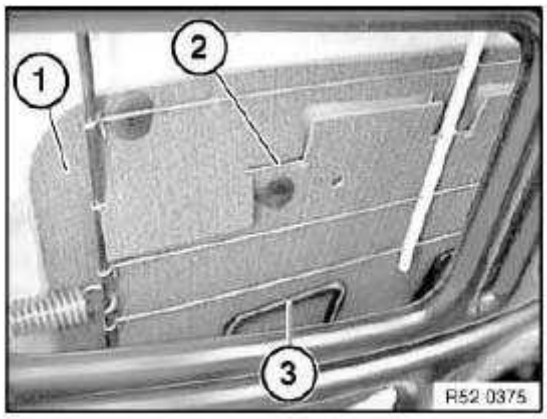


Fig. 51: Lumbar Cushion And Wire
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, shown here without valve housing.

Installation:

Observe cable guide (1) for backrest heating.

Lay air hoses (2) without kinks through hole (3).

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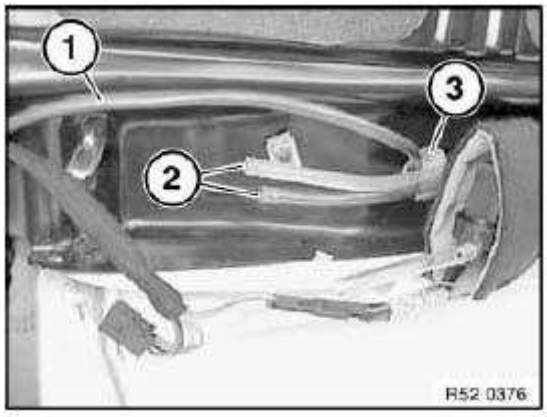


Fig. 52: Cable Guide And Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check function.

52 13 070 REMOVING AND INSTALLING/REPLACING SEAT ANGLE ADJUSTER (NORMAL/MANUAL) ON LEFT OR RIGHT FRONT SEAT

Special tools required:

- **51 2 100 CLAMPING LEVER**

Necessary preliminary tasks:

- Remove front seat
- Remove actuating unit, see **52 13 015 Removing and installing / replacing controls on left / right front seat (normal / manual)**

WARNING: Torsion bar spring (1) is subject to tension. Risk of injury.

Lever torsion bar spring (1) with special tool 51 2 100 in direction of arrow from seat angle adjuster.

Feed torsion bar spring (1) out of seat mechanism.

Installation:

Make sure plastic protector is correctly positioned on contact surface between torsion bar spring and seat mechanism (grating noises).

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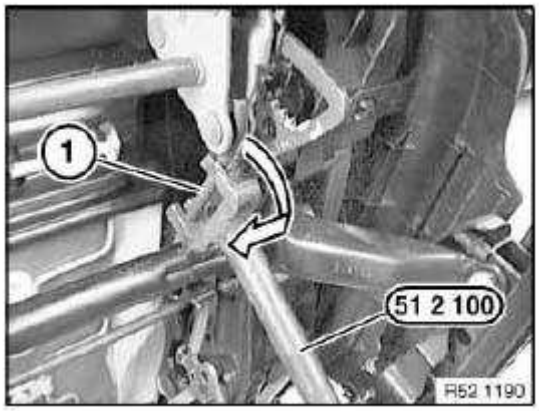


Fig. 53: Removing Bar Spring
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Installation:

Replace Taptite screws (1).

Tightening torque: 52 10 16AZ, see **52 10 FRONT SEATS** .

Release screw (2).

Tightening torque: 52 10 17AZ, see **52 10 FRONT SEATS** .

Remove seat angle adjuster (3).

Installation:

Slide left and right O-rings onto shaft. Make sure O-rings are correctly located between seat angle adjuster and seat pan.

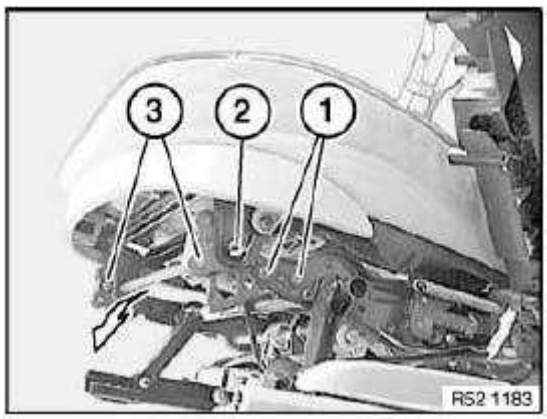


Fig. 54: Removing Seat Angle Adjuster

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Courtesy of BMW OF NORTH AMERICA, INC.

52 13 198 REMOVING AND INSTALLING / REPLACING REAR PANEL ON LEFT OR RIGHT FRONT SEAT BACKREST (NORMAL/MANUAL)

Remove front seat.

Release clips (1) with side cutting pliers.

NOTE: Remove clip remainders.

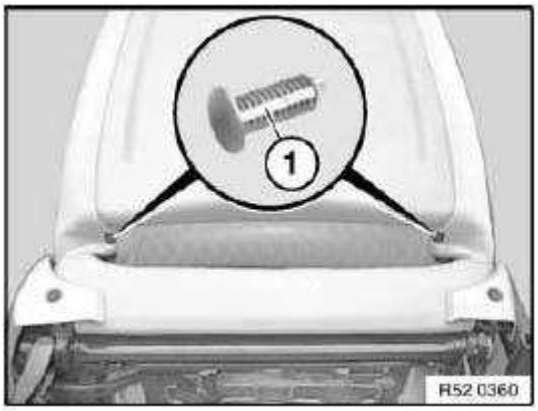


Fig. 55: Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully pull cover (1) with piping (2) out of groove in rear panel (3).

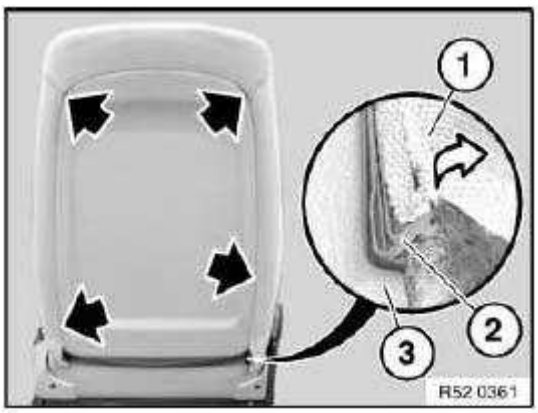


Fig. 56: Pulling Cover With Piping Out Of Groove
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The cover piping (1) has a marking (2) which must line up with hole (3) in rear panel groove (4).

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From marking (2), press in piping (1) completely to left and right at bottom.

Five new repair clips must be fitted after each disassembly.

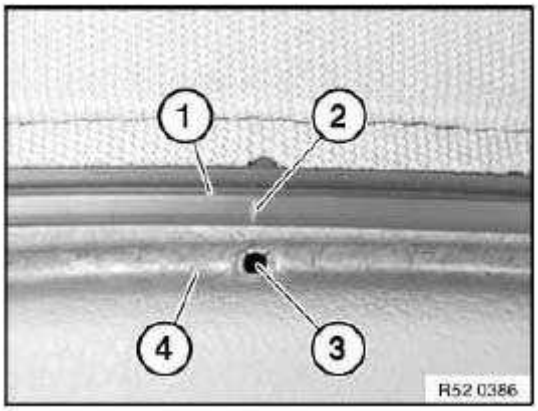


Fig. 57: Piping And Rear Panel Groove
Courtesy of BMW OF NORTH AMERICA, INC.

Release clips (1) (cut through with side cutting pliers).

NOTE: Remove clip remainders.

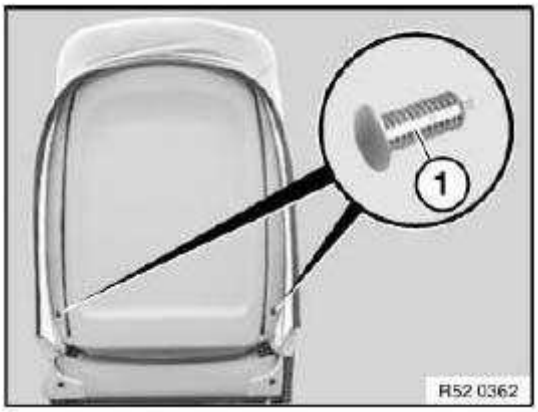


Fig. 58: Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Pull rear panel (1) off backrest cover (2).

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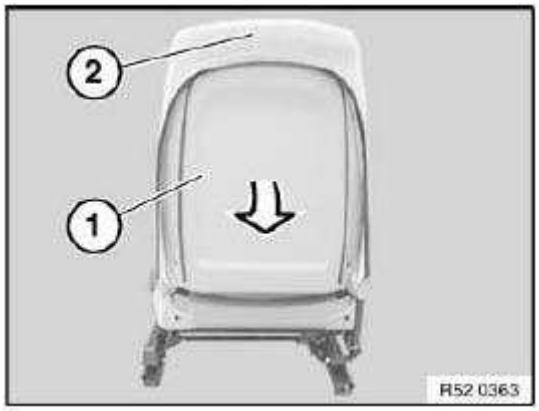


Fig. 59: Pulling Rear Panel Off Backrest Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Holes (1) and (2) on rear panel (3) must not be damaged.

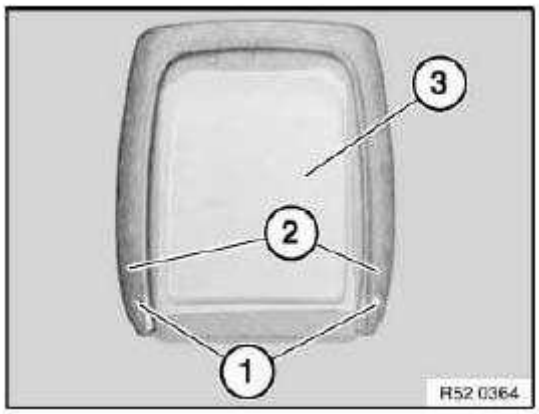


Fig. 60: Holes And Rear Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Slide backrest cover (1) on left/right over clip mount (2).

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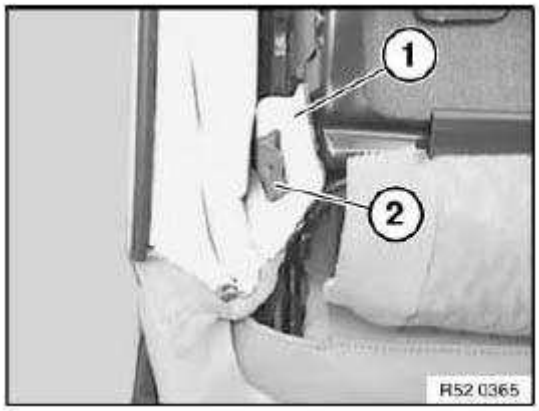


Fig. 61: Clip And Backrest Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

To prevent noise:

Stick felt strip (1) to raised frame area (2).

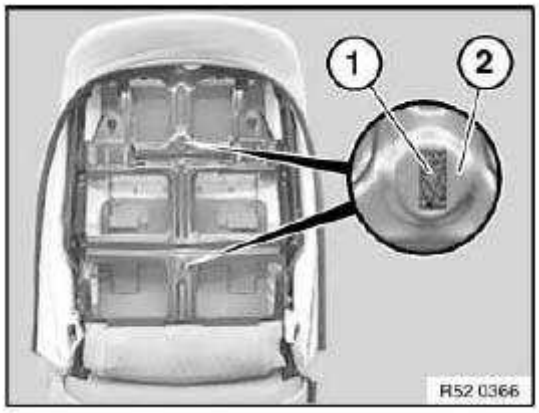


Fig. 62: Frame Area
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 390 REMOVING AND INSTALLING / REPLACING FRONT HEADREST (NORMAL/ MANUAL)

Move backrest back.

Move headrest (1) as far upwards as possible.

Unlock lock (2) and remove headrest (1).

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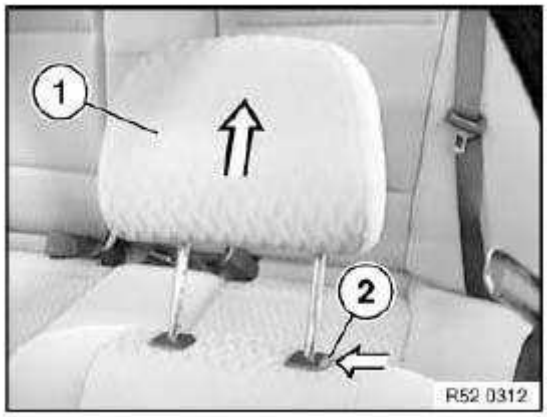


Fig. 63: Removing Headrest
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 400 REPLACING SEAT COVER ON LEFT OR RIGHT FRONT SEAT (NORMAL/MANUAL)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove inner cover, see **52 13 041 Removing and installing / replacing inner cover on left or right front seat backrest (normal/ manual)**
- Remove cover (normal/electric)**52 16 040 Removing and installing/replacing outer cover on front left or right seat (sports/electric)** or outer actuating unit**52 13 015 Removing and installing / replacing controls on left / right front seat (normal / manual)**

WARNING: US/CDN front passenger seat (with OC3 mat) only:
To avoid damaging the OC3 mat, it is essential to carry out the following operations with extra care.

When replacing seat cover:

If seat cover is defective, seat cover and padding with OC3 mat must be replaced together.

New seat cover is supplied with padding, OC3 mat and if necessary seat heating.

When replacing padding with OC3 mat:

If OC3 mat or padding is defective, both parts may only be replaced together.

These must be fitted with the seat cover from the car.

Enabling seat occupancy detector (OC3 mat):

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- Connect BMW diagnosis system
- Release seat occupancy detector
- Clear fault memory if necessary

Seat with electric actuating unit only:

Release screws (1).

Pull trim (2) out a little and release screw (3).

Release clip (5) from carrier (4).

Remove trim (2) and carrier (4).

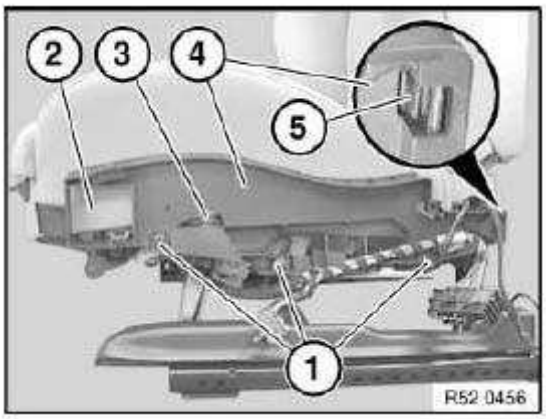


Fig. 64: Releasing Clip From Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Cable holders (1) on carrier (2) must not be damaged.

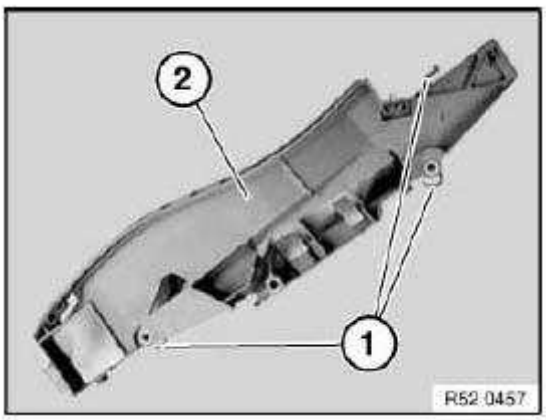


Fig. 65: Cable Holder And Carrier

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Courtesy of BMW OF NORTH AMERICA, INC.

E46 only:

Pull out tongue (1) on seat cover (2) on left/right.

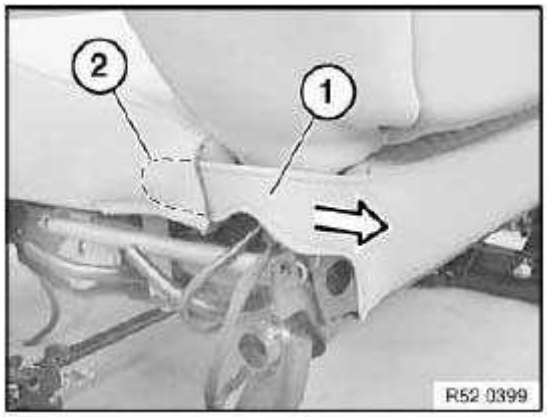


Fig. 66: Pulling Out Tongue On Seat Cover On Left/Right
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seat cover (1) from seat frame (2).

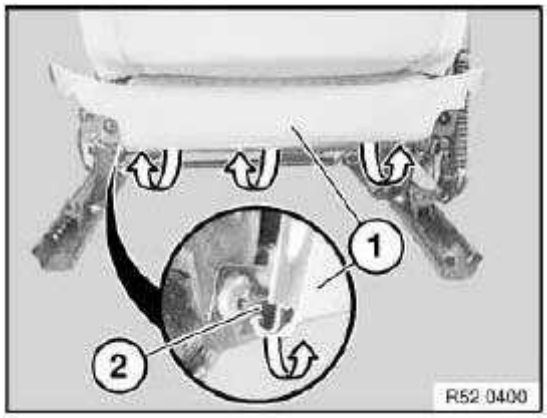


Fig. 67: Removing Seat Cover From Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat occupancy detector:

If necessary, disconnect plug connection (1) from control unit (2).

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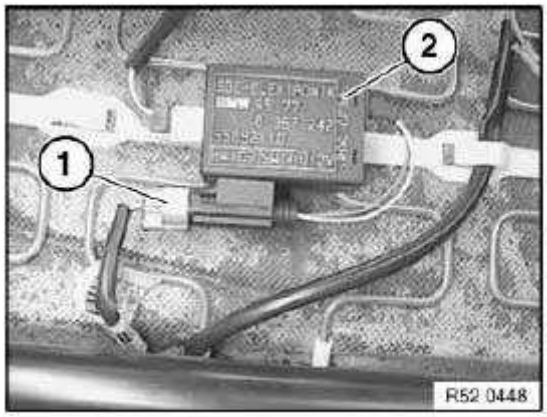


Fig. 68: Plug Connection And Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heating:

If necessary, lever catch (1) towards top and detach cover (2).

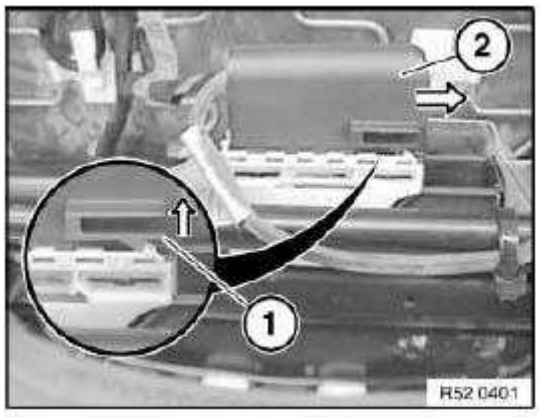


Fig. 69: Lever Catch And Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) from seat heating.

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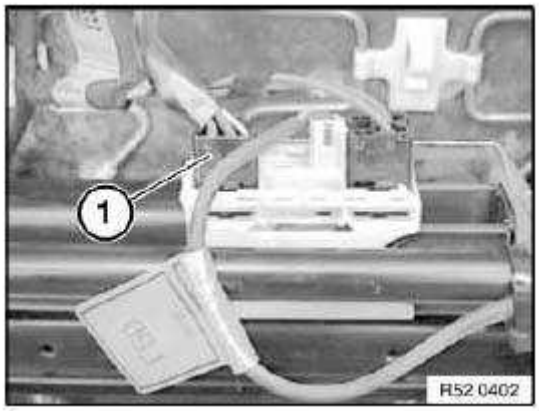


Fig. 70: Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) from seat heating.

Expose cable (2).

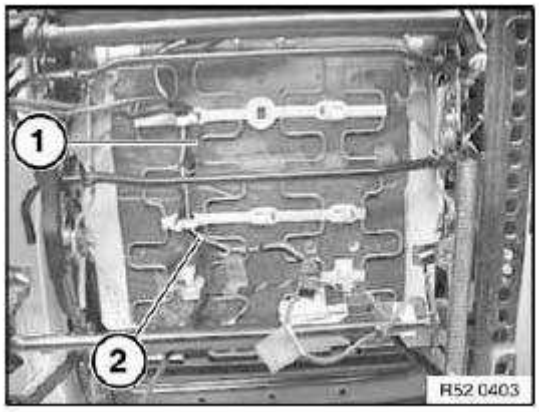


Fig. 71: Plug Connection And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Release retainers (1) on left/right.

Pull out cover tabs (2) on left/right.

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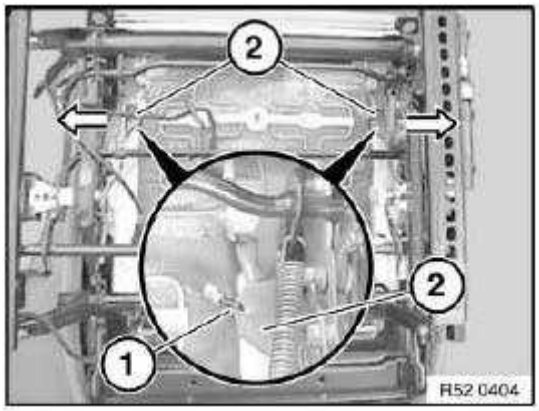


Fig. 72: Pulling Out Cover Tabs On Left/Right
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out cover welt (1) completely from seat frame (2).

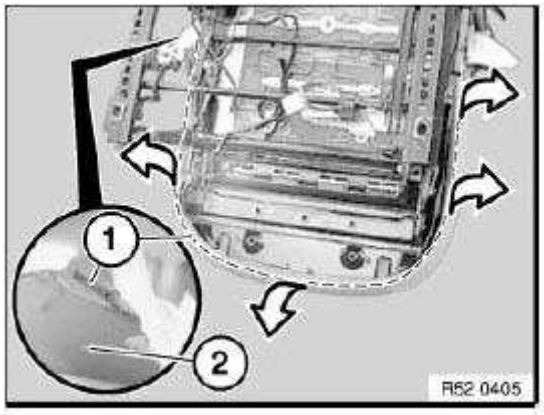


Fig. 73: Pulling Out Cover Welt Completely From Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Begin assembly in middle.

Cover piping (1) and seat frame (2) have markings for middle position.

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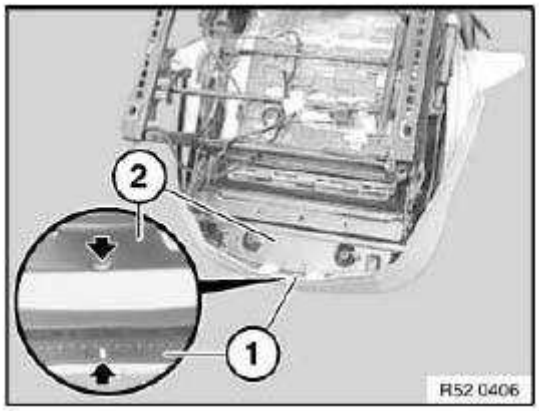


Fig. 74: Cover Piping And Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Fold in tongues (1) on seat cover and push through under backrest (2) towards front.

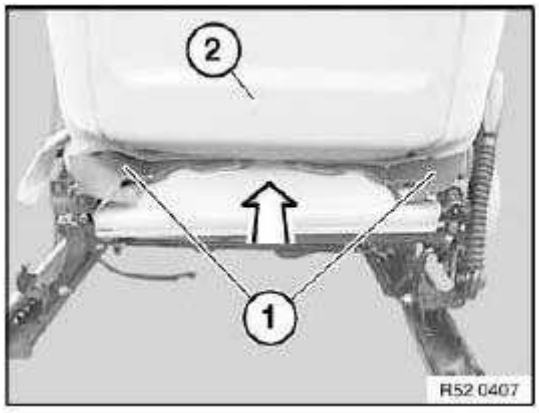


Fig. 75: Pushing Under Backrest Towards Front
Courtesy of BMW OF NORTH AMERICA, INC.

Model without seat heating and without seat occupancy detector:

Remove seat cover (1) towards front/top.

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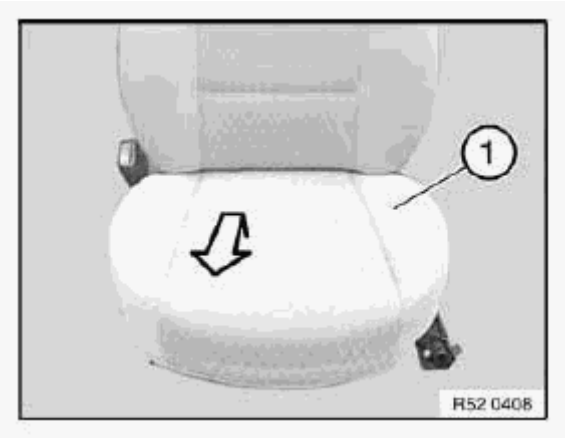


Fig. 76: Cover Piping And Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heater and/or with seat occupancy detector:

Pull seat cover (1) forward a little and feed cable (2) out.

Remove seat cover (1) towards front/top.

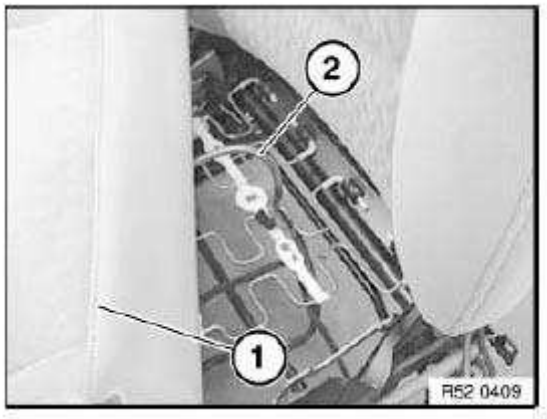


Fig. 77: Seat Cover And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The support is coated with wax to prevent grinding noises.

Do not remove wax (1) on seat pan (2).

NOTE: The operation "Removing complete seat cushion" ends here.

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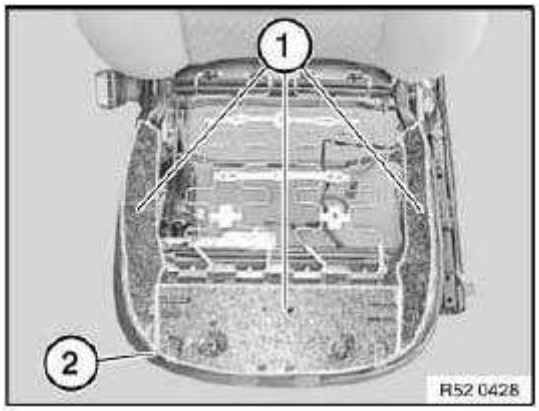


Fig. 78: Wax And Seat Pan
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing support:

Detach retainers (1) at rear left/right from support (2).

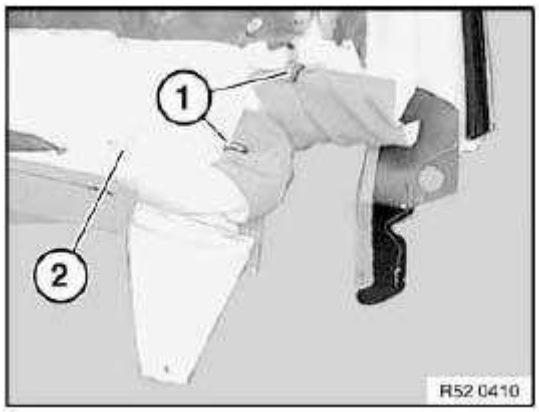


Fig. 79: Retainers
Courtesy of BMW OF NORTH AMERICA, INC.

Version with OC3 mat:

- OC3 mat must not be kinked under any circumstances.

Detach all retainers in side area from longitudinal wires (1).

Pull trim wires (1) forward out of seat cover.

Carefully fold back seat cover and release retainers from cross - wires (2).

Remove seat cover from padding.

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IMPORTANT: Remove all remnants of clips from seat cover and padding.

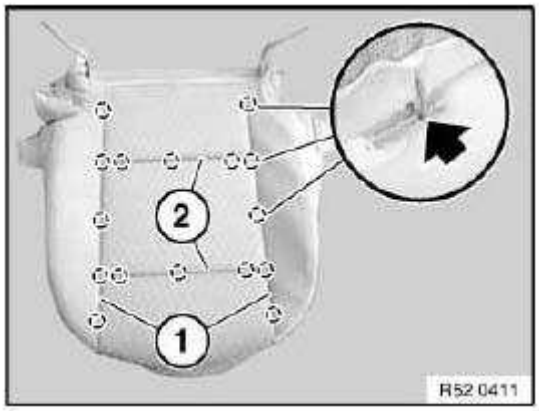


Fig. 80: Removing Seat Cover From Padding
Courtesy of BMW OF NORTH AMERICA, INC.

Padding (1) with OC3 mat (2).

IMPORTANT: No retainer remainders may be fitted as well.
Handle OC3 mat with extreme care.
Do not kink OC3 mat.
Do not clamp OC3 mat.
OC3 mat must lie without folds under seat cover.

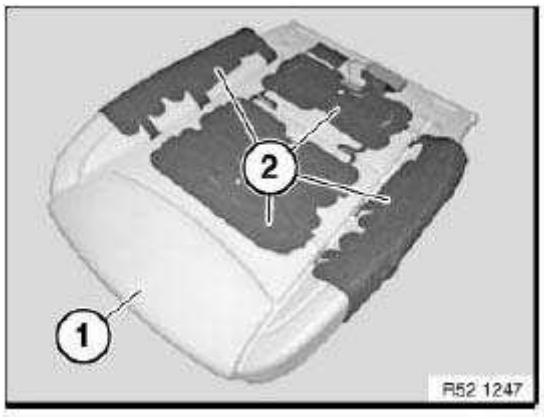


Fig. 81: Padding And OC3 Mat
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Bend new clips (2) with special tool 52 0 050.

1. Padding
2. Retainer

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3. Trim thread in padding
4. Trim thread in cover
5. Seat cover

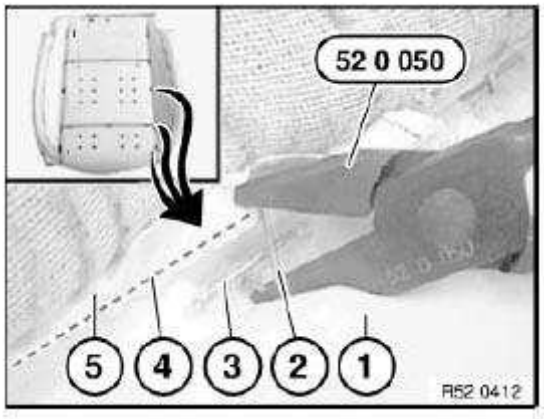


Fig. 82: Padding And Seat Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The support is coated with wax to prevent grinding noises.

Do not remove wax (1) on support (2).

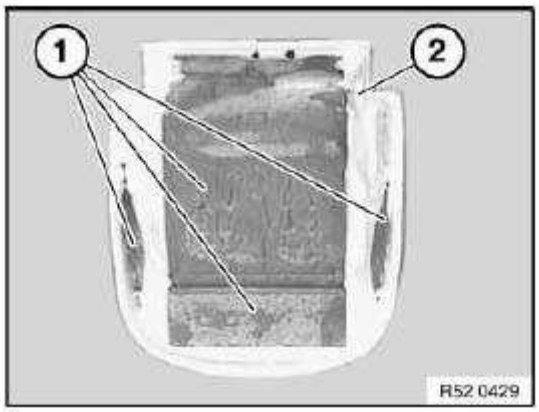


Fig. 83: Removing Wax
Courtesy of BMW OF NORTH AMERICA, INC.

Passenger seat only (replacing padding):

Installation:

In order to guarantee the function and fastening (adhesive strength) at the sticking surfaces of sensor mat (1), the foam most not show any traces of damage at all!

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Replace the foam if it is hardened or damaged particularly in the area of the sticking surfaces.

Fit new sensor mat (1) for passenger seat occupancy detector.

Align new sensor mat (1) on foam (2).

Feed plug (3) through bore hole (4).

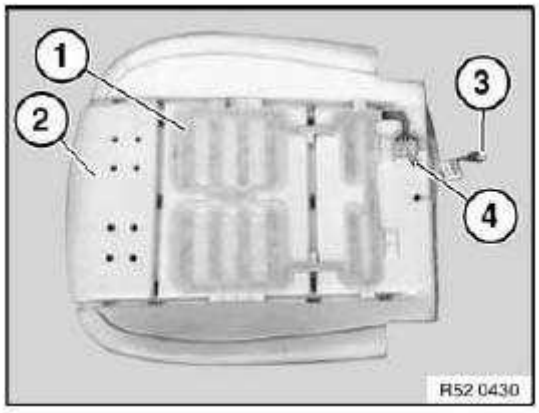


Fig. 84: Plug, Sensor Mat And Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Passenger seat only (replacing sensor mat):

Passenger seat only (replacing padding):

Installation:

Detach liner (1) at individual points and stick sensor mat (2) onto foam (3).

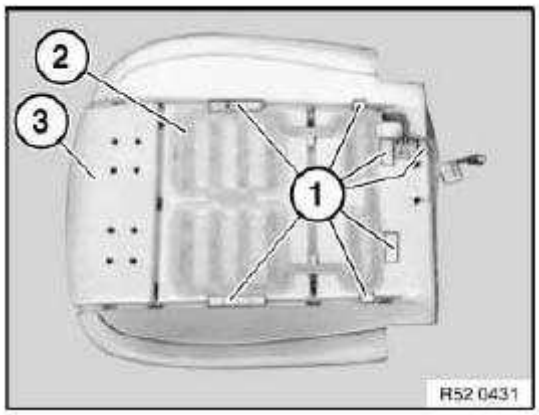


Fig. 85: Liner And Foam
Courtesy of BMW OF NORTH AMERICA, INC.

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NOTE: The work for "Replacing support" ends here.

Passenger seat only (replacing sensor mat):

Pull plug (1) out of bore hole (2).

In order to guarantee the function and fastening (adhesive strength) at the sticking surfaces of sensor mat (3), the foam most not show any traces of damage at all!

Replace the foam if it is hardened or damaged particularly in the area of the sticking surfaces.

Cut sticking surfaces on sensor mat (3) with cutter knife or razor blade from foam without damaging the foam.

Carefully remove sensor mat (3) from support (4).

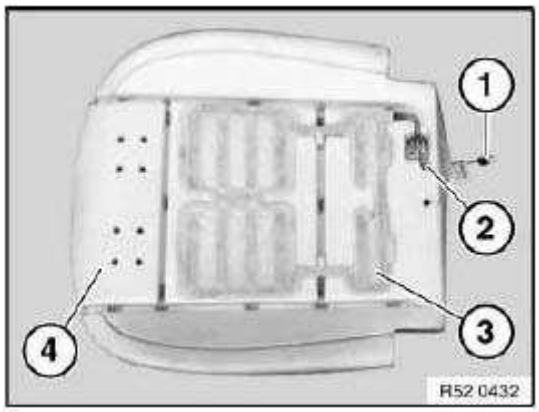


Fig. 86: Sensor Mat And Support
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Replacing sensor mat" ends here.

Replacing seat cover:

Remove trim threads (1) from seat cover (2).

Cut new seat cover (2) to size and insert trim threads (1).

Cable (3) for seat heating.

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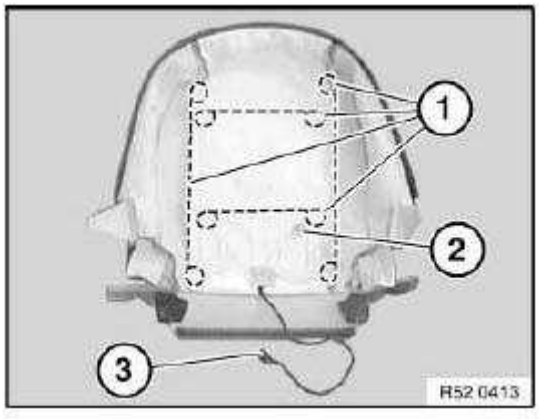


Fig. 87: Removing Trim Threads
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 405 REPLACING BACK-REST COVER FOR LEFT OR RIGHT FRONT SEAT (NORMAL / MANUAL)

Remove rear panel on front seat backrest,

refer to **52 13 198**.

Detach backrest cover (1) from backrest frame (2).

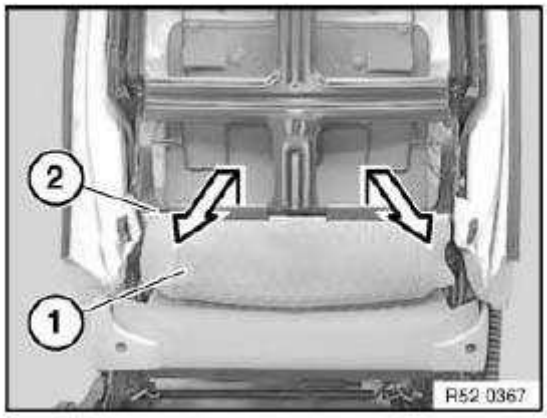


Fig. 88: Removing Backrest Cover From Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heating only: expose seat heating cable:

Remove outer cover on front seat:

Manual operation, refer to **52 13 040**.

Electrical operation, refer to **52 16 040**.

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Unfasten plug connection (1).

Pull cable (2) out of holder (3).

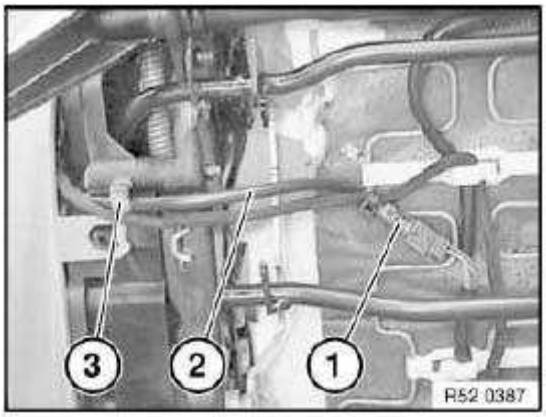


Fig. 89: Plug Connection And Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Model with seat heating only:

Pull out tongue (1).

Pull cable (2) out of holder (3).

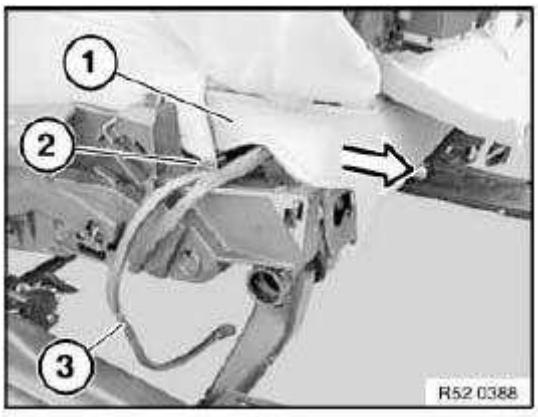


Fig. 90: Pulling Cable Out Of Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Model with seat heating only:

Lift out Omega clip (1).

Pull out cable (2) from Omega clip (1).

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Model with lumbar supports:

If necessary, disconnect plug connections (3) and (4).

Lift out Omega clip (1).

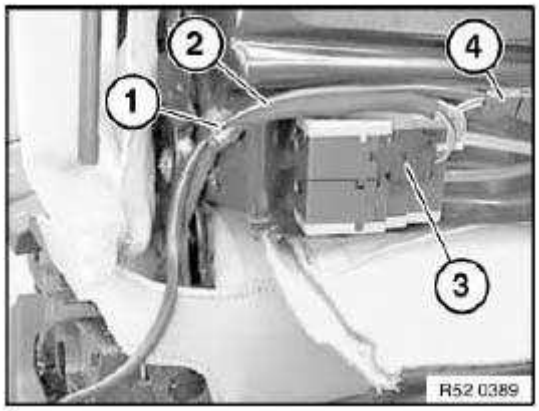


Fig. 91: Omega Clip, Cable And Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Removal/replacement of backrest frame only:

Detach cover (1) on left/right.

CAUTION: Do not under any circumstances turn screw underneath screw (2), this would destroy the seat frame.

Loosen left/right screw (2).

Detach backrest frame (3) with backrest cover upwards.

Installation:

Replace screws (microencapsulated).

Tightening torque: 52 10 2AZ, see **52 10 FRONT SEATS** .

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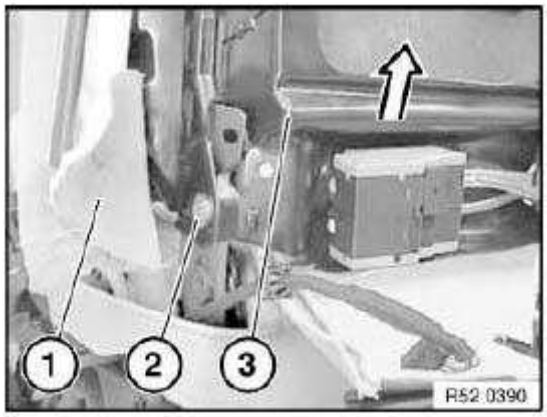


Fig. 92: Removing Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Removing complete backrest" ends here.

Removal of backrest cover with padding/replacement of backrest frame only:

Remove both guides for front head restraint,

refer to **52 13 ... Removing and installing/replacing guide for front left or right head restraint**

Version with lumbar support only:

NOTE: If necessary, gently heat air hose when firmly seated.

Valve housing must not be unclipped, leakage.

If the valve housing is unclipped, release screw and clip valve housing together.

Disconnect hoses (2) and (3) from valve housing (1).

2 Hose (blue), top cushion

3 Hose (red), bottom cushion

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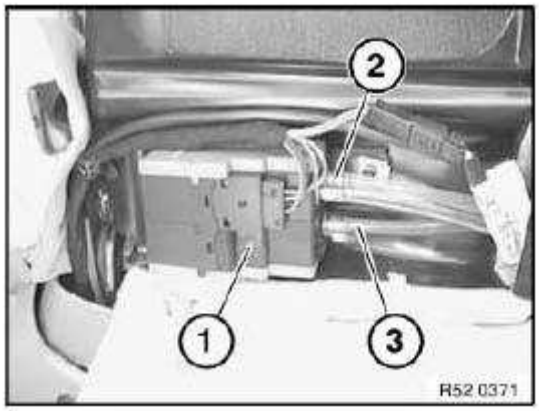


Fig. 93: Hoses And Valve Housing
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, shown here without valve housing.

Installation:

Observe cable guide (1) for backrest heating.

Lay air hoses (2) without kinks through hole (3).

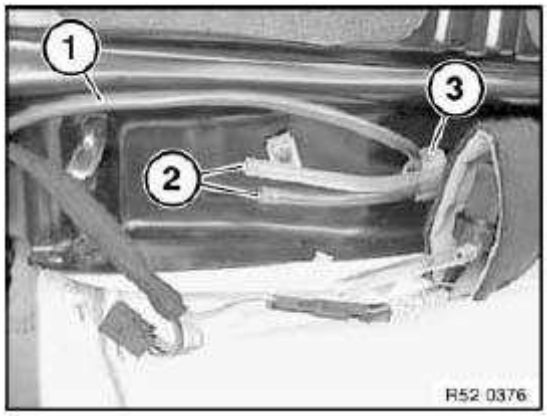


Fig. 94: Cable Guide And Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Detach backrest cover (1) at sides towards front and remove with support upwards from backrest frame (2).

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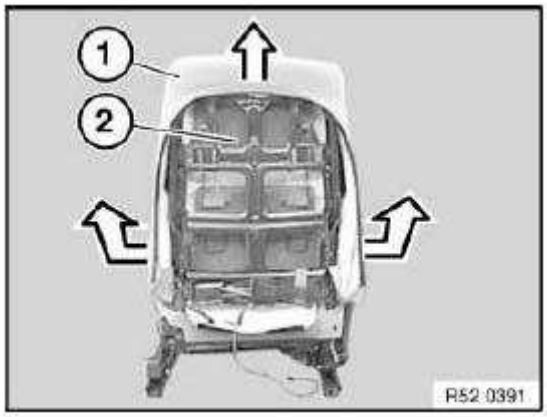


Fig. 95: Removing Backrest Cover At Sides Towards Front
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Removing backrest cover with support" ends here.

Removal of backrest cover from padding, replacing padding:

Release retainers (1) on left/right of backrest cover (2).

NOTE: Support (3) is reinforced in this area.

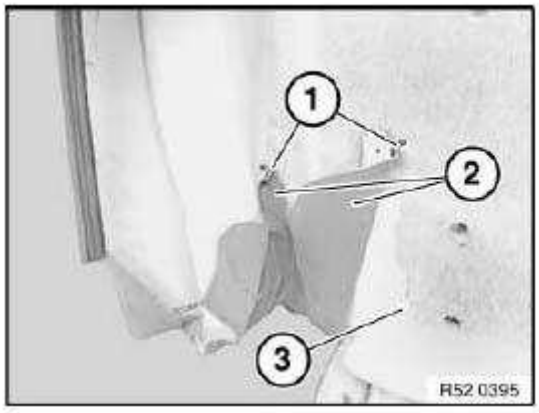


Fig. 96: Retainers And Backrest Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Release all retainers.

Remove backrest cover (1) from padding.

Remove all remnants of retainers from backrest cover (1) and padding.

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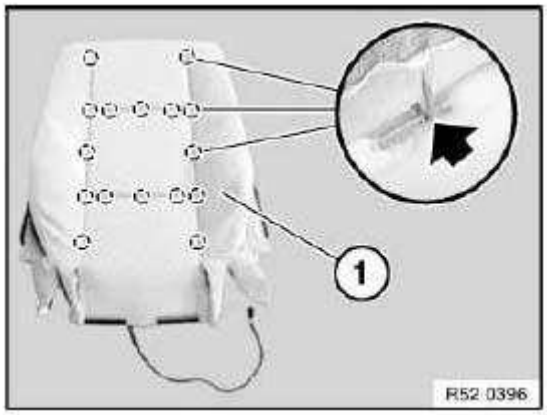


Fig. 97: Removing Backrest Cover From Padding
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fold in new clip (2) with special tool 52 0 050.

1. Support
2. Retainer
3. Trim thread in support
4. Trim wire in backrest cover
5. Back-rest cover

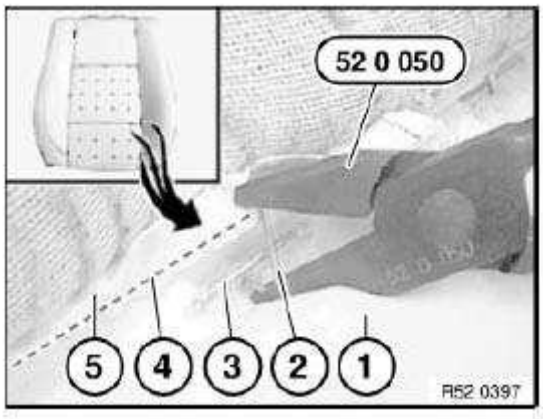


Fig. 98: Folding New Clip With Special Tool 52 0 050
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Replacing support" ends here.

Replacement of backrest cover:

Pull trim threads (1) out of backrest cover.

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Cut new backrest cover to size and insert trim threads (1).

2 Seat heater cable

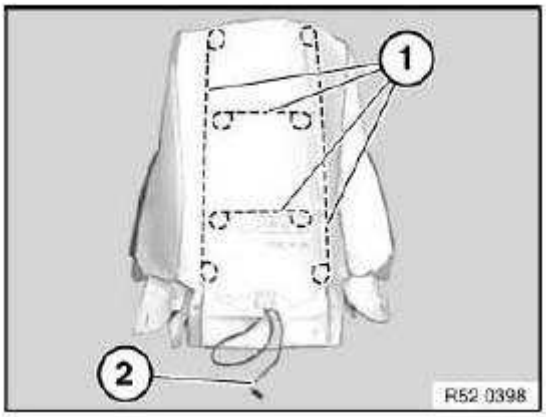


Fig. 99: Seat Heater Cable
Courtesy of BMW OF NORTH AMERICA, INC.

52 13 410 REPLACING SEAT AND BACKREST COVERS FOR FRONT SEAT (NORMAL/MANUAL), LEFT OR RIGHT

Operation is described in:

- Replace seat cover for left or right front seat, see **52 13 400 Replacing seat cover on left or right front seat (normal/manual)**
- Replace backrest cover for left or right front seat, see **52 13 405 Replacing back-rest cover for left or right front seat (normal / manual)**

52 13 415 REPLACING LEFT OR RIGHT SUPPORT FOR FRONT SEAT (NORMAL / MANUAL)

This operation is described in section on:

Replacing seat cover on left or right front seat, see **52 13 400 Replacing seat cover on left or right front seat (normal/manual)**

52 13 420 REPLACING LEFT OR RIGHT SUPPORT FOR FRONT SEAT BACK-REST (NORMAL / MANUAL)

This operation is described in section on:

Replacing backrest cover for left or right front seat, see **52 13 400 Replacing seat cover on left or right front seat (normal/manual)**

14 FRONT SEAT NORMAL, ELECTRIC

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52 14... REMOVING AND INSTALLING/REPLACING GUIDE FOR FRONT LEFT OR RIGHT HEAD RESTRAINT (NORMAL/ELECTRIC)

Operation is identical to:

- **52 13 390 Removing and installing / replacing front headrest (normal/ manual)**

52 14 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

Necessary preliminary tasks:

- Remove head restraint, see **52 13 390 Removing and installing / replacing front headrest (normal/ manual)**

WARNING: Read and comply with safety regulations for handling airbag modules and pyrotechnical belt tensioners, see 41 00 ... HANDLING AIRBAGS AND RESTRAINT SYSTEMS
Incorrect or improper handling may trigger the pyrotechnical belt pretensioner or side airbag and thereby cause injury.

Adjust front seat as far forward and upward as possible.

Switch off ignition!

Release seatbelt screw (1) and feed out seatbelt strap (2).

Tightening torque: 72 11 1AZ, see **72 11 SEAT BELTS** .

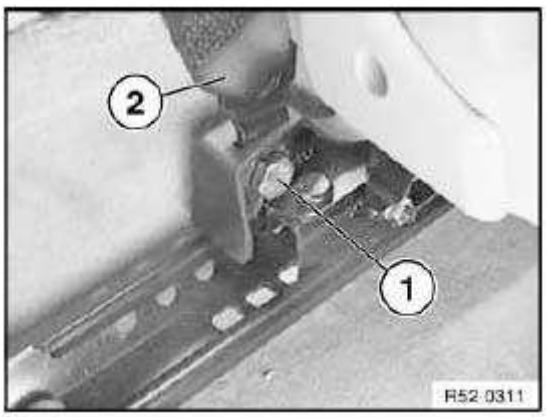


Fig. 100: Seatbelt Screw And Feed Out Seatbelt Strap
Courtesy of BMW OF NORTH AMERICA, INC.

Move front seat forwards/upwards as far as possible.

Release bolts (1).

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Installation:

Replace microencapsulated screws.

Tightening torque: 52 10 1AZ, see **52 10 FRONT SEATS** .

Move front seat backwards/downwards as far as possible.

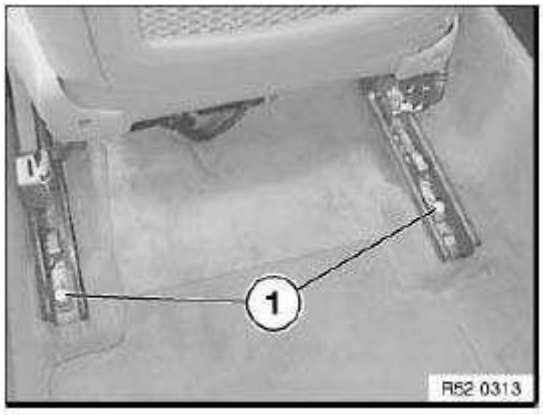


Fig. 101: Seat Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, unclip protective caps upwards.

Release screws (3).

Installation:

Replace microencapsulated screws.

Tightening torque: 52 10 1AZ, see **52 10 FRONT SEATS** .

Move seat runners forward so that they are flush.

Unlock lock (1) and disconnect plug connection (2).

IMPORTANT: Cover door sill with protective covers (risk of damage).

Lift out front seat.

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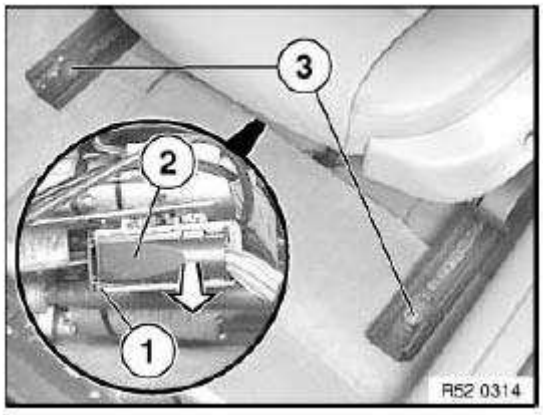


Fig. 102: Lifting Out Front Seat
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carpet must not get between seat rails and floor pan in area of fastening points (grating noises).

Tightening torque: 52 10 1AZ, see **52 10 FRONT SEATS** .

52 14 025 REMOVING AND INSTALLING/REPLACING SEAT MECHANISM ON LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

Special tools required:

- 61 2 071
- 61 2 074

Carry out following tasks beforehand:

- Remove seat pan and flexmat on front seat, see **52 13... Removing and installing/replacing seat pan and flexmat (normal/manual), left or right**
- Remove backrest frame on front seat, see **52 13 030 Removing and installing / replacing backrest frame on left or right front seat (normal / manual).**
- Remove seat belt tensioner.

Release screw (1) and cable holder (3).

Remove retaining bracket (2) with seat wiring harness from seat mechanism (4).

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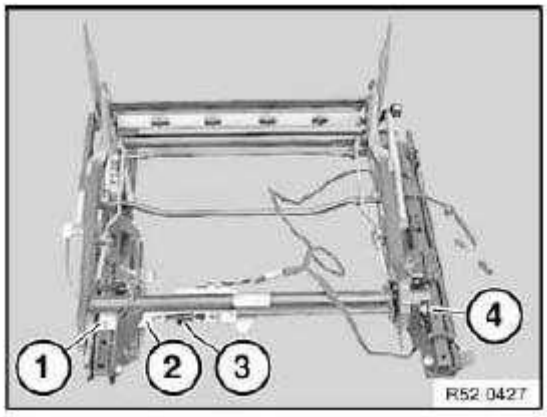


Fig. 103: Releasing Screw And Cable Tie
Courtesy of BMW OF NORTH AMERICA, INC.

Attach cable 61 2 074 to cable 61 2 071 and connect plug connection (1) to front seat.

Connect cable 61 2 071 to battery.

Check function.

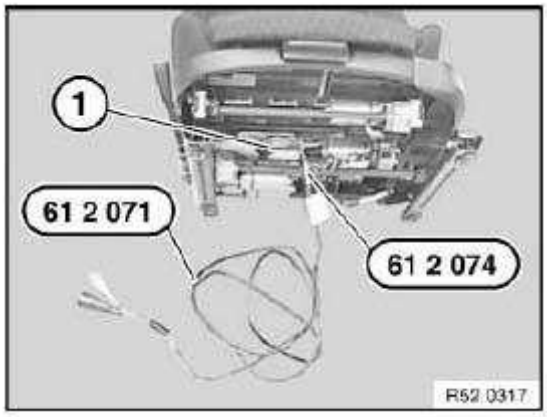


Fig. 104: Plug Connection And Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

52 14 030 REMOVING AND INSTALLING/REPLACING BACKREST FRAME ON FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC)

Necessary preliminary tasks:

- Remove rear panel on front seat, see **52 14 198 Removing and installing/replacing rear panel on left or right front seat backrest (normal/electric)**

Replacement only:

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- Remove backrest cover, see **52 16 405 Replacing backrest cover on front left or right seat (sports/electric)**
- Remove lumbar cushion, see **52 14 050 Replacing lumbar cushion on front left or right seat (normal/electric)**
- Remove valve housing for lumbar support
- Remove drive unit for lumbar support, see **67 66 010 REMOVING AND INSTALLING/REPLACING LUMBAR SUPPORT DRIVE MECHANISM ON FRONT SEAT, LEFT OR RIGHT**
- Remove release mechanism on front seat

Removing backrest frame only:

Unhook backrest cover (1) on left and right.

IMPORTANT: Do not under any circumstances turn screw underneath screw (2), this would destroy the seat frame.

Release screws (2) on left and right.

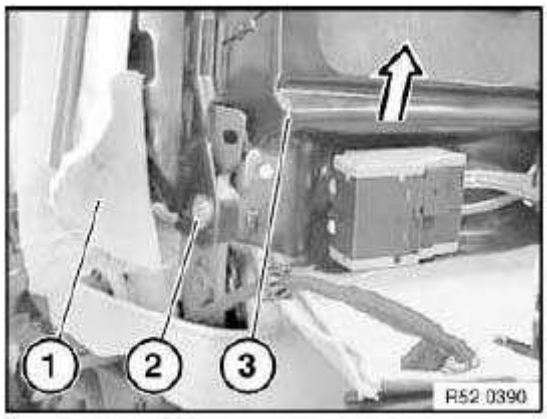


Fig. 105: Removing Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace screws (microencapsulated).

Tightening torque: 52 10 2AZ, see **52 10 FRONT SEATS** .

Remove backrest frame (3) with backrest cover towards top.

Replacing backrest frame only:

Detach mount (1) for rear panel towards top/rear from backrest frame (2).

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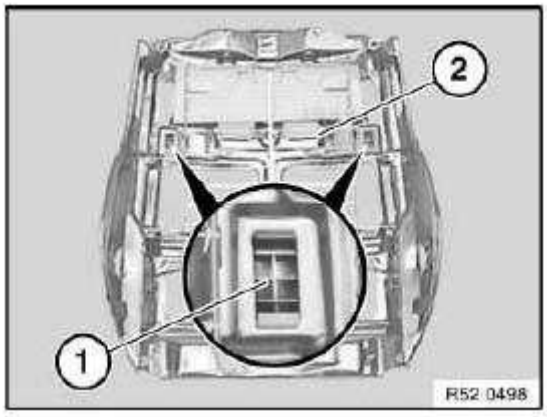


Fig. 106: Out Mount, And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catch (1) and guide (2) on mount (3) for rear panel must not be damaged.

Guide taper (4) must point downwards.

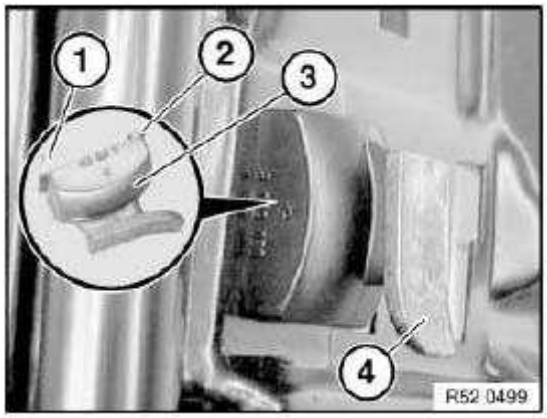


Fig. 107: Taper And Mount
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, remove mat (1) from spring wire (2) of backrest frame (3).

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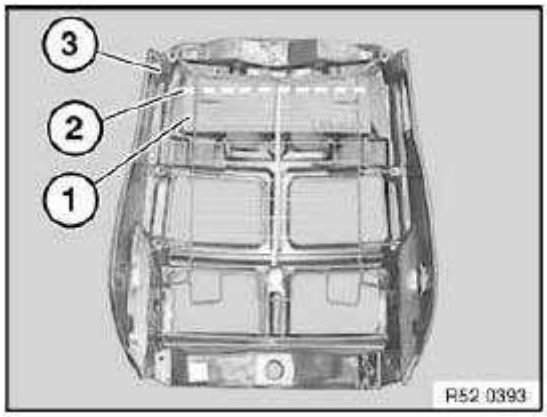


Fig. 108: Mat And Spring Wire
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, suspend mat (1) on uppermost spring wire (2) on backrest frame (3).

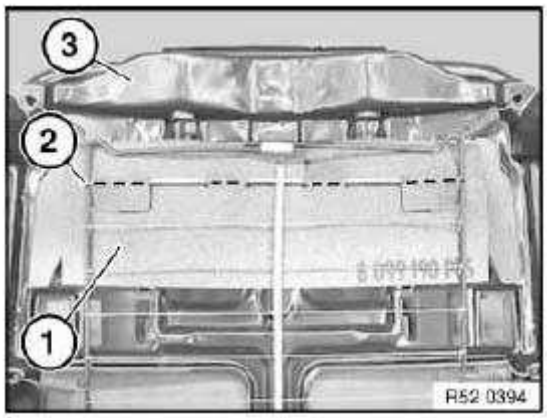


Fig. 109: Spring Wire And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

52 14 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC)

Operation is identical to:

Remove and install/replace outer cover on front left or right seat (sports/electric),

refer to **52 16 040**.

52 14 041 REMOVING AND INSTALLING/REPLACING INNER COVER ON FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC)

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Operation is identical to:

Replacing inner cover on left or right front seat (normal/electric), see **52 13 041 Removing and installing / replacing inner cover on left or right front seat backrest (normal/ manual)**

52 14 050 REPLACING LUMBAR CUSHION ON FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC)

Operation is identical to:

Replacing lumbar cushion on left or right front seat (normal/manual), see **52 13 050 Replacing lumbar cushion on front left or right seat**

52 14 060 REMOVING AND INSTALLING / REPLACING VALVE HOUSING FOR FRONT LEFT OR RIGHT LUMBAR SUPPORT (NORMAL / MANUAL)

Special tools required:

- **52 0 050 PLIERS**

Necessary preliminary tasks:

- Remove rear panel on front seat

E83:

If necessary, detach tensioning cables from backrest frame (2).

Detach backrest cover (1) in direction of arrow from backrest frame (2).

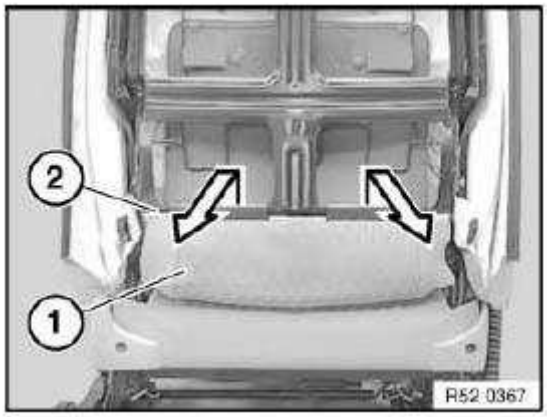


Fig. 110: Removing Backrest Cover From Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

E63:

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Detach tensioning cables (1) from backrest frame (2).

Disconnect all retainers.

Detach partial cover (2) from backrest frame.

Installation:

Lock new retainers by bending with special tool 52 0 050.

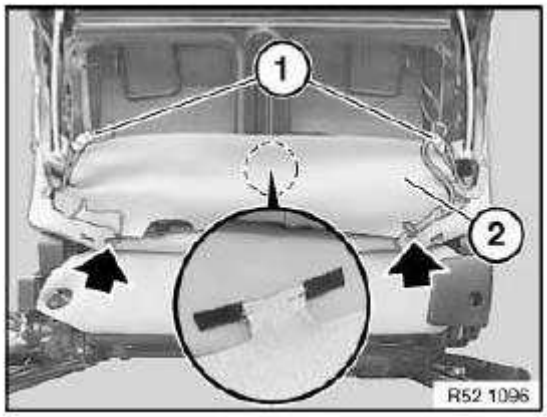


Fig. 111: Removing Partial Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (5).

NOTE: If necessary, gently heat air hose when firmly seated.

Disconnect air hoses (2...4) from valve housing (1).

2 Hose (blue) top cushion

3 Hose (clear) lumbar drive

4 Hose (red) bottom cushion

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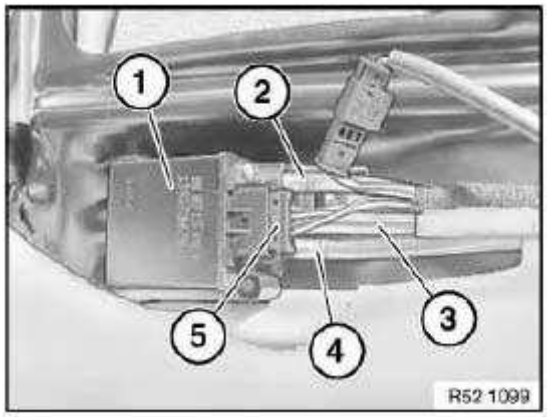


Fig. 112: Disconnecting Air Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) from inside.

Remove valve housing (3) with metal nut (2).

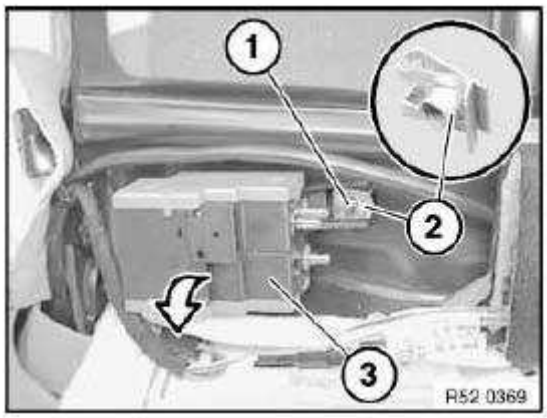


Fig. 113: Removing Valve Housing With Metal Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Pay attention to seat heating cable guide (1).

Lay air hoses (2) without kinks through hole (3).

Check function.

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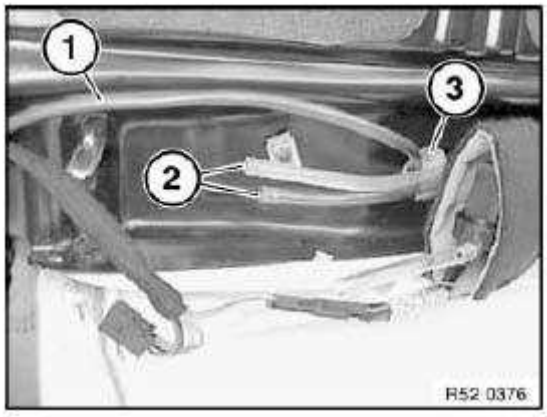


Fig. 114: Cable Guide And Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

52 14 070 REMOVING AND INSTALLING/REPLACING SEAT ANGLE ADJUSTER ON LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

Necessary preliminary tasks:

- Remove front seat, see **52 14 000 Removing and installing left or right front seat (normal/electric)**
- Remove outer cover, see **52 16 040 Removing and installing/replacing outer cover on front left or right seat (sports/electric)**

Release screws (1).

Release screw (2).

Unclip carrier (3) from seat mechanism at rear.

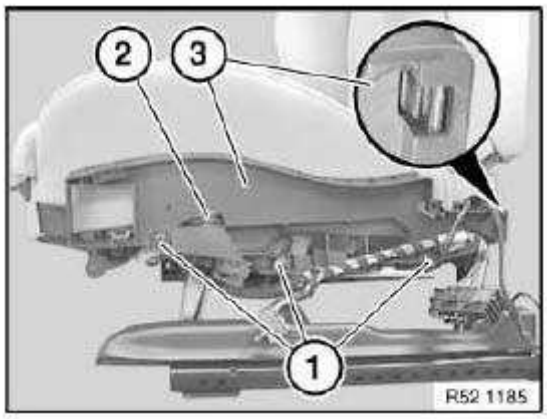


Fig. 115: Release Screw And Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug connection (1) on drive unit (2) and disconnect.

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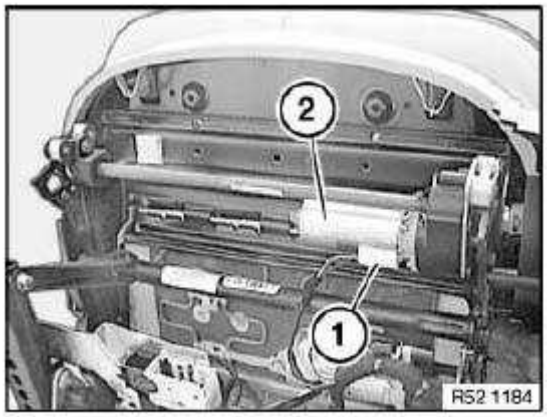


Fig. 116: Plug Connection And Drive Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Installation:

Replace Taptite screws (1).

Tightening torque: 52 10 16AZ, see **52 10 FRONT SEATS** .

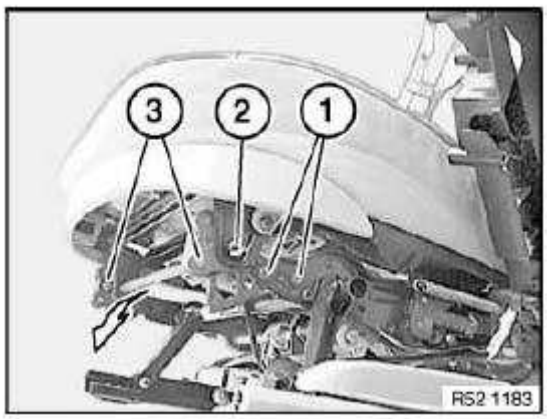
Release screw (2).

Tightening torque: 52 10 17AZ, see **52 10 FRONT SEATS** .

Remove seat angle adjuster (3).

Installation:

Slide left and right O-rings onto shaft. Make sure O-rings are correctly located between seat angle adjuster and seat pan.



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Fig. 117: Removing Seat Angle Adjuster
Courtesy of BMW OF NORTH AMERICA, INC.

52 14 198 REMOVING AND INSTALLING/REPLACING REAR PANEL ON LEFT OR RIGHT FRONT SEAT BACKREST (NORMAL/ELECTRIC)

Operation is identical to:

Replacing rear panel on left or right front seat backrest (normal/manual), see **52 13 198 Removing and installing / replacing rear panel on left or right front seat backrest (normal/manual)**

52 14 390 REMOVING AND INSTALLING OR REPLACING FRONT LEFT OR RIGHT HEAD RESTRAINTS (NORMAL/ELECTRIC)

Operation is identical to:

Replacing front left or right head restraint (normal/manual), see **52 13 390 Removing and installing / replacing front headrest (normal/ manual)**.

52 14 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

Operation differs as follows and is described in:

Replacing seat cover without thigh support for left or right front seat, see **52 13 400 Replacing seat cover on left or right front seat (normal/manual)**.

Replacing seat cover with thigh support for left or right front seat, see **52 16 400 Replacing seat cover for left or right front seat (sports/electric)**.

52 14 405 REPLACING BACKREST COVER FOR FRONT LEFT OR RIGHT SEAT (NORMAL/ELECTRIC)

Operation is identical to:

Replacing backrest cover for left or right front seat (normal/manual), see **52 13 405 Replacing back-rest cover for left or right front seat (normal / manual)**.

52 14 415 REPLACING SUPPORT FOR LEFT OR RIGHT FRONT SEAT (NORMAL/ELECTRIC)

WARNING: US/CND front passenger seat (with OC3 mat) only:
The support can only be removed in conjunction with the OC3 mat.
If support is defective, both parts may only be replaced together.
After fitting new support, enable OC3 mat with BMW diagnosis system.

The operation for removing the support with/without OC3 mat is described in:

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- Replacing seat cover on front seat, see **52 14 400 Replacing seat cover for left or right front seat (normal/electric)**

Enabling seat occupancy detector (OC3 mat):

- Connect BMW diagnosis system
- Release seat occupancy detector
- Clear fault memory if necessary

52 14 420 REPLACING PADDING FOR LEFT OR RIGHT FRONT SEAT BACKREST (NORMAL/ELECTRIC)

This operation is described in section on:

Replace backrest cover for left or right front seat, see **52 14 405 Replacing backrest cover for front left or right seat (normal/electric)**.

52 14 899 ADDITIONAL WORK (NORMAL/ ELECTRIC) WITH DEFECTIVE DRIVE FOR LONGITUDINAL ADJUSTMENT

Set seat tilt adjustment to max. up setting.

Release screw (1) on actuator drive (2) of longitudinal seat adjustment.

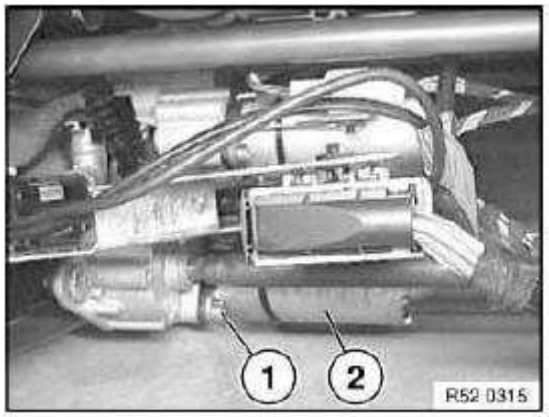


Fig. 118: Actuator Drive And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) on servodrive (2) of longitudinal seat adjustment and remove servodrive (2).

Activate the operating switch for the seat position adjustment:

A. No function:
   - Disconnect plug for longitudinal seat adjustment
   - Connect new servodrive and check function

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- If servodrive is running, gear is O.K.
- Reassemble front seat

B. Actuator drive running:
- Transmission for longitudinal seat adjustment defective!
- Continue with

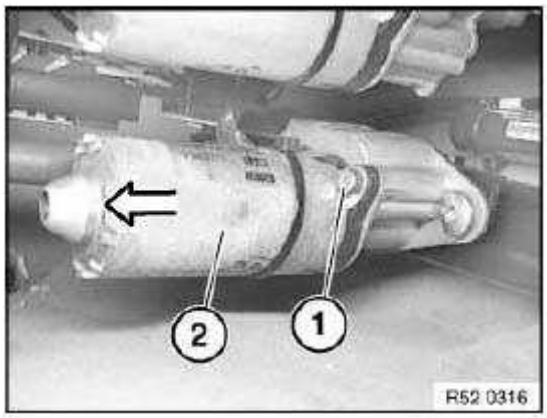


Fig. 119: Removing Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

Disassembly of faulty gear for longitudinal seat adjustment

Disassembly of faulty gear (1) for longitudinal seat adjustment:

NOTE: For purposes of clarity, the backrest frame and seat cover are shown removed.

(2) Input shaft

(3) Internal gear

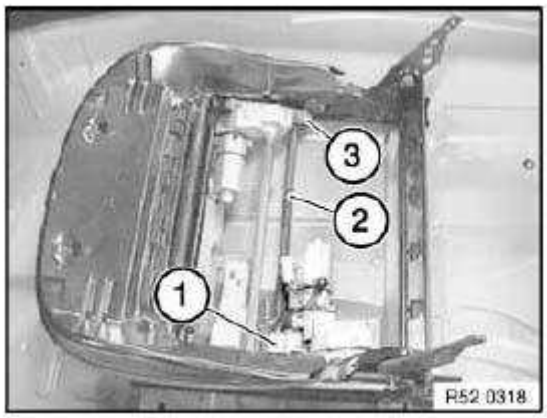


Fig. 120: Input Shaft And Internal Gear
Courtesy of BMW OF NORTH AMERICA, INC.

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Using a pneumatic saw (1),

cut through drive shaft (2) from rear.

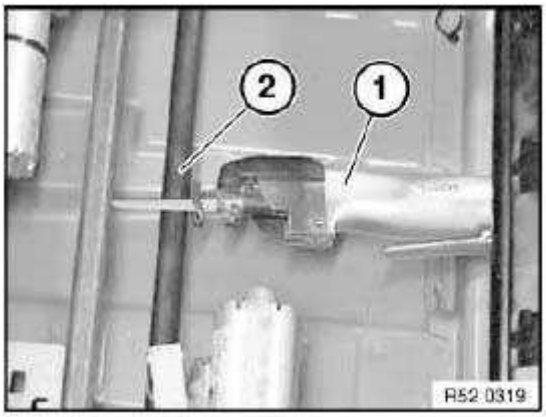


Fig. 121: Pneumatic Saw And Drive Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

Remove drive shaft (1) from gear (2).

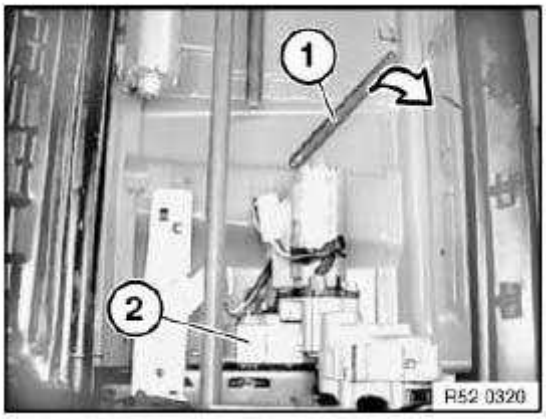


Fig. 122: Removing Drive Shaft From Gear
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) and remove gear (2).

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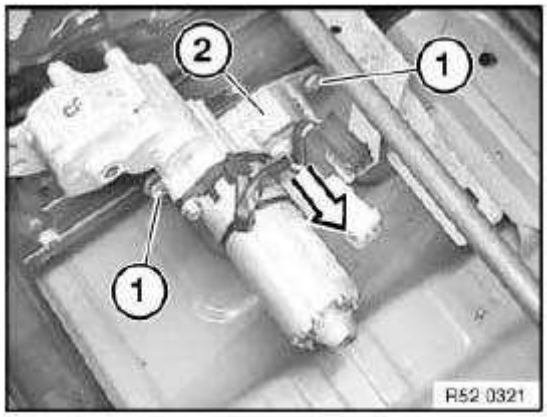


Fig. 123: Removing Gear And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Over rest of drive shaft (1),

adjust front seat,

release screws on floor panel

and remove front seat.

NOTE: If gear (4) is faulty, detach cover (2), release screws (3), and remove gear (4).

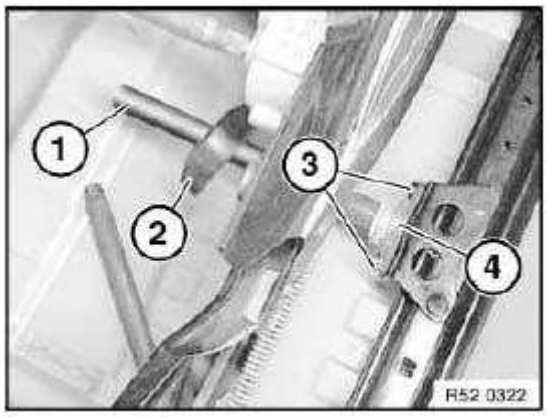


Fig. 124: Removing Gear And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Replace seat mechanism on front seat.

15 FRONT SEAT SPORTS, MANUAL

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52 15... REMOVING AND INSTALLING/REPLACING GUIDE FOR FRONT LEFT OR RIGHT HEAD RESTRAINT (SPORTS/NORMAL)

Operation is identical to:

- Removing and installing guide for front head restraint (normal/manual), see **52 13 ... Removing and installing/replacing guide for front left or right head restraint**

52 15 000 REMOVING AND INSTALLING FRONT SEAT (SPORTS/MANUAL), LEFT OR RIGHT

Operation is identical to:

Removing and installing front seat (normal/manual), left or right.

52 15 015 REMOVING AND INSTALLING/REPLACING ACTUATING UNIT ON FRONT LEFT OR RIGHT SEAT (SPORTS/MANUAL)

Operation is identical to:

Remove and install/replace actuating unit on front left or right seat (normal/manual),

refer to **52 13 015**.

52 15 025 REMOVING AND INSTALLING/REPLACING SEAT MECHANISM ON LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

Operation is identical to:

Replacing seat mechanism on left or right front seat (normal/electric), see **52 14 025 Removing and installing/replacing seat mechanism on left or right front seat (normal/electric)**

52 15 030 REMOVING AND INSTALLING/REPLACING BACKREST FRAME ON LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

Remove backrest frame and backrest cover with padding,

refer to **52 13 405**.

Replacement only:

Model with lumbar supports:

If necessary, remove lumbar cushion on front seat,

refer to **52 13 050**.

If necessary, remove valve housing for front lumbar support,

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If necessary, remove drive unit for lumbar support on front seat,

refer to **67 66 010** .

Lift out mount (1) for rear panel

at top and pull off

towards rear/top from backrest frame (2).

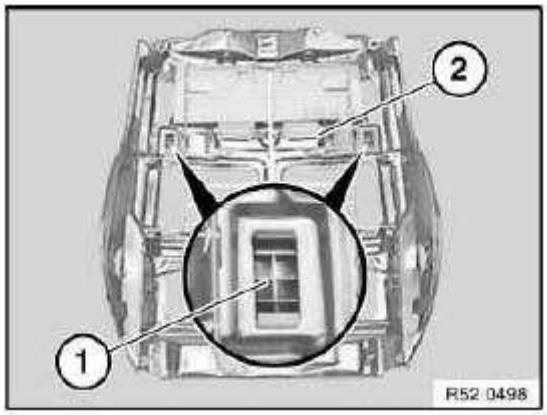


Fig. 125: Out Mount, And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catch (1) and guide (2) on mount (3) for rear panel must not be damaged.

Guide taper (4) must point downwards.

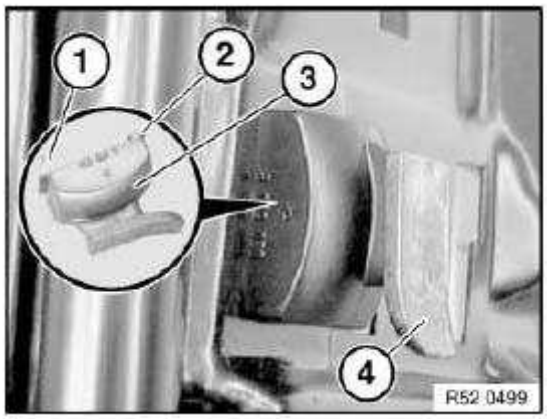


Fig. 126: Taper And Mount
Courtesy of BMW OF NORTH AMERICA, INC.

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If necessary, release screw (1) and remove metal nut (2).

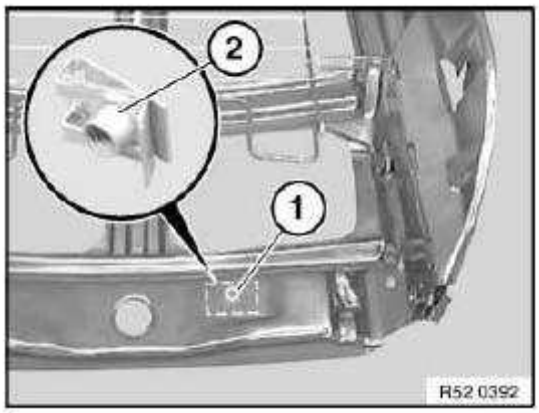


Fig. 127: Metal Nut
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, remove mat (1) from spring wire (2) of backrest frame (3).

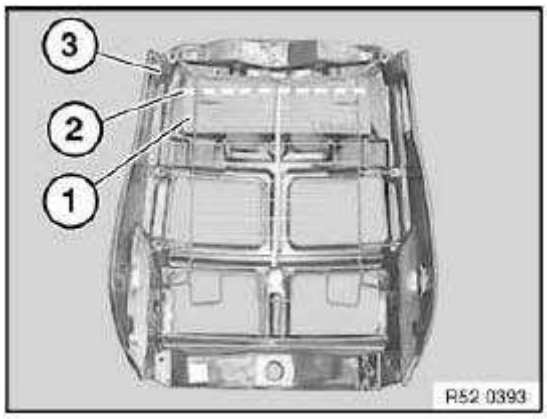


Fig. 128: Mat And Spring Wire
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, suspend mat (1) on uppermost spring wire (2) on backrest frame (3).

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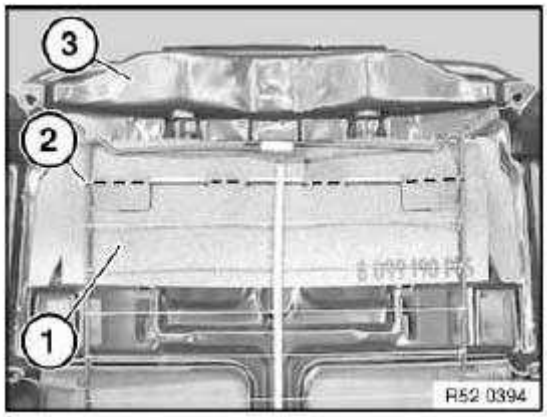


Fig. 129: Spring Wire And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

52 15 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/MANUAL)

Operation is identical to:

Remove and install/replace outer cover on front left or right seat (normal/manual),

refer to **52 13 040**.

52 15 041 REMOVING AND INSTALLING/REPLACING INNER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/MANUAL)

Operation is identical to:

Replacing inner cover on left or right front seat (normal/electric), see **52 13 041 Removing and installing / replacing inner cover on left or right front seat backrest (normal/ manual)**.

52 15 050 REPLACING LUMBAR CUSHION ON FRONT LEFT OR RIGHT SEAT (SPORTS/MANUAL)

Operation is identical to:

Replace lumbar cushion on front left or right seat (normal/manual),

refer to **52 13 050**.

52 15 070 REMOVING AND INSTALLING/REPLACING SEAT ANGLE ADJUSTER (SPORT/MANUAL) ON LEFT OR RIGHT FRONT SEAT

Special tools required:

- **51 2 100 CLAMPING LEVER**

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Necessary preliminary tasks:

- Remove front seat, see **52 15 000 Removing and installing front seat (sports/manual), left or right**
- Remove actuating unit, see **52 13 015 Removing and installing / replacing controls on left / right front seat (normal / manual)**

WARNING: Torsion bar spring (1) is subject to tension. Risk of injury.

Lever torsion bar spring (1) with special tool 51 2 100 in direction of arrow from seat angle adjuster.

Feed torsion bar spring (1) out of seat mechanism.

Installation:

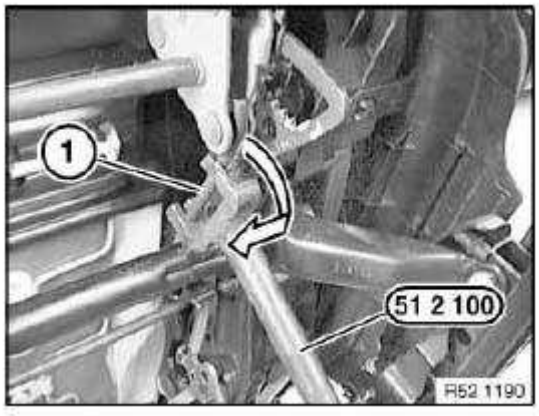


Fig. 130: Removing Bar Spring
Courtesy of BMW OF NORTH AMERICA, INC.

Make sure plastic protector is correctly positioned on contact surface between torsion bar spring and seat mechanism (grating noises).

Release screws (1).

Installation:

Replace Taptite screws (1).

Tightening torque: 52 10 16AZ, see **52 10 FRONT SEATS** .

Release screw (2).

Remove seat angle adjuster (3).

Installation:

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Slide left and right O-rings onto shaft. Make sure O-rings are correctly located between seat angle adjuster and seat pan.

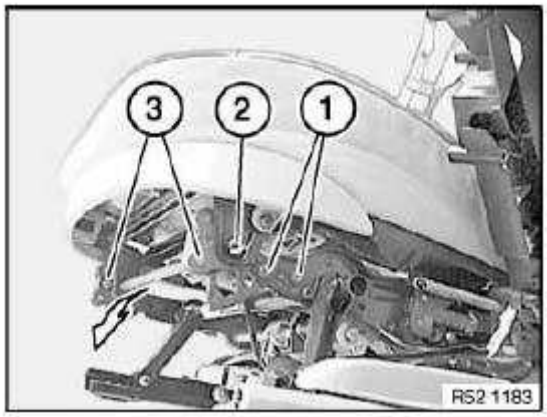


Fig. 131: Removing Seat Angle Adjuster
Courtesy of BMW OF NORTH AMERICA, INC.

52 15 095 REMOVING AND INSTALLING/REPLACING THIGH SUPPORT HOLDER ON FRONT LEFT OR RIGHT SEAT (SPORTS/MANUAL)

Operation is identical to:

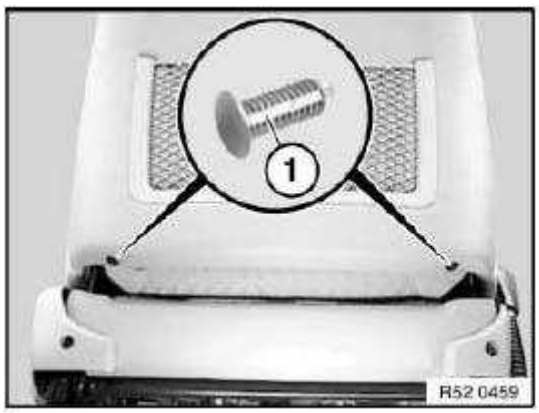
Remove and install/replace thigh support holder on front left or right seat (sports/electric),

refer to **52 16 095**.

52 15 198 REMOVING AND INSTALLING/REPLACING REAR PANEL ON FRONT LEFT OR RIGHT SEAT BACKREST (SPORTS/MANUAL)

Release clips (1) with side cutting pliers.

NOTE: Remove clip remainders.



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Fig. 132: Clip Remainders
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out rear panel (1) at bottom towards rear and pull out towards bottom from backrest frame (2).

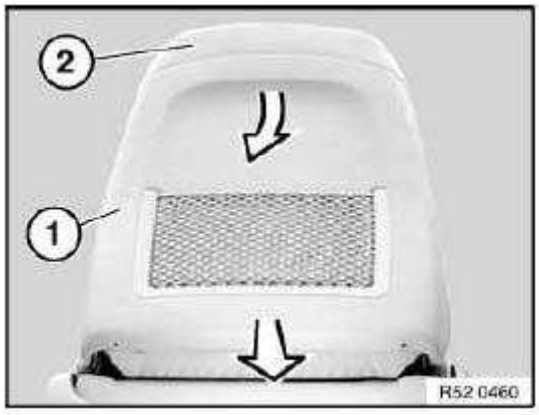


Fig. 133: Pulling Out Rear Panel At Bottom Towards Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Bores (1) and fastening set (2) of rear panel (3) must not be damaged.

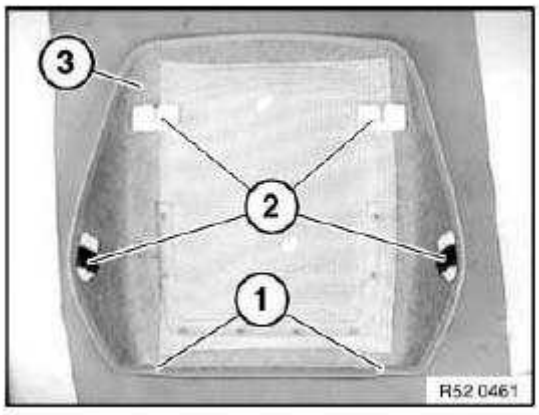


Fig. 134: Fastening Set And Rear Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Slide backrest cover (1) on left/right over clip mount (2).

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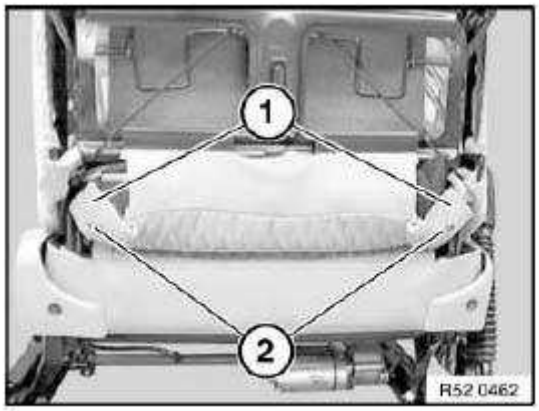


Fig. 135: Backrest Cover And Clip Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Mounts (1) on backrest frame (2) must not be damaged.

To install rear panel, first slide into mounts (1) and then slide in at sides at bottom, refer to next work step.

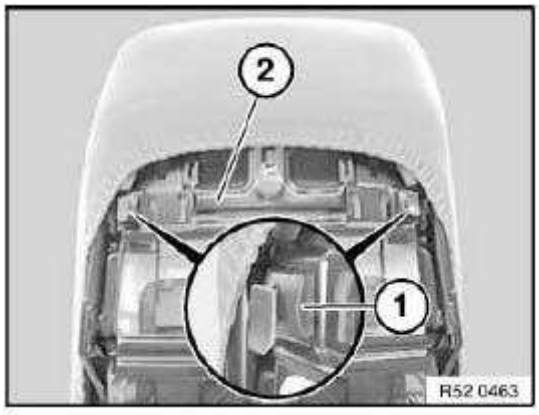


Fig. 136: Mounts And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

After installing rear panel in upper mounts,

refer to previous work step:

Feed rear panel at sides into opening in backrest cover and

insert into mounts (1) on left/right on backrest frame (2) and snap into place.

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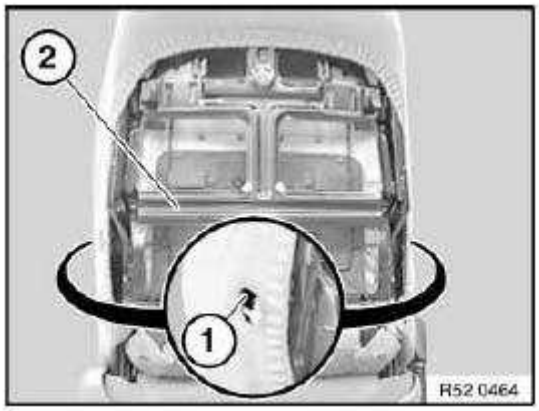


Fig. 137: Installing Rear Panel In Upper Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

52 15 390 REMOVING AND INSTALLING OR REPLACING FRONT LEFT OR RIGHT HEAD RESTRAINTS (SPORTS/MANUAL)

Operation is identical to:

Replacing front left or right head restraint (normal/manual), see **52 13 390 Removing and installing / replacing front headrest (normal/ manual)**

52 15 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

Operation is identical to:

Replacing seat cover for left or right front seat (normal/manual), see **52 16 400 Replacing seat cover for left or right front seat (sports/electric)**

52 15 405 REPLACING BACKREST COVER FOR LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

Operation is identical to:

Replacing backrest cover for left or right front seat (normal/manual), see **52 13 405 Replacing back-rest cover for left or right front seat (normal / manual)**

52 15 415 REPLACING PADDING FOR LEFT OR RIGHT FRONT SEAT (SPORT/MANUAL)

This operation is described in section on:

Replacing seat cover on left or right front seat, see **52 13 400 Replacing seat cover on left or right front seat (normal/manual)**

52 15 420 REPLACING PADDING FOR LEFT OR RIGHT FRONT SEAT BACKREST (SPORT/MANUAL)

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This operation is described in section on:

Replace backrest cover for left or right front seat, see **52 13 405 Replacing back-rest cover for left or right front seat (normal / manual)**

16 FRONT SEAT SPORTS, ELECTRIC

52 16... REMOVING AND INSTALLING/REPLACING CARRIER FOR OUTER COVER ON LEFT OR RIGHT FRONT SEAT (SPORTS/ELECTRIC)

Remove outer front cover.

Release screws, remove lower section.

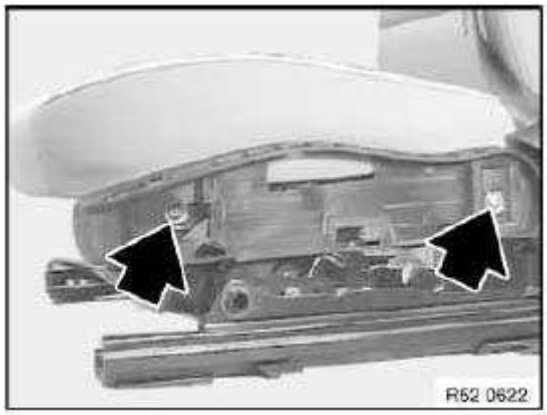


Fig. 138: Locating Lower Section
Courtesy of BMW OF NORTH AMERICA, INC.

52 16... REMOVING AND INSTALLING/REPLACING GUIDE FOR FRONT LEFT OR RIGHT HEAD RESTRAINT (SPORTS/ELECTRIC)

Operation is identical to:

- Removing and installing guide for front head restraint (normal/manual), see **52 13 ... Removing and installing/replacing guide for front left or right head restraint**

52 16... REMOVING AND INSTALLING/REPLACING SEAT PAN AND FLEX MAT ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Remove seat cover with padding,

refer to **52 16 400**.

Release left screw (1) and slacken right screw only.

Release left/right screws (3).

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Slacken left/right screws (4) only.

Lever out retaining plate (2) on left.

Installation:

Tightening torque: 52 10 9AZ, see **52 10 FRONT SEATS** .

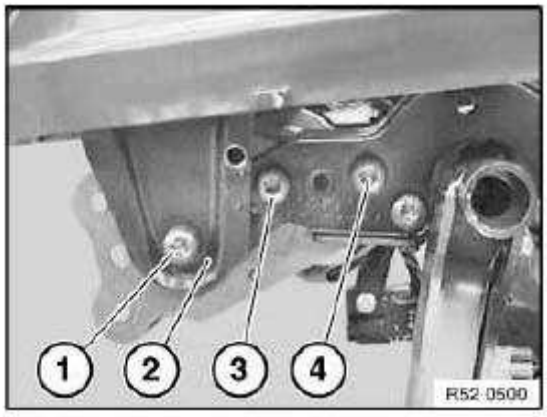


Fig. 139: Retaining Plate And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Press seat pan (4) upwards, thereby relieving tension on flex mat.

Release screw (1) and remove support (2) from gear (3).

Installation:

Tightening torque: 52 10 9AZ, see **52 10 FRONT SEATS** .

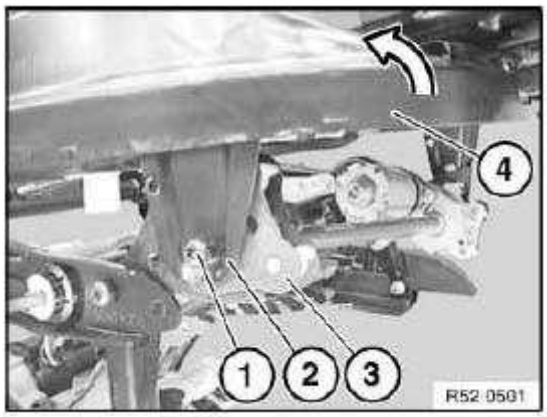


Fig. 140: Removing Support From Gear
Courtesy of BMW OF NORTH AMERICA, INC.

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Installation:

Using split-pin drift (1), lift support (2) onto guide (3).

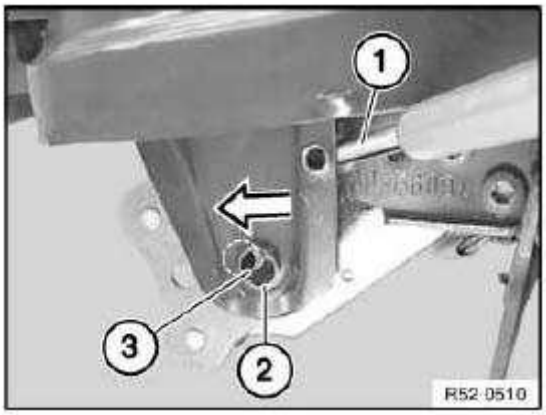


Fig. 141: Lifting Support Onto Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat occupancy detector:

If necessary, unhook control unit (1) and cable (3) from holders (2).

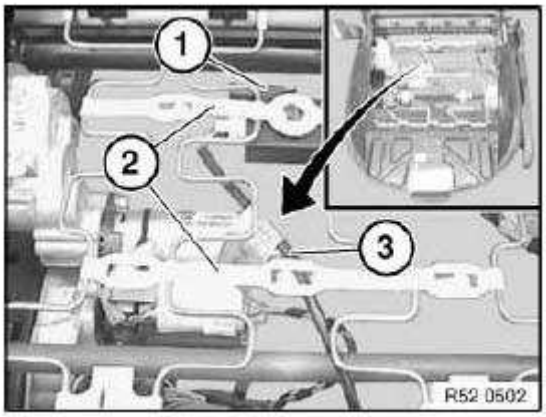


Fig. 142: Releasing Control Unit And Cable From Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Turn seat pan (1) upwards.

Detach flexmat (2) at rear from mounts (3).

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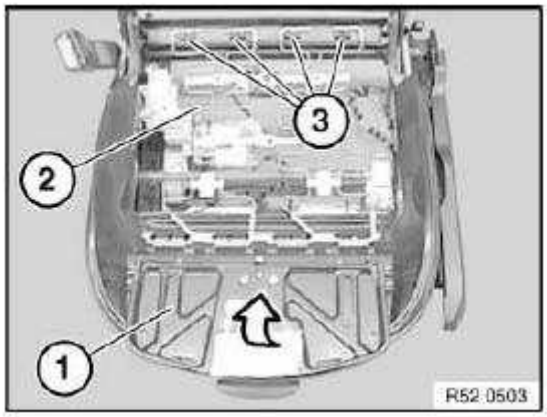


Fig. 143: Detaching Flexmat At Rear From Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seat pan (1) on left/right backwards/top from mount (2) and remove.

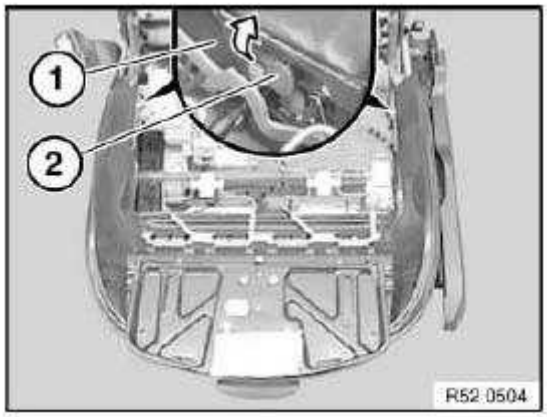
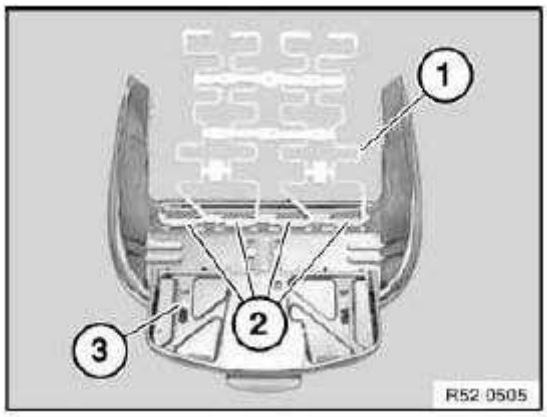


Fig. 144: Detaching Seat Pan On Left/Right Backwards/Top
Courtesy of BMW OF NORTH AMERICA, INC.

Detach flexmat (1) from mounts (2) on seat pan (3).



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Fig. 145: Removing Flexmat From Mounts On Seat Pan
Courtesy of BMW OF NORTH AMERICA, INC.

Removing thigh support from seat pan:

Unhook spring (1) from thigh support (2).

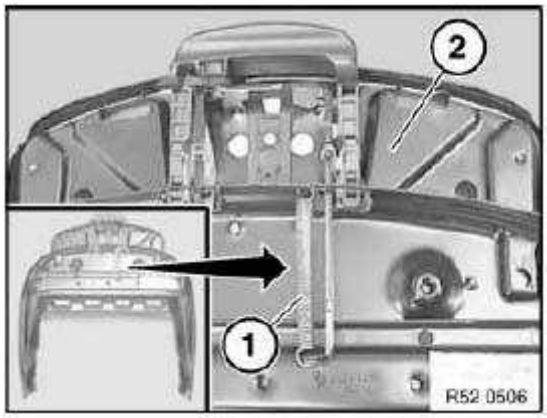


Fig. 146: Releasing Spring From Thigh Support
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove thigh support (2).

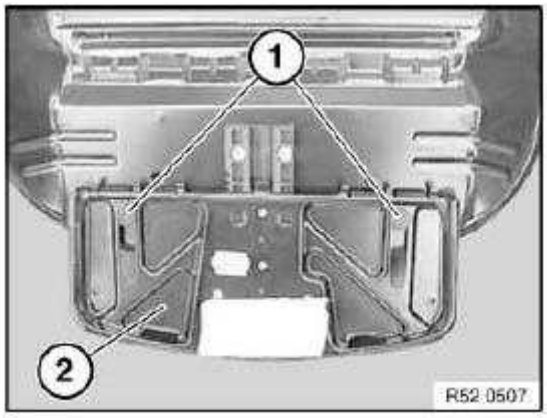


Fig. 147: Thigh Support And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, release screws (1) and remove guide rails (2) from seat pan (3).

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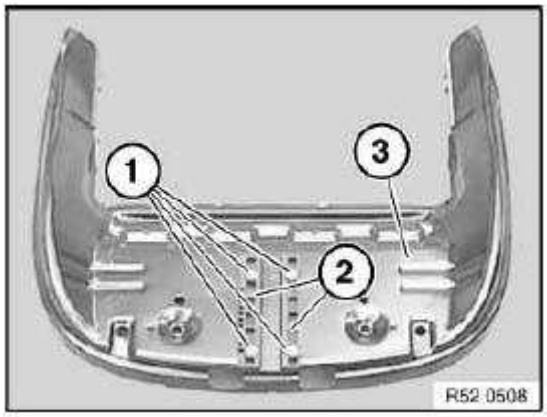


Fig. 148: Guide Rails And Seat Pan
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 000 REMOVING AND INSTALLING FRONT SEAT (SPORTS/ELECTRIC), LEFT OR RIGHT

Operation is identical to:

Removing and installing front seat (normal/manual), left or right.

52 16 025 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT SEAT MECHANISM (ON SPORT/ELECTRIC FRONT SEAT)

Remove seat pan and flexmat on front seat,

Remove backrest frame on front seat,

refer to **52 13 030**.

Remove seatbelt tensioner,

refer to **72 11 030** .

Disconnect all plug connections (1) from actuator drives.

Remove seat wiring harness from seat mechanism (2).

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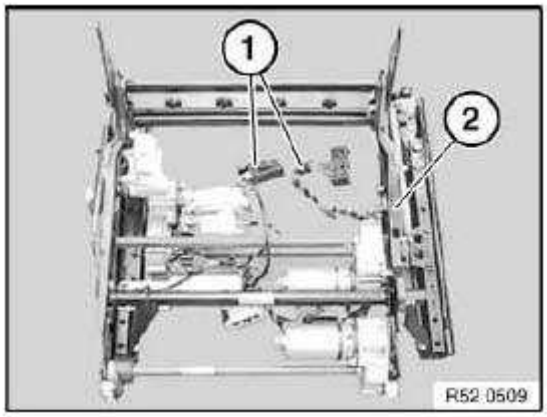


Fig. 149: Plug Connections And Seat Mechanism
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Perform function check:

Connect cable 61 2 071 to battery,

connect cable 61 2 074 to cable 61 2 071 and plug connection (1) to front seat.

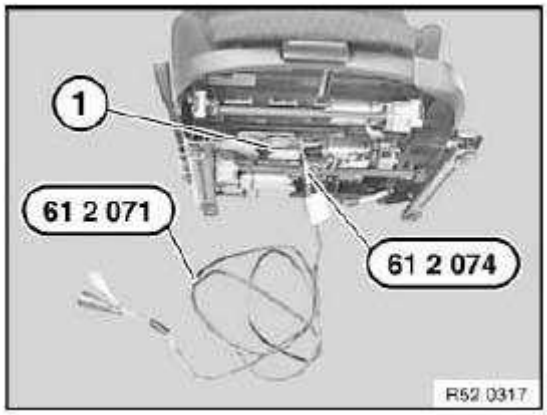


Fig. 150: Plug Connection And Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 030 REMOVING AND INSTALLING/REPLACING BACKREST FRAME ON LEFT OR RIGHT FRONT SEAT (SPORT/ELECTRIC)

Operation is identical to:

Replacing backrest frame on left or right front seat (sport/manual), see **52 15 030 Removing and installing/replacing backrest frame on left or right front seat (sport/manual)**

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52 16 040 REMOVING AND INSTALLING/REPLACING OUTER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Unscrew bolt (1).

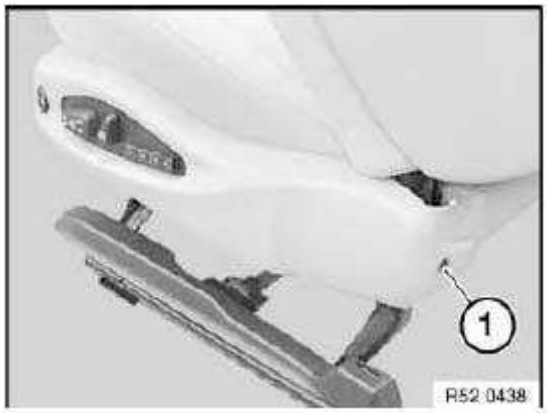


Fig. 151: Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

Removing top cover:

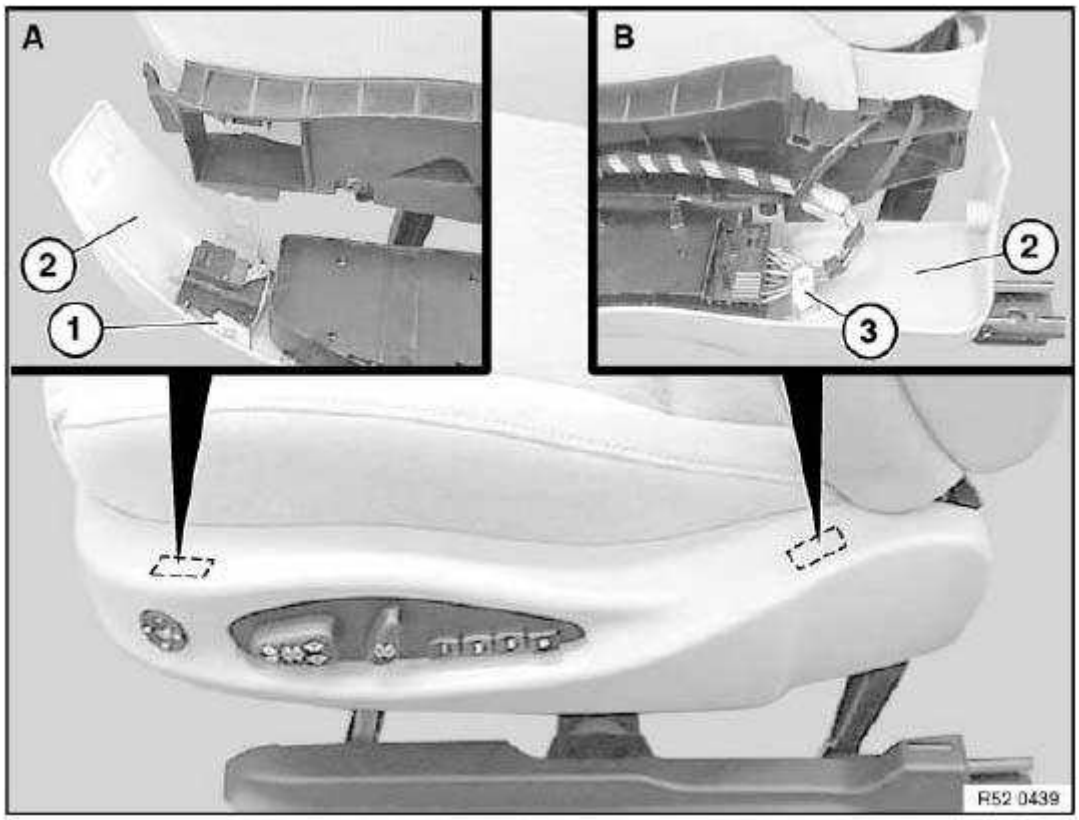


Fig. 152: Pulling Rear Cover Outwards

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Courtesy of BMW OF NORTH AMERICA, INC.

A. Snap out catch (1) on front cover (2) towards bottom and pull cover (2) outwards a little.
B. Snap out catch (3) on rear cover (2) towards front/bottom and pull cover (2) outwards a little.

Lever lugs (1) on cover (3) out of brackets (2).

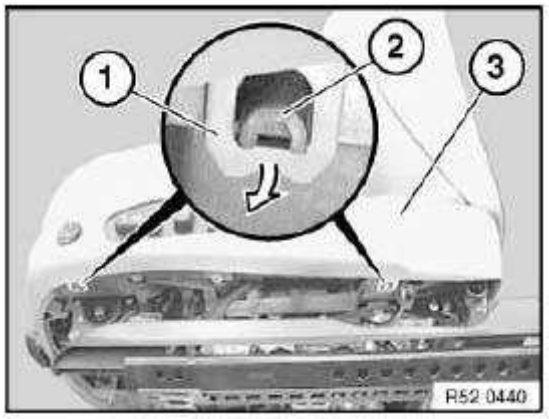


Fig. 153: Removing Lugs On Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out cover (1) at rear, detach at front from guide and remove.



Fig. 154: Removing Front From Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Do not crush cables (1) during installation.

Insert lugs (2) into mounts (3) and snap into place.

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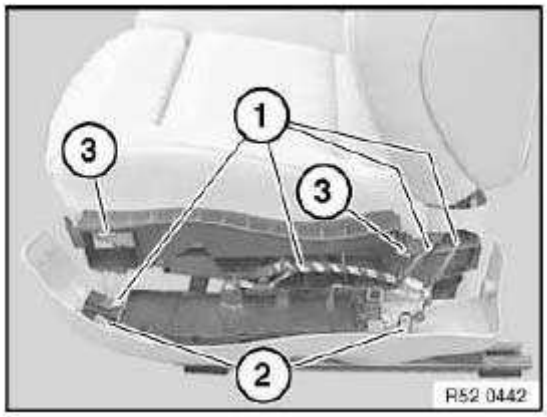


Fig. 155: Crush Cables, Lugs And Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Lever out lugs (2) and detach switch combination (3).

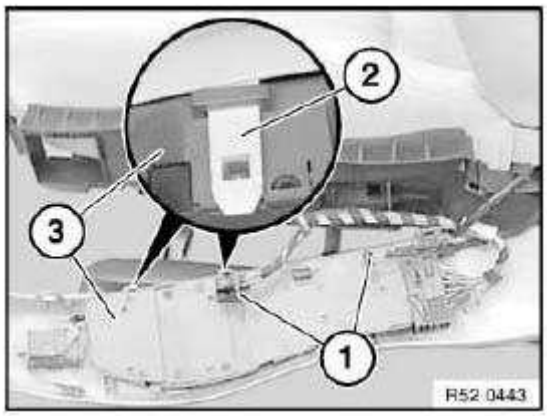


Fig. 156: Out Lugs And Switch Combination
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Guides (1) and catches (2) on switch combination (3) must not be damaged.

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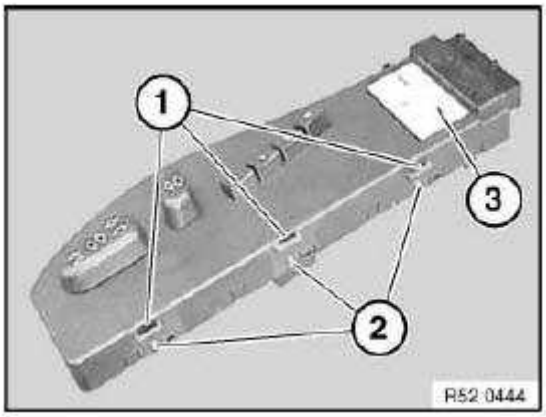


Fig. 157: Guides, Catches And Switch Combination
Courtesy of BMW OF NORTH AMERICA, INC.

Model with lumbar supports:

If necessary, expose cable (1) and disconnect plug connection (2).

Replacement only:

If necessary, press down catches (3) on left/right and remove switch (4) from cover.

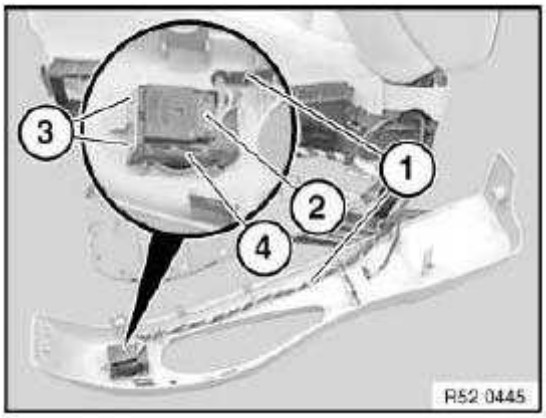


Fig. 158: Expose Cable, Catches And Switch
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts must not be damaged, replace cover (4) if necessary:

1. Mounts for switch combination
2. Guide, front
3. Tabs

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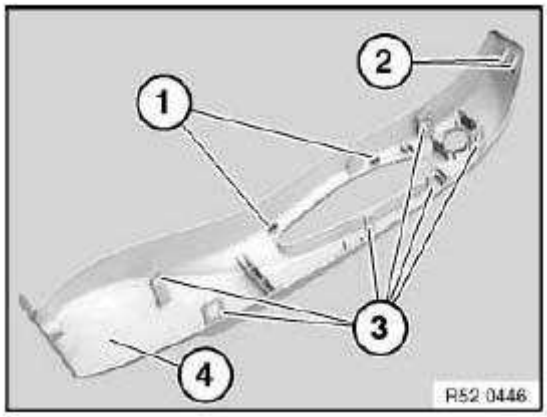


Fig. 159: Guide, Tabs And Switch Combination
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of switch combination only or in event of further work on front seat:

Disconnect plug connection (1) and remove switch combination (2).

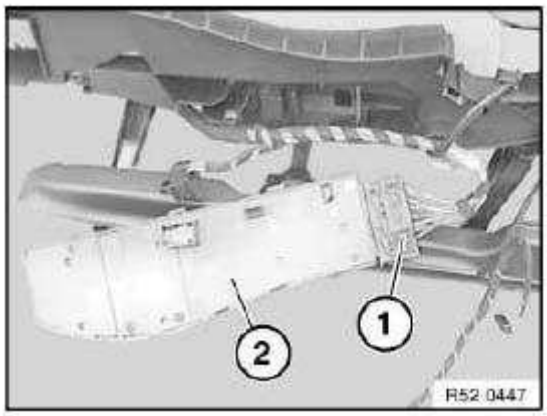


Fig. 160: Plug Connection And Switch Combination
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 041 REMOVING AND INSTALLING/REPLACING INNER COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Operation is identical to:

Replacing inner cover on left or right front seat (normal/electric), see **52 13 041 Removing and installing / replacing inner cover on left or right front seat backrest (normal/ manual)**.

52 16 070 REMOVING AND INSTALLING/REPLACING SEAT ANGLE ADJUSTER ON LEFT OR RIGHT FRONT SEAT (SPORT/ELECTRIC)

Necessary preliminary tasks:

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- Remove front seat, see **52 14 000 Removing and installing left or right front seat (normal/electric)**
- Remove outer cover, see **52 16 040 Removing and installing/replacing outer cover on front left or right seat (sports/electric)**

Release screws (1).

Release screw (2).

Unclip carrier (3) from seat mechanism at rear.

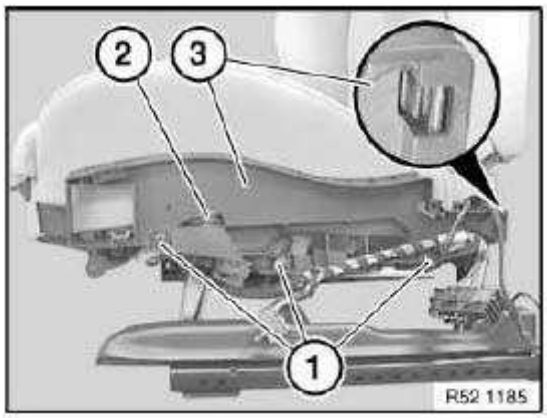


Fig. 161: Release Screw And Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug connection (1) on drive unit (2) and disconnect.

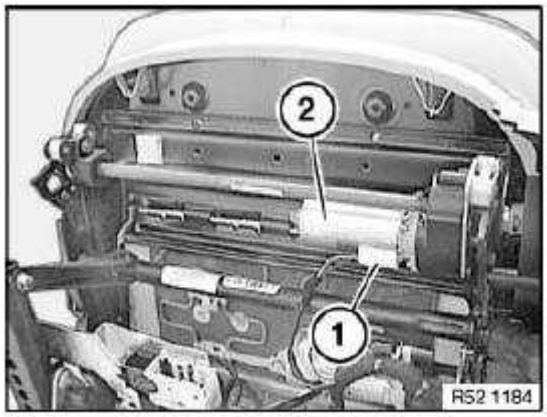


Fig. 162: Plug Connection And Drive Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Installation:

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Replace Taptite screws (1).

Tightening torque: 52 10 16AZ, see **52 10 FRONT SEATS** .

Release screw (2).

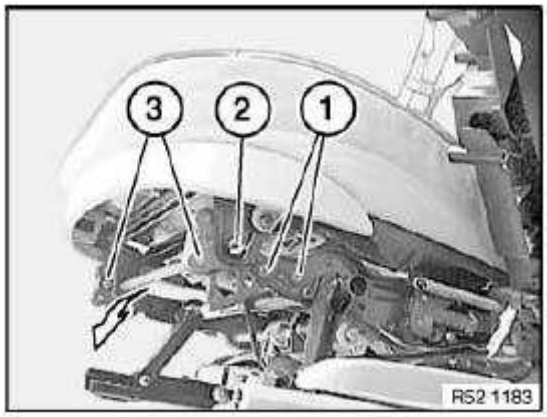


Fig. 163: Removing Seat Angle Adjuster
Courtesy of BMW OF NORTH AMERICA, INC.

Tightening torque: 52 10 17AZ, see **52 10 FRONT SEATS** .

Remove seat angle adjuster (3).

Installation:

Slide left and right O-rings onto shaft. Make sure O-rings are correctly located between seat angle adjuster and seat pan.

52 16 095 REMOVING AND INSTALLING/REPLACING THIGH SUPPORT HOLDER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Unfasten thigh support and pull completely towards front.

Detaching cushion for thigh support:

Bend open retaining plates (1) and remove cover piping (2).

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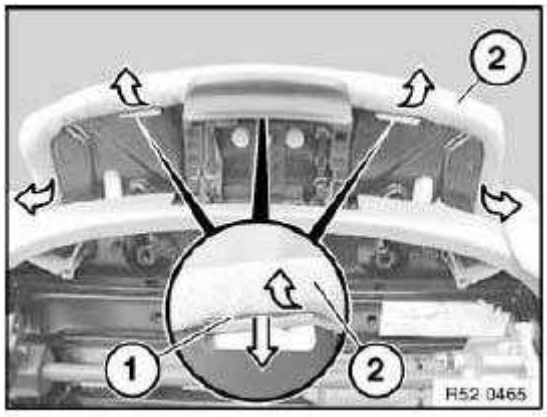


Fig. 164: Removing Retaining Plates And Cover Piping
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Cushion (1) is attached at front with double-sided adhesive tape (3) to holder (2).

Pull cushion (1) towards top off holder (2).

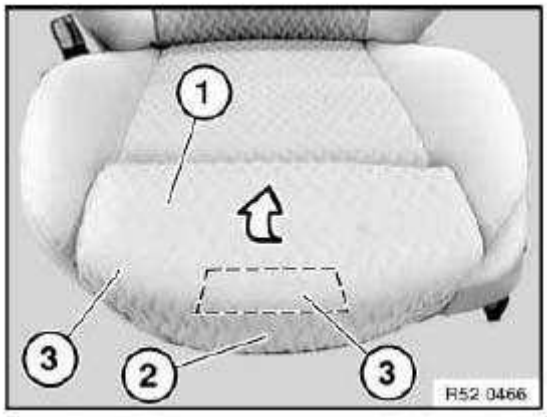


Fig. 165: Pulling Cushion Towards Top Off Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Lever trim wire (1) out of mounts (2).

Installation:

Stick new double-sided adhesive tape (4) to holder (3) or attach mount with spray adhesive.

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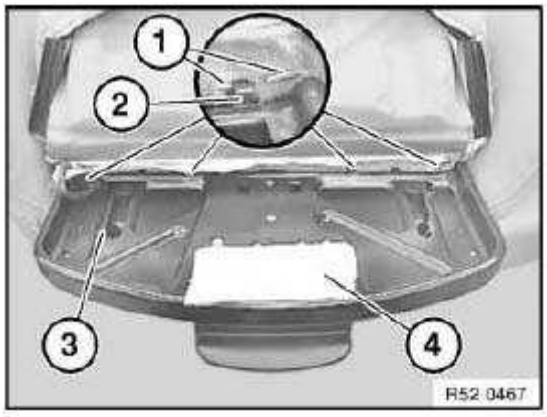


Fig. 166: Lever Trim Wire And Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Removing cushion for thigh support" ends here.

Removal of "Thigh support holder" only:

Unhook spring (1) at bottom from holder (2) and seat frame (3).

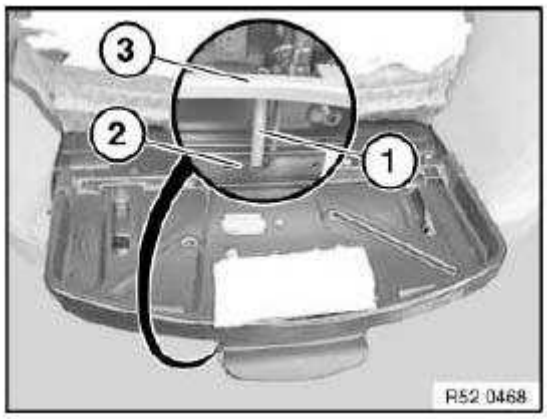


Fig. 167: Releasing Spring At Bottom From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Press operating lever (2) fully and detach holder (3) for thigh support towards front from seat frame (4).

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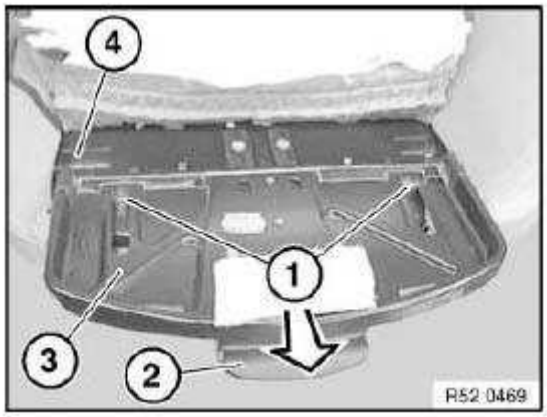


Fig. 168: Pressing Operating Lever
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts on holder (5) must not be damaged:

1. Mounts for trim wire
2. Holding-down elements for trim wire
3. Guide sleeves
4. Double-sided adhesive tape (replace or coat with spray adhesive for assembly)

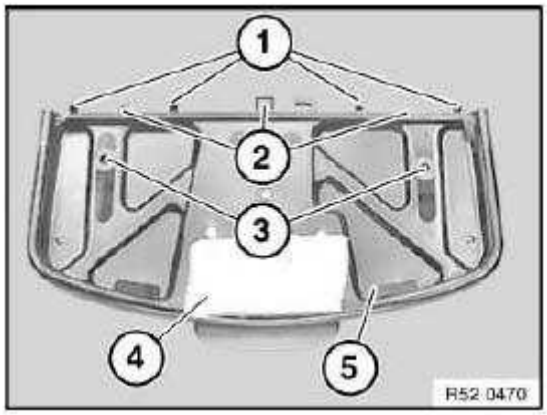


Fig. 169: Holder, Guide Sleeves And Trim Wire
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, release screws (1) and remove guide rails (2) from seat frame (3).

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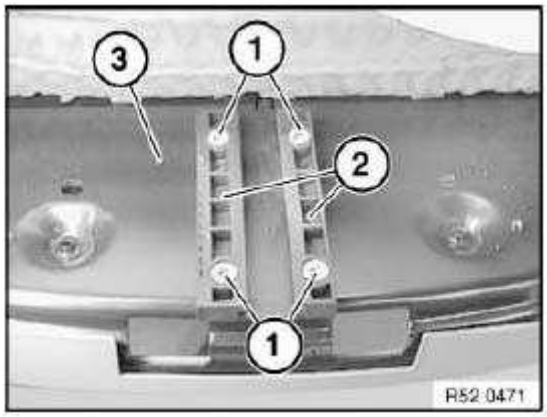


Fig. 170: Release Screws And Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 095 REMOVING AND INSTALLING/REPLACING THIGH SUPPORT HOLDER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Necessary preliminary tasks:

- Move thigh support forwards fully

Unfasten plug connection (1) and disconnect.

Release screws (2).

Installation:

Insert screws (2) with Loctite.

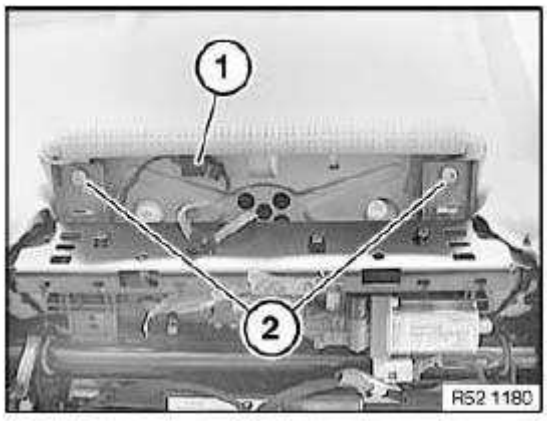


Fig. 171: Plug Connection And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seat cover (1) in marked area from carrier (2) for thigh support.

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Feed plug out of carrier (2) for thigh support.

Remove carrier (2) for thigh support.

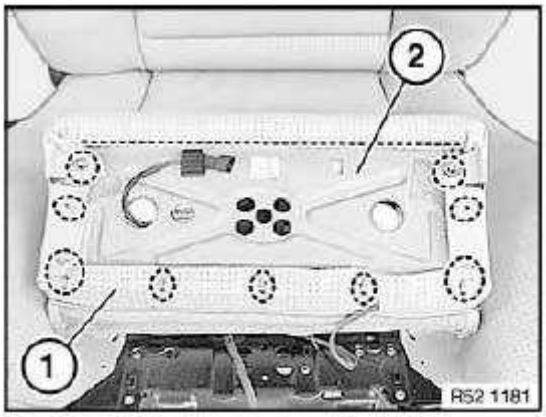


Fig. 172: Detaching Seat Cover
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 198 REMOVING AND INSTALLING/REPLACING REAR PANEL ON FRONT LEFT OR RIGHT SEAT BACKREST (SPORTS/ELECTRIC)

Operation is identical to:

Remove and install/replace rear panel on front left or right seat backrest (sports/manual),

refer to **52 15 198**.

52 16 390 REMOVING AND INSTALLING/REPLACING FRONT HEAD RESTRAINT (SPORTS/ELECTRIC) ON LEFT OR RIGHT

Operation is identical to:

Replacing front left or right head restraint (normal/manual), see **52 13 390 Removing and installing / replacing front headrest (normal/ manual)**

52 16 400 REPLACING SEAT COVER FOR LEFT OR RIGHT FRONT SEAT (SPORTS/ELECTRIC)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat, see **52 16 000 Removing and installing front seat (sports/electric), left or right**
- Remove outer cover with actuating unit, see **52 16 040 Removing and installing/replacing outer cover on front left or right seat (sports/electric)**

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- Remove inner cover, see **52 16 041 Removing and installing/replacing inner cover on front left or right seat (sports/electric)**

WARNING: US/CDN front passenger seat (with OC3 mat) only:
To avoid damaging the OC3 mat, it is essential to carry out the following operations with extra care.

When replacing seat cover:

If seat cover is defective, seat cover and padding with OC3 mat must be replaced together.

New seat cover is supplied with padding, OC3 mat and if necessary seat heating.

When replacing padding with OC3 mat:

If OC3 mat or padding is defective, both parts may only be replaced together.

These must be fitted with the seat cover from the car.

Enabling seat occupancy detector (OC3 mat):

- Connect BMW diagnosis system
- Release seat occupancy detector
- Clear fault memory if necessary

Version with seat heating:

If necessary, disconnect plug connection (1).

Release cable strap (2).

Detach cable (3) from holder (4).

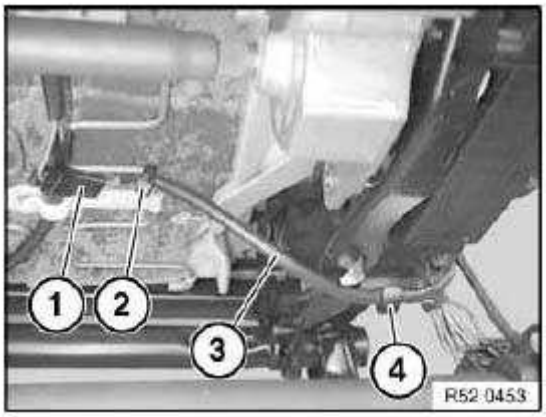


Fig. 173: Cable Strap And Holder

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Courtesy of BMW OF NORTH AMERICA, INC.

Detach cable (1) from holder (2).

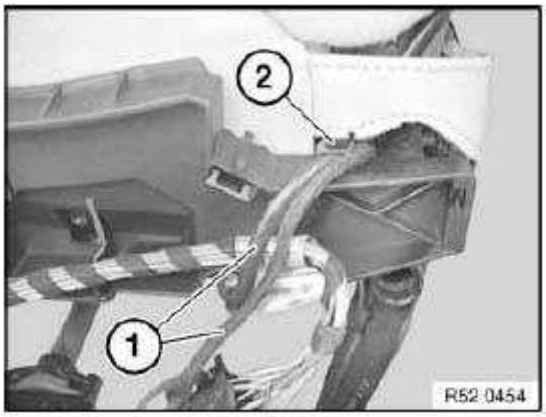


Fig. 174: Removing Cable From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) on inside/outside.

Unclip clips (3) towards bottom and pull trim (2) out a little.

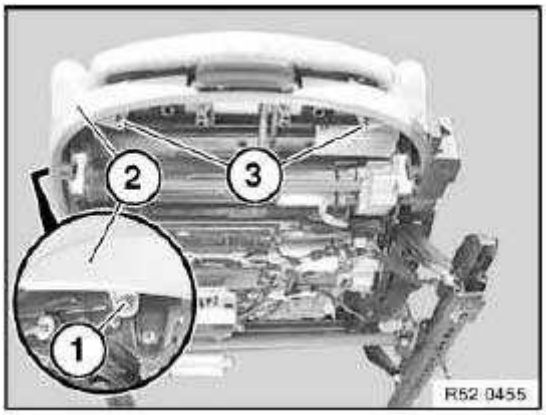


Fig. 175: Releasing Screw On Inside/Outside
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Pull trim (2) out a little and release screw (3).

Release clip (5) from carrier (4).

Remove trim (2) and carrier (4).

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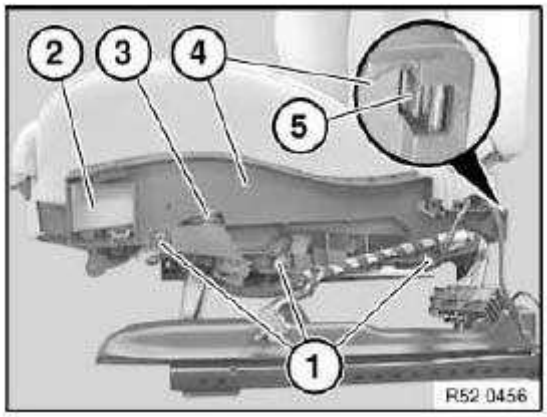


Fig. 176: Releasing Clip From Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Cable holders (1) on carrier (2) must not be damaged.

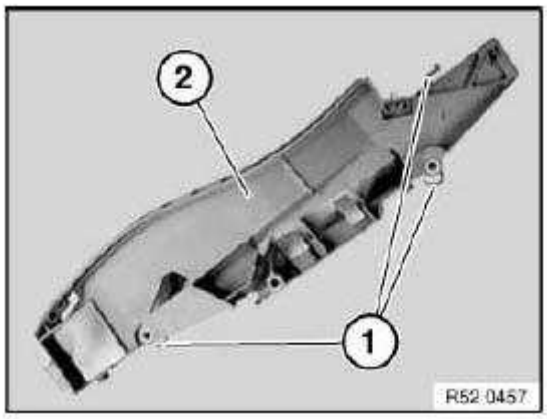


Fig. 177: Cable Holder And Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clips (1) on sports seat trim (2) must not be damaged.

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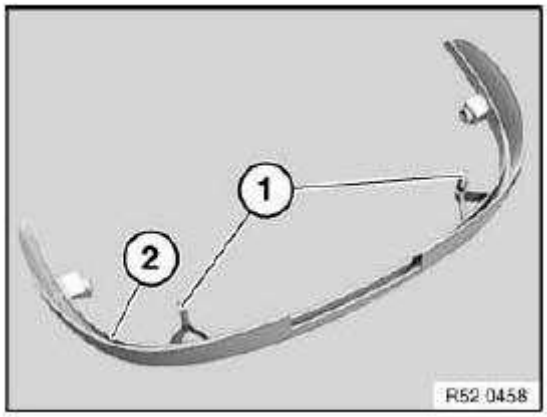


Fig. 178: Clips And Seat Trim
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Removing holder for actuation" ends here.

Version with seat occupancy detector:

If necessary, disconnect plug connection (1) from control unit (2).

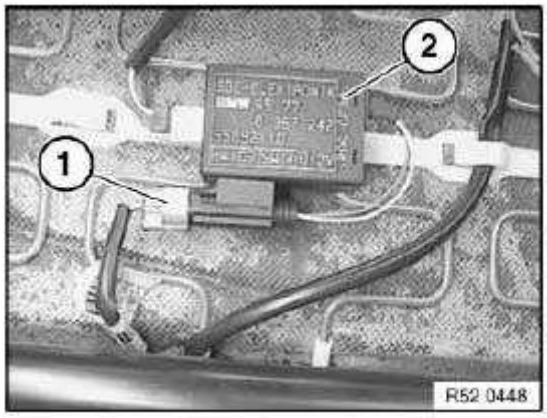


Fig. 179: Plug Connection And Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heating:

If necessary, release locks (1) and detach plug housing (2).

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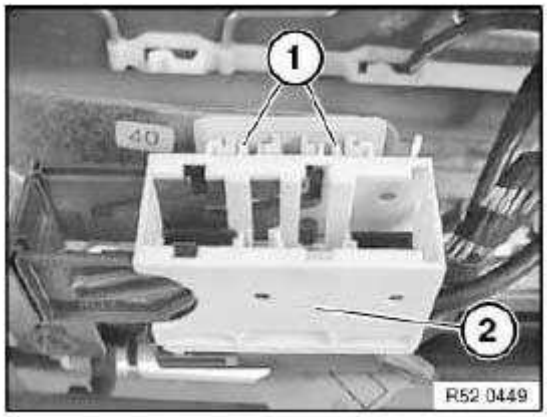


Fig. 180: Locks And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, press lock (1) downwards and detach cover (2).

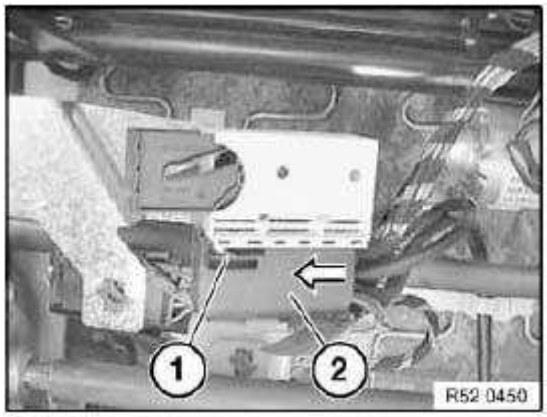
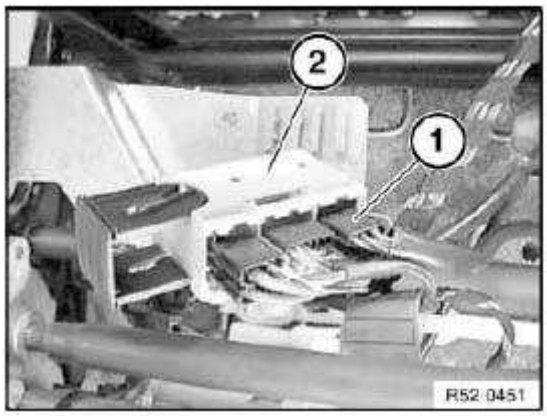


Fig. 181: Pressing Lock Downwards
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) for seat heating from plug housing (2).



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Fig. 182: Disconnecting Plug Connection For Seat Heating
Courtesy of BMW OF NORTH AMERICA, INC.

Pull cable (1) out of holders (2).

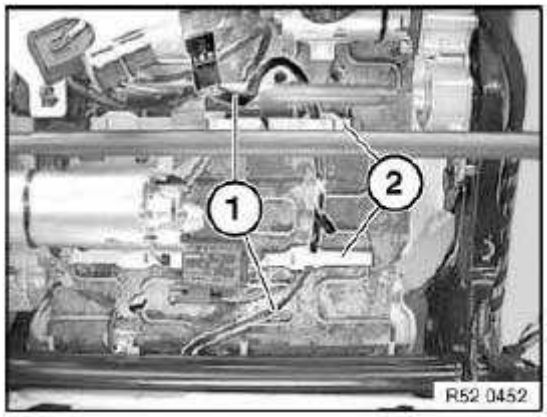


Fig. 183: Pulling Cable Out Of Holders
Courtesy of BMW OF NORTH AMERICA, INC.

E46 only:

Pull out tongue (1) on seat cover (2) on left/right.

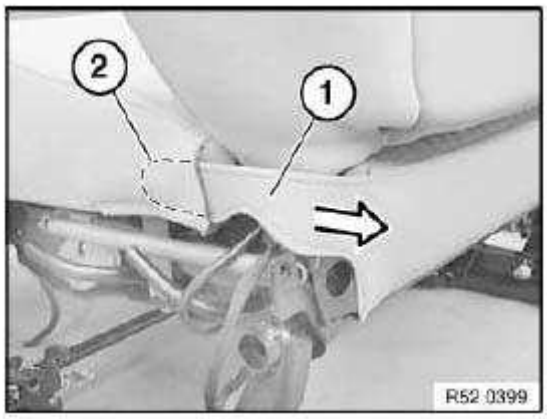


Fig. 184: Pulling Out Tongue On Seat Cover On Left/Right
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seat cover (1) from seat frame (2).

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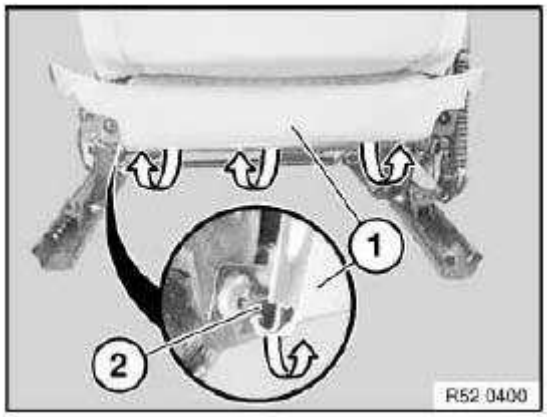


Fig. 185: Removing Seat Cover From Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out cover welt (1) completely from seat frame (2).

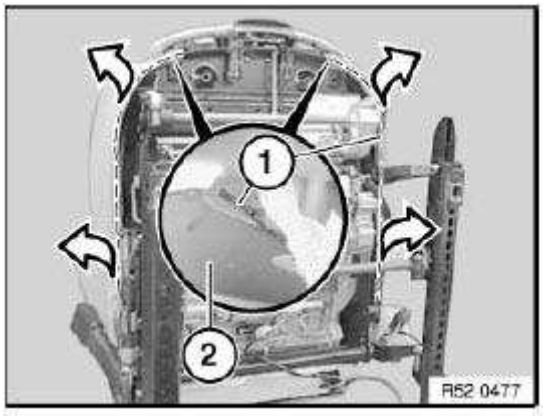
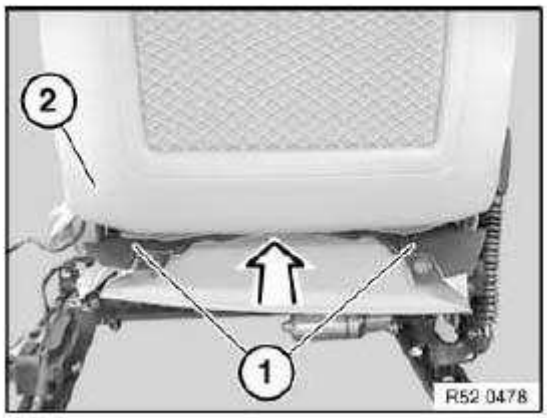


Fig. 186: Pulling Out Cover Welt Completely From Seat Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Fold in ends (1) on seat cover and push through under backrest (2) towards front.



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Fig. 187: Pushing Through Under Backrest Towards Front
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten thigh support and pull completely towards front.

Bend open retaining plates (1) and remove cover piping (2).

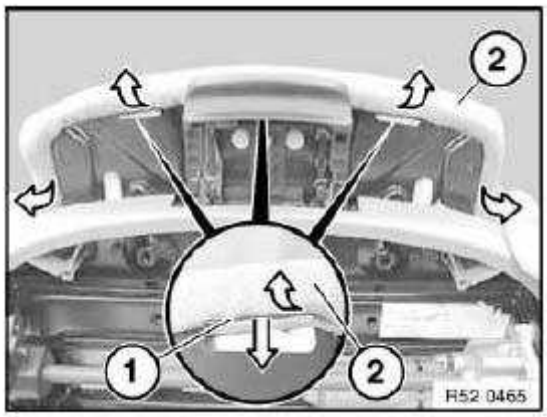


Fig. 188: Removing Retaining Plates And Cover Piping
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Cushion (1) is secured at front with double-sided adhesive tape (3) to carrier (2).

Pull cushion (1) towards top off carrier (2).

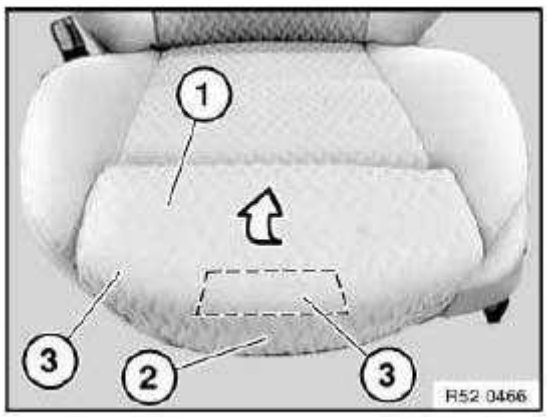


Fig. 189: Pulling Cushion Towards Top Off Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Lever trim wire (1) out of mounts (2).

Installation:

Stick new double-sided adhesive tape (4) to carrier (3) or attach mount with spray adhesive.

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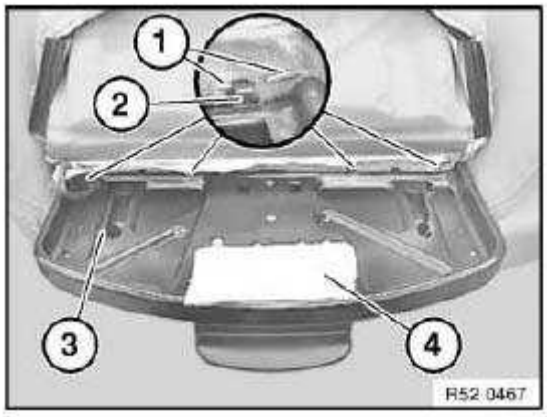


Fig. 190: Lever Trim Wire And Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

Model without seat heating and without seat occupancy detector:

Remove seat cover (1) with thigh support (2) towards front/top.

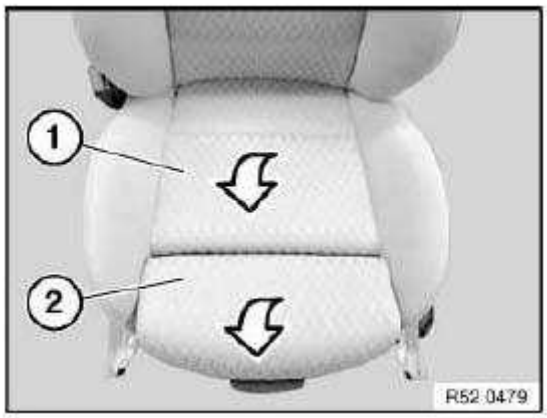


Fig. 191: Removing Seat Cover With Thigh Support Towards Front/Top
Courtesy of BMW OF NORTH AMERICA, INC.

Model with seat heating and/or with seat occupancy detector:

Pull seat cover (1) forward a little and feed cable (2) out.

Remove seat cover (1) with thigh support towards front/top.

NOTE: The operation "Removing complete seat cushion" ends here.

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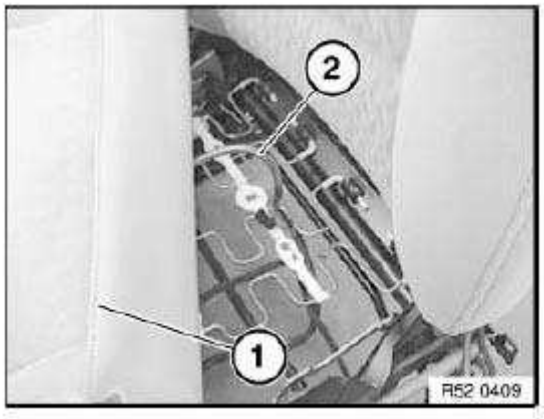


Fig. 192: Seat Cover And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing padding or sensor mat:

Release clips (1) and (2) at rear left/right from support (3).

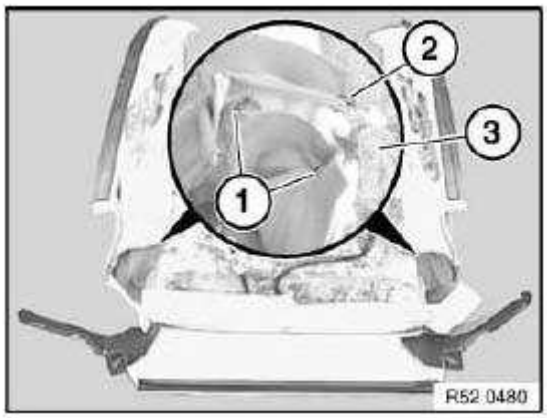


Fig. 193: Clips And Rear Left/Right
Courtesy of BMW OF NORTH AMERICA, INC.

Release all clips (1) on left/right and center (2) from support (3).

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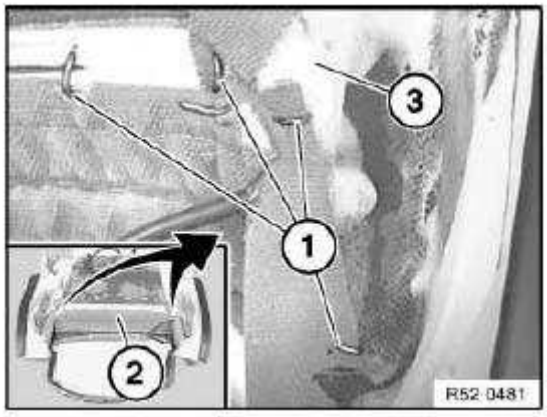


Fig. 194: Releasing All Clips On Left/Right
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heating:

Installation:

Note routing of seat heater cable (1).

Do not damage with clips.

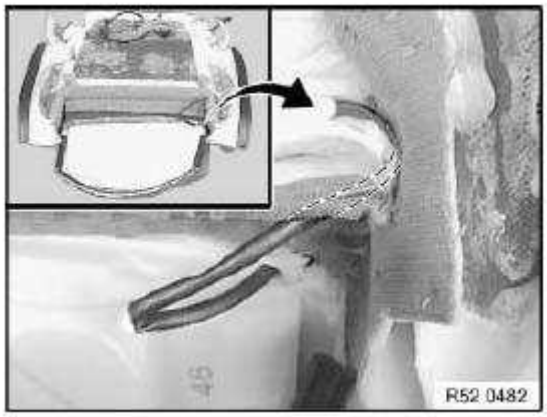


Fig. 195: Locating Seat Heater Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Version with OC3 mat:

- OC3 mat must not be kinked under any circumstances.

Detach all retainers in side area from longitudinal wires (1).

Pull trim wires (1) forward out of seat cover.

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Carefully fold back seat cover and release retainers from cross - wires (2).

Remove seat cover from padding.

IMPORTANT: Remove all remnants of clips from seat cover and padding.

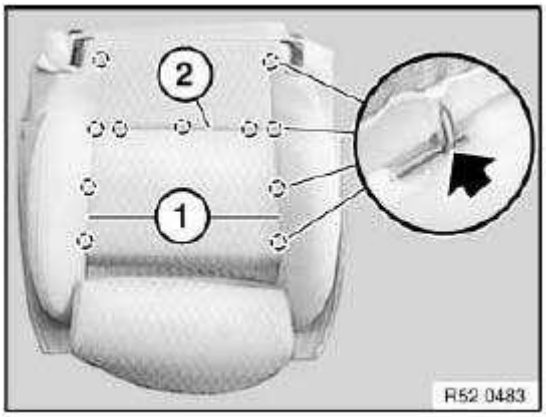


Fig. 196: Pulling Trim Wires
Courtesy of BMW OF NORTH AMERICA, INC.

Remove padding (1) from seat cover (2).

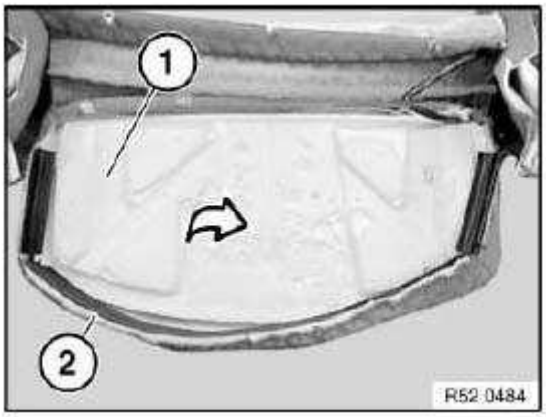


Fig. 197: Removing Padding From Seat Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heating:

Installation:

If necessary, detach heating mat (1) from adhesive tape (2) of thigh support.

3 Seat heater cable

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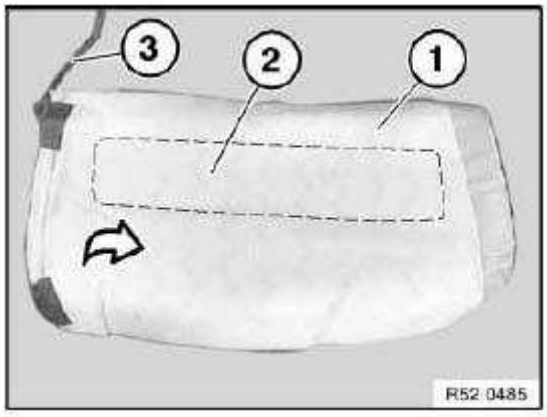


Fig. 198: Removing Mat From Adhesive Tape Of Thigh Support
Courtesy of BMW OF NORTH AMERICA, INC.

Stick double-sided adhesive tape (2) to support (1) or coat with spray adhesive.

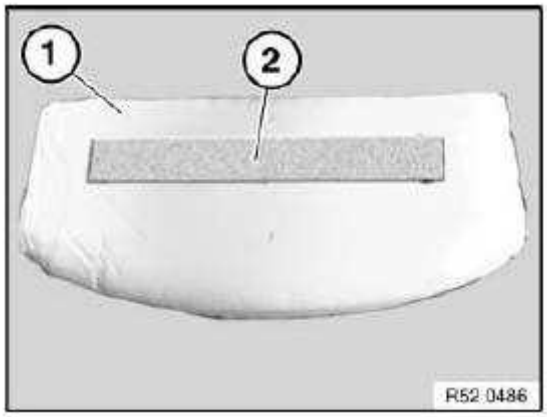


Fig. 199: Double-Sided Adhesive Tape
Courtesy of BMW OF NORTH AMERICA, INC.

Version with seat heater and/or with seat occupancy detector:

Installation:

Feed seat heater cable (1) through bore hole (3).

Feed seat heater cable (2) through bore hole (4).

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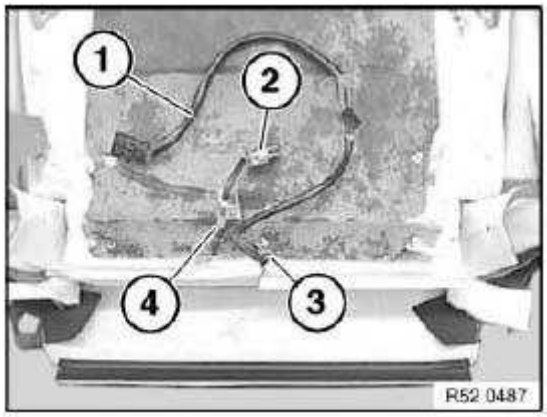


Fig. 200: Seat Heater Cable And Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Padding (1) with OC3 mat (2).

IMPORTANT: No retainer remainders may be fitted as well.
Handle OC3 mat with extreme care.
Do not kink OC3 mat.
Do not clamp OC3 mat.
OC3 mat must lie without folds under seat cover.

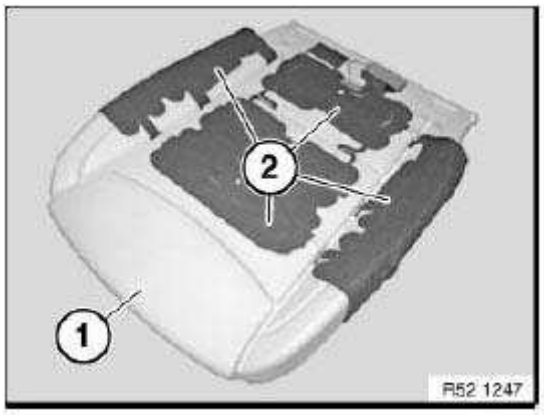


Fig. 201: Padding And OC3 Mat
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Bend new clips (2) with special tool 52 0 050.

1. Padding
2. Retainer
3. Trim thread in padding

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4. Trim thread in cover
5. Seat cover

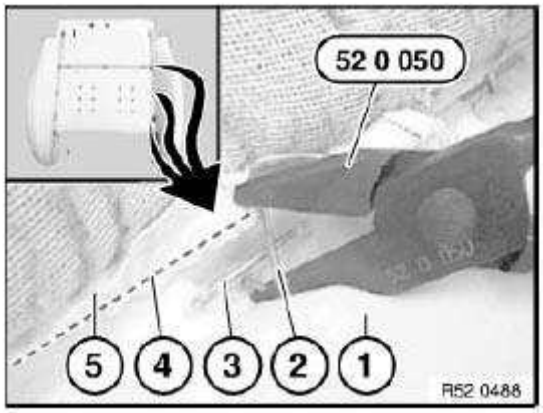


Fig. 202: Clips And Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Support (2) must be coated with wax (1) to prevent grinding noises.

Do not remove wax (1) on support (2).

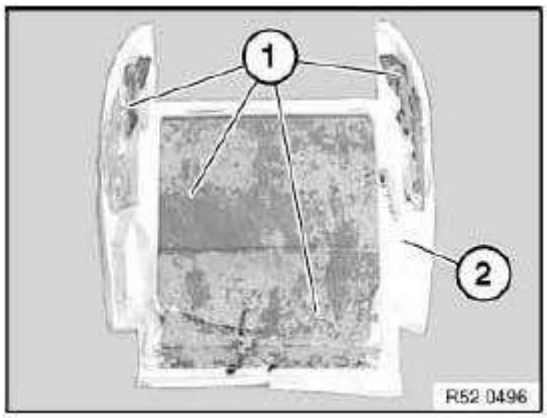


Fig. 203: Wax And Support
Courtesy of BMW OF NORTH AMERICA, INC.

Passenger seat only (replacing sensor mat):

Installation:

In order to guarantee the function and fastening (adhesive strength) at the sticking surfaces of sensor mat (1), the foam most not show any traces of damage at all!

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Replace the foam if it is hardened or damaged particularly in the area of the sticking surfaces.

Lay sensor mat connection without creasing into groove on support.

Fit new sensor mat (1) for passenger seat occupancy detector.

Align new sensor mat (1) on foam (2).

Feed plug (3) through bore hole (4).

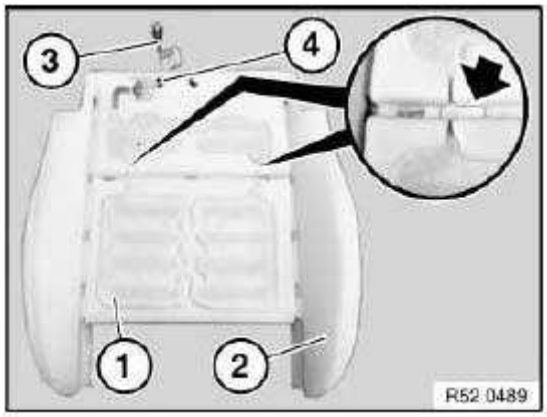


Fig. 204: Locating Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Detach liner (1) at individual points and stick sensor mat (2) onto foam (3).

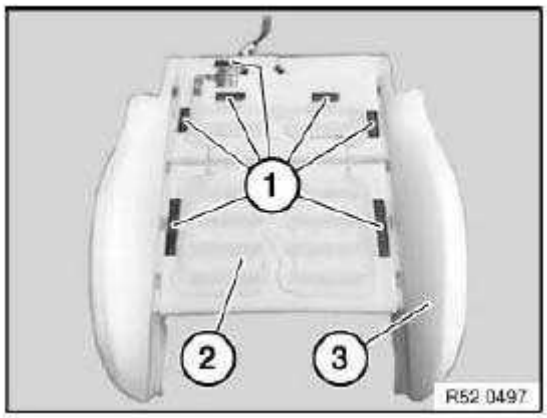


Fig. 205: Liner, Sensor Mat And Foam
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The operation "Replacing support or sensor mat" ends here.

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Replacing seat cover:

Remove trim threads (1) from seat cover (2).

Cut new seat cover (2) to size and insert trim threads (1).

3 Seat heater cable

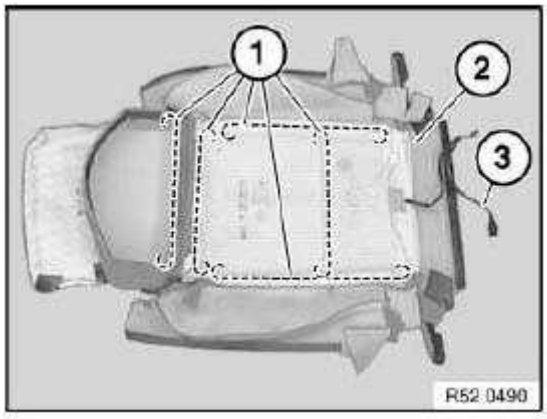


Fig. 206: Trim Threads, Seat Cover And Heater Cable
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 405 REPLACING BACKREST COVER ON FRONT LEFT OR RIGHT SEAT (SPORTS/ELECTRIC)

Remove rear panel from front seat backrest,

refer to **52 15 198**.

Detach backrest cover (1) from backrest frame (2).

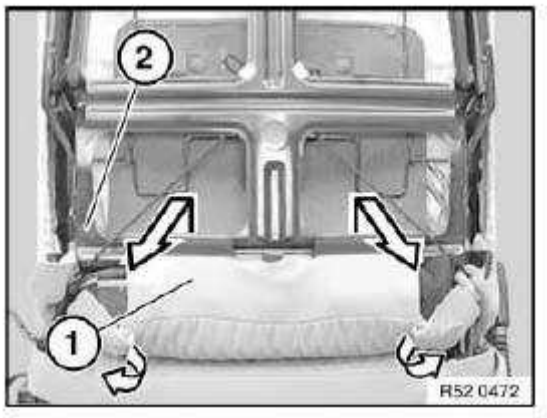


Fig. 207: Removing Backrest Cover From Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

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Unhook ends of tensioning cord (1) from backrest frame (2).

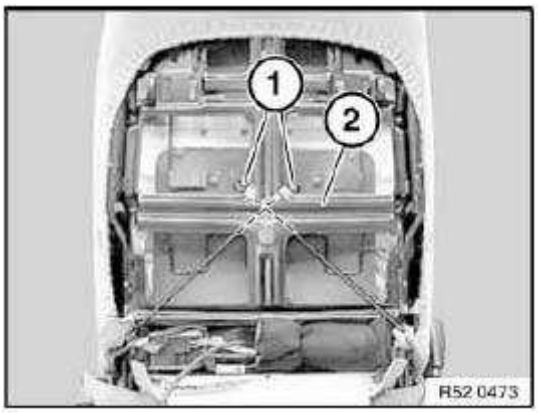


Fig. 208: Tensioning Cord And Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Pass tensioning cord (1) with backrest cover (3) on left/right round clip mount (2).

Hook ends of tensioning cord to backrest frame, refer to previous work step.

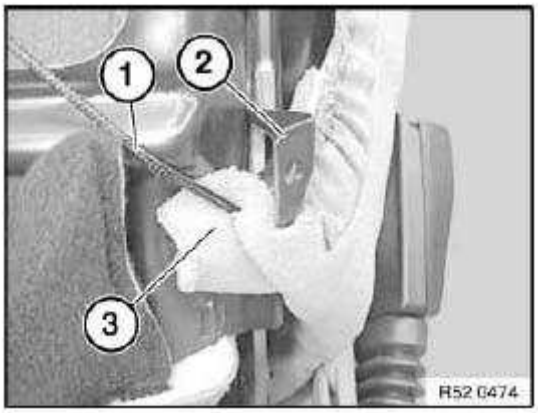


Fig. 209: Tensioning Cord And Backrest Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation instruction for backrest width adjustment:

Lay tension cables (1...2) underneath hoses (3) and cables (4).

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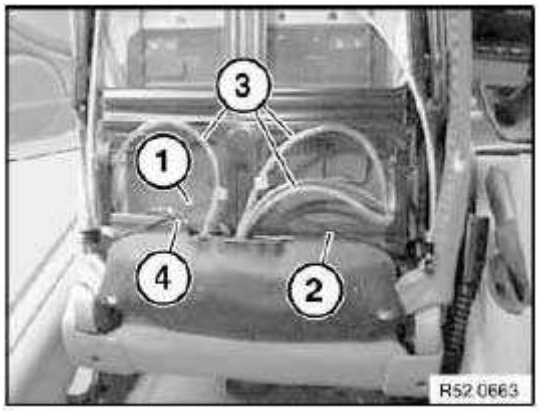


Fig. 210: Tension Cables And Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Exposing cable for seat heating on version with seat heating only:

Removing outer cover on front seat:

Manual controls, refer to **52 13 040**.

Electrical controls, refer to **52 16 040**.

Unfasten plug connection (1).

Pull cable (2) out of holder (3).

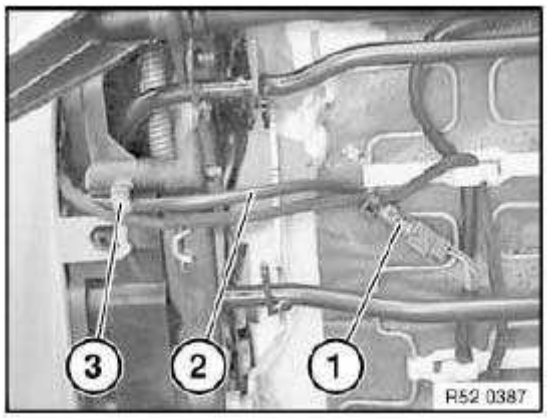


Fig. 211: Plug Connection And Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Model with seat heating only:

Pull out tongue (1).

Pull cable (2) out of holder (3).

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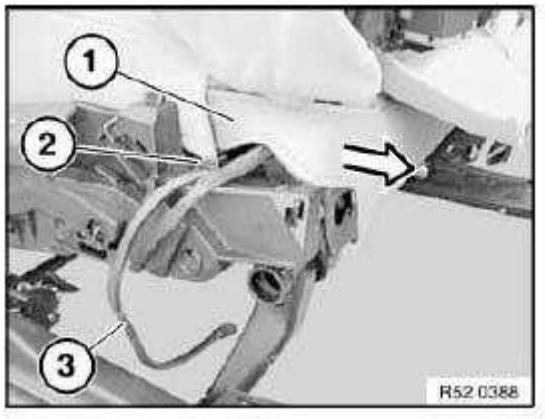


Fig. 212: Pulling Cable Out Of Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Model with seat heating only:

Lift out Omega clip (1).

Pull out cable (2) from Omega clip (1).

Model with lumbar supports:

If necessary, disconnect plug connections (3) and (4).

Lift out Omega clip (1).

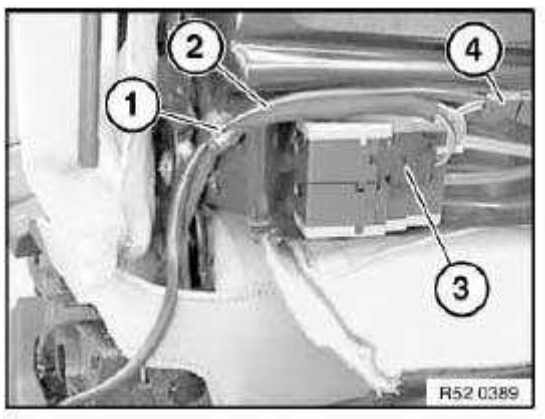


Fig. 213: Omega Clip, Cable And Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Removal or replacement of backrest frame only:

CAUTION: Do not under any circumstances turn screw underneath screw (2), this would destroy the seat frame.

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Press backrest cover (1) to one side and release screw (2) on left/right.

Detach backrest frame (3) with backrest cover upwards.

Installation:

Replace screws (2) (microencapsulation).

Tightening torque: 52 10 2AZ, see **52 10 FRONT SEATS** .

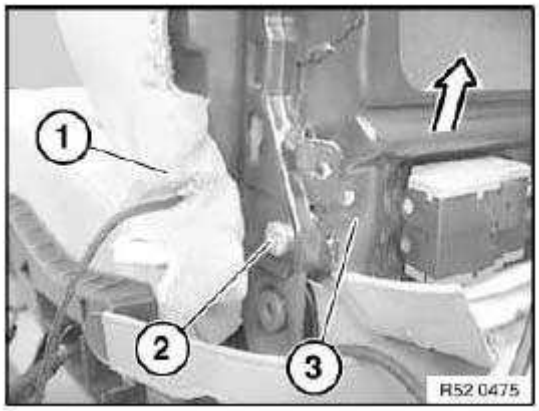


Fig. 214: Removing Backrest Frame With Backrest Cover Upwards
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The work for "Removing complete backrest" ends here.

Removal of backrest cover with padding or replacement of backrest frame only:

Remove both guides for head restraint at front,

refer to **52 13...**

Version with lumbar support only:

Disconnect hoses (2) and (3) from valve housing (1).

NOTE: If necessary, gently heat air hose when firmly seated.

Valve housing must not be unclipped: leakage. If the valve housing is unclipped, release screw and clip valve housing together.

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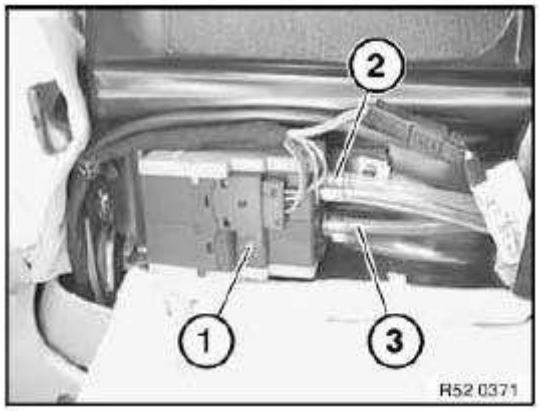


Fig. 215: Hoses And Valve Housing
Courtesy of BMW OF NORTH AMERICA, INC.

2 Hose (blue), top cushion

3 Hose (red), bottom cushion

NOTE: For purposes of clarity, shown here without valve housing.

Installation:

Observe cable guide (1) for backrest heating.

Lay air hoses (2) without kinks through hole (3).

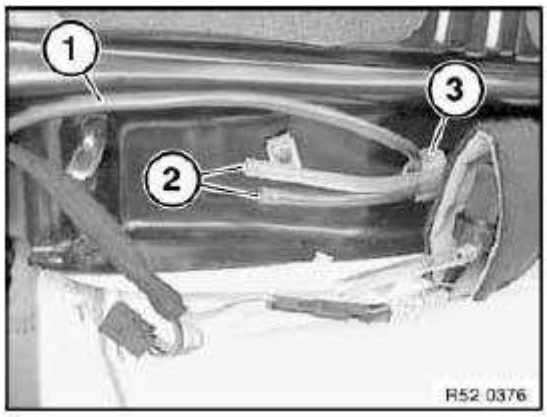


Fig. 216: Cable Guide And Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Version with lumbar support and backrest width adjustment only:

Detach hoses (1) and (2) at cutting line (heat with hot air blower if necessary).

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1. Hose (blue) upper cushion (lumbar support)
2. Hose (red) lower cushion (lumbar support)
3. Hose (white) right cushion (backrest width adjustment)
4. Hose (white) left cushion (backrest width adjustment)
5. Motor pump unit

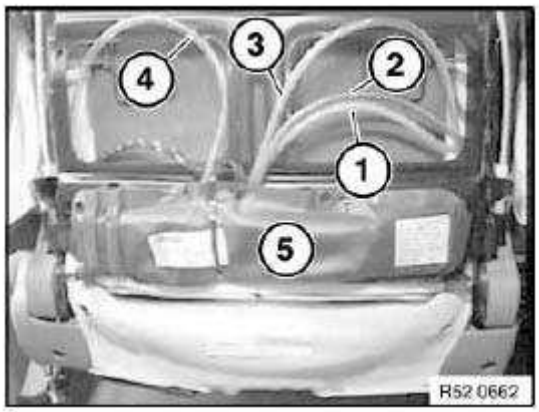


Fig. 217: Hoses And Cutting Line
Courtesy of BMW OF NORTH AMERICA, INC.

Detach backrest cover (1) at sides towards front and remove with support upwards from backrest frame (2).

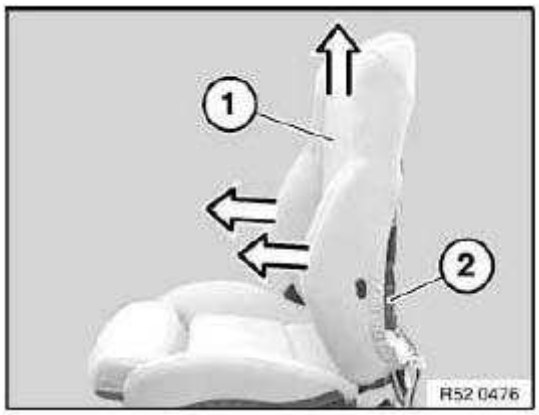


Fig. 218: Removing Backrest Cover At Sides Towards Front
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The work for "Removing backrest cover with padding" ends here.

Removal of backrest cover from padding, replacing padding:

Release retainers (1) on left/right of backrest cover (2).

NOTE: Support (3) is reinforced in this area.

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Note routing of tensioning strap (4).

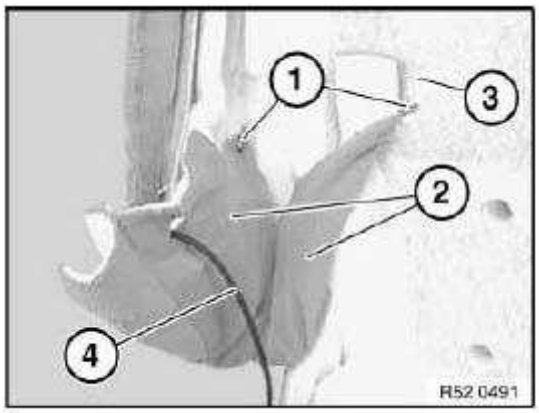


Fig. 219: Retainers, Backrest Cover And Support
Courtesy of BMW OF NORTH AMERICA, INC.

First detach clips (1).

Fold back piping (2) with backrest cover (3).

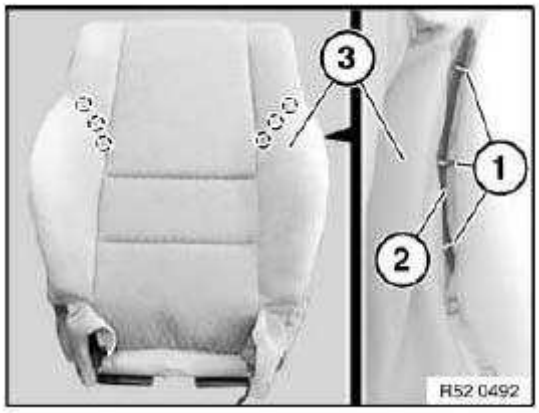


Fig. 220: Clips, Backrest Cover And Back Piping
Courtesy of BMW OF NORTH AMERICA, INC.

Detach all remaining clips.

Remove backrest cover (1) from padding.

Remove all remnants of retainers from backrest cover (1) and padding.

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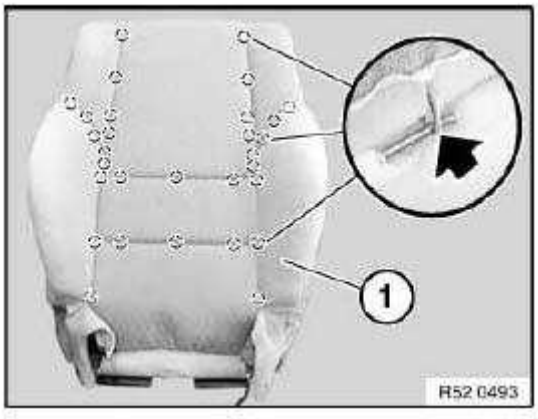


Fig. 221: Locating Backrest Cover Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fold in new clip (2) with special tool 52 0 050.

1. Support
2. Retainer
3. Trim thread in support
4. Trim wire in backrest cover
5. Backrest cover

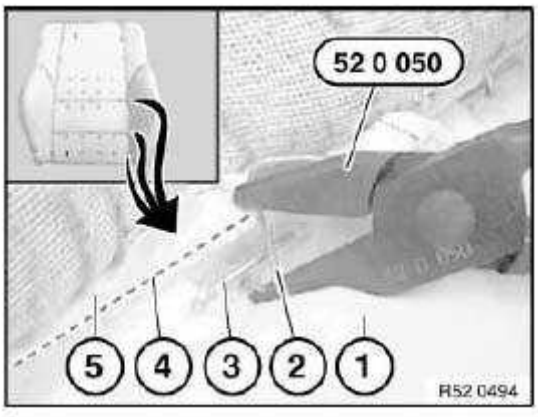


Fig. 222: Support, Retainer And Backrest Cover
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The work for "Replacing padding" ends here.

Replacement of backrest cover:

Pull trim threads (1) out of backrest cover.

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Cut new backrest cover to size and insert trim threads (1).

2 Seat heater cable

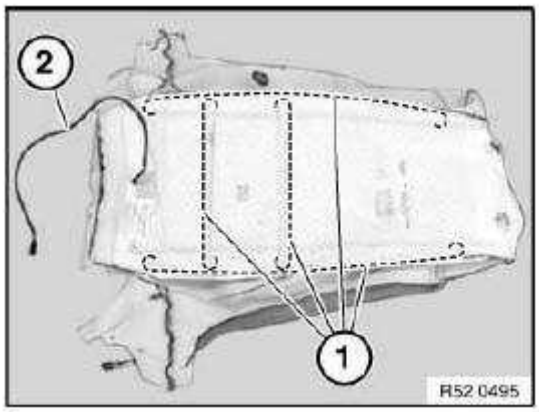


Fig. 223: Trim Threads And Seat Heater Cable
Courtesy of BMW OF NORTH AMERICA, INC.

52 16 415 REPLACING SUPPORT FOR LEFT OR RIGHT FRONT SEAT (SPORT/ELECTRIC)

WARNING: US/CND front passenger seat (with OC3 mat) only:
The support can only be removed in conjunction with the OC3 mat.
If support is defective, both parts may only be replaced together.
After fitting new support, enable OC3 mat with BMW diagnosis system.

The operation for removing the support with/without OC3 mat is described in:

- Replacing seat cover on front seat, see **52 16 400 Replacing seat cover for left or right front seat (sports/electric)**

Enabling seat occupancy detector (OC3 mat):

- Connect BMW diagnosis system
- Release seat occupancy detector
- Clear fault memory if necessary

52 16 420 REPLACING PADDING FOR LEFT OR RIGHT FRONT SEAT BACKREST (SPORT/ELECTRIC)

This operation is described in section on:

Replace backrest cover for left or right front seat, see **52 16 405 Replacing backrest cover on front left or right seat (sports/electric)**

26 REAR SEAT THROUGH-LOADING

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52 26... REMOVING AND INSTALLING/REPLACING FINISHING STRIP ON ARMREST FOR REAR SEAT

Special tools required:

- 00 9 317 **00 9 310 ASSEMBLY WEDGES (SET IN PLASTIC CASE)**

Slide special tool 00 9 317 behind retaining pin of upper cover section underneath finishing strip and unclip strip towards rear.

Repeat procedure if necessary on other side.

Feed finishing strip out of armrest pins.

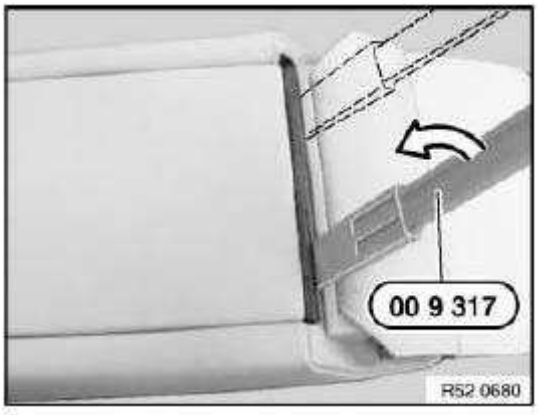


Fig. 224: Sliding Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

52 26... REMOVING AND INSTALLING/REPLACING FIXTURE FOR ROLLER BLIND ON REAR SEAT (THROUGH - LOADING SYSTEM) ON LEFT/RIGHT

Unclip cover (1) on both sides towards top.

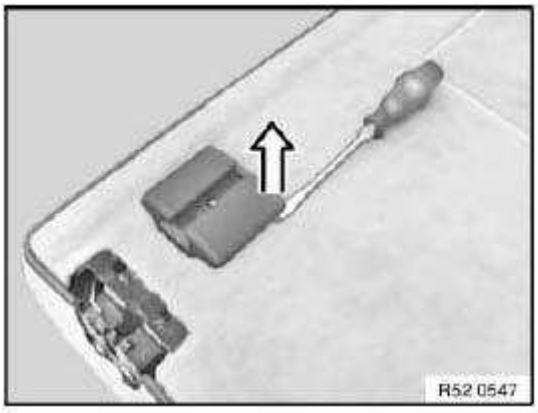


Fig. 225: Removing Cover On Both Sides Towards Top

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Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten screws (2).

Installation:

Clips (1) must not be damaged.

Fit opening of cover for upper backrest edge.

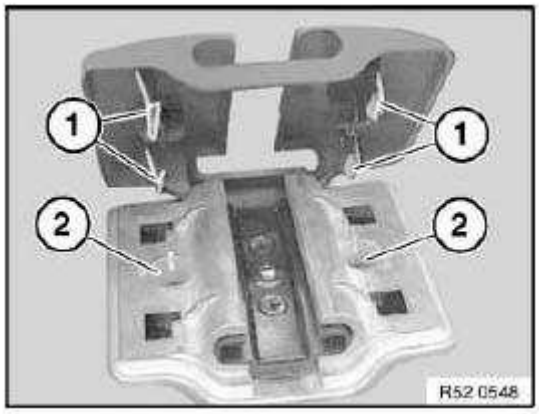


Fig. 226: Clips And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

52 26... REMOVING AND INSTALLING/REPLACING SKI BAG WITH CASING ON REAR SEAT (THROUGH-LOADING SYSTEM)

Special tools required:

- 00 9 317 **00 9 310 ASSEMBLY WEDGES (SET IN PLASTIC CASE)**

Necessary preliminary tasks:

- Remove center armrest, see **52 26 030 Removing and installing/replacing armrest for rear seat backrest (through-loading system)**

Press ski bag (1) on rear side out of backrest.

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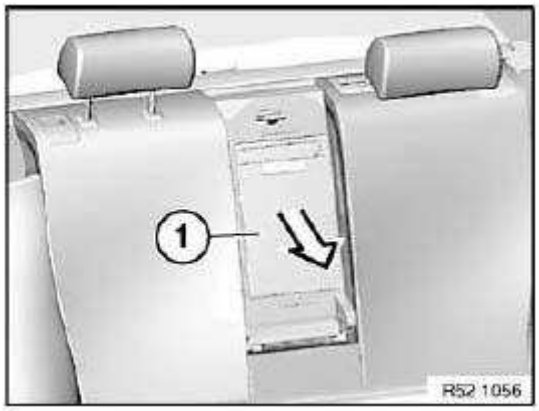


Fig. 227: Pressing Ski Bag On Rear Side Out Of Backrest
Courtesy of BMW OF NORTH AMERICA, INC.

Lift off cover (1).

Release screws (2).

Installation:

Make sure cover is correctly installed.

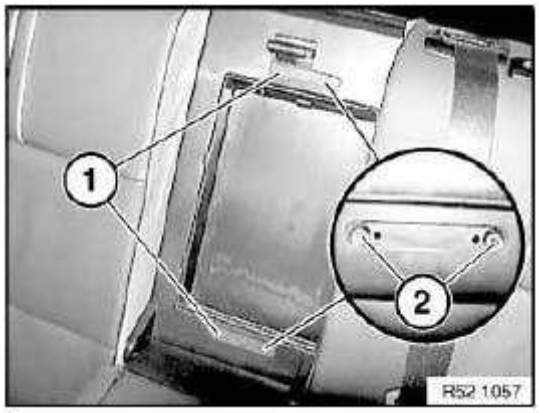


Fig. 228: Cover And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip mounting frame (1) on rear side with special tool 00 9 317.

Installation:

Do not damage plastic clips. Danger of kinking!

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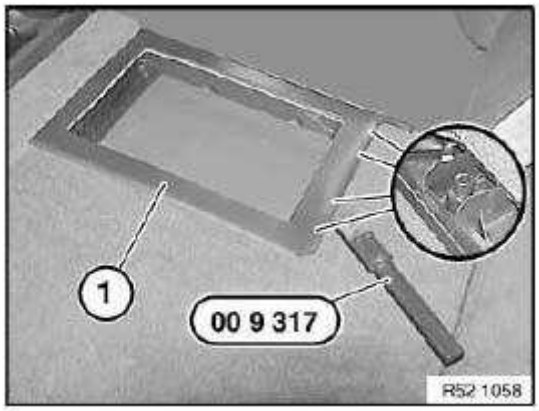


Fig. 229: Mounting Frame And Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Remove skibag trim (1).

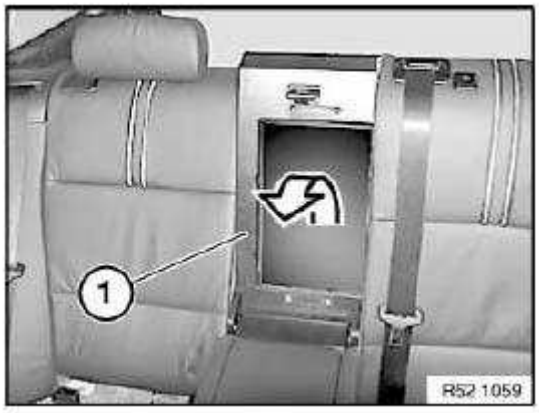


Fig. 230: Removing Skibag Trim
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 005 REMOVING AND INSTALLING/REPLACING REAR SEAT (THROUGH-LOADING SYSTEM)

Unclip rear seat on left/right towards top.

For op. ext. seat heating only:

Unfasten plug connection.

Lift out rear seat.

Installation:

Feed belt buckles (1) through designated openings into correct location.

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Make sure ISOFIX covers (2) are correctly engaged.

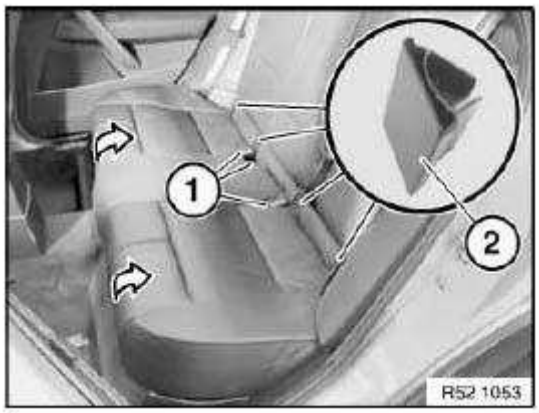


Fig. 231: Removing ISOFIX Covers
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 008 REMOVING AND INSTALLING/REPLACING LEFT/RIGHT SIDES OF BACKREST ON REAR SEAT BACKREST (THROUGH-LOADING)

Necessary preliminary tasks:

- Release rear-seat backrest and fold forward.

Unclip rest side section (1) and pull out in direction of arrow (2).

Installation:

Make sure rest side section is correctly seated in guide.

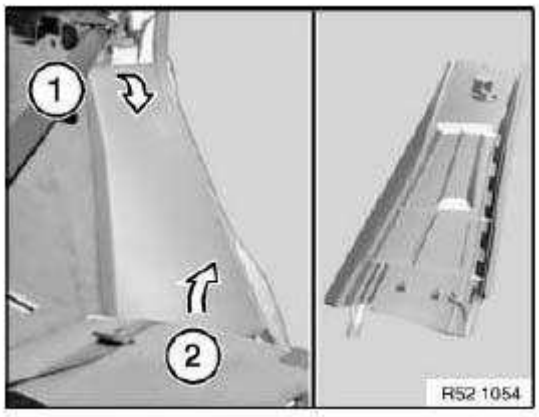


Fig. 232: Removing Rest Side Section
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 015 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT REAR SEAT BACKREST (THROUGH-LOADING SYSTEM)

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Carry out following tasks beforehand:

- Remove armrest side section on rear seat backrest, see **52 26 008 Removing and installing/replacing left/right sides of backrest on rear seat backrest (through-loading)**
- Remove center seat belt (lower fastening), see **72 11 103 REMOVING AND INSTALLING/REPLACING REAR CENTER SEAT BELT**

Fold down backrests.

Release screws (1) of outer mount.

Release screws (2) of center mount.

Remove center mount (3).

Installation:

Correctly place center mount on bearing pedestal.

If necessary, replace faulty outer mount, see **52 26 412 Replacing backrest cover for right rear seat (through-loading system)**

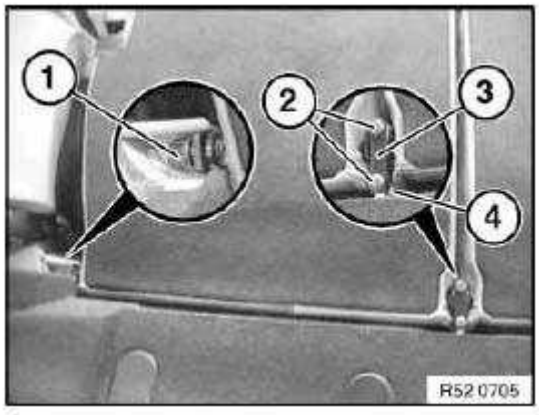


Fig. 233: Backrests Screws And Center Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Lever both backrests out of center mount (1) and pull out left backrest (2) towards left. In the process, mounting shaft of right backrest is pulled out of left backrest.

Remove left backrest (2) from vehicle.

NOTE:

- **Removal of both backrests:**

  Release screws on outer mount of right backrest and remove backrest.

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- **Removal of right backrest:**

  Proceed in mirror-inverted fashion to left backrest.

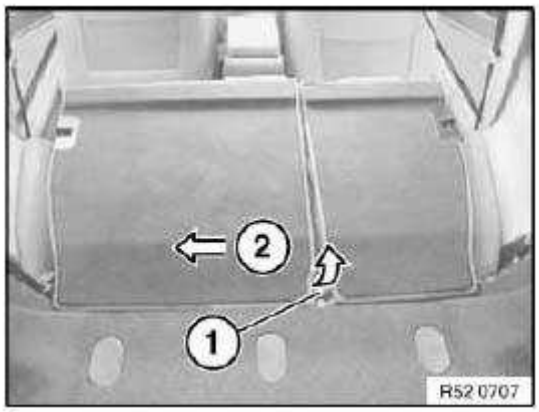


Fig. 234: Pulling Out Left Backrest Towards Left
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Bearing bushings (1) must not be damaged.

Replace faulty bearing bushings, see **52 26 412 Replacing backrest cover for right rear seat (through-loading system)**

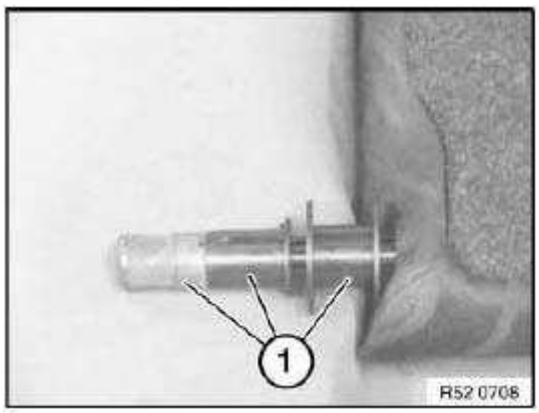


Fig. 235: Bearing Bushings
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 030 REMOVING AND INSTALLING/REPLACING ARMREST FOR REAR SEAT BACKREST (THROUGH-LOADING SYSTEM)

Fold down right backrest.

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Unscrew bolt (1).

Remove armrest first towards front and then sideways.

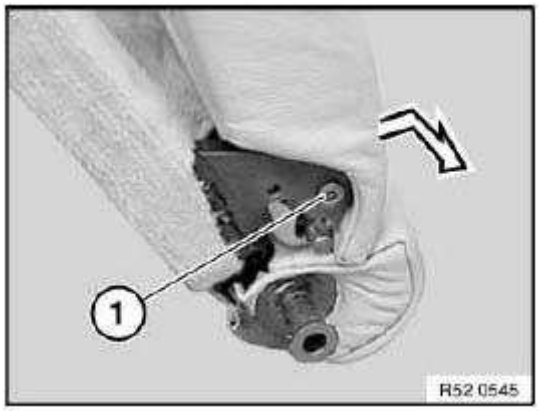


Fig. 236: Removing Armrest
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 033 REMOVING AND INSTALLING/REPLACING UPPER COVER SECTION ON ARMREST FOR REAR SEAT

Drive out two-part hinge pin (1) with a suitable tool (bar, etc.), pressing material in area (2) on both sides (risk of damage).

Installation:

Drive in one hinge pin each from right and left. Hinge pins must be flush with outer edge of hinge.

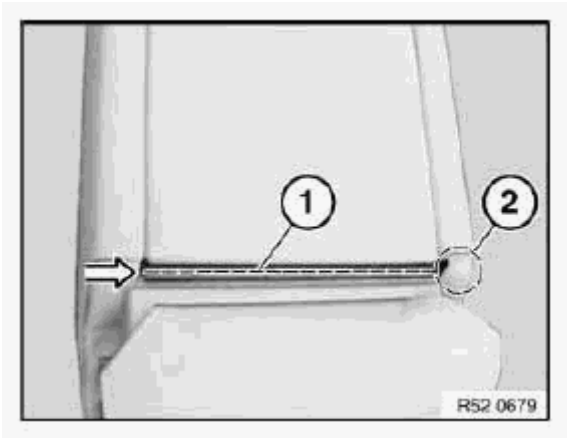


Fig. 237: Removing Upper Cover Section On Armrest
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 080 REMOVING AND INSTALLING/REPLACING BACKREST FRAME FOR LEFT REAR SEAT (THROUGH - LOADING SYSTEM)

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Necessary preliminary tasks:

- Remove backrest cover with padding on left, see **52 26 411 Replacing backrest cover for rear seat (through-loading system) on left**
- Remove mounting for roller blind, see **52 26... Removing and installing/replacing fixture for roller blind on rear seat (through - loading system) on left/right**
- Remove lock for rear seat backrest, see **52 26 309 Removing and installing/replacing lock for left rear seat backrest (through-loading system)**

Unclip retainers and remove.

Remove backrest frame (1).

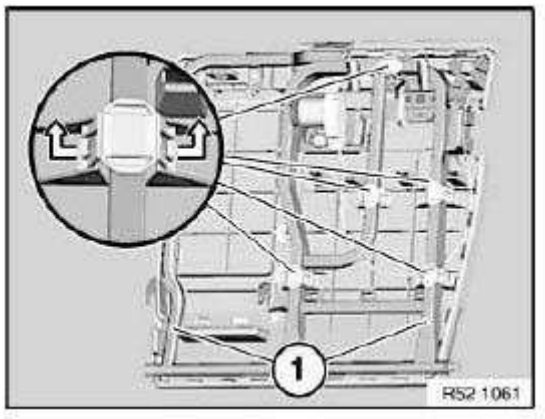


Fig. 238: Removing Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only:

Release screws (1).

Remove retaining hook (2).

Unscrew bolt (3).

Tightening torque: 72 11 15AZ, see **72 11 SEAT BELTS** .

Remove automatic reel (4) with Bowden cable.

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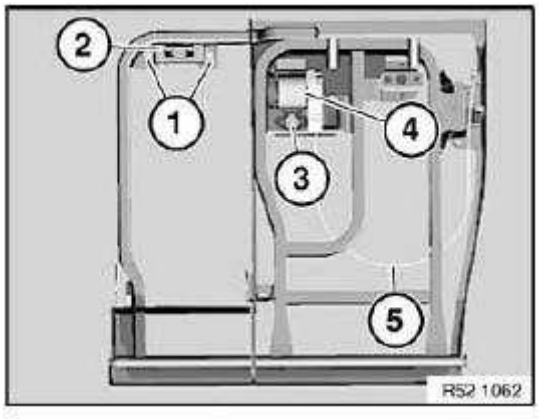


Fig. 239: Retaining Hook, Bolt And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 085 REMOVING AND INSTALLING/REPLACING BACKREST FRAME FOR RIGHT REAR SEAT (THROUGH-LOADING SYSTEM)

Necessary preliminary tasks:

- Remove backrest cover with padding on right, see **52 26 412 Replacing backrest cover for right rear seat (through-loading system)**
- Remove mounting for roller blind, see **52 26... Removing and installing/replacing fixture for roller blind on rear seat (through - loading system) on left/right**
- Remove lock for rear seat backrest, see **52 26 309 Removing and installing/replacing lock for left rear seat backrest (through-loading system)**

Unclip retainers and remove.

Remove backrest frame (1).

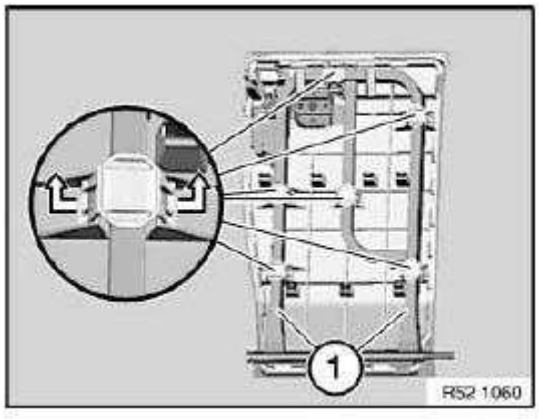


Fig. 240: Removing Backrest Frame
Courtesy of BMW OF NORTH AMERICA, INC.

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52 26 199 REMOVING AND INSTALLING/REPLACING REAR PANEL ON LEFT REAR SEAT BACKREST (THROUGH - LOADING SYSTEM)

Operation is described in:

- Removing and installing/replacing backrest frame for left rear seat backrest, see **52 26 080 Removing and installing/replacing backrest frame for left rear seat (through - loading system)**

52 26 200 REMOVING AND INSTALLING/REPLACING REAR PANEL ON RIGHT REAR SEAT BACKREST (THROUGH - LOADING SYSTEM)

Operation is described in:

- Removing backrest frame for right rear seat backrest, see **52 26 085 Removing and installing/replacing backrest frame for right rear seat (through-loading system)**

52 26 301 REMOVING AND INSTALLING /REPLACING ACTUATING MECHANISM FOR LEFT REAR SEAT BACKREST (THROUGH-LOADING SYSTEM)

Grasp trim (1) for release lever from inside and pry out upward.

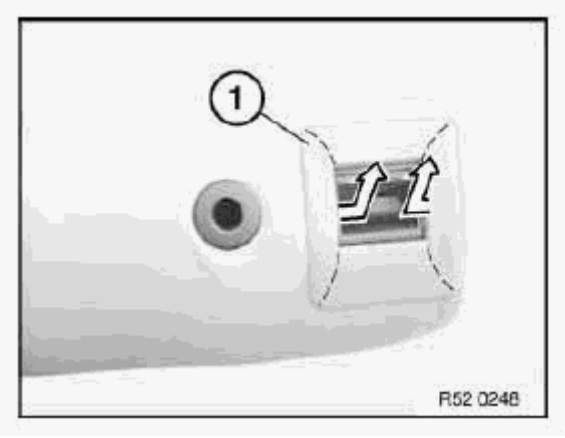


Fig. 241: Releasing Lever From Inside
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retaining straps (1) must not be damaged.

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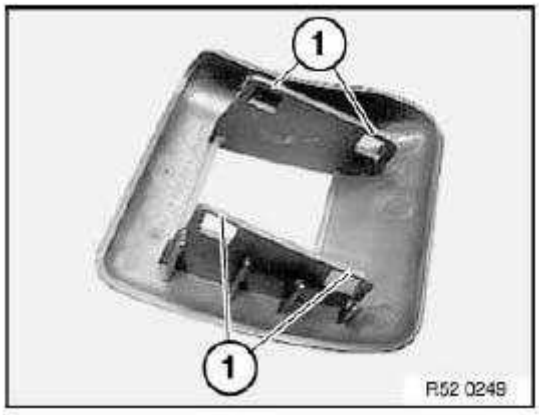


Fig. 242: Retaining Straps
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Place cloth (1) over locking rod to prevent the rear seat backrest from locking down.

Pry out actuating mechanism (2) by pulling forwards and upwards.

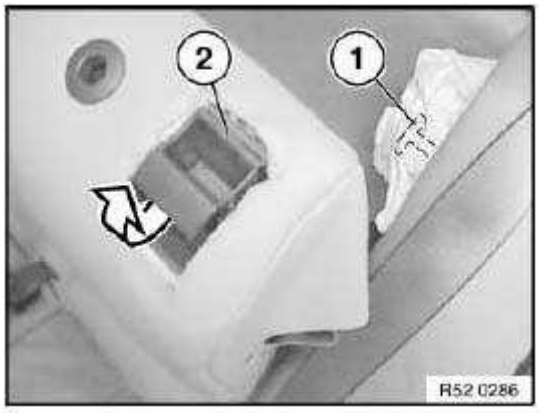


Fig. 243: Prying Out Actuating Mechanism
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locking tabs (1) on left/right sides (for trim on actuating mechanism) must not be damaged.

Locking tabs (2) at front and (3) back (for actuating mechanism) must not be damaged.

Actuating rod (4) must be correctly mounted and should not be bent.

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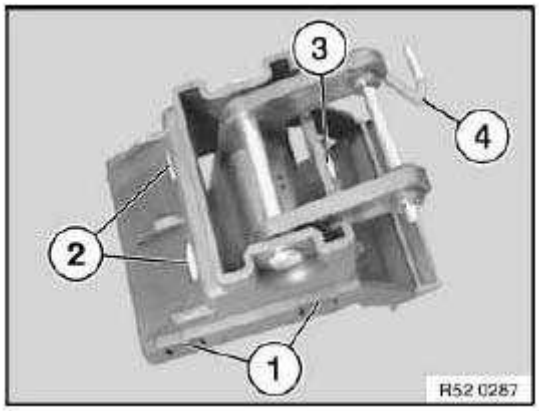


Fig. 244: Locking Tabs And Actuating Rod
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 309 REMOVING AND INSTALLING/REPLACING LOCK FOR LEFT REAR SEAT BACKREST (THROUGH-LOADING SYSTEM)

Slide lock trim on edge of backrest side upwards slightly and clip out to one side, then slide trim section on rear side slightly to center, unclip and remove.

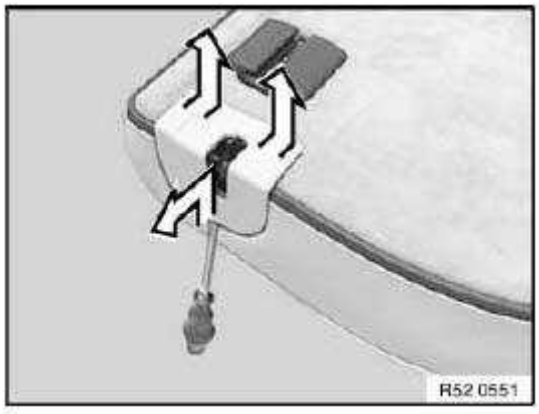


Fig. 245: Sliding Lock Trim On Edge Of Backrest Side Upwards Slightly
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clips of trim must not be damaged.

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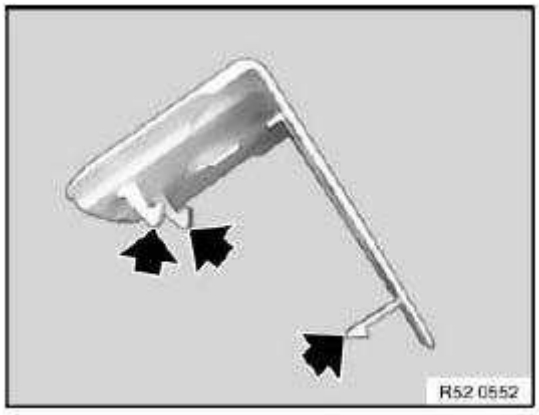


Fig. 246: Locating Clips Of Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Partially lift cover (1) off rear seat backrest.

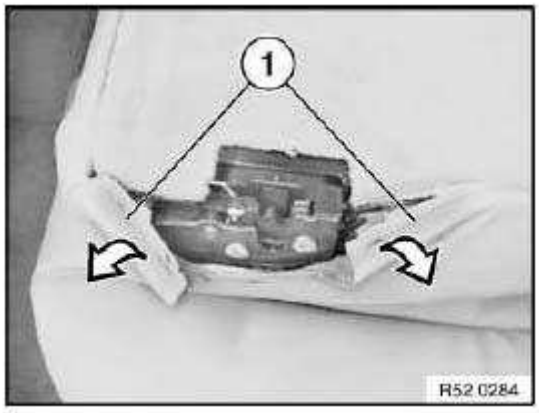


Fig. 247: Removing Lift Cover
Courtesy of BMW OF NORTH AMERICA, INC.

E46 only:

Remove lockplate (1) and unhook actuating rod (2) for seatback release.

E83 only:

Lockplate (1) omitted. Unhook actuating rod (2) for seatback release.

Installation:

Fit bush (3) and new lockplate (1).

Perform function check with rear seat back-rest folded forward.

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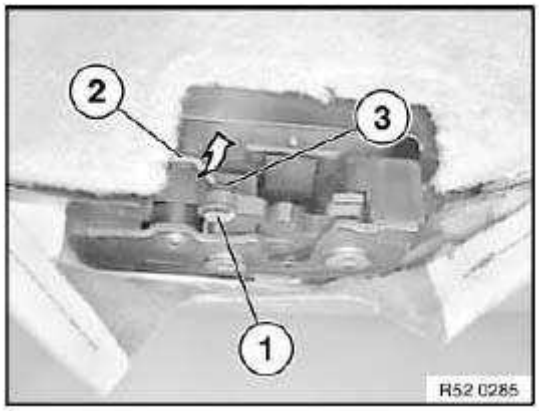


Fig. 248: Removing Lockplate
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws and fold back backrest lock.

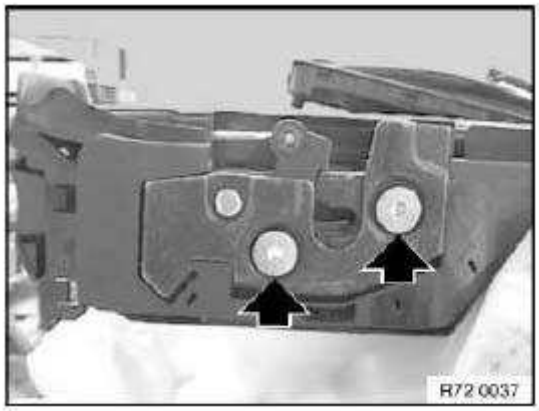


Fig. 249: Locating Backrest Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Summary, backrest lock, left:

1. Actuating rod for backrest lock
2. Lower section, backrest lock, left
3. Bowden cable of safety belt
4. Backrest lock, left
5. Bush for mounting of actuating rod

backrest locking fixture

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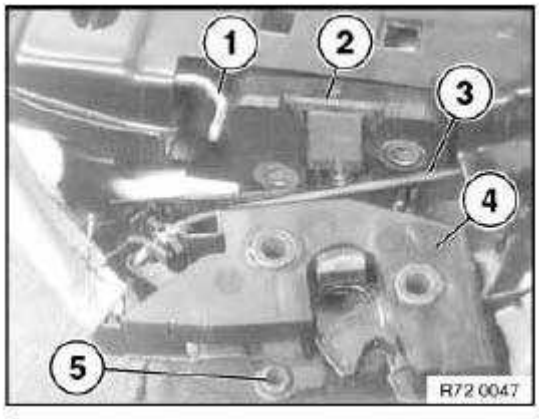


Fig. 250: Actuating Rod, Bowden Cable And Backrest Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Unhooking seat belt Bowden cable from backrest lock:

Press lever (1) forwards in direction of arrow.

Remove sleeve for Bowden cable (2) from holder (3) in backrest lock.

Unhook Bowden cable from lever (1).

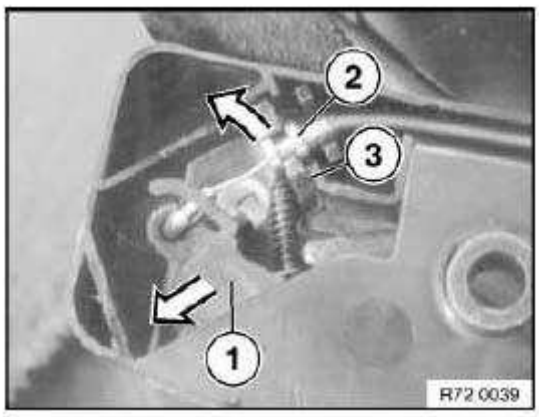


Fig. 251: Removing Sleeve For Bowden Cable From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Summary, backrest lock, left:

1. Actuating lever for backrest lock in left backrest lock
2. Hole for Bowden cable of safety belt
3. Retaining lug for Bowden cable on actuating lever for backrest lock
4. Bracket for Bowden cable of safety belt
5. Bowden cable sleeve

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6. Bowden cable of safety belt

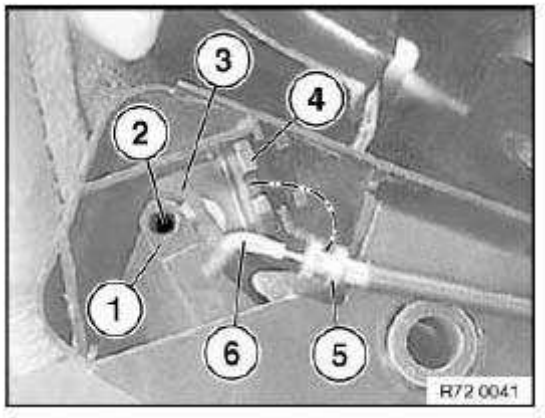


Fig. 252: Actuating Lever And Bowden Cable
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 388 REMOVING AND INSTALLING/REPLACING REAR HEAD RESTRAINTS (THROUGH-LOADING SYSTEM), MIDDLE (COMPACT)

Operation is described in:

- Removing and installing rear head restraints (through-loading system), left or right, see **52 26 390 Removing and installing/replacing rear head restraint (through-loading system), left or right (Compact)**

52 26 388 REMOVING AND INSTALLING/REPLACING REAR MIDDLE HEAD RESTRAINT

Fold back head restraint (1) and move upwards to max. extent.

Press lock (2) and pull out head restraint.

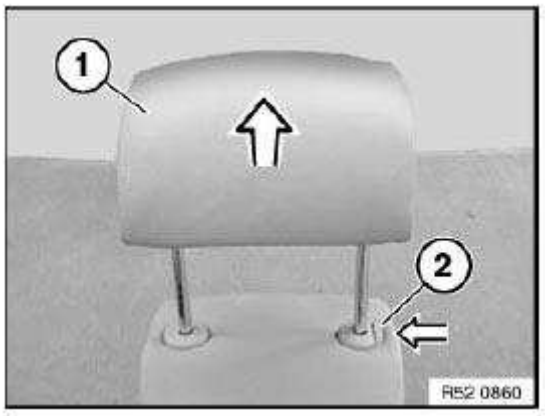


Fig. 253: Pulling Out Head Restraint
Courtesy of BMW OF NORTH AMERICA, INC.

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52 26 390 REMOVING AND INSTALLING OR REPLACING LEFT OR RIGHT REAR HEAD RESTRAINT

Move head restraint (1) upwards to maximum extent.

Press lock (2) and pull out head restraint.

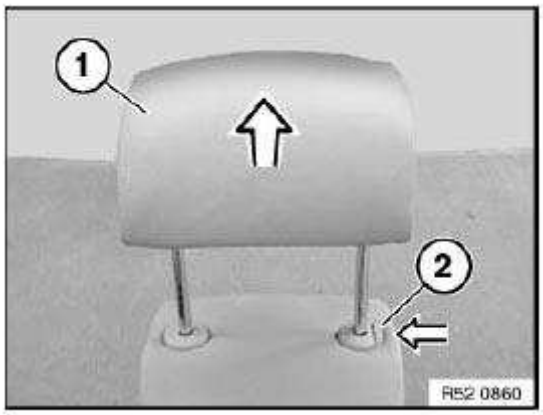


Fig. 254: Pulling Out Head Restraint
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 390 REMOVING AND INSTALLING/REPLACING REAR HEAD RESTRAINT (THROUGH-LOADING SYSTEM), LEFT OR RIGHT (COMPACT)

Fold back head restraint and move upwards to max. extent.

If necessary, press gently on guides towards front and rear and pull out firmly.

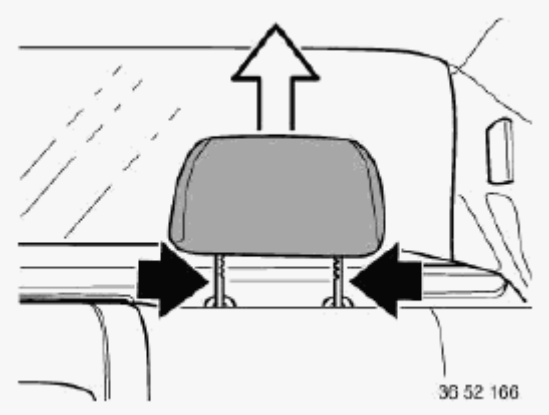


Fig. 255: Folding Back Head Restraint
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 400 REPLACING SEAT COVER FOR REAR SEAT (THROUGH-LOADING SYSTEM)

Special tools required:

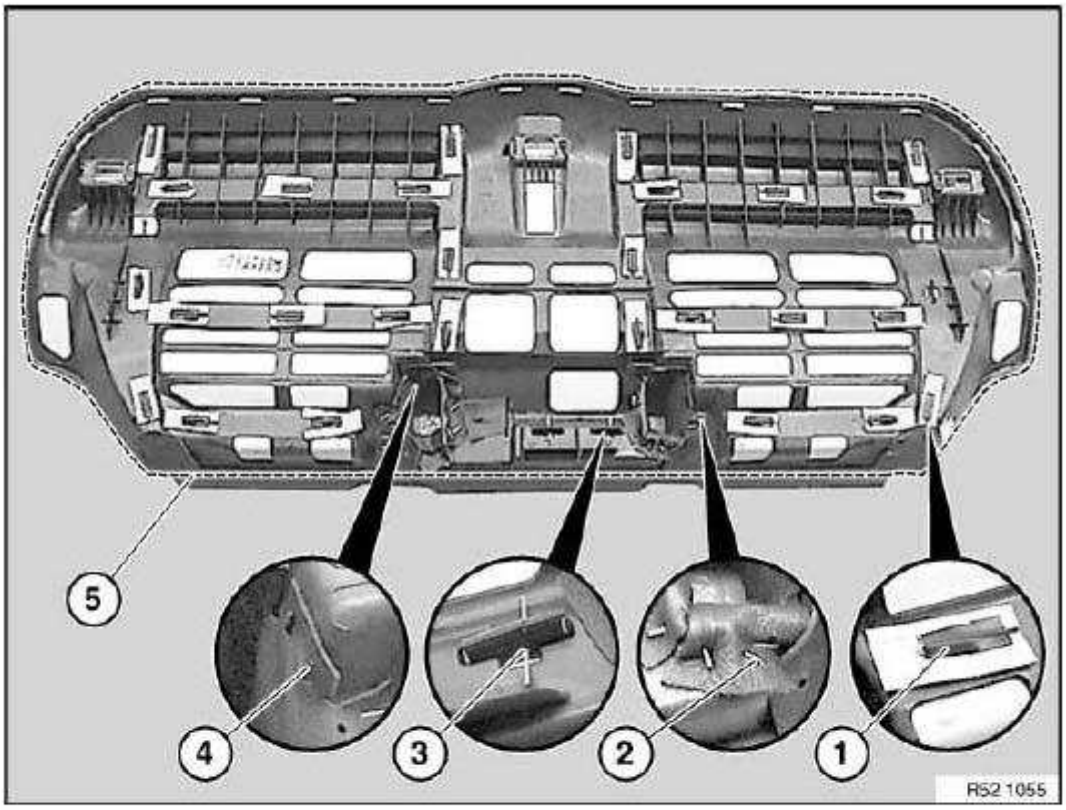
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- 00 9 323

Necessary preliminary tasks:

- Remove rear seat, see **52 26 005 Removing and installing/replacing rear seat (through-loading system)**

Overview of attachment points of cover to seat pan:



1	Cover lugs (28 x)	2	Clips
3	Cover lugs (2 x)	4	Plastic hooks
5	Piping		

Fig. 256: Cover Lugs, Plastic Hooks And Piping
Courtesy of BMW OF NORTH AMERICA, INC.

Removing seat cover:

- Remove retainers (2).
- Unhook cover from plastic hooks (4)
- Detach retaining elements from cover tabs (1 & 3).

Feed out piping.

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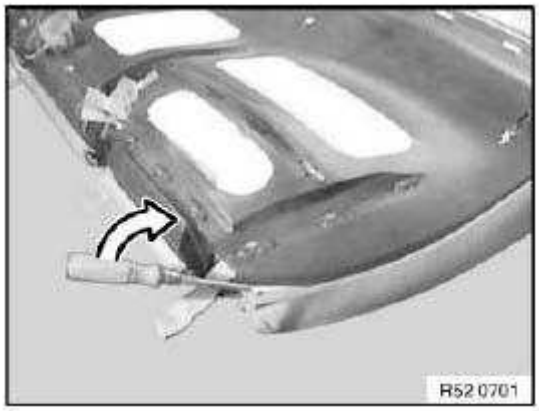


Fig. 257: Feeding Out Piping
Courtesy of BMW OF NORTH AMERICA, INC.

Slide cover lugs with special tool 00 9 323 through opening in seat pan.

Carefully remove seat pan.

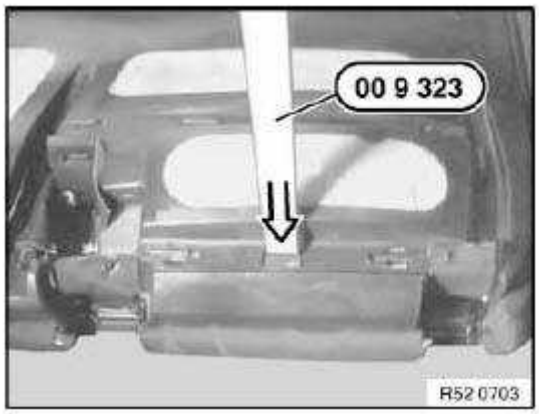


Fig. 258: Sliding Cover Lugs With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed cover lugs (1) through openings (2) in padding and before laying on seat pan pull through fully on rear side.

Push retaining elements back onto cover lugs.

Reattach seat cover to plastic hooks.

Attach new clips with pneumatic tacker.

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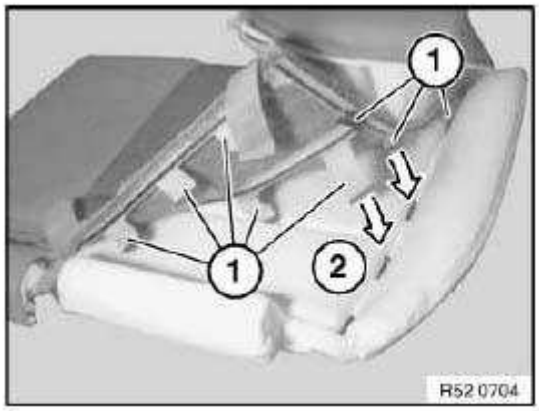


Fig. 259: Cover Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 411 REPLACING BACKREST COVER FOR REAR SEAT (THROUGH-LOADING SYSTEM) ON LEFT

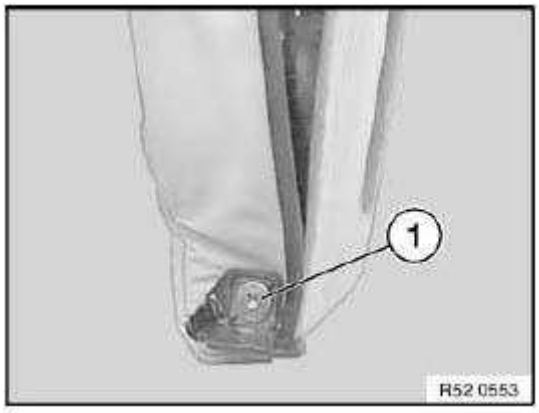
Special tools required:

- 00 9 317
- 00 9 323

Necessary preliminary tasks:

- Remove and install left backrest**52 26 015 Removing and installing/replacing left or right rear seat backrest (through-loading system)**
- Remove and install rear head restraints, see **52 26 388 Removing and installing/replacing rear middle head restraint**
- Remove lock trim of left rear seat backrest, see **52 26 309 Removing and installing/replacing lock for left rear seat backrest (through-loading system)**

Release screw (1) of seat outer mount.



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Fig. 260: Seat Outer Mount Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert screw (1) and plastic washer (2) as shown into bearing pedestal (3) and screw down.

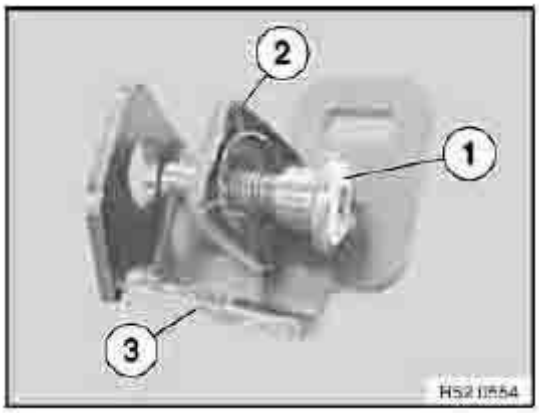


Fig. 261: Plastic Washer And Bearing Pedestal
Courtesy of BMW OF NORTH AMERICA, INC.

Move backrest into installation position and pull out belt slightly.

Clamp belt firmly.

E46 only:

Unfasten screws.

Remove trim.

E83 only:

Trim not screwed down.

Lever out trim with special tool 00 9 317.

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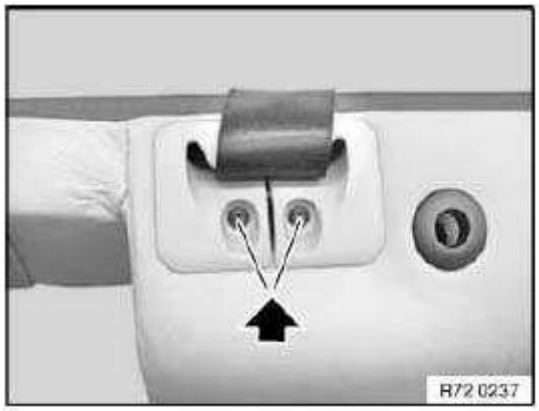


Fig. 262: Locating Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Separate webbing.

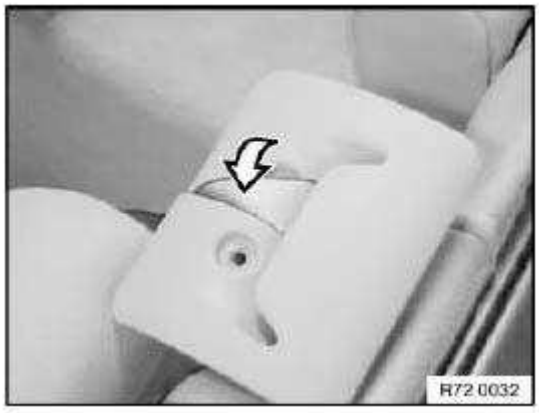


Fig. 263: Separating Webbing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed out strap so that belt stopper (1) is located between upper guide (2) and lower guide (3) of belt finisher.

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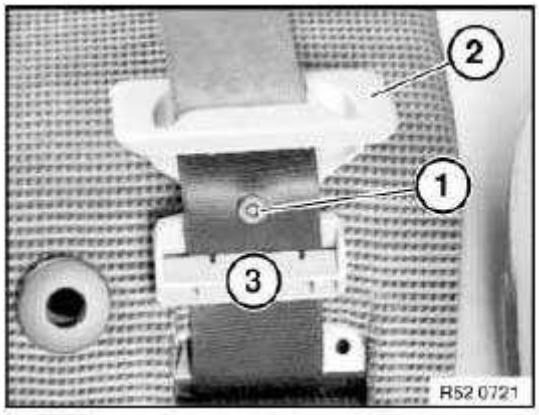


Fig. 264: Belt Stopper, Upper And Lower Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Lever cover with trim wires (1) out of metal clutches (2).

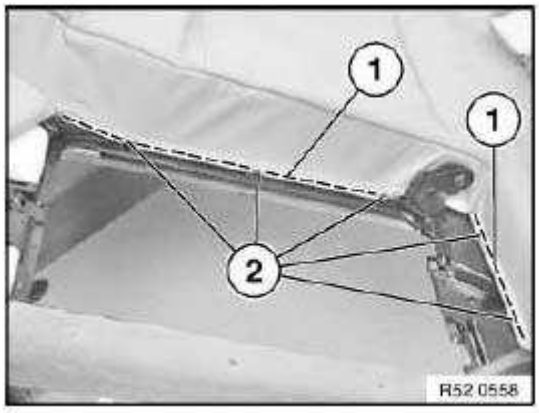
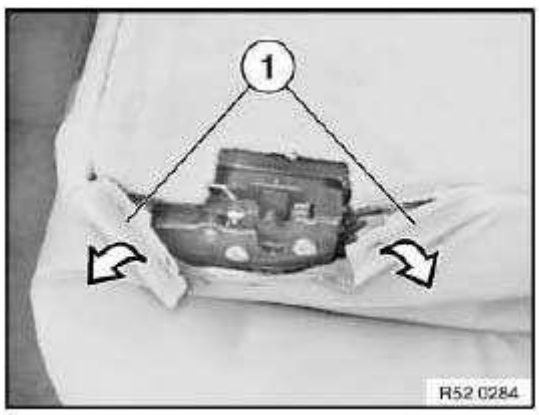


Fig. 265: Trim Wires And Metal Clutches
Courtesy of BMW OF NORTH AMERICA, INC.

Detach cover all round by lifting out piping (1).



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Fig. 266: Removing Lift Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully pull cover towards front.

Slide all retaining tabs (1) in succession out of retaining fixture.

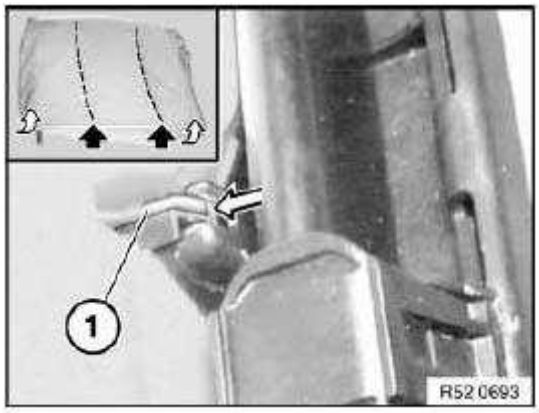


Fig. 267: Sliding Retaining Tabs
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Press tabs with special tool 00 9 323 into mounting on both sides.

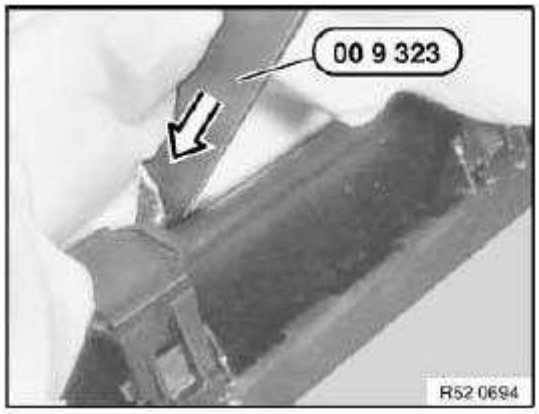


Fig. 268: Pressing Tabs With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Grip under cover (1) and padding and gently press clips (2) together, pull out head restraint guide (3).

Remove cover and padding.

Installation:

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Clips of head restraint guide (2) must not be damaged.

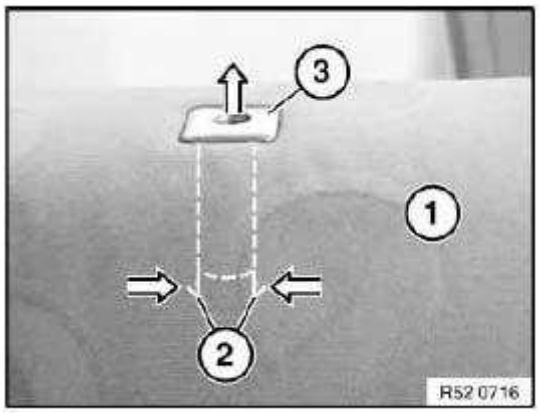


Fig. 269: Pulling Out Head Restraint Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of backrest cover or padding only:

Pull cover out of padding.

Installation:

Feed cover lugs (1) into openings of padding (2).

Make sure piping (3) is resting in opening of padding (4).

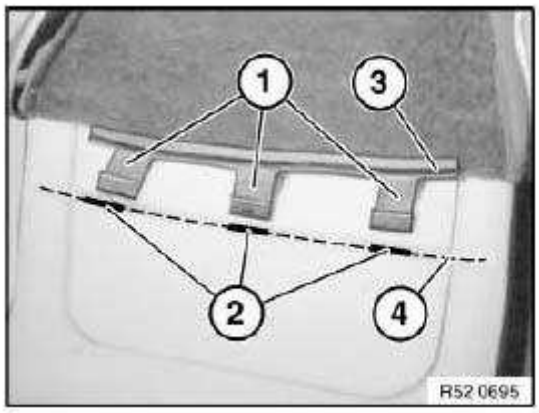


Fig. 270: Cover Lugs And Padding
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 412 REPLACING BACKREST COVER FOR RIGHT REAR SEAT (THROUGH-LOADING SYSTEM)

Special tools required:

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- 00 9 317
- 00 9 323

Necessary preliminary tasks:

- Remove and install left rear seat (through-loading), see **52 26 005 Removing and installing/replacing rear seat (through-loading system)**
- Remove and install rear head restraints, see **52 26 390 Removing and installing/replacing rear head restraint (through-loading system), left or right (Compact)**
- Remove backrest for rear seat (through-loading system), see **52 26 015 Removing and installing/replacing left or right rear seat backrest (through-loading system)**
- Remove actuator trim for left rear seat, see **52 26 301 Removing and installing /replacing actuating mechanism for left rear seat backrest (through-loading system)**
- Remove lock trim, see **52 26 309 Removing and installing/replacing lock for left rear seat backrest (through-loading system)**

Release mounting for center and outer mounts.

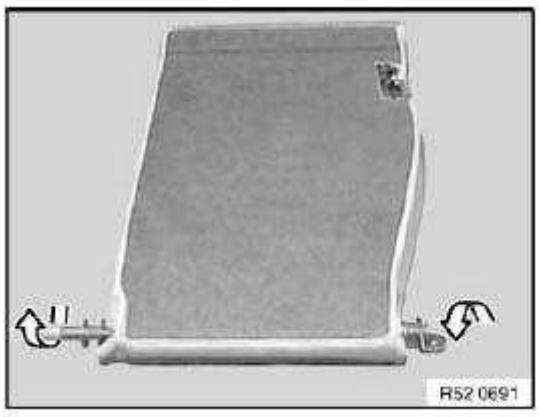


Fig. 271: Releasing Mounting For Center And Outer Mounts
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Installation sequence for mounting kit for center mount (1) and outer mount (2).

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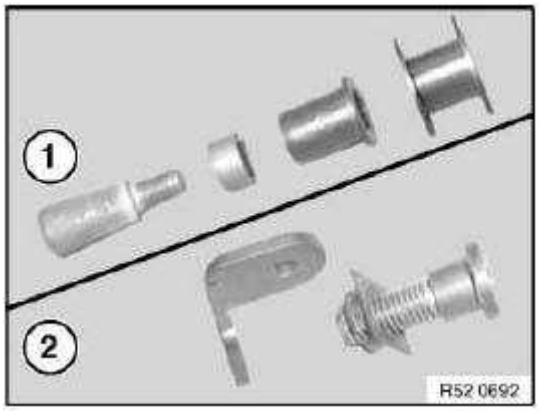


Fig. 272: Center And Outer Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Move backrest into installation position and pull out belt slightly.

Clamp belt firmly.

E46 only:

Unfasten screws.

Remove trim.

E83 only:

Trim not screwed down.

Lever out trim with special tool 00 9 317.

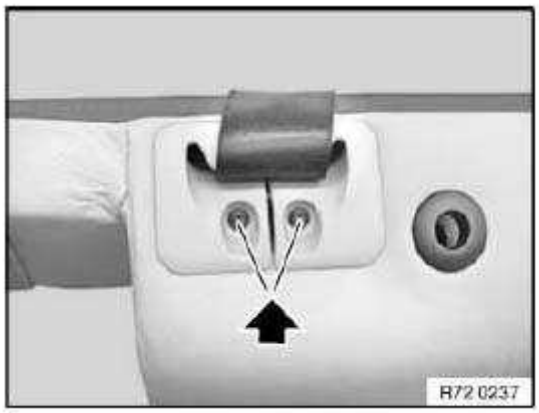


Fig. 273: Locating Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Separate webbing.

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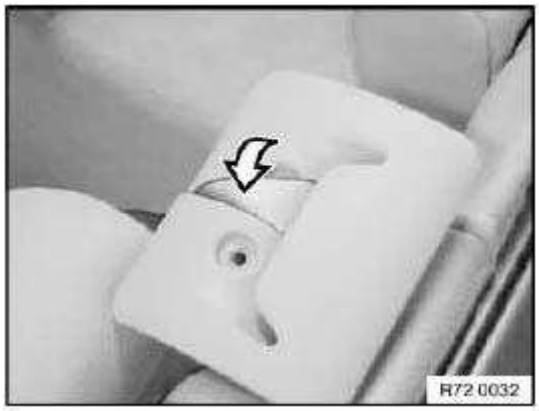


Fig. 274: Separating Webbing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed out strap so that belt stopper (1) is located between upper guide (2) and lower guide (3) of belt finisher.

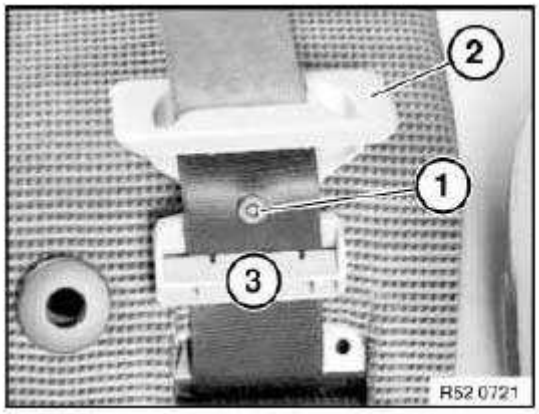


Fig. 275: Belt Stopper, Upper And Lower Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out cover all round.

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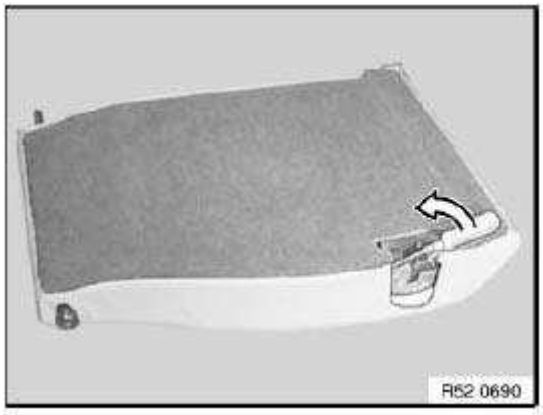


Fig. 276: Removing Lever Out Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully pull cover over mounts towards front.

Slide all cover lugs (1) in succession in direction of backrest center (if necessary with cleaning wedge 00 9 323).

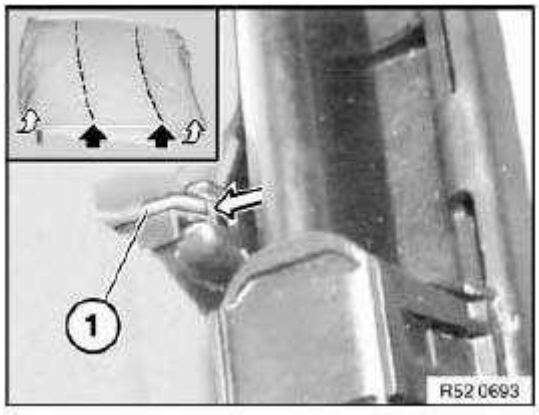


Fig. 277: Sliding Retaining Tabs
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Press tabs with special tool 00 9 323 into mounting on both sides.

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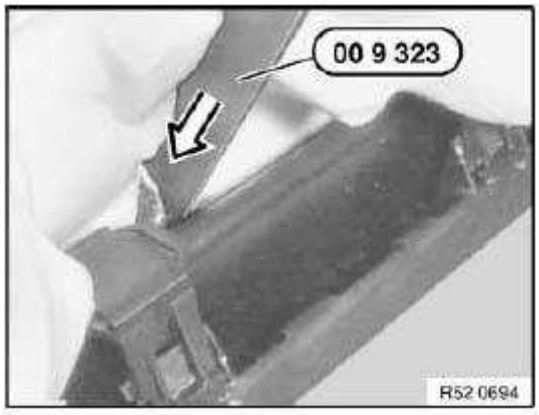


Fig. 278: Pressing Tabs With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Grip lower cover (1) and padding and gently press clips (2) together, pull out head restraint guide (3).

Remove cover and padding.

Installation:

Clips of head restraint guide (2) must not be damaged.

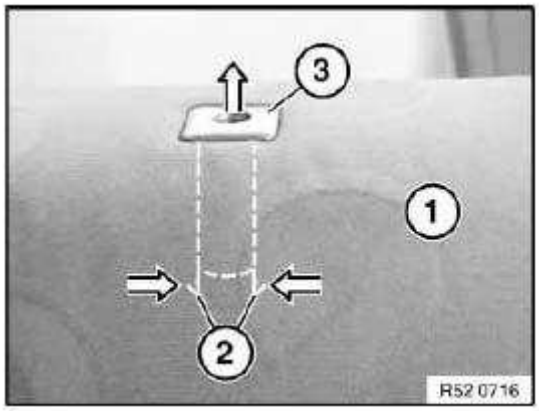


Fig. 279: Pulling Out Head Restraint Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of backrest cover or padding only:

Pull cover out of padding.

Installation:

Feed cover lugs (1) into openings of padding (2). Make sure piping (3) is resting in opening of padding (4).

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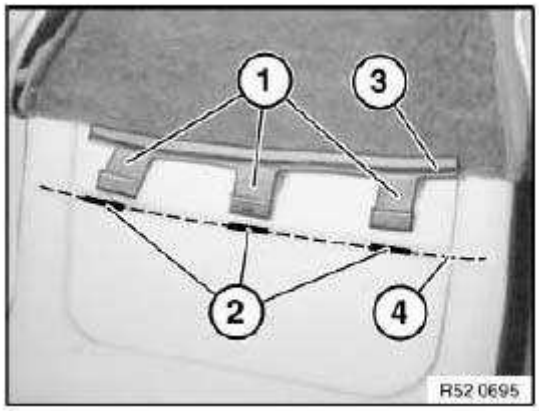


Fig. 280: Cover Lugs And Padding
Courtesy of BMW OF NORTH AMERICA, INC.

52 26 450 REPLACING PADDING FOR REAR SEAT

Necessary preliminary tasks:

- Replacing seat cover for rear seat, see **52 26 400 Replacing seat cover for rear seat (through-loading system)**

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ACCESSORIES AND EQUIPMENT

Seats - Special Tools - X3

52 SEATS

52 0 050 PLIERS

Note: For securing clips on seat cover

Series: E12, E21, E23, E24, E28, E30, E30/C, E30tou, E31, E32, E32/3, E34, E34tou, E36, E36/2, E36/3, E36/5, E36/7, E36/C, E36tou, E38, E38/3, E39, E39PL, E39tou, E46, E46/16, E46/2, E46/3, E46/5, E46/C, E52, E53, E60, E61, E63, E64, E65, E66, E67, E68, E70, E81, E83, E85, E86, E87, E90, E91, E92, E93, R50, R52, R53, R56, RR1, RR2

SI number: 52 06 87 (808)

Order number: 52 0 050 Pliers

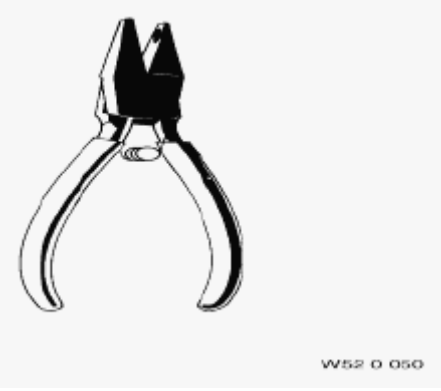


Fig. 1: Pliers (52 0 050)
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Seats - Tightening Torques - X3

10 FRONT SEATS

52 10 FRONT SEATS

FRONT SEATS - TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Seat to floor plate	E31 / E32 / E34 / E36	M10		44 Nm
	E36 / Z3 front	M8		22 Nm
	E36 / Z3 rear	M10		43 Nm
	E38 / E39 / E46 / E52 / E53 / E63 / E64 / E83 / E85	M10		45 Nm
			Torque angle	90°
	E60 / E61 / E65 / E66 / E67 / E87 / E90 / E91	M10 (trilobular)	Replace Powerlok screw	44 Nm
2AZ Backrest frame to seat frame	E36			60 Nm
	E63 / E64 / E83 / E85			32 Nm
	E46 all except Convertible		Replace screws	32 Nm
	E65 / E66 / E67 / E60 / E61	M10 (trilobular)	Replace Powerlok screw	33 Nm
	E53			45 Nm
3AZ Support (backrest shell) to headrest rail	E31			6.5 Nm
4AZ Head restraint rail to backrest frame	E31			25 Nm
5AZ Finisher on seat rail	E38 / E39	M4		4 Nm
6AZ Seat frame to seat runner	E38 / E39	M6		15 Nm
	E60 / E61 / E65 / E66	M8		27 Nm
7AZ Actuating unit to seat frame	E46 / E85			$10\pm^{2}$ Nm
8AZ Adjusting screw for eccentric element	E46 / E85			1.4 Nm
9AZ Seat pan to seat frame	E46 / E53 / E63 / E64 / E83 / E85			$10\pm^{2}$ Nm
10AZ Microswitch to front seat	E46			$2\pm^{1}$ Nm
11AZ Backrest frame to seat rail	E31			25 Nm
12AZ Trims to seat mechanism	E63 / E64			3 Nm
13AZ Trim to seat cushion shell	E63 / E64			4.4 Nm
14AZ Backrest frame to seat				$24\ \pm^{4}$

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frame - Screw	E46 Convertible		Replace screws	Nm
15AZ Backrest frame to seat frame - Pin with knurling and lock nut	E46 Convertible		Replace screws	40 $\pm^{5}$ Nm
16AZ Seat tilt adjuster to seat mechanism	E46 / E53 / E83 / E85	M6 x 10 (trilobular)	Replace Taptite screw	9 Nm
17AZ Seat tilt adjuster to seat pan	E46 / E53 / E83 / E85			9 Nm
18AZ Active head restraint Sliding rails with gas cartridge	E60 / E61 / E65 / E66 / E67			8 Nm
19AZ Belt guide to backrest	E85			1.25 Nm
20AZ Kinematic element to backrest frame	E46 Convertible			3 $^{+2}$ Nm

24 REAR SEAT, NORMAL

52 24 REAR SEAT (NORMAL), MANUAL

REAR SEAT (NORMAL), MANUAL - TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Backrest on body	E38	M6		5 Nm
	E60	M8		18.5 Nm
2AZ Head restraint support to backrest	E60	M6	Screws, top	5.6 Nm
			Screws, bottom	8 Nm
3AZ Armrest lock to backrest	E60	M6		8 Nm
4AZ Backrest lock to backrest	E60	M6		19 Nm
5AZ Center armrest to backrest frame	E60	M6		19 Nm
6AZ Storage compartment casing to body	E63 / E64			7.5 Nm
7AZ Ski bag casing to body (hexagon screw)	E63 / E64	M8		24 Nm
8AZ Lock to body				
9AZ Top Tether eyelet	E60 / E63 / E65 / E66			17 Nm

25 REAR SEAT, NORMAL, ELECTRIC

52 25 REAR SEAT (NORMAL), ELECTRIC

REAR SEATS (THROUGH-LOADING SYSTEM) - TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Backrest on body	E38			5 Nm
	E65 / E66 / E67		Install nuts with Loctite	20 Nm
2AZ Seat to floor plate	E65 / E66 / E67			20 Nm

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	E65 / E66 / E67		Plastic nut	12 Nm
3AZ Backrest frame to seat frame	E65 / E66 / E67			18 Nm
4AZ Center armrest to body	E65 / E66 / E67			19 Nm

26 REAR SEAT, THROUGH-LOADING

52 26 REAR SEATS (THROUGH-LOADING SYSTEM)

REAR SEATS (THROUGH-LOADING SYSTEM) - TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Outer mount (backrest) to body	E60			12.5 Nm
2AZ Center mount (backrest) to body	E60			12.5 Nm
3AZ Backrest lock to seat back	E60			12.5 Nm
4AZ Center armrest to seat back	E60	M6		6 Nm
5AZ Outer mount to seat back	E60			38 Nm
6AZ Skibag cover to skibag frame	E60			6 Nm
7AZ Striker to body				
8AZ Lashing eye to backrest				
9AZ Lock to backrest	E61			20+5 Nm
10AZ Lock to body	E60			18.5 Nm

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ACCESSORIES AND EQUIPMENT

Trailers - Tightening Torques - X3

10 LOADING PLATFORM

86 10 PLATFORM

PLATFORM - TIGHTENING TORQUES

	Type	thread	tightening specification	Measure
1AZ Nut to retaining thread, rear light		M5		7 Nm
2AZ Bar to platform		M8x35		23 Nm
3AZ Lashing plate to platform		M8x35		15 Nm
4AZ Front guard to cross-member		M8x55		28 Nm
5AZ Front guard to longitudinal member		M8x25		34 Nm
6AZ Saucer head screw to rail		M5x15		7 Nm
7AZ Rail, loading ramp frame to cross strut		M6x16		11.5 Nm
8AZ Rail, loading ramp frame to longitudinal member mount		M6x16		11.5 Nm
9AZ Cross strut to rail		M6x16		5.5 Nm
10AZ Footplate to drawbar member		M6x25		11.5 Nm
11AZ Bracket to drawbar member		M8x25		34 Nm
12AZ Wiring harness mount to reversing housing		M10x1x20		58 Nm
13AZ Socket holder to drawbar		M10x95		55 Nm
14AZ Top reversing housing and bracket to drawbar member		M10		55 Nm
15AZ Towing attachment to tow tube		M12x70		96 Nm
16AZ Drawbar member to cross-member		M8x20		28 Nm
17AZ Cross-member to drawbar member		M8x25		40 Nm
18AZ Drawbar member to cross-member		M8x25		28 Nm
19AZ Disk wheel to brake hub				100 Nm
20AZ Brake hub to axle				280 Nm
21 AZ Shock absorber to bracket		M12x55		96 Nm
22AZ Trailing arm to coil spring		M10x35		46 Nm
23AZ Coil spring to longitudinal member		M10x25		46 Nm
24AZ Wheel brake to trailing arm		M10x1.5x30		145 Nm
25AZ Trailing arm to mount		M12x85		96 Nm
26AZ Rear apron to bracket		M8x25		26 Nm
27AZ Bracket to mounting bracket		M6x16		11 Nm
28AZ Rotary striker lock to cross strut		M8x35		18 Nm
29AZ Bearing pedestal to loading ramp frame		M6x16		10 Nm

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30AZ Outer towbar mount to longitudinal member		M10x25		55 Nm
31AZ Mounting bracket to longitudinal member		M10x25		78 Nm
32AZ Base plate to cross-member		M10x35		78 Nm

21 HOOD

86 21 HOOD

HOOD - TIGHTENING TORQUES

	Type	thread	tightening specification	Measure
1AZ Roof railing, front and rear, to roof railing adapter		M8		22.5 Nm
2AZ Roof railing, middle, to roof railing adapter		M8		22.5 Nm
3AZ Roof railing, front and rear, to support		M6		15 Nm
4AZ Roof railing, middle, to support		M6		10 Nm
5AZ Upper lock striker fixture to lower lock striker fixture		M8		27 Nm
6AZ Hinge, side lid, to support		M8		27 Nm
7AZ Support, lid to lid		M8		23 Nm
8AZ Screw, depth adjustment, side lid		M8		27 Nm
9AZ Screw, depth adjustment, rear lid		M8		27 Nm
10AZ Ball pivot to retaining bracket		M8		23 Nm
11AZ Retaining bracket to support		M8		27 Nm
12AZ Rotary striker lock to support		M5		7 Nm

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ACCESSORIES & EQUIPMENT

Trailers & Equipment - Repair Instructions - X3

10 LOADING PLATFORM

00 00 ... BODY AND UNDERBODY: CHECKING FOR CORROSION AND DAMAGE

Inspect chassis, underbody and wheel arches and check for corrosion and damage.

NOTE: It is absolutely essential to rectify any identified faults after consulting the customer and to issue a separate invoice.

00 00 ... RAISING BMW MULTI-TRAILER

CAUTION: Twin-strut underfloor platforms and twin-pillar lifting platforms are suitable for raising the BMW multi-trailer.

Lifting platforms with drive-on surfaces are not suitable for raising in order to carry out maintenance and repair work.

The lifting platform must comply with the relevant statutory accident prevention regulations and be serviced according to the manufacturer's instructions. It is essential to follow the lifting platform operating instructions, in particular the safety instructions and carrying capacity!

Make sure you adhere to the BMW-recommended work area of 5 x 7 m and to an escape route of 0.6 m between two lifting platforms.

Before raising the BMW multi-trailer, please observe the following points:

- Raise the trailer only when it is unloaded
- Remove a supplied loading ramp from the loading ramp frame so that all chassis areas of the BMW multi-trailer are freely accessible
- There must be sufficient clearance between the carrier arms/flat girder bridges and the GFK aprons or the front guard of the BMW multi-trailer
- The BMW multi-trailer must always be positioned in the middle of the lifting platform.

CAUTION: You will need special additional supports for the lifting platform in order to bridge the difference in height between longitudinal member and lower edge of GFK side apron or front guard of the BMW multi-trailer. The minimum height of the additional supports is 145 mm. Use only the additional supports approved by the platform manufacturer or specified in these repair instructions.

You will find appropriate examples in the repair instructions for the

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majority of lifting platforms present in BMW workshops. For lifting platforms that are not named, the relevant manufacturers will offer you appropriate additional supports. Please contact directly the manufacturer of the lifting platform used in your dealership.

CAUTION: The BMW multi-trailer may only be raised by its longitudinal members. Do not under any circumstances raise the BMW multi-trailer by the GFK aprons. Make sure the additional supports bear the longitudinal members over their entire width and no attachments or wiring harnesses are touched or jammed. Check the securing equipment of the additional supports for correct seating. Under no circumstances should any work be carried out underneath the BMW multi-trailer if it is not adequately secured against slipping off the lifting platform.

The areas (2) on the longitudinal members (1) marked in the adjacent diagram are the best areas for attaching the additional supports.

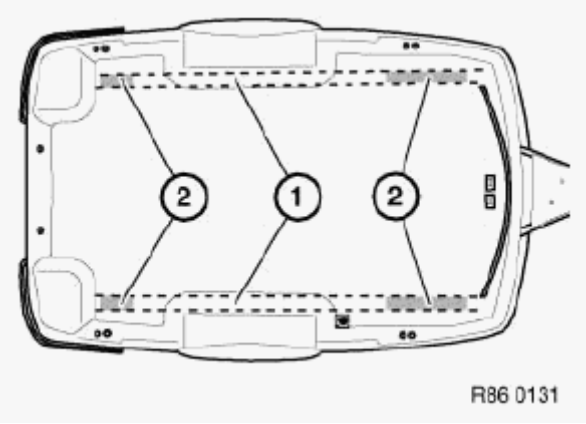


Fig. 1: Identifying Marked Areas On Longitudinal Members
Courtesy of BMW OF NORTH AMERICA, INC.

General Notes On Using Twin-Pillar Lifting Platforms

For the twin-pillar lifting platforms described, the BMW multi-trailer is positioned in the direction of travel on the platform. For lifting platforms which do not create sufficient clearance between disk wheel and carrier arms, move the BMW multi-trailer against the direction of travel onto the platform.

Becker & Sohne Twin-Strut Underfloor Platform

The BMW multi-trailer can only be raised if it is supported at right angles to the direction of travel. For raising, use the high additional supports (1) of Becker & Sohne.

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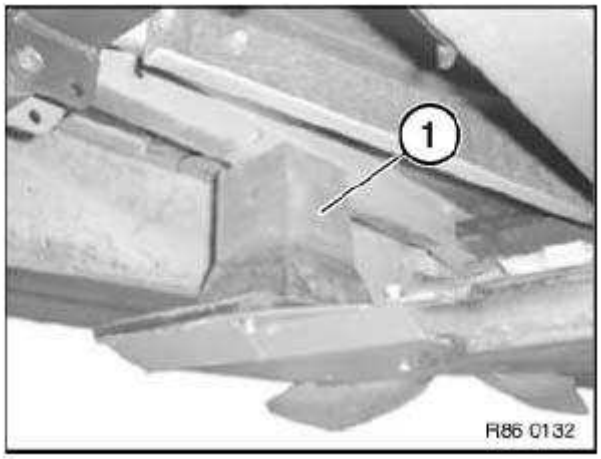


Fig. 2: Identifying High Additional Supports
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Also lash the BMW multi-trailer to the flat girder bridges of the lifting platform. Flag the protruding tow hitch and the drawbar member of the BMW multi-trailer conspicuously so as to prevent injury, e.g. with a red cloth.

MAHA Twin-Pillar Lifting Platform

The BMW multi-trailer can only be raised if you use the support plate attachment sleeves for transporters (1). Position the axle of the BMW multi-trailer in the direction of travel in front of the pillars of the platform in order to obtain the specified lifting ranges and to establish sufficient clearance between disk wheel and carrier arms. The long carrier arms raise the front and the short carrier arms raise the rear of the BMW multi-trailer.

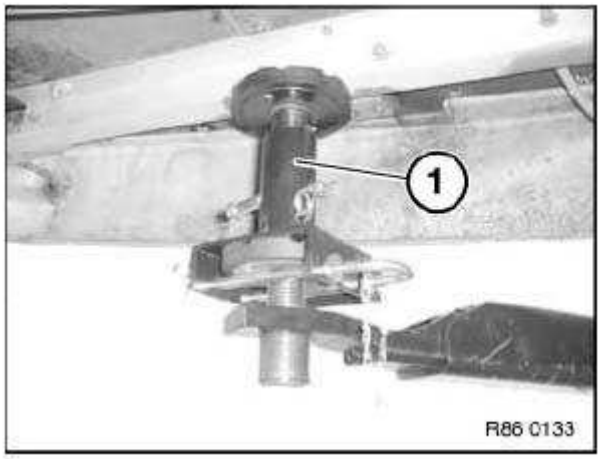


Fig. 3: Identifying MAHA Twin-Pillar Lifting Platform
Courtesy of BMW OF NORTH AMERICA, INC.

Romaico-Lift Twin-Pillar Lifting Platform

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The BMW multi-trailer can only be raised if you use the 146 mm high attachments (1). Position the axle of the BMW multi-trailer in the direction of travel in front of the pillars of the platform in order to obtain the specified lifting ranges and to establish sufficient clearance between disk wheel and carrier arms. The long carrier arms raise the front and the short carrier arms raise the rear of the BMW multi-trailer.

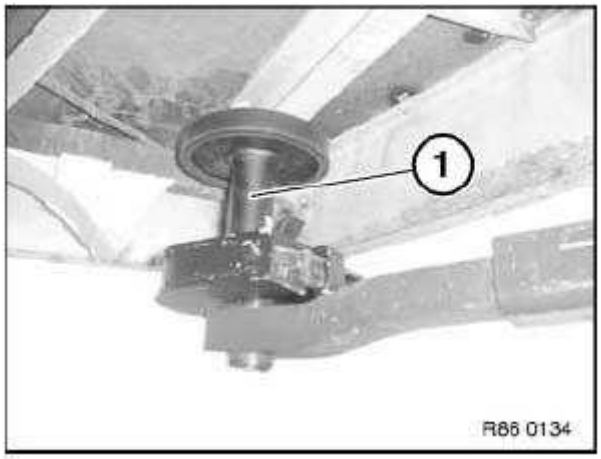


Fig. 4: Identifying Romaico-Lift Twin-Pillar Lifting Platform
Courtesy of BMW OF NORTH AMERICA, INC.

Working Pit

The BMW multi-trailer can be serviced or repaired in conjunction with a working pit if the following measures are taken into consideration. The BMW multi-trailer must be secured against slipping/tilting sideways. The drawbar jockey wheel must be firmly secured against rolling.

86 10 ... ADJUSTING BRAKE SYSTEM

Proper adjustment of the brake system is only possible if the brake Bowden cables and all brake system moving parts move freely and are ready for operation.

The wheels must be completely fitted and able to rotate freely. Always adjust both brake sides. The left and right sides are adjusted in the same way.

Pull out overrunning equipment (1) fully in direction of arrow.

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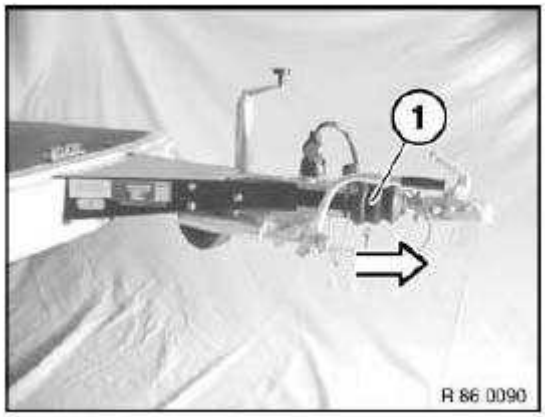


Fig. 5: Identifying Overrunning Equipment
Courtesy of BMW OF NORTH AMERICA, INC.

Reversing lever (1) must rest directly on inner lying tow tube of overrunning brake.

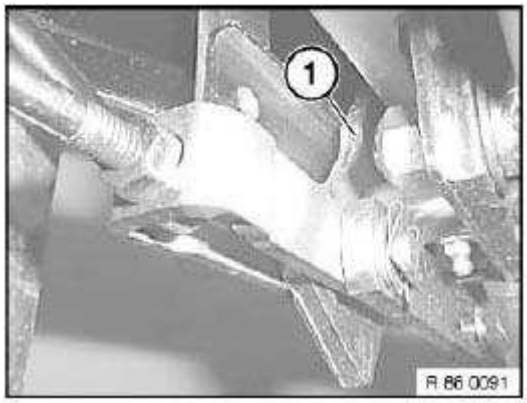
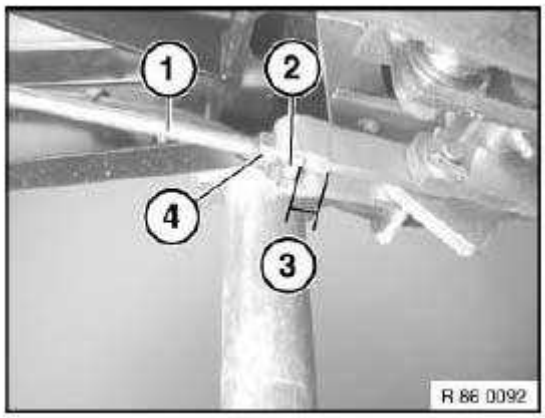


Fig. 6: Identifying Reversing Lever
Courtesy of BMW OF NORTH AMERICA, INC.

Screw brake linkage (1) into nut (2) until distance (3) (nut (2) - end of brake linkage (1)), is 10 - 15 mm. Lock brake linkage (1) in position with nut (4). Check distance (3) and nuts (2, 4) with brake linkage installed.



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Fig. 7: Identifying Screw Brake Linkage & Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Insert pull rod (1) in brake compensator (2) and screw nut (3) onto pull rod (2).

Tighten nut (3) until pull rod (1) is free of play.

Check pull rod (1) already fitted for zero play.

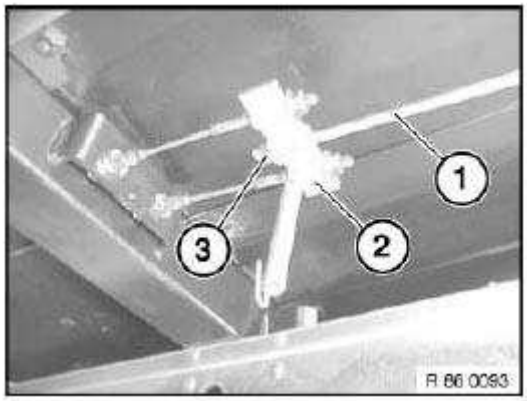


Fig. 8: Identifying Pull Rod, Brake Compensator & Screw Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Hook tension spring (1) to tension spring mount (2).

Installation:

The brake shoes are adjusted in two work steps. In the first step, the distance between the lower half of the brake shoes and the brake drum is adjusted. In the second step, the distance between the upper half of the brake shoes and the brake drum is adjusted.

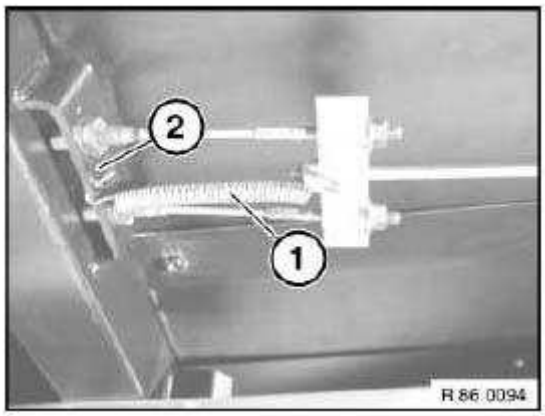


Fig. 9: Identifying Hook Tension Spring & Tension Spring Mount
Courtesy of BMW OF NORTH AMERICA, INC.

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Rotate road wheel (1) in direction of travel and simultaneously turn adjusting screw (2) in direction of arrow.

Tighten adjusting screw (2) until road wheel (1) can no longer be turned.

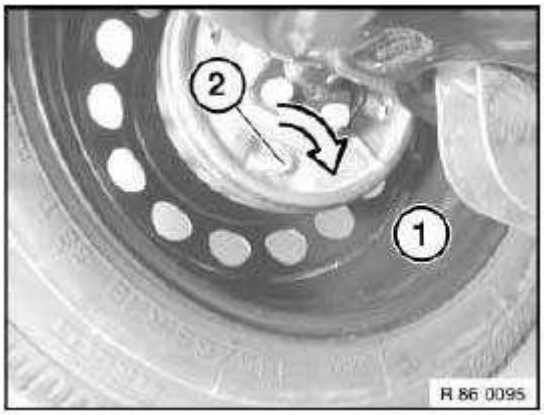


Fig. 10: Identifying Adjusting Screw & Road Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

Turn adjusting screw (1) in direction of arrow and release slowly until road wheel (2) can rotate.

Finish adjustment procedure when slight grinding noises can be heard in lower brake shoe halves.

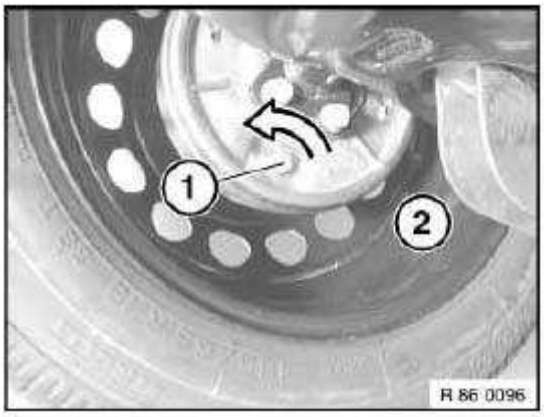


Fig. 11: Identifying Adjusting Screw & Road Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

Firmly tighten handbrake lever three to five times.

Depending on road wheel side, tighten nut (1) or (2) until slight grinding noises can be heard in upper brake shoe halves.

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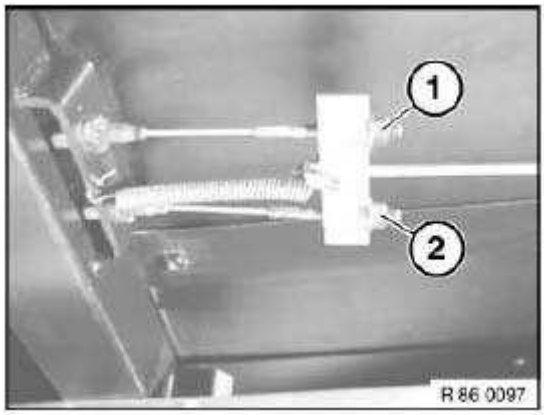


Fig. 12: Identifying Depending On Road Wheel Side, Nut
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... ADJUSTING SPRING FORCE ACCUMULATOR

The spring force accumulator requires no maintenance and generally does not need to be readjusted.

Adjustment dimension, spring force accumulator: distance between end of support tube-internal washer (1) is 90 mm.

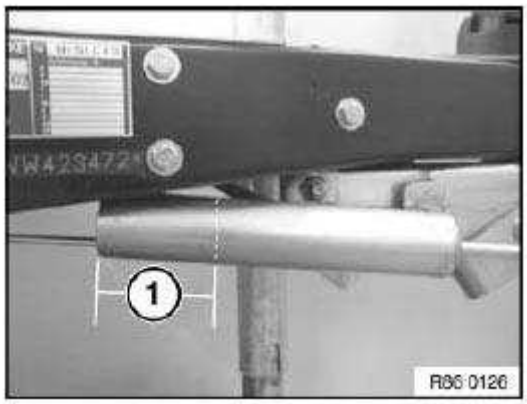


Fig. 13: Identifying Distance Between End Of Support Tube-Internal Washer
Courtesy of BMW OF NORTH AMERICA, INC.

To tension spring force accumulator: turn nut (2) located in support tube (1) clockwise.

To relieve tension on spring force accumulator: turn nut (2) located in support tube (1) counterclockwise.

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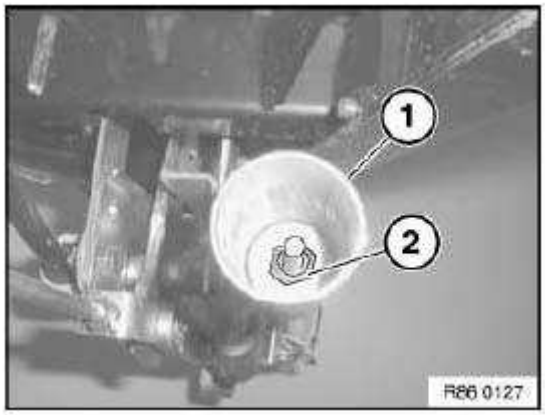


Fig. 14: Identifying Support Tube & Nut
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF CAMLOCK RETAINING CAM

Unscrew bolts (1).

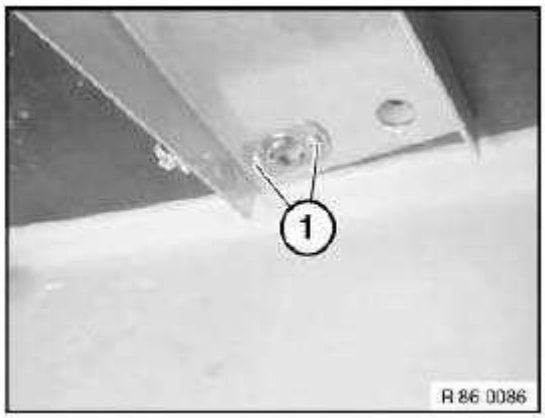


Fig. 15: Identifying Camlock Retaining Cam Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF BASE PLATE

NOTE: **Disassembly of bar, refer to 86 10 ... REPLACING BAR**

Disassembly of lashing plate, refer to 86 10 ... REPLACING LASHING PLATE AND LASHING EYE.

Disassembly of 12 volt socket, refer to 86 10 ... REPLACING 12 VOLT SOCKET

Remove plastic bush/metal bush, refer to 86 10 ... REMOVING PLASTIC BUSH/METAL BUSH.

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Disassembly of light guard, refer to 86 10 ... REPLACING REAR LIGHT

Disassembly of front apron, refer to 86 10 ... DISASSEMBLY OF FRONT APRON

Disassembly of left and right aprons, refer to 86 10 ... DISASSEMBLY OF LEFT AND RIGHT APRONS

Disassembly of left and right wheel boxes, refer to 86 10 ... DISASSEMBLY OF LEFT AND RIGHT WHEEL BOXES

Disassembly of rear apron, refer to 86 10 ... DISASSEMBLY OF REAR APRON

Disassembly of left and right lamp housings, refer to 86 10 ... DISASSEMBLY OF LEFT AND RIGHT LAMP HOUSINGS

Disassembly of rivet connection, rear support: refer to Disassembly procedure of rivet connection, rear support, see 86 10 ... REMOVING REAR SUPPORTS AND BRACKET

Unscrew bolts (1).

CAUTION: Before drilling out rivet heads, drive in rivet pins with a punch.

Drill out rivet connections (2).

Installation:

Tightening Torque: 86 10 32AZ, see **86 10 PLATFORM** .

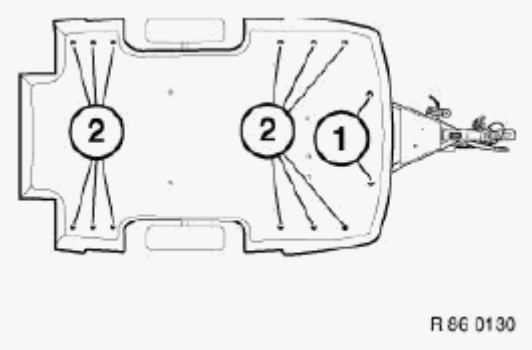


Fig. 16: Identifying Bolts & Rivet Connections
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF BRACKET ON PLATFORM BASE

Unscrew bolts (1).

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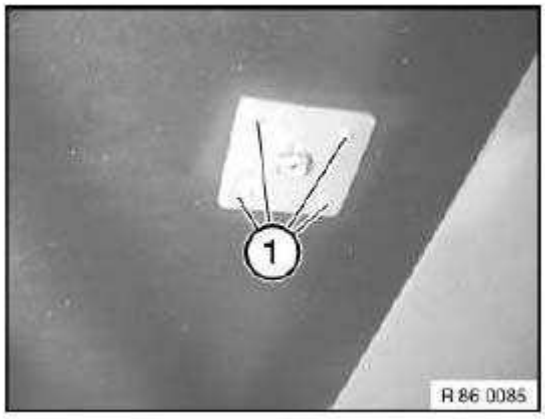


Fig. 17: Identifying Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF FRONT APRON

Drill out rivets (1) on lower apron edge.

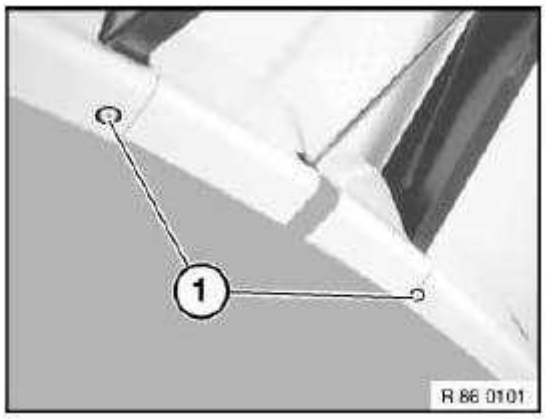


Fig. 18: Identifying Rivets On Lower Apron Edge
Courtesy of BMW OF NORTH AMERICA, INC.

Remove sealing compound (1).

Drill out rivets (2).

Installation:

Use Sikaflex 221 as sealing compound.

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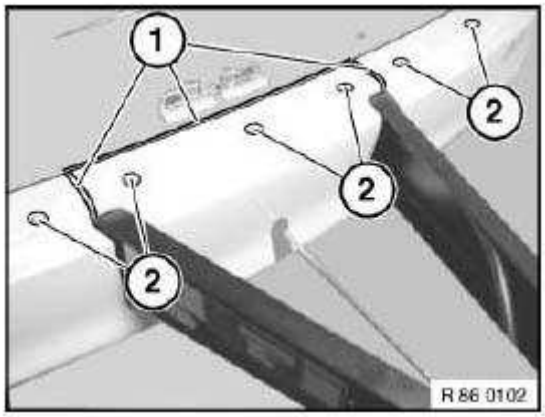


Fig. 19: Identifying Sealing Compound & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Press side sections (1) to side in direction of arrow. Tilt center section (2) downwards and remove to side.

Installation:

Use Sikaflex 221 as sealing compound.

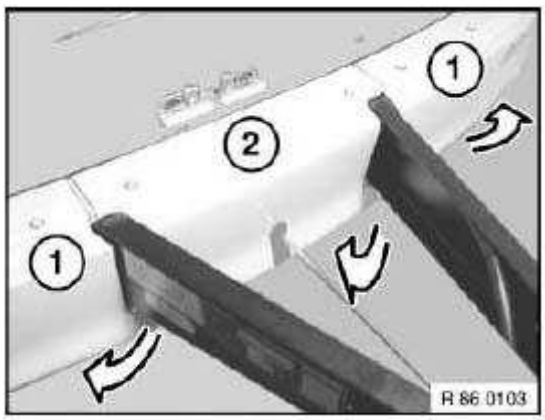


Fig. 20: Press Side Sections To Side And Tilt Center Section Downward
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF FRONT PROTECTION BAR

Release screws (1) on cross-member (2).

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 4AZ, see **86 10 PLATFORM** .

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Installation:

Tightening Torque: 86 10 5AZ, see **86 10 PLATFORM** .

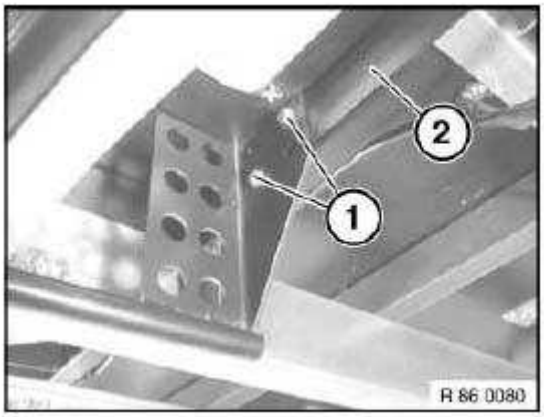


Fig. 21: Identifying Screws On Cross-Member
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on longitudinal member (2).

Installation:

Tightening Torque: 86 10 5AZ, see **86 10 PLATFORM** .

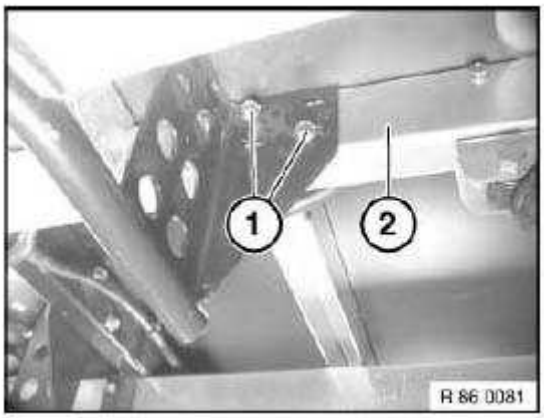


Fig. 22: Identifying Screws On Longitudinal Member
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF JOCKEY WHEEL OR JOCKEY WHEEL MOUNT

Turn clamping lever (1) in direction of arrow and release clamping connection. Open clamping bracket (2) and remove jockey wheel (3). Release screws on mount (4) and remove screws.

Installation:

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Tightening Torque: 86 10 11AZ, see **86 10 PLATFORM** .

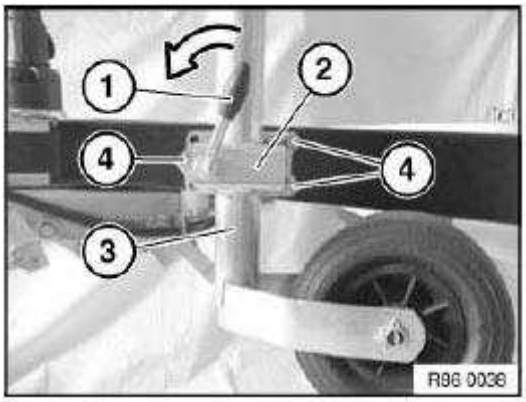


Fig. 23: Identifying Clamping Lever & Jockey Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF LEFT AND RIGHT APRONS

NOTE: Remove position light, refer to 86 10 ... REPLACING POSITION LIGHT.

Remove rear light, refer to 86 10 ... REPLACING REAR LIGHT.

Remove plastic bush/metal bush, refer to 86 10 ... REMOVING PLASTIC BUSH/METAL BUSH.

Drill out rivets (1) on lower apron edge.

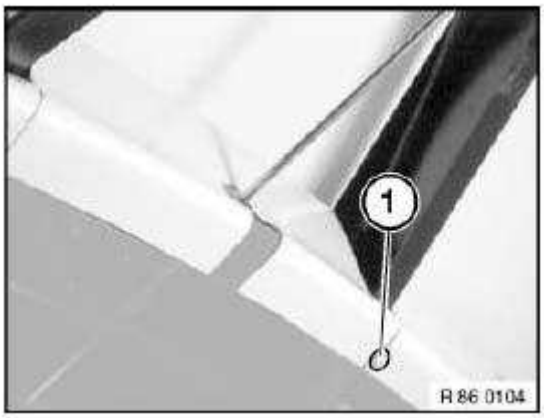


Fig. 24: Identifying Rivets On Lower Apron Edge
Courtesy of BMW OF NORTH AMERICA, INC.

Remove sealing compound (1).

Drill out all rivets (2) along apron edge.

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Installation:

Use Sikaflex 221 as sealing compound.

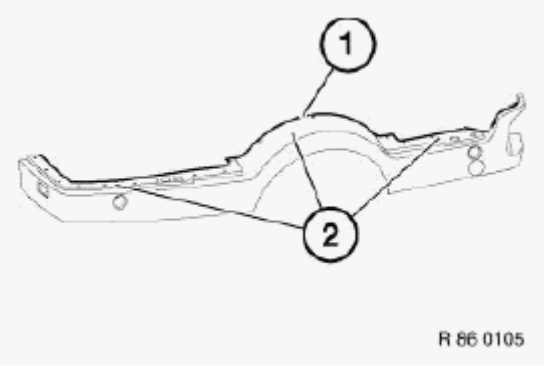


Fig. 25: Identifying Sealing Compound & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Remove sealing compound (1).

Drill out rivets (2) on lower apron edge.

Installation:

Use Sikaflex 221 as sealing compound.

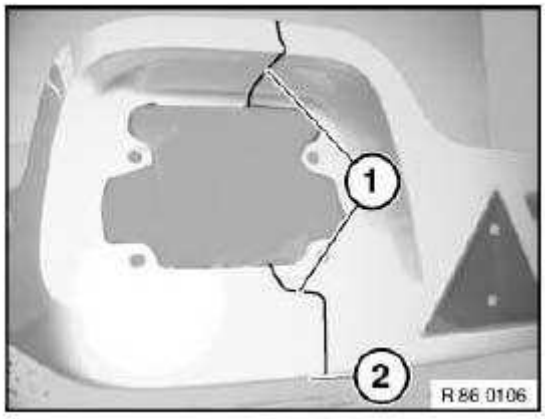


Fig. 26: Identifying Rivets On Lower Apron Edge
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF LEFT AND RIGHT LAMP HOUSINGS

Cut through sealing compound (1) and remove.

Drill out rivet connections (2).

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Installation:

Use Sikaflex 221 as sealing compound.

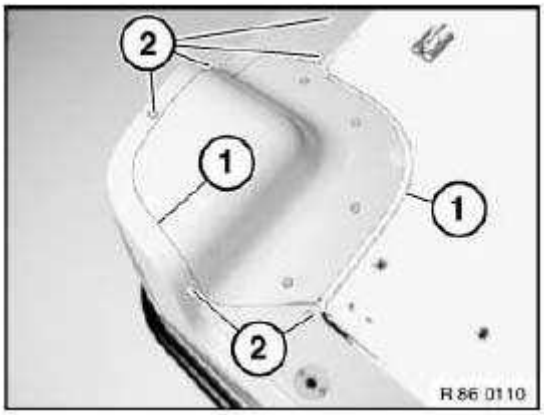


Fig. 27: Identifying Sealing Compound & Rivet Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Drill out rivet connections (1).

Raise side sections (2, 3).

Pull out lamp housing (4) towards inside in direction of platform.

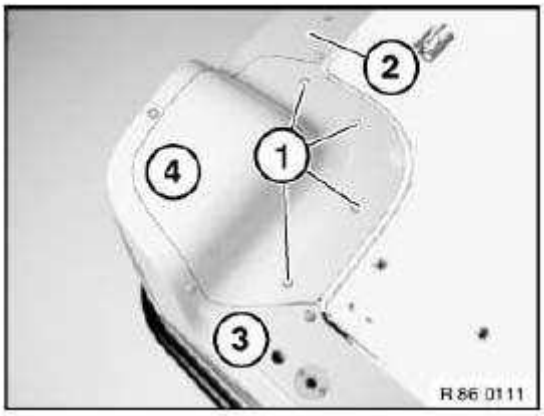


Fig. 28: Identifying Rivet Connections & Raise Side Sections
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF LEFT AND RIGHT WHEEL BOXES

Remove sealing compound (1).

Drill out rivets (2).

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Raise side apron (3). Pull out wheel box (4) towards rear.

Installation:

Use Sikaflex 221 as sealing compound.

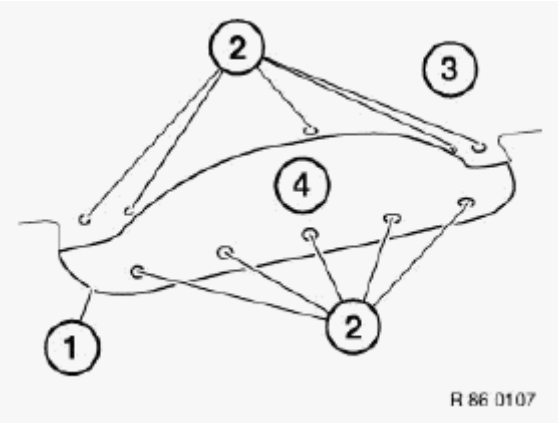


Fig. 29: Identifying Sealing Compound, Raise Side Apron & Wheel Box
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF LICENSE PLATE MOUNTING PLATE

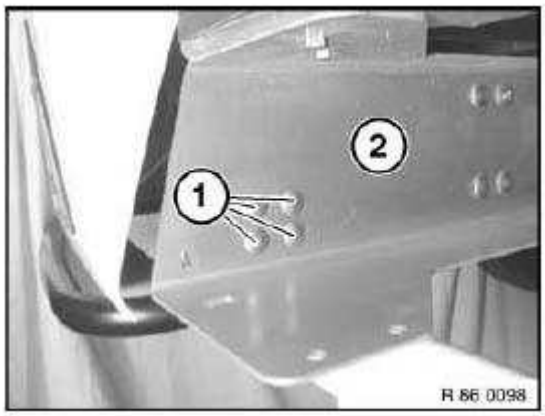
CAUTION: Once the connecting screws (1) have been removed, the closing spring of the hinge retracts. Risk of trapping!

Release screws (1) in loading ramp frame (2) on left and right sides.

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 7AZ, see **86 10 PLATFORM** .



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Fig. 30: Identifying Screws In Loading Ramp Frame
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF LOADING RAMP FRAME/DISASSEMBLY OF RAIL, LEFT/RIGHT

NOTE: Two persons are required to disassemble the loading ramp frame.

Disassembly of license plate mounting plate, refer to 86 10 ... Disassembly of licence plate mounting plate

Disassembly of pull rod, refer to 86 10 ... Removing overrunning equipment/maintaining or replacing guide bush/installing overrunning equipment.

Release screws (1) of loading ramp frame (2) on cross-strut (3).

Installation:

Tightening Torque: 86 10 7AZ, see **86 10 PLATFORM** .

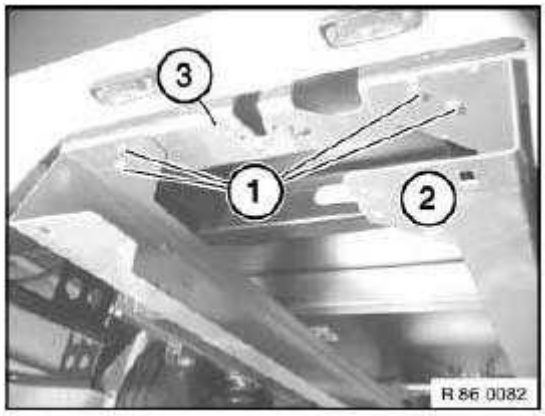


Fig. 31: Identifying Loading Ramp Frame On Cross-Strut
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1, 2) on left and right sides of loading ramp frame (3).

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 8AZ, see **86 10 PLATFORM** .

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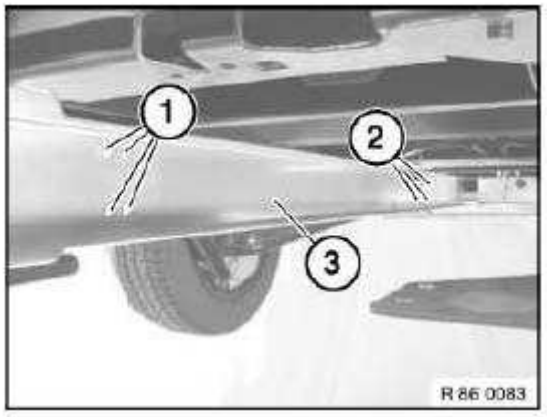


Fig. 32: Identifying Screws On Loading Ramp Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1, 2, 3).

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 9AZ, see **86 10 PLATFORM** .

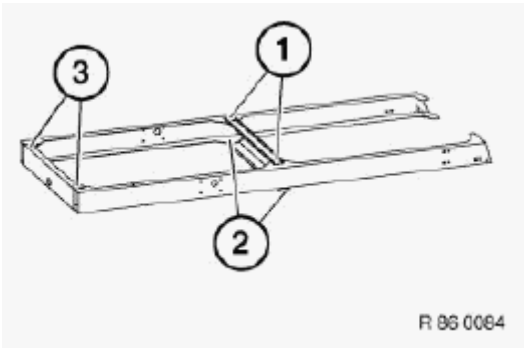


Fig. 33: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISASSEMBLY OF REAR APRON

NOTE: Remove rear light, refer to 86 10 ... REPLACING REAR LIGHT.

Remove plastic bush/metal bush, refer to 86 10 ... REMOVING PLASTIC BUSH/METAL BUSH.

Cut through sealing compound (1) on left and right and remove.

Drill out rivets (2) on left and right sides on lower apron edge.

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Installation:

Use Sikaflex 221 as sealing compound.

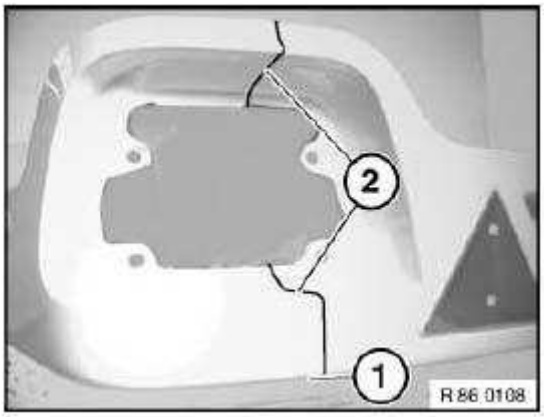


Fig. 34: Identifying Rivets On Lower Apron Edge
Courtesy of BMW OF NORTH AMERICA, INC.

Cut through sealing compound (1) and remove.

Drill out rivets (2).

Installation:

Use Sikaflex 221 as sealing compound.

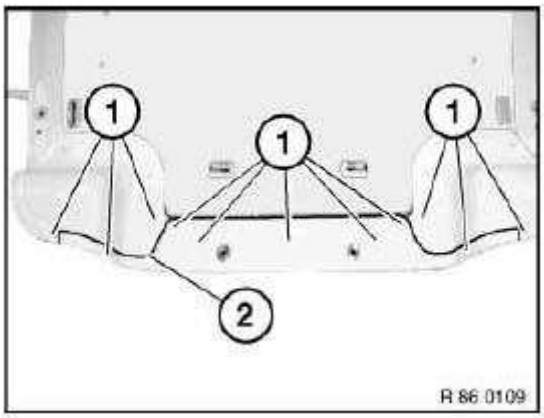


Fig. 35: Identifying Sealing Compound & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... DISCONNECTING PLUG CONNECTION, WIRING HARNESS, FRONT/REAR

Spread levers (1) on socket housing apart in direction of arrow and disconnect female connector (2) in direction of arrow towards bottom.

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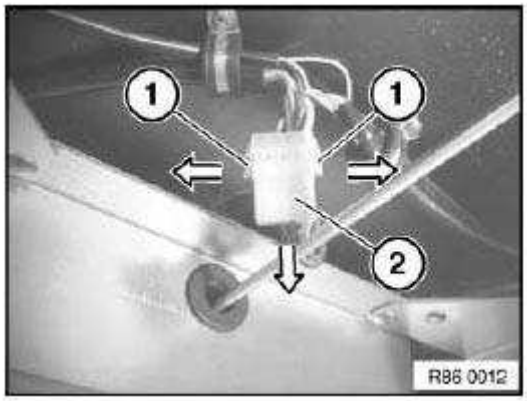


Fig. 36: Identifying Spread Levers & Female Connector
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... INSTALLATION POSITION OF BMW LETTERING

Top edge of lettering at same height as recess for position light (1).

Distance between drawbar member and lettering (2) is 300 mm.

Installation:

Remove grease from gluing surfaces.

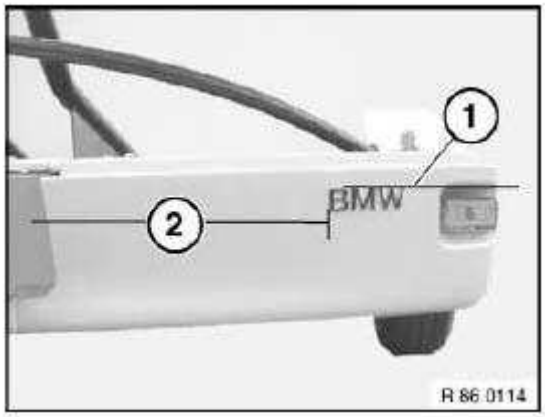


Fig. 37: Identifying Distance Between Drawbar Member & Lettering
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... POSITIONING OF MULTITRAILER HOOD FOR MAINTENANCE AND REPAIR WORK

IMPORTANT: At least two persons are needed to install and remove the hood from the platform.

Before installing and removing the hood, secure the BMW multitrailer and the

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entire combination against rolling. For this purpose, use the parking brake and the chocks of the BMW multitrailer.

The hood can also be set up and lowered with the aid of the universal lift available from BMW in conjunction with the roof racks and the hood adapter. Under no circumstances should work of any kind be carried out below the suspended hood.

For maintenance and repair work, raise the hood using a lifting platform. Twin-column lifting platforms, body lifting platforms and twin-stamp underfloor platforms are suitable. The seating plates and areas of the lifting platform must be adjustable according to the dimensions of **Fig. 38**.

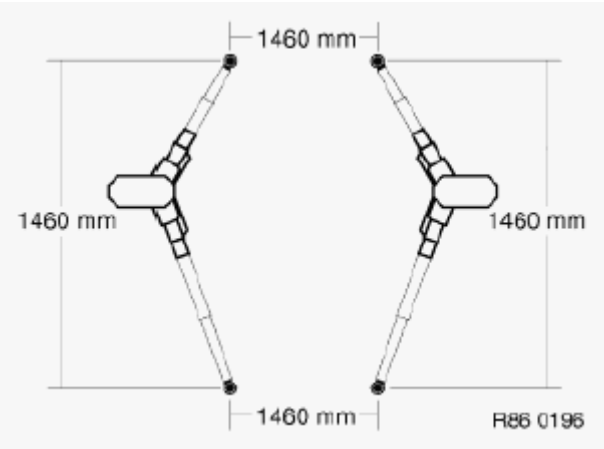


Fig. 38: Identifying Lifting Platform Adjustable Dimensions
Courtesy of BMW OF NORTH AMERICA, INC.

The lifting platform must conform to the relevant legal provisions of the accident prevention regulations and be serviced as specified. Comply with the lifting platform operating instructions, in particular the safety instructions and the carrying capacity.

Make sure you adhere to the BMW-recommended work area of 5 x 7 m and to an escape route of 0.6 m between two lifting platforms.

Please comply with the following instructions before raising the hood:

- Raise only when it is unloaded;
- Ensure sufficient clearance between the seating plates/seating areas and the GFP edge of the hood;
- The hood must always be positioned in the middle of the lifting platform.

IMPORTANT: The hood may only be raised at the pin (1). Under no circumstances may the hood be raised at the GFP edge of the hood (2). See Fig. 39. Exclusively for removal of pin (1), raise the hood in the GFP area.

Also refer to: 86 21 ... Removing centering pin from mounting bracket

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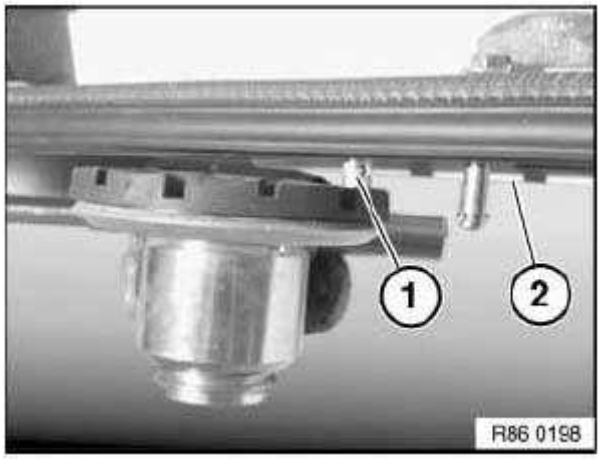


Fig. 39: Identifying Centering Pin & Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING CAMLOCK RETAINING CAM ON LOADING RAMP

Drill out rivets (1).

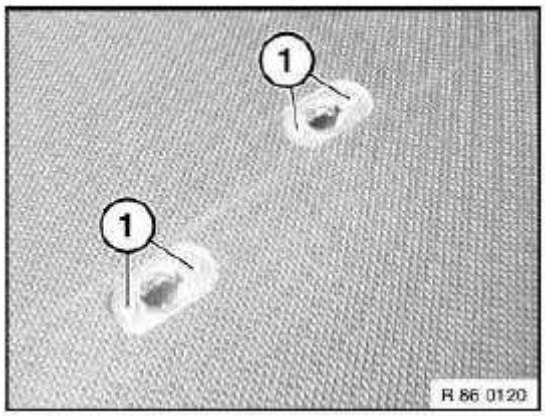


Fig. 40: Identifying Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING CAMLOCK SCREW CAP

Bend back edges (1) of tab washer (2). Remove tab washer (2) over cross pin (3) towards bottom.

Installation:

Replace lockplate.

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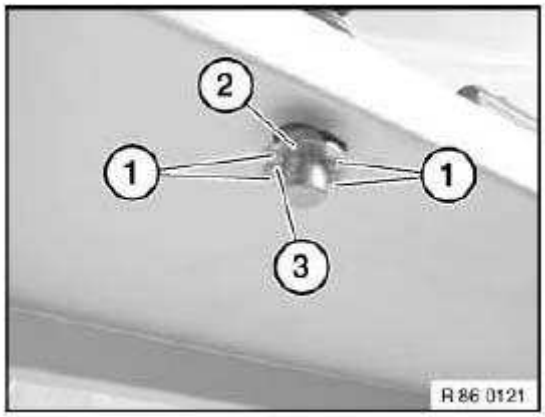


Fig. 41: Bend Back Edges Of Tab Washer
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING AND INSTALLING OR REPLACING LEFT OR RIGHT COIL SPRING

Release screw (1) and remove, tilt shock absorber (2) in direction of arrow towards rear.

Installation:

Use new self-locking nut.

Hold shock absorber vertically and protective cap points upwards. Completely press in shock absorber once and pull out up to required installation length. Do not tilt shock absorber further than is needed for installation.

Tightening Torque: 86 10 21AZ, see **86 10 PLATFORM** .

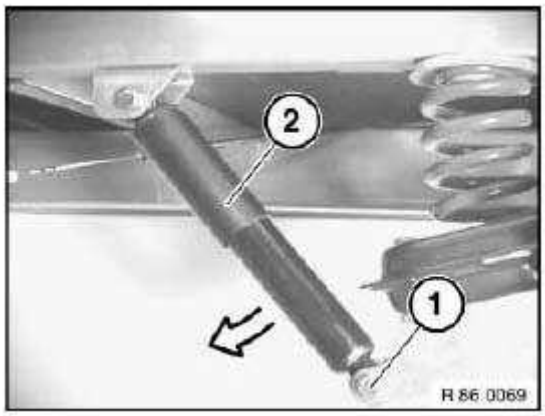


Fig. 42: Remove Screw & Tilt Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.

The trailing arm folds down once the coil spring on the arm has been released.

No persons should be located underneath trailing arm. Risk of injury!

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Release screw (1) between trailing arm (2) and coil spring.

Installation:

Tightening Torque: 86 10 22AZ, see **86 10 PLATFORM** .

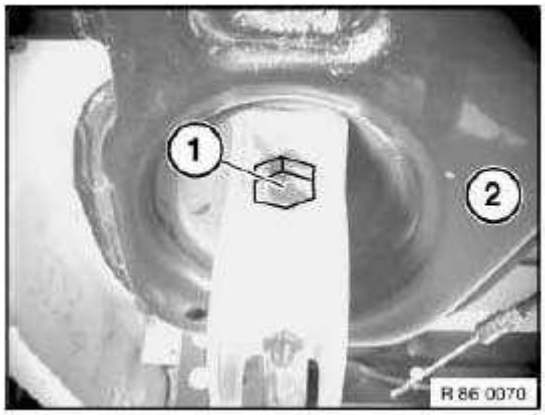


Fig. 43: Identifying Screw & Trailing Arm
Courtesy of BMW OF NORTH AMERICA, INC.

Remove pressure plate (1) from coil spring (2).

Installation:

Use pressure plate with nut.

Fit pressure plate (1) according to its shape (3) into pressure spring (2).

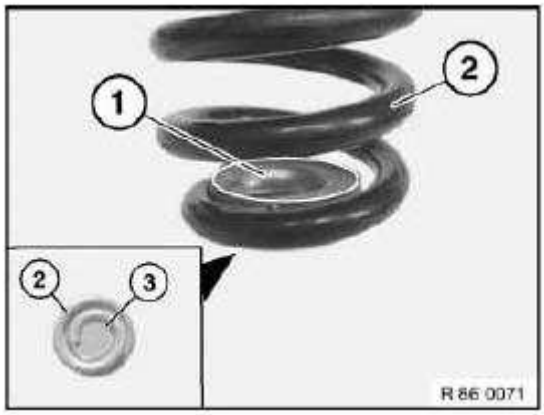


Fig. 44: Identifying Pressure Plate & Coil Spring
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) between coil spring (2) and longitudinal member (3). Remove small pressure plate (4) and large pressure plate (5).

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Installation:

Use pressure plate without nut.

Fit small pressure plate (4) according to its shape (6) into pressure spring (2).

Tightening Torque: 86 10 23AZ, see **86 10 PLATFORM** .

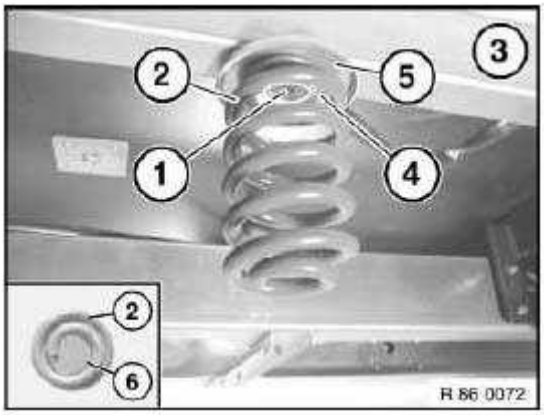


Fig. 45: Identifying Screw Between Coil Spring & Longitudinal Member
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Two persons are needed to install the coil spring correctly. One person presses down the pressure plate (2) seated inside the coil spring (1) and tightens the coil spring (1)/trailing arm (3) screw connection. At the same time, the second person levers the coil spring (1) with a screwdriver into its correct seat.

For coil spring (1)/trailing arm (3), Tightening Torque: 86 10 22AZ, see **86 10 PLATFORM** .

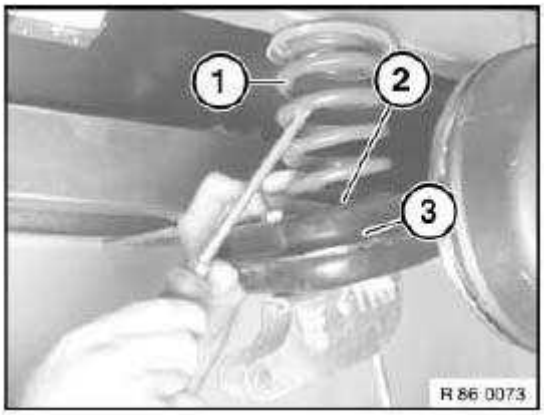


Fig. 46: Identifying Coil Spring & Pressure Plate
Courtesy of BMW OF NORTH AMERICA, INC.

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86 10 ... REMOVING BOLT ON LOADING RAMP

Insert a drift into hole (1) of bolt (2) and turn clockwise.

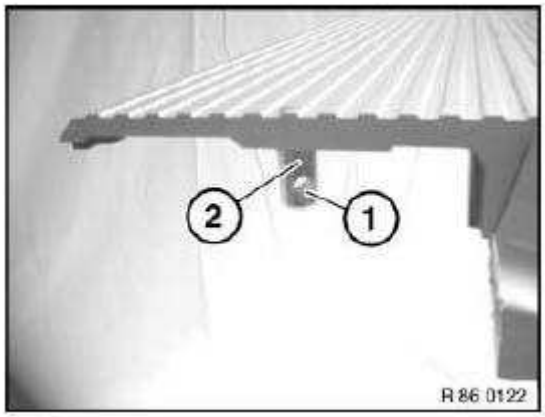


Fig. 47: Identifying Bolt On Loading Ramp
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING BRAKE SHOES

The wheels of the multi-trailers must be able to rotate freely. Adjust and check brake system after installing brake shoes.

Unhook tension spring (1) from tension spring mount (2).

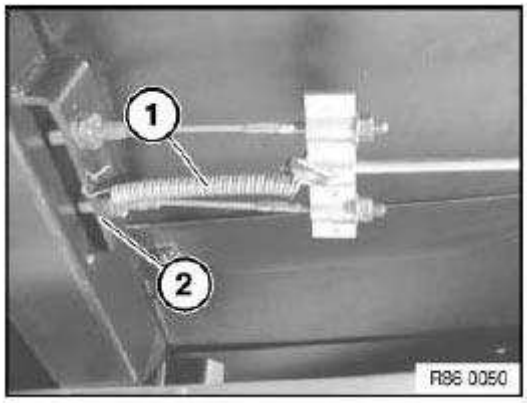


Fig. 48: Identifying Tension Spring & Tension Spring Mount
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Once nut (1) of pull rod (2) has been released, do not move handbrake lever. Handbrake lever can flick upwards.

Release nut (1) on pull rod (2) and remove hexagon nut. Slide brake compensator (3) towards rear.

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Installation:

Use new self-locking nut.

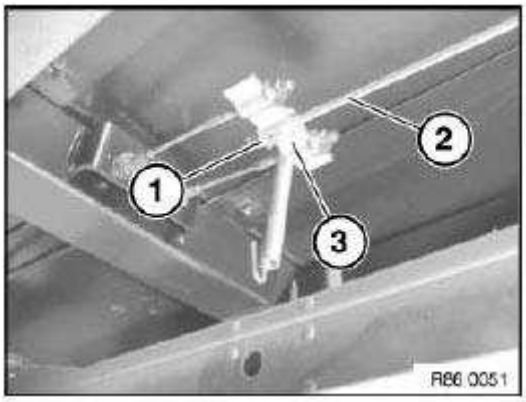


Fig. 49: Identifying Nut On Pull Rod
Courtesy of BMW OF NORTH AMERICA, INC.

Grip openings (1) in wheel trim (2) with both hands and pull off wheel trim (2).

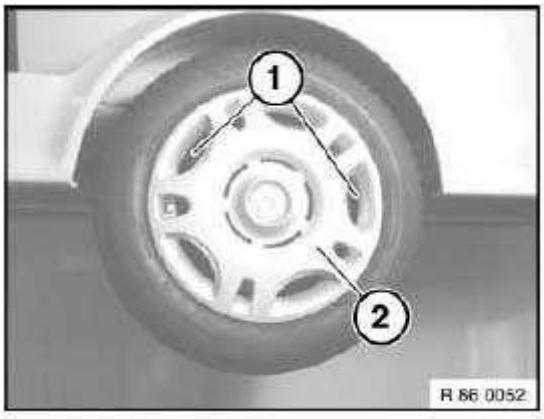


Fig. 50: Identifying Grip Openings & Wheel Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Release wheel bolts (1) and remove disk wheel (2).

Installation:

Tightening Torque: 86 10 19AZ, see **86 10 PLATFORM** .

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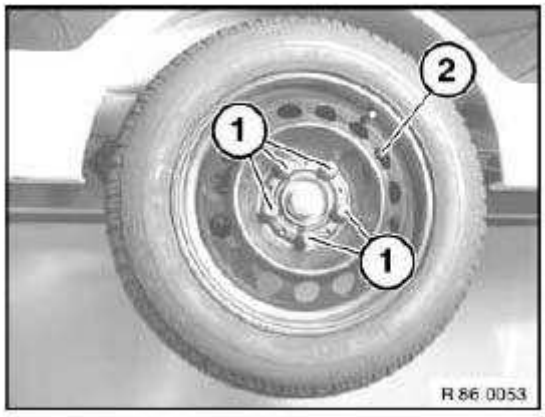


Fig. 51: Identifying Wheel Bolts & Disk Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

Turn brake shoe adjusting screw (2) on brake carrier (1) in direction of arrow and release fully. The brake shoes do not rest against the drum.

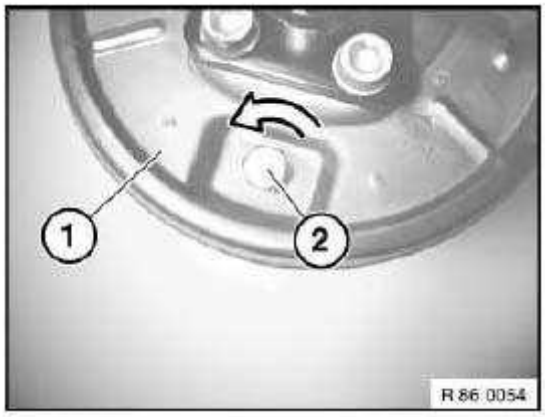


Fig. 52: Identifying Brake Shoe Adjusting Screw On Brake Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Lever off cap (1).

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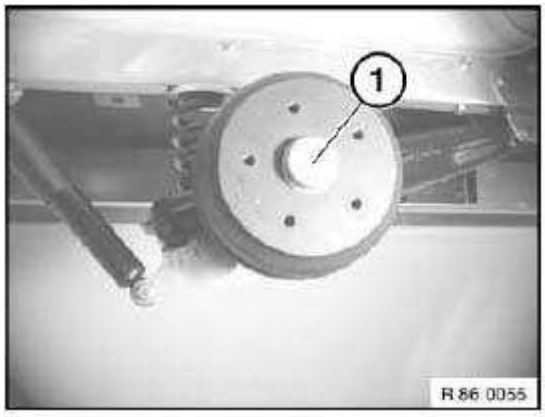


Fig. 53: Levering Off Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Release nut (1) and remove. Pull off brake hub (2) with both hands.

Installation:

Only a new nut is permitted for reinstallation.

Tightening Torque: 86 10 20AZ, see **86 10 PLATFORM** .

Do not screw off brake hub under any circumstances.

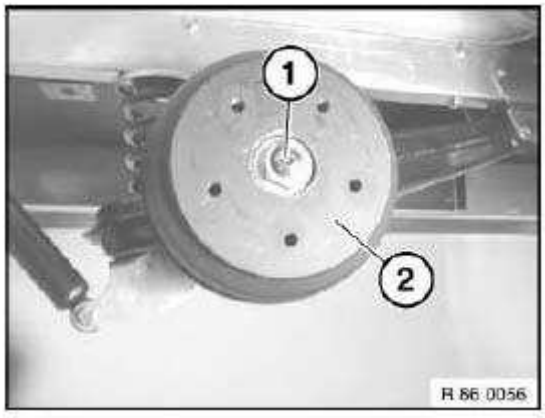


Fig. 54: Identifying Nut & Brake Hub
Courtesy of BMW OF NORTH AMERICA, INC.

This procedure is not necessary for removing the brake shoes.

Push back cable (1).

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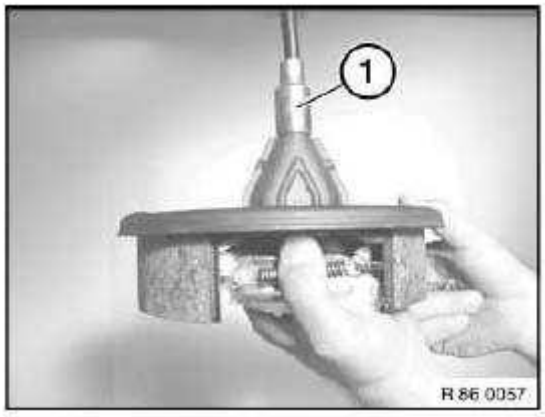


Fig. 55: Identifying Back Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Remove shell (1).

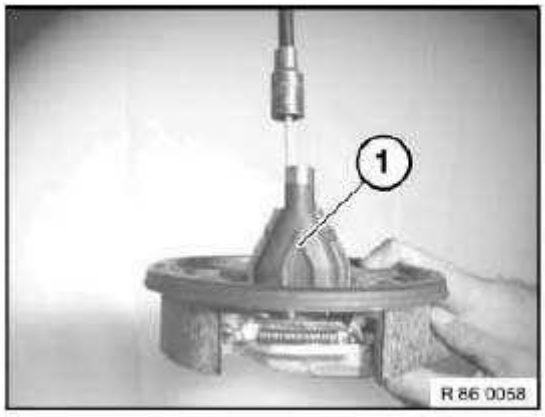
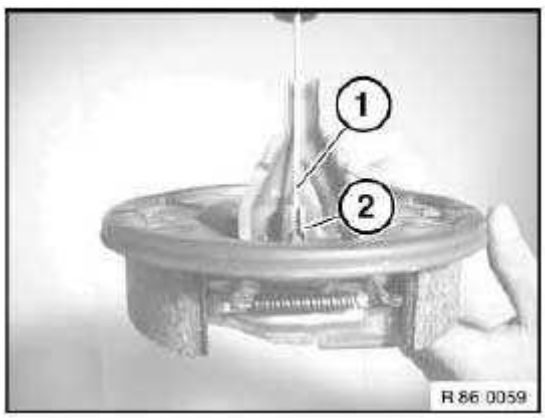


Fig. 56: Identifying Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Remove brake cable (1) from mounting (2).



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Fig. 57: Identifying Brake Cable & Mounting
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook pressure spring (1) from fixed brake shoe (2) and brake carrier (3).

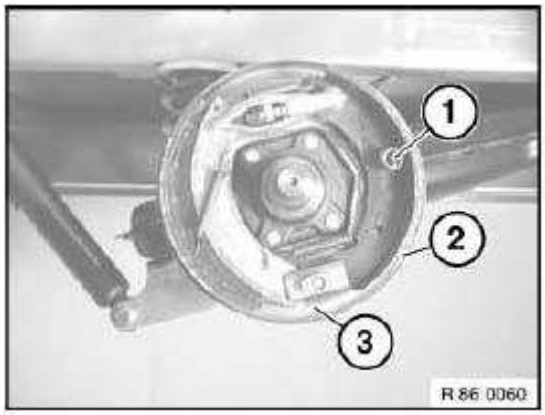


Fig. 58: Identifying Pressure Spring & Fixed Brake Shoe
Courtesy of BMW OF NORTH AMERICA, INC.

Remove tension spring (1) from both brake shoe fixtures (2).

Remove brake lever assembly (3).

Installation:

The fixed part of the brake lever assembly (3) is seated on the moving brake shoe. The moving part of the brake lever assembly is seated on the fixed brake shoe.

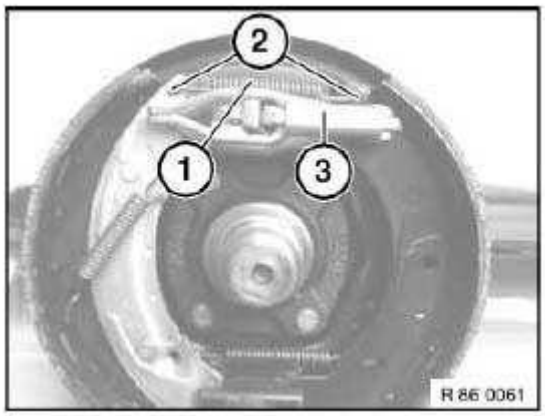


Fig. 59: Identifying Tension Spring & Brake Lever Assembly
Courtesy of BMW OF NORTH AMERICA, INC.

Pull brake shoes (1) apart in direction of arrow, tilt forward and remove from adjustment device (2).

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Installation:

Always replace the four shoes and use the same make.

Minimum lining thickness: 1.5 mm

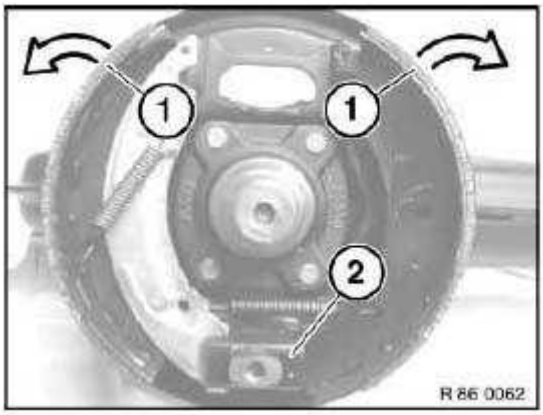


Fig. 60: Identifying Brake Shoes & Adjustment Device
Courtesy of BMW OF NORTH AMERICA, INC.

Check adjustment device (1).

Check wedge (2) and setting pins (3) for ease of movement and wear.

Apply grease if necessary.

Check brake cables for ease of movement and wear.

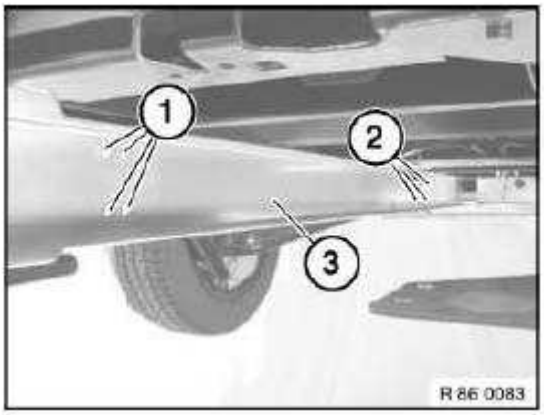


Fig. 61: Identifying Screws On Loading Ramp Frame
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING ENTRY PROFILE SECTION ON LOADING RAMP, LEFT, RIGHT AND CENTER

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CAUTION: Before drilling out rivets, drive in rivet pins with a punch.

Drill out rivets (1). Remove entry profile section (2) towards front.

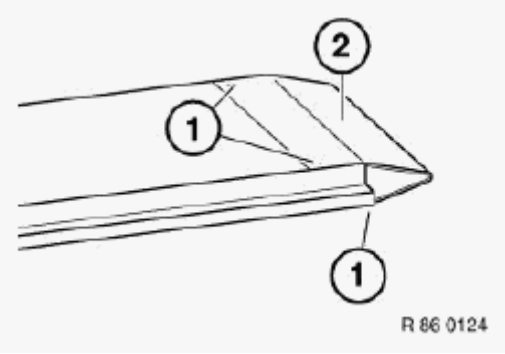


Fig. 62: Identifying Entry Profile Section On Loading Ramp
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING LEFT OR RIGHT SHOCK ABSORBER

Inspect the shock absorber while installed to ascertain whether it needs to be replaced.

Replace shock absorber if it is leaking. Replace shock absorber if it can be easily pushed in or pulled out when removed.

Release screw (1) and remove. Tilt shock absorber in direction of arrow. Release screw (2) and remove shock absorber.

Installation:

Hold shock absorber vertically: protective cap points upwards. Completely press in shock absorber once and pull out up to required installation length. Do not tilt shock absorber further than is needed for installation.

Tightening Torque: 86 10 21AZ, see **86 10 PLATFORM** .

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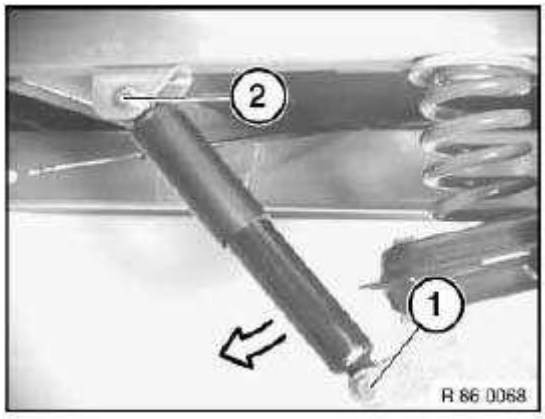


Fig. 63: Identifying Screw & Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING LOADING RAMP LOCK

Unscrew bolts (1).

Installation:

Tightening Torque: 86 10 28AZ, see **86 10 PLATFORM** .

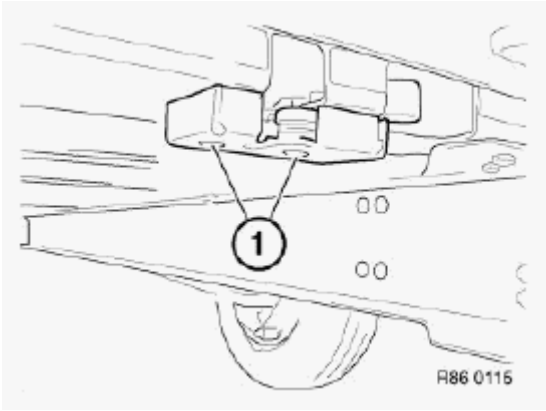


Fig. 64: Identifying Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

Pass lever (1) of rotary striker lock (2) out of square hole (3) by twisting from side to side.

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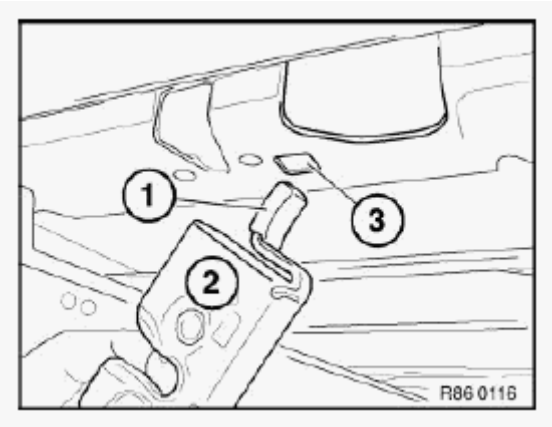


Fig. 65: Identifying Rotary Striker Lock & Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew bolts (1).

Installation:

Opening for securing clip (2) points to front or rear.

Square-head nut (3) rests with its square surface parallel to bearing pedestal (4).

Tightening Torque: 86 10 29AZ, see **86 10 PLATFORM** .

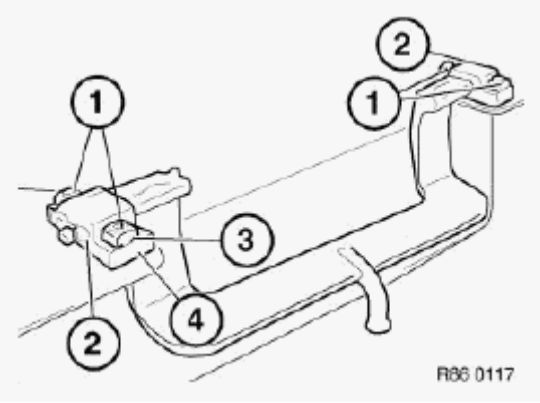


Fig. 66: Identifying Square-Head Nut & Bearing Pedestal
Courtesy of BMW OF NORTH AMERICA, INC.

Raise edge (1) of securing clip and slide in direction of arrow towards rear.

Detach bearing pedestal (2).

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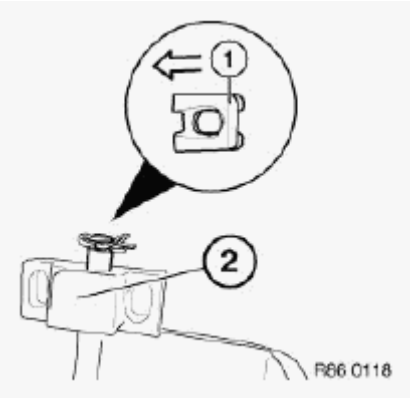


Fig. 67: Identifying Raised Edge & Bearing Pedestal
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Install bearing pedestal (1) on stub (3) of locking bracket (3).

Off-center bore (4) in bearing pedestal (1) points with short distance (A) to locking bracket (3).

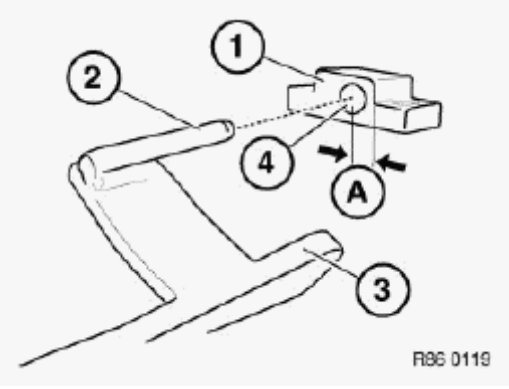


Fig. 68: Identifying Bearing Pedestal On Stub
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING MOUNTING BRACKET SEALING CAP

Cut out mounting bracket (3) along markings (1, 2) and lever out of apron (4).

Installation:

For gluing, use two-component adhesive ICEMA R 101 and hardener 7.

Mixture ratio: ICEMA R 101 7 parts; hardener 7 1 part.

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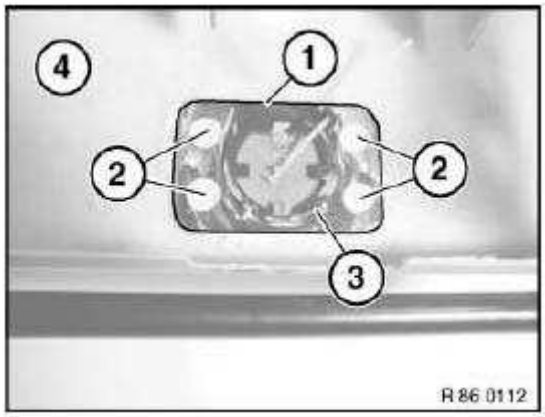


Fig. 69: Identifying Mounting Bracket Sealing Cap
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING MOUNTING BRACKET, CENTER, LEFT AND RIGHT

NOTE: Disassembly of Camlock retaining cam

refer to 86 10 ... DISASSEMBLY OF CAMLOCK RETAINING CAM

Unscrew bolts (1).

Installation:

Tightening Torque: 86 10 31AZ, see **86 10 PLATFORM** .

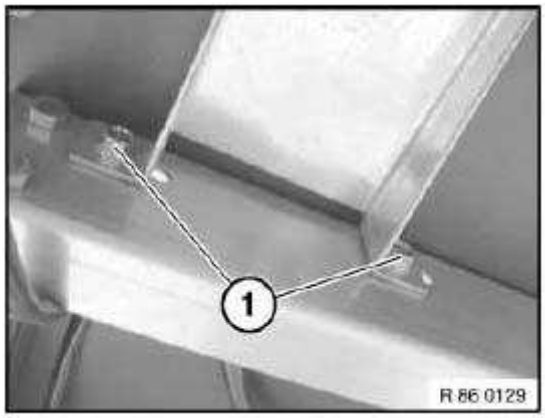


Fig. 70: Identifying Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING OUTER PULL ROD MOUNT, LEFT AND RIGHT

Release screws (1) and remove pull rod mount (2).

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Installation:

Tightening Torque: 86 10 30AZ, see **86 10 PLATFORM** .

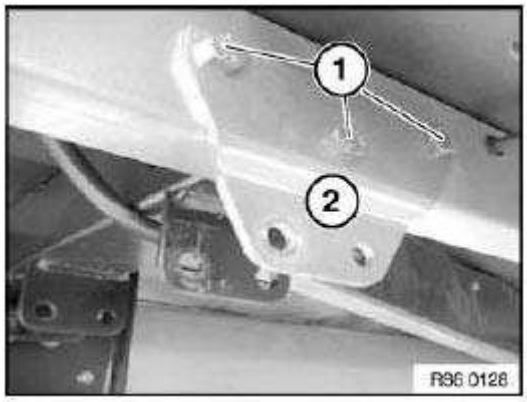


Fig. 71: Identifying Screws & Pull Rod Mount
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING OVERRUNNING EQUIPMENT/MAINTAINING OR REPLACING GUIDE BUSH/INSTALLING OVERRUNNING EQUIPMENT

After installing overrunning equipment, readjust brake system, refer to **86 10 ... ADJUSTING BRAKE SYSTEM**

Check the guide bush while installed to ascertain whether it needs to be replaced. Raise ball end area and replace guide bush if play is detected in ball end area.

NOTE: After installing, readjust and check brake system.

Release round head screws (1) and remove running board (2) towards top.

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 10AZ, see **86 10 PLATFORM** .

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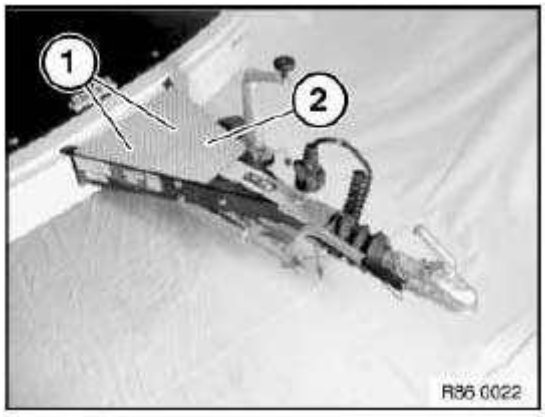


Fig. 72: Identifying Round Head Screws & Running Board
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook tension spring (1) from tension spring mount (2).

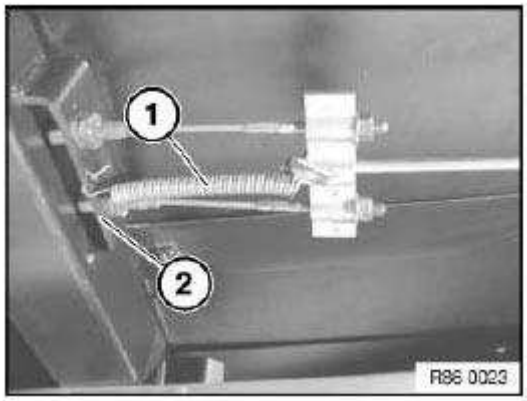


Fig. 73: Identifying Tension Spring & Tension Spring Mount
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Once nut (1) of pull rod (2) has been released, do not move handbrake lever. Handbrake lever can flick upwards.

Release screw (1) on pull rod (2) and remove hexagon nut. Slide brake compensator (3) towards rear.

Installation:

Use new self-locking nut.

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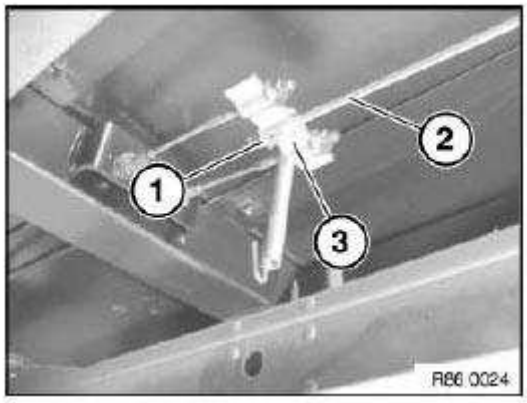


Fig. 74: Identifying Brake Compensator, Screw & Rod
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on jockey wheel mount and remove.

Release wiring harness mount (2) and remove. Reinstall screw and tighten until hand-tight.

Installation:

Tightening Torque for jockey wheel mount (1), 86 10 311AZ, see **86 10 PLATFORM** .

Tightening Torque for wiring harness mount (2), 86 10 12AZ, see **86 10 PLATFORM** .

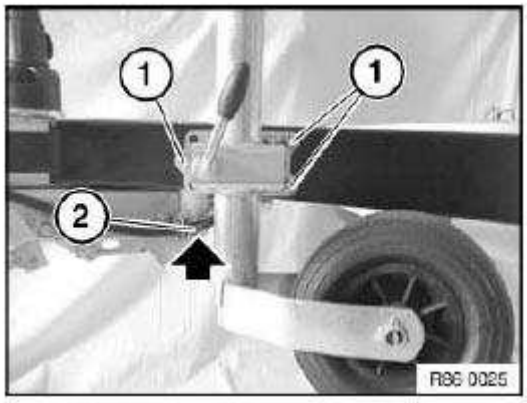


Fig. 75: Identifying Wiring Harness Mount & Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw on socket holder (1) and remove. Cut through strap (2) and lay wiring harness to one side. Pull gaiter (3) in direction of arrow.

Installation:

Use new self-locking nut.

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Tightening Torque: 86 10 13AZ, see **86 10 PLATFORM** .

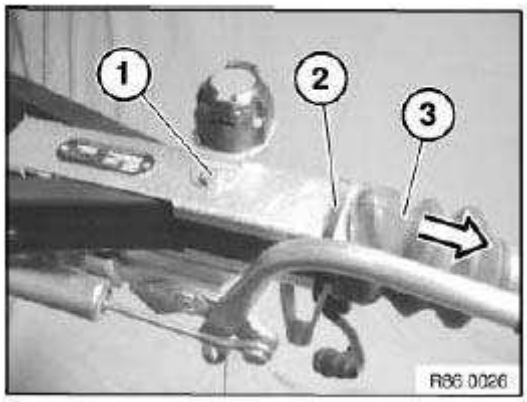


Fig. 76: Pulling Gaiter
Courtesy of BMW OF NORTH AMERICA, INC.

Remove protective caps (1).

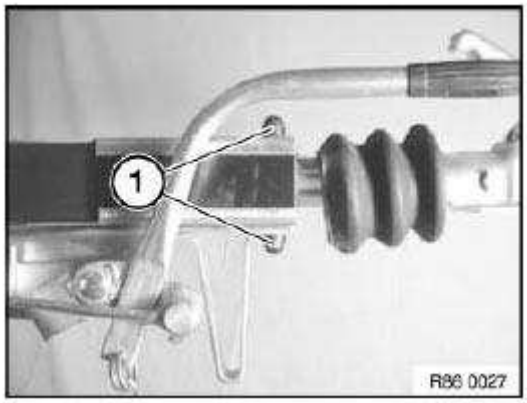


Fig. 77: Identifying Protective Caps
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts (1) and remove.

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 14AZ, see **86 10 PLATFORM** .

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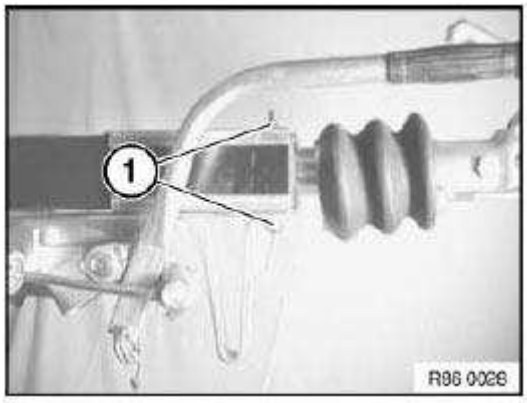


Fig. 78: Identifying Self-Locking Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Tilt top reversing housing (1) in direction of arrow towards rear. Slide out top reversing housing (1) and bottom reversing housing with handbrake lever unit (2) in direction of arrow towards rear.

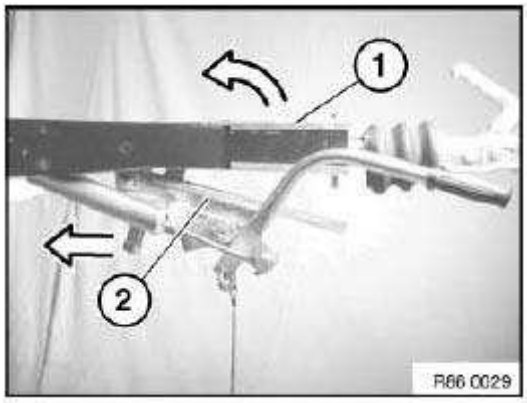
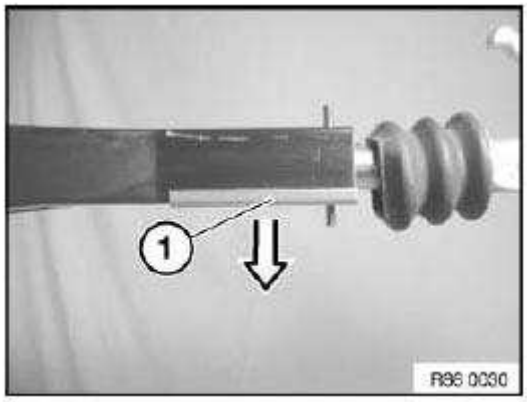


Fig. 79: Sliding Out Top Reversing Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Remove holder (1) towards bottom.



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Fig. 80: Removing Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Pull drawbar member (1) in direction of arrow and pull out overrunning equipment (2) in direction of arrow towards front.

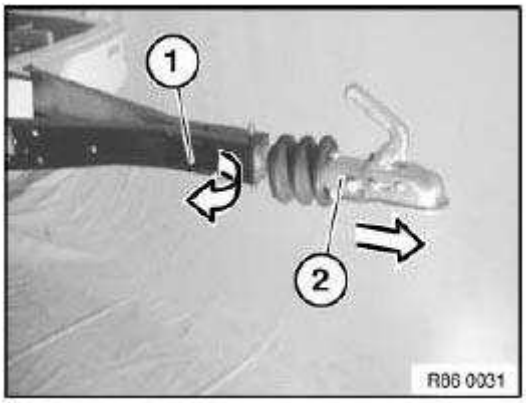


Fig. 81: Removing Overrunning Equipment
Courtesy of BMW OF NORTH AMERICA, INC.

Remove spacer tubes (1) and threaded pins (2) from guide bush (3).

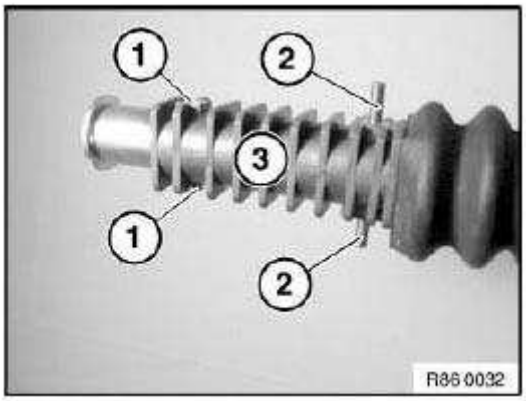


Fig. 82: Identifying Spacer Tubes, Threaded Pins & Guide Bush
Courtesy of BMW OF NORTH AMERICA, INC.

Press pins (1) inwards. Detach counter support (2) and guide bush (3).

Maintenance:

Grease tow tube (4) and attach guide bush (3).

Installation:

Secure counter support (2) with new clamping sleeves to tow tube (4).

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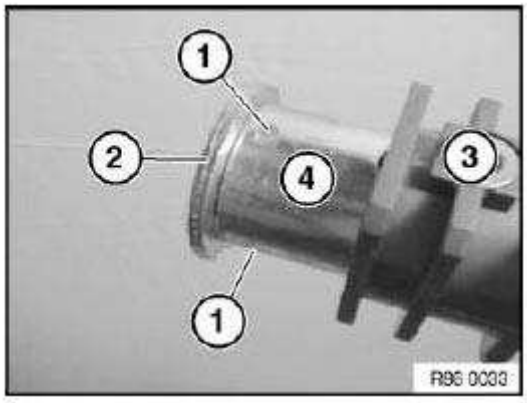


Fig. 83: Identifying Pins, Counter Support & Guide Bush
Courtesy of BMW OF NORTH AMERICA, INC.

Insert spacer tubes (1) and threaded pins (2) in guide bush (3).

Make sure spacer tubes (1) are correctly seated in guide bush (3).

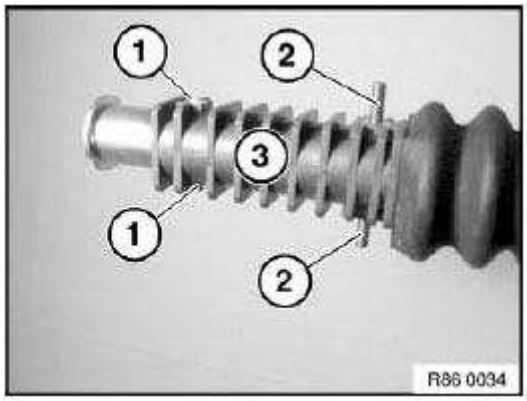


Fig. 84: Identifying Spacer Tubes, Threaded Pins & Guide Bush
Courtesy of BMW OF NORTH AMERICA, INC.

Using a screwdriver, link spacer tubes (1) and shock absorber located in tow tube. This ensures that the shock absorber remains in the correct installation position. Pull drawbar member (2) in direction of arrow and push in overrunning equipment (3) in direction of arrow towards rear.

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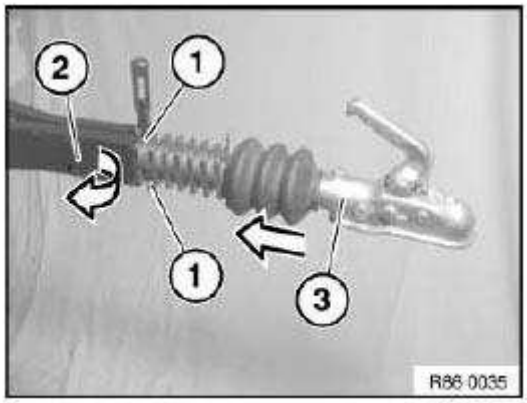


Fig. 85: Pulling Drawbar Member
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING PLASTIC BUSH/METAL BUSH

Release countersunk metal screws (1).

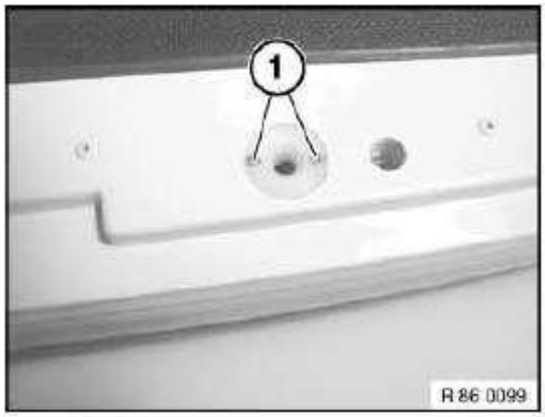


Fig. 86: Identifying Countersunk Metal Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out plastic bush/metal bush (1) with a screwdriver.

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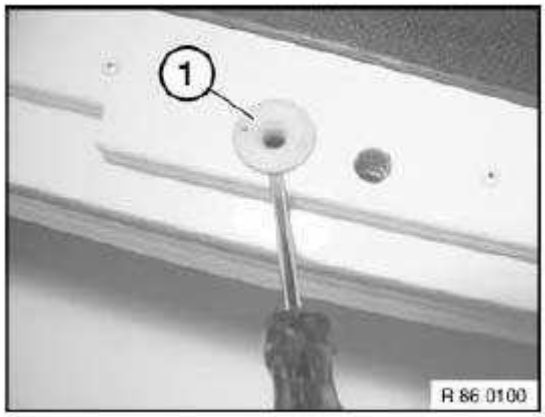


Fig. 87: Identifying Plastic Bush/Metal Bush
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING REAR SUPPORTS AND BRACKET

Release screws (1) and remove rear support (2) from bracket (3).

Installation:

Tightening Torque: 86 10 26AZ, see **86 10 PLATFORM** .

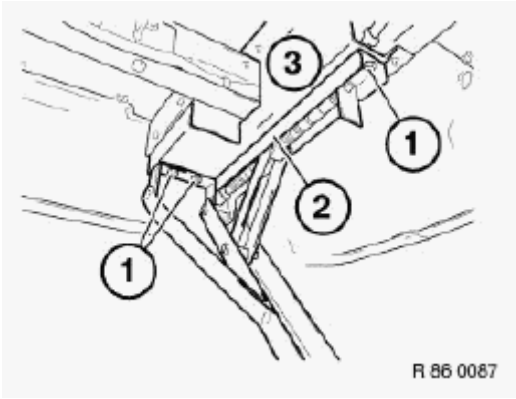


Fig. 88: Identifying Screws, Rear Support & Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cable holders (1) from bracket (2). Release screws (3) on left and right sides of bracket (2). Drill out rivets (4) from underside of platform. Drill out rivets (5) from upper side of platform.

Installation:

Tightening Torque: 86 10 27AZ, see **86 10 PLATFORM** .

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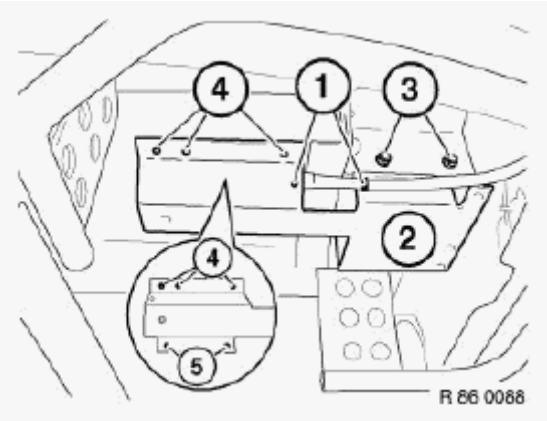


Fig. 89: Identifying Cable Holders, Bracket, Screws & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Feed cable for rear light (1) through opening (2). Fit cable holders (4) in holes (3).

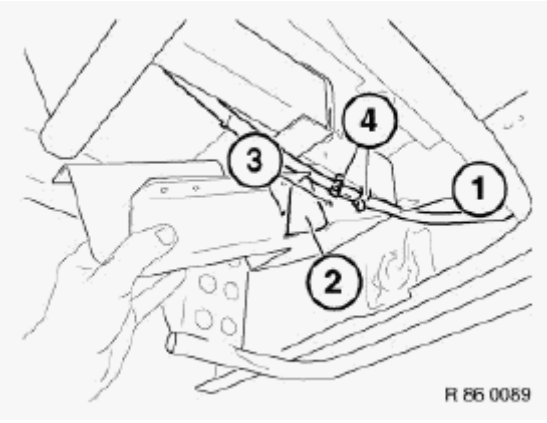


Fig. 90: Identifying Screw & Tilt Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING REFLECTING REAR LIGHT

From rear side of GFK apron, drive out plastic pins (1) with a drift.

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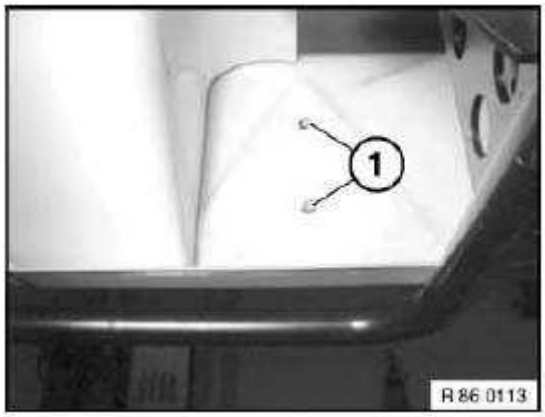


Fig. 91: Identifying Plastic Pins
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING REST ON LOADING RAMP, LEFT, RIGHT AND CENTER

CAUTION: Before drilling out rivets, drive in rivet pins with a punch.

Drill out rivets (1). Remove rest (2) towards front.

Installation:

Stick on new sealing tape.

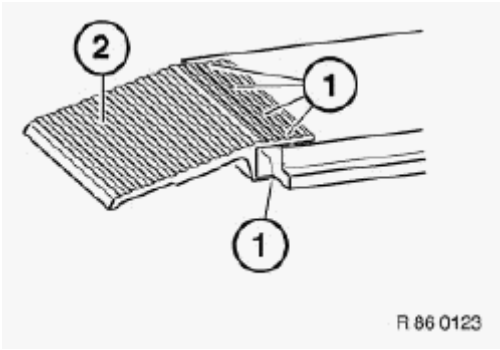


Fig. 92: Identifying Rivets & Rest
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING SHOCK ABSORBER FROM OVERRUNNING EQUIPMENT

Check the overrunning equipment shock absorber while installed to ascertain whether it needs to be replaced.

Apply handbrake. Push in and pull out tow ball end by hand. If it is very easy to pull out the tow ball end, the shock absorber must be replaced.

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NOTE: **Complete disassembly of overrunning equipment and guide bush, refer to 86 10 ... REMOVING OVERRUNNING EQUIPMENT/MAINTAINING OR REPLACING GUIDE BUSH/INSTALLING OVERRUNNING EQUIPMENT.**

Release screw (1) and remove. Pull out internal shock absorber (2) from opening in tow tube (3) towards rear.

Installation:

Tightening Torque: 86 10 15AZ, see **86 10 PLATFORM** .

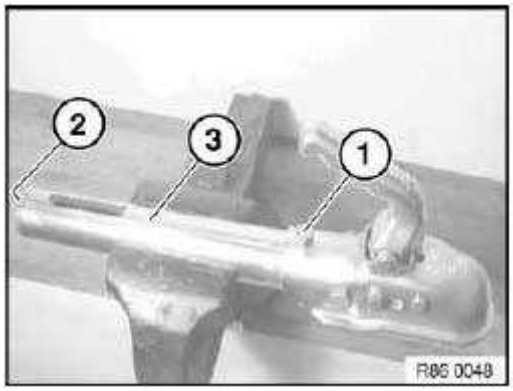


Fig. 93: Identifying Shock Absorber, Tow Tube & Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Push in new shock absorber (1) through opening in tow tube (2).

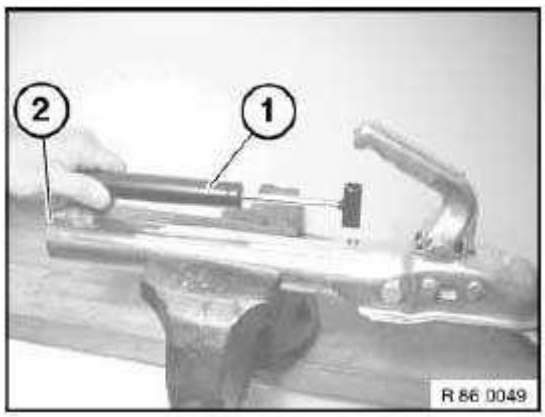


Fig. 94: Identifying Shock Absorber & Tow Tube
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING TRAILING ARM, REMOVING AND INSTALLING OR REPLACING MOUNTING

Replace bearing in trailing arm if there is play in trailing arm.

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NOTE: **Remove brake cable, refer to 86 10 ... REMOVING BRAKE SHOES.**

Remove shock absorber and coil spring, refer to 86 10 ... Removing and installing or replacing left or right coil spring.

Release screws (1) between wheel brake (2) and trailing arm (3) and remove complete wheel brake (2).

Installation:

Do not reuse screws (1). Use only the socket-head cap screws intended for this purpose. Stamped arrow on the reverse side of the brake carrier points in the direction of travel and stands at the 12 o'clock position.

Tightening Torque: 86 10 24AZ, see **86 10 PLATFORM** .

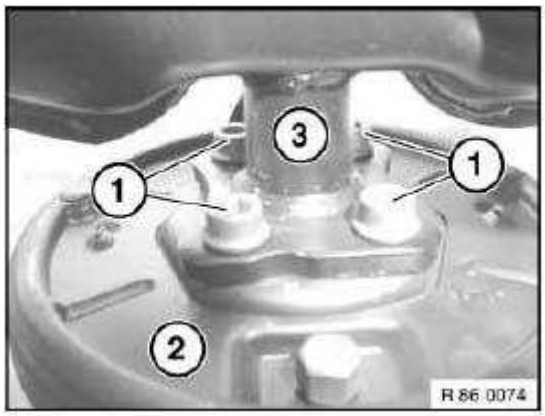


Fig. 95: Identifying Screws, Wheel Brake & Trailing Arm
Courtesy of BMW OF NORTH AMERICA, INC.

The trailing arm folds down once the coil spring on the arm has been released.

No persons should be located underneath trailing arm. Risk of injury!

Release screws (1, 2). Use assembly hole (3) to release screw connection (2).

Press out screws (1, 2) with a mandrel.

Installation:

Use new self-locking nut.

Tightening Torque: 86 10 25AZ, see **86 10 PLATFORM** .

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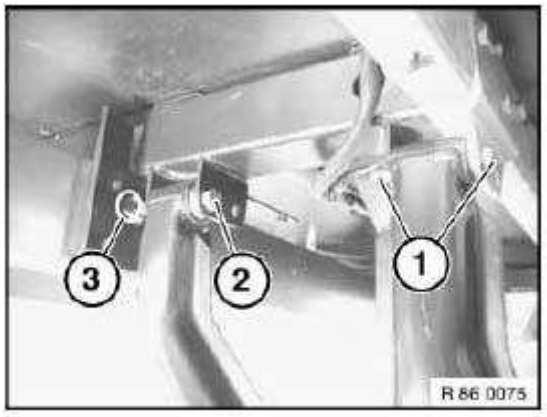


Fig. 96: Identifying Screws & Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Mount trailing arms (1) at rear mounts (4) only, viewed in direction of travel, with screws (2, 3).

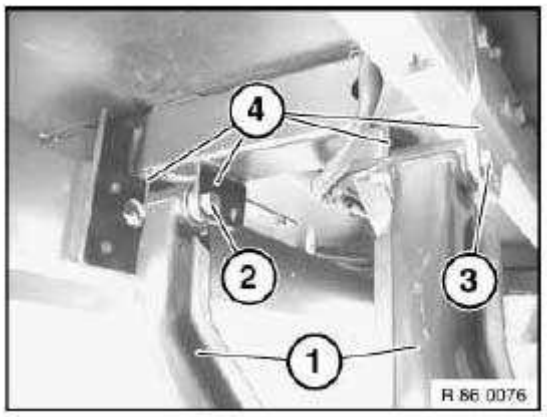


Fig. 97: Identifying Trailing Arms, Rear Mounts & Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Do not damage trailing arm with drill when drilling.

Drill spacer tube (1) with a 4 mm drill at three evenly offset points. Place drill as near as possible to compensating bush (2).

Bores relieve tension on material of spacer tube.

Press out spacer tube (1) and compensating bush (2) with a drift.

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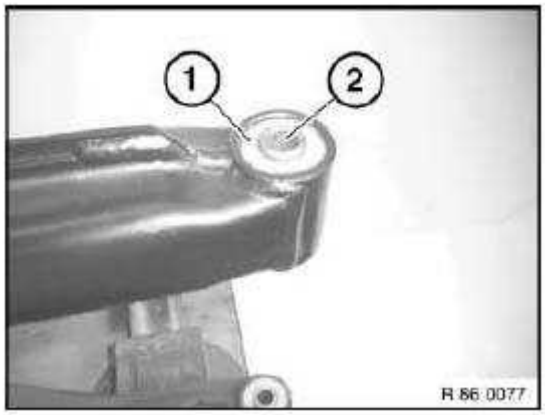


Fig. 98: Identifying Spacer Tube & Compensating Bush
Courtesy of BMW OF NORTH AMERICA, INC.

Grease new spacer tube (1) for installation with Syntheso Glep I. Drive new spacer tube (1) with a rubber mallet into trailing arm mount (2).

Installation:

Make sure spacer tube (1) is not tilted when driven in.

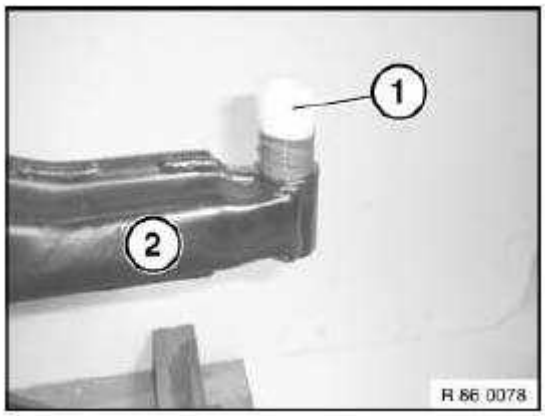


Fig. 99: Identifying Spacer Tube & Trailing Arm Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Drive compensating bush (1) with a drift into spacer tube (2). Set compensating bush (1) and spacer tube (2) centrally in trailing arm mount (3).

Installation:

Make sure compensating bush (1) is not tilted when driven in.

Install coil spring, refer to **86 10 ... Removing and installing or replacing left or right coil spring**.

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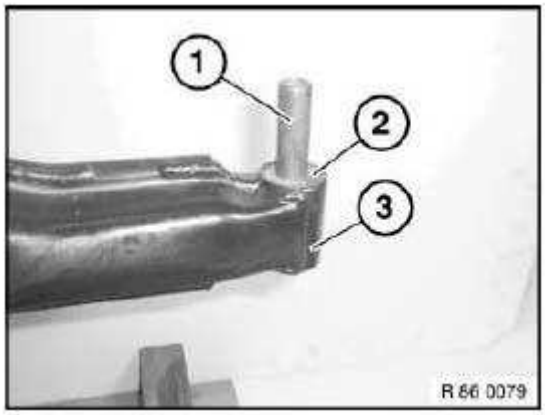


Fig. 100: Identifying Compensating Bush, Spacer Tube & Trailing Arm Mount
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING WHEEL BEARING

The angular-contact ball bearings do not require maintenance and have lifetime lubrication. The bearings cannot be readjusted.

Remove brake drum, refer to **86 10 ... REMOVING BRAKE SHOES.**

Lever out both snap rings (1).

Installation:

Replace expanded or damaged snap rings (1). Ensure correct seating.

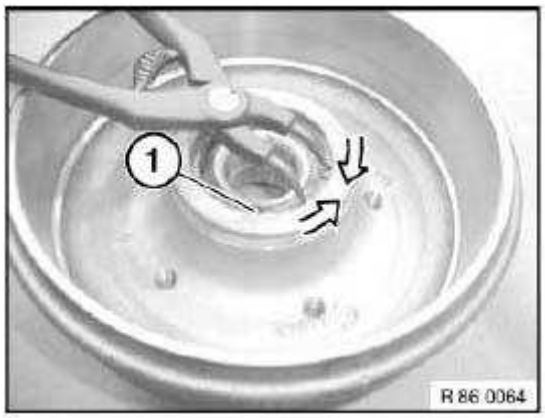


Fig. 101: Identifying Snap Rings
Courtesy of BMW OF NORTH AMERICA, INC.

Press out wheel bearing with special tool 24 1 010. See **24 1 010 INSTALLATION SLEEVE**

CAUTION: Do not reuse old wheel bearing.

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Fig. 102: Identifying Wheel Bearing With Special Tool (24 1 010)
Courtesy of BMW OF NORTH AMERICA, INC.

Place new wheel bearing (1) with lathe-turned end (2) in center of bore in brake drum (3).

Installation:

Before pressing in new wheel bearing, check bearing seat for possible damage.

Make sure wheel bearing is not tilted when pressed in.



Fig. 103: Identifying Wheel Bearing, Lathe-Turned End & Center Of Bore In Brake Drum
Courtesy of BMW OF NORTH AMERICA, INC.

Press in new wheel bearing (1) with special tool 23 2 150 and 33 1 374. See **23 2 150 PRESSURE SLEEVE** .

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Fig. 104: Identifying Wheel Bearing With Special Tool (23 2 150 & 33 1 374)
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REMOVING WOODEN REST ON LOADING RAMP, LEFT, RIGHT AND CENTER

CAUTION: Before drilling out rivets, drive in rivet pins with a punch.

Drill out rivets (1).

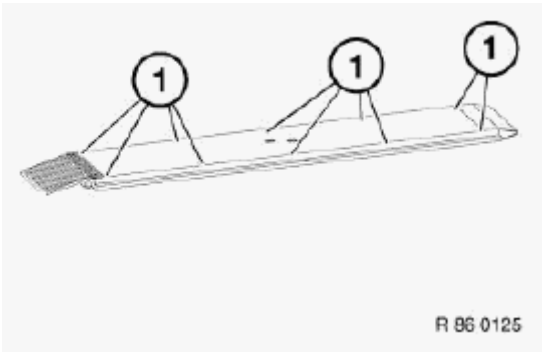


Fig. 105: Identifying Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPAIR WORK ON GFP COMPONENTS WITH GELCOAT SURFACE

Scratches in Gelcoat surface

Scratches in the Gelcoat surface which do not allow the GFP mat structure to show through can be touched up. Sand out scratches with water and 800 wet sandpaper. Then sand with water and 2000 wet sandpaper. Prepare repair area for polishing.

Cracks in Gelcoat surface

Sand the cracked area in a V shape beyond the end of the crack and clean.

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There must be no grease or oil residues, moisture or dust remaining in the crack to be repaired.

When repairing holes such as e.g. rivet holes, deburr hole edge and heavily roughen large area around hole.

Prepare required amount of Gelcoat paste with 2% hardener and fill prepared repair area with spatula.

Apply Gelcoat paste in several applications to repair areas.

Adhere to mixture ratio (2 parts hardener to 100 parts Gelcoat paste) as precisely as possible.

Too much added hardener slows down the hardening time and changes the paint color.

The hardening period is at least 12 hours at 20°C room temperature.

The hardening period can be longer depending on the temperature.

Once the Gelcoat paste has hardened, sand the touched-up area with water and 800 wet sandpaper. Sand with water and 2000 wet sandpaper and prepare for polishing.

86 10 ... REPLACING 12 VOLT SOCKET

From underside of platform, cut through cable tie (1) and remove. Disconnect plug with grommet (2) from socket (3) towards bottom.

Installation:

Position all seals correctly. Also secure plug with grommet (2) using new cable tie to other socket.

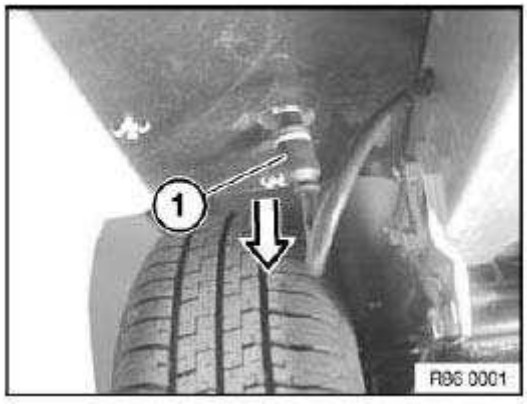


Fig. 106: Identifying Cable Tie, Grommet & Socket
Courtesy of BMW OF NORTH AMERICA, INC.

On upper side of platform, release Phillips screws (1) on mounting bracket (2).

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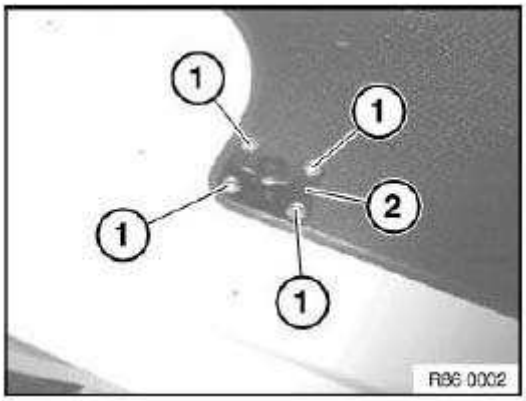


Fig. 107: Identifying Phillips Screws On Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Remove sealing compound along white marking (1).

Installation:

Make sure cable is correctly laid.

Use Sikaflex 221 as sealing compound.

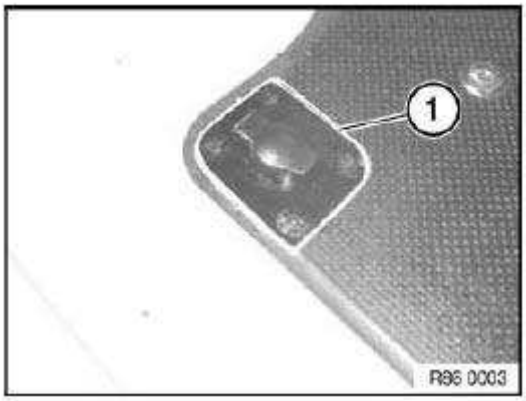


Fig. 108: Identifying Sealing Compound Along White Marking
Courtesy of BMW OF NORTH AMERICA, INC.

Grip under mounting bracket (1) with a screwdriver and lever out bracket (1) towards top. Remove bracket (1).

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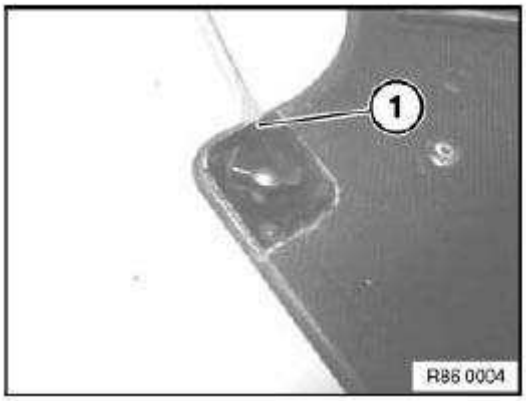


Fig. 109: Identifying Grip Under Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Release nut (1). Remove socket (2) from mounting bracket (3).

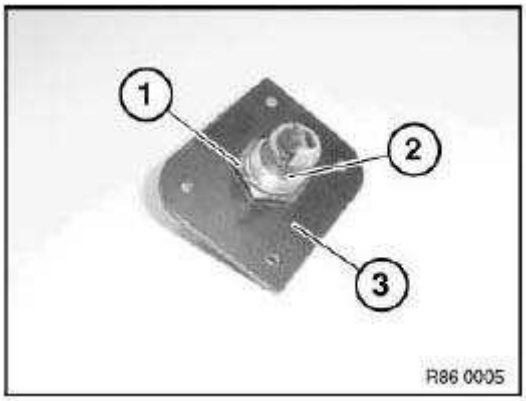


Fig. 110: Identifying Nut, Socket & Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING BAR

NOTE: Disassembly of lashing eyes, refer to 86 10 ... REPLACING LASHING PLATE AND LASHING EYE.

Remove lashing eyes (1).

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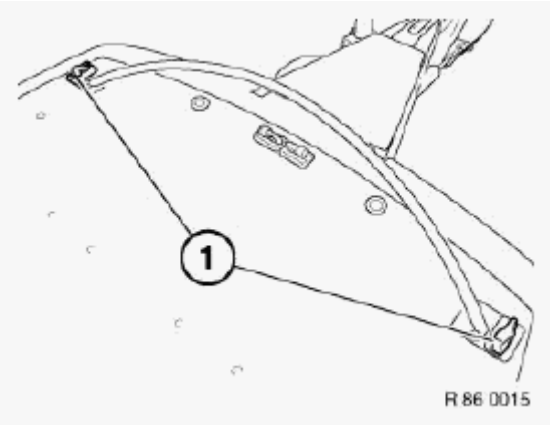


Fig. 111: Identifying Lashing Eyes
Courtesy of BMW OF NORTH AMERICA, INC.

Remove protective caps (1) on left/right.

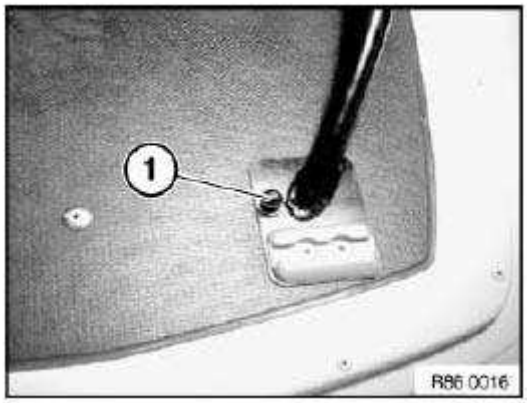


Fig. 112: Identifying Protective Caps
Courtesy of BMW OF NORTH AMERICA, INC.

Release hexagon screws (1) and countersunk head screws (2) on left/right.

Remove bar.

Installation:

For hexagon screw, Tightening Torque: 86 10 2AZ, see **86 10 PLATFORM** .

For countersunk head screw, Tightening Torque: 86 10 3AZ, see **86 10 PLATFORM** .

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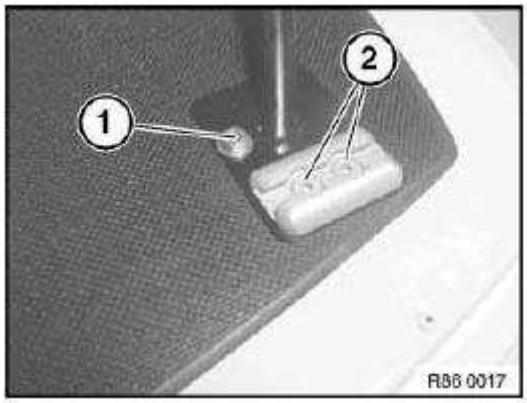


Fig. 113: Identifying Hexagon Screws & Countersunk Head Screws
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING DRAWBAR MEMBERS, LEFT AND RIGHT

Remove complete brake pull rod.

Removal of position light cable, refer to **86 10 ... REPLACING LICENSE PLATE LIGHT.**

Release screws (1) on cross-member (2). Pull out crossmember (2) towards rear.

Installation:

Tightening Torque: 86 10 16AZ, see **86 10 PLATFORM** .

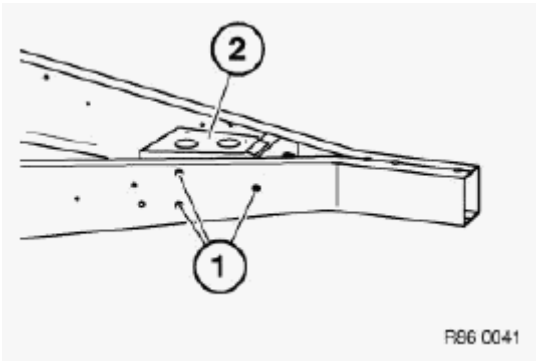


Fig. 114: Identifying Screws On Cross-Member
Courtesy of BMW OF NORTH AMERICA, INC.

Release countersunk head screws (1) and remove.

Installation:

Tightening Torque: 86 10 3AZ, see **86 10 PLATFORM** .

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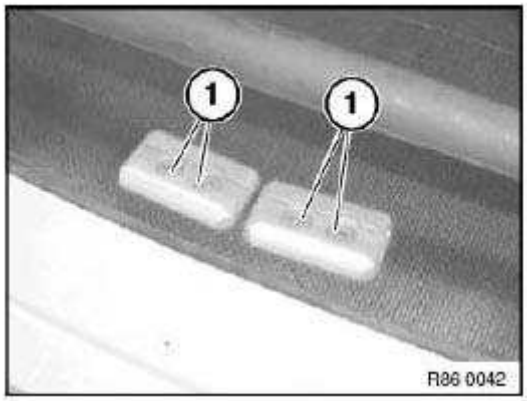


Fig. 115: Identifying Countersunk Head Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cable holder (1) and remove wiring harness (2) from drawbar member (3).

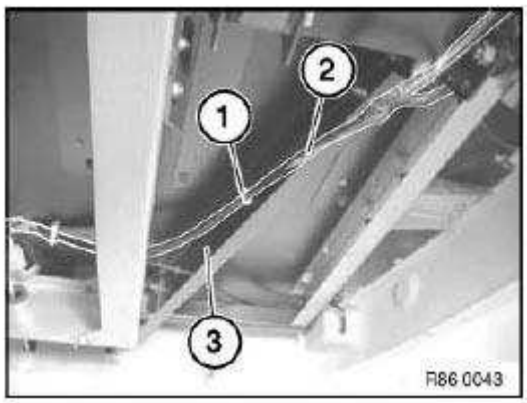


Fig. 116: Identifying Cable Holder, Wiring Harness & Drawbar Member
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cable (1) from position light housing (2). Pull out cable (1) through drawbar member aperture (3).

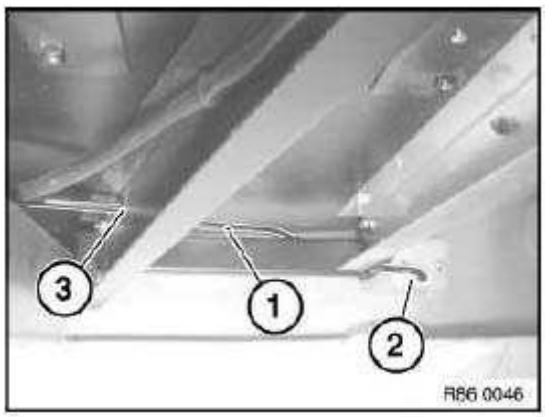


Fig. 117: Identifying Cable, Housing & Drawbar Member Aperture

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Courtesy of BMW OF NORTH AMERICA, INC.

Release all screws on cross-member (1) and remove crossmember (1).

If necessary, release screws on mounting brackets (2) and remove cross-members (3).

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 17AZ, see **86 10 PLATFORM** .

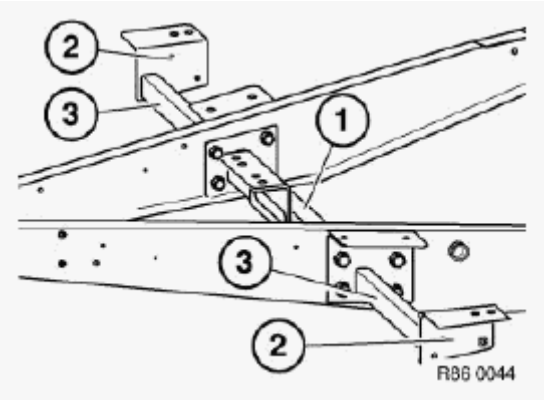


Fig. 118: Identifying Screws On Cross-Member
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew bolt (1). Grip nut from rear through assembly hole (2) in cross-member.

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 18AZ, see **86 10 PLATFORM** .

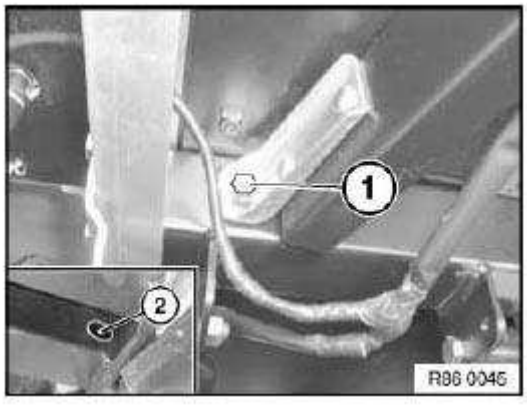


Fig. 119: Identifying Bolt & Assembly Hole

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Courtesy of BMW OF NORTH AMERICA, INC.

Tilt drawbar member (1) down in direction of arrow A and pull out towards rear in direction of arrow B.

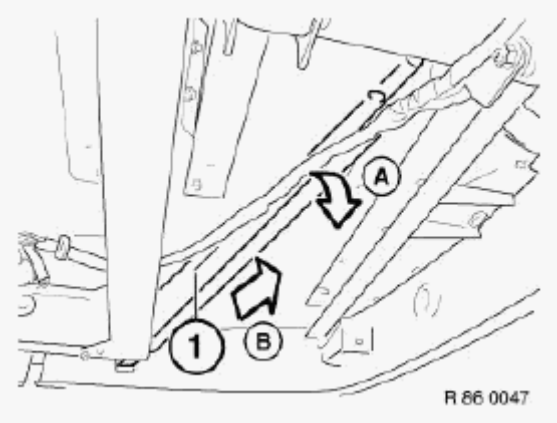


Fig. 120: Pulling Drawbar Member
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING GAITER

Position brake lever fully towards rear.

Release screws (1) and (2) and remove. Pull off towing attachment (3) in direction of arrow.

Installation:

Tightening Torque: 86 10 15AZ, see **86 10 PLATFORM** .

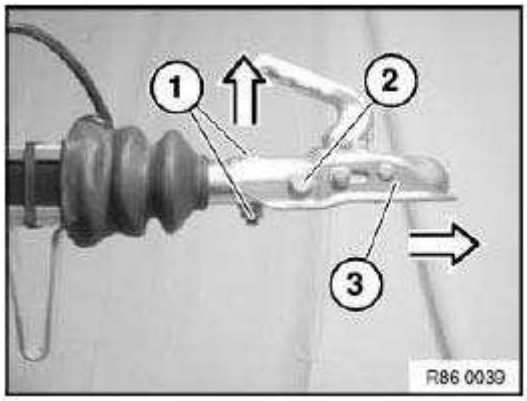


Fig. 121: Identifying Screws & Towing Attachment
Courtesy of BMW OF NORTH AMERICA, INC.

Pull off gaiter (1) in direction of arrow.

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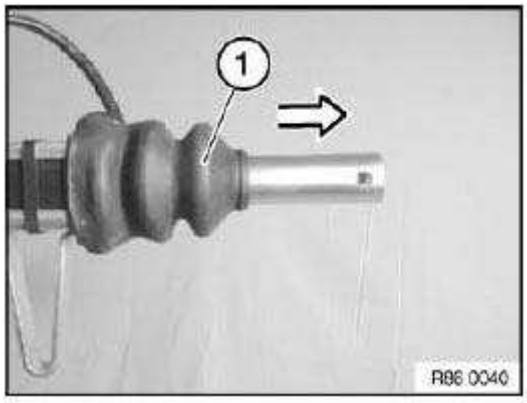


Fig. 122: Identifying Gaiter
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING HOLDER FOR CHOCK

Pull bar (1) down in direction of arrow A. Pull out chock (2) in direction of arrow B at an angle towards bottom.

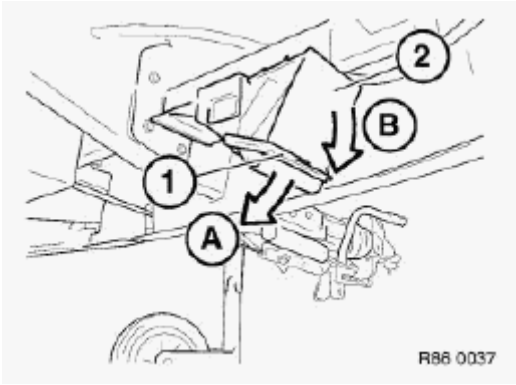
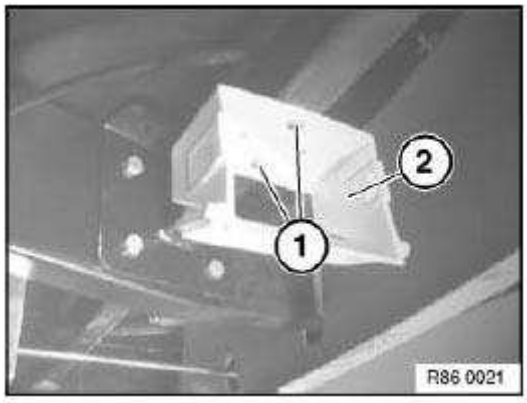


Fig. 123: Pulling Out Chock
Courtesy of BMW OF NORTH AMERICA, INC.

Release and unscrew cheese head tapping screws (1) on holder (2).



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Fig. 124: Identifying Cheese Head Tapping Screws On Holder
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING LASHING PLATE AND LASHING EYE

Releasing lashing eye

Pull spring bar (1) upwards in direction of arrow A. Slide lashing eye (3) in direction of arrow B and remove from lashing plate (2).

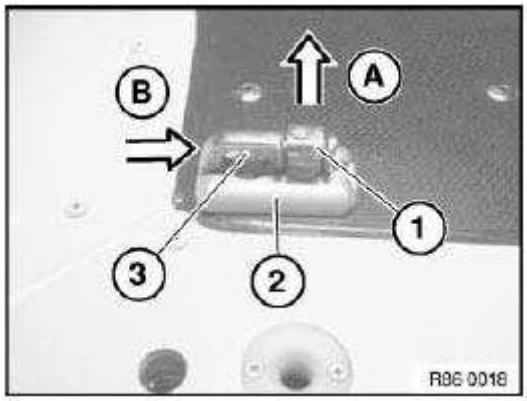


Fig. 125: Identifying Spring Bar & Lashing Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Release countersunk head screws (1) and remove lashing plate.

Installation:

Tightening Torque: 86 10 3AZ, see **86 10 PLATFORM** .

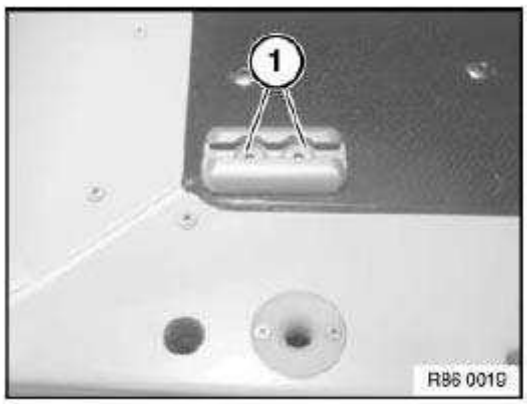


Fig. 126: Identifying Countersunk Head Screws & Lashing Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Locking lashing eye

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Position lashing eye (1) on circular openings on lashing plate (2). Press lashing eye (1) in direction of arrow A into lashing plate (2). In this position, slide lashing eye (1) in direction of arrow B. Spring bar (3) snaps in, anchors and secures lashing eye (1) in lashing plate (2).

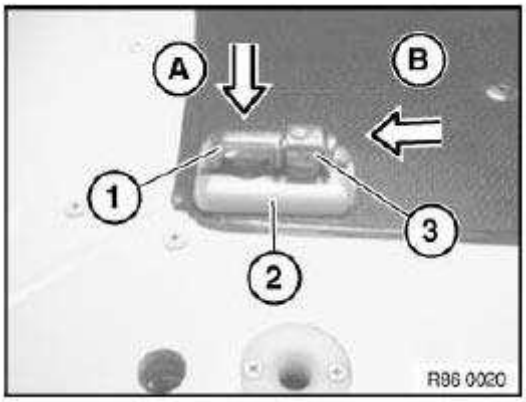


Fig. 127: Identifying Lashing Eye & Lashing Plate
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING LICENSE PLATE LIGHT

Release screws (1) and remove license plate light (2) from mounting.

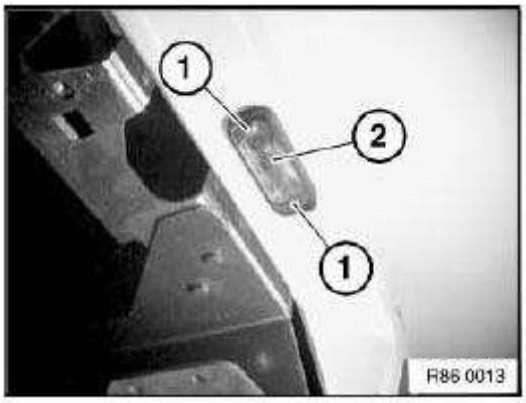


Fig. 128: Identifying Screws & License Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect flat connector (1) in direction of arrow.

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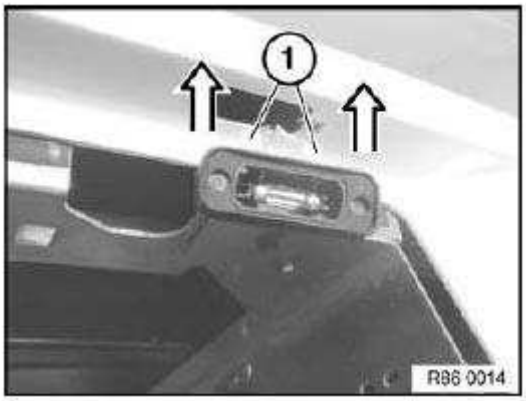


Fig. 129: Identifying Flat Connector
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING POSITION LIGHT

Unclip cover (1) on side recess (arrow).

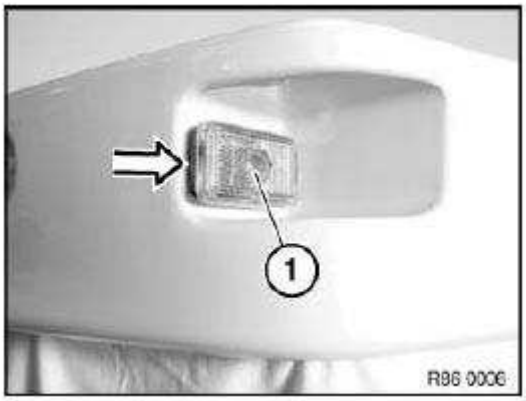


Fig. 130: Identifying Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Pull flat connector (1) from flat contact.

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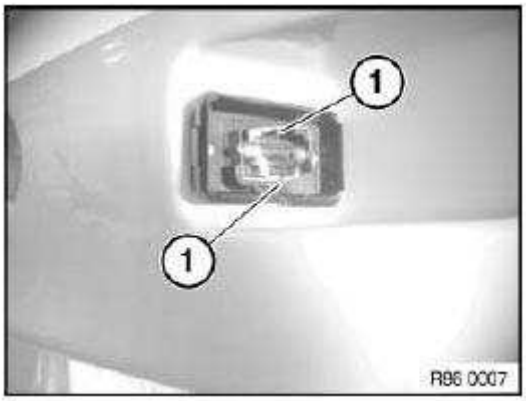


Fig. 131: Identifying Flat Connector
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out cable (1) completely.

CAUTION: Before drilling out rivet heads, drive in rivet pins with a punch.

Drill out rivet heads (2) and remove position light housing from front.

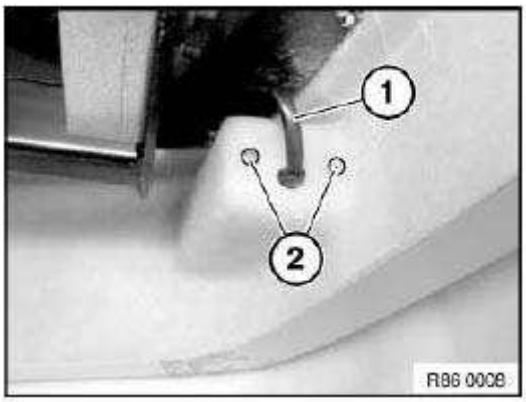


Fig. 132: Identifying Cable & Rivet Heads
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... REPLACING REAR LIGHT

Release thumb screws (1), slide light guard (2) in direction of middle of car and tilt out towards rear.

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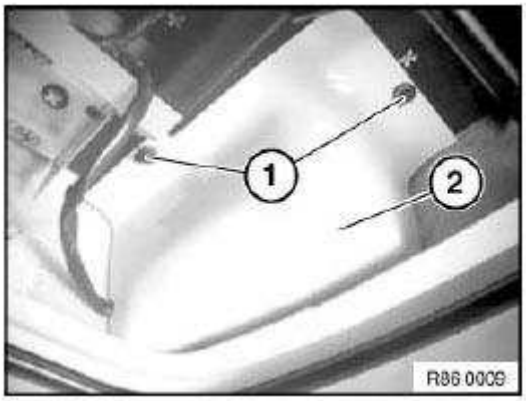


Fig. 133: Identifying Screws, Slide Light Guard
Courtesy of BMW OF NORTH AMERICA, INC.

Turn handwheel (1) counterclockwise in direction of arrow and remove base (2).

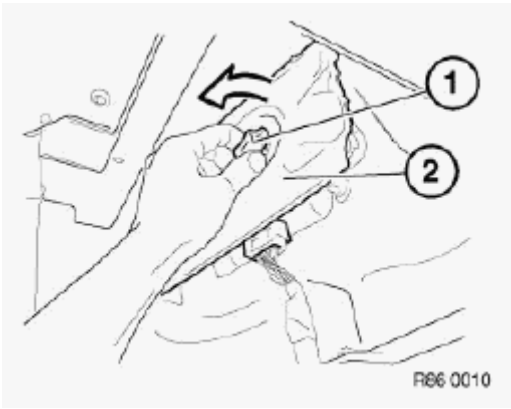


Fig. 134: Removing Base
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts (1) and press rear light (2) out towards front.

Installation:

Use new self-locking nuts.

Tightening Torque: 86 10 1AZ, see **86 10 PLATFORM** .

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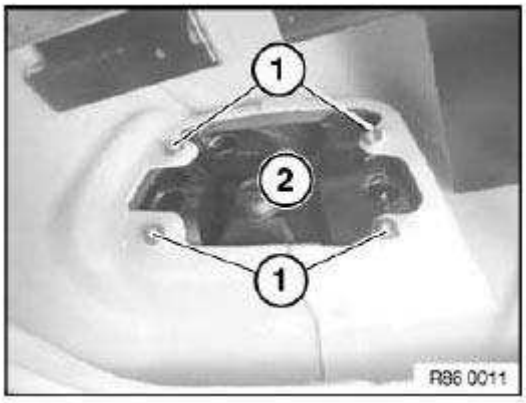


Fig. 135: Identifying Nuts & Rear Light
Courtesy of BMW OF NORTH AMERICA, INC.

86 10 ... TROUBLESHOOTING ON MULTI-TRAILER

MULTI-TRAILER TROUBLESHOOTING TABLE

Fault	Cause	Remedy
Trailer already brakes when foot is taken off accelerator	Shock absorber of overrunning equipment faulty	Replace shock absorber of overrunning equipment
Reversing sluggish or not possible	Brake system adjusted too strongly	Adjust brake system
NOTE: **When automatic reversing is activated, there is a residual braking torque caused by the design. This results**	Brake shoes jammed	Free brake shoes, replace complete brake shoes with brake shoe carrier if necessary
in slightly heavier overrunning.	Cables overtensioned	Adjust brake system
Handbrake effect too weak	Faulty adjustment	Adjust brake system
-	Faulty spring force accumulator	Adjust spring force accumulator
-	Brake cables heavily contaminated, corroded or kinked	Free cables, replace if necessary
Wheel brakes overheating	Brake system incorrectly adjusted	Adjust brake system
-	Overrunning equipment is sluggish	Lubricate overrunning equipment
-	Brake cables heavily contaminated, corroded or kinked	Free cables, replace if necessary
-	Cables overtensioned	Adjust brake system
-	Wheel brakes contaminated	Clean wheel brakes

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-	Reversing lever of overrunning equipment jammed	Remove reversing lever, clean and grease with conventional BMW lubricants
Braking effect too weak	Excessive play in brake system	Adjust brake system
-	Brake linings glazed, fouled by oil, damaged or worn	Replace complete brake shoes, clean brake drums, replace if necessary
-	Overrunning equipment is sluggish	Lubricate overrunning equipment
-	Brake cables heavily contaminated, corroded or kinked	Free cables, replace if necessary
Jolting braking or starting off	Excessive play in brake system	Adjust brake system
-	Shock absorber of overrunning equipment faulty	Replace shock absorber of overrunning equipment
-	Brake shoes jammed	Replace complete brake shoes with brake shoe carrier
Brakes squeal or rattle	Wheel brakes contaminated or worn	Clean wheel brakes, replace brake shoes and/or brake drums if necessary
-	Out-of-round or banging brake drum	Replace brake drums
-	Pad loose	Replace brake shoes
-	Wheel-bearing play excessive	Replace wheel bearings
Brakes pull to one side	Tire pressure incorrect	Correct tire pressure
-	Brake linings glazed, fouled by oil, damaged or worn	Replace complete brake shoes, clean brake drums, replace if necessary
-	Suspension shock absorber has no effect	Replace suspension shock absorber
Brake pads worn at angle	Wheel-bearing play excessive	Replace wheel bearings
-	Pads worn to less than minimum thickness	Replace brake shoes
Towing attachment fails to engage after connection	Internal attachment parts contaminated	Clean and lubricate attachment

21 HOOD

86 21 ... ADJUSTING HOOD PRETENSION - CAMLOC FASTENER WITH SPACERS

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NOTE: **At least two persons are needed to install and remove the hood. Before installing and removing the hood, secure the BMW multitrailer and the entire combination against rolling. For this purpose, use the parking brake and the chocks of the BMW multitrailer.**

To help adjust the hood pretension, you will need four blocks with a minimum height of 60 mm.

Installation:

Before attaching the hood, thoroughly clean the top side of the GFP apron of the BMW multitrailer.

It is particularly important to clean the contact surface of the GFP apron (1) (marked in gray) on which the rubber seal of the hood rests. Refer to **Fig. 136**.

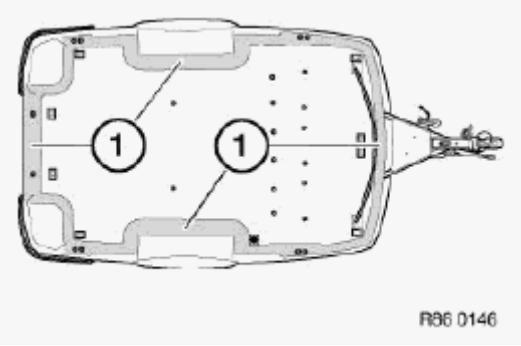


Fig. 136: Identifying GFP Apron
Courtesy of BMW OF NORTH AMERICA, INC.

The following text describes how to adjust the hood pretension as an example at one support area of the platform or at one hood fastener. The pretension is adjusted at the other support areas and fasteners in the same sequence.

The hood must be fixed on the platform in such a way that the rubber seal of the hood is placed under pretension or compressed. Only with this pretension is it possible to obtain a tight seal between hood and platform. Pretension is achieved with the Camloc fasteners and by using spacers.

Two different types of spacers (2) are available for each Camloc fastener (1): one thick and one thin. You can fit one, two or no spacer (2) on the Camloc fastener (1).

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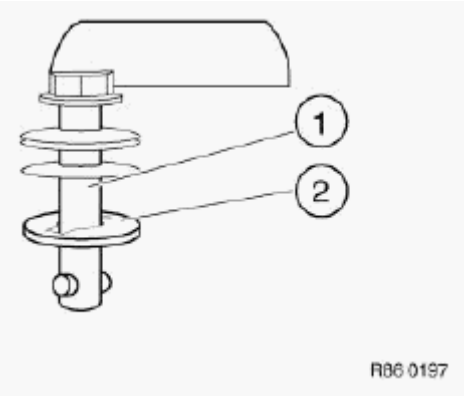


Fig. 137: Identifying Spacer On Camloc Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

Access to hood lighting plug (1):

Right side lid.

Open out spring-loaded cap (2) on socket (3) and remove hood lighting plug (1). Close cap (2). Insert hood lighting plug (1) into plug receptacle (4).

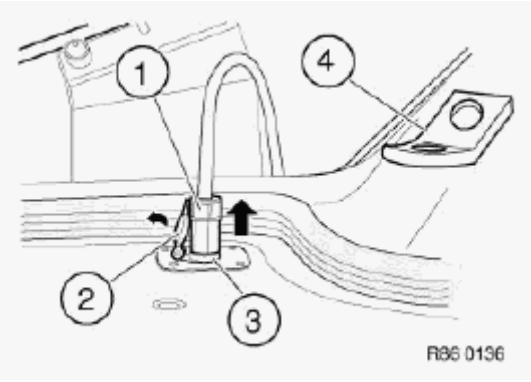


Fig. 138: Removing Hood Lighting Plug
Courtesy of BMW OF NORTH AMERICA, INC.

Unlocking Camloc fastener:

Wing (1) of Camloc fastener (2) is parallel to outer edge of hood. Turn Camloc fastener (2) counterclockwise until it is heard and felt to unlock.

Locking

Press hood in lid frame downwards by hand. Turn Camloc fastener clockwise until it is heard and felt to lock into place. Wing (1) of Camloc fastener is parallel to outer edge of hood.

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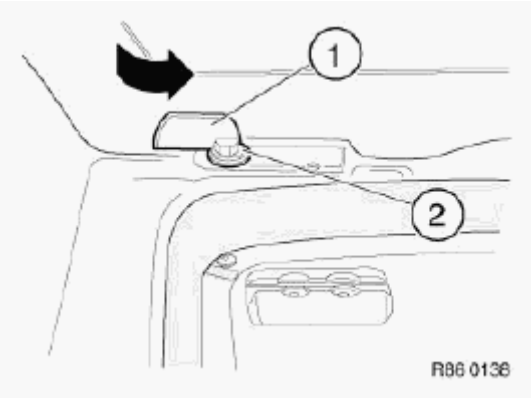


Fig. 139: Identifying Wing & Camloc Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

Raise hood and place block (1) between centering pin (2) and platform. Lower hood and position centering pin (2) on block (1).

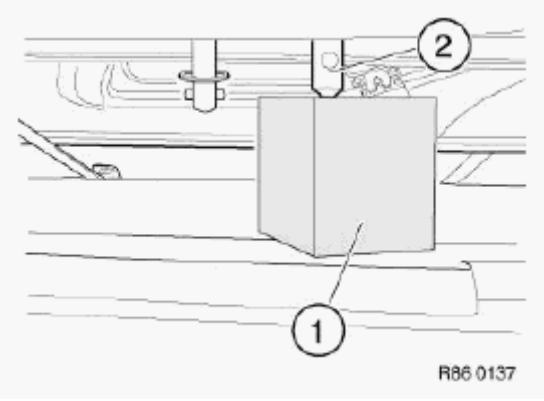


Fig. 140: Identifying Centering Pin On Block
Courtesy of BMW OF NORTH AMERICA, INC.

Remove spring nut (1) from Camloc fastener (2).

Installation:

Use new spring nut.

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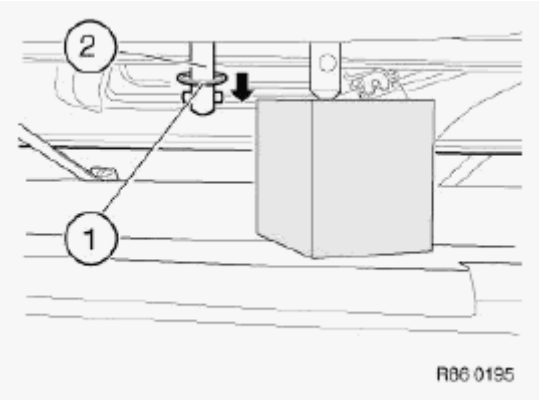


Fig. 141: Identifying Spring Nut & Camloc Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

Remove Camloc fastener (1) from locating hole (2).

Installation:

Press Camloc fastener (1) downwards until contact is made with hood stop. Wing (3) of Camloc fastener points to middle of hood.

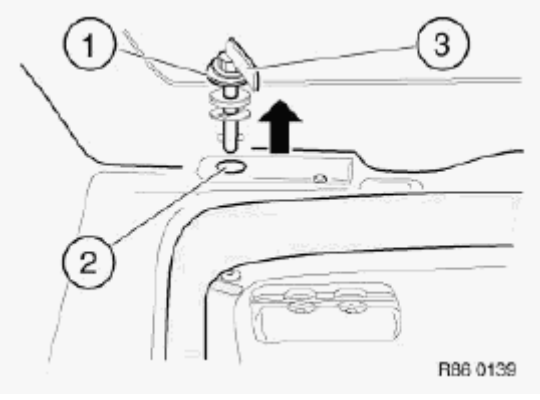


Fig. 142: Identifying Camloc Fastener & Locating Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing spacer:

Remove spacer (1) from Camloc fastener (4) by aligning opening (2) over lateral pin (3).

Reducing pretension:

Reduce spacer thickness, replace spacer or install Camloc fastener without spacer.

Increasing pretension:

Fit a thicker spacer or two spacers.

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Installation:

Place spacer (1) on Camloc fastener (4) and turn until it is in a secure position.

Check that hood seal is correctly seated.

Check that Camloc fasteners are locked. Lift hood by handle recesses. Hood must not be able to move with respect to platform of BMW multitrailer.

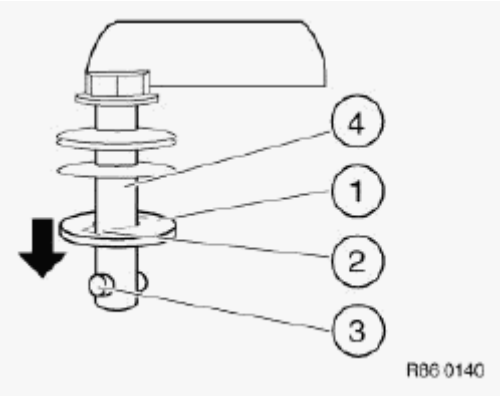


Fig. 143: Identifying Spacer On Camloc Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... ADJUSTING REAR LID TO FIT

NOTE: The following text describes how to adjust the rear lid to fit at one mounting point as an example. Proceed in the same way for the other mounting points.

Height adjustment of rear lid:

Release screws (1) and move rear lid in direction of arrows.

Depth adjustment of rear lid:

Release screws (2) and move rear lid in direction of arrows.

Installation:

Tightening Torque, height adjustment,

refer to **86 21 HOOD** .

Tightening Torque, depth adjustment,

refer to **86 21 HOOD** .

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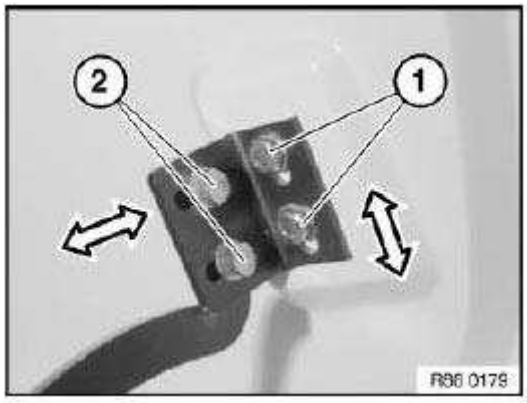


Fig. 144: Identifying Rear Lid Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust gap (A) evenly all around without displacement and correct if necessary.

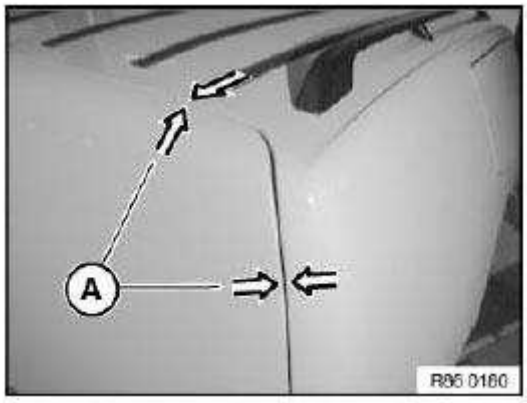


Fig. 145: Identifying Rear Lid Gap
Courtesy of BMW OF NORTH AMERICA, INC.

Check lid in transition (B) to hood for displacement and correct if necessary (flush).

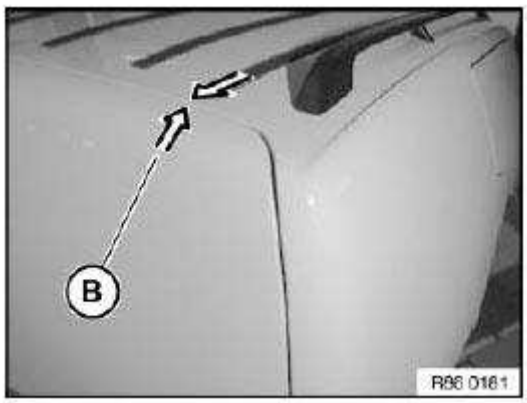


Fig. 146: Identifying Lid In Transition To Hood

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Courtesy of BMW OF NORTH AMERICA, INC.

To align lid in transverse direction, you can install or remove plastic washers (3) between hinge bracket (1) and mounting bracket (2).

Installation:

There must always be a plastic washer (3) fitted on left and right sides of mounting bracket (2). Plastic washers are available in thicknesses of 1 mm and 3 mm.

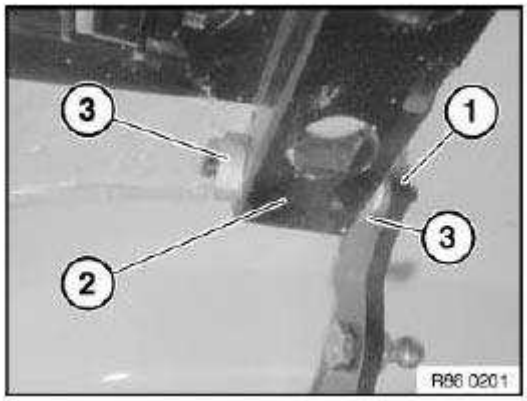


Fig. 147: Identifying Plastic Washer, Mounting Bracket & Hinge Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Check lid in transition (C) to hood (flush) and correct if necessary. Correction is made by inserting or omitting plastic washers (refer to **Fig. 147**).

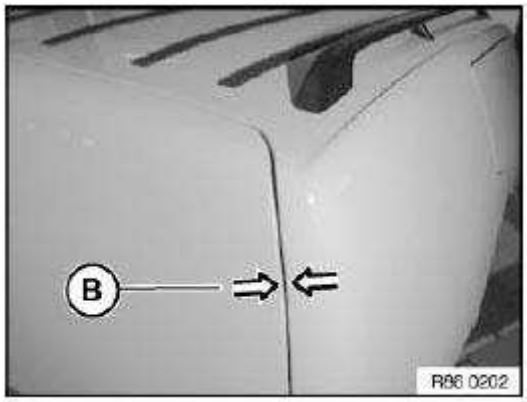


Fig. 148: Identifying Lid In Transition To Hood
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... ADJUSTING ROTARY STRIKER LOCK

The following text describes how to adjust the rotary striker lock on the rear lid as an example. Proceed in the same way for the side lids. Adjust the lock while the lid is open.

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Release screws (1) and adjust rotary striker lock (2) in elongated hole area in direction of arrows.

Installation:

Tightening Torque, refer to **86 21 HOOD** .

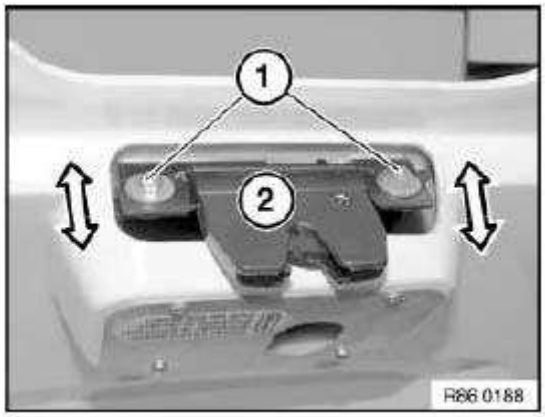


Fig. 149: Adjusting Rotary Striker Lock
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... ADJUSTING SIDE LID TO FIT

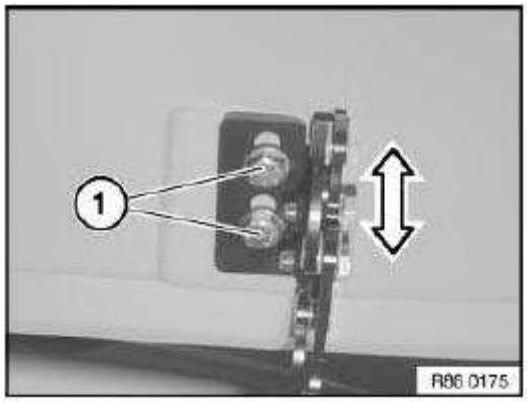
NOTE: The following text describes how to adjust the side lid to fit at one mounting point as an example. Proceed in the same way for all other mounting points.

Height adjustment of side lid:

Release screws (1) and move side lid in direction of arrows.

Installation:

Tightening Torque, refer to **86 21 HOOD** .



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Fig. 150: Adjusting Side Lid Height Adjustment
Courtesy of BMW OF NORTH AMERICA, INC.

Depth adjustment of side lid:

Release screws (1) and move side lid in direction of arrows.

Installation:

Tightening Torque, refer to **86 21 HOOD** .

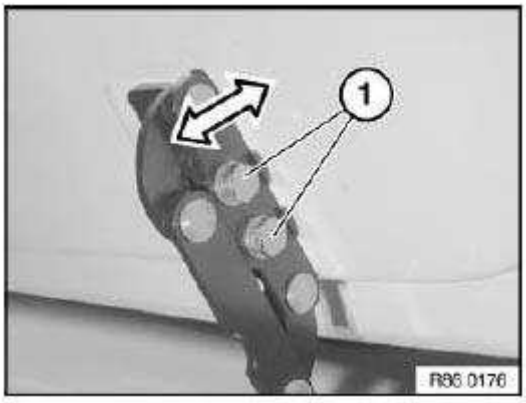


Fig. 151: Adjusting Side Lid Depth Adjustment
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust gap (A) evenly all around and correct if necessary.

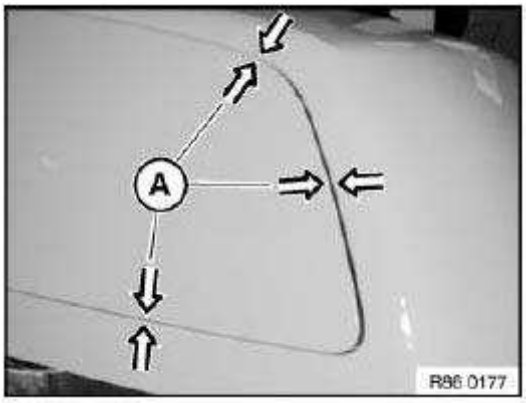


Fig. 152: Identifying Side Lid Gap
Courtesy of BMW OF NORTH AMERICA, INC.

Check lid in transition (B) to hood for displacement and correct if necessary (flush).

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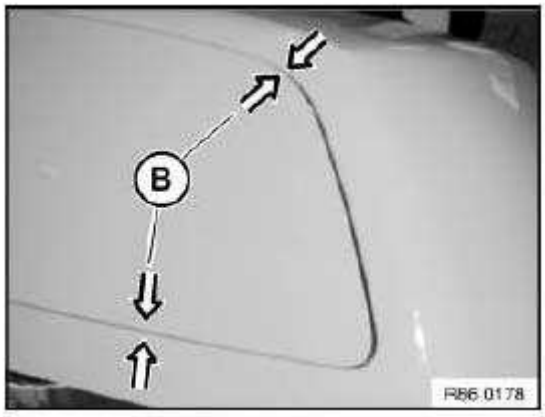


Fig. 153: Identifying Lid In Transition To Hood
Courtesy of BMW OF NORTH AMERICA, INC.

To align lid in direction of travel, you can install or remove a spacer plate (3) between mounting bracket (1) and hinge (2).

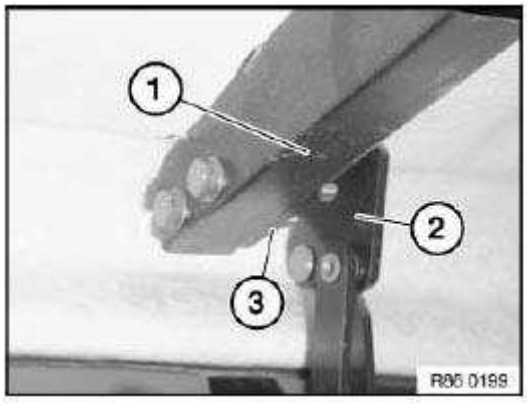


Fig. 154: Identifying Spacer Plate, Mounting Bracket & Hinge
Courtesy of BMW OF NORTH AMERICA, INC.

Check lid in transition (C) to hood for displacement and correct if necessary (flush). Correction is made by inserting or omitting spacer plates (refer to **Fig. 154**).

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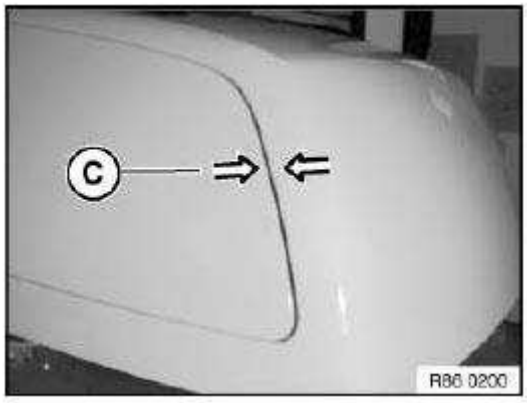


Fig. 155: Identifying Lid In Transition To Hood
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... ATTACHING/REPLACING BMW BADGE

Position of attachment: inside of rear lid

Remove plastic cover (1) from bore holes (2).

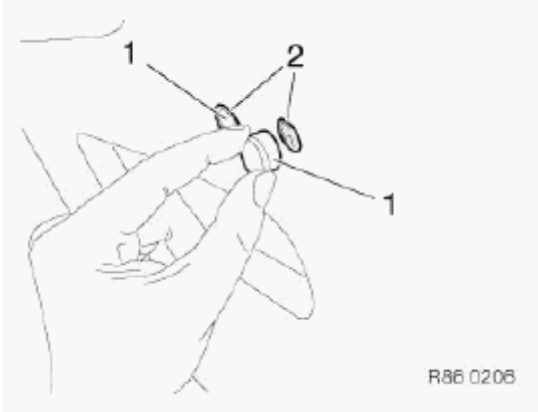


Fig. 156: Identifying Plastic Cover & Bore Holes
Courtesy of BMW OF NORTH AMERICA, INC.

Inserting a set of pointed pliers through bore holes (1), detach retaining washers (2) from pins of BMW badge.

Installation:

Use only new retaining washers.

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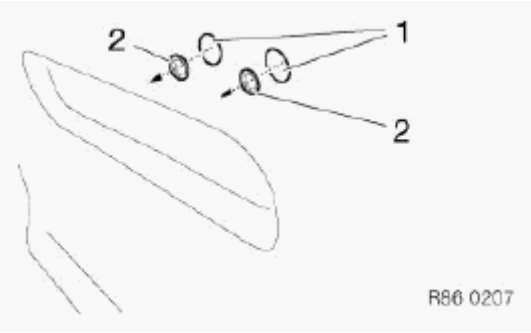


Fig. 157: Identifying Bore Holes & Retaining Washers
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Instruction for removing BMW badge:

Slide a blunt object (e.g. a wooden wedge) under the BMW badge and carefully lever off the badge.

Position of attachment: outside of rear lid

The BMW badge must be attached at room temperature.

Degrease bonding area with petroleum ether.

Rub down bonding area with a dry cloth.

Peel off protective film on BMW badge (1).

Insert BMW badge (1) with pin (2) into bore hole (3). If bore holes (3) are considerably larger than pin (2), optically align BMW badge (1) exactly.

Press down BMW badge (1) firmly.

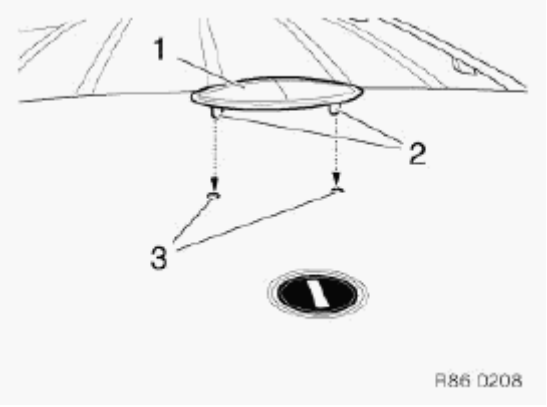


Fig. 158: Identifying BMW Badge, Pin & Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

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Position of attachment: inside of rear lid

By inserting a 1/4" ratchet with extension and socket wrench insert (7 mm A/F) through bore holes (2), attach a retaining washer (1) in each case to pin of BMW badge. In so doing, press down on outside of rear lid with one hand on BMW badge and grip.

Push on relevant retaining washer (1) as far as it will go.

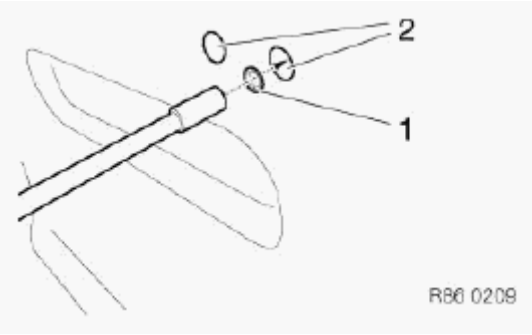


Fig. 159: Identifying Bore Holes & Retaining Washers
Courtesy of BMW OF NORTH AMERICA, INC.

Position of attachment: inside of rear lid

Insert plastic cover (1) in bore holes (2).

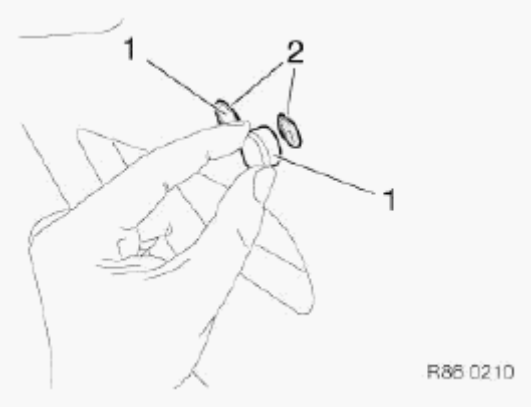


Fig. 160: Identifying Plastic Cover & Bore Holes
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... FITTING BMW LOGO

Distance between hood edge and lower edge of BMW logo (1) is 100 mm.

Distance between middle of lock and lettering (2) is 300 mm.

Installation:

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Degrease bonding areas with benzine. Rub down bonding area with a dry cloth.

Position of BMW logo (1): parallel to lower edge.

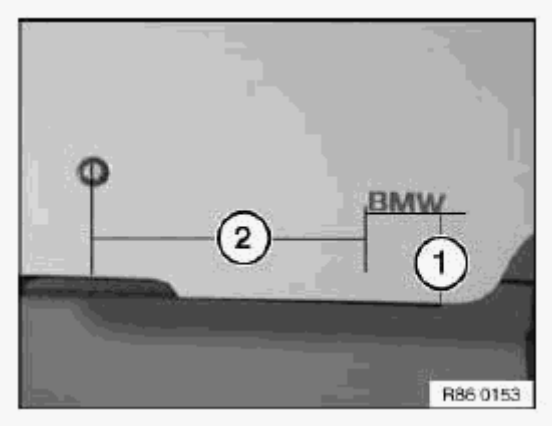


Fig. 161: Identifying Distance Between Middle Of Lock & Lettering
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... INSTALLING HOOD SEAL

NOTE: Removing old seal: In a straight area of hood, grip old seal piping with a pair of pliers and pull off horizontally. Grip detached seal with both hands and uniformly pull away from hood ridge.

Push seal piping (1) by hand onto hood ridge (2). Using a rubber hammer, gently tap seal piping (1) as far as it will go onto hood ridge (2). Make sure piping is evenly positioned especially in radii of hood ridge.

Installation:

Position end face of seal at front end of hood in a straight area. Lay seal from front to rear.

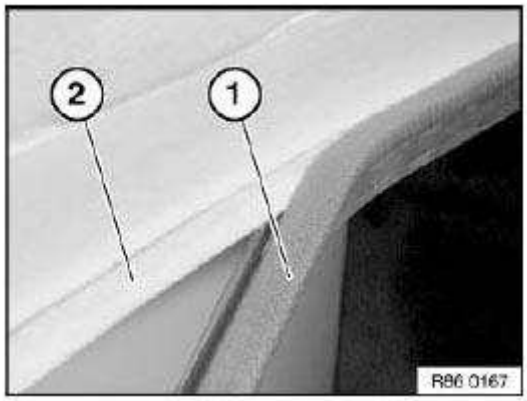


Fig. 162: Identifying Seal Piping & Hood Ridge
Courtesy of BMW OF NORTH AMERICA, INC.

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86 21 ... INSTALLING RUBBER ROOF STRIP

NOTE: Pull off old rubber roof strip and remove remaining traces of adhesive with universal cleaner, refer to BMW Operating Fluids. Rub down with a dry cloth.

Select rubber roof strip according to length of roof recess (1). Arrange chamfered ends of rubber roof strip to match shape of roof recess (1).

Installation:

Pretreat bonding area and stick on rubber roof strip according to manufacturer's instructions.

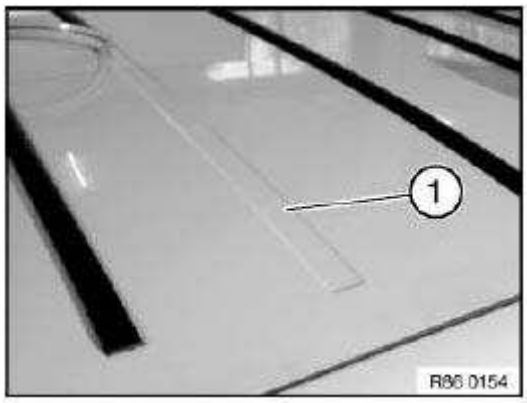


Fig. 163: Identifying Roof Recess
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... INSTALLING SEAL FOR REAR LID AND SIDE LID

NOTE: The following text describes how to install the seal for the rear lid as an example. Proceed in the same way for the side lids.

Removing old seal: Open lid. Grip seal piping with both hands and pull seal off hood ridge. Remove old seal over lid.

Push seal piping (1) by hand onto hood ridge (2). Using a rubber hammer, gently tap seal piping (1) as far as it will go onto hood ridge (2). Make sure piping (1) is evenly positioned especially in radii of hood ridge.

Installation:

Always position end face of seal in a straight area only:

e.g. on cross-member or on upper hood ridge of rear lid.

Suitable areas on side lids:

Upper and lower hood ridge.

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Sealing lip of seal must point outwards.

After installing from inside and outside, check correct seating between lid seal and lid. Lid must rest without air on lid seal.

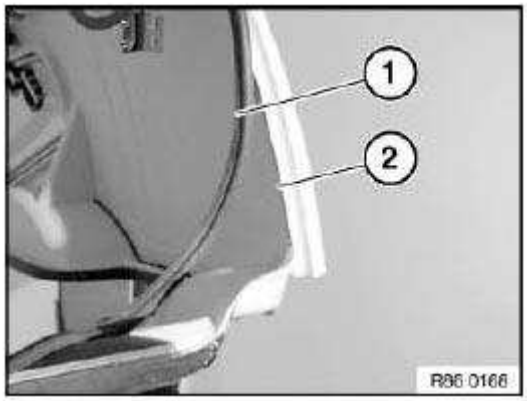


Fig. 164: Identifying Seal Piping & Hood Ridge
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... INSTALLING SPONGE RUBBER SEAL

NOTE: Removing old sponge rubber seal: Pull off old sponge rubber seal. Remove remaining traces of adhesive with universal cleaner, refer to BMW Operating Fluids.

Sponge rubber seal runs along area marked gray (1).

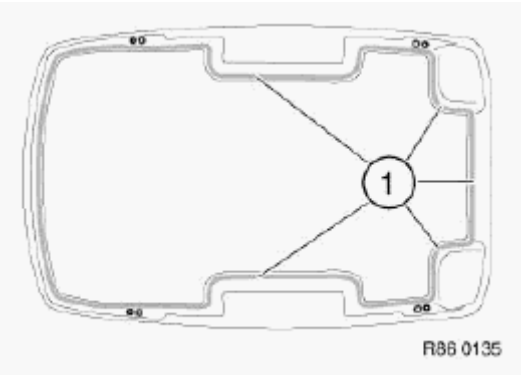


Fig. 165: Identifying Rubber Seal Area
Courtesy of BMW OF NORTH AMERICA, INC.

Lay sponge rubber seal (1) in middle of hood contact surface (2).

Installation:

Degrease contact surface (2) with benzine and rub down with a dry cloth. Stick on sponge rubber seal (1)

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according to manufacturer's instructions. Position end face of seal (1) in a straight area.

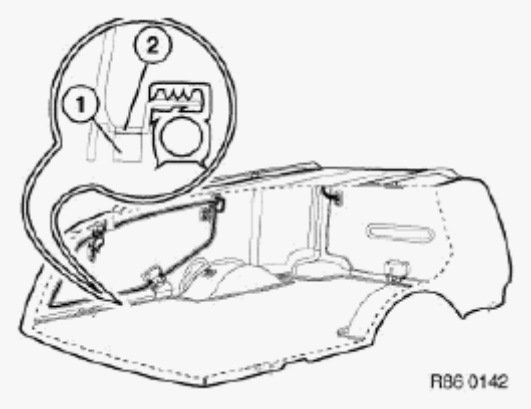


Fig. 166: Identifying Seal End Face & Contact Surface
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING BALL PIVOT

NOTE: Remove gas spring, refer to 86 21 ... REMOVING GAS SPRING.

NOTE: The following text describes how to remove the ball pivot from the hinge retaining bracket on the rear lid as an example. Proceed in the same way for the other ball pivots.

Make sure the attachments are reinstalled in the correct sequence. Only in this way will the gas springs open and close properly.

Grip ball pivot (1) at hexagon mount (2) and release nut (3).

Installation:

Use new self-locking nut.

Tightening Torque, refer to **86 21 HOOD** .

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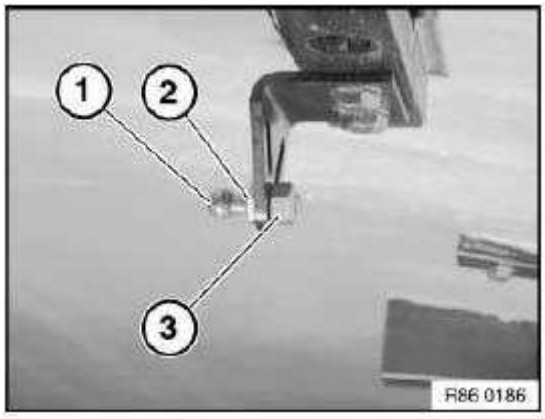


Fig. 167: Adjusting Rotary Striker Lock
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING CENTERING PIN FROM MOUNTING BRACKET

NOTE: Exclusively for removal of pin, raise the hood in the GFP area. For raising, use a wooden block with a maximum width of 35 mm and a height of 45 mm. The length must be selected depending on the lifting platform securing point. Ensure the hood is secure on the blocks.

Position block (1) so that it is only located in area of sponge rubber seal (2).

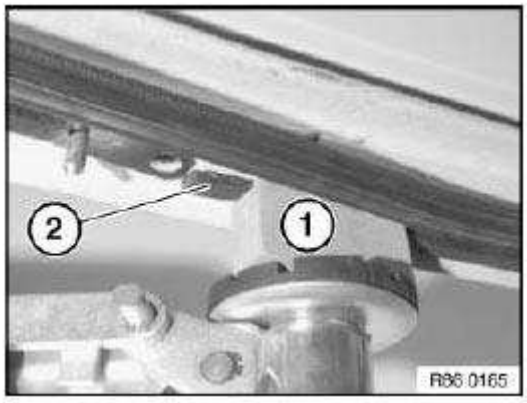


Fig. 168: Identifying Block & Rubber Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Insert a mandrel into hole (1) of pin (2) and turn counterclockwise.

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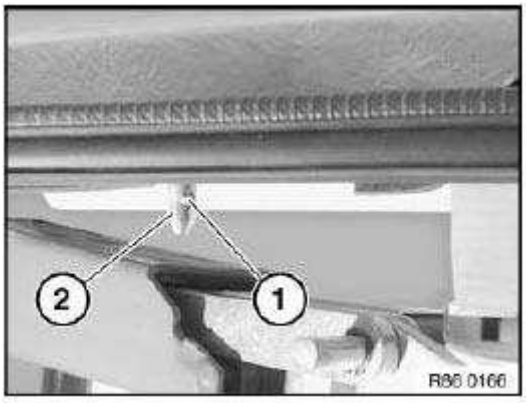


Fig. 169: Identifying Mandrel Into Hole Of Pin
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING GAS SPRING

Only remove the gas spring while the lid is open. The gas spring will then not be subjected to load and the spring piston will not jump out of the spring housing. Prop the lid open with one hand to prevent it dropping closed. Remove the gas spring with your other hand.

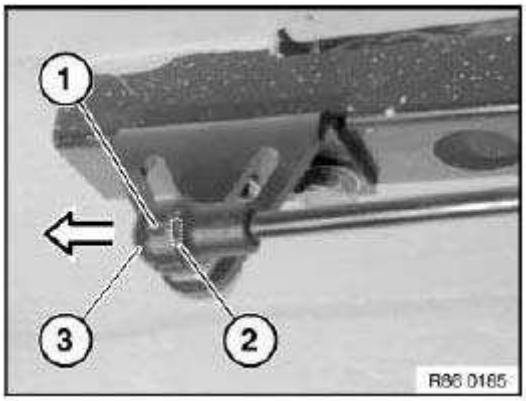
NOTE: Side lids are each fitted with a gas spring. Rear lid is fitted with two gas springs. The following text describes how to remove the gas spring at one mounting point as an example. Proceed in the same way for all other mounting points.

Rear lid: Replace gas springs in pairs only.

Lever out retaining clip (1) in recess (2) and push on gas spring head (3) in direction of arrow. Detach spring head (3) from ball pivot.

Installation:

Push retaining clip (1) back into its original position. Press spring head (3) onto ball pivot until spring head (3) snaps audibly into place.



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Fig. 170: Detaching Spring Head From Ball Pivot
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING GAS SPRING RETAINING BRACKET

NOTE: Remove gas spring, refer to 86 21 ... REMOVING GAS SPRING.

Remove ball pivot, refer to 86 21 ... REMOVING BALL PIVOT.

Release screws (1) and remove gas spring retaining bracket (2) from mounting bracket (3).

Installation:

Install retaining bracket so that it is centered in elongated holes.

Tightening Torque, refer to **86 21 HOOD** .

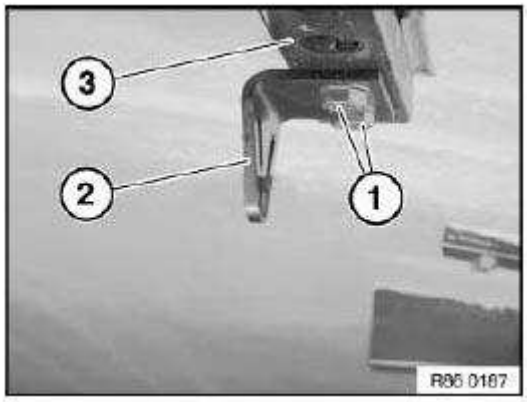


Fig. 171: Identifying Screws, Gas Spring Retaining Bracket & Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING HINGE BRACKET ON REAR LID

NOTE: Remove rear lid, refer to 86 21 ... REMOVING LID.

Remove gas spring, remove gas spring on hinge side only, refer to 86 21 ... REMOVING GAS SPRING.

Raise edge (1) of retaining clip (2) and slide in direction of arrow towards rear.

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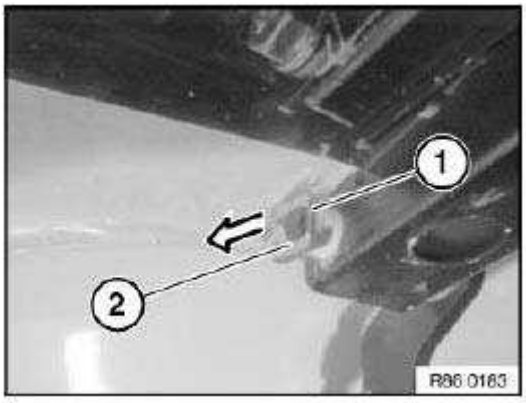


Fig. 172: Sliding Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Remove plastic washer (1). Pull hinge bracket (2) in direction of arrow out of mounting bracket (3).

Installation:

There must always be a plastic washer (1) fitted on left and right sides of mounting bracket (3).

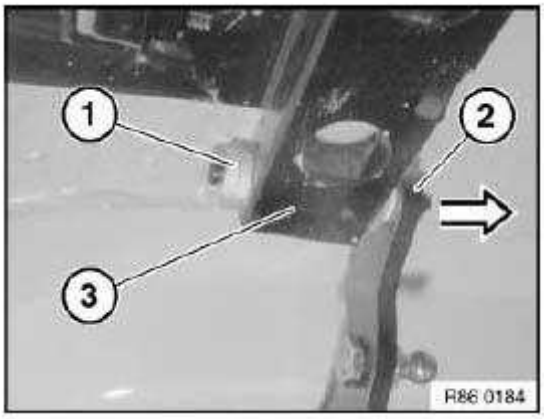


Fig. 173: Removing Hinge Bracket From Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING LID

NOTE: Adjusting side lid to fit, refer to 86 21 ... ADJUSTING SIDE LID TO FIT.

Adjusting rear lid to fit, refer to 86 21 ... ADJUSTING REAR LID TO FIT.

NOTE: The text describes how to remove the lid at one rear lid mounting point as an example. Proceed in the same way for the side lids. Spare part lids are always supplied without complete locking systems.

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Two persons are required for this task.

NOTE: Open lid.

Loosen screws (1). Remove lid (2).

Installation:

Rear lid: shoulder (3) points to middle of hood.

Side lid: shoulder (3) points to outside of hood.

Tightening Torque: refer to **86 21 HOOD** .

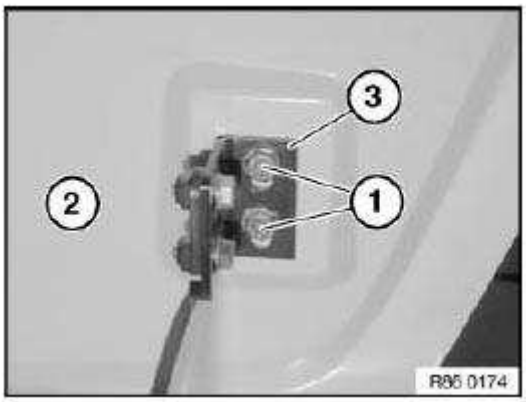


Fig. 174: Identifying Lid & Screws
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING LOCK BARREL

NOTE: The following text describes how to remove the lock barrel on the rear lid as an example.

Proceed in the same way for the side lids. Remove the lock barrel while the lid is open.

Remove cover, spring nut and pull rod, refer to 86 21 ... REMOVING ROTARY STRIKER LOCK.

Slide retainer (1) in direction of arrow away from lock barrel (2). Remove lock barrel (2).

Installation:

Examine rubber backing for damage and replace if necessary. When replacing lock barrel, make sure coding of new lock barrel matches coding of fitted lock barrel (simultaneous closing).

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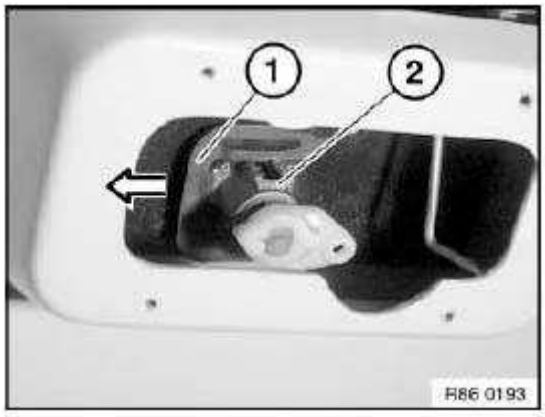


Fig. 175: Sliding Retainer From Lock Barrel
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING LOCK STRIKER FIXTURE ON REAR LID

Grip rubber seal on seal piping (1) and pull off in area of lock striker fixture (2). Grip lid seal (3) on seal piping (4) and pull off in area of lock striker fixture (2).

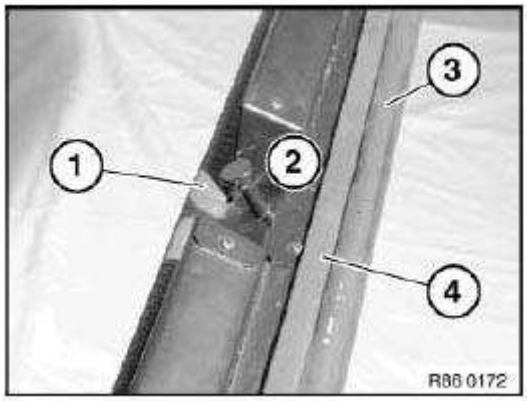


Fig. 176: Identifying Lid Seal & Seal Piping
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Before drilling out rivets, drive in rivet pins with a punch.

Drill out rivets (1+2) and remove lock striker fixture (3).

Installation:

Rivets (1) have black heads and long shanks. Rivets (2) have silver heads and short shanks.

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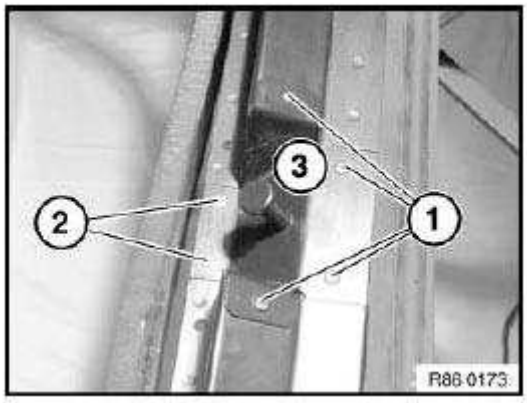


Fig. 177: Identifying Lock Striker Fixture & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING PLUG FOR INSIDE LIGHT

NOTE: Two different types of plugs are used for the inside light. Both types function in the same way, only their designs are different.

Type 1:

Release screw (1) and separate housing plug (2).

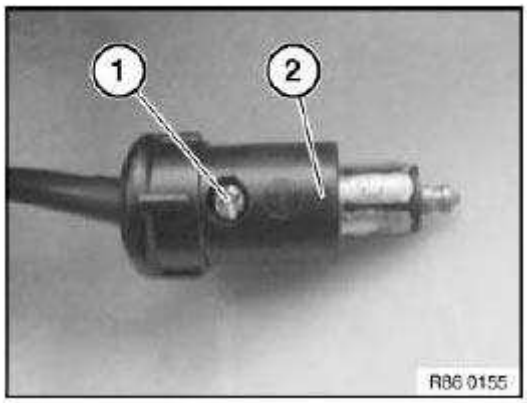


Fig. 178: Identifying Housing Plug & Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and disconnect cables (2) from screw clamp.

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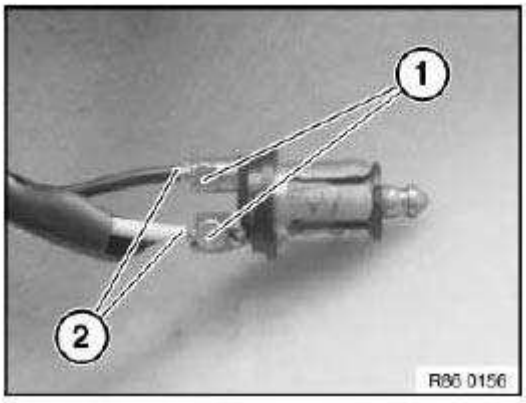


Fig. 179: Identifying Cables & Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Type 2:

Release screw (1) and separate housing plug (2).

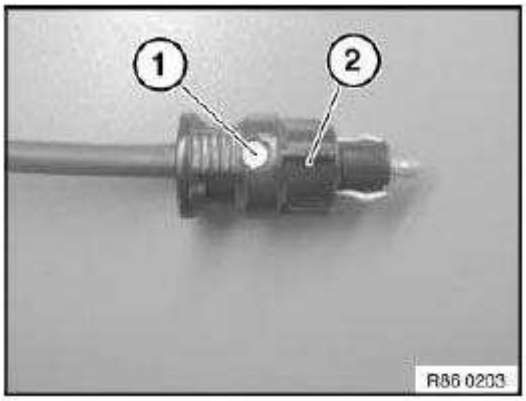


Fig. 180: Identifying Housing Plug & Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Remove contact parts (1+2).

Installation:

When installing, make sure contact parts (1+2) are in correct installation position.

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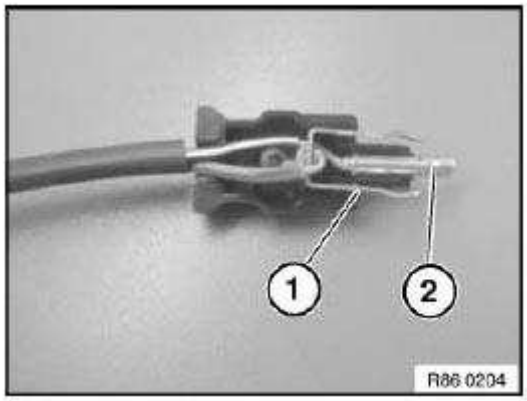


Fig. 181: Identifying Contact Parts
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING ROOF RAILING

NOTE: The text describes how to remove the roof railing at one mounting point as an example. Proceed in the same way for the other mounting points.

Open cover (1) and fold down.

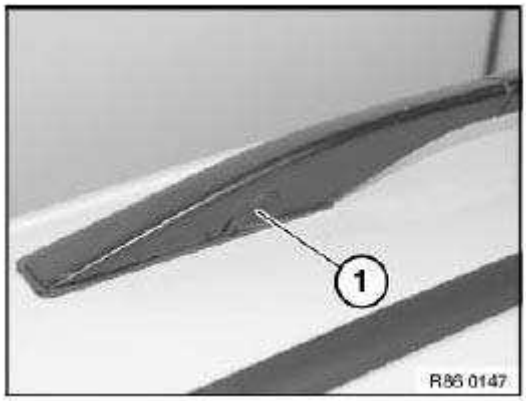


Fig. 182: Identifying Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew bolt (1).

After releasing three retaining screws, lift off roof railing (2).

Installation:

Check molded sealing parts for faults and replace if necessary. Pay attention to identification of molded sealing parts and position accordingly.

Check butylene tape seal.

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Use new screws. Coat all screws with OKS 90 thread locking adhesive.

First screw down railing adapter in middle. Then press roof railing downwards with a force of approx. 50 N. Then screw down railing adapter at front and rear.

Tightening Torque for roof railing at front and rear, refer to **86 21 HOOD** .

Tightening Torque for roof railing in middle, refer to **86 21 HOOD** .

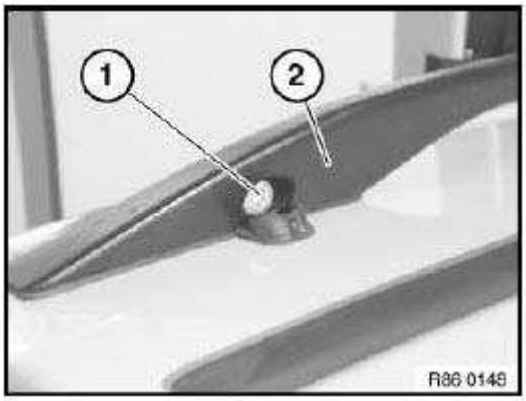


Fig. 183: Identifying Roof Railing And Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING ROOF RAILING ADAPTER

NOTE: Removing roof railing, refer to 86 21 ... REMOVING ROOF RAILING

Remove molded sealing part (1).

Installation:

All molded sealing parts must rest flat on hood. Molded sealing parts are marked according to their position.

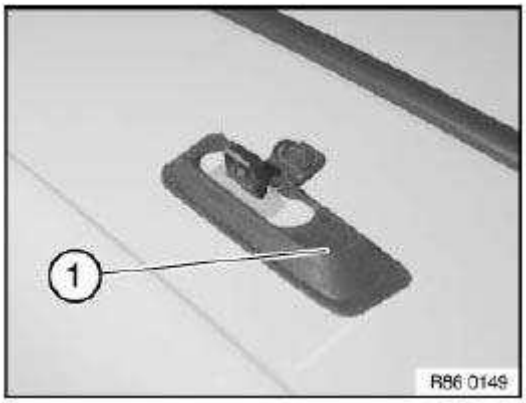


Fig. 184: Identifying Molded Sealing Part

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Courtesy of BMW OF NORTH AMERICA, INC.

Cut butylene tape (1) out of railing adapter (2) along dotted line (3) with a knife.

Installation:

Use butylene tape, 5 mm round, for sealing railing adapter on hood roof.

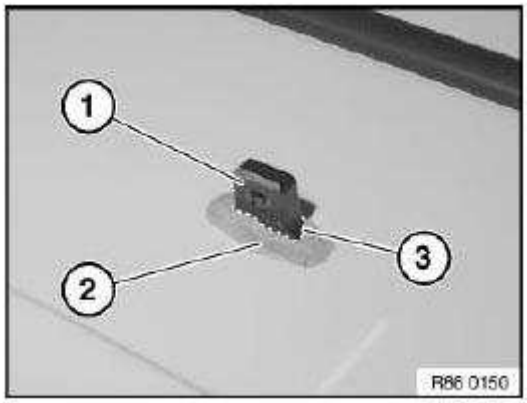


Fig. 185: Identifying Butylene Tape & Railing Adapter
Courtesy of BMW OF NORTH AMERICA, INC.

Railing adapters at front and rear: Release screws (1) from inside of hood. Pull out railing adapter (2) and spacer plate (3) towards bottom.

Installation:

Use new screws. Coat all screws with OKS 90 thread locking adhesive. Install spacer plate (3) in its original position.

Tightening Torque for railing adapters at front and rear, refer to **86 21 HOOD** .

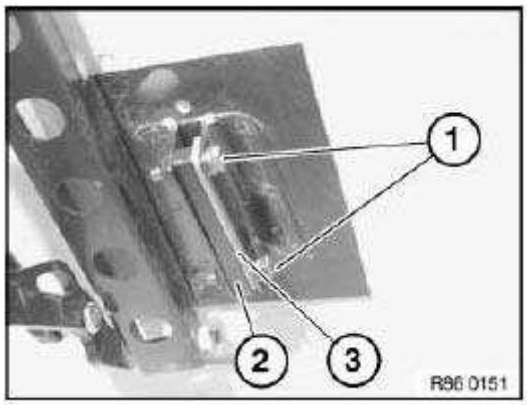


Fig. 186: Identifying Railing Adapter, Screws & Spacer Plate
Courtesy of BMW OF NORTH AMERICA, INC.

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Railing adapter in middle: Release screws (1) from inside of hood. Twist out railing adapter from outside.

Installation:

Use new screws. Tightening Torque for railing adapter in middle, refer to **86 21 HOOD** .

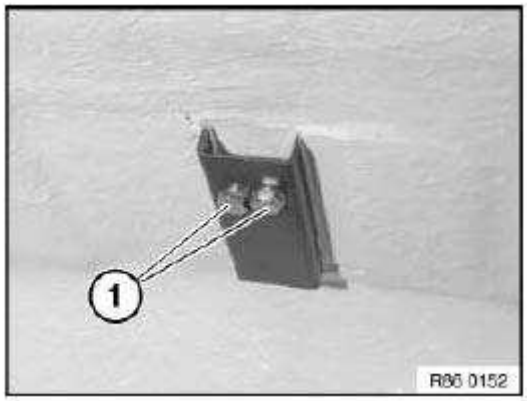


Fig. 187: Identifying Hood Screws
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING ROTARY STRIKER LOCK

The following text describes how to remove the rotary striker lock on the rear lid as an example. Proceed in the same way for the side lids. Remove the lock while the lid is open.

Release screws (1) and remove cover (2). On rear lid, remove red cap (3).

Installation, rear lid only:

Place red cap back on pull rod. Red cap serves to indicate rear lid emergency unlocking facility.

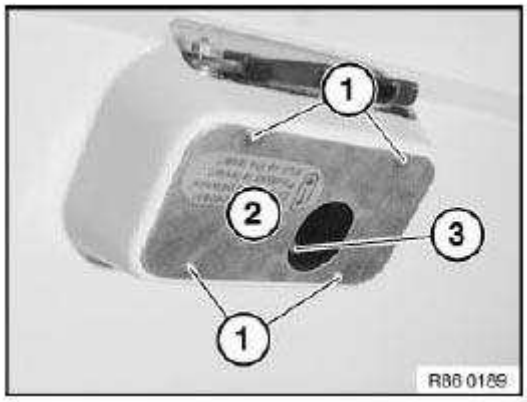


Fig. 188: Identifying Screws, Cover & Red Cap
Courtesy of BMW OF NORTH AMERICA, INC.

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Remove spring nut (1) from pull rod (2).

Installation:

Use new spring nut.

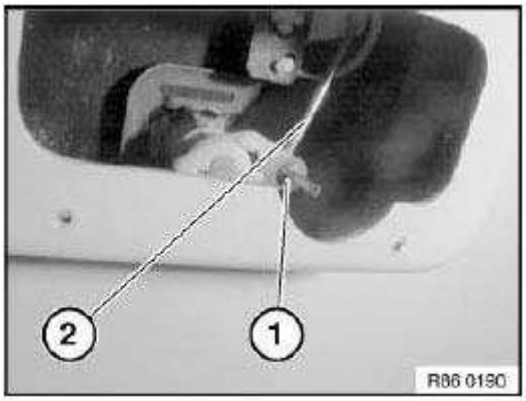


Fig. 189: Identifying Spring Nut & Rod
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook pull rod (1) from rocker (2).

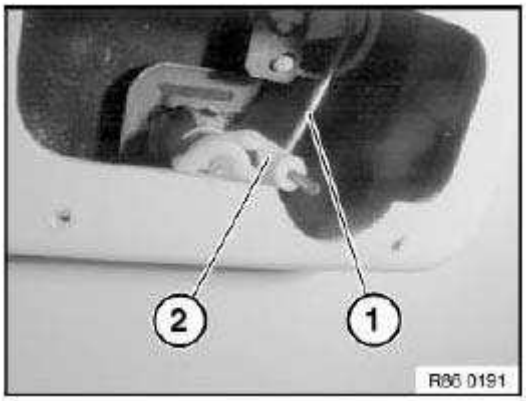


Fig. 190: Identifying Rod & Rocker
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove rotary striker lock (2) from opening (3).

Installation:

Tightening Torque, refer to **86 21 HOOD** .

Use new Stover nuts.

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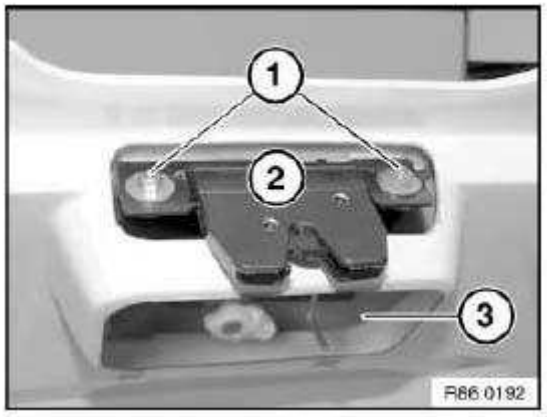


Fig. 191: Identifying Sealing Compound & Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Detach spring nut (1) from pull rod (2). Remove pull rod (2) from rotary striker lock (3).

Installation:

Use new spring nut.

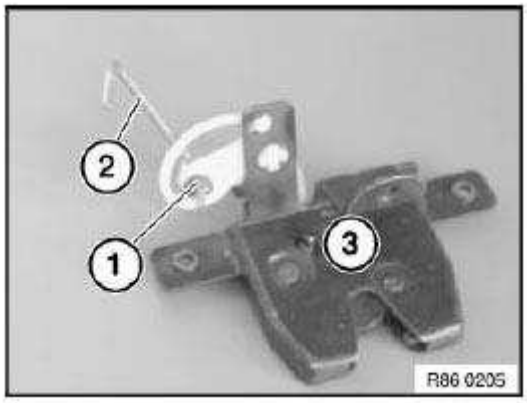


Fig. 192: Identifying Spring Nut, Rod & Rotary Striker Lock
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REMOVING SIDE LID HINGE

NOTE: Remove side lid, refer to 86 21 ... REMOVING LID.

Remove gas spring, remove gas spring on hinge side only, refer to 86 21 ... REMOVING GAS SPRING.

Unscrew bolt (1). Remove hinge (2). If fitted, remove spacer plate(s) (3).

Installation:

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Pass screws (1) again through spacer tubes. Reinstall existing spacer plate(s) in its/their original position(s). Use new self-locking nuts.

Tightening Torque, refer to **86 21 HOOD** .

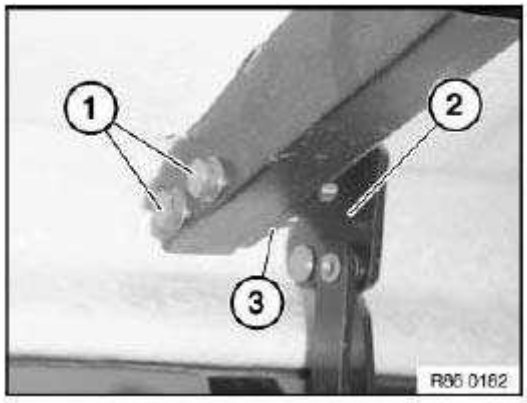


Fig. 193: Identifying Hinge, Spacer Plate & Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REPLACING INSIDE LIGHT

Unclip cover (1) at side recess (arrowed) and remove towards bottom.

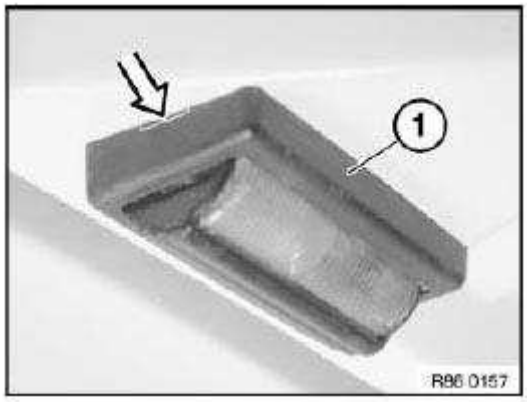


Fig. 194: Removing Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip lamp housing (1) at side recess (arrowed).

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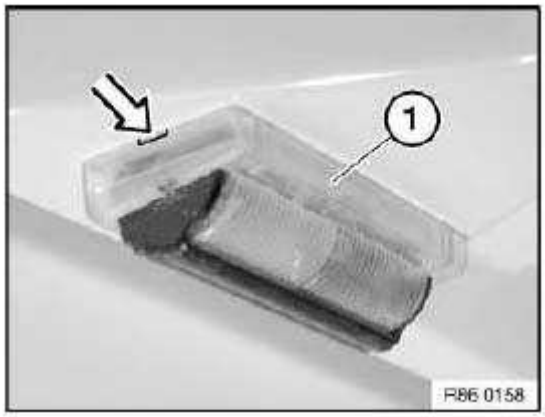


Fig. 195: Unclipping Lamp Housing At Side Recess
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect flat connector (1) from flat connector contact.

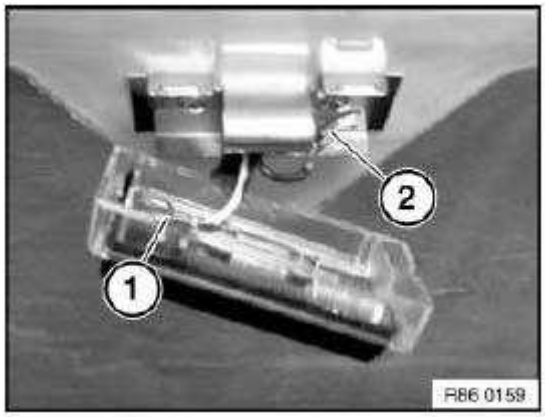


Fig. 196: Disconnecting Flat Connector From Flat Connector Contact
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Before drilling out rivets, drive in rivet pins with a punch. Drill out rivets (1). Pull off inside light mounting bracket (2) over flat connector (3).

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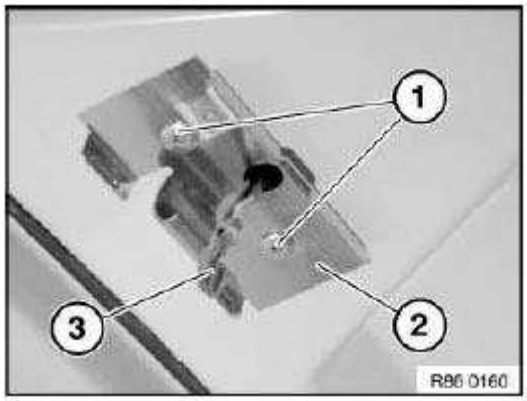


Fig. 197: Identifying Rivets, Inside Light Mounting Bracket & Flat Connector
Courtesy of BMW OF NORTH AMERICA, INC.

86 21 ... REPLACING INSIDE LIGHT POWER CABLE

NOTE: Remove inside light cover and lamp housing,

refer to 86 21 ... REPLACING INSIDE LIGHT.

Remove inside light plug, refer to 86 21 ... REMOVING PLUG FOR INSIDE LIGHT

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Carefully remove adhesive bonds of power cable (1) from hood surface.

Installation:

Carefully remove traces of old adhesive with a scraper. Use standard heat gun adhesive as adhesive.

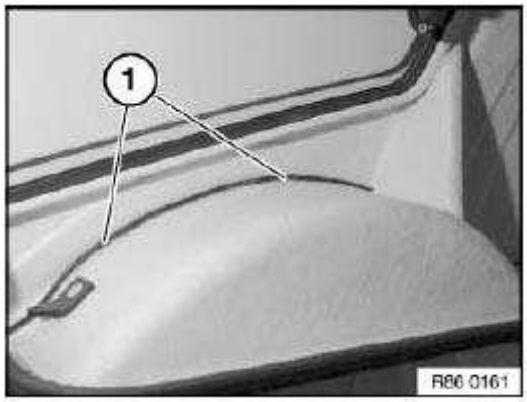


Fig. 198: Identifying Power Cable
Courtesy of BMW OF NORTH AMERICA, INC.

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Carefully remove adhesive bonds of power cable (1) from hood surface.

Installation:

Carefully remove traces of old adhesive with a scraper. Use standard heat gun adhesive as adhesive.

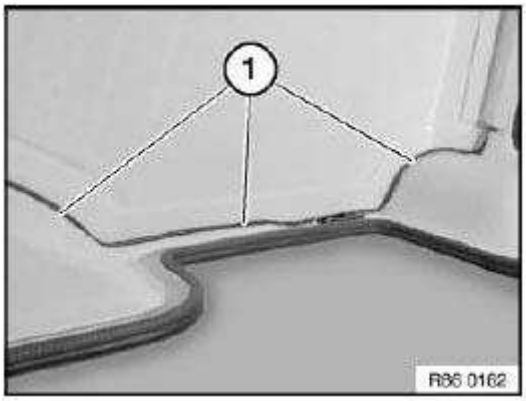


Fig. 199: Identifying Power Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Remove flat connectors (1). Strip cable ends (2) and connect to a new cable. Feed cable connection through opening (3).

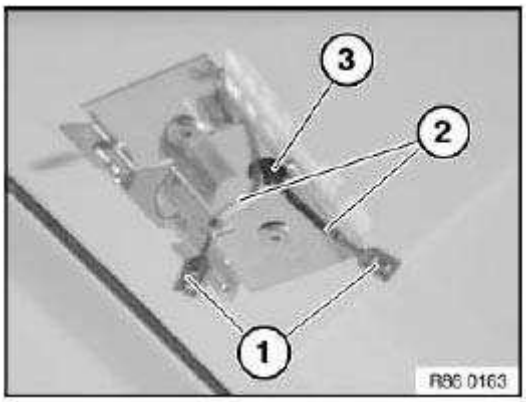


Fig. 200: Identifying Opening, Flat Connectors & Cable Ends
Courtesy of BMW OF NORTH AMERICA, INC.

Lay new power cable with old power cable through duct (1).

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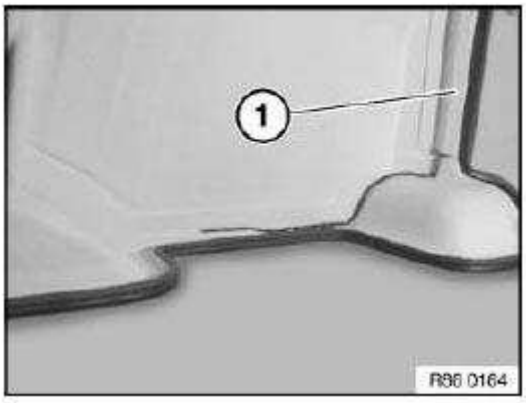


Fig. 201: Identifying Duct
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND EQUIPMENT

Various Accessories - Tightening Torques - X3

60 VARIOUS ACCESSORIES

71 60 TRAILER HITCH

TRAILER HITCH TIGHTENING TORQUES

	Type	Thread	Tightening specification	Measure
1AZ Trailer tow hitch to body	E53	Nut M10 and screw M10 10.9	1. Collar nuts M10 trailer tow hitch / rear panel 2. M10 screws to axial struts, top and bottom	59 Nm
	E70		Replace nuts	108 Nm
	E83	M12		71 Nm

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