

**Note:**

Ride height adjustment must be carried out after the following work:

- Removal/replacement of ride height sensor or its control rod (only necessary on vehicles with air suspension)
- Exchange the EHC control unit (only with F01/F02/F03/F04/F07)
- Replacement of ICM control unit (Integrated Chassis Management)



Connect diagnosis system.

Switch the ignition on.

Carry out ride height adjustment (menu item: "Service function").

Attention!

Following ride height adjustment, for vehicles with:

- Run Flat Indicator: Initialise Run Flat Indicator.
- Tyre Pressure Monitor: Perform tyre pressure control (RDC) reset.



00 Danger of injury if oil comes into contact with eyes and skin



Danger of injury!

Contact with eyes or skin may result in injury!

Possible symptoms are:

- Impaired sight
- Irritation of the eyes
- Reddening of the skin
- Rough and cracked skin



Protective measures/rules of conduct:

- Wear safety goggles.
- Wear oil-resistant protective gloves.
- Observe country-specific safety regulations.



First aid measures:

- Eye contact: Immediately flush eyes with lots of water for at least 15 minutes. In the case that it is available, use an eye wash bottle. If eye irritation persists, consult a doctor.
- Skin contact: Wash off with soap and water immediately. If irritation persists, consult a doctor.

Note: Do not use solvents/thinners.



00 Danger of poisoning if oil is ingested/absorbed through the skin



Danger of poisoning!

Ingesting oil or absorbing through the skin may cause poisoning!

Possible symptoms are:

- Headaches
- Dizziness
- Stomach aches
- Vomiting
- Diarrhoea
- Cramps/fits
- Unconsciousness



Protective measures/rules of conduct:

- Fill oil in appropriately marked containers only.
- Do not fill oil in containers meant for drinking out of. (bottles for beverages, glasses or cups)
- Observe country-specific safety regulations.



First aid measures:

- Do not induce vomiting.

If the person affected is still conscious, he/she must rinse out their mouth with water, drink plenty of water and consult a doctor immediately.

Do not administer anything to an unconscious person via their mouth; place them in a stable position on their side. Call the emergency doctor immediately.



00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

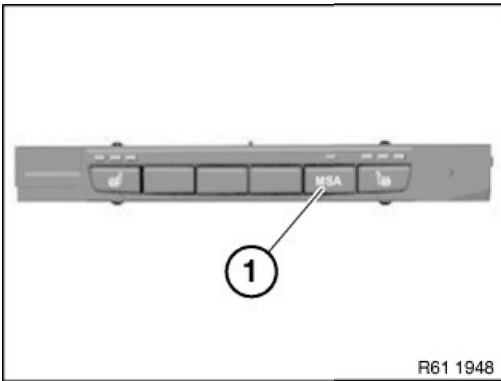
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

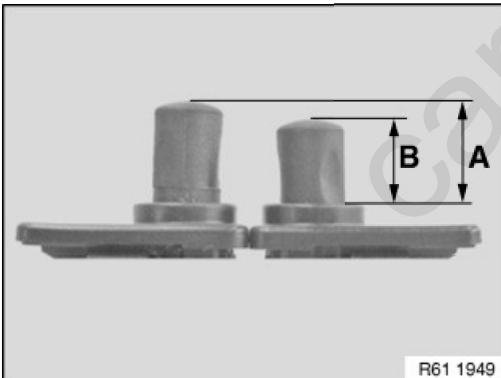
Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:



- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
 - Workshop mode
 $A = 10 \text{ mm}$
 - Basic setting (engine hood/bonnet open)
 $B = 7 \text{ mm}$

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.



When working with diagnosis tools:

- Observe instructions in diagnosis tool





Note:

For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

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**Warning!**

Danger of poisoning if oil is ingested/absorbed through the skin!

Risk of injury if oil comes into contact with eyes and skin!

**Recycling:**

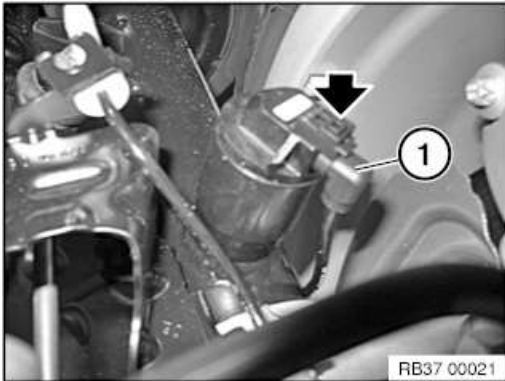
Observe country-specific waste disposal regulations.

**Measures if oil is unintentionally released:**

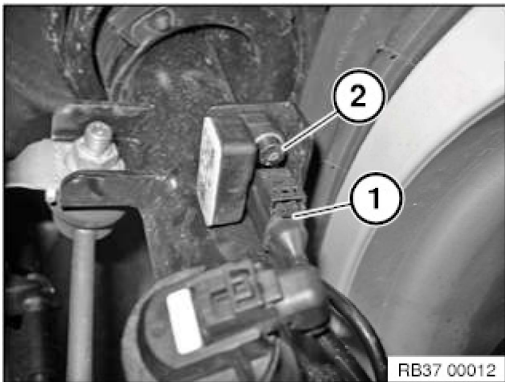
- Personal precautionary measures: Danger of slipping! Keep non-involved persons away from the work area. Wear personal protective clothing/equipment.
- Environmental protection measures: Prevent oil from draining into drain channels, sewerage systems, pits, cellars, water and the ground.
- Limiting spread: Use oil blocks to prevent the surface spread of oil.
- Cleaning procedure: Bind and dispose of escaped oil with nonflammable absorbents.

Note: Do not flush oil away with water or aqueous cleaning agents.





Unfasten plug connection (1) (arrow) and disconnect.



Unfasten and disconnect electrical connector (1) from the acceleration sensor (2).



Note:
Further repair work is identical with removing and installing front spring strut!



**Special tools required:**

- 31 3 340
- 31 2 230
- 31 3 341
- 2 240 516
- 2 240 482
- 2 240 523
- 2 240 487
- 2 240 290
- 2 240 490
- 33 0 040

**Attention!**

- When replacing the spring strut, replace the auxiliary damper as well!

**Warning!**

Before using the special tool 31 3 340 take care to read through the Owner's Handbook!

All the safety precautions and instructions contained in the Owner's Handbook must be strictly observed!

Failure to observe these safety precautions and instructions increases the risk of serious physical injury, damage to your health and damage to property and equipment!

**Attention!**

1. Use only the BMW approved special tool!
2. Prior to each use, check the special tools for defects, modifications and operational reliability.
3. Damaged/modified special tools must not be used!
4. No changes or modifications may be made to the special tools!
5. These special tools are intended solely for the purpose of tightening and relieving cylindrical and tapered suspension springs.
6. Keep special tools dry, clean and (down to the spindle) free from grease.
7. Impact screwdrivers are prohibited!

Risk of damage inside the shock absorber!

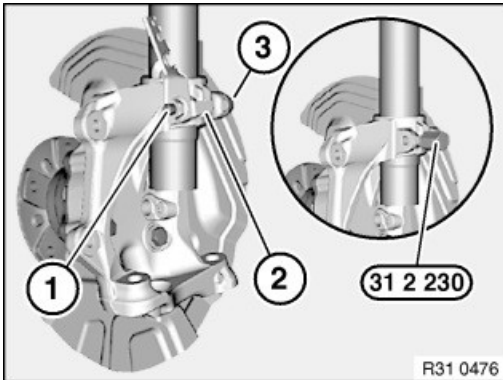
8. Do not compress coil spring to full extent.





Necessary preliminary tasks:

- Remove front spring strut



Release nut (1), remove holder (2) and remove screw (3).

Tightening torque 31 31 3AZ

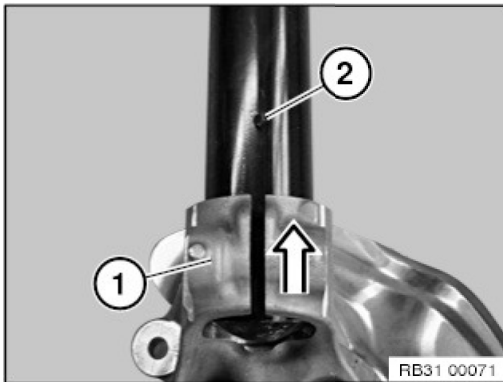
Expand swivel bearing with special tool 31 2 230 and pull off spring strut.

Installation note:

Keep press fit of swivel bearing and spring strut in lower area clean and free from oil and grease.

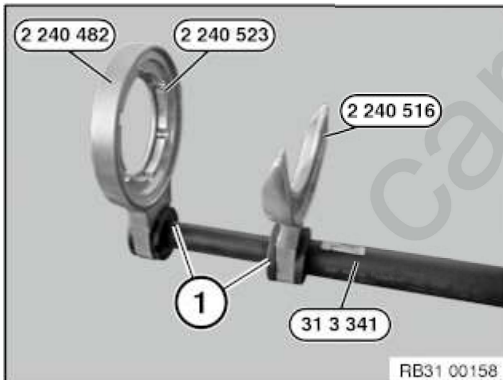
Screw head must point in direction of travel.

Replace self-locking nut.



Installation note:

Expand swivel bearing (1) with special tool 31 2 230 . Align swivel bearing (1) to positioning pin (2) on the rear side of the spring strut along the gap and slide all the way in.

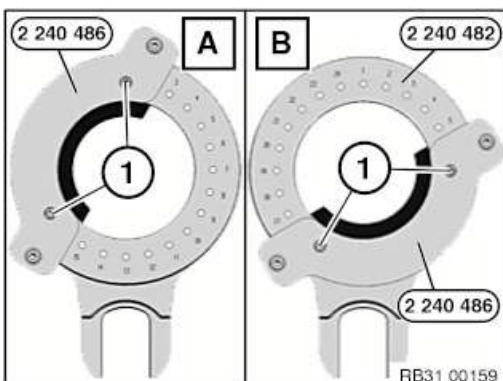


Clamp special tool 31 3 341 in vice.

Fit special tool 2 240 516 and 2 240 482 onto special tool 31 3 341 until retaining bolt (1) can be felt and heard to snap into place.

Insert the centring insert 2 240 523 in the round tensioning plate 2 240 482 .

Check seating of special tools 2 240 516 and 2 240 482 with centring insert 2 240 523 , correct if necessary.



Installation of "spring brake" onto round tensioning plate:

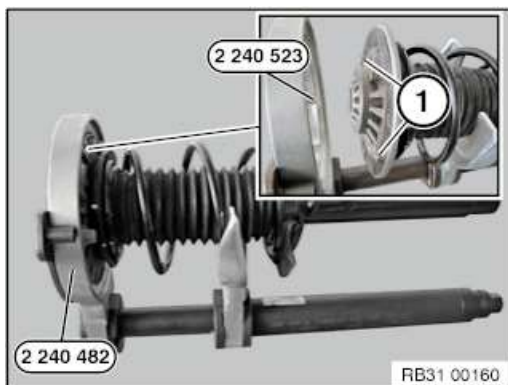
Move counter support 2 240 486 into the correct position/bore hole (see Figure A or B)

- **Standard suspension: Screw connection using bore holes 1 and 17**
- **Sport suspension: Screw connection using bore holes 7 and 15**

Turn centring insert 2 240 253 until counter support 2 240 486 can be screwed into place at the specified position.

Screw together counter support with round tension plate and centring insert with screws (1) so they are hand-tight.





Clean coil spring to remove contamination.
Spring must be free of grease, clean and dry.

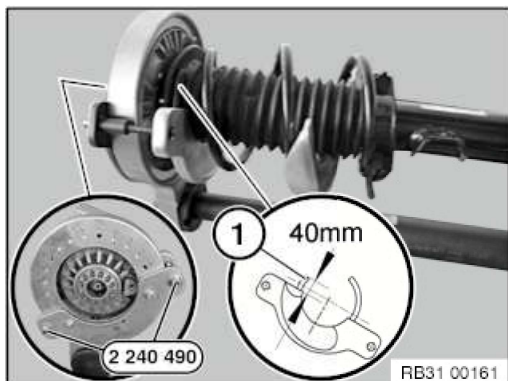
Insert spring strut into spring tensioner.

Warning!

Insert the guide pins (1) of the support bearing must fit into the recesses on the centring insert 2 240 523 .

The support bearing must be completely fitted against the centring ring 2 240 523 .

The lower spring coil must be placed completely into the recess of special tool 2 240 516 !

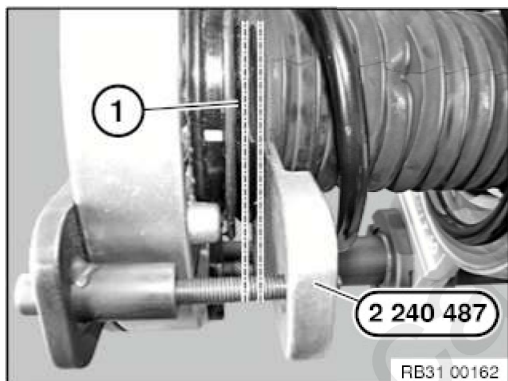


Attach pressure plate 2 240 487 with the screws 2 240 290 !

The gummed side of the pressure plate 2 240 487 must be fitted against the top spring coil.

Position the spring strut so that the end of the spring (1) protrudes by 40 mm beyond the pressure plate 2 240 487 .

Tighten the screws 2 240 490 evenly at 7 Nm.



Attention!

The pressure plate 2 240 487 must be aligned parallel with the top spring coil (1)!

When the end of the spring begins turning relative to the pressure plate, stop tensioning immediately.

The pressure plate must be checked for correct seating, and the rubber-coated facing and pressure plate also checked for wear!

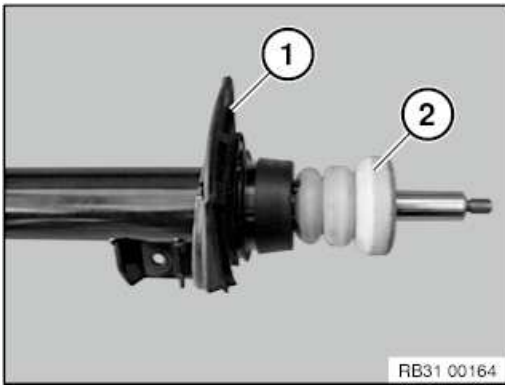
Tension coil spring with spring tensioner 31 3 341 until stress on piston rod is relieved.



Release nut with special tool 33 0 040 .

Remove the spring strut with auxiliary damper.





Installation note:

Remove the spring pad (1) and mount onto the new spring strut, replace if necessary.

Replace the auxiliary damper (2).



Insert spring strut into tensioned coil spring. **Attention!**

Align the lower end of the spring (1) flush with the spring pad (2).

Check the installation position of the protective tube, correct the fold if necessary.



Replace nut and tighten down with special tool 33 0 040 .

Tightening torque 31 31 2AZ.

Relieve tension on coil spring and remove spring strut.



Impact screwdrivers are prohibited!

Risk of damage inside the shock absorber!



After installation:

- Remount vertical acceleration sensor.
 - Use the diagnosis system to perform the vertical acceleration sensor adjustment
- > see service functions/start-up VDM



**Note:**

Ride height adjustment must be carried out after the following work:

- Removal/replacement of ride height sensor or its control rod (only necessary on vehicles with air suspension)
- Exchange the EHC control unit (only with F01/F02/F03/F04/F07)
- Replacement of ICM control unit (Integrated Chassis Management)



Connect diagnosis system.

Switch the ignition on.

Carry out ride height adjustment (menu item: "Service function").

Attention!

Following ride height adjustment, for vehicles with:

- Run Flat Indicator: Initialise Run Flat Indicator.
- Tyre Pressure Monitor: Perform tyre pressure control (RDC) reset.





Warning!

Vehicle may tilt off vehicle hoist if the workshop jack is incorrectly handled.

When supporting components, make sure that:

- the vehicle can no longer be raised or lowered.
- the vehicle does not lift off the locating plates on the vehicle hoist.



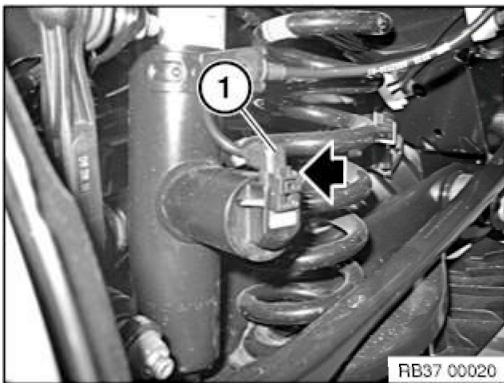
Important!

- Read and comply with Information on replacing shock absorbers.

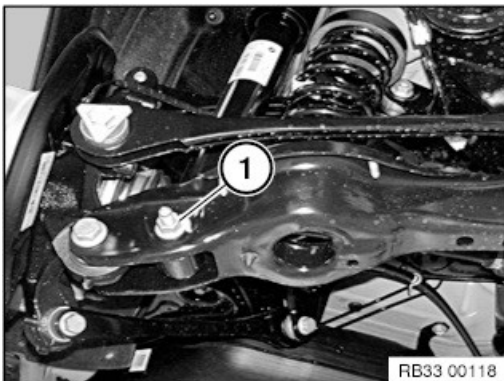


Necessary preliminary tasks:

- Remove rear wheel
- Remove camber arm cover



Unlock connector (1) in direction of arrow and pull off towards top.
Unclip wiring harness on shock absorber and place to one side.



Support wheel carrier with workshop jack.

Slacken nut (1).

Tightening torque 33 52 3AZ

Lift wheel carrier with workshop jack to the point where the screw can be removed.

Slowly lower workshop jack until wheel carrier is suspended.

Remove workshop jack from under vehicle.

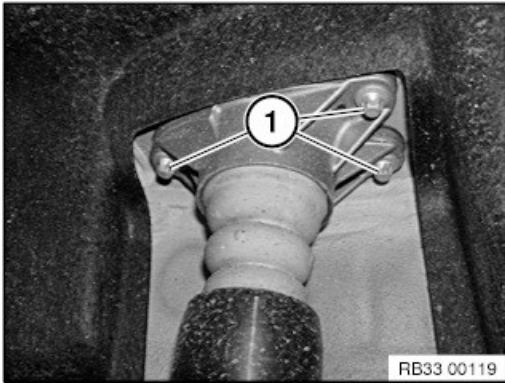
Installation note:

Renew screw and nut.

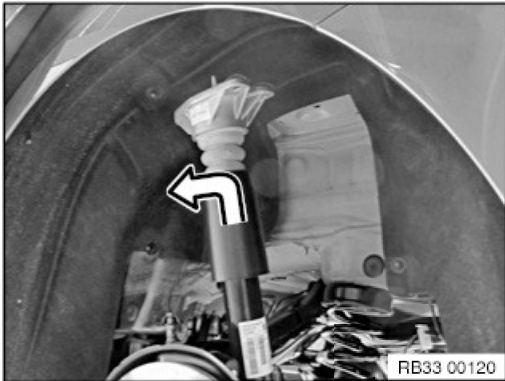
Note direction of insertion of screw.

Tighten down screw connection in normal position.

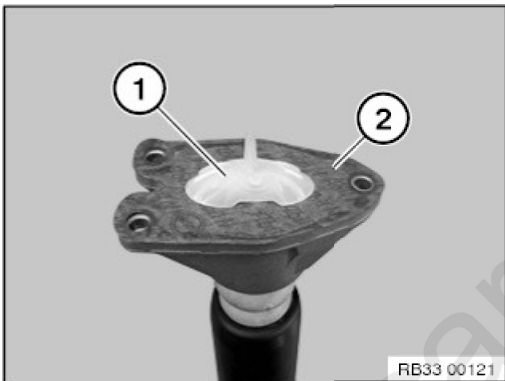




Release screws (1) on support bearing.
Tightening torque 33 52 1AZ.



Press shock absorber together and remove upward from wheel arch.



Installation note:
Check protective cap (1) and sealing washer (2) for damage and renew if necessary.



**Special tools required:**

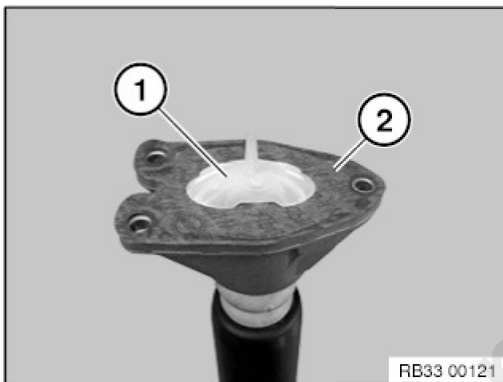
- 2 355 965
- 2 355 966

**Important!**

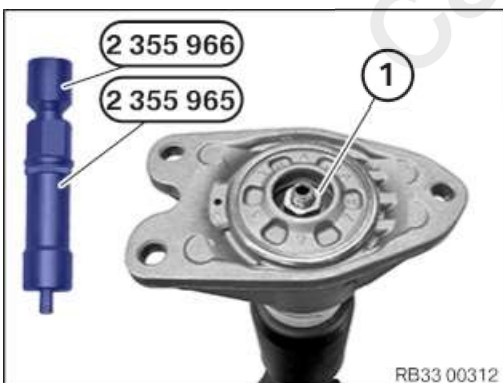
- When replacing the shock absorber, renew the auxiliary damper as well.
- Read and comply with Information on replacing shock absorbers.

**Necessary preliminary tasks:**

- Remove shock absorber



Remove protective cap (1) and sealing washer (2). *Installation note:*
Replace the faulty components.



Release nut (1) with special tool 2 355 965 and 2 355 966 .

Tightening torque 33 52 2AZ.

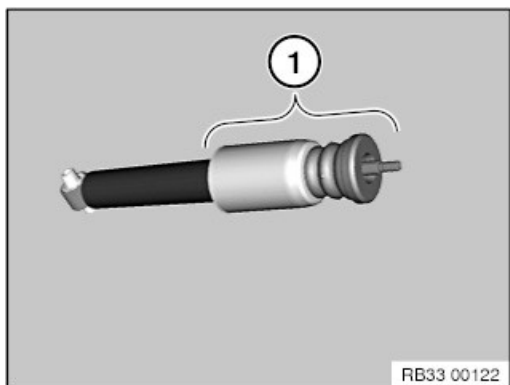
Installation note:
Renew nut.



Impact screwdrivers are prohibited!

Risk of damage inside the shock absorber!





Replace auxiliary damper with protective tube (1).

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**Special tools required:**

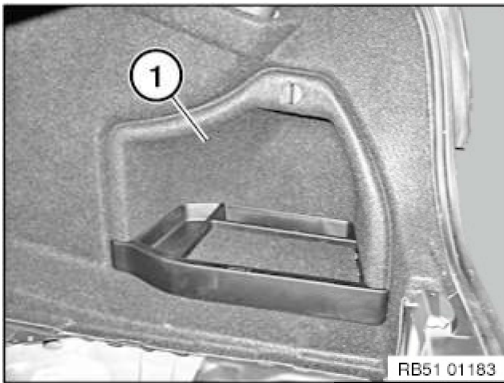
- 64 1 020

**Important!**

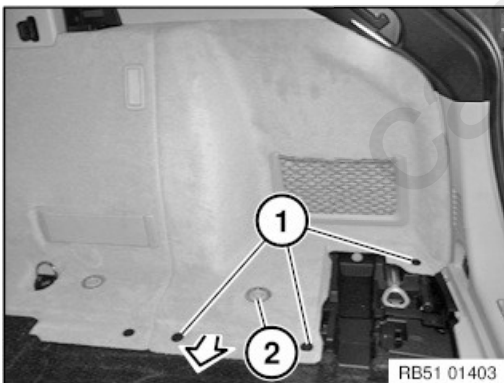
Read and comply with notes on protection against electrostatic discharge (ESD protection)!

**Necessary preliminary tasks:**

- Remove luggage compartment floor trim panels (F31 only)

**F30/F32/F33/ F35:**

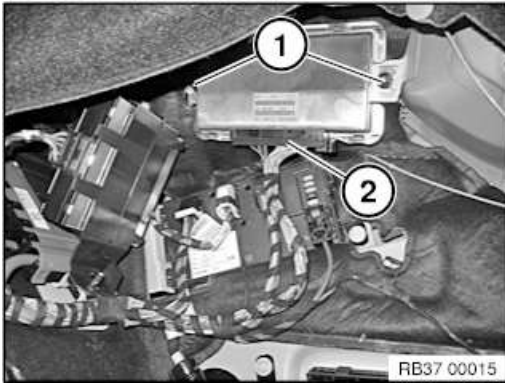
Remove flap (1) on rear right in luggage compartment trim panel.

**F31:**

Lift out expanding rivets (1) and trim (2) for adaptive securing system with special tool 64 1 020 .

Remove luggage compartment trim panel in direction of arrow.





Unscrew nuts (1).
Unlock connector (2) and remove.
Remove control unit.



After installation:

- Carry out programming/encoding
- Start up the VDM with the aid of the diagnosis system
- Carry out ride height adjustment

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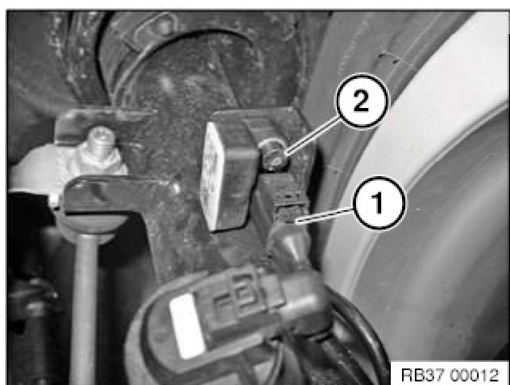
**Attention!**

Read and comply with notes on protection against electrostatic discharge (ESD protection)!

**Attention!**

Replace the vertical acceleration sensor in conjunction with the adapter lead only!

Necessary preliminary tasks: Remove front left or right wheel arch cover (front section).

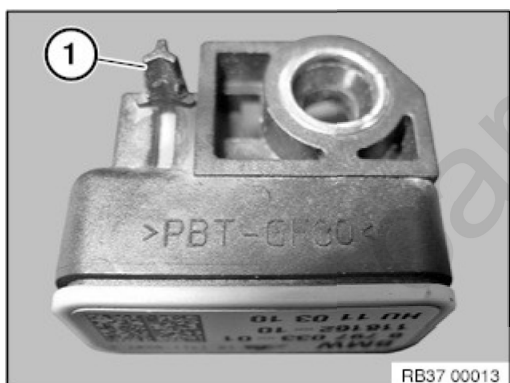


Unlock the plug connection (1) of the vertical acceleration sensor from the spring strut and disconnect.

Release screw (2).

Tightening torque 37 14 6AZ.

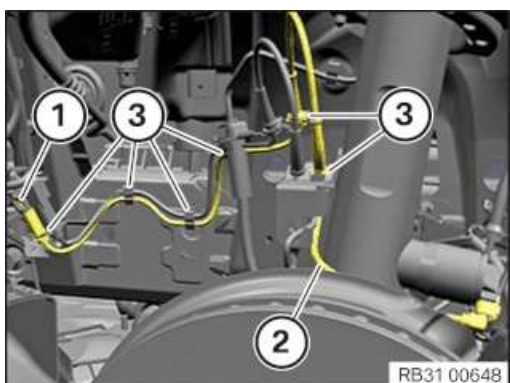
Remove the vertical acceleration sensor.



Installation note:

Check installation position.

Mount the vertical acceleration sensor in the bore hole on the spring strut holder using retaining pin (1)!



Unfasten plug connection (1) and disconnect.

Loosen adapter lead (2) from the brackets (3).

Remove adapter lead (2).





After installation:

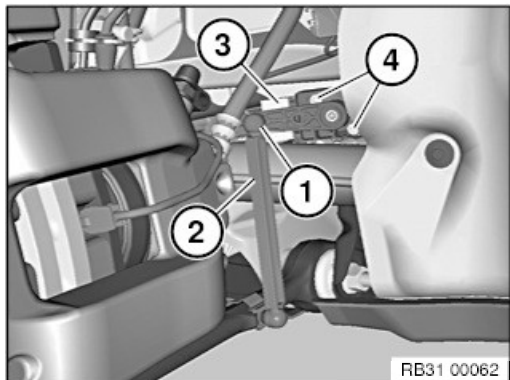
- Use the diagnosis system to perform the vertical acceleration sensor adjustment
> See service functions / Chassis and Suspension / Electronic Damper Control / Start-up

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**Important!**

Read and comply with notes on protection against electrostatic damage (ESD protection).



Slacken nut (1).

Tightening torque 37 14 4AZ.

Detach jointed rod (2).

Disconnect plug connection (3).

Release screws (4).

Tightening torque 37 14 2AZ.

Remove ride height sensor to front.

Installation note:

Replace nut (1).

Sensor lever points in direction of travel starting from ride height sensor.

**After installation:**

- Check headlight adjustment, correct if necessary.

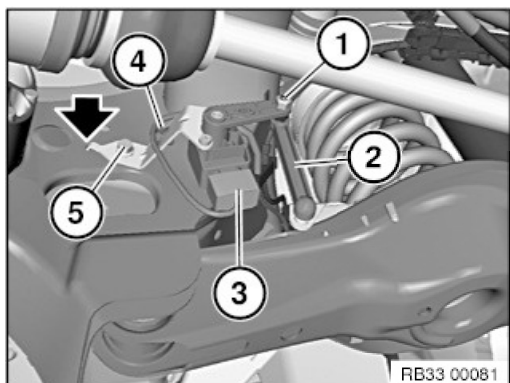


**Important!**

Read and comply with notes on protection against electrostatic damage (ESD protection).

**Necessary preliminary tasks:**

- Remove camber arm cover.



Slacken nut (1).

Tightening torque 37 14 4AZ.

Detach jointed rod (2).

Disconnect plug connection (3).

Unclip cable with holder (4).

Release screw (5).

Tightening torque 37 14 1AZ.

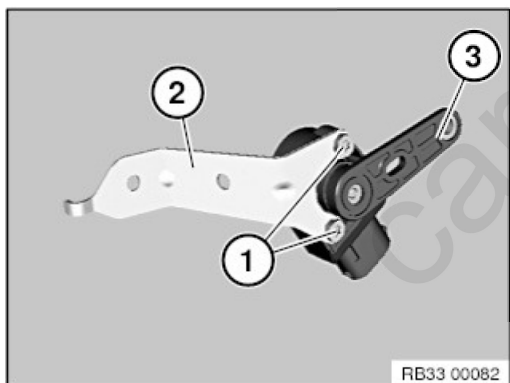
Remove ride height sensor.

Installation note:

Replace nut (1).

Align holder with corresponding bore hole on rear axle support.

Replace faulty cable clips.

**Replacement:**

Release screws (1).

Tightening torque 37 14 2AZ.

Take off ride height sensor from holder (2).

Installation note:

Sensor lever (3) points towards wheel when installed.

**After installation:**

- Check headlight adjustment, correct if necessary.



**Special tools required:**

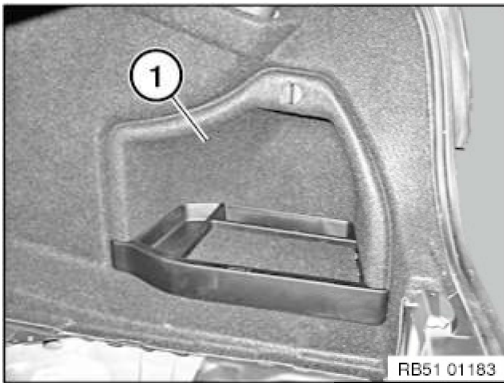
- 64 1 020

**Important!**

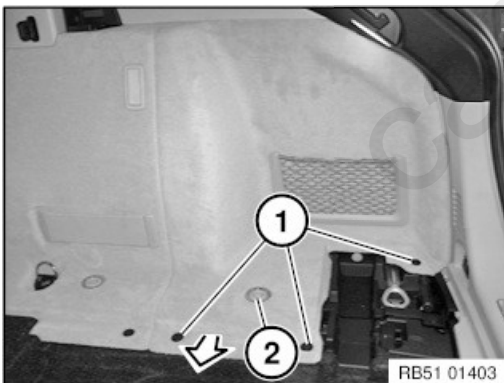
Read and comply with notes on protection against electrostatic discharge (ESD protection)!

**Necessary preliminary tasks:**

- Remove luggage compartment floor trim panels (F31 only)

**F30/F32/F33/ F35:**

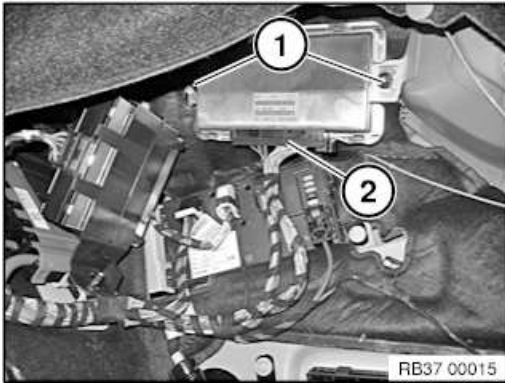
Remove flap (1) on rear right in luggage compartment trim panel.

**F31:**

Lift out expanding rivets (1) and trim (2) for adaptive securing system with special tool 64 1 020 .

Remove luggage compartment trim panel in direction of arrow.





Unscrew nuts (1).
Unlock connector (2) and remove.
Remove control unit.



After installation:

- Carry out programming/encoding
- Start up the VDM with the aid of the diagnosis system
- Carry out ride height adjustment

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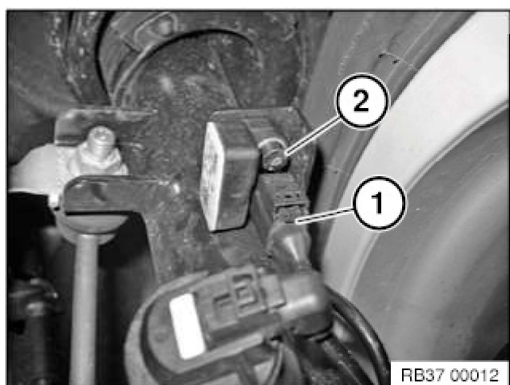
**Attention!**

Read and comply with notes on protection against electrostatic discharge (ESD protection)!

**Attention!**

Replace the vertical acceleration sensor in conjunction with the adapter lead only!

Necessary preliminary tasks: Remove front left or right wheel arch cover (front section).

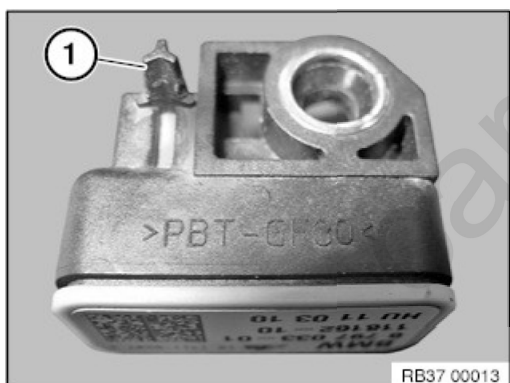


Unlock the plug connection (1) of the vertical acceleration sensor from the spring strut and disconnect.

Release screw (2).

Tightening torque 37 14 6AZ.

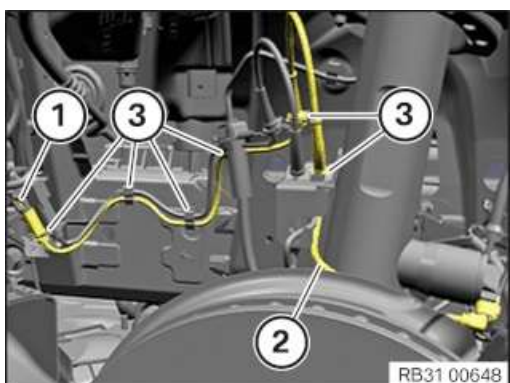
Remove the vertical acceleration sensor.



Installation note:

Check installation position.

Mount the vertical acceleration sensor in the bore hole on the spring strut holder using retaining pin (1)!



Unfasten plug connection (1) and disconnect.

Loosen adapter lead (2) from the brackets (3).

Remove adapter lead (2).





After installation:

- Use the diagnosis system to perform the vertical acceleration sensor adjustment
> See service functions / Chassis and Suspension / Electronic Damper Control / Start-up

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