00 00 602 Service - air filter element

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

1 – Removing air filter element

Prerequisite

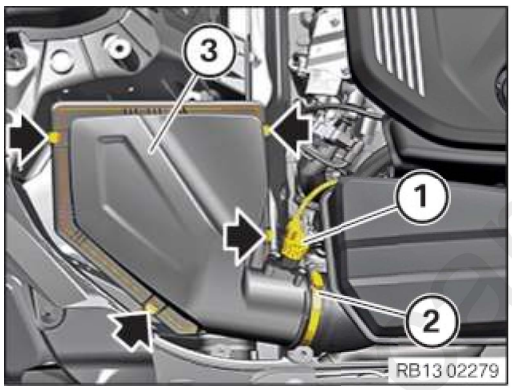
Ignition is switched off.

RISK OF DAMAGE

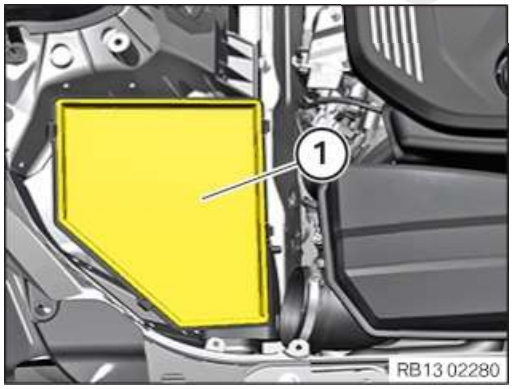
Damage to the clean air line. Damage to the air filter.

For changing the air filter insert, if the upper section of intake filter housing is only raised and not completely removed, the clean air line and the air filter insert may be damaged.

- Do not lift upper section of intake filter housing by force.
- Unfasten clamp.
- Remove upper section of intake filter housing completely.



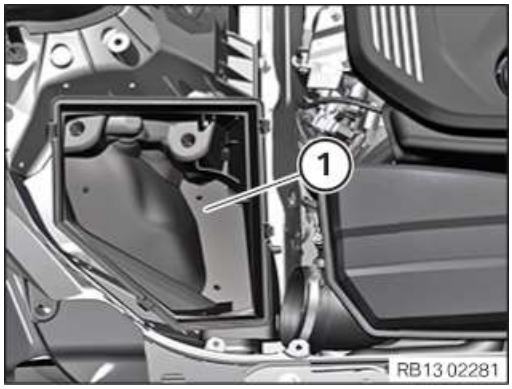
- Unlock and loosen connector (1).
- Unfasten clamp (2).
- Unlock clamps (arrows).
- Remove the upper section of the intake filter housing (3).



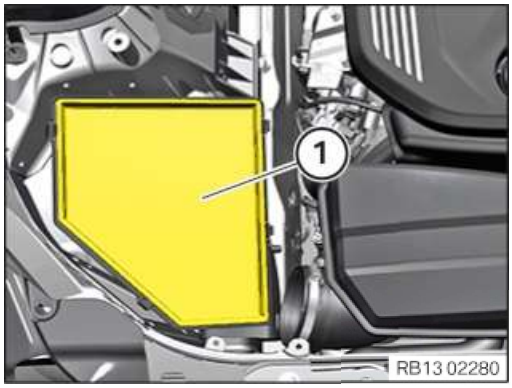
- Remove the air filter element (1).

2 – Installing the air filter element

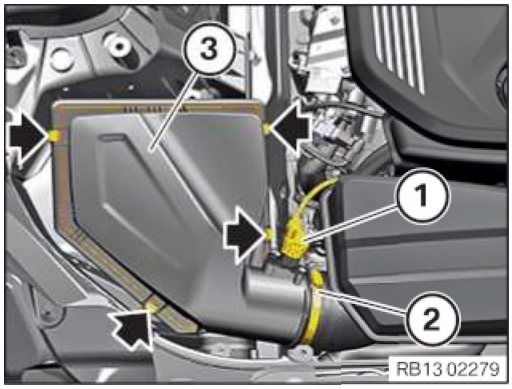
mdiag.com



- Clean lower section of intake filter housing (1).



- Install the air filter element (1).



- Lock clamps (arrows).

  The clamps (arrows) must engage audibly.
- Tighten clamp (2).

Clean air pipe to upper section of intake filter housing

Clamp		Tightening torque	3 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

Additional Information

Overview of Tightening Torques

Clean air pipe to upper section of intake filter housing Used in step 2

Clamp		Tightening torque	3 Nm

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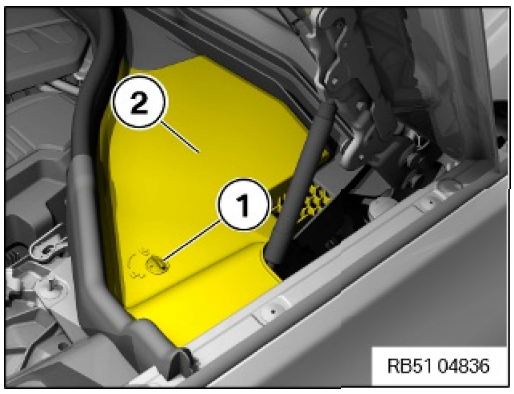
00 00 618 Service - brake fluid

TECHNICAL INFORMATION

Use only BMW-approved brake fluids.
For additional information see: SBS-ANL-SBS1996-340396150...

PRELIMINARY WORK

1 – Remove the cover of the engine compartment at the rear left



- Loosen the lock (1).
- Remove rear left cover of engine compartment (2).

2 – Connect bleeder unit for brake fluid





- To guarantee correct bleeding of the brake system, it is essential to adhere to the following procedure!
- Fill new brake fluid in the expansion tank up to the lower edge of thread (1).
- Bleed the hose of the bleeder unit before connecting.

TECHNICAL INFORMATION

Use only BMW-approved brake fluids, see operating fluids.

RISK OF DAMAGE

Paint damage.

Mechanical or chemical action may lead to paint damage.

- Cover up working area with specified covering material only.

- Connect the bleeder unit (1) to the brake fluid expansion tank and switch it on.

  Observe the operating instructions of the corresponding equipment manufacturer.

- **Do not exceed the filling pressure of** 2 bar**.**

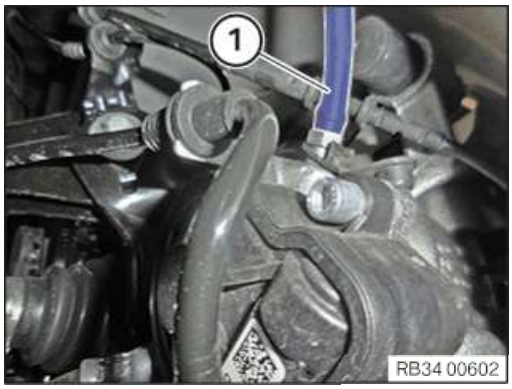
mdiag.com

MAIN WORK

3 – Rinsing and bleeding the rear axle brake circuit

NOTICE

Description is for right component only. The procedure on the left side is identical.



- **Start flushing at the rear right.**
- Connect the vent hose with the collecting vessel to the vent valve (1) on rear right brake caliper.
- Open the vent valve (1) and purge it until clear, bubble-free brake fluid emerges.
- Close vent valve.

Vent valve

		Tightening torque	10 Nm

- Carry out the same procedure on the rear left wheel brake.

4 – Flushing and bleeding the front axle brake circuit

NOTICE

Description is for right component only. The procedure on the left side is identical.



- **Start flushing at the front right.**
- Connect the vent hose with the collecting vessel to the vent valve (1) on front right interior brake calliper.
- Open the vent valve (1) and purge it until clear, bubble-free brake fluid emerges.
- Close vent valve (1).

Vent valve

		Tightening torque	10 Nm

POSTPROCESSES

5 – Close bleeder unit for brake fluid

RISK OF DAMAGE

Paint damage.

Mechanical or chemical action may lead to paint damage.

- Cover up working area with specified covering material only.

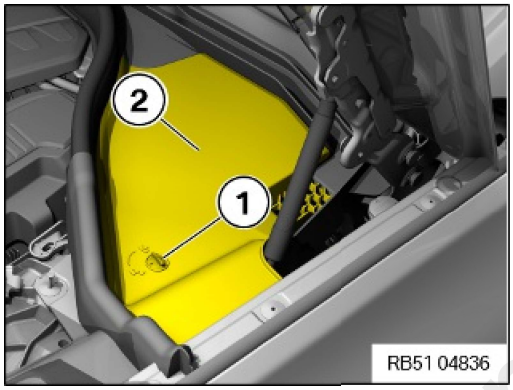


- Switch off bleeder unit (1) and remove from brake fluid expansion tank .
- Check the brake fluid level; if necessary, adjust to maximum mark.



- Check the seal (1) on the sealing cap, renew if necessary.
- Mount the sealing cap on the brake fluid expansion tank.

6 – Install the cover of the engine compartment on the rear left



- Position the engine compartment cover at the rear left (2) .
- Close lock (1).

7 – With active pedestrian protection (SA8TF): check the gas pressure springs for bonnet



Check

TECHNICAL INFORMATION

Not all models with active pedestrian protection have an expiry date printed on the gas pressure spring.

- Check expiry date of the gas pressure spring for bonnet (1).

  Alternatively, if there is no printed expiry date, the gas pressure spring for bonnet should be renewed every five years starting from the production date of the vehicle.

desired state

- The expiry date of both gas pressure springs for bonnet (1) must be after the next brake fluid service (24 months).

  Gas pressure springs without a printed expiry date are also subject to maintenance and they must be renewed regularly.

Result

» The expiry date of the two engine compartment lid gas pressure springs () must extend to the time of the next brake fluid service (24 months).

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Measure

- Renew both gas pressure springs for bonnet.

51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid

8 – Performing a CBS reset (equipment specification without the reset button for the trip distance recorder in the instrument cluster (KOMBI))

Prerequisite

Scope of maintenance work is performed.

On-board date is set correctly.

No CC message is present.

Availability of the scope of maintenance work is under 90%.

TECHNICAL INFORMATION

The CBS scope of maintenance work can be reset in the car. In general, however, the reset of CBS functions (CBS reset) with the diagnosis system is recommended.

It is only possible to code the country-specific statutory intervals with the diagnosis system.

TECHNICAL INFORMATION

Information for the occurrence of a failed CBS reset:

For front/rear brake service:

- A CBS reset is only possible in the vehicle with a worn brake pad wear sensor (CBS display in CID active).

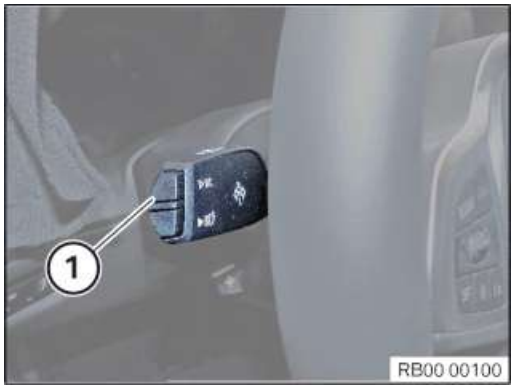
- With a brake pad wear sensor that is not worn (no CBS display in the CID), a CBS reset is only possible with the diagnosis system.

Other known causes of CBS reset problems:

- Parking brake engaged

- Brake pedal pressed

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TECHNICAL INFORMATION

The reset procedure (CBS reset) is cancelled due to a timeout or a terminal change.

- Generate PWF status "Residing".
- Generate PWF status "PAD": For this purpose, press the START-STOP button three times.
- Press on-board computer button on the turn signal/high beam switch for (1) approx. 10 s, until the 1st scope of maintenance work appears on the display.

  The next position is reached by briefly pressing the on-board computer button on the turn signal/high beam switch (1)again.
- Select the desired service job.

  If a CBS reset is possible, "Reset possible" is displayed on the instrument cluster (KOMBI).
- Confirm the "Perform reset?" text message. Press the on-board computer button on the turn signal/high beam switch for (1) 3 s.

  The CBS reset is confirmed as "Reset successful" after it is performed.

Additional Information

Overview of Tightening Torques

Vent valve			Used in step 34
		Tightening torque	10 Nm

Links

Repair instructions	**Used in step**
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid	7
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid	7
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid	7
51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid	7

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00 00 612 Service - front brakes

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raising the vehicle using a vehicle hoist.

TECHNICAL INFORMATION

General information on changing the brake pads:

For vehicles older than 48 months it is recommended to replace the retaining spring or expanding spring.

The brake pad wear sensor must be replaced once it has been removed because the brake pad wear sensor loses its retention capability in the brake pad.

A CBS reset must be done after every brake pad exchange:

A CBS reset in the vehicle is possible in the event of a **partially ground down** brake pad wear sensor. The CBS display in the Central Information Display (CID) is active.

In the event of a brake pad wear sensor that is **not partially ground down**, a CBS reset is only possible with the diagnosis system. No CBS display in the Central Information Display (CID).

If bonded brake pads are installed, the brake pads must be renewed after releasing the adhesive strip.

TECHNICAL INFORMATION

To prevent damage to the surface coating: With floating callipers on the brake caliper mounting bracket or with fixed callipers in the brake caliper housing, do not clean the contact surfaces for the brake pads to the extent that it is possible.

Clean the contact surfaces with brake cleaner (BMW part number 83 19 2 154 780). Next, apply a thin coat of brake pad paste (BMW part number 83 19 2 158 851 for 3 g) or 83 19 2 158 852 fr 100 g).

Spread brake pad paste on the marked surfaces with a brush.

For additional information see: 34 00 ... brake pad paste

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PRELIMINARY WORK

1 – Removing both front wheels

▸ **Removing the wheel**



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter from the tool set .

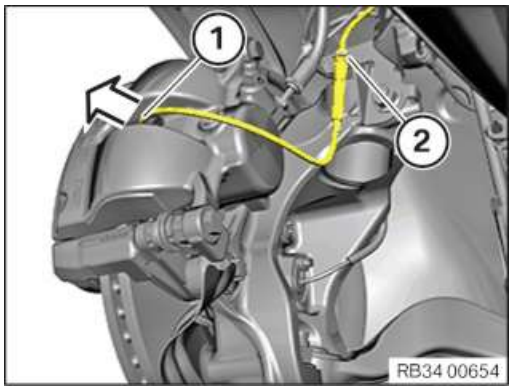
2 – Removing front brake pad wear sensor

TECHNICAL INFORMATION

The brake pad wear sensor must be replaced once it has been removed because the brake pad wear sensor loses its retention capability in the brake pad.

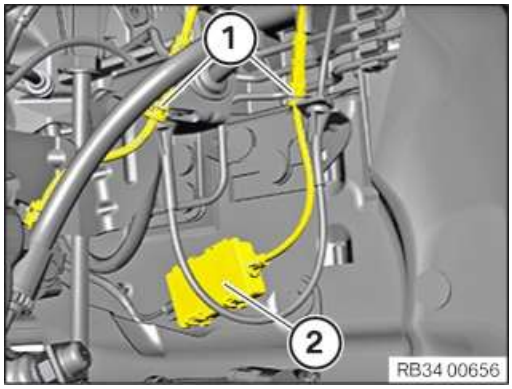
If a brake pad wear sensor that has already been ground has to be replaced even though the minimum brake pad thickness has not yet been reached, you must observe the following:

The new sliding contact must be filed down with a file to the same length as the sanded sliding contact.



- Remove brake pad wear sensor (1) out of the brake pad in the direction of the arrow.
- Detach the brake pad wear sensor cable from the bracket (2).

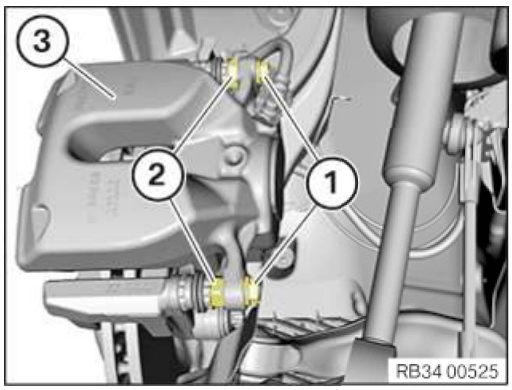
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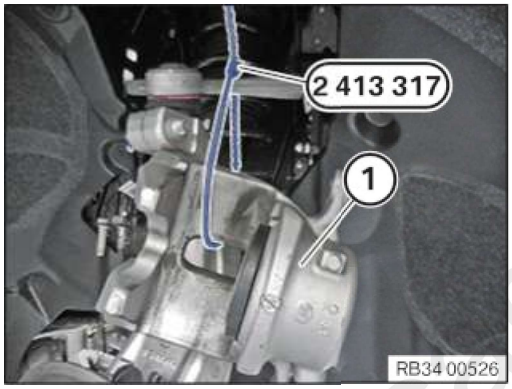
- Detach the brake pad wear sensor from the brackets (1).
- Open sealing cap (2) and disconnect the plug connection.

MAIN WORK

3 – Remove front brake pads

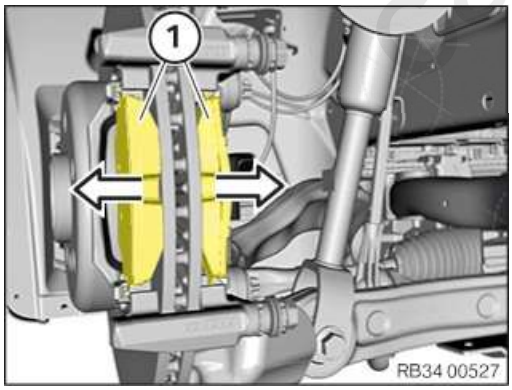


- Release the screws (1); if necessary use the hexagon head (2) for counter support.
- Remove the brake caliper (3).



- Tie up the brake caliper (1) using the special tool (cable strap) 2 413 317.

  The brake caliper must not hang on the brake hose.



- Remove the brake pads (1) in the direction of arrow.
- Mark any worn brake pads.

  If the brake pad wear exists on one side, they must not be mixed up.



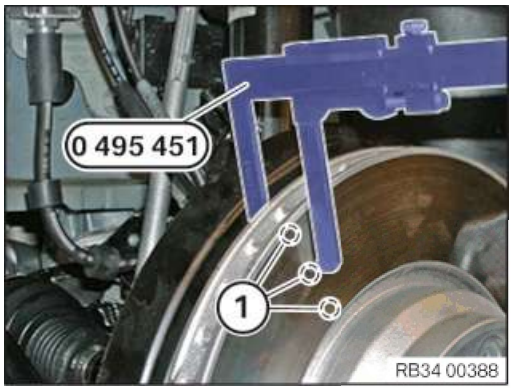
TECHNICAL INFORMATION

When pressing the brake piston back, note the brake fluid level in the expansion tank.

Overflowing brake fluid will damage the paintwork.

- Push the brake pistons (1) back with the special tool 2 352 960.

4 – Measure minimum brake disc thickness (front brake)



- Check minimum brake disc thickness:

  Place the special tool at three measuring points in area (1) and measure.

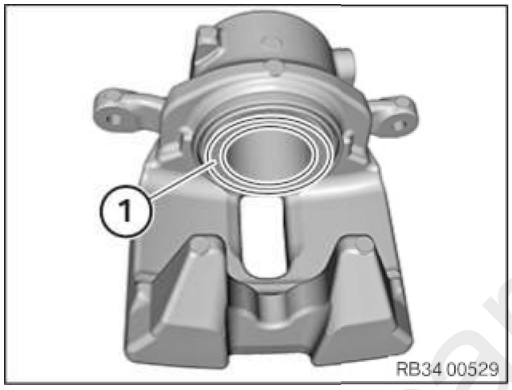
  Compare measuring result and lowest value with setpoint value.

  New brake pads must only be installed if the brake disk thickness is greater than the minimum brake disc thickness.

Minimum brake disc thickness (nominal dimension 330x24)

Minimum brake disc thickness (brake disc 330x24)	22,4 mm

5 – Grease the brake pads, caliper carriers and brake calipers with brake pad paste (17-inch brake)

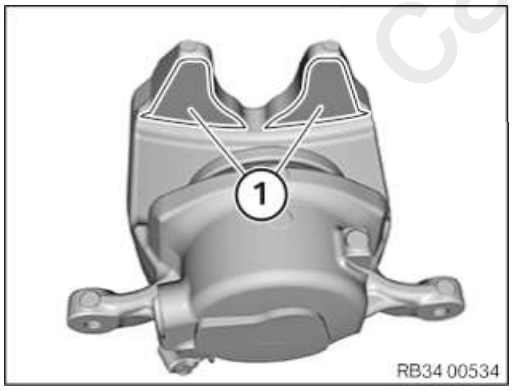


- Clean the contact surfaces (1) of the brake piston using brake cleaner.

Expendable materials

Brake cleaner2.0	500 ml, Spray can	83192365214
	20 , Canister	83192365215

- Check dust boots for damage; renew if necessary.

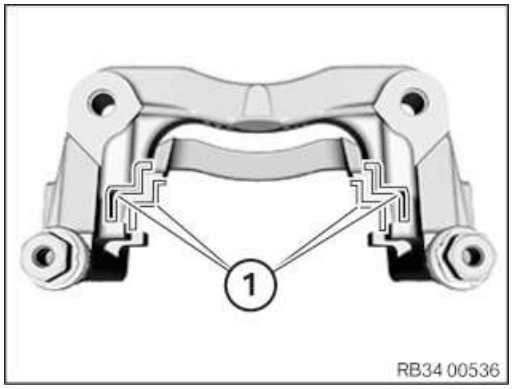


- Clean contact surfaces (1) of the brake caliper with brake cleaner and apply a thin layer of brake pad paste.

Expendable materials

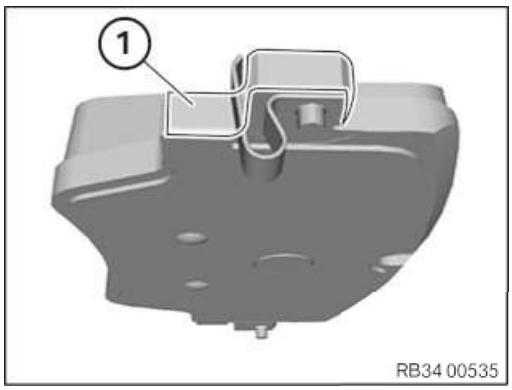
Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

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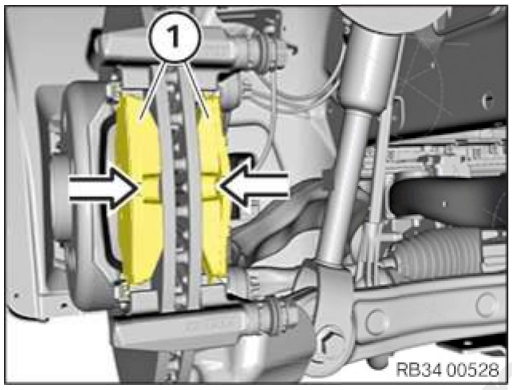
- Clean contact surfaces with brake cleaner.

  The contact surfaces (1) for the brake pads should not be cleaned mechanically if possible in order to avoid damaging the surface coating.
- Carefully clean highly contaminated contact surfaces (1) using a suitable tool (e.g. brass wire brush, nylon brush).
- Coat contact surfaces (1) thinly with brake pad paste.



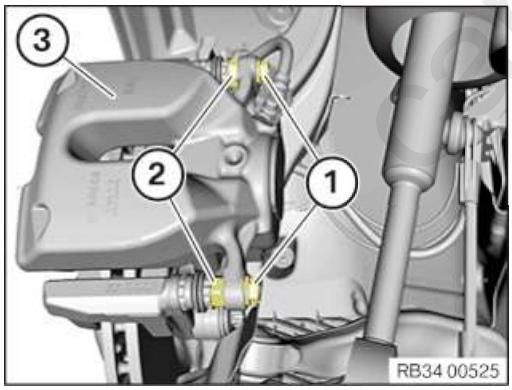
- Apply a thin coating of brake pad paste to both sides of the T-head of the brake pad in area (1).

6 – Installing the front brake pads



- If applicable, observe the identification of the removed brake pads.

  If the brake pads are worn on one side, they must not be mixed up.
- Install the brake pads (1) in the brake calliper in the direction of the arrow.



- Remove the special tool (cable strap) 2 413 317.
- Install the brake caliper (3).
- Renew screws.

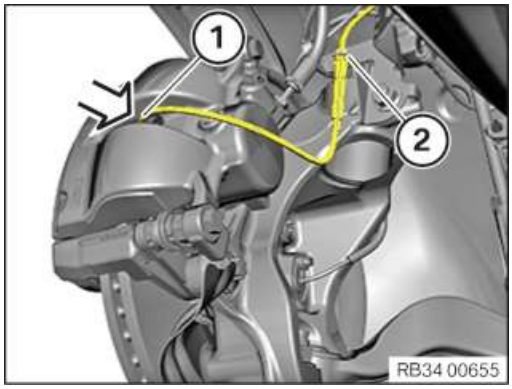
  Parts: Bolts
- Tighten the screws (1), if applicable, hold against the hexagon head (2).

Guide bolt (brake caliper on caliper carrier)

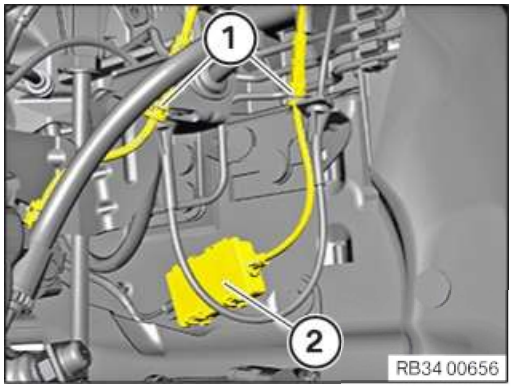
M8	Renew screws.		35 Nm

POSTPROCESSES

7 – Installing front brake pad wear sensor



- Attach the brake pad wear sensor to the bracket (2).
- Install the brake pad wear sensor (1) in the brake pad in the direction of the arrow.
- Make sure the brake pad wear sensor is fitted correctly in the brake pad.



- Attach cable of brake pad wear sensor in brackets (1).
- Connect the plug connection .
- Close sealing cap (2).

8 – Installing both front wheels

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

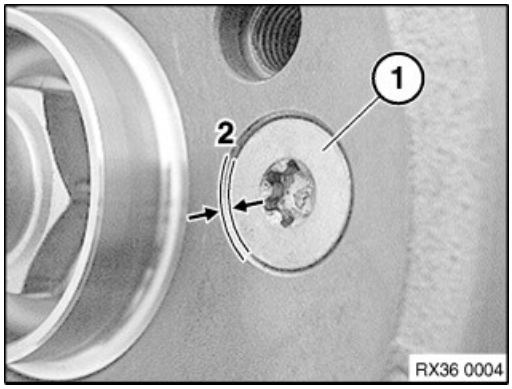
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).

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- Check that the mounting bolt (1) for the brake disc is securely seated.

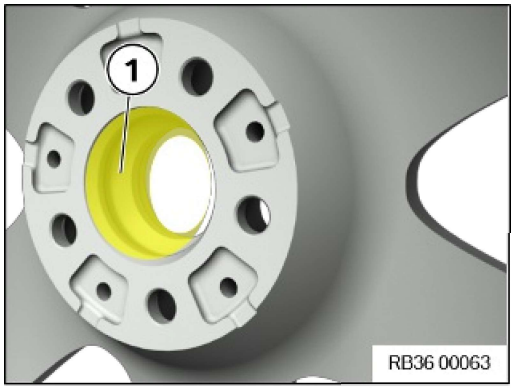
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

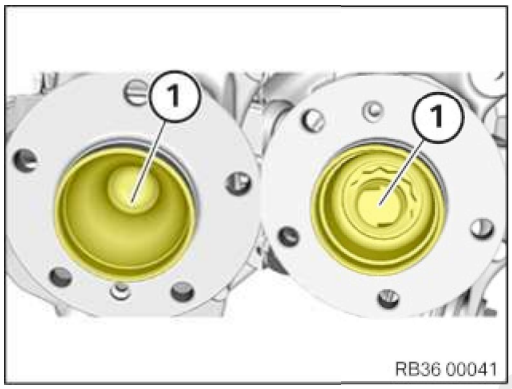
M8	Renew screw.	Tightening torque	16 Nm



- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

  This process is intended to prevent damage to the brake disc.

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TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

  Parts: Wheel bolts
- Clean the wheel bolts.
- Check wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

9 – Commissioning/bedding in new brake pads and brake discs

TECHNICAL INFORMATION

When exchanging brake pads, reset the CBS display in accordance with factory specification (CBS reset).

Carry out test braking while driving at low speed because the effectiveness of the brakes may be reduced during the initial braking operations.

Exaggerated emergency and continuous braking operations for faster bedding-in are not permitted.

Advise the customer not to perform intentional emergency braking operations for the first 200 km after the brakes have been replaced.

- Fully depress brake pedal several times so that brake pads contact brake discs.
- Adjust the brake fluid level to the maximum mark.
- Perform a functional check on the brake test stand to ensure compliance of the brake system with statutory guidelines.
- Attach mirror tag to inside mirror.

10 – Performing a CBS reset (equipment specification without the reset button for the trip distance recorder in the instrument cluster (KOMBI))

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Prerequisite

Scope of maintenance work is performed.

On-board date is set correctly.

No CC message is present.

Availability of the scope of maintenance work is under 90%.

TECHNICAL INFORMATION

The CBS scope of maintenance work can be reset in the car. In general, however, the reset of CBS functions (CBS reset) with the diagnosis system is recommended.

It is only possible to code the country-specific statutory intervals with the diagnosis system.

TECHNICAL INFORMATION

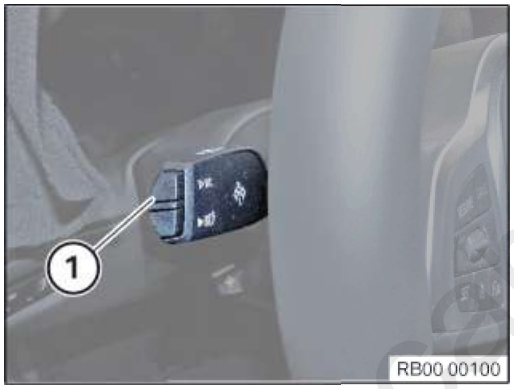
Information for the occurrence of a failed CBS reset:

For front/rear brake service:

- A CBS reset is only possible in the vehicle with a worn brake pad wear sensor (CBS display in CID active).
- With a brake pad wear sensor that is not worn (no CBS display in the CID), a CBS reset is only possible with the diagnosis system.

Other known causes of CBS reset problems:

- Parking brake engaged
- Brake pedal pressed



TECHNICAL INFORMATION

The reset procedure (CBS reset) is cancelled due to a timeout or a terminal change.

- Generate PWF status "Residing".
- Generate PWF status "PAD": For this purpose, press the START-STOP button three times.
- Press on-board computer button on the turn signal/high beam switch for (1) approx. 10 s, until the 1st scope of maintenance work appears on the display.

  The next position is reached by briefly pressing the on-board computer button on the turn signal/high beam switch (1)again.
- Select the desired service job.

  If a CBS reset is possible, "Reset possible" is displayed on the instrument cluster (KOMBI).
- Confirm the "Perform reset?" text message. Press the on-board computer button on the turn signal/high beam switch for (1) 3 s.

  The CBS reset is confirmed as "Reset successful" after it is performed.

Additional Information

Overview of Tightening Torques

Guide bolt (brake caliper on caliper carrier) Used in step 6

M8	Renew screws.		35 Nm

carmanual.com

Brake disc to front wheel hub Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub Used in step 8

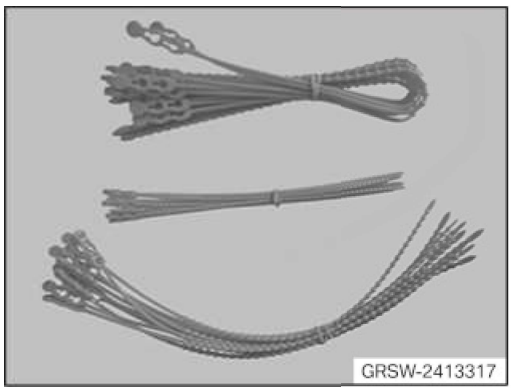
M8	Renew screw.	Tightening torque	16 Nm

Wheel bolts Used in step 8

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

Overview of Special Tools

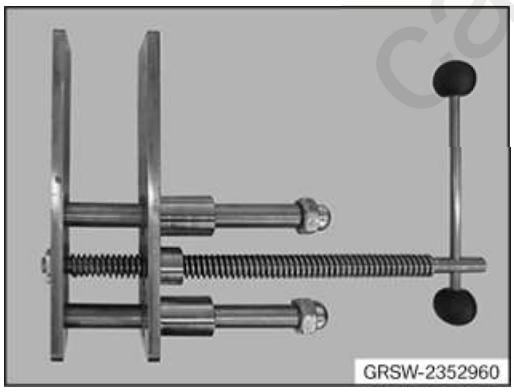
2 413 317 Cable strap



Common Used in step 36

Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

2 352 960 Reset



Common Used in step 3

Usage	Set back to brake piston. Replacement for 34 1 050 (83300492455).
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	

cardiagn.com

2 344 011 Tool



Common	Used in step 8
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

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Replacement tools:

0 495 221 (36 1 323) Wheel stud



Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

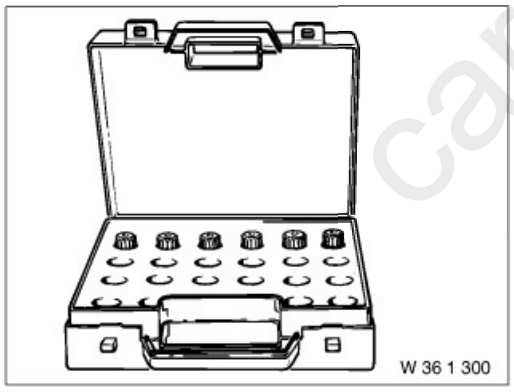
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0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 228 (36 1 331) Wheel stud



Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

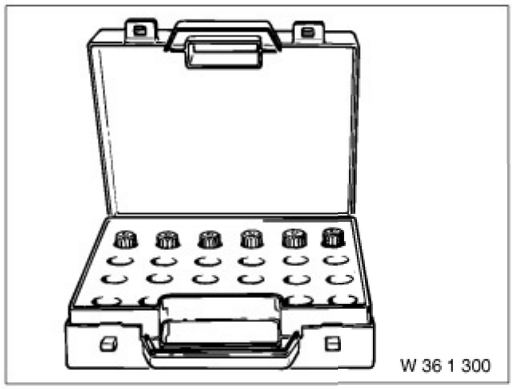
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0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Minimum brake disc thickness (nominal dimension 330x24)	Used in step 4
Minimum brake disc thickness (brake disc 330x24)	22,4 mm

Links

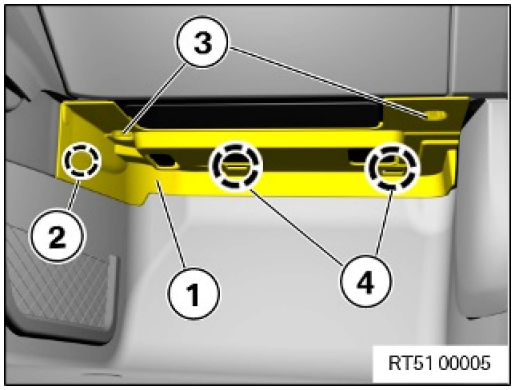
Repair instructions	Used in step
34 00 x01 Guideline for applying brake pad paste on brake pads and caliper carrier	

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00 00 616 Service - microfilter

PRELIMINARY WORK

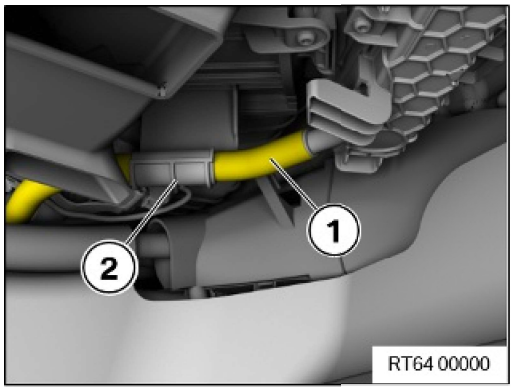
1 – Remove the right footwell trim



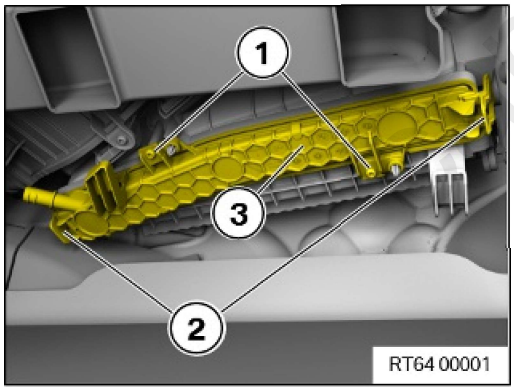
- Turn the locks (3) by 90°.
- Feed the footwell trim (1) out of the guide (2).
- Detach the footwell trim (1) inward out of the guides (4).
- Unlock associated plug connection and disconnect.

MAIN WORK

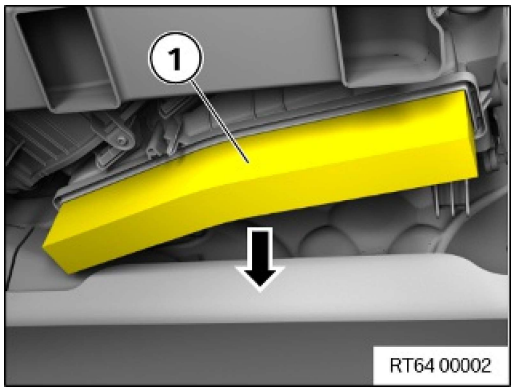
2 – Remove microfilter



- Pull off the water drain hose (1).
- Thread the water drain hose (1) out of the bracket (2).

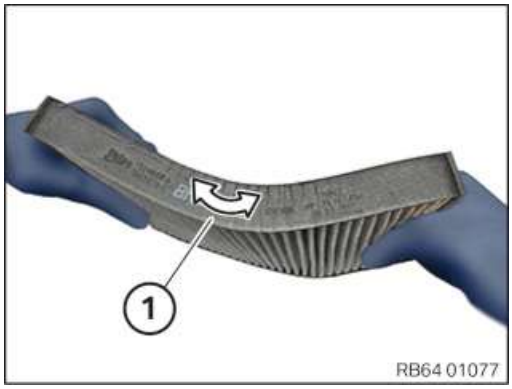


- Loosen screws (1).
- Release latch mechanisms (2) and remove cover (3).

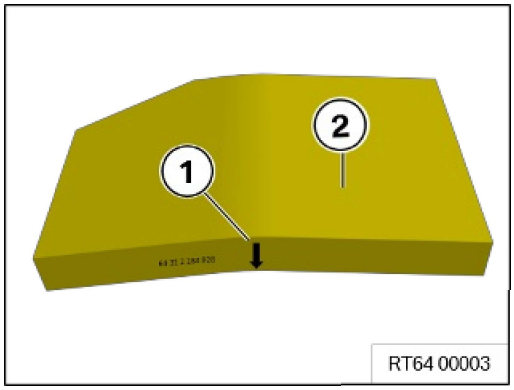


- Remove microfilter (1).

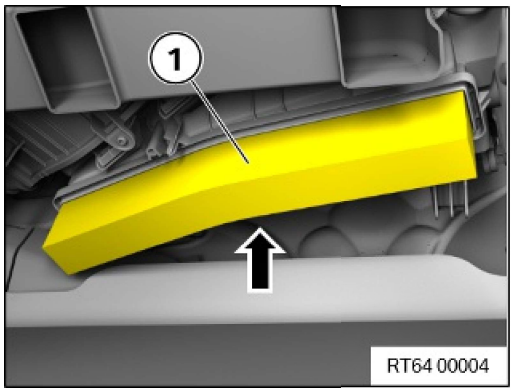
3 – Install microfilter



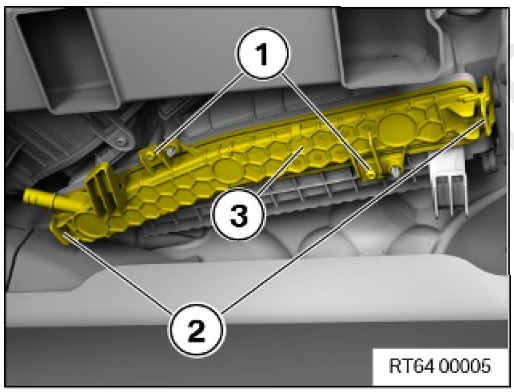
- Pre-bend microfilter (1) slightly as shown in the graphic.



- Please note that the arrow (1) on the microfilter (2) must always point in the direction of travel during installation.



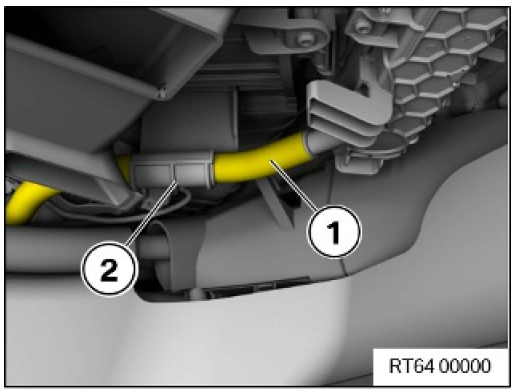
- Push the microfilter (1) up into the blower housing.



- Make sure that the cover (3) is correctly inserted into the latch mechanisms (2) of the blower housing.
- Tighten the screws (1).

Microfilter lid on heating and air-conditioning unit

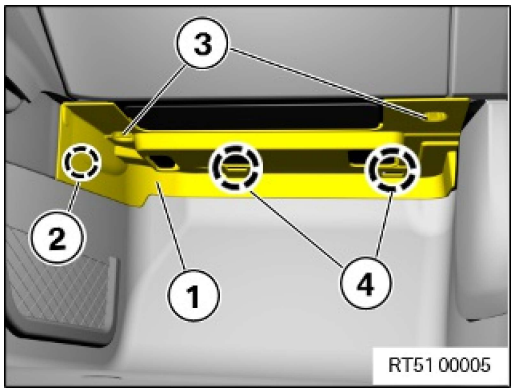
Screw		Tightening torque	2.8 Nm



- Connect water drain hose (1).
- Insert the water drain hose (1) into the holder (2).

xdiagn.com

4 – Install the right footwell trim panel



- Connect associated connector.
- Attach the footwell trim (1) to the guides (4) and fold up.
- Guide the footwell trim (1) into the guide (2) of the centre console.
- Position locks (3) correctly and turn by 90°.

Additional Information

Overview of Tightening Torques

Microfilter lid on heating and air-conditioning unit Used in step 3

Screw		Tightening torque	2.8 Nm

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00 00 614 Service - rear brakes

WARNING

Vehicle may slip off the vehicle hoist if the vehicle hoist is handled incorrectly.

Danger! Life-threatening injuries!

- Observe safety information on raising the vehicle using a vehicle hoist.
- For additional information see: 00 ... Raising the vehicle using a vehicle hoist.

CAUTION

Effects on other persons.

Danger of injury! Risk of damage!

- Make sure that no other persons are in or around the vehicle.

TECHNICAL INFORMATION

During work on the rear brake, it must be ensured that the button for the electromechanical parking brake cannot be pressed.

TECHNICAL INFORMATION

General information on changing the brake pads:

For vehicles older than 48 months it is recommended to replace the retaining spring or expanding spring.

The brake pad wear sensor must be replaced once it has been removed because the brake pad wear sensor loses its retention capability in the brake pad.

A CBS reset must be done after every brake pad exchange:

A CBS reset in the vehicle is possible in the event of a **partially ground down** brake pad wear sensor. The CBS display in the Central Information Display (CID) is active.

In the event of a brake pad wear sensor that is **not partially ground down**, a CBS reset is only possible with the diagnosis system. No CBS display in the Central Information Display (CID).

If bonded brake pads are installed, the brake pads must be renewed after releasing the adhesive strip.

TECHNICAL INFORMATION

To prevent damage to the surface coating: With floating callipers on the brake caliper mounting bracket or with fixed callipers in the brake caliper housing, do not clean the contact surfaces for the brake pads to the extent that it is possible.

Clean the contact surfaces with brake cleaner (BMW part number 83 19 2 154 780). Next, apply a thin coat of brake pad paste (BMW part number 83 19 2 158 851 for 3 g) or 83 19 2 158 852 fr 100 g).

Spread brake pad paste on the marked surfaces with a brush.

For additional information see: 34 00 ... brake pad paste

PRELIMINARY WORK

1 – Removing both rear wheels

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. – Removing both rear wheels

▶ **Removing the wheel**



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to remove the wheel (see workshop equipment).

  This process is intended to prevent damage to the brake disc.



- If several wheels are removed simultaneously: Use a piece of chalk to mark on each tyre the axle and side on which the corresponding wheel is fitted.
- Release the wheel bolts (arrows) crosswise and remove the wheel.
- To release and tighten wheel bolts with a security code: Use a suitable adapter from the tool set .

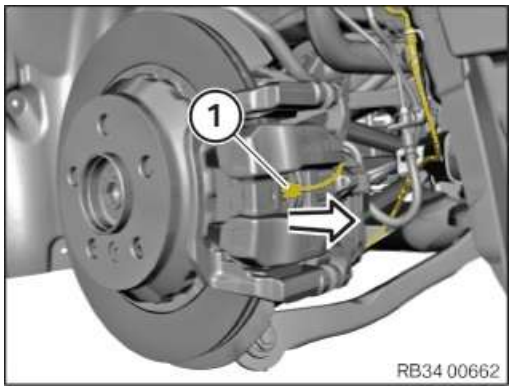
2 – Removing the brake pad wear sensor, rear

TECHNICAL INFORMATION

The brake pad wear sensor must be replaced once it has been removed because the brake pad wear sensor loses its retention capability in the brake pad.

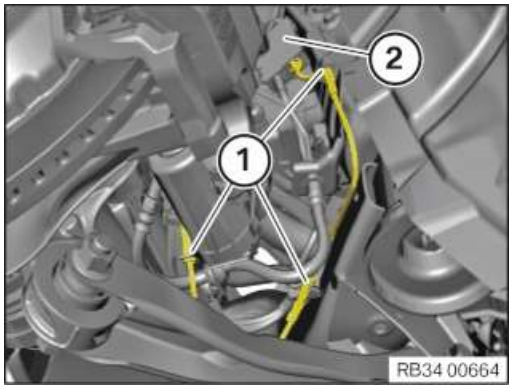
If a brake pad wear sensor that has already been ground has to be replaced even though the minimum brake pad thickness has not yet been reached, you must observe the following:

The new sliding contact must be filed down with a file to the same length as the sanded sliding contact.



- Remove the brake pad wear sensor (1) from the brake pad.

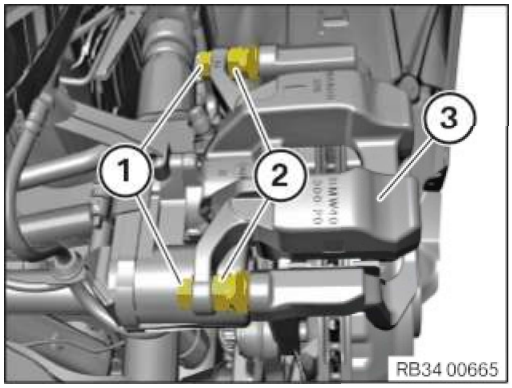
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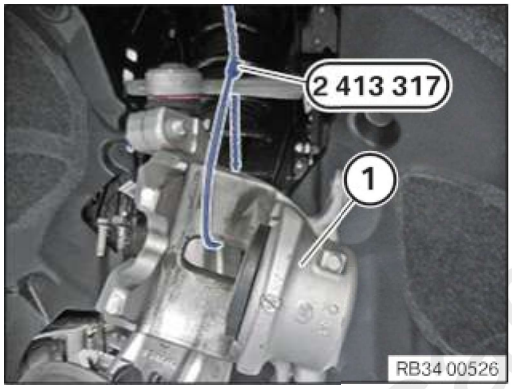
- Detach the brake pad wear sensor from the brackets (1).
- Open cover (2) and disconnect the plug connection.

MAIN WORK

3 – Remove rear brake pads

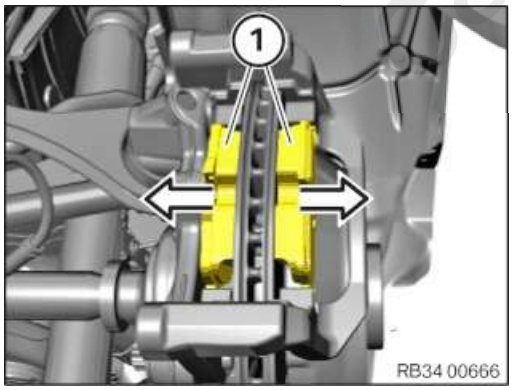


- Release the screws (1); if necessary use the hexagon head (2) for counter support.
- Remove brake caliper (3).



- Tie up brake calliper (1) using special tool (cable strap) 2 413 317.

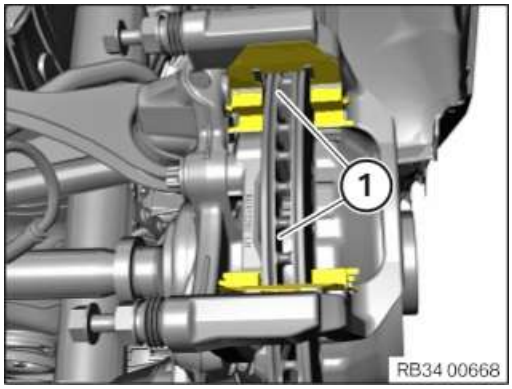
  The brake caliper must not hang on the brake hose.



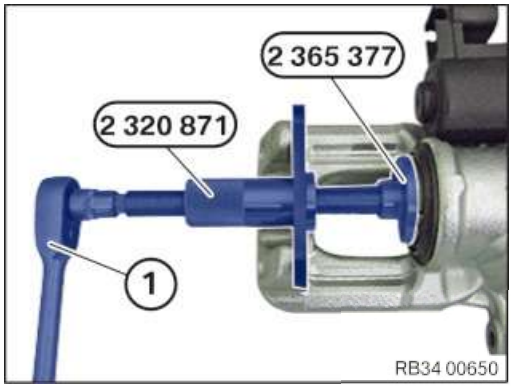
- Remove the brake pads (1) from the brake caliper in direction of arrow.
- Mark any worn brake pads.

  If the brake pad wear exists on one side, they must not be mixed up.

carmanualsdiagram.com



- Remove the sliding plates (1).



TECHNICAL INFORMATION

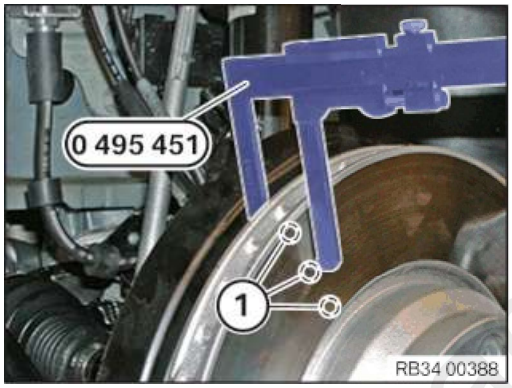
When pressing the brake piston back, note the brake fluid level in the expansion tank.

Overflowing brake fluid will damage the paintwork.

- Press back the brake piston using the special tools and .
- Use the reversible ratchet (1) to turn the brake piston back to the first end stop.

  Avoid turning the actuator!

4 – Measure minimum brake disc thickness (rear brake)



- Check minimum brake disc thickness:

  Place the special tool at three measuring points in area (1) and measure.

  Compare measuring result and lowest value with setpoint value.

  New brake pads may only be installed if the brake disk thickness is greater than the minimum brake disc thickness.

Minimum brake disc thickness (nominal dimension 330x20)

Minimum brake disc thickness (brake disc 330x20)	18,4 mm

Minimum brake disc thickness (nominal dimension 345x24)

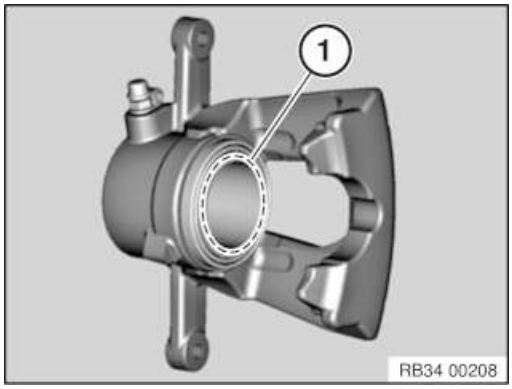
Minimum brake disc thickness (brake disc 345x24)	22,4 mm

Minimum brake disc thickness (nominal dimension 370x24)

Minimum brake disc thickness (brake disc 370x24)	22,4 mm

5 – Grease brake pads, caliper carrier and brake caliper with brake pad paste

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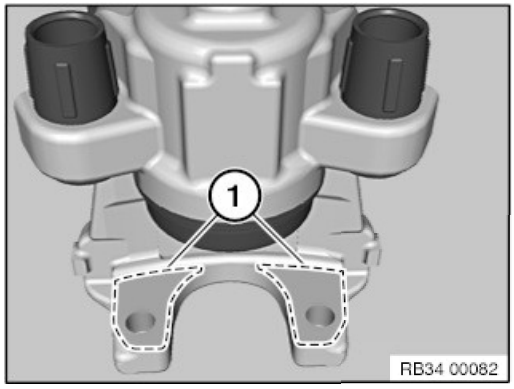


- Clean contact surface (1) of the brake piston with brake cleaner and apply a thin coat of brake pad paste.

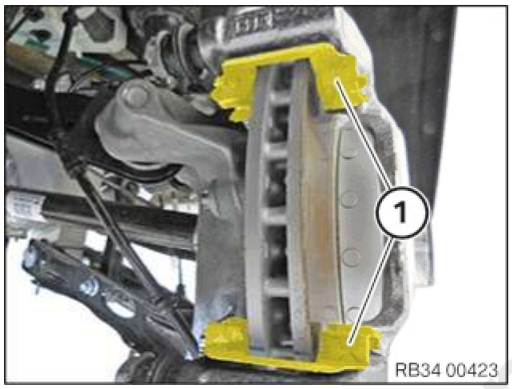
Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233

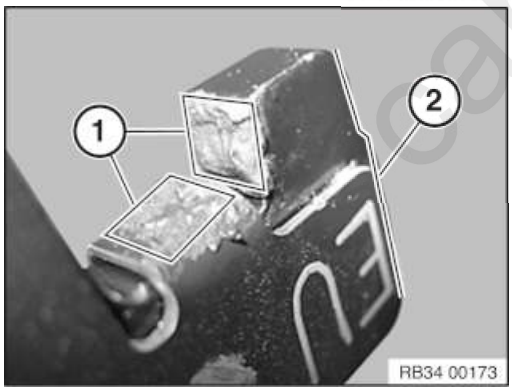
- Check dust boots for damage; renew if necessary.



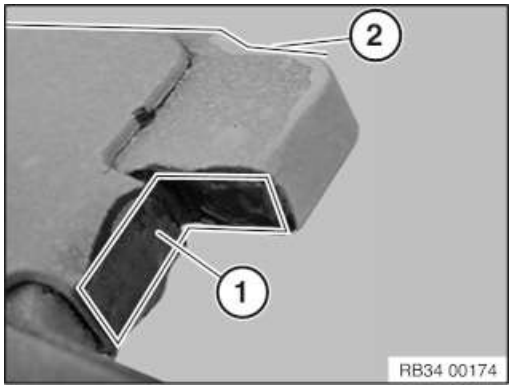
- Clean contact surface (1) of the brake piston with brake cleaner and apply a thin coat of brake pad paste.



- Mount the sliding plates (1).

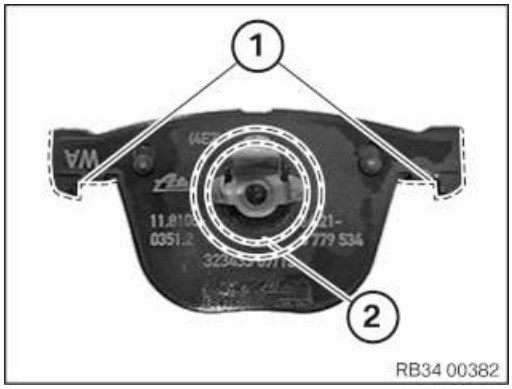


- Apply a thin coat of brake pad paste to the T-head of the inner brake pad in the areas (1) and (2).

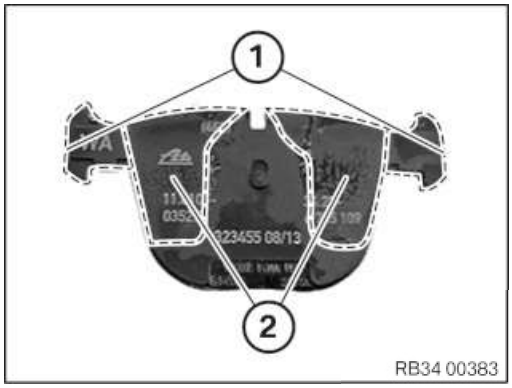


- Apply a thin coat of brake pad paste to the T-head of the inner brake pad in the areas (1) and (2).

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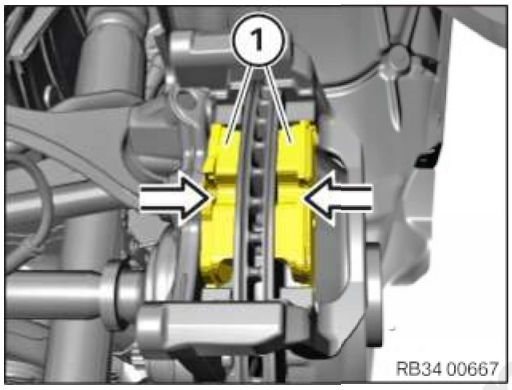


- Apply a thin coat of brake pad paste to the contact surface in the areas (1) and (2).

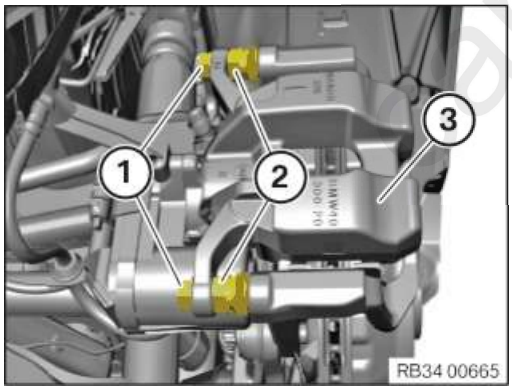


- Apply a thin coat of brake pad paste to the contact surface in the areas (1) and (2).

6 – Install rear brake pads



- Install the brake pads (1) in the direction of the arrow.



- Remove the special tool (cable strap) 2 413 317.
- Mount brake caliper (3).
- Renew screws (1).

  Parts: Bolts

- Tighten the screws (1), if applicable, hold against the hexagon head (2).

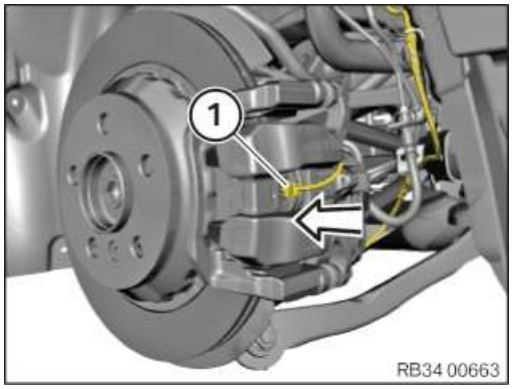
Guide bolt (brake caliper on caliper carrier)

M8			35 Nm

POSTPROCESSES

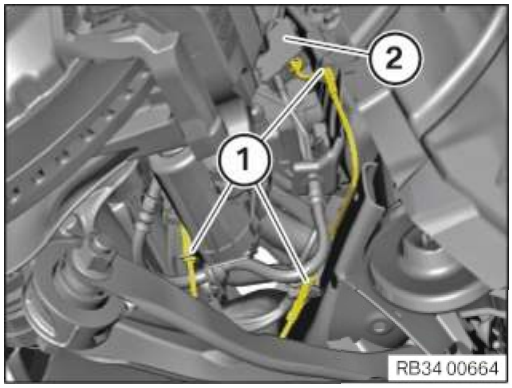
7 – Install rear brake pad sensor

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- Install the brake pad wear sensor (2) in the brake pad in the direction of the arrow.

  Ensure brake pad wear sensor fits correctly in brake pad.



- Attach cable of brake pad wear sensor in brackets (1).
- Connect the plug connection and close the cover (2).

8 – Installing both rear wheels

▸ **Mounting the wheel**



TECHNICAL INFORMATION

The contact surface between the brake disc and the wheel rim must be clean and free from oil and grease. There is otherwise a risk of the wheel becoming loose at a later time.

- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

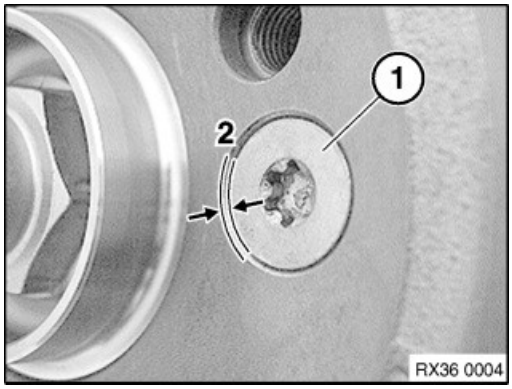
  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).
- In the event of grease residue in the area of the wheel bolt holes, remove and clean the brake disc.



- Remove dirt, grease residues and corrosion from the contact surface with a drill and the special tool 2 344 011.

  Do not operate special tool 2 344 011 with an impact screwdriver.
- Degrease the contact surfaces with the universal cleaner (see BMW Group Parts).

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- Check that the mounting bolt (1) for the brake disc is securely seated.

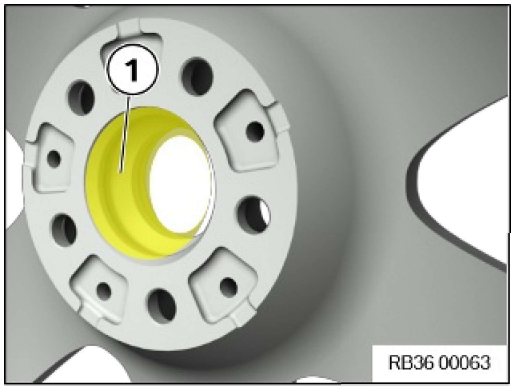
  The mounting bolt (1) for the brake disc may not protrude under any circumstances on the contact surface (2) between the brake disc and the wheel rim.

Brake disc to front wheel hub

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub

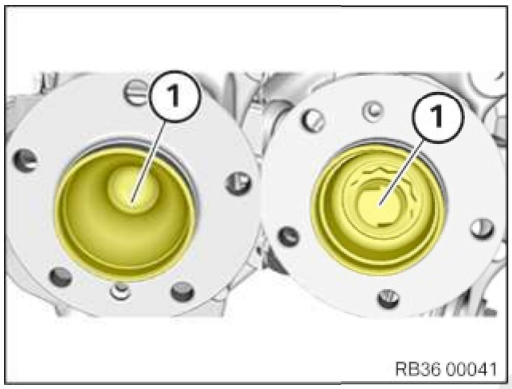
M8	Renew screw.	Tightening torque	16 Nm



- Thinly grease the wheel centring (1) in the wheel rim.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



- Lightly grease the front and rear wheel hubs in this area (1) to protect from corrosion.

Expendable materials

Brake block paste * TU = Trade Unit. TU numbers cannot be ordered! For invoicing purposes only.	3 g, Bag	83192158851
	100 g, Tube	83192158852
	5 g, TU*	83230140233



- In vehicles with M Carbon ceramic brake: The wheel assembly jack must be used to install the wheel (see workshop equipment).

  This process is intended to prevent damage to the brake disc.

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TECHNICAL INFORMATION

Never use impact screwdrivers or electric screwdrivers to screw in and tighten the wheel bolts.

The wheel rim must rest uniformly against the brake disc.

In the case of non-original BMW wheel bolts/wheel rims, it may be necessary to retighten the wheel bolts on account of setting properties (refer to the documentation from the manufacturer).

Do not apply oil to new wheel bolts.

- Renew corroded wheel bolts.

  Parts: Wheel bolts
- Clean the wheel bolts.
- Check wheel bolts and threads for damage, renew the wheel bolts if necessary.
- Join and tighten the wheel bolts (arrows).

Wheel bolts

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim. Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence. Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.	Tightening torque Check	140 Nm 140 Nm

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9 – Start-up or bedding-in of new brake pads and discs (rear brake)

TECHNICAL INFORMATION

When exchanging brake pads, reset the CBS display in accordance with factory specification (CBS reset).

Carry out test braking while driving at low speed because the effectiveness of the brakes may be reduced during the initial braking operations.

Exaggerated emergency and continuous braking operations for faster bedding-in are not permitted.

Advise the customer not to perform intentional emergency braking operations for the first 200 km after the brakes have been replaced.

- Fully depress brake pedal several times so that brake pads contact brake discs.
- Switch the ignition on.

  Use the parking brake button to open, close and open the parking brake again.
- Switch off ignition.
- Adjust the brake fluid level to the maximum mark.
- Perform a functional check on the brake test stand to ensure compliance of the brake system with statutory guidelines.
- Attach mirror tag to inside mirror.

10 – Performing a CBS reset (equipment specification without the reset button for the trip distance recorder in the instrument cluster (KOMBI))

Prerequisite

Scope of maintenance work is performed.

On-board date is set correctly.

No CC message is present.

Availability of the scope of maintenance work is under 90%.

TECHNICAL INFORMATION

The CBS scope of maintenance work can be reset in the car. In general, however, the reset of CBS functions (CBS reset) with the diagnosis system is recommended.

It is only possible to code the country-specific statutory intervals with the diagnosis system.

TECHNICAL INFORMATION

Information for the occurrence of a failed CBS reset:

For front/rear brake service:

- A CBS reset is only possible in the vehicle with a worn brake pad wear sensor (CBS display in CID active).

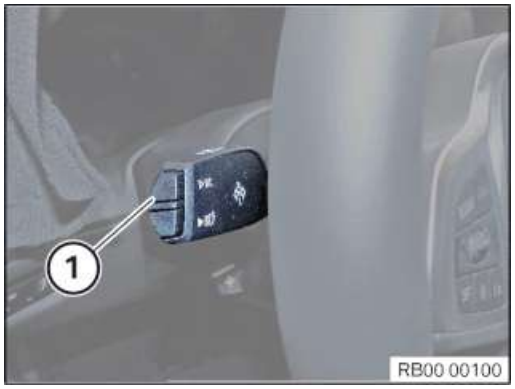
- With a brake pad wear sensor that is not worn (no CBS display in the CID), a CBS reset is only possible with the diagnosis system.

Other known causes of CBS reset problems:

- Parking brake engaged

- Brake pedal pressed

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TECHNICAL INFORMATION

The reset procedure (CBS reset) is cancelled due to a timeout or a terminal change.

- Generate PWF status "Residing".
- Generate PWF status "PAD": For this purpose, press the START-STOP button three times.
- Press on-board computer button on the turn signal/high beam switch for (1) approx. 10 s, until the 1st scope of maintenance work appears on the display.

  The next position is reached by briefly pressing the on-board computer button on the turn signal/high beam switch (1)again.
- Select the desired service job.

  If a CBS reset is possible, "Reset possible" is displayed on the instrument cluster (KOMBI).
- Confirm the "Perform reset?" text message. Press the on-board computer button on the turn signal/high beam switch for (1) 3 s.

  The CBS reset is confirmed as "Reset successful" after it is performed.

Additional Information

Overview of Tightening Torques

Guide bolt (brake caliper on caliper carrier) — Used in step 6

M8			35 Nm

Brake disc to front wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

Brake disc to rear wheel hub — Used in step 8

M8	Renew screw.	Tightening torque	16 Nm

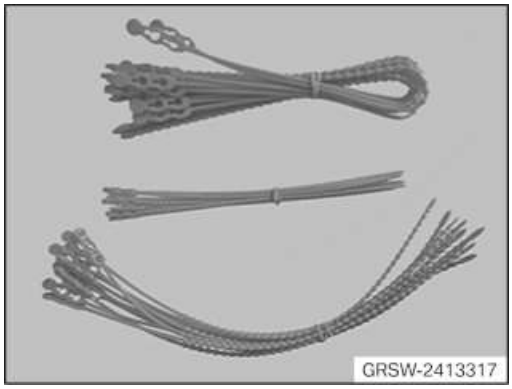
Wheel bolts — Used in step 8

M14 / SW17	Screw in wheel bolts and evenly tighten crosswise by hand in order to centre the wheel rim.	Tightening torque	140 Nm
	Tighten wheel bolts to the prescribed tightening torque with a calibrated torque wrench in a crosswise sequence.	Check	140 Nm
	Check all the wheel bolts in the same order or retighten to the prescribed tightening torque again.		

Overview of Special Tools

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2 413 317 Cable strap



Common	Used in step 36
Usage	The "Cable ties" parts set consists of 3 items as follows: ABV232 Length: 320 mm colour: RedABV250 Length: 500 mm colour: RedABVS270 Length: 665 mm colour: Red
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	01 47 15 (332)

2 344 011 Tool

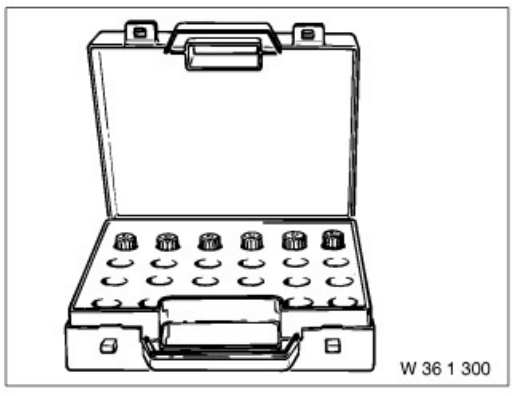


Common	Used in step 8
Usage	Tool (wheel hub grinder) for cleaning the connection of the wheel rim (wheel contact face) to the wheel hub.
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	08 08 12 (872)

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Replacement tools:

0 495 221 (36 1 323) Wheel stud



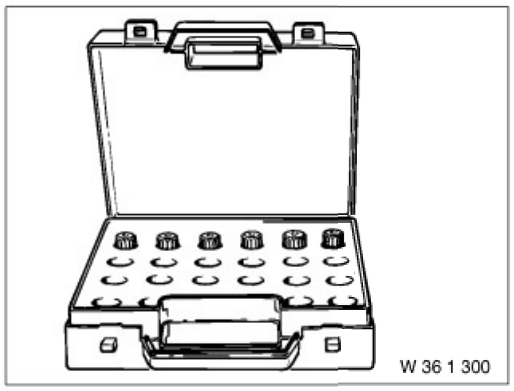
Common	Used in step 1
Usage	(Code 30) Code 39 available separately, (see EPC) under 36 13 1 181 259
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 224 (36 1 326) Wheel stud



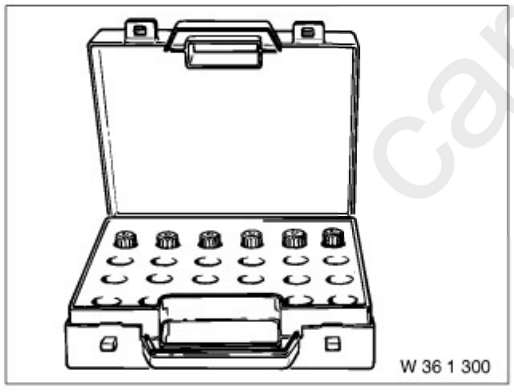
Common	Used in step 1
Usage	(Code 33) With centring bore available separately, (see EPC) under 36 13 6 765 546
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 225 (36 1 327) Wheel stud



Common	Used in step 1
Usage	(Code 34) With centring bore available separately (see EPC) under 36 13 6 765 547
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 226 (36 1 328) Wheel stud



Common	Used in step 1
Usage	(Code 35) With centring bore available separately, (see EPC) under 36 13 6 762 340
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 227 (36 1 329) Wheel stud



Common	Used in step 1
Usage	(Code 36) With centring bore available separately (see EPC) under 36 13 6 762 341
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

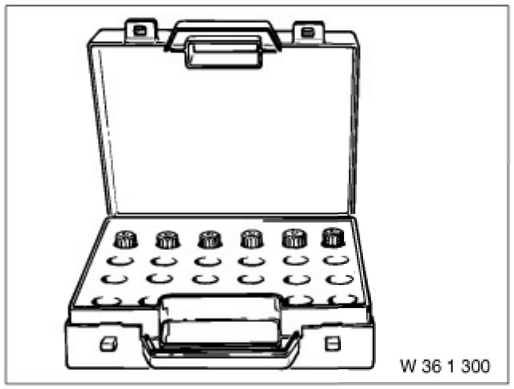
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0 495 228 (36 1 331) Wheel stud



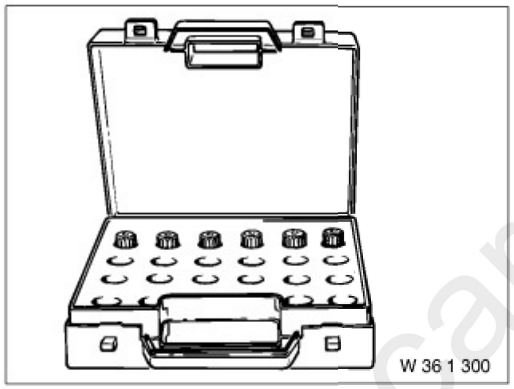
Common	Used in step 1
Usage	(Code 37) With centring bore available separately (see EPC) under 36 13 6 762 342
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 229 (36 1 332) Wheel stud



Common	Used in step 1
Usage	(Code 38) With centring bore available separately (see EPC) under 36 13 6 762 343
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

0 495 230 (36 1 333) Wheel stud



Common	Used in step 1
Usage	(Code 40) With centring bore available separately (see EPC) under 36 13 6 762 344
Included in the tool or work	0 492 518
Storage location	
Replaced by	
In connection with	
SI-Number	

Overview Technical Data

Minimum brake disc thickness (nominal dimension 330x20)	Used in step 4
Minimum brake disc thickness (brake disc 330x20)	18,4 mm

Minimum brake disc thickness (nominal dimension 345x24)	Used in step 4
Minimum brake disc thickness (brake disc 345x24)	22,4 mm

Minimum brake disc thickness (nominal dimension 370x24)	Used in step 4
Minimum brake disc thickness (brake disc 370x24)	22,4 mm

Links

Repair instructions	Used in step
34 00 x01 Guideline for applying brake pad paste on brake pads and caliper carrier	

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00 00 622 Service - spark plugs

PRELIMINARY WORK

1 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

RISK OF DAMAGE

Damage to the acoustic cover.

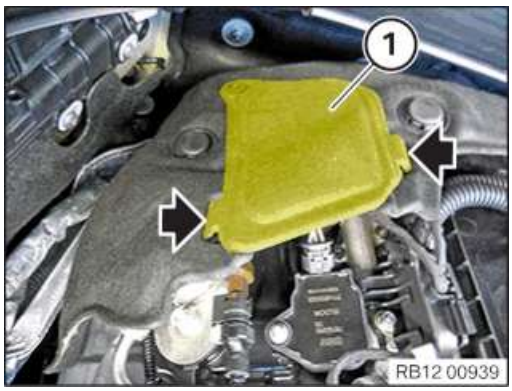
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.



- Unclip the acoustic cover (1) from the holders in the **marked** areas towards the top.

2 – Removing the service opening in sound insulation on top of engine



- Detach service opening (1) (arrows) and set it aside.

3 – Remove ignition coils

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

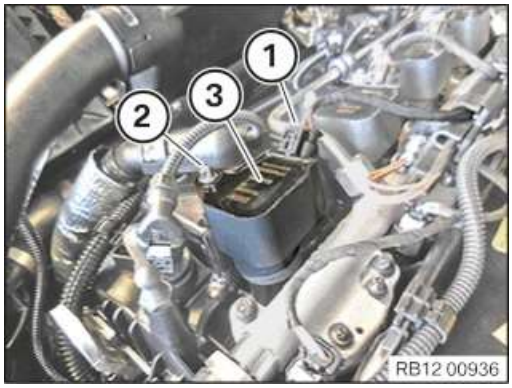
Electrostatic discharge.

Damage to or destruction of electrical components.

- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
- Wear electrically conductive clothing and antistatic shoes (with ESD symbol).
- For additional information see: 61 35 Information on electrostatic discharge (ESD) protection.

NOTICE

The description is for one component only. The procedure is identical for all further components.



- Unlock and loosen connector (1).
- Loosen screw (2).
- Remove the ignition coil (3).

MAIN WORK

4 – Removing all spark plugs

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WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Swirling dirt particles caused by compressed air.

Danger of injury!

- Collect dirt particles, e.g. when blowing out, use cloth to do so.



- Wear safety goggles.

TECHNICAL INFORMATION

Clean spark plug slot with compressed air.

The spark plug shaft must be cleaned using compressed air after having removed the ignition coils and before removing the spark plugs. After having removed the spark plugs, once again check the sealing surface for contamination and (if necessary) clean using a moist cloth or clean using compressed air.

Deposits that are not removed according to instructions may enter the combustion chamber and lead to uncontrolled combustion. Remaining deposits on the spark plug sealing surfaces may lead to leaks and the spark plugs may come loose during engine operation.

Spark plug threads must not be greased or oiled. Insufficiently tightened spark plugs may cause leaks and the sparks plugs may come loose during engine operation.

TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.

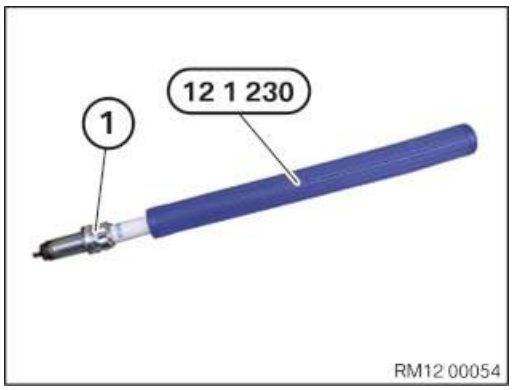


- Unscrew the spark plugs with the special tool 0 495 560 (12 1 220) and an extension.

5 – Installing all spark plugs

TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.



- Insert spark plug (1) into special tool 0 496 065 (12 1 230).



TECHNICAL INFORMATION

Do not drop spark plug into spark plug shaft! This can lead to a reduction of the electrode gap and can thus impair smooth running of the engine, especially in idle position.

- First screw spark plug into engine using special tool 0 496 065 (12 1 230) until it is hand-tight.



- Tighten spark plugs with torque wrench, special tool 0 495 560 (12 1 220) and extension with joint.

Spark plugs

M12x1.25		Tightening torque	23 Nm

POSTPROCESSES

6 – Installing the ignition coils

RISK OF DAMAGE

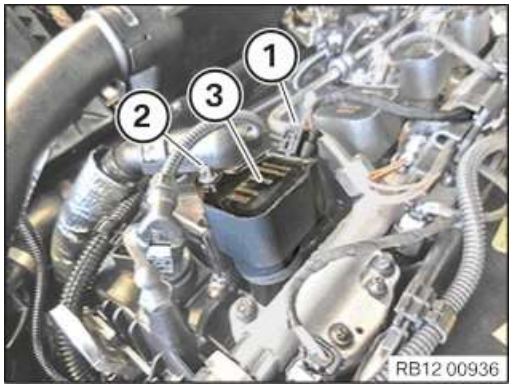
Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

NOTICE

The description is for one component only. The procedure is identical for all further components.



- Insert and install the ignition coil (3).
- Tighten down screw (2).

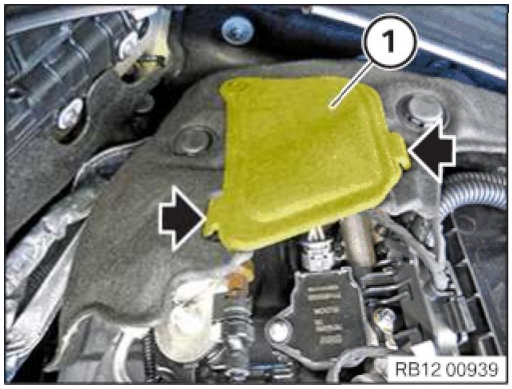
Ignition coil to cylinder head cover

Screw M6		Tightening torque	8 Nm

- Connect and lock the connector (1).

  The connector (1) must engage audibly.

7 – Installing the service opening in sound insulation on top of engine



- Insert and install sound insulation (1) (arrows).

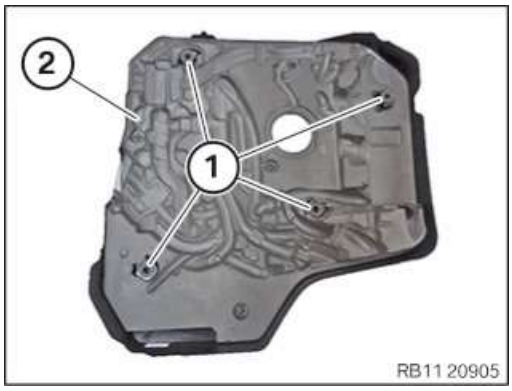
8 – Install acoustic cover

RISK OF DAMAGE

Damage to the acoustic cover.

Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.



- Check all rubber mounts (1) of acoustic cover (2) for correct seating.

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- Clip in the acoustic cover (1) into the holders in the **marked** areas.

  The acoustic cover (1) must audibly engage into place.

Additional Information

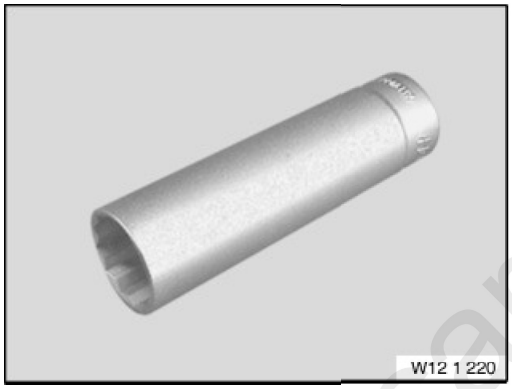
Overview of Tightening Torques

Spark plugs			Used in step 5
M12x1.25		Tightening torque	23 Nm

Ignition coil to cylinder head cover			Used in step 6
Screw M6		Tightening torque	8 Nm

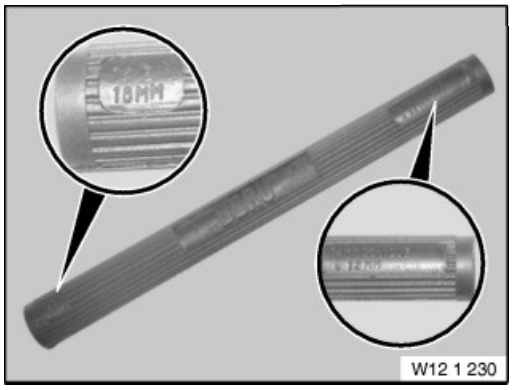
Overview of Special Tools

0 495 560 (12 1 220) Socket



Common	Used in step 45
Usage	For removing and installing the spark plugs (WAF 14 bihexal).
Included in the tool or work	
Storage location	C18
Replaced by	
In connection with	
SI-Number	01 20 06 (299)

0 496 065 (12 1 230) Fitting aid



Common	Used in step 5
Usage	Fitting aid for spark plug installation. Original BERU ZMH 001 rubber hose 0 890 00 001.
Included in the tool or work	
Storage location	individual
Replaced by	
In connection with	
SI-Number	01 04 07 (352)

Links

Repair instructions	**Used in step**
61 35 ... Notes on ESD protection (Electro Static Discharge)	3

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00 00 622 Service - spark plugs

PRELIMINARY WORK

1 – Removing the acoustic cover

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

RISK OF DAMAGE

Damage to the acoustic cover.

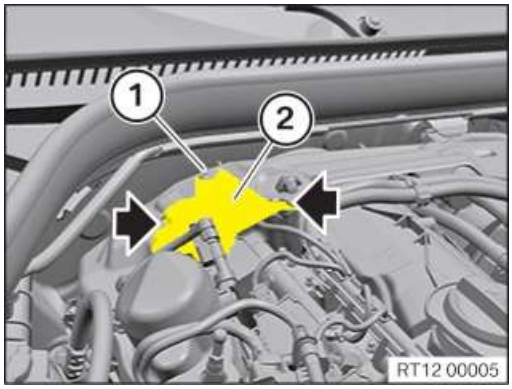
Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.



- Unclip the acoustic cover (1) from the holders in the **marked** areas towards the top.

2 – Release the service opening of the sound insulation at the top of the engine



- Detach the service opening (2) in the marked areas (arrows) and twist it to the side at the pivot point (1).

3 – Remove all ignition coils.

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NOTICE

The description is for one component only. The procedure is identical for all further components.

▸ **Removing the ignition coil**

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

RISK OF DAMAGE

Damage to the ignition coil.

The silicone hose of the ignition coil must not be contaminated by fuel as this can lead to failure of the ignition coil.

- Cover ignition coils using suitable covers when working on the fuel system, if necessary remove them.
- Do not oil or grease the silicone tube of the spark plug connector. The silicone tube is coated with talc to reduce the pulling forces.

RISK OF DAMAGE

Electrostatic discharge.

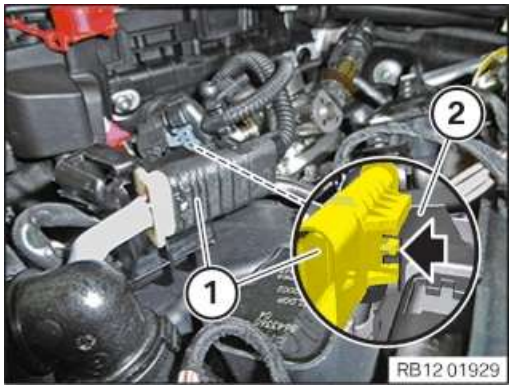
Damage to or destruction of electrical components.

- Leave electrical components in original packaging until just before they are installed. Use the original packaging only for any return shipments. Always package removed components straight away.
- Read and comply with user information on using the associated special tool 12 7 060.
- Only touch the housings of electrical components. Do not touch pins or multi-pin connectors directly.
- Wear electrically conductive clothing and antistatic shoes (with ESD symbol).
- For additional information see: 61 35 Information on electrostatic discharge (ESD) protection.

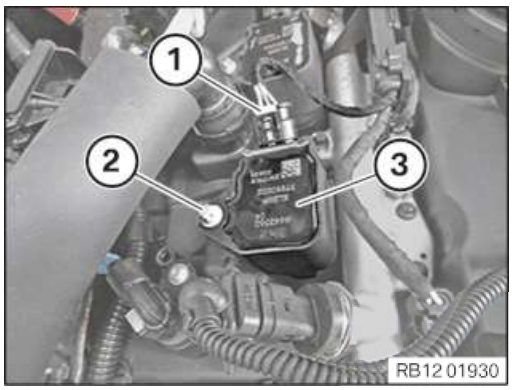


- Unlock plug connection (1) and disconnect.

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- Unlock connector (1) (arrow) and disconnect it from holder (2).



- Unlock plug connection (1) and disconnect.
- Loosen screw (2).
- Remove ignition coil (3).

MAIN WORK

4 – Removing all spark plugs

WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

CAUTION

Swirling dirt particles caused by compressed air.

Danger of injury!

- Collect dirt particles, e.g. when blowing out, use cloth to do so.

- Wear safety goggles.

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TECHNICAL INFORMATION

Clean spark plug slot with compressed air.

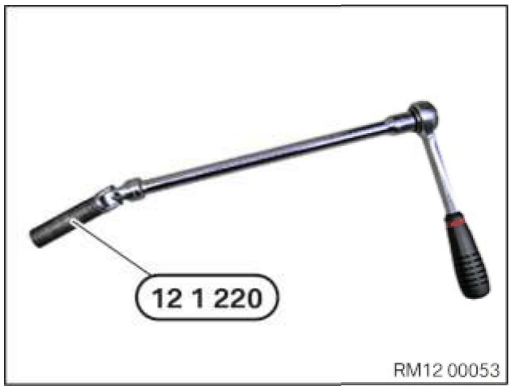
The spark plug shaft must be cleaned using compressed air after having removed the ignition coils and before removing the spark plugs. After having removed the spark plugs, once again check the sealing surface for contamination and (if necessary) clean using a moist cloth or clean using compressed air.

Deposits that are not removed according to instructions may enter the combustion chamber and lead to uncontrolled combustion. Remaining deposits on the spark plug sealing surfaces may lead to leaks and the spark plugs may come loose during engine operation.

Spark plug threads must not be greased or oiled. Insufficiently tightened spark plugs may cause leaks and the sparks plugs may come loose during engine operation.

NOTICE

The description is for one component only. The procedure is identical for all further components.



TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.

- Mount the special tool 0 495 560 (12 1 220) on a pivoting extension.

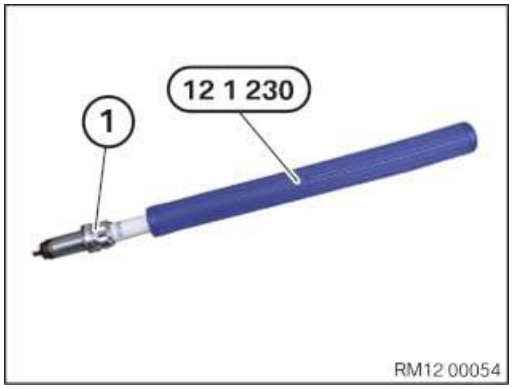


- Unscrew spark plugs with the special tool 0 495 560 (12 1 220) and a pivoting extension.

5 – Installing all spark plugs

NOTICE

The description is for one component only. The procedure is identical for all further components.



- Insert spark plug (1) into special tool 0 496 065 (12 1 230).



TECHNICAL INFORMATION

Do not drop spark plug into spark plug shaft! This can lead to a reduction of the electrode gap and can thus impair smooth running of the engine, especially in idle position.

- Screw in the spark plugs in the engine with the special tool 0 496 065 (12 1 230) until hand-tight.



TECHNICAL INFORMATION

Exclusively swivelling extensions may be used for the reversible ratchet. Rigid mounting tool and variable plug connections with rigid option may not be used; there is a risk that the insulator breaks.

- Tighten the spark plugs with the torque wrench, the special tool 0 495 560 (12 1 220) and a swivelling extension.

Spark plugs

M12x1.25		Tightening torque	23 Nm

POSTPROCESSES

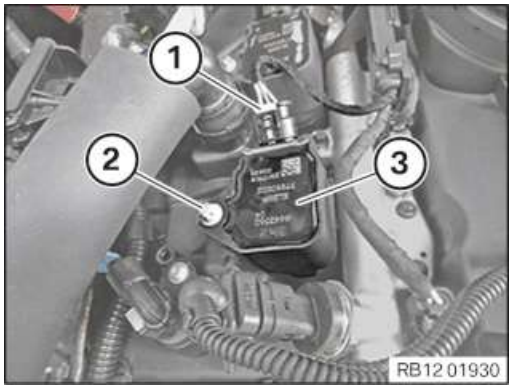
6 – Install all ignition coils

NOTICE

The description is for one component only. The procedure is identical for all further components.

▶ **Install ignition coil.**

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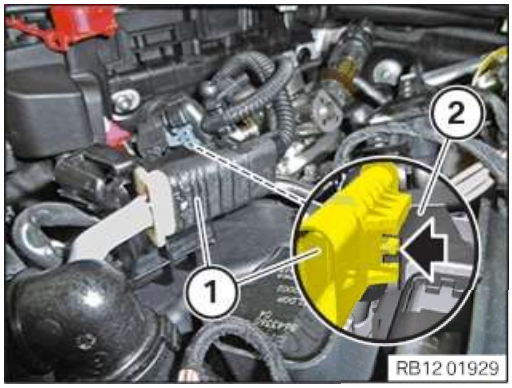
- Install ignition coil (3).
- Tighten down screw (2).

Ignition coil

Screw		Tightening torque	8 Nm

- Connect connectors (1) and lock.

  The connector (1) must engage audibly.



- Connect and lock connector (1) with holder (2) (arrow).

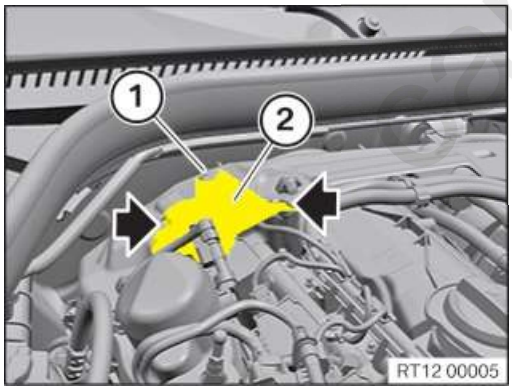
  The connector (1) must engage audibly.



- Connect connectors (1) and lock.

  The connector (1) must engage audibly.

7 – Mounting the service opening in sound insulation on top of engine



- Turn the sound insulation (2) at the pivot point (1) to the installation position and guide it in where marked (arrows).

8 – Install acoustic cover

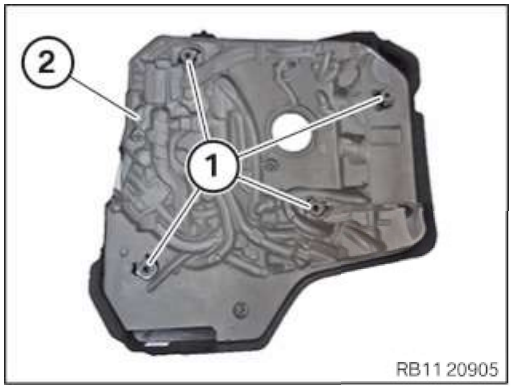
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RISK OF DAMAGE

Damage to the acoustic cover.

Jerky movements during disassembly and excessive application of force during installation may result in breakage of the acoustic cover.

- Disassemble or mount the acoustic cover carefully.
- Disassemble or mount snap-lock couplings of the ball pivots one after the other.
- Disassemble or mount acoustic cover only at temperatures >20 °C.
- Use only distilled water as an auxiliary material during installation, no lubricants.



- Check all rubber mounts (1) of acoustic cover (2) for correct seating.



- Clip in the acoustic cover (1) into the holders in the **marked** areas.

  The acoustic cover (1) must audibly engage into place.

Additional Information

Overview of Tightening Torques

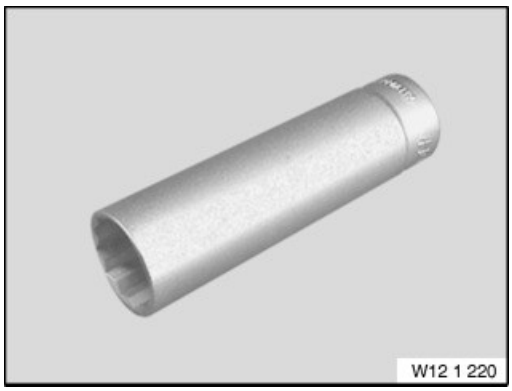
Spark plugs			Used in step 5
M12x1.25		Tightening torque	23 Nm

Ignition coil			Used in step 6
Screw		Tightening torque	8 Nm

Overview of Special Tools

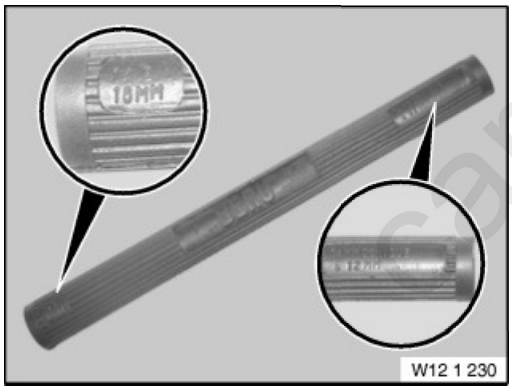
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0 495 560 (12 1 220) Socket



Common	Used in step 45
Usage	For removing and installing the spark plugs (WAF 14 bihexal).
Included in the tool or work	
Storage location	C18
Replaced by	
In connection with	
SI-Number	01 20 06 (299)

0 496 065 (12 1 230) Fitting aid



Common	Used in step 5
Usage	Fitting aid for spark plug installation. Original BERU ZMH 001 rubber hose 0 890 00 001.
Included in the tool or work	
Storage location	individual
Replaced by	
In connection with	
SI-Number	01 04 07 (352)

Links

Repair instructions	Used in step
61 35 ... Notes on ESD protection (Electro Static Discharge)	3

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00 00 624 Service - vehicle check

TECHNICAL INFORMATION

Repair possible defects for a separate charge after discussion with the customer.

PRELIMINARY WORK

1 – Check lighting system

Check

- Check function of the front and rear lights.
- Check function of the motor vehicle number plate light.
- Check headlight adjustment.

Result

» Functional limitation of the lighting system.

Measure

- Repair lighting system.

  If necessary, adjust headlight and charge separately.

63 10 014 Adjusting fog lights
63 10 004 Adjusting headlights
63 10 004 Adjusting headlights
63 10 014 Adjusting fog lights

2 – Check horn, headlight flashers and hazard warning flashers

- Operate the horn and check the function of both fanfares.
- Operate the headlight flasher, check the function of the high beam headlight and blue indicator light in the instrument cluster (KOMBI).
- Check function of hazard warning lights system.

3 – Check the wiper and window washer system

Check

- Check the wiper range for streaks.

Result

» Streaks in the wiper range.

Measure

- For a separate charge: Renew the wiper blades.

Check

- Check the washer jets and spray jet.

Result

» The spray jet does not exit or exits unevenly.

Measure

- Adjust the washer jets.

Measure

- For a separate charge: If applicable, renew the washer jets.

4 – Check blower

- Check function of blower.
- Check air distribution and air leak for all blower speeds.

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5 – Check the interior lighting

- Check the function of the operating element.
- Check the function of the indicator lights and warning lights.
- If applicable, check the function of additional instrument lighting.
- Check the function of the inscription lighting of the light switch.
- If applicable, check the function of additional inscription lighting.
- Check the function of the interior lighting.
- Check the function of the glove box light.
- Check the function of the luggage compartment lights.

6 – Check seat belts

Check

- Check condition of seat belt strap.
- Check function of automatic reel.
- Check seat belt locking reel, seat belt buckle, seat belt clip and, if necessary, seat belt clasp for damage.

Result

» Damage or functional limitations.

Measure

- Repair damage and functional limitations.

72 00 ... Replacing the seat belt clip

7 – Checking the warning triangle, high-visibility jacket and first-aid kit

Check

- Check whether or not the warning triangle, high-visibility jacket and first-aid kit are available.
- Check expiry date on the first-aid kit.

Result

» Warning triangle, high-visibility jacket and first-aid kit not present.

» First-aid kit has expired.

» First-aid kit will expire prior to the next vehicle check.

Measure

- Install the warning triangle, high-visibility jacket and first-aid kit.

Measure

- Renew first-aid kit.

8 – Check Mobility Set

Check

- Check expiry date on the tyre sealant bottle.

Result

» Expiry date exceeded.

» Expiry date exceeded before next vehicle check.

Measure

- Replace tyre sealant bottle and charge separately.

MAIN WORK

9 – Check tyres (if available, compact spare wheel also)

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Check

- Check the tread depth of all tyres with the tyre tread gauge.
- Check the tyre tread surface and flanks for cuts and foreign objects such as nails or screws.
- Check tread wear pattern for worn out areas and for one-sided wear.

Result

» Tyres worn or damaged.

Measure

- Replace the tyres against a separate invoice and, if required, carry out the wheel alignment.

Check

- Check the tyre pressure.

Result

» Tyre pressure too low or too high.

Measure

- Adapt the tyre pressures as per the specification.

10 – Check vehicle underbody and all other visible components

Check

- Carry out visual inspection of the vehicle underbody.
  - Check for tightness (transmission, fuel system, components of the brake, steering)
  - Check for correct routing of the electrical lines (e.g. brake pad wear sensor)
  - Check for tightness (shock absorber)
  - Check the installation and corrosion on the springs in the rebound state
  - Check vehicle underbody for damage
  - Check complete mounting of mounted parts (e.g. underbody panellings)

Result

» Check for damage or leaks on the vehicle underbody

Measure

- If necessary, remove trim panels from underbody.

  Check brackets, brake lines and fuel lines for damage and correct mounting orientation.

Measure

- Eliminate possible defects for a separate charge after discussion with the customer.

11 – Check brake lines and the brake line connections

Check

- In the visible areas, perform visual connection for:
  - Leakages
  - traces of fluid
  - damage
  - pinched areas
  - correct routing of brake lines
  - correct seating of brake lines in holders
- Check brake fluid level in brake fluid expansion tank

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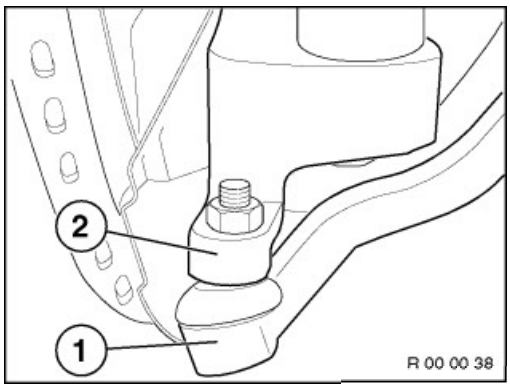
Result

» Leaks, damage.

Measure

- Repair detected defects for a separate charge after discussion with the customer.

12 – Check the components of the steering



Check

- Move the steering wheel in both directions while checking for play.

desired state

- There is no play between the track rod joint (1) and track rod arm (2).

Result

» There is play.

Measure

- Eliminate possible defects for a separate charge after discussion with the customer.

Check

- Check gaiters and sleeves for damage (e.g. cracks and holes) and tightness.
- Check gaiter for missing tensioning straps.

Result

» Damage or leaks.

Measure

- Eliminate possible defects for a separate charge after discussion with the customer.

POSTPROCESSES

13 – Checking the coolant level and coolant composition

- Check the connections, hose clamps and hoses for coolant residues and damage such as e.g. cracks.
- Check coolant composition in all coolant expansion tanks.

Expendable materials

Technically suitable antifreeze and corrosion inhibitor	

Main group 17

Check

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- Check the coolant level in both coolant expansion tanks.

  The filling level in the coolant expansion tank must be between the minimum and maximum mark.

- Inform customer in event of incorrect fluid level and, if necessary, troubleshoot (charged separately).

Result

» Coolant level below the minimum mark.

» Coolant level above the maximum mark.

Measure

- Adjust filling level in the coolant expansion tank to the desired filling level.

  The according amount of coolant must be supplemented or drawn off.

14 – Check the engine compartment for leakage from the top

Check

- Carry out visual inspection of the engine compartment.
  - Check general leak-tightness (engine, cooling system, fuel system, hoses and pipes)
  - Check the electric cables are correctly routed.

Result

» Damage or leakage present.

Measure

- Eliminate possible defects for a separate charge after discussion with the customer.

15 – Top up the washer fluid for the window washer system

- Top up the fluid tank for the window washer system up to the maximum mark.

16 – Check the tyre settings in the central information display (CID)

Check

- Check for correct tyre setting in the central information display (CID).

desired state

- The mounted tyres match the tyre setting in the central information display (CID).

Result

» Incorrect tyre setting in the central information display (CID).

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Measure

- Adjust the tyre setting in the central information display (CID).

  Open the menu:

  - Select **My vehicle** in the menu.
  - Select **Vehicle status** in the menu.
  - Select **Tyre pressure control (RDC)** from the menu.

  Enter the settings:

  - Select **Tyre settings** from the menu.
  - Select tyres: Summer tyres / winter tyres.
  - Select the tyre type that is mounted at the rear axle.
  - Select the load status of the vehicle.
  - Confirm the settings.

  Starting measurement of the current tyre pressure. The progress of the measurement is displayed.

17 – Performing a CBS reset (equipment specification without the reset button for the trip distance recorder in the instrument cluster (KOMBI))

Prerequisite

Scope of maintenance work is performed.

On-board date is set correctly.

No CC message is present.

Availability of the scope of maintenance work is under 90%.

TECHNICAL INFORMATION

The CBS scope of maintenance work can be reset in the car. In general, however, the reset of CBS functions (CBS reset) with the diagnosis system is recommended.

It is only possible to code the country-specific statutory intervals with the diagnosis system.

TECHNICAL INFORMATION

Information for the occurrence of a failed CBS reset:

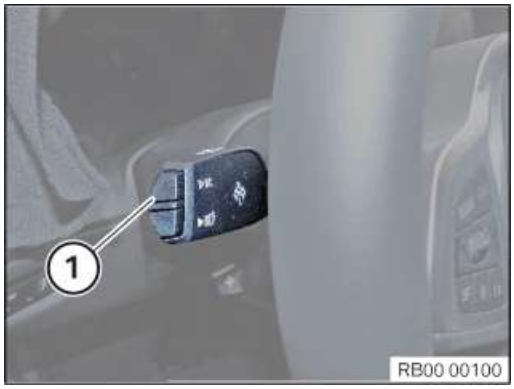
For front/rear brake service:

- A CBS reset is only possible in the vehicle with a worn brake pad wear sensor (CBS display in CID active).
- With a brake pad wear sensor that is not worn (no CBS display in the CID), a CBS reset is only possible with the diagnosis system.

Other known causes of CBS reset problems:

- Parking brake engaged
- Brake pedal pressed

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TECHNICAL INFORMATION

The reset procedure (CBS reset) is cancelled due to a timeout or a terminal change.

- Generate PWF status "Residing".
- Generate PWF status "PAD": For this purpose, press the START-STOP button three times.
- Press on-board computer button on the turn signal/high beam switch for (1) approx. 10 s, until the 1st scope of maintenance work appears on the display.

  The next position is reached by briefly pressing the on-board computer button on the turn signal/high beam switch (1)again.
- Select the desired service job.

  If a CBS reset is possible, "Reset possible" is displayed on the instrument cluster (KOMBI).
- Confirm the "Perform reset?" text message. Press the on-board computer button on the turn signal/high beam switch for (1) 3 s.

  The CBS reset is confirmed as "Reset successful" after it is performed.

18 – Checking for road safety and performing test drive

Check

- Check the service brake and the parking brake.
- Check steering for play, ease of movement and correct straight-ahead driving.
- Inspect the shock absorbers visually for leaks.
- Check that the indicator lights, the warning lights and the Check Control function correctly.
- Check the due date on the German Technical Inspection Agency (TÜV) badge and, if necessary, inform the customer of the due date for the inspection.

Result

» Defects were detected.

Measure

- Eliminate possible defects for a separate charge after discussion with the customer.

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Additional Information

Links

Repair instructions	Used in step
63 10 014 Adjusting fog lights	1
63 10 004 Adjusting headlights	1
63 10 004 Adjusting headlights	1
63 10 014 Adjusting fog lights	1
61 61 021 Replacing left or right windscreen wiper blade	3
61 61 041 Replacing both wiper blades	3
72 00 ... Replacing the seat belt clip	6

36 10 300 Remove or install front or rear wheel

32 00 155 Kinematics Diagnosis System wheel alignment with ride height measurement without loading the vehicle

36 11 003 RDC resetting

Operating materials	Used in step

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00 00 105 Standard scope of service

TECHNICAL INFORMATION

Repair possible defects for a separate charge after discussion with the customer.

1 – Check the function of the parking brake without roller est stand

Check

- Check the function of the parking brake, e.g., when the vehicle is driven into the workshop.

Result

» Function of the parking brake is limited.

Measure

- Repair parking brake.

2 – Check the indicator lights and warning lights

Check

- Check the indicator lights and warning lights in the instrument cluster (KOMBI).

Result

» The indicator lights and/or warning lights in the instrument cluster (KOMBI) are illuminated.

Measure

- Eliminate the causes for the warning messages.

3 – Checking Check Control messages

Check

- Check for Check Control messages in the CID.

Result

» Check Control messages are present in the CID.

Measure

-

▸ **Reading out the fault memory**

- Connect diagnosis system.



Check

- Read out fault memory.

Result

» A fault memory entry is present.

Measure

- Delete the fault memory, work through the test module if applicable.

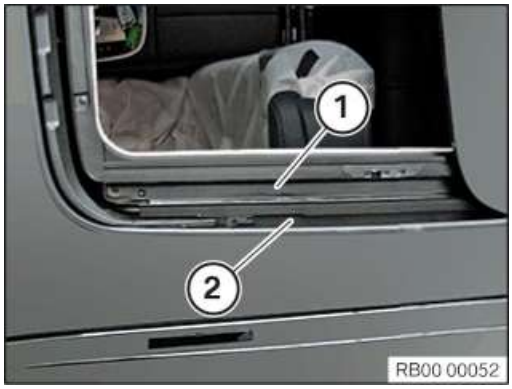
4 – For slide/tilt sunroof or panorama glass roof: Check the guide rails and water drain channels for contamination

Prerequisite

The glass slide/tilt sunroof panel is open.

Check

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- Check guide rail (1) and water drain channel (2) on left and right for contamination.

Result

» Guide rails and water drain channels are contaminated.

Measure

- Clean guide rails and water drain channels and issue a separate invoice.

  Check whether water drain hoses are clear.

5 – Recommendation: Check tyres

▸ **Check tyres (if available, compact spare wheel also)**

Check

- Check the tread depth of all tyres with the tyre tread gauge.
- Check the tyre tread surface and flanks for cuts and foreign objects such as nails or screws.
- Check tread wear pattern for worn out areas and for one-sided wear.

Result

» Tyres worn or damaged.

Measure

- Replace the tyres against a separate invoice and, if required, carry out the wheel alignment.

Check

- Check the tyre pressure.

Result

» Tyre pressure too low or too high.

Measure

- Adapt the tyre pressures as per the specification.

6 – Transferring service history

Prerequisite

All completed maintenance work is documented in the Service History.



- Transfer the completed maintenance work from the Service History to the vehicle.
- Connect diagnosis system:
  - Service functions
  - Maintenance
  - Transferring service history

Additional Information

Links

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Repair instructions	Used in step
36 10 300 Remove or install front or rear wheel	5
32 00 155 Kinematics Diagnosis System wheel alignment with ride height measurement without loading the vehicle	5
36 11 003 RDC resetting	5

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00 00 ... Vehicle care measures for inventory vehicles (new and used vehicles) as well as vehicles to be taken off the road that are in the hands of customers

Action	Vehicles	Execution
Remove the protective transportation film	New vehicles	Do not remove the protective film if the vehicle is kept outdoors; Note the instructions on how to remove protective film
Release parking brake	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Engage gear or selector lever position "P" for automatic transmission	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Check the covers of the interior equipment	New vehicles	In general
Increase the tyre pressure to 3.5 bar	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Charge battery	New vehicles	See battery charging calendar
	Used vehicles	See battery charging calendar

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	Customer vehicles to be taken off the road (note to customers)	Every 6 weeks; Every 12 weeks for vehicle batteries that have been disconnected from the vehicle electrical system; Notify customers of vehicle-specific procedures for electric or hybrid vehicles
Change the brake fluid and reset CBS	Used vehicles	Change before vehicle handover to customer if service is due shortly (see CBS display -> Brake fluid service)
Check convertible top for potential damage	New vehicles	Generally before handover to the customer
	Used vehicles	Generally before handover to the customer
If possible, keep convertibles in roofed areas	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Check for damage to paint, the exterior or interior	New vehicles	Generally before handover to the customer
	Used vehicles	Generally before handover to the customer
Change engine oil and oil filter at engine operating temperature	New vehicles	No change
	Used vehicles (not applicable to vehicles with Premium Selection certificate)	Prior to handover to customers as from a 12 month immobilisation period
	Customer vehicles to be taken off the road (note to customers)	Prior to handover to customers as from a 12 month immobilisation period

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Check coolant composition	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Dry the parking brake and footbrake by applying the brake	New vehicles	In general
	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Apply surface protection: vehicle surface wash including interior vehicle cleaning and subsequent paint and chrome-part care. Clean the rubber seals of the flaps and doors and apply talc or rubber care product. Use materials approved by BMW for cleaning and vehicle preservation to recondition engines, engine compartments, vehicle underbodies, axles and assemblies.	Used vehicles	In general
	Customer vehicles to be taken off the road (note to customers)	In general
Switch on the air conditioning for approximately 10 min each month	New vehicles	Required to ensure circulation of the refrigerant oil
	Used vehicles	Required to ensure circulation of the refrigerant oil
	Customer vehicles to be taken off the road (note to customers)	Required to ensure circulation of the refrigerant oil

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00 00 ... When driving on a race track

Caution!

The customer must be informed that, in particular, the brake pads, wear indicator and the flat tyre monitor installed as standard are not designed for race track operation. The vehicle is also not designed for motor sport competition racing.

Excessive loading of the vehicle, e.g. by operating it on a race track or in motor sport competition racing, is not covered by the warranty.

If the customer still wants to drive on a race track, the following aspects must be considered/checked, at least:

The vehicle, or rather the engine, should be carefully run in before operating it on the race track. A run in period of at least 2000 km.

Recommendation: Carry out an oil change after the run in period.

For driving on a race track, the following extensions must be considered and implemented on the vehicle.

Model: .....

Vehicle identification number: .....

Scope of checks before driving on the race track:		
Vehicle check	**OK**	**Comment**
Perform a comprehensive vehicle check service. -> Scope of the vehicle check service		
Engine	**OK**	**Comment**
Perform oil-level check.. -> If necessary, top up to the maximum level.		
Transfer box (affects only F39 X2 M35i / F40 M135i xDrive / F54 JCW ALL4 / F60 JCW ALL4)	**OK**	**Comment**
Perform transfer box oil change.		
Cooling	**OK**	**Comment**
Visual inspection of the radiator for contamination. -> Draw off contamination.		
Brake system	**OK**	**Comment**
Check the age of the brake fluid - see Service Booklet/Service history. -> The age of the brake fluid should not exceed 1 year.		
Check filling level in brake fluid expansion tank. -> If necessary, top up to the maximum level.		
Check the brake pad thickness on the front axle. -> Wear material thickness ≥ 9 mm -> Ideally, install new brake pads.		
Recommendation for M-vehicles: Use Sport brake pads, if available for that model.		

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Check the brake pad thickness on the rear axle. -> Wear material thickness ≥ rear axle ≥ 8 mm -> Ideally, install new brake pads. **Recommendation for M-vehicles:** Use Sport brake pads, if available for that model.		
Check the brake disc thickness on the front axle. -> Minimum brake disc thickness: ≥ Minimum brake disc thickness + 1 mm -> Ideally, install new brake discs.		
Check the brake disc thickness on the rear axle. -> Minimum brake disc thickness: ≥ Minimum brake disc thickness + 1 mm -> Ideally, install new brake discs.		
Visual inspection of the brake line and brake hose for tightness, damage and porosity.		
Wheels / tyres	**OK**	**Comment**
Check wheels/tyres for suitability for operation on the race track -> Winter tyres, all-season tyres and tyres on steel rims are absolutely unsuitable. **Recommendation:** Use Sport tyres.		
Check the tyre pressure of all the tyres and adjust, if required. -> In order to increase the service life and tyre performance, a reduction in the tyre pressure is recommended for the race track. To do this, proceed as follows: 1. Drive the tyres warm. 2. Set the tyre pressure according to the prescribed value on the tyre pressure label for partial loads. 3. Initialise RDC. **Note:** The display of tyre inflation pressure is possible only up to an operating temperature of systems of 120 °C. At higher temperatures, which can be reached during racing operation, the display is suppressed and a CC message is issued. After cooling down, the system functions again without limitations. **Background:** The tyre pressure increases due to the increase in temperature in the tyre when operated on the race track. This reduces the contact surface of the tyre to the road, leading to an increased temperature load on the running surface. The adjustment of the tyre pressure in tyres that have been driven warm as opposed to tyres in a cold state leads to a reduction in the pressure and thus, due to an increased tyre contact area, to a more equal load on the tyre.		

Extensions when driving on a race track:		
Warm up	**OK**	**Comment**
Drive a warming up lap. > Bring the engine up to operating temperature. Fast driving at a medium rpm level and medium dynamics.		
Cool down	**OK**	**Comment**
Drive a cooling down lap. -> Fast driving at a medium rpm level and medium dynamics. Avoid brake load as far as possible.		

Scope of checks after driving on the race track:		
Engine	**OK**	**Comment**
Carry out an oil-level check according to the Owner's Handbook. -> If necessary, top up to the maximum oil level.		

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Front axle transmission (only affects G15 with N63 engine)	**OK**	**Comment**
Perform oil change on front axle transmission.		
Transfer box (affects only F39 X2 M35i / F40 M135i xDrive / F54 JCW ALL4 / F60 JCW ALL4)	**OK**	**Comment**
Perform transfer box oil change.		
Rear axle differential (only affects G29 Z4 M40i / G20 M340i / G20 M340i xDrive)	**OK**	**Comment**
If an adjusted rear axle differential is installed. -> Perform oil change.		
Cooling	**OK**	**Comment**
Visual inspection of the radiator for contamination. -> Draw off contamination.		
Brake system	**OK**	**Comment**
Check filling level in brake fluid expansion tank. -> If necessary, top up to the maximum level.		
Check the brake pad thickness on the front axle. -> Replace brake pads when the remaining brake pad thickness is undershot (min. thickness 3.7 mm)		
Check the dust boots on the brake calipers of the front axle for damage.		
Check the brake pad thickness on the rear axle. -> Replace brake pads when the remaining brake pad thickness is undershot (min. thickness 3.7 mm)		
Check the dust boots on the brake calipers of the rear axle for damage.		
Check the brake disc thickness and their state on the front axle. -> Replace brake discs when: • Drop below the minimum brake disc thickness • Scoring • Heat cracks • Thickness difference		
Check the brake disc thickness and their state on the rear axle. -> Replace brake discs when: • Drop below the minimum brake disc thickness • Scoring • Heat cracks • Thickness difference		
Wheels / tyres **Note to customer:** Perform the following points for wheels/tyres immediately after the racing track operation and before driving on public streets.	**OK**	**Comment**
Check wheels/tyres for damage.		
Check wheels/tyres for minimum tread depth.		

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Check the tyre pressure of all the tyres and adjust, if required. 1. Allow tyres to cool down. 2. Set the tyre pressure according to the prescribed value on the tyre pressure label. 3. Initialise RDC. **Background:** Adjustment of the tyre pressure in cold tyres, as otherwise it can lead to tyre pressure control warning messages due to the low pressure.		
Vehicle check	**OK**	**Comment**
Perform a comprehensive vehicle check service. -> Scope of the vehicle check service		

....

Date Mechanic Workshop Supervisor

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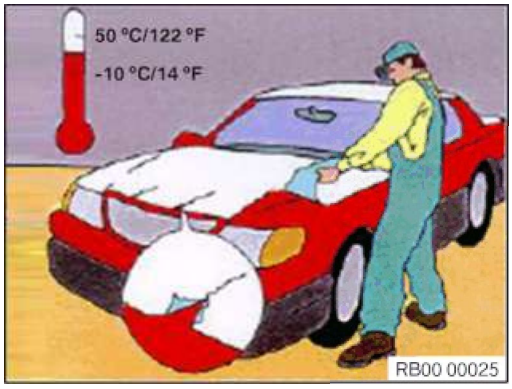
00 00 ... Work instruction for removing the protective film

Note:
The protective film is applied to new vehicles at the works. The dealer must guarantee only expert removal of the protective film.

The protective film should be removed 48 hours before vehicle handover to the customer.

The protective film can be easily removed from the affected surfaces. Polishing is necessary only in exceptional cases.

Further information on the protective film is available in the document "Frequently asked questions on surface protection".

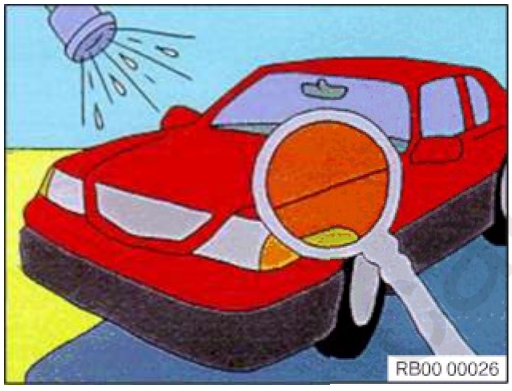


Instructions for removing the protective film:

- In order to reduce the amount of force required, the film can be torn at the edge and pulled off in narrower strips.
- Remove the film in a surface temperature range of -10 °C to +50 °C.

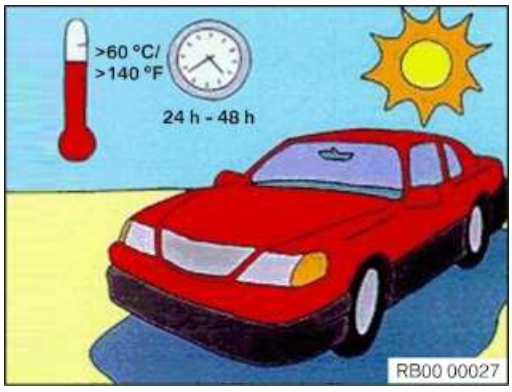
  Excessively high temperatures can lead to adhesive residue being left on the surface.

  In order to achieve the recommended temperature for pulling off the adhesive film from the vehicle after direct exposure to the sun, it is possible to carry out a car wash with applied protective film in order to cool the vehicle down.



Car wash and surface inspection:

- Check vehicle surface after the car wash.
- Any adhesive residue left on the vehicle surface can be removed by rubbing by hand or using a cleaning agent R2 (part number 83 19 0 417 324) or stain remover (part number 83 11 9 407 816) and a lint-free cloth.



Procedure in the event of paint swelling:

- Any paint swelling normally disappears within 48 hours.
- Higher temperatures (infrared lamp) accelerate this process.
- Polishing of the surfaces is necessary only in rare cases if the heat treatment does not result in success.