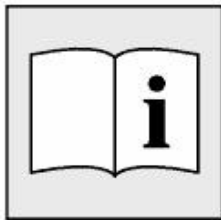
**Special tools required:**

- 34 1 280

*Necessary preliminary tasks:*

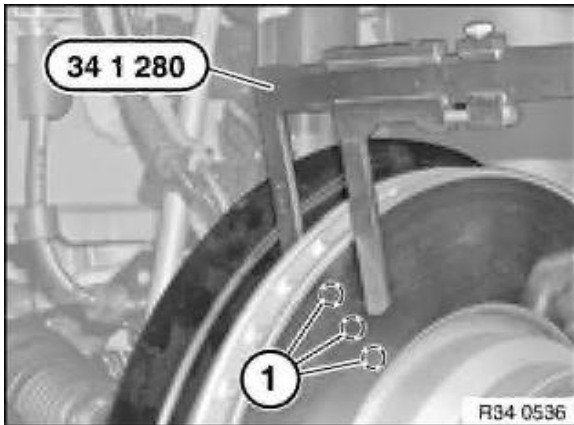
- Remove wheels
- If necessary, remove and clean brake linings

E65 and E66: Release parking brake (pushbutton to left of steering wheel).

After completing work:

- Adjust handbrake (not for E65 and E66)
- Read and comply with notes on braking in new brake discs / brake pads.

Observe safety instructions on raising the vehicle.



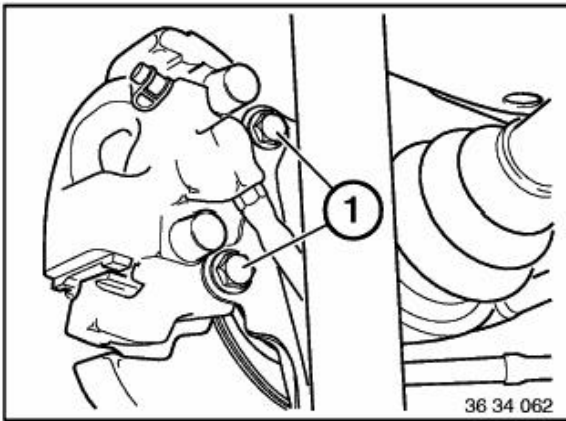
Check minimum brake disc thickness:

- Position special tool 34 1 280 at three measuring points in area (1) and measure.
- Compare measurement result and lowest value with setpoint value.

New brake linings may only be installed if the brake disc thickness is greater than or equal to the minimum brake disc thickness (MIN TH).

Always replace brake discs in pairs.

If the brake discs are replaced, you must also fit new brake linings.



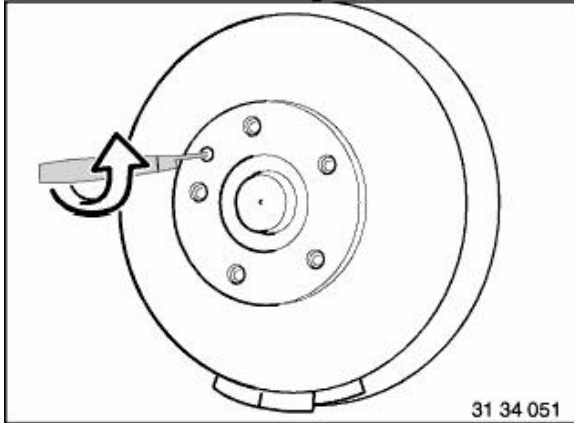
Release screws (1), remove brake caliper and tie up.

Note:

Brake hose remains connected.

Installation:

Tightening torque 34 21 3AZ .



Unscrew bolts and take off brake disc.

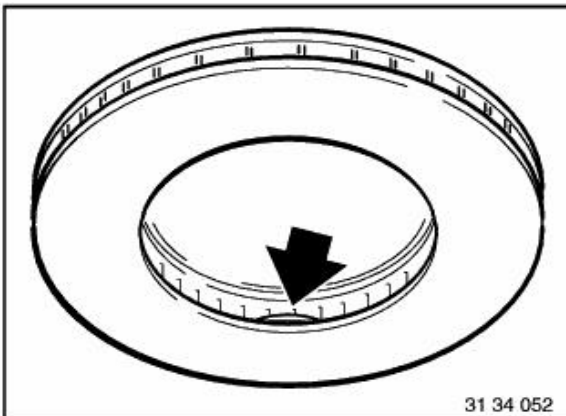
Installation:

Tightening torque 34 21 1AZ .

Clean contact surface of brake disc at wheel hub thoroughly and remove traces of corrosion if necessary. Unevenness on contact surface may result in distortion of brake disc!

Important!

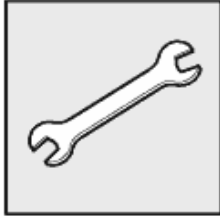
To release brake disc: Do not under any circumstances strike friction ring with a hammer or similar! If necessary, carefully tap on base of brake disc chamber with a rubber mallet.



Important!

Internally ventilated brake discs are balanced.

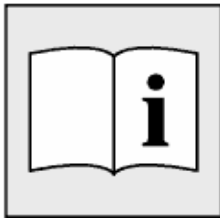
Never remove or reposition balance clips.

**Special tools required:**

- 34 1 050
- 34 1 080
- 34 1 280

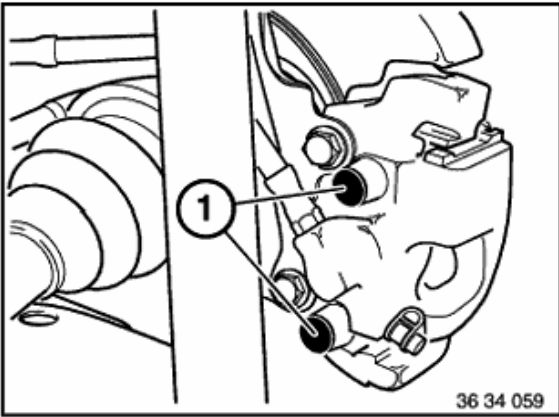
**Important!**

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

*Necessary preliminary tasks:*

- Remove wheels
- Remove brake pad wear sensor

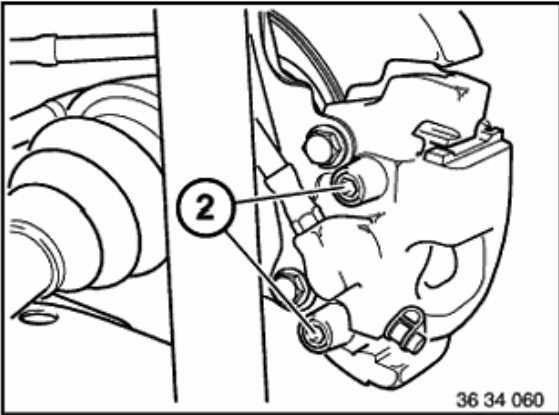
Observe safety instructions on raising the vehicle.



Remove plastic plugs (1).

Right side:

Disconnect plug connection for brake lining wear sensor.



Release guide screws (2) with special tool 34 1 080 .

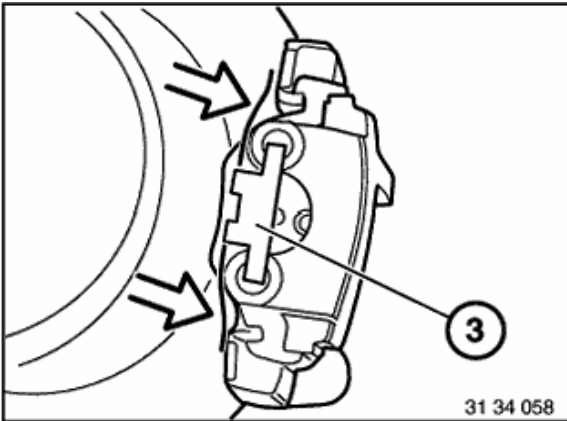
Installation:

Only clean guide screws; do not grease.

Check threads.

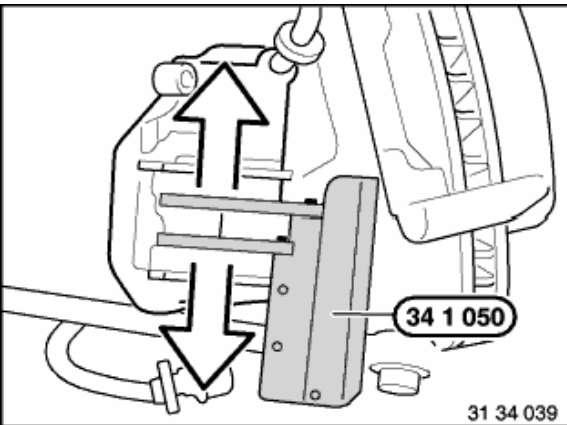
Replace all guide screws which are not in perfect condition.

Tightening torque 34 21 5AZ .



Lift out retaining spring (3).

Withdraw brake caliper backwards.

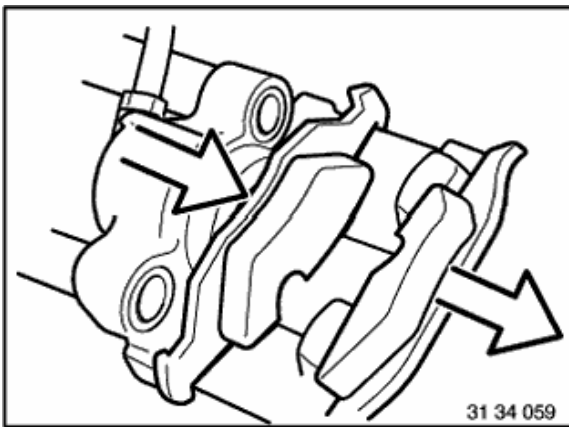


Turn piston fully back with special tool 34 1 050 .

Important!

When forcing piston back:

- Pay attention to brake fluid level in expansion tank; brake fluid that spills over will damage paintwork.



Remove outer brake pad.

Inner brake pad is located with its spring in the piston.

Important!

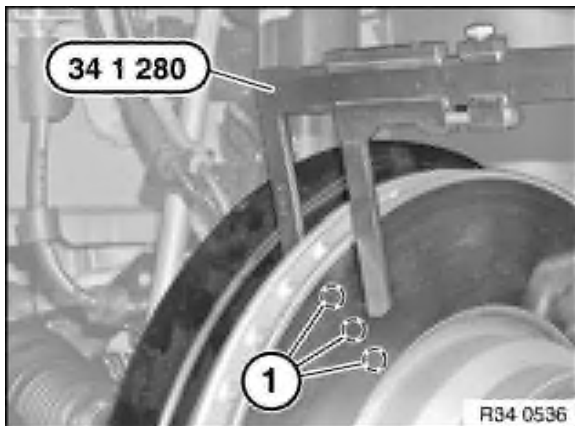
Mark any worn brake pads.

If the brake linings are worn on one side, they must not be mixed up!

Observe minimum thickness of brake pads.

Clean brake pads.

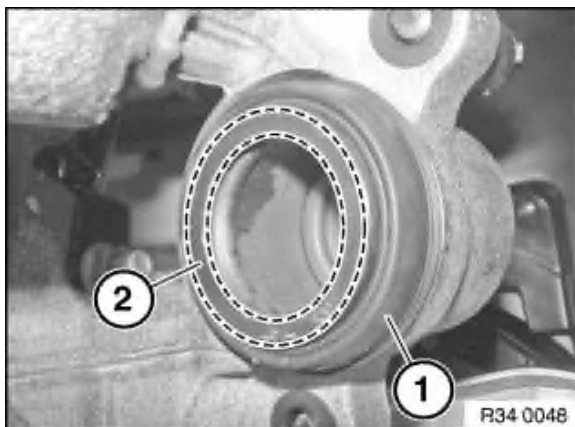
Do not apply grease to brake pad backplate.



Check minimum brake disc thickness:

- Position special tool 34 1 280 at three measuring points in area (1) and measure.
- Compare measurement result and lowest value with setpoint value.

New brake linings may only be installed if the brake disc thickness is greater than or equal to the minimum brake disc thickness (MIN TH).

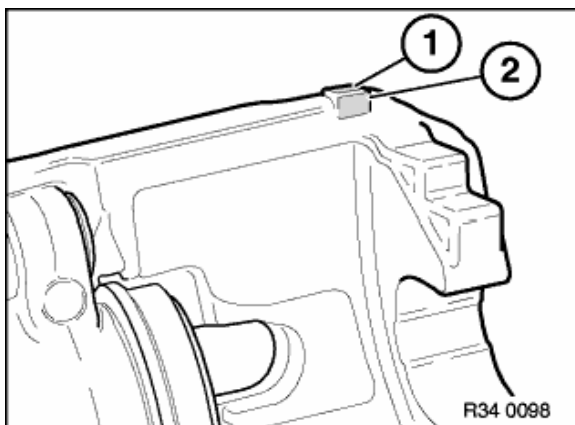


Check dust sleeve (1) for damage and replace if necessary.

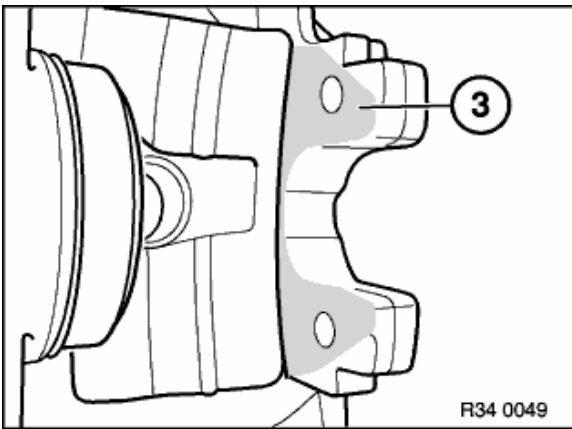
Clean contact face (2) of brake piston and apply a thin coating of anti-squeak compound.

Important!

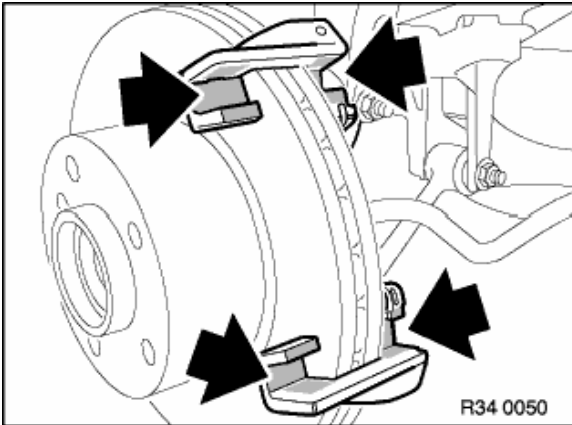
Dust sleeve must not come into contact with anti-squeak compound as this may cause the dust sleeve to swell.



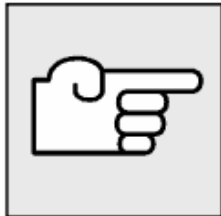
Clean mounting faces (1) and (2) of brake lining hammer heads/brake caliper housing and coat with anti-squeak compound.



Clean contact face (3) of brake caliper and apply a thin coating of anti-squeak compound.



Clean brake caliper mounting bracket at hammer head guides and apply a thin coating of anti-squeak compound.



Note:

After completing work:

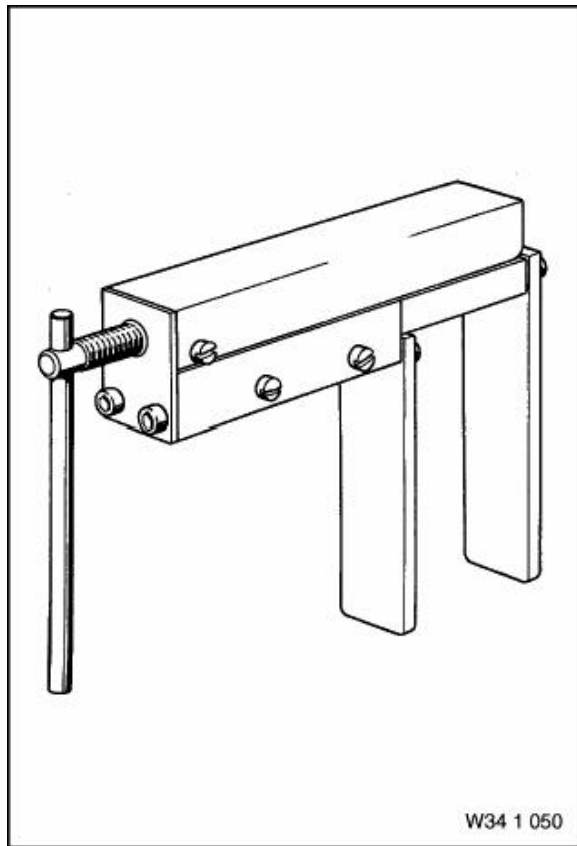
- Fully depress brake pedal several times so that brake linings contact brake discs.
- When installing new brake pads at front and rear axles, brake fluid level must be brought up to "MAX" marking.
- Read and comply with notes on braking in new brake discs / brake pads.
- If necessary, when replacing linings, reset CBS display in accordance with factory specification.

Important!

On the E60 M5 and E63 M6 the fault memory entry "Mastervac vacuum pressure sensor" may be stored after the brake linings have been replaced.

The fault memory entry must be deleted. The vacuum pressure sensor only has to be replaced if the fault is entered repeatedly.

34 1 050 Fixture



Note:

For turning back brake piston when fitting new brake pads, disc brakes front and rear

Series:

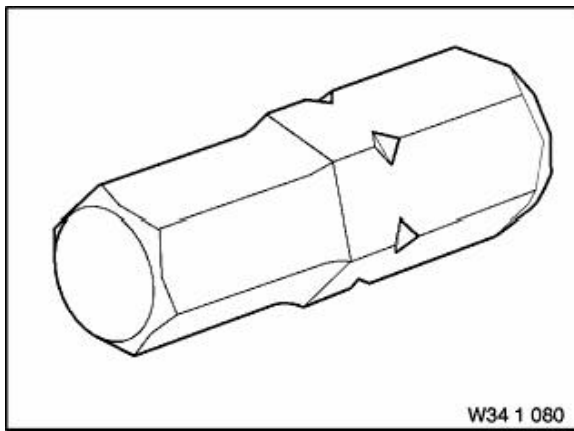
E12, E21, E23, E24, E28, E30, E31, E32, E34, E36, E38, E39, E52, E53, E60, E61, E63, E64, E65, E66, E67, E83, E85, E86, E87, E90, E91, E92, E93

Order number:

34 1 050
Fixture

34 1 080 Bit insert

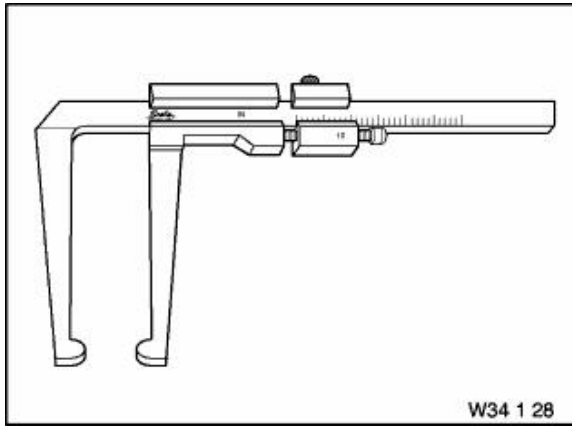
Minimum set: Mechanical tools



In conjunction with: Tool holder for 5/16" bit
Note: For loosening and tightening brake caliper bolts
Series: E31, E36, E38, E38/3, E39, E52, E53, E60, E61, E63, E64, E65, E66, E67
Storage location: B46
SI number: 1 15 99(483)
Order number: 34 1 080
Bit insert

34 1 280

Sliding caliper



Note:

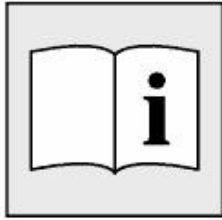
For measuring brake disk thickness.

Series:

E31, E32, E34, E36, E38, E39, E46, E52,
E53, E60, E61, E63, E65, E66, E67, E83,
E85, E87, E90, E91

Order number:

34 1 280
Sliding caliper



Necessary preliminary tasks:

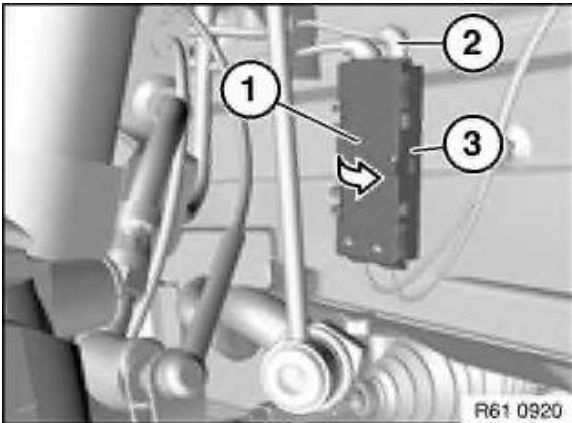
- Remove wheel



Important!

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

If a brake pad 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 ground sliding contact.

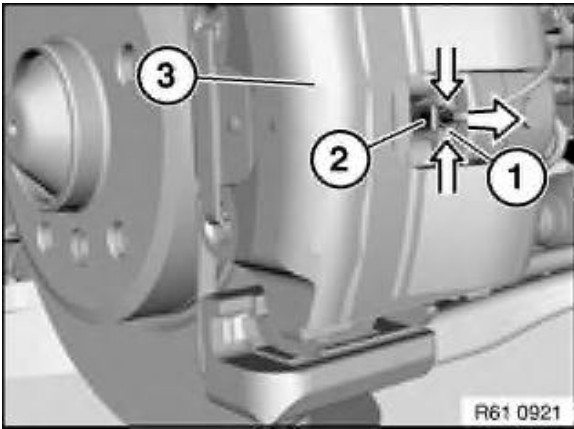


Open cover (1) on plug housing (3).

Unclip lead of brake pad sensor (2) from plug housing (3).

Disconnect associated plug connection of lead from brake pad sensor (2).

Expose lead for brake pad sensor up to brake pad.



Press clip (1) together and detach brake pad sensor (2) in direction of arrow from brake pad (3).

Installation:

Make sure clip (1) and brake pad sensor (2) are correctly seated in brake pad (3).

6.0 Anti-squeak paste

Stops disc brakes from squeaking.

For usage, see Repair Instructions, Group 34

Note:

Please make sure you following the instructions in the Electronic Parts Catalogue!

<u>Trade name</u>	<u>BMW part number</u>	<u>Container size</u>
Brake block paste	81 22 9 407 103	5.5 ml pack, 100 pcs.
Plastilube	83 23 0 305 690	75 ml pack, 12 pcs.

<u>Trade name</u>	<u>BMW part number</u>	<u>Container size</u>
Never Seez Compound	83 23 9 407 830	100 g tube

Note:

Lubrication instructions in the repair instructions and on the information sheet supplied with the set of brake pads must be observed.

Status 12/2006

**Special tools required:**

- 32 1 030

Perform inspection in the following manner:

When 1st ratchet is engaged, no braking force should be exerted.

The difference in wheel circumferential forces between the left and right wheels may deviate by max. 30 % from the greater value (measured on brake analyzer).

In event of larger deviations of wheel circumferential force: carry out readjustment.

It must be possible to brake with locked wheels with the handbrake.

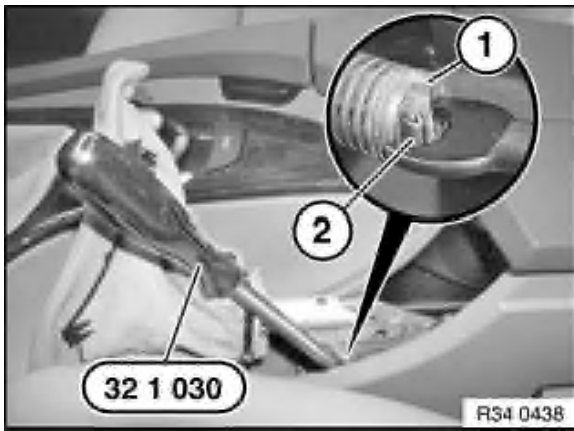
The handbrake must be readjusted whenever the actuation stroke is greater than 10 teeth.

Note:

The handbrake can only be adjusted correctly when the parking brake Bowden cables and all moving handbrake parts are free to move and fully operational.

Basic handbrake adjustment is necessary:

- When replacing parking brake shoes.
- When replacing brake disks.
- In event of excessive actuation stroke (10 teeth).
- When replacing parking brake Bowden cables



1. Setting instruction for brake shoes (basic setting)

Lock adjuster unit (ASZE).

Using special tool 32 1 030 , press stop (1) of adjusting spring back to such an extent that retaining hook (2) engages in stop (1).



Completely unscrew one wheel stud on each rear wheel.

Installation:

Tightening torque 36 10 1AZ .

Turn wheel until adjustment screw is visible in tapped hole.



Turn adjusting screw with a screwdriver until the wheel is no longer able to turn.

Then unfasten the adjusting screw 8 notches.



Unlock adjuster unit (ASZE).

Lever restraint hook (2) outwards with a suitable screwdriver (1).

Restraint hook (2) must disengage from stop of adjusting spring.

2. Setting instruction for parking brake Bowden cables

The handbrake lever must be applied 5 times to approx. 400N actuating force.

2.1 On brake analyzer

0th tooth (handbrake released):

Vehicles with manual transmission: Shift lever in neutral position.

Vehicles with automatic transmission: Selector lever in Nth position.

- Without locking differential ≤ 150 N.
- With locking differential ≤ 200 N (possibly odd display).

1st tooth: No increase in braking force with regard to 0th tooth. Indicator lamp can be lit.

2nd tooth: Indicator lamp must be lit.

3rd tooth: Increase in braking force.

5th tooth: The brake force display must have reached ≥ 400 N.

Checking brake force differential at wheel:

Apply handbrake until a wheel circumferential force (brake force display) of min. 1000 N is reached.

Max. permitted brake force differential right/left ≤ 35 % (referred to greater brake value).

3. Braking in the duo-servo parking brake

The following braking-in procedures are applicable in case of insufficient braking effect or after replacing brake disks and/or brake shoes.

3.1 On brake analyzer

Apply handbrake lever until wheel circumferential force on first wheel is 800 N.

Lock lever in next lower tooth.

Release handbrake lever after approx. 2 minutes.

3.2 When driving on road

(If possible inside the company grounds or on an unused road)

At approx. 40 km/h, apply handbrake lever until braking action can be felt.

Pull up handbrake lever into next notch and drive on for approx. 400 m.

A basic requirement is that handbrake is adjusted uniformly.

Note:

If necessary, repeat braking-in procedure.

Important!

Allow brake to cool down sufficiently.

32 1 030 Lever

Minimum set: Mechanical tools



Note: For disconnecting hydraulic lines from steering gear and for locking adjustment unit (ASZE) at handbrake lever

Series: E60, E61, E63, E64, E65, E66, E67, E82, E83, E85, E86, E87, E90, E91, E92, E93, RR1, RR2

Storage location: B45, C45

SI number: 1 14 01 (766)

Order number: 32 1 030
Lever

36 10 Wheels

	Type	Thread	Tightening specification	Measure
1AZ Wheel bolt	E30 / E31 / E32 / E34 / E36 / E38 / E39 / E46 / E52 / E60 / E61 / E63 / E64 / E85 / E86	M12		120 ± 10 Nm
	E53 / E65 / E66 / E67 / E83	M14		140 ± 10 Nm

**Important!**

After completing work:

- Carry out function check on brake analyzer (test stand) to ensure that the brakes complies with legal requirements.
- Carry out test braking while driving at low speed; the effectiveness of the brakes may be reduced during the initial braking operations.
- Exaggerated drastic and continuous braking operations for faster braking in are not permitted.
- Advise the customer not to perform any wilful drastic braking in the first 200 km after brake replacement.
- Attach mirror tag to interior rearview mirror.

**Warning!**

Danger to life!

Read and follow operating instructions for lifting platform.

Do not exceed carrying capacity of lifting platform.

Note:

The lifting platform must comply with the relevant statutory accident prevention regulations and be serviced according to the manufacturer's instructions.

**Important!**

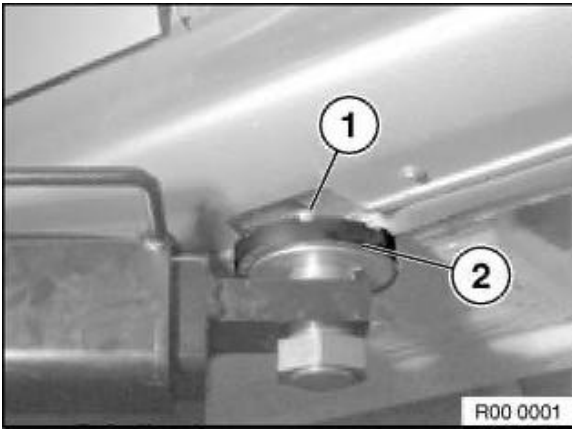
Risk of damage!

Before driving onto a lifting platform, make sure there is sufficient ground clearance between the lifting platform and the car.

The vehicle may only be raised with the lifting platform at the four jacking points.

*Necessary preliminary tasks:*

- If necessary, remove jacking points from equipment pack and insert from below into openings in front and rear sill areas



Important!

Risk of damage!

Align support plates (2) of lifting platform arms to jacking points (1) in such a way that no adjoining components are touched and thereby damaged.

34 21 Rear Brake

	Type	Thread	Tightening specification	Measure
1AZ Brake drum/disc to wheel hub	E39 / E38 / E46 / E52 / E53 / E83 / E85 / E86 / E65 / E66 / E67 / E60 / E61 / E63 / E64			16 Nm
2AZ Wheel brake cylinder to brake anchor plate	E36			10 Nm
3AZ Brake carrier on semi-trailing arm/wheel carrier	E65 / E66 / E67 / E60 / E61 / E63 / E64			110 Nm
	E46 / E85 / E86 / E86			65 Nm
	E83	M10	Replace micro-encapsulated screws	65 Nm
5AZ Guide bolt	E39 / E38 / E46 / E52 / E53 / E83 / E85 / E86 / E65 / E66 / E67 / E60 / E61 / E63 / E64	wrench size 7 mm		30 - 5 Nm
6AZ Protective plate to wheel carrier	E85 / E86 / E83	M6		9 Nm
	E85 / E86 / E83	M8		15 Nm
	E60 / E61 / E63 / E64 / E65 / E66 / E67	M6		12 Nm

34 21 Rear Brake DiscsE60

Different thicknesses on brake linings	max. mm	0.01
Surface roughness of braking surfaces (precision-turned)	Ra μ	
Brake disc diameter Models:520d 520i 523i 525i 525d 530i 530d 630i 525ix 530ix 530xd	mm	320
Brake disc diameter Models: 530iN53 545i 645Ci 535d 540i 550i	mm	345
Wear warning from residual lining thickness	mm	3.0
Brake disk minimum thickness (MIN TH) stamped on brake disk body Models:520d 520i 525i 525d 530i 530d 630i 525ix 530ix 530xd	mm	18.4
Brake disk minimum thickness (MIN TH) stamped on brake disk body Models: 530iN53 545i 645Ci 535d 540i 550i	mm	22.4
Max. machining limit per friction ring side (M models must not be machined!)	mm	0.8