BRAKE SYSTEM MAINTENANCE KEY POINTS

oremoc



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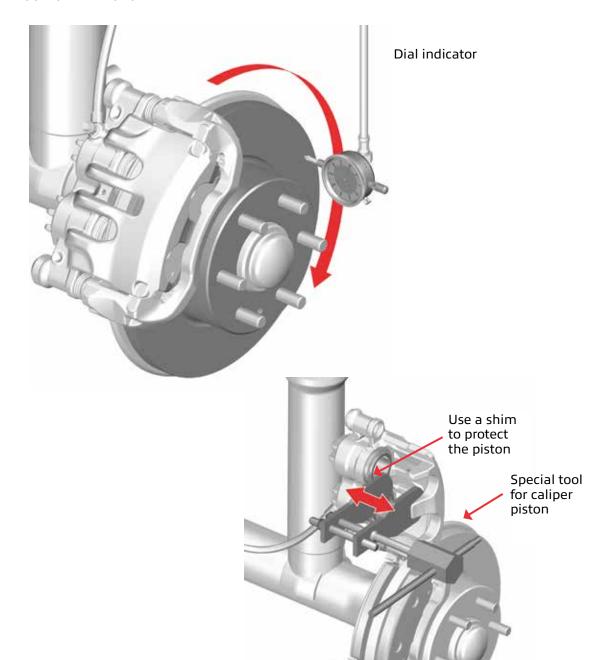
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BEFORE STARTING

- ALWAYS do the job professionally
 - → When fitting a new caliper, disc or brake pad, the enclosed instruction must be followed
 - → Use good quality components
 - → Work safely using the most appropriate equipment

WHY?

→ The braking system is responsible for the active safety of the vehicle. Its malfunction can compromise people's safety

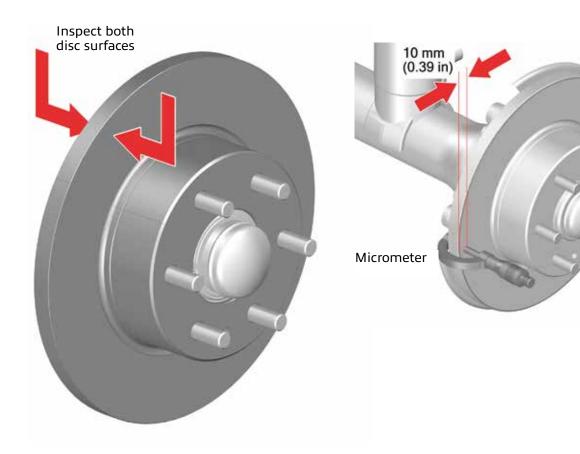


DISCS INSPECTION

- ✓ **ALWAYS** evaluate disc condition and thickness
 - → Minimum thickness is generally marked on the rim of the braking surface or on the hub surface
 - → Replace if needed. Brembo do not recommend turning or grounding the braking surface

WHY?

→ If discs are below the minimum thickness, they will not be able to correctly dissipate the heat.

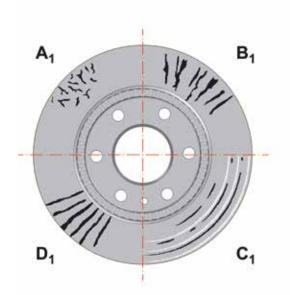


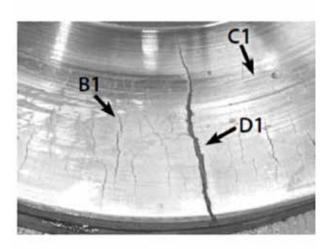
CRACKS

Check the discs per axle at each change of pads for grooves and cracks. If necessary replace the disc. The figure shows the possible surface conditions of the brake disc.

CARS

- → A1 = Small cracks spread over the surface → Check and replace the components
- → B1 = Cracks running in a radial direction → REPLACE!
- → C1 = Unevenness of the disc surface less than 1.5 mm → Check and replace the components
- → D1 = Cracks going through to the cooling duct or onto the inner or to the outer edge of the friction ring → REPLACE!





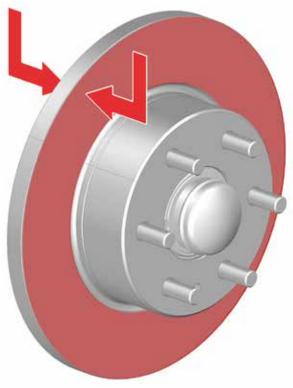
DISCS CLEANING

- ALWAYS clean discs after replacing or machining
 - → Clean the braking surface and the surface in contact with the hub
 - → The anticorrosion layer (oil) must be completed removed
 - → The disc must not be contaminated by oil or grease

WHY?

- → New discs have a residue from the machining and handling process. This oil must be removed to prevent causing noise concerns, and contaminating the pad surface.
- → Resurfacing discs can leave behind metallic shavings that need to be removed to prevent causing noise concerns and contaminating the pad surface.

Clean discs surfaces





Which discs cleaner?

✓ Petrol

✓ Spirit

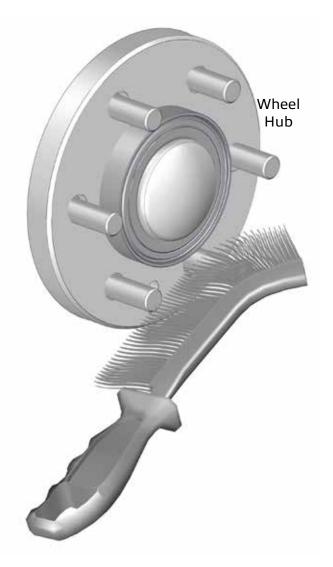
✓ Specific brake disc cleaner

HUB CLEANING

- ALWAYS clean the hub before new disc installation
 - → Clean the surface of the wheel hub. Eliminate rust and other deposit with a metal brush
- **WHY?**
 - → The wheel hub may have rusted
 - → The presence of rust or dirt can influence the disc run-out.

Which hub cleaner?

- ✓ Metallic brush
- ✓ Petrol
- ✓ Spirit
- ✓ Specific brake disc cleaner

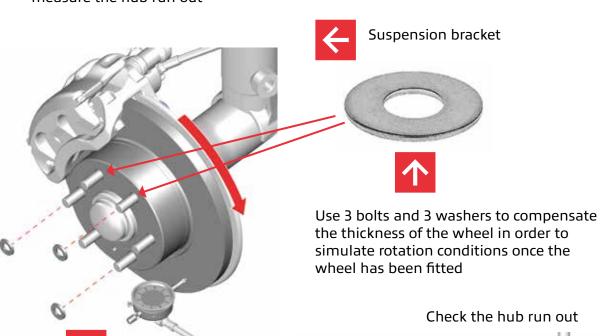


RUN-OUT CHECK

- ALWAYS measure disc before and after a brake job
 - → Use the specific tool to check the disc run-out
 - → Run out cannot exceed 0,10 mm when the disc is fitted
 - → Tighten the disc using the wheel screws and washers to simulate the thickness of the wheel
 - → If an issue arises, it is advised to measure the hub run-out

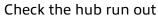
WHY?

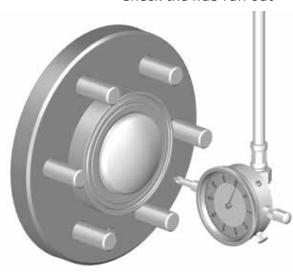
- → Run out variation can cause vibration in the brake system
- → If discs have excessive run-out there may be poor brake feel and stopping performance.



DTI Gauge fixed to the suspension bracket

Run out max = 0.10 mm

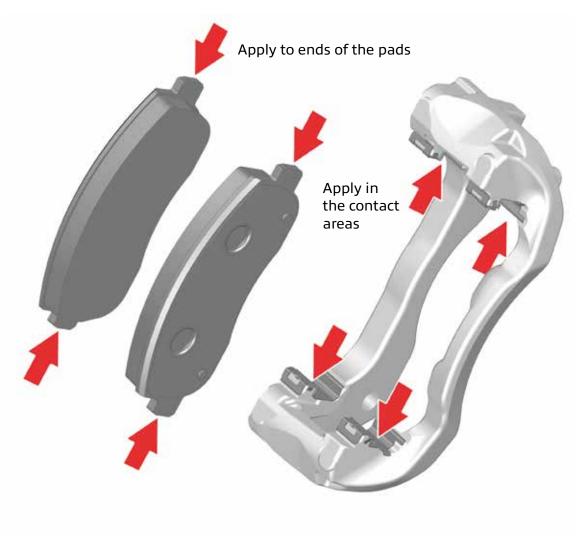




PADS INSPECTION

- ALWAYS check the pads thickness and surface
 - → Replace pads if needed
 - → Apply a thin coat of specific grease in the contact areas with the bracket

- → Using pads that are below the specified requirements can result in safety concerns such as cracking and fading
- → Brake discs or brake pads that are soiled diminish stopping capability. It is crucial to prevent grease and assembly paste from coming into contact with the brake discs and pads.



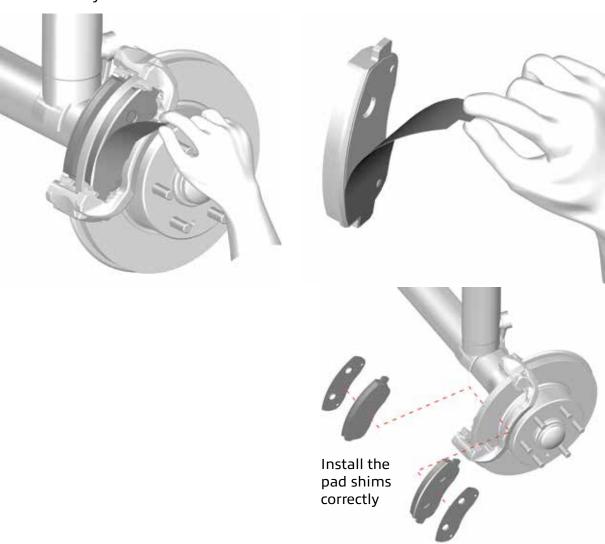
SHIMS INSTALLATION

- ✓ **ALWAYS** install the shim correctly when it is loose inside the package
 - → In case of shim with double sticky layers, remove the top layer after assembly
 - → Install the brake pads with the wear indicator on the inside.

WHY?

→ Wrong installation can compromise the correct performance of the brake system

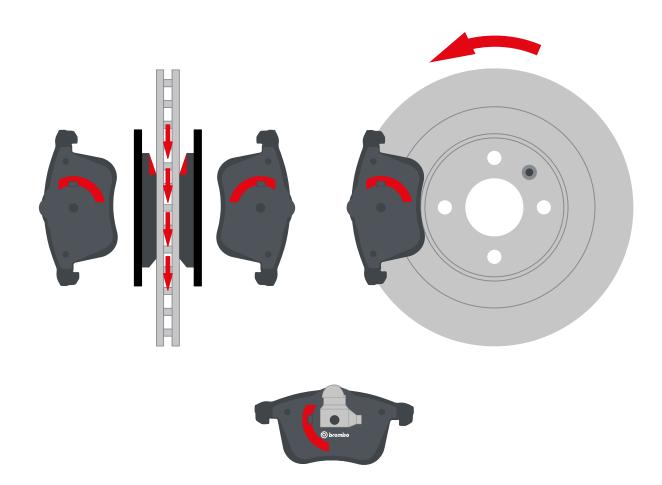
Remove the layer after assembly



DIRECTIONAL PADS

- ✓ ALWAYS Make sure to consistently verify if the pads are directional in nature.
 - → The shim exhibits cut-outs
 - → An asymmetric clip is present
 - → Consider the length of the electric wear indicator
 - → Observe any variations in chamfer
 - → Look for a half moon shape

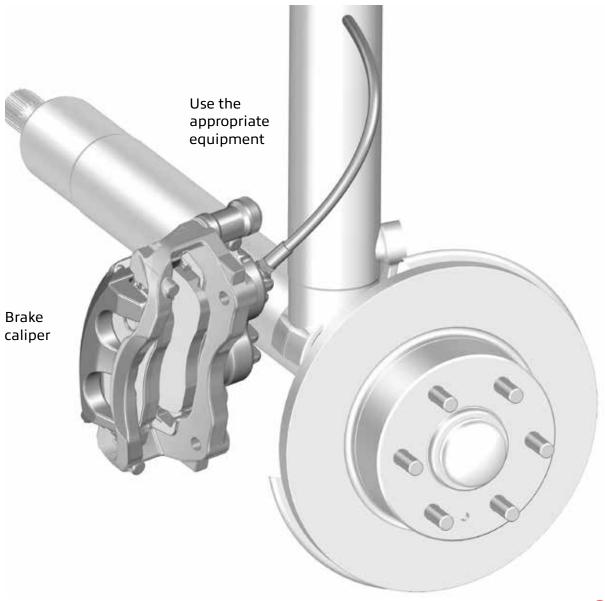
- → Fitting the brake pads on the wrong side leads to noise, increased wear and possibly reduced brake performance
- → Shim with cut-outs. These enable you to displace the pressure point from the piston
- → Clip –asymmetric identified by the markings
- → Electric WI. The fitting location is determined by the length of the indicator



CALIPER INSPECTION

- ALWAYS pay careful attention to the proper handling of the caliper and the brake hoses.
 - → Use the appropriate equipment

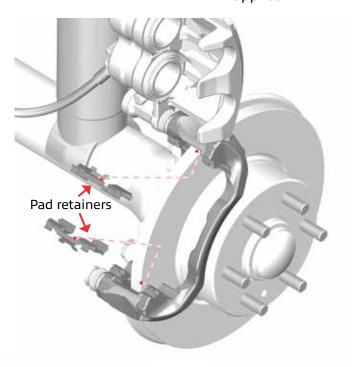
- → Hanging the caliper by the hose while replacing disc and pads can torn the hose.
- → Applying a clamp to the hose to prevent brake fluid from dripping while replacing the caliper can potentially cause internal damage to the hose.

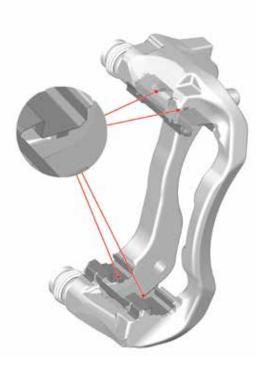


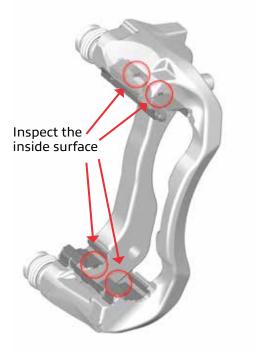
CLIPS / BRACKETS INSPECTION

- ALWAYS inspect and clean pad wear clips, and support brackets
 - → Replace clips if needed

- **WHY?**
 - → To ensure a smooth in/out operation when the brakes are applied



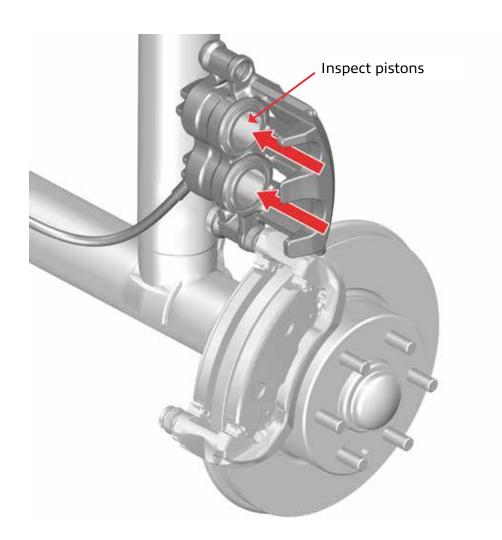




PISTONS INSPECTION

- ✓ ALWAYS inspect pistons for operation, corrosion and leaks
 - → Replace if needed

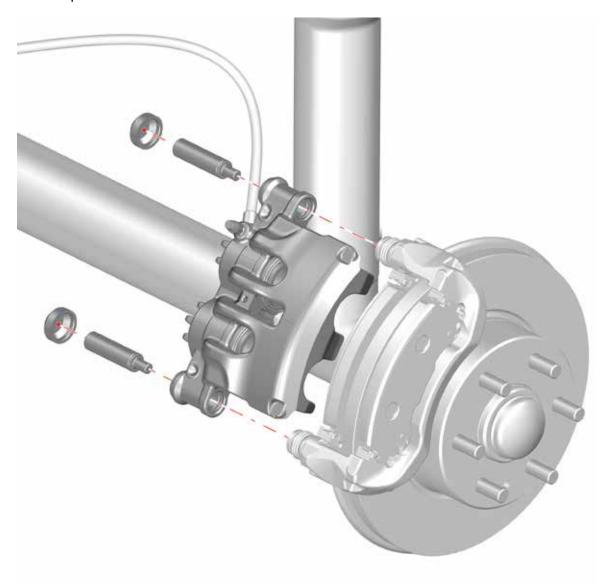
- **Q** WHY?
 - → Corrosion can cause pistons to bind, this can result in un-even brake force distribution and vehicle pull while braking.



SEALS AND SLIDING ELEMENTS

- ALWAYS clean and lubricate caliper slide pins, pin boots and external piston seal
 - → Check pistons, seals, boots and sliding elements on the caliper to ensure that they are free from damage and corrosion and able to slide
 - → Use specific grease suitable for each component
 - → Replace if needed

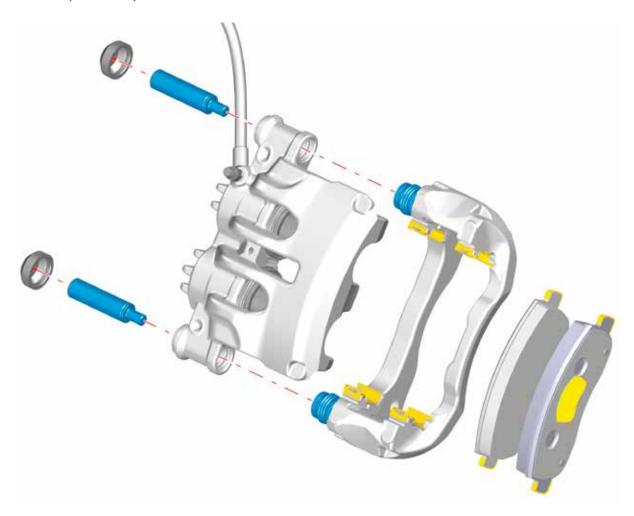
- → Using wrong grease could result in premature rubber and seal failure, causing uneven caliper pressure or leaks.
- → Cracked or torn rubber components can allow moisture to enter assemblies, potentially creating rust, preventing smooth operation while braking.



LUBRICANT

TAKE CARE: RUBBER COMPATIBILITY (BLUE AREAS)

- → **Rubber parts** of brake caliper (seal, boots, dust boot) are manufactured using
- → **EPDM is a special rubber** compound brake fluid compatible
- → EPDM could be damaged using products that are not compatible, like mineral oil, not compatible lubricant and cleaner



BRAKE LUBES (YELLOW AREAS)

An alternative method to reduce noise-causing vibrations is to consistently apply a hightemperature brake lubricant to the back of the pads and the areas where the pads make contact with the caliper.

- → The lubricant must be heat-resistant so it won't melt and run off the pads, and it must be durable so it will provide long-lasting protection.
- → **Never use ordinary chassis grease** or silicone brake grease for this purpose.
- → Also, do not allow the lubricant to come into contact with the fronts of the pads

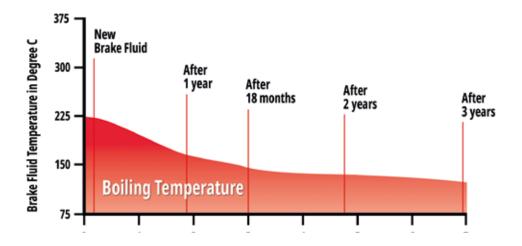
BRAKE FLUID INSPECTION

- ALWAYS make it a priority to check the brake fluid level.
 - → Maintain the fluid level within the designated MIN and MAX marks. If the level is low, add the recommended type of fluid specified by the car manufacturer.
 - → Continuously monitor the color and cleanliness of the brake fluid. If the fluid appears dark, it is necessary to replace it.
 - → Ensure timely replacement of the brake fluid, typically after two years or as advised by the car manufacturer.

- **WHY?**
 - → Brake fluid is hygroscopic, meaning it absorbs moisture over time.
 - → The brake fluid level can gradually decrease as the brake pads wear down. However, a sudden drop in fluid level typically indicates a brake system leak that needs immediate attention.
 - → Water contamination in the brake fluid increases the risk of vapor lock.



Effects of Water Contamination on the Boiling Temperature (ERBP) of DOT 3 Brake Fluid

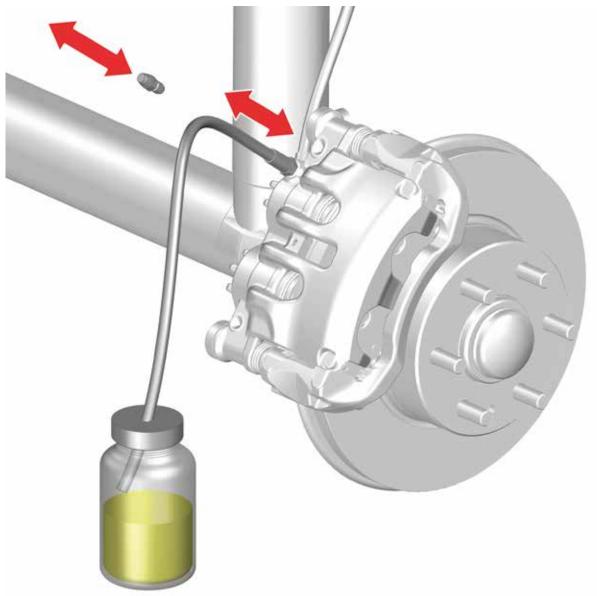


BRAKE FLUID REPLACEMENT

- **ALWAYS** when replacing the brake
 - → Avoid using fluid that does not comply with the car specifications.
 - → Take care not to let fluid accidentally drop onto painted, rubber, plastic and mechanical parts
 - → Do not use brake fluid from a container that has been open for an extended period of time

WHY?

→ Moreover, water-contaminated brake fluid not only poses safety concerns but also contributes to corrosion and pitting in various brake system components. This includes caliper pistons and bores, wheel cylinders, master cylinders, steel brake lines, and ABS modulators.

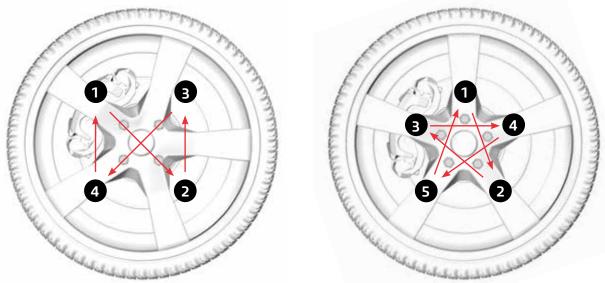


WRENCH TORQUE

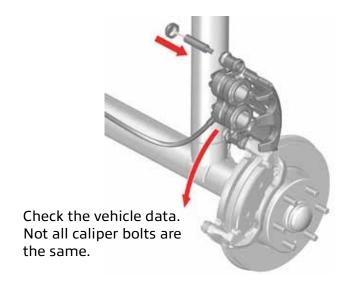
- ✓ ALWAYS use a torque wrench for all brake components and wheels.
 - → Use a torque wrench in proper sequence
 - → Not all caliper fastening bolts are the same. Torque ranges can vary; please check the vehicle data. Furthermore, some bolts can be torque-to-yield or require liquid tread lockers.

WHY?

→ Neglecting to utilize a calibrated torque wrench when working on brake components and tightening wheels in a star pattern can lead to undesirable outcomes such as brake groaning, pedal pulsation, and the potential for disc damage.



Check the vehicle data



AT THE END – RUNNING IN

- ✓ ALWAYS the mechanic has to carry out a test on the road and suggest to the driver a running in period of 300 km to be sure there are nor vibration or noises and that the brake system works properly.
 - → During that period short and smooth braking will be carried out to allow the correct alignment between pads and discs surfaces
 - → Type of stop: low brake pressure, low deceleration, low temperature, low speed (e.g. normal stop at traffic light)

- → The braking system is responsible for the active safety of the vehicle. Its malfunction can compromise people's safety
- → During the running-in period it is important to allow the correct alignment between the surface of the disc and pads







Running in of 300 km

