Tips for the workshop...

...from the ATE Training Center

Did you know that.... squeaky brakes can also be caused by old, weak springs?

When changing disc brake pads and drum brake linings the fitter often uses the old springs again. The problem there is that all springs gradually lose their tension as they get older and so can no longer do their job properly. The result is that the weak springs allow the brakes to start squeaking – no wonder really when you remember that the brakes of a vehicle are actually part of a system, a system that not only includes all the wheel brake components themselves but also the front suspension and the rear suspension. At the same time, of course, it means that any changes that take place in that system, such as ageing of the springs for example, will have an effect on the system as a whole.

In order to reduce noise, it is becoming the practice these days to add weights to brake calipers, adapters and pads which, although they have no effect on the actual function, do help damp out any unwanted noise. So, if you fail to use new fitting kits and experience noise problems as a result, don't say you weren't warned. We strongly recommend that, whenever you are changing a set of brake pads, you also use ATE Original fitting kits for drum brakes and disc brakes.

Of course when changing disc brake pads you should always fit new pad wear warning contacts too. This is because most of these contacts are secured to the pads with plastic clips

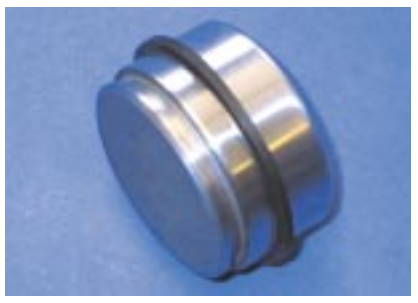
which are exposed to very high temperatures from the hot pads during their service life. The natural result of this is that the plastic becomes brittle and can easily break, causing the warning light to malfunction.

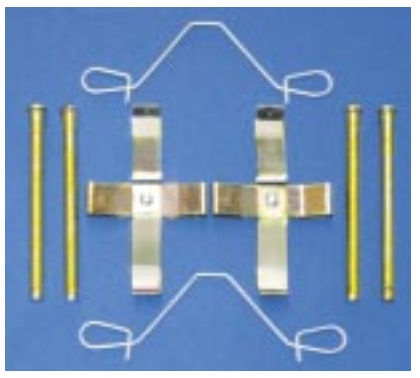
Did you know that... a large proportion of complaints about brake discs are due to stiff movement of the caliper?

Most modern brake calipers are of the single-piston type in which the piston itself operates one pad while the other is operated by the sliding caliper.

Unfortunately, free movement of the brake caliper assembly is often not checked. If there is insufficient clearance, the end-result will be non-uniform wear of the brake discs and also overheating or bluing. The cause of the problem is often thought to be the particular disc material being used, so the discs and pads are changed – only for the identical problem to reappear after another few thousand miles or so. The real reason is clear – the poor movement of the brake caliper that was not corrected in the first place.

So we strongly recommend that you always use ATE Original repair kits for brake calipers – sets of seals, bushings, guide pins, fitting parts and pad wear warning contacts.





By taking note of this Tip you can be sure that your vehicle's brakes will keep working safely and efficiently throughout its service life.

What do we mean by...

Clearance:
In braking systems, "clearance" refers to the amount by which the pistons retract into the caliper after the brake pedal has been released so that the brake disk can continue rotating freely. The seal in the brake caliper is responsible for this clearance and the correct value for any brake is determined by the basic design.

Pad wear warning contacts:
Electrical systems are becoming increasingly popular these days for the early detection of excessive pad wear. So, embedded in disk brake pads are "warning contacts" which work in conjunction with different systems to open or close an electrical circuit when pad wear reaches an advanced stage. The end-result is that a warning light comes on, telling the driver that he should have his brakes looked at in order to avoid possible brake failure or secondary damage.

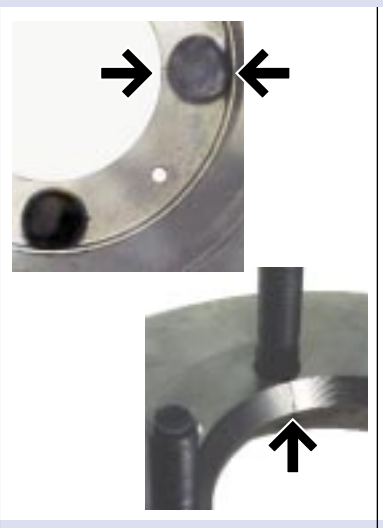
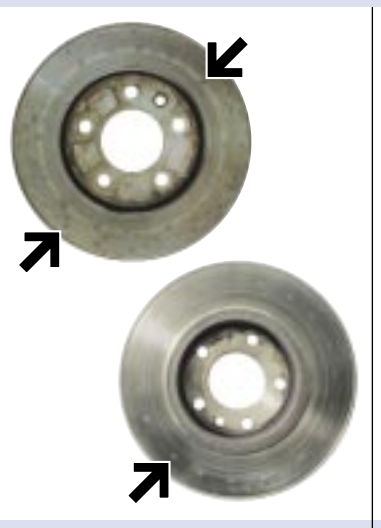
Bushings:
"Bushing" is becoming increasingly popular as the name for the guides used in modern fist-caliper disk brakes.
It is actually a sleeve with damping properties made of EPDM and coated with Teflon on the inside. It works in conjunction with a stainless steel guide pin. This combination of materials produces a free-moving guide that is also extremely reliable.

Greasing disk brake pads:
When fitting new disk brake pads and having cleaned the pad guides in the caliper, grease should only be applied between pad and caliper frame in those particular places. This is called "greasing lightly" and means applying only a very small amount to the guides.
The type of grease used should be non-metalliferous, suitable for high temperatures and non-drip such as Plastilube.

Did you know that... the cause of defective brake discs is often not found in the disc itself?

Defective brake discs reveal beyond doubt where the trouble lies. The following examples are designed to help you do your own troubleshooting.

Here's a tip from us: Don't assume the brake disc is at fault until you have checked out all the other possible causes and excluded them!

					
Triggers:	Cracked pot	Judder + noise	Judder	Judder + shimmy	Judder + shimmy + noise
Visible signs:	Disc pot cracked near a wheel bolt	One side of the friction ring (the outside) has seriously overheated, there are pad material deposits and cracks	There are heat marks on the friction ring	Both sides of the friction ring have gone blue after very little use	The layer of rust on the friction ring is lifting
Possible causes:	Bolt press-fitted incorrectly	Bushings and guide jammed	Overheating by the driver, brake not releasing, pistons jammed or rusted solid in the caliper, pads jammed in the caliper, guide stiff	Inadequate bedding-in or overstraining of the brakes, residual pressure in the system, pistons jammed or rusted solid in the caliper, pads jammed in the caliper, guide stiff	An extended service life has resulted in a badly rusted disc, water damage
Remedies/notes for the workshop:	Press-fit the bolts properly in the disc according to the manufacturer's data	Renew the bushings/guides, or the whole caliper if necessary (a whole set)	Check the calipers for free movement, check the pads and bushings, any residual pressure in the system?	Check the hydraulic system, draw the customer's attention to possible overstraining	Check the caliper channel and the pads for free movement, lightly grease the caliper and pad contact surfaces
Application errors:	Workshop	Servicing errors	Customer/Servicing errors	Customer/Servicing errors	Operating conditions
Notes for the customer:	None	None	Do not overstrain the brakes	Follow the bedding-in and operating instructions	None