

Original ATE wheel cylinders

Reduced in weight and resistant to brake fluid





Original ATE wheel cylinders

- ▶ The ATE brand is backed up by Continental, one of the worlds biggest brake specialists: this is the assurance of a high standard of safety, quality and service. On the free parts market ATE offers a **broad range of products** for the brake systems of practically all vehicle manufacturers worldwide. They include friction parts such as brake discs, brake pads, brake shoes, brake drums as well as hydraulic parts such as hand brake cables, brake calipers, and **wheel cylinders**, too.
- ▶ The ATE wheel cylinders meet **exceptionally high quality standards**: in addition to the certification of their production to ISO 1400, the wheel cylinders exceed statutory requirements by satisfying ATE's own internal N-standard. Extensive test facilities are available for quality testing according to customer specifications.
- ▶ As specialist for hydraulic brake parts, in addition to **drum brake shoes and drum brake shoe installation kits** ATE offers original ATE wheel cylinders, with and without integral pressure regulator, for the repair and maintenance of ATE simplex brakes. With its wheel cylinder range ATE covers most of the relevant motor vehicle market.
- ▶ Quality on a high level – for the production of wheel cylinders Continental uses **only high-grade, long-lived materials**. The surface protection of the wheel cylinder housing is Cr-6 free and thus complies with the EU End-Of-Life Vehicle Directive.

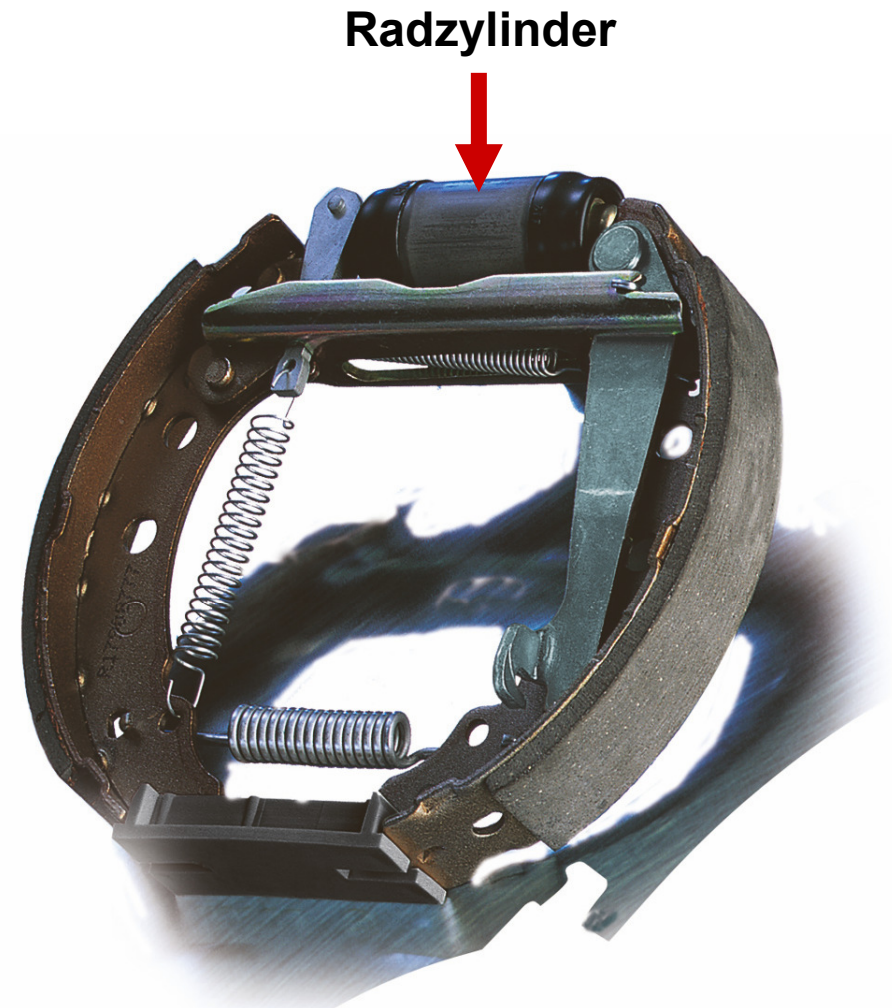


Example of installation: the original ATE simplex brake

- ▶ The wheel cylinder is a relevant component of the simplex brake. Usually it is fitted on the rear axle of a motor vehicle.
- ▶ During forward travel the leading brake shoe (primary brake shoe) generates higher braking torque than the trailing brake shoe (secondary brake shoe).
- ▶ The reason for this is the servo effect which is the result of the leading brake shoe being pulled into the brake drum. In contrast, the trailing shoe is pushed away by the brake drum so that no servo effect is created.
- ▶ The simplex brake attains the same low servo effect in forward travel as in reverse. The parking brake can be very easily integrated into this design.

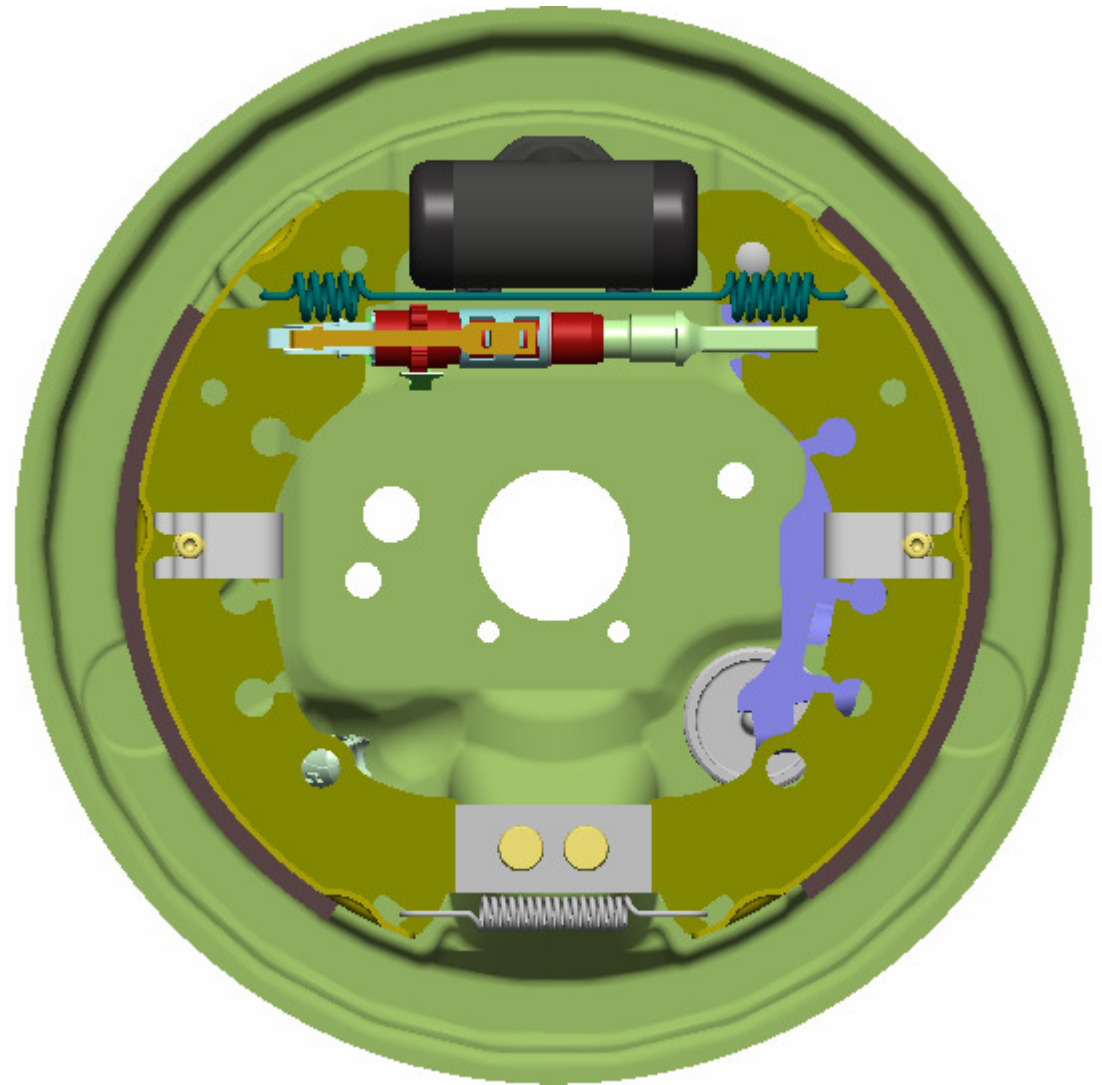
Further examples of use:

- ▶ Wheel cylinder in drum brake in conjunction with ABS
- ▶ Special type: external wheel cylinder (installed outside the wheel brake), e.g. for industrial applications



Original ATE wheel cylinders – The quality

- ▶ Original ATE wheel cylinders feature materials with high-quality characteristics. They are manufactured from extruded aluminum section and accordingly have reduced weight, are resistant to corrosion and brake fluid and have a long life compared with conventional wheel cylinders. The piston seals are made of EPDM.
- ▶ Since this is a safety-relevant replacement part, before being included in our ATE range ATE wheel cylinders are subjected to safety tests, for example low-pressure and high-pressure leak tests and wear resistance tests.
- ▶ Original ATE wheel cylinders are suitable for brake fluids complying with SAE J1703 and FMVSS §571.116 (DOT 3, DOT 4, DOT 5.1).
- ▶ Depending on the manufacturer's vehicle specification, ATE wheel cylinders also are suitable for use in combination with ABS and/or ESP.



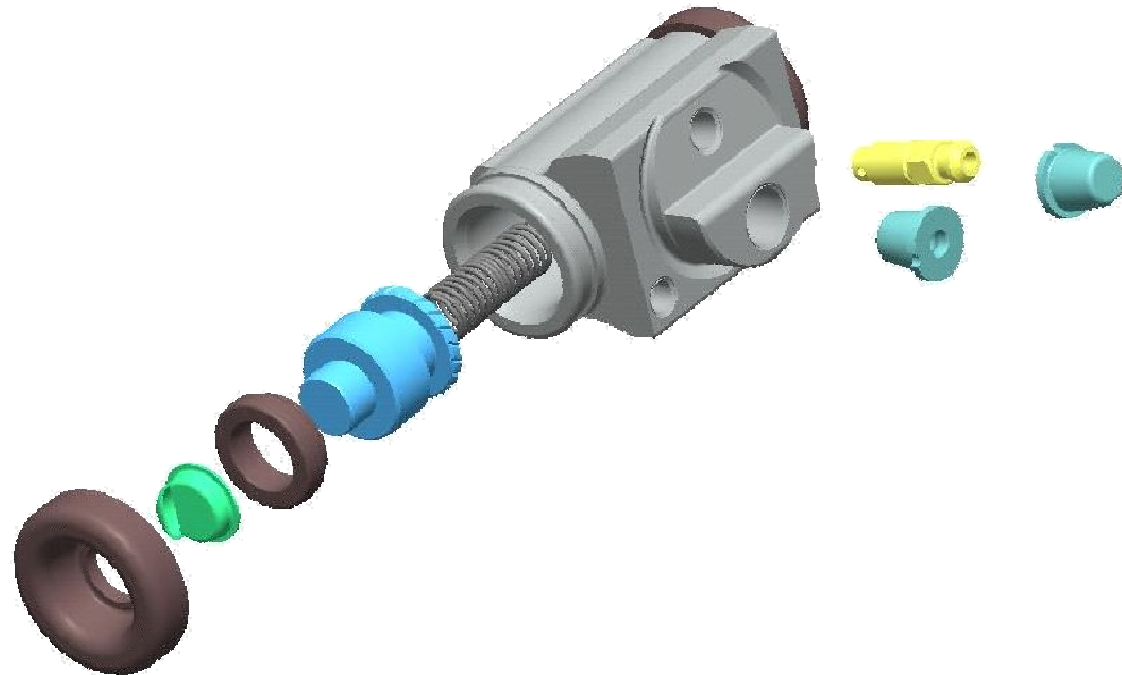
Original ATE wheel cylinders

How they work

Hydraulic pressure is applied to the wheel cylinders on the rear axle, which then have the function of applying force to the brake shoes so that braking torque is built up.

Components of wheel cylinders

- ▶ Housing
- ▶ Piston
- ▶ Spring
- ▶ Bleed screws
- ▶ Plugs
- ▶ Protective cap
- ▶ Seals

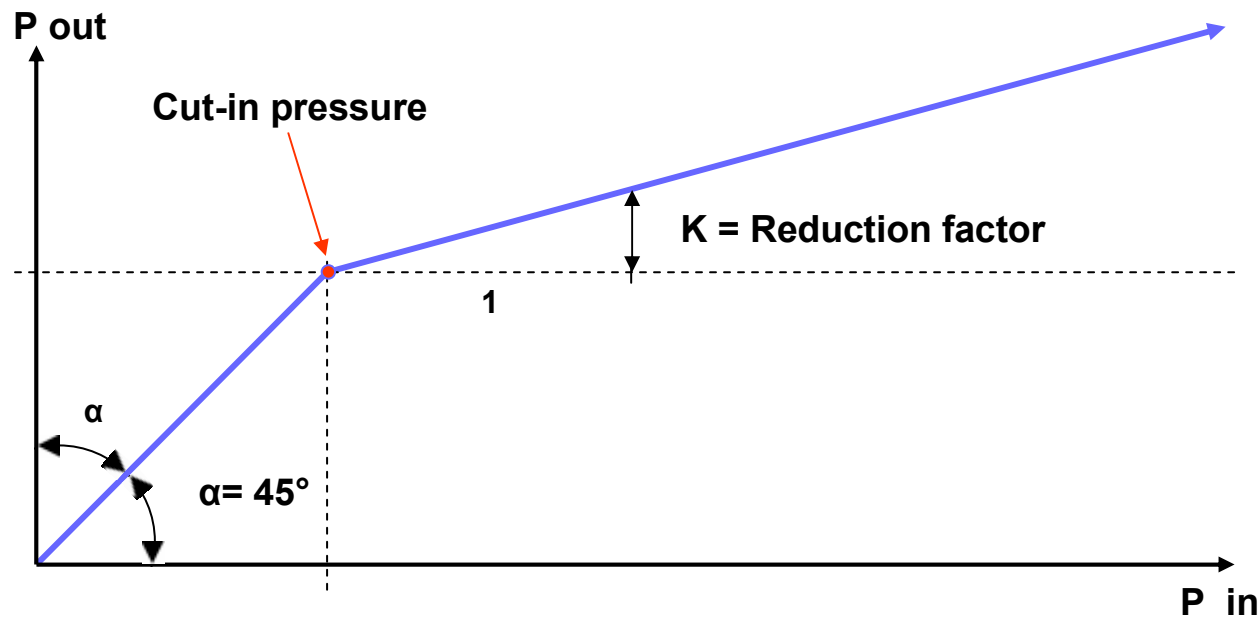


Original ATE wheel cylinder with integral brake force reducing valve



- ▶ Depending on vehicle equipment, the wheel cylinder with integral brake force reducing valve can be an alternative to the brake force reducing valve fitted in the vehicle itself.
- ▶ A brake force reducing valve in the vehicle is no longer needed since all parts crucial to operation are contained in the wheel cylinder with integral brake force reducing valve.
- ▶ The controlling function is adapted to the specific vehicle.

Representation of the controlling action of a wheel cylinder with integral brake force reducing valve



0	$< P < P_{cut-in}$: $P_{out} = P_{in}$
P_{cut-in}	$< P < P_{max}$: $P_{out} = P_{cut-in} + K * (P_{in} - P_{cut-in})$











Original ATE wheel cylinders with integral brake force reducing valve

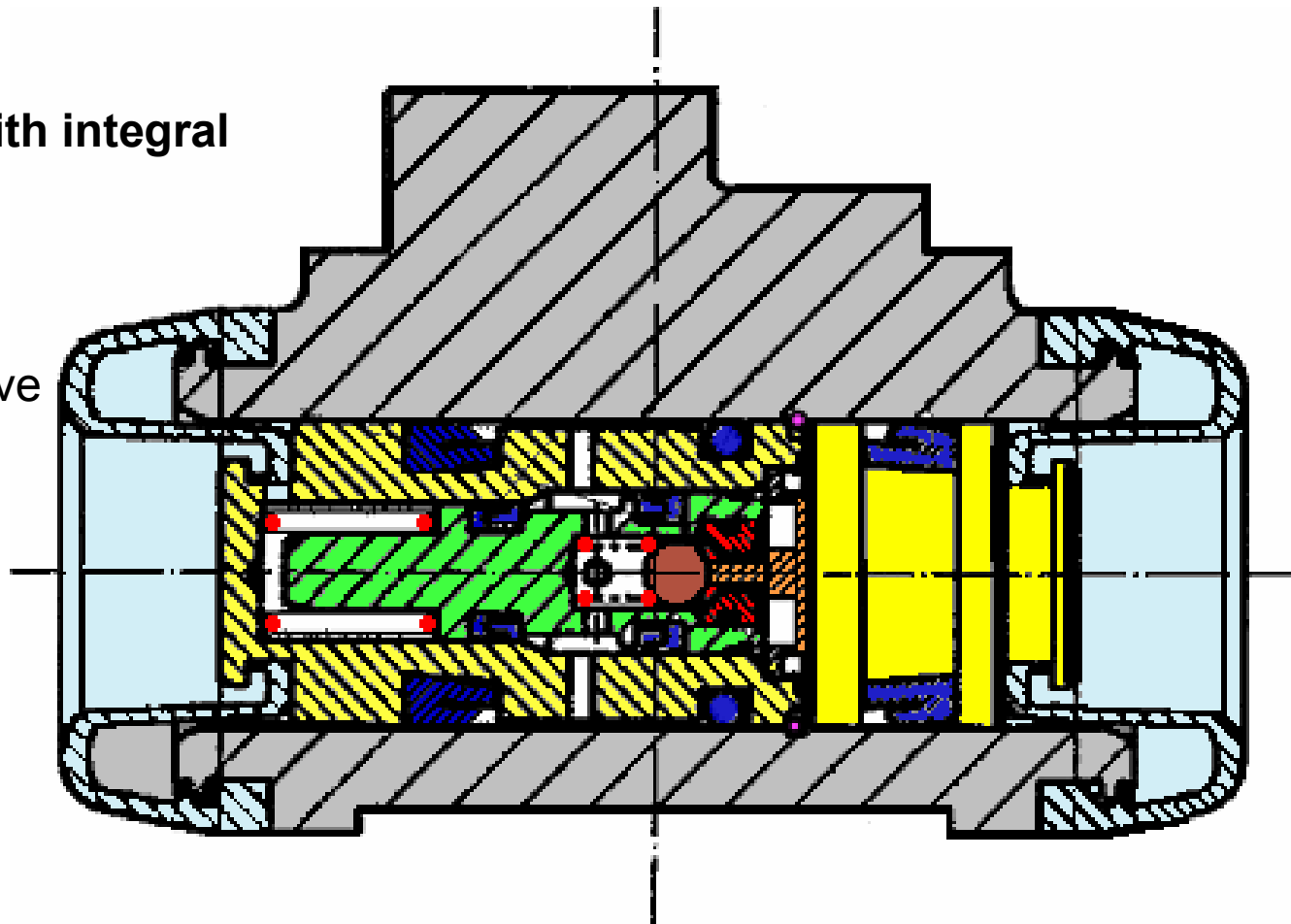


How they work

The task of a wheel cylinder with integral brake force reducing valve set to a fixed cut-in point () is to approximate the ideal brake force distribution to axles or wheels irrespective of vehicle load.

Components of a wheel cylinder with integral brake force reducing valve:

-  Piston
-  Piston with control unit
-  Inner piston with pressure ratio valve
-  Sealing elements
-  Pin
-  Valve seat
-  Ball
-  Snap ring (stop)
-  Protective cap
-  Springs



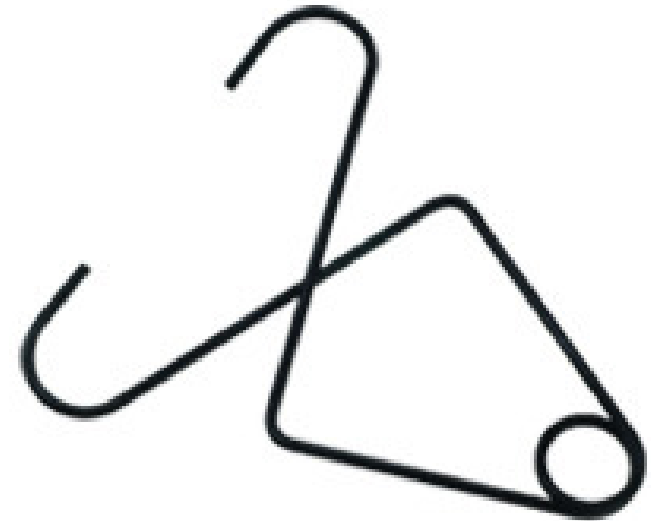
Spare parts & tools

Repair kits

- ▶ Two repair kits are available: one with rubber parts, a second with rubber parts and pistons.
- ▶ In addition, wheel cylinders are included in the drum brake shoe installation kits: the ATE Original Kit and the ATE TopKit.

Piston clip

- ▶ Following removal of the brake shoes, the pistons of the wheel brake cylinder must be secured from unintentionally slipping out of the cylinder.
- ▶ The ATE piston clip is the ideal aid for this purpose. It can be used on all wheel brake cylinders with a diameter of 25.4 mm.
- ▶ Apart from securing the brake piston, the ATE piston clip has another important function: it greatly facilitates the mounting of the brake shoes.



Fitting instructions for replacing wheel cylinders

- ▶ The wheel brake cylinders may only be replaced with the replacement parts specified for the vehicle.
- ▶ The union and bleeder screw should always be tightened to the specified torque. Otherwise there is a risk that excessive tightening torques can break the wheel cylinder open.

