

Technical Bulletin

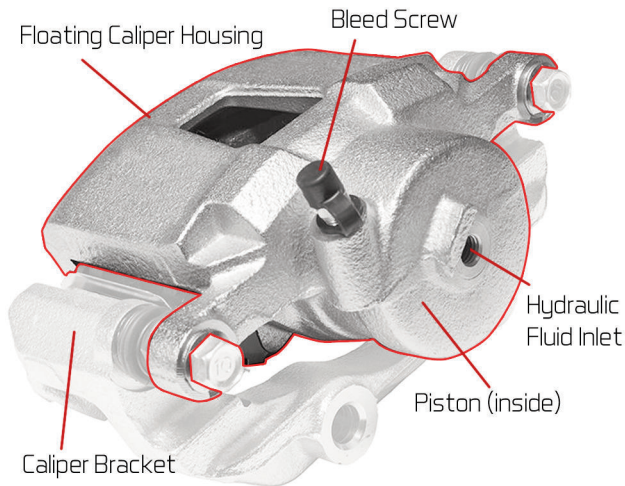


Caliper Types

Brake calipers convert the braking effort applied by the driver to the brake pedal into a clamping force between the brake pads and brake disc at the road wheel.

There are two basic types of brake calliper - fixed and sliding; today the majority of brake callipers are sliding callipers.

Sliding Caliper (also known as Floating or Pist Type Calipers)



The complete calliper assembly comprises two structural parts - a calliper bracket which is solidly mounted to the axle of the vehicle and the calliper body which houses the hydraulic pistons

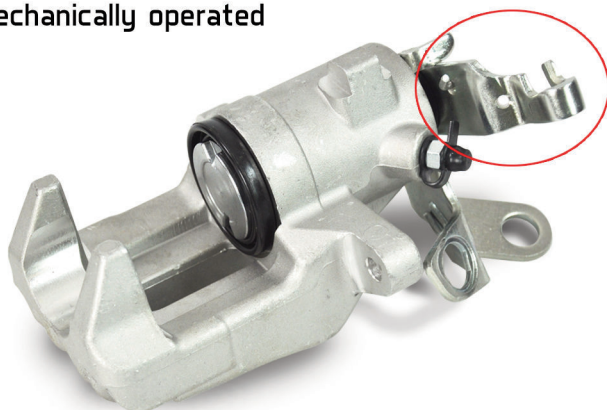
The inboard element of the calliper body contains the pistons and the hydraulic pressure created from the brake pedal via the master cylinder initiates the direct clamp of the piston side brake pad and the resulting reaction force on the outboard side of the calliper clamps the outboard side brake pad to the disc. The calliper can slide either on pins contained within bushes or on the calliper bracket itself.

The advantages of the floating caliper is that its cheaper and lighter than the fixed caliper as it uses less parts and is more compact.

Some floating calipers can also be used to operate the parking brake. These can be either mechanically or electronically operated.

Handbrake Caliper

Mechanically operated



This type of caliper is used for normal pedal braking and the piston is operated hydraulically. However it is also used to operate the parking brake.

The parking brake is connected via a cable to a lever on the outside of the brake calliper which causes the piston to clamp the brake pads to the disc.

When the parking brake lever is pulled force is applied mechanically instead of hydraulically.

Electronically operated



This type of caliper is also used for normal pedal braking and the piston is operated hydraulically. However it is also used to operate the parking brake.

If the floating caliper incorporates an electronic parking brake, then it will have an EPB (Electronic Parking Brake) actuator fitted. The EPB can be activated manually by pressing the button inside the vehicle or automatically as part of the ESP (Electronic Stability Program).

The EPB (Electronic Parking Brake) unit contains an electric drive motor which via a spindle provides the actuation force to clamp the brake pads to the disc when the holding mechanism is activated by the driver via a switch or button. The calipers are then locked in position. The caliper remains locked without any need for hydraulic pressure.

The EPB is used as a part of a larger electronic brake control system which can provide safety functions such as automatic EPB engagement to prevent "roll away" in the event of an engine stall and "hill hold" to prevent the car rolling backwards.

Continue overleaf for an explanation of fixed calipers and common faults

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Fixed Caliper



With the fixed calliper there are hydraulic pistons on both sides of the calliper body whereas with the sliding calliper the pistons are only on one side of the calliper body which makes the sliding calliper more compact and lighter.

The entire calliper is solidly mounted to the axle of the vehicle with hydraulic pistons on both sides of the calliper body to clamp the brake pads to the brake disc when the brake is applied.

The fixed calliper is more rigid than the sliding calliper which gives improved brake output and feel through the brake pedal when the brake is applied at high braking pressures. The fixed calliper can apply more power and apply that power more evenly during braking.

Consequently the fixed calliper is preferred for high performance and luxury cars.

Common Faults

BRAKE CALIPER WARRANTY TERMS: 18 months, 15,000 miles*

The symptoms of caliper failure may include the following:

- A loss of pressure
- steering pull during brake application
- Rattling or clunking noise
- Squealing or grinding noise as the brakes are applied.

Caliper failures can be attributed to many factors including:

- Failing seals
- Bleeder issues
- Corrosion or other damage.

There are also lots of cases of newly fitted calipers being returned as faulty due to handbrake mechanisms functioning incorrectly. This may be due to a fault but, is often down to incorrect fitment.

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- Normal wear & tear
- Unauthorised repair.
- Accident, neglect or any other cause beyond the control of Juratek Ltd.

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