

## **LATEST TECHNICAL DEVELOPMENTS WITH REMANUFACTURED ELECTRICAL BRAKE CALIPERS - AND SOME TECHNICAL TIPS**

Quality remanufactured brake calipers are as good as the OE equivalent – vitally important for such a safety critical product - and are becoming increasingly popular in the UK Aftermarket. With an annual replacement growth of 5%, calipers represent one of the few organically growing replacement parts markets.

The technology for this product is also developing rapidly with the latest EPB (Electric Park Brake). This has been developed to enhance vehicle safety and, because the handbrake lever is now eliminated, provides improved interior design and additional space in the vehicle. The opportunity for remanufacturers is on those calipers where the electric motor is integral to the brake caliper itself. These electric calipers are fitted mainly on the Audi A6, VW Passat from 2005 & VW Tiguan from 2007. We are already seeing the Passat and A6 calipers coming back, as they have just come out of the vehicle manufacturers warranty period. The market demand seems to be already indicating there is a high failure rate on them, although we have to bear in mind that these are fitted to some of the highest selling vehicles in Europe and they are popular company cars with high mileages.

Remanufactured calipers offer fantastic value as a replacement part but - because they are a safety critical item - it is essential that installers select a brand they can be confident will most definitely not let them or their customers down. In terms of standards the hydraulic side of remanufacturing these calipers is exactly the same. The electric motor side, however, is reworked and tested to OE standard using specialist test facilities in which Remy has recently invested. Other than the OE manufacturer itself, Remy will be the first Aftermarket supplier to have this latest technology available.

### **The Brake Caliper Remanufacturing Process**

Being such a safety critical item, brake calipers - and their castings in particular - are of an extremely rugged design, generally being cast in iron, steel or aluminium. This makes them eminently suitable for remanufacture. A quality remanufacturer will adopt a remanufacturing process along the following lines:

After the castings have been stripped, washed, inspected and shot blasted, they are electro-plated to give a bright, corrosion resistant finish. 100% new pistons should always be installed as this is the key to ensuring that the best performance is achieved. Re-using pistons is not appropriate and would most defiantly increase the failure rate. 100% replacement of all rubber components - seals, covers etc - is also very important to ensure that the best hydraulic performance is achieved and protected.

With handbrake calipers it is very important that the bore in the casting for the handbrake mechanism is inspected to a very high standard and is re-bushed when any damage is found.

It is also important that units are 100% stripped and should be cleaned in furnaces to carbonise all fluid and dirt – pyrolysis. This allows maximum cleaning without damaging the unit itself. Bodies should also be heavily plated using nickel plating to ensure that corrosion protection is optimised to provide the highest quality unit. In fact, in most cases a good reman unit will be better than its OE equivalent. That is why we at Remy manufacture many components - pistons, slides, bushes etc – in-house to retain and ensure that the highest quality standards are achieved.

All finished Remy calipers are pressure tested on purpose built test rigs. A calibrated computerised self-checking three stage air pressure decay tester - leak tester – is used, which upon successful completion of the test, will produce from a computer a pass label to accompany the caliper.

Having made the right choice and selected to install a remanufactured caliper from a quality remanufacturer, it is important that installers should take great care when fitting.

**Some general installation tips:**

- When installing correctly you must ensure that the fluid is not contaminated and the system should be fully flushed out prior to installing the new caliper.
- To obtain the best results calipers should ideally be fitted in pairs, as performance will decline over time, and we recommend you replace the brake pads at the same time.
- Snapping of bleed screws can be common in aluminium calipers due to corrosion on the unit itself, particularly because the screw is quite small in diameter. Special care should be taken with this type of unit. Once snapped, the caliper must be replaced although it should be retained intact for future quality remanufacture.
- As part of the MoT check, the brake calipers should always be checked for leaks and to ensure that they have not seized and are fully operational. This is particularly important in cases where the customer may have noticed excessive noise, brake judder or lack of brake performance.

**Some rear handbrake caliper installation tips:**

A large number of the technical calls we receive relate to the hand brake mechanism on rear calipers. Problems may occur during fitting due to the handbrake lever being moved before correct installation on the vehicle. The handbrake mechanism has been factory set - and should not be moved until it has been fitted to the vehicle.

Please note during fitting of handbrake calipers:

- After having fitted the brake calliper, the distance between brake pads and brake disc should not exceed 1 mm. If adjustment is required, remove the brake pads and adjust the piston using the correct tool to achieve the correct clearance (do not move the lever).
- Re-fit the brake pads and re-measure the clearance gap.
- Re-fit the handbrake cable and adjust it to remove any free play. (Do not move the lever or operate the handbrake!).
- Bleed the system in accordance with manufacturer's instructions.
- Automatic internal adjustment occurs when the foot-brake is applied. It may take several operations of the pedal.
- Fine adjustment occurs during road testing.
- Only at this point should the handbrake be tested. Final adjustment of the handbrake cable may be required at this stage.