



Powerhouse Automotive reckons it's the leading rebuilder of bike brake calipers in the UK. The firm's Lawson Smith loves dispelling myths and setting folk right on braking – and he's our expert this month.

LAWSON SMITH



Q My back brake keeps sticking on, the disc was glowing red last time I noticed, eek! My mate says just give it a kick, but I guess I should probably fix it properly... What's likely to be the problem?

Daz Connors

A As moisture and salt attack your calipers, often positioned in the worst places to suffer constant dirty road splash, aluminium oxide corrosion builds up in the seal grooves and clamps the seals onto the pistons. It builds up relentless pressure like a tree root under a path, and either locks the pistons or, in some cases, forces the dust seals out of the grooves. If you're really lucky you might get a few months more use out of it by exercising the piston in and out and cleaning it off with brake cleaner, but the reality is that you need to rebuild the caliper with fresh seals, having removed that corrosion.



A nice new seal groove (top) and an oxide corroded one. Time for a caliper rebuild if yours looks like the bottom one.

Q I was changing the brake pads on my old ZX-6R, and noticed there's a lot of corrosion and rust on the shiny round cylinder bits behind the pads. Is this bad? How can I sort it?

Terri James

A It can be very bad, or not quite so bad! A little corrosion towards the very ends of the pistons may not be a problem, as the last few mm of the metal surface does not work on the seals. However, if the pistons are corroded back more than about 3 or 4mm back from the end, the corrosion is going to either cause them to leak or cause premature wear of the seals. Pistons are expensive to replace – best to perform an annual cleanup of your calipers as preventative maintenance to avoid this!



Q The brakes are pretty rubbish on my '99 Hornet 600. I've changed pads and fitted steel hoses, but they still feel pretty spongy with no bite. I've read online that the master cylinder needs rebuilding – is that a big job? What's involved?

Jean Bernard

A Once your brake lever is out of the way, all you usually need to change your master cylinder seals is a pair of circlip pliers. Most kits come complete

DON'T GET TO GRIPS WITH IT

Q Daft question - how do you get all four pistons out of a caliper? I'm stripping down the brakes on a Ducati 916, and a couple of the pistons seem to be stuck in place, not moving, but the others are coming right out. Any tips welcome!

James Garcia

A This can be where the home mechanic really messes up, gets frustrated, then reaches for the mole grips. DON'T DO IT! That WILL destroy the pistons, especially the soft ones in a 916. First, don't think compressed air will do a better job than your brake lever at moving pistons – it won't. Before taking the calipers off the bike, remove your pads and put a thin layer of cardboard between the pistons and the disks. Then, pump away, until all of the pistons come out and meet the disk/card. The thickness of the disk will almost always be enough to prevent any pistons from coming out far enough to leak. Once they are that far out, they will be relatively easily wobbled out either by hand or using soft-jawed pliers. Aluminium or lead grips in a vice will also protect them if you just nip the ends of the pistons to pull them out.



Mole grip massacre! Don't do it.



with all of the metal and rubber internal components ready to swap out/ swap in, and it can be done in 15 minutes if nothing is rusty. However, before turning to the master cylinder, make sure that all of your caliper pistons are moving freely. If any are stuck, the piston will be flexing on the rubber rather than pushing firmly against the disk, and this can give a spongy feel.

Q I'm rebuilding a 1987 GSX-R1100, big dinosaur of a thing! The brake calipers are all messed up, so I want to get them looking good again. What paint can you use on calipers? It has to be brake-fluid-proof I suppose? Do you need to take them apart before painting or can you just mask bits off?

Tom Pierce

A If you really have to, you can mask off bits, rub down and make the best of it in situ, but you're much better getting them apart and properly stripped back to bare metal – you can almost guarantee that if the outside looks tired, the rest will need a refresh as well. Brakes are all about staying alive, don't worry about looks more than function! As for paints, there is pretty much nothing on the market that will fully resist brake fluid, but good branded caliper paints (available in aerosol in motor shops and online) will resist it long enough to bleed up and wipe off any spills while doing the job. Powder coat is resistant, but it is also a very efficient heat barrier – which is not ideal for brakes, and tends to crack around threads and at the joints between caliper halves.

Q I've bought an early Honda Blackbird, and I want to rebuild the brakes, they look like they've been at the bottom of the sea for a few years! Is there anything to watch out for with the linked brakes setup? I'm worried about the secondary master cylinder thing down on the fork leg?

Jay Williams

A Those secondary master cylinders are quite robust and don't usually need to be re-sealed, but if in doubt just do it – there are relatively inexpensive good quality aftermarket kits available and they are no more tricky to rebuild than a normal master cylinder. Again, don't gamble with your brakes, especially on a 240kg machine capable of over 170mph!

CORROSION

Q I liked the piece on fasteners last month, but I'm a bit confused by the answer about what bolts are most rust-proof? You seemed to say all of them, which didn't make sense!

Chris Southunder

A Fair point Chris, and we went back to Kevin Harker of Pro-Bolt for clarification. He told us stainless steel was the most rustproof – and that's what the firm supplies for use at sea. "A4 Austenitic stainless steel (non-magnetic) is best for really harsh use – we sell most of the stainless range to the boating world! But titanium is also excellent for bikes too."

So there you have it... Stainless for the non-corrosive win!



THE LOCKING KEY?

Q Trying to make some mods on my bike, an old Suzuki DR750, looking to make her into a bit of a supermoto beast for the road. Problem is, the exhaust header bolts keep coming loose, and a few other nuts on the frame too. I want to lockwire it all into place, not sure how to start though? I got some old wire and tried twisting it with some pliers but it didn't really work.

Dave Johnson

A The DR is a big old single Dave, and there's potential for a load of vibration to shake things loose. I'd check the basics first – try new studs and nuts on the exhaust header, and torque them up to the right settings. They get real hot so no chance of using thread lock or nyloc nuts on there. The chassis fasteners will be fine with threadlock though – it's like a special gummy glue which sets in place on threads, and stops them loosening off from vibration, yet still comes loose when you get a spanner onto them.

You need proper lockwire and pliers for lockwiring stuff, and you also have to drill small holes very carefully in nut and bolt heads. It's fiddly, and probably not what you need – although it may be a last resort on hot fasteners like the exhaust studs. The pliers have a rotating mechanism and locking jaws to make twisting the wire easier. Venhill sells a nice pair of lockwire pliers for £19: www.venhill.co.uk.



IN THE FUEL KNOWLEDGE...

Q How far can my Hayabusa go when the fuel light is on? I've done 15-20 miles before but I was crapping it in case I ran out.

Ken Wilson

A The spec says reserve is about 5.5 litres Ken, so probably 30-40 miles going steady. Best thing to do is experiment and find out! Put a jerry can with a gallon of fuel in on the back seat, and ride till the fuel runs out, zeroing the trip when the light comes on. Take care you don't run out somewhere dangerous of course... When it finally coughs, pull over and fill up from the can.

Doing that a couple of times will give you a solid idea of how far you can get at your normal riding pace.