

# Caring for Carbon

**CARBON FIBRE FRAMES AND COMPONENTS ARE POPPING UP ALL OVER THE BIKE INDUSTRY—IF YOU BUY A MID TO HIGH END MOUNTAIN BIKE IT WILL PROBABLY HAVE SOME CARBON ON IT. SO, DOES IT REQUIRE ANY SPECIAL CARE? RAOUL LUESCHER LOOKS AT SOME OF THE DO'S AND DON'TS...**



## Assembly Compound

'Assembly compound' is similar to grease but contains tiny 'spheres' that increase the friction between mating parts and reduce the chance of component slippage. As a result, you don't need to torque the clamping mechanisms as much and this reduces the chance of damage due to over tightening. I recommend using it whenever carbon parts are attached including seat posts and handlebars as well as front derailleur clamps, shifters, brake levers and so on. It also contains corrosion inhibitors for use with metal parts. If you use this in conjunction with a torque wrench, you shouldn't have any problems with parts slipping. Assembly compound is sold by companies such as FSA, Ritchey, Finish Line and TACX.



## Why so Fragile?

Why do I need things like torque wrenches and assembly compound for carbon, when I didn't need it before? Well the reality is that these items have always been a good idea, it's just that now parts are getting lighter and proper assembly is becoming more important. Light parts are more prone to the crushing loads encountered when tightening stems to bars, seat pillars to frames and so on. This is true for lightweight metal parts as well as carbon, however, with carbon it is more dependant on what the ply configuration is. In either case it is best to follow any recommendations offered by the part manufacturer.



## Torque Wrench

Carbon fibre (or lightweight alloy) handlebars and seat posts are susceptible to over tightening. To prevent this I recommend purchasing a small torque wrench. They generally cost between \$80 and \$200 (depending on brand and capacity) and they take the guesswork out of tightening any bolts on your bike. If it saves a crushed handlebar or seat post then it has paid for itself. It may also prevent serious component failure which is hard to place a value on. Use it for all the fasteners on your bike, if you are not sure what torque setting to use, look it up on the component manufacturer's website. Alternately, the Park Tool website has a listing of recommended torque settings for most applications.



## Sharp Edges

Over tightening is not the only danger to lightweight carbon parts. Poorly designed or roughly finished clamps also pose a threat. Check the inner clamping surface on handle bar stems, bar ends, brake/gear levers and front derailleurs. The easiest way to remove any sharp corners is to lightly sand with 240 grit paper around the edge until it is rounded off. A poorly finished frame can also cause problems if it has burrs on the inside of the seat tube. This can score and damage an expensive carbon seatpost and cause premature failure. In this case you should consult a frame builder to have the inside of the frame tidied up (choose a builder who is familiar with the relevant frame material).



## Bar End Compatibility

Bar ends may be less common these days but they are still popular for cross country racing. If you like to use bar ends, ensure that your handlebars have been designed to handle the clamping stress that is applied to the very end of the bar. Most manufacturers will state if their carbon handlebars are 'bar end compatible'.



## Cutting Carbon

If your carbon bars are too wide, extra care needs to be taken when cutting them as it is possible to damage them if done incorrectly. Here's how it should be done...

Rule number one is measure twice and cut once—be sure where you want to make the cut. Wrap some 25mm wide masking tape around the bar to act as a guide and to reduce the chance of splintering.

Using a hacksaw with a new 32 tooth blade or even better a carbide grit tile saw blade, carefully cut around the circumference of the bar. Make a shallow cut all the way around before proceeding to cut all the way through. Let the blade do the cutting; you shouldn't have to use much force. Be careful to avoid delamination or splintering as you complete the cut.

Check for any splintering once you have finished cutting—a little bit is okay if the splinters are short. Lightly sand with 240 grit sandpaper to round the edges over; this will reduce the chance of further splinters appearing. It is also good to seal the surface with a bit of clear nail polish.

Never use a tube cutter of the type that is used for metal bars. These will crush and delaminate the carbon, rendering it as expensive scrap.



## Brake Lever Check

Carbon brake levers should be checked periodically for scrapes and cracks, light marks can be filled with nail polish. If you crash on the lever, check it out carefully and remember carbon does not bend; it either takes the impact or it breaks—if you are unsure get expert advice.



## Cleaning Carbon

The best way to clean your bike is with warm soapy water. Don't use strong chemical solvents such as some degreasers, MEK Acetone, petrol and so on. These can attack the resin and damage the part beyond repair. After the bike is nice and clean, check it for any cracks, paint chips and other damage.



## Chain Suck

Chain slap and chain suck can easily damage a carbon frame. Carbon mountain bikes should have a chainstay protector and an anti-chainsuck plate fitted. If not, buy a well padded neoprene chainstay wrap to protect against chain slap and a row of cable ties near the chainrings can help to protect against chainsuck.



## UV Protection

It is important to protect the finish as the resin may degrade due to environmental exposure such as UV, moisture and chemical attack. Both clear coat and paint will do this. If you find a mark on the finish that goes down to the carbon fibre, it is a good idea to reseal it as soon as possible. An easy product to use for small marks is nail polish. It comes in clear as well as a broad range of colours. Just make sure the part is dry and apply a few thin coats.



## Refinishing Carbon

This can be done, however care needs to be taken. Whatever you do don't use paint stripper to remove the old paint. If you sand back the old paint, be very careful not to go too far and sand the carbon away. Automotive two pack gives the most durable finish and is safe to use. It is best to take it to someone who is familiar with painting composite materials like a boat builder rather than a car panel shop.



## Carbon in Hot Cars

According to the NRMA, on a typical Australian summer's day, the temperature inside a parked car can be 30-40 degrees higher than outside the car. From this you can calculate that the temperature could reach around 80 degrees. So, what will this temperature do to the carbon parts on your bike?

Most modern carbon parts are made with a temperature curing prepreg material or some other heat curing resin. These materials are typically cured at 120 degrees. Without getting too technical this means your bike will be okay up to about 120 degrees, so you are unlikely to have any problems.

In the early days of carbon in the bike industry, lower temperature resins were used and these could go soft at higher temperatures. Remember that black things can get very hot to touch, so it is not recommended. I would also be concerned about blowing seals in the suspension or popping tyres if things are getting really hot. After all, bikes are meant to be ridden, not cooked!

Photography by John Hardwick