

BST Rapid TEK innovation – “Technology made beautiful”



South African carbon fibre wheel specialist Blackstone TEK presents what Managing Director Gary Turner says is “the best bolt-on performance part in the world.”

“Our elegant 5-split spoke Rapid TEK wheel has an ‘edgy’ new look, but also showcases BST engineering with its super light weight and the unique high pressure forged carbon hub areas. “It’s a direct replacement for the OEM wheels, making it easy to use. Produced by BST from concept to volume production, these wheels have been subjected to the same rigorous testing as all the BST wheels. Our Rapid TEK carbon fibre conventional rear wheel offers interchangeable parts so that a rider can swap wheels when he changes his motorcycle. That’s a neat piece of engineering.”

BST’s ‘value proposition’ is simple: “It’s all about bang for the buck - this is the best performance enhancer available for your ride. The reduction in weight and rotational inertia gives instant gratification and a significant performance advantage through improved handling, later braking and quicker acceleration.

“The enhancement to performance is greater than any other modification a rider could make to his or her motorcycle for the equivalent cost. The additional benefit of interchangeable hubs also increases the life span and value of the wheels.”

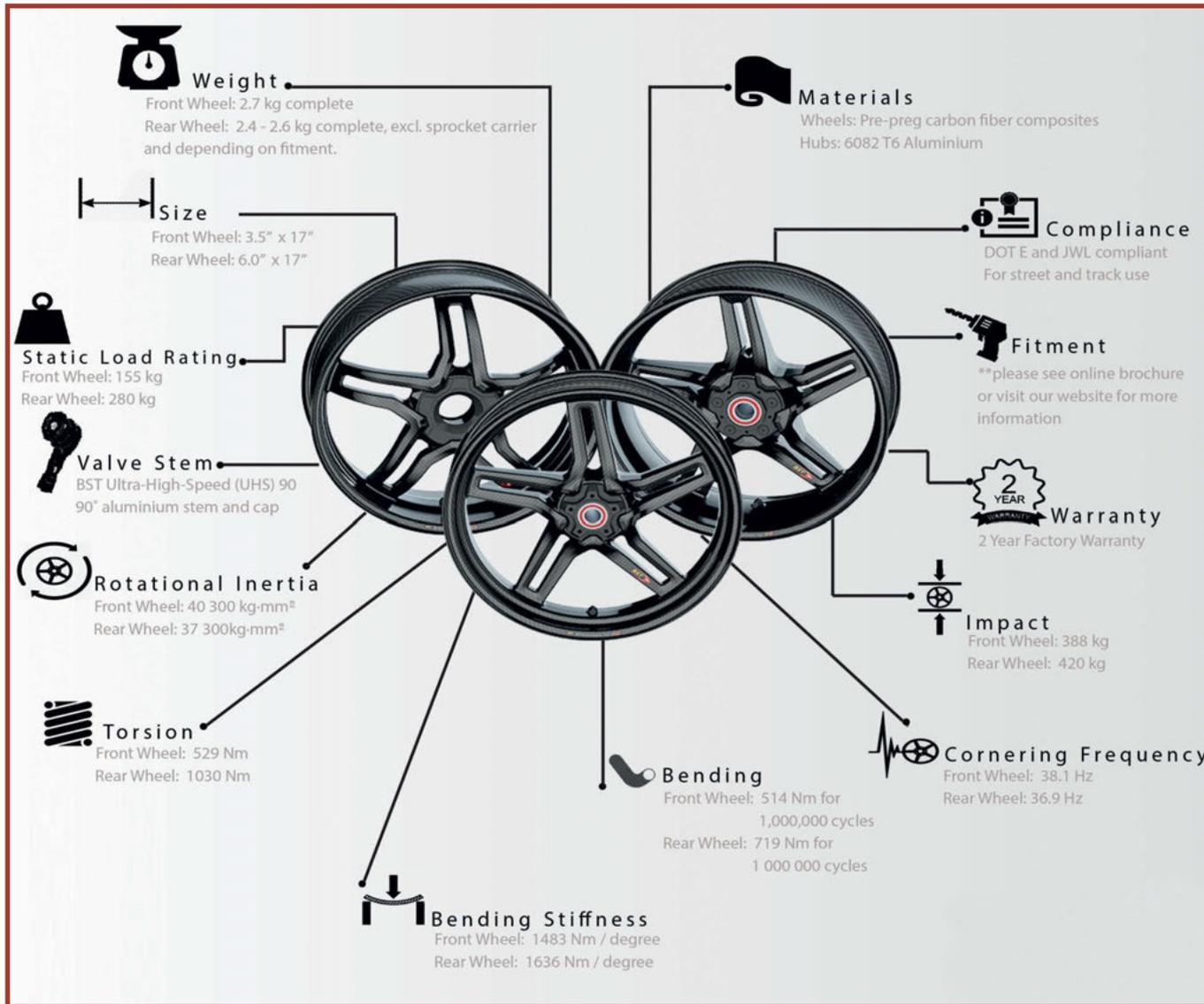
Gary goes on to say that they don’t only look great in their wide choice of available colourways, but that they are “extremely durable. The strength to weight ratio of carbon fibre is well known and is utilised to its fullest by BST. We apply the most stringent testing standards to both our OEM and aftermarket wheels. “BST is the only carbon wheel manufacturer that is ISO 9001:2008 certified, audited by the German TÜV, and that adheres strictly to the JWL and DOT E specifications.



Terry Annecke, Operations and Marketing Director, at EICMA in 2017

“The interchangeable hub means you will now be able to use your wheel on different motorcycles by simply replacing the brake adapter, and our new BST

designed high-pressure forged composite drive side means you can expect only the best in performance.” The exceptional performance all stems from where



the weight is saved and the high strength - the lighter rim lowers the moment of inertia; this results in quicker response and reaction to the rider's commands, faster acceleration and quicker braking. Sold with a 2-year factory warranty, the wheels are made in pre-preg carbon fibre with hubs in 6082 T6 aluminium and BST ultra high speed 90-degree aluminium valve stem and cap. The fronts are 3.5" by 17" (weighing 2.7 kg complete, with 388 kg impact and 155 kg static load rating), the rears are 6.0" by 17" (weighing 2.4 – 2.6 kg complete, excluding sprocket carrier and depending on fitment, with a 420 kg impact and 280 kg static load rating) and are available for selected BMW S 1000R/RR, Ducati models, Honda, Kawasaki, KTM, MV Agusta, Suzuki, Yamaha and even the Bimota BB3. The cornering frequency is 38.1 Hz for the front and 36.9 Hz for the rear; front wheel torsion is 529 Nm, 1,030 Nm rear; bending is 514 Nm front and 719 Nm rear for 1m cycles; front bending stiffness is rated at 1,483 Nm/degree, front, and 1,636 Nm/degree for the rear; rotational inertia is 40,300 mm³ for the front and 37,300 kg mm³ for the rear.

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What Is Carbon Fibre?

A carbon fibre is a long, thin strand of material about 0.0002-0.0004" (0.005-0.010 mm) in diameter and composed mostly of carbon atoms. The carbon atoms are bonded together in microscopic crystals that are more or less aligned parallel to the long axis of the fibre. The crystal alignment makes the fibre incredibly strong for its size. Several thousand carbon fibres are twisted together to form a yarn, which may be used by itself or woven into a fabric. The yarn or fabric is combined with epoxy and wound or moulded into shape to form various composite materials. Carbon fibre-reinforced composite materials are used to make aircraft and spacecraft parts, motor cycle structural elements, wheels, racing car bodies, golf club shafts, bicycle frames, fishing rods, automobile springs, sailboat masts, and many other components where light weight and high strength are needed. Carbon fibres are classified by the tensile modulus of the fibre. The English unit of

measurement is pounds of force per square inch of cross-sectional area, or psi. Carbon fibres classified as "low modulus" have a tensile modulus below 34.8 million psi (240 million kPa). Other classifications, in ascending order of tensile modulus, include "standard modulus," "intermediate modulus," "high modulus," and "ultra-high modulus." Ultra-high modulus carbon fibres have a tensile modulus of 72.5 -145.0 million psi (500 million-1.0 billion kPa). As a comparison, steel has a tensile modulus of about 29 million psi (200 million kPa). Thus, the strongest carbon fibres are ten times stronger than steel and eight times that of aluminium, not to mention much lighter than both materials, 5 and 1.5 times respectively. Additionally, their fatigue properties are superior to all known metallic structures, and they are one of the most corrosion-resistant materials available, when coupled with the proper resins.



The effects of inertia By Gary Turner

Lightweight wheels are without a doubt the best performance product that can be purchased for a motorcycle. Instant performance is gained in all major areas - it's something the rider feels immediately – it's instant gratification.

When comparing wheels and weights, it is not always the overall weight that matters, but rather the weight distribution in each particular wheel which affects the performance of the wheel. A lighter rim means better performance. Carbon wheels generally have much lighter rims and carry the bulk of their weight in the hub – and the hub has little effect on the performance of the wheel. But weight is NOT the only

consideration. Lighter wheels will make a major difference to the handling of a motorcycle, but they will also improve your acceleration and deceleration (braking).

This is because the weight of the wheels isn't at work in isolation. What is even much more important is the rotational inertia of the wheels, namely how much weight is close to the axle and how much weight is further away from the axle.

Clearly the energy needed to turn wheels obviously comes from the engine. If you need less energy or power to turn your wheels, the available power accelerates the wheel quicker and you will end up with a higher maximum speed.

The lighter the wheels, the less your unsprung mass. This means that your suspension has to work less to dampen the wheels, and it will therefore track the ground surface much better, giving better control and performance.

It is more difficult to move or steer a rotating mass than a stationary mass (try to move a spinning bicycle wheel). If you reduce the mass, and specifically the rotating inertia, the force required to move or steer the mass is reduced significantly. Putting lighter wheels on a motorcycle will reduce the steering forces significantly and therefore have a positive influence on driver fatigue. No other performance-enhancing product gives the same benefit/price ratio.

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