# LESS WEIGHT = BETTER HANDLING

*Installing BST carbon fiber wheels from Brock's Performance*

IF YOU WANT TO ADD MORE CHROME AND BLING TO your bike, turn the page and stop reading now as this is not your typical Harley tech article. Some people might argue Harley performance is all — and only — about adding torque and horsepower for improved dyno or straight line drag strip performance. While it sure is fun to whack open the throttle of a big-inch Harley and feeling a pulsing V-twin torque up, some of us also appreciate a well-balanced and flickable motorcycle for twisty back roads.

A half century ago, an Englishman named Colin Chapman took a different approach to building his Formula One Lotus racecars. He believed it was more important to reduce weight than to add more power. He referred to it as "adding lightness." He pioneered the concept that the less a vehicle weighed, the better it would handle while using less gas and reducing mechanical stress on all components. His theory makes sense, but we have to wonder how many people apply it to customizing Harleys — even sporty ones.

Now let's go one step further on our weight reduction plan. Did you realize that where you remove weight can have a significant impact on how your motorcycle handles? Components are classified as either sprung or unsprung. While these are basic (and important) terms for most motorcycle road racers, these terms are foreign to most Harley street riders.

## Sprung Vs. Unsprung Weight

PRETTY MUCH EVERYTHING ON A motorcycle with suspension is either sprung or unsprung. Basically, if a part moves up and down when the suspension compresses or expands (like the frame, engine, rider, etc.) it's sprung weight. If the part moves independent of the suspension on your motorcycle (like your wheels, tires, brakes, and the

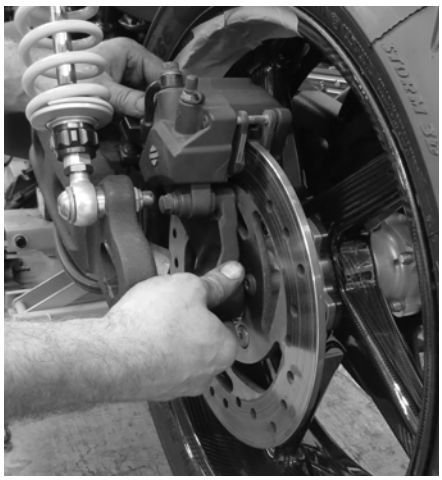
**1** Dan at Rob's Dyno Service carefully mounts the tires we got from Avon, a Storm 120/70-17" for the front and a matching Storm 180/55-17" for the rear, on Rob's tire machine. Dan doesn't let the tire machine's arm actually touch the rim.

PHOTOS AND CAPTIONS BY CHRIS MAIDA

**2** Dan installs the stock pulley onto the new Blackstone TEK (BST) carbon rear wheel using the stock pulley bolts, red Loctite, and a 5/8" socket. He torques the bolts to 80 ft-lbs.

**3** Dan tightens the front stock rotor bolts to 20-24 ft-lbs. using blue Loctite and a T-40 Torx. The rear rotors use a T-45 Torx and get torqued to 40 ft-lbs.

**4** Dan then checks the balance of both wheels on the Rob's Dyno Service K&L balancer.



**5** With the rear wheel under the rear fender, Dan positions the rear caliper over its disc by coming at it from the rear. He then positions the stock left spacer between the wheel and caliper bracket.

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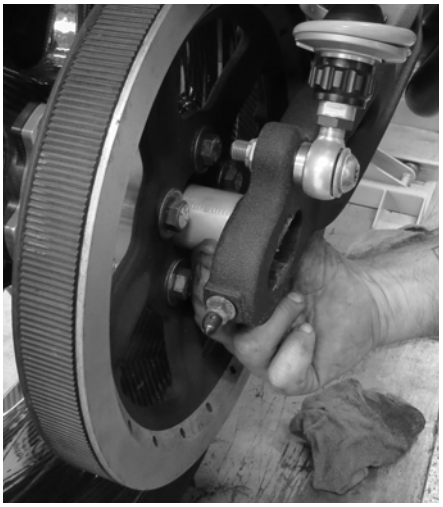


6 The BST-supplied longer and lighter right wheel spacer goes between the swingarm and wheel.

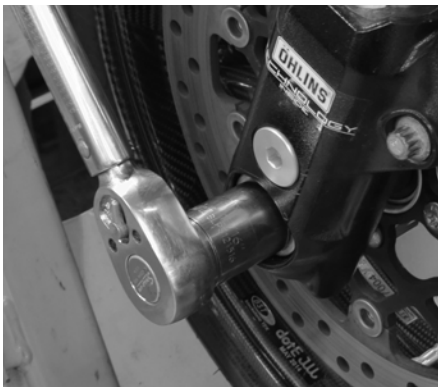
7 Dan then sends the axle through and secures it using the stock hardware and a 1-1/4" socket. After checking the belt tension, he torques the axle nut to 90 ft-lbs. and pops in the stock circlip.

8 On the front, Dan positions the wheel between the fork legs and positions the stock wheel spacers. The axle is then sent through.

lower part of the suspension, etc), it's unsprung. Unsprung weight has a greater effect on how your bike handles. The lower the unsprung weight, the less work your suspension has to do to keep your tires on the road, especially over irregular road surfaces. In addition, the less wheels and brakes weigh, the faster they can accelerate or decelerate, something important to real performance.

The easiest and least expensive way to reduce unsprung weight on most motorcycles is to use lighter wheels and tires. That's quite the opposite of recent

9 The calipers can now be reinstalled using the stock hardware and 10mm 12-point socket. Dan torques the bolts to 28-38 ft-lbs.




10 The axle nut can then be installed and torqued to 60 ft-lbs. using a 15/16" socket.

11 Here's how the new front BST wheel looks on the bike. It spins on ceramic bearings.

trends to heavier wider (chopper) or taller (bagger) chromed wheels on many customs in the last few years. While not cheap, the strongest lightweight wheels these days are made with carbon fiber. And the quality of the BST wheels, which are offered by Brock's Performance, is among the best on the market. And while we're installing these BST carbon fiber wheels on a Sportster XR1200X, virtually all motorcycles would benefit from lighter carbon fiber wheels — especially baggers. Our front wheel with cermic bearings, but no tire or rotor, weighs only 7 pounds, the rear one only 9 pounds! Compare that to the stock front wheel, which weighs 15 pounds in the same condition, the rear one is 20 pounds! That's a significant weight reduction — and all unsprung.

Of course, you don't want to put just any tire on a set of high-performance wheels like these, so we ordered a set of Avon's Storm tires for our project: a 120/70-17" tire up front and a 180/55-17" for the rear. BST has carbon fiber wheel applications for most Harleys, so if you're looking for real performance improvements for your Harley, this is a great option. **AIM**

**12** Here's how the new rear BST wheel looks.

**13** And here's how the bike looks with the new BST wheels! Handling is greatly improved.

## SOURCES

**AVON TYRE CUSTOMER SERVICE**
800/624-7470
AvonMoto.com

**BROCK'S PERFORMANCE**
973/912-0054
BrocksPerformance.com

**ROB'S DYNO SERVICE**
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