

REINVENTING THE WHEEL

TIM GIBSON ENGINEERS A WINNER

By Randy Fish

Let's face it, the aftermarket has seen its fair share of copycats who come out of nowhere, borrow somebody else's good idea, set up shop and sell head to head against the poor stiff who had the idea in the first place. There is another side to this coin, though, one where an enterprising individual comes in and totally reengineers a product and makes it several times better than it's ever been.

That's what we have here, folks. It's no secret that over the years, racing wheels have often possessed similar design characteristics and manufacturing processes, and differed primarily in

cosmetic appearance alone. Let's start with some background on this new company's driving force, and then we'll demonstrate why this is one of the hottest new products to hit the drag racing scene in a long while.

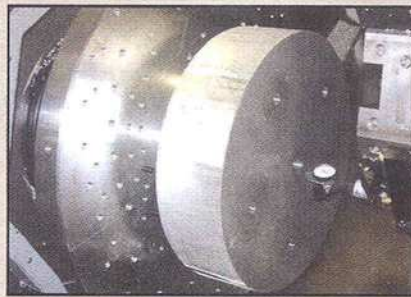
Tim Gibson is no stranger to the quarter-mile, having competed in his



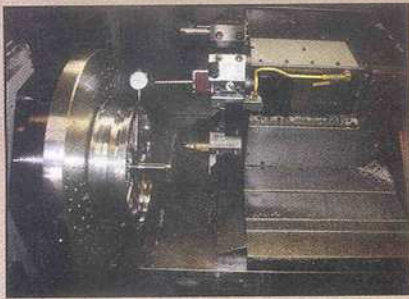
Lee Crim, Gibson's cousin and a graduate of Pasadena's famous Art Center College of Design, assists in every aspect at Gibson Engineering, from design and programming to production.



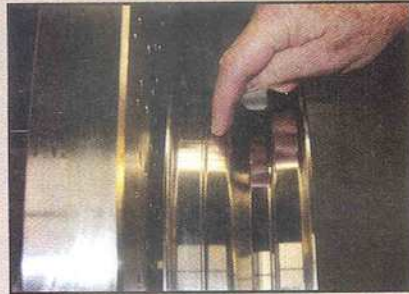
BELOW: For six years Tim Gibson worked as team aerodynamicist at John Force Racing. During that time he was responsible for designing (and enhancing) each new Ford Mustang body shell, along with all related aerodynamic systems. He's shown here in Lockheed's Atlanta-area wind tunnel, where a great deal of critical analysis was conducted.



An 85-pound billet of aircraft aluminum plate starts in the Haas SL-40 CNC three-axis lathe where two operations are performed using seven different cutting tools. This machine cuts the front and rear face as well as the drop-in (center void).



Gibson's custom tooling includes a run-out gauge that verifies concentricity at numerous intervals during the machining process.



During the initial design phase of Gibson Wheels, Tim realized that many drag racing front wheels didn't have safety beads, which are common on motorcycle wheels. This is a machined ridge that prevents the tire from falling into the "drop-in" area (or center void), should a low-pressure situation occur, which could also cause the tire to come off the wheel. All Gibson Wheels have safety beads as outlined by the U.S. Tire and Rim Association.

native Alabama with a 1951 Ford. The Ford was bought new in Luverne, Alabama, by his grandfather, passed down to an uncle, and sold to Tim when he was 14 years old. He also raced a 427-powered '66 Corvette. In 1984, Gibson and his wife, Karen, moved to California where Tim landed a job with renowned chassis builder Don Long. During that time, he also attended UCLA and earned a degree in Aeronautical Engineering. Following graduation in 1990, Tim was employed by TRW Space and Defense, working on ICBM aerodynamics until 1992, when he moved to Dan Gurney's All American Racers. It was there that Gibson applied his talents towards the IMSA championship-winning Toyota GTP program (1993), which also garnered the IMSA Manufacturer's Championship and the IMSA Driver's Championship in that same year.

Dan Gurney branded Gibson with the nickname "Titanium Tim," because

he was responsible for fabricating the titanium rear axle housings for Larry Minor's Top Fuel cars. During that period Tim had written a technical paper about welding titanium, and also designed lots of titanium parts for Gurney's GTP Toyota.



Programming and tooling commands on the Haas SL-40 can be done with the central keypad or this hand-held controller.



After the first two operations, the blank is secured in the FV-40 Femco vertical mill for two more operations using 24 different pieces of tooling. This machine cuts the windows and spokes from rough cut to finish cut.

Another lateral shift occurred in 1998, when Gibson left Gurney's to work with Roland Leong at Don Prudhomme Racing, and later for Wes Cerny at Joe Gibbs Racing. His primary focus for those teams was aerodynamics, logging countless hours in GM's Warren, Michigan, wind tunnel. During this era Tim's daily work was punctuated by driving the Bill Miller Engineering Top Fuel Dragster on weekends, from 1995 to 2001. Next, Gibson became the team aerodynamicist at John Force Racing from 2000 to 2006, where he designed all of Force's Mustang bodies and aerodynamic systems, causing NHRA to rewrite the

lion's share of its Funny Car body and spoiler rules in the process. While there, he worked closely with Crew Chief Austin Coil, as well as Ford designers and management personnel in Dearborn, Michigan, and in the Lockheed wind tunnel, near Atlanta. At this point in time journalist Cole Coonce changed the guy's nickname to "Techno Tim," while P.R. and online journalist Rob Geiger helped tell the world about it. Never one to sit still, even more seat time came from 2000 to 2003, as Tim drove the Master-Cam front-engine Nostalgia Top Fuel Dragster. Then, from 2002 to 2007, he also drove the Stevens family Top Fuel car on a part-time basis, primarily at IHRA events.

After 2006, Tim began a partnership with long-time friend (and fellow mad scientist) Bill Miller on the successful



The Femco vertical mill is equipped with Cat 40 tool holders, which were originally designed by the Caterpillar Corporation.



Quality control requires a granite surface table, which is perfectly flat (and level). Here, Tim weighs a dragster front wheel after machining was complete, and it tipped the digital scale at a scant 5.2 pounds. We asked him what other wheels might weigh and Gibson replied, "Between seven and nine pounds." These trick wheels are one-piece, fully machined, with no welding, bolts or rivets.

line of Gibson-Miller injectors and superchargers found on numerous Top Fuel Dragsters and Fuel Funny Cars.

Now that you know the background and have a thumbnail sketch of this man's talent, let's move on to the present day and Gibson Wheels.



Available in dragster (17 x 2.125), spindle mount (15 x 3.5) and five-bolt (15 x 3.5), each style features a built-in "cheater disc" specially designed to provide enough area to effectively break (or reflect) the starting line beams and allow you to stage your car properly. Tim Gibson says these are the lightest SFI-approved wheels on the market today.

these unique wheels allow them to be lighter in weight without compromising strength. Tim explained, "As a driver, I was always impressed by how much affect the front wheels had on a dragster when they touch down. It's not uncommon that front wheel 'spin-up' will cause an upset to the car, whether it's causing it to spin, shake or both." He continued, adding, "The force used to spin up the front wheels (no matter where they touch down during a run) is created by the engine's horsepower. So, the heavier the front wheel, the more horsepower is being used to spin that wheel up to its final trap speed." This is a much deeper subject than most people would imagine. The issue is not only the weight of the wheel, but also the rotational inertia of the wheel. First, you have to move the weight, and then you have to spin it. If you've ever experimented with different weight flywheels, you'll understand this better. The higher rotational inertia of the wheel, the more horsepower is being wasted while accelerating it to trap speeds.



The day we visited, several wheels had been through their final quality control inspections and were ready for packaging.

Back in 2007, Tim purchased the machinery from Kinesis Racing Wheels, which was located in Vista, California. Gibson teamed up with his cousin, Lee Crim, along with friends, Don Long and Dave Ward, and proceeded to build all new tooling and fixtures, designed product, and began machining premium, lightweight drag racing wheels. The engineering and design principles of

Looking at other areas of cause and effect, horsepower can also be wasted by wheels that are not round (or concentric). That said, Tim explained how tooling is critical in producing a round, true, low run-out wheel. "Most wheels are machined using a standard axial-compression, jaw-type chuck and a center hold-down fixture. Due to their compressive and bending forces, this



This rear view of Gibson's new three-piece road race wheel demonstrates several areas where critical weight has been removed without compromising the integrity. You can expect to see these appear on many of the world's fastest exotic sporty cars.

type of tooling can cause distortion during manufacturing." Gibson continued, noting, "Our custom-made tooling is designed to maintain precise concentricity, while having no compressive or bending forces acting on the wheel at any time. This tooling also eliminates any run-out caused by residual stress, metal removal or induced stress." As we take this issue to print, Gibson had just received word that his new 18 x 10 three-piece road race wheels had passed SAE J328 endurance tests, so production on those ramped up immediately.

That product also demonstrates Tim's interest and appreciation for road racing and exotic super cars, which also opens up an entire new market. Tim Gibson is a member of SAE International, SEMA and SFI, as well as SEMA's Wheel & Tire Council. Gibson Wheels meet SFI 15.2 approval. **DR**



SOURCE

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