



## Success is No Shock for American Suspension



Vince Costa's life-long passion for motorcycles is reflected in American Suspension, his company that designs and manufactures high-end motorcycle suspension parts and systems for American bikes. His passion for using Ashlar-Vellum computer-aided drafting software also began early with Vellum® 2.7. Today he uses Graphite™ CAD software to draw the forks, brakes, wheels and shocks for customized American motorcycles. Costa tells us, "Graphite just seems to work fast, which is really important because we have to be continually coming up with new ideas."

One of the company's most innovative ideas is an inverted front fork with an integrated brake caliper in the lower fork leg and an integral brake line. This provides three things:

- Improved aesthetics for motorcycles often seen as works of art, selling in the \$50,000 price range.
- A more powerfully functioning brake caliper because all of the strength of the lower leg is used in the structure.
- A lower manufacturing cost because one part can be machined to perform multiple functions.

Costa has patented the various parts and used them to successfully fend off overseas manufactures.

Awhile ago, custom bike builder Paul Teutul, Jr. began to collaborate with Costa creating innovative assemblies from Costa's stable of suspension systems. When the Discovery Channel held the *American Chopper Build-off* to decide who was the greatest custom motorcycle builder in the world, Teutul called Costa to brainstorm ideas. Costa tells us Teutul was looking to design the most fantastic, well designed bike they could possibly conceive and make it happen in a very short amount of time. Together they thought through the design.

Costa had been working on a concept that included ribs and rivets, giving it a look like something out of Jules Verne. Drawing further inspiration from P51 Mustang fighter planes, the two decided to try a never-before-used single-sided swing-arm front suspension, which attached the wheel on just one side, leaving the other side open, similar to a plane's retractable landing gear. They also took the suspension unit out of the inverted fork and made it into the steering neck, bolting in the front with a specially made frame and steering mechanism so the suspension could move up and down while the handlebars remained steady.

Costa admits the pressure was high because he and the frame maker were producing parts on the west coast and sending everything to Paul Teutul, Jr. for completion in New York. Working entirely from drawings, there was no time to test this front suspension before it had to be assembled on live TV. But it all worked...winningly. Costa concludes,

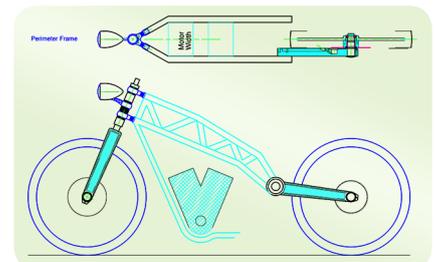
***"I have to give your program credit. It's so easy to use and so quick. For designing suspension stuff like what I'm doing, it's like being able to sketch. It's just really, really good for doing that because I can do stuff so quickly and make changes. So it really helped when we were making it."***



Paul Teutul, Jr. on the winning bike in the *American Chopper Build-off*.



Costa's innovative suspension designs integrate the brake caliper into the front fork for better aesthetics, performance and cost to manufacture.



Concept drawing for the single-sided swing-arm front suspension which attached the wheel on just one side.

### Background/Contact

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