THE OFFICIAL BRAG® COMMUNICATIONS SOURCE

FUEL

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FUELL®

contents

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What a year it's been – both for Buell and for BRAG.® We introduced a new race bike, the Buell® XBRR,™ that shocked the world (and even created a bit of controversy!). And, although no team has yet finished on the podium in AMA FX, with XBRR wins in U.S. ASRA races, in France and Germany, we are definitely carrying the excitement worldwide. The press reaction to this unique race bike has been great; people were ready for something different, even on the racetrack! Meanwhile, Buell sales overall have continued to climb, particularly in Europe, with the new Ulysses™ XB12X and Lightning® Long XB12Ss leading the way.

At tracks around the country, both amateur and professional Buell racers have continued to distinguish themselves at all levels. In particular, the contingency programs we have put in place have been very successful at helping "grassroots" racers make a go of it in a very competitive field.

On the BRAG side, we staged another very successful Homecoming event here in Wisconsin. I can't tell you how much it means to me to meet and spend quality time with so many dedicated and enthusiastic … er, enthusiasts. And the Wicked Twisty events set the stage for local clubs and riders becoming more involved in staging events open to Buell riders everywhere.

As I look to the future I see nothing but more excitement – and change. As always, we're thrilled about the new products working their way through the pipeline. And this year, we're also excited about big changes coming regarding BRAG.

We all know that Buell owners tend to look at the world a little differently – and that's just the way it should be. It's this attitude that helps make Buell owners the core of the Buell brand. So we've been listening very closely to what you've had to say regarding BRAG and what it means to be a member of the Buell family. And now we're responding.

Being a member of the Buell club will look different next year than it has in the past. Check out the new Buell owners section on buell.com beginning in mid-November for specifics on the changes. Changes will include some new and enhanced benefits for all Buell owners, increased riding opportunities, and more.

It's a big change – one that represents a shift in thinking regarding how best to enhance the Buell ownership experience. And one I'm confident you'll come to appreciate as a big improvement.

After all, you like the improvements we keep making to our *bikes,* right?

Looking forward,

Erik Buell

ABOUT THE COVER/ABOVE:
BRAG members enjoy three days of riding in New Mexico during the "Enchanted Twisties" Wicked Twisties Tour.

Photography: Nathan Harrmann

BRAG BUELL RIDERS ADVENTURE GROUP

Peggy S. Utphall » Editor
Peggy Lamb » Director, Rider Groups

GS Design, Inc. » Design and Production

WE CARE ABOUT YOU! Ride safely, respectfully, and within the limits of the law and your abilities. Always wear an approved helmet, proper eyewear and protective clothing, and insist your passenger does too. Never ride while under the influence of alcohol or drugs. Know your Buell® motorcycle, and read and understand your owner's manual from cover to cover.

Buell® Racers Speed Toward Finish Line

FORMULA XTREME
"Learning Season" Draws to a Close

It's been a challenging season for Buell XBRR™ riders in the AMA Formula Xtreme series – but also a rewarding one, with lessons learned and high hopes for a strong, successful return in 2007.

Following 11th- and 18th-place finishes, respectively, for Buell racers Steve Crevier and Jeremy McWilliams at Virginia International Raceway in August, neither rider finished the Formula Xtreme national final during the final round of the 2006 AMA Superbike Championship at the Mid-Ohio Sports Car Course in Lexington.

McWilliams, riding for Warr's of London Harley-Davidson/Buell, qualified 11th, while Crevier, riding for Deeley Harley-Davidson/Buell Canada, qualified 17th in the field of 30. Yamaha USA rider Eric Bostrom led all qualifiers and took the point for pole position.

McWilliams, who was 6th quickest in the morning warm-up, was forced to switch to his backup XBRR after a small oil leak was discovered on his primary bike just before the start of the race. With no time on his backup bike, he was forced to retire after the first lap with an electrical problem.

Crevier was racing in 14th place when he experienced a mechanical problem on lap five. The race and the 2006 AMA FX Championship was won by American Honda factory rider Josh Hayes.

"The AMA's FX class is really getting fast and exciting and was a battle for the championship until this last race," said Buell Motorcycle Company Chairman and Chief Technical Officer Erik Buell. "It's been quite a learning year for the Buell teams, and when Jeremy's team finally got the setup right for him on Sunday morning, it was looking like we would close out the season with our best finish yet.

"But that's racing, and that's why we'll be back next year; it's the challenge."

ASRA THUNDERBIKE
No Rest in Defense

Veatch Motorsports rider Dave Estok is closing in on a successful defense of his 2006 American SportBike Racing Association (ASRA) Thunderbike title. With one race remaining, he holds a slim 11-point lead. At most venues, given how solidly he's performed all season, that margin might be considered somewhat comfortable. But at Daytona, anything can happen.

"Going into Daytona, all bets are off," said Buell Racing Manager Henry Duga. "It's a unique venue. The speed, the drafting, the high-banks … these are things riders don't deal with at any other venue. And it always leads to lots of surprises."

Since missing the Daytona season opener, Estok and his Buell Firebolt® have chipped away at the early lead assumed by BMW rider Nate Kern. His victory in the ASRA Thunderbike National at Barber Motorsports Park on Sunday, August 13 moved him into the series lead. After leading the qualifying on Saturday, Estok outdueled Hal's H-D/Buell-Hal's Speed Shop rider Dan Bilansky, also on a Buell Firebolt, in wet conditions, for the victory.

At the start of the race, Harley-Davidson/Buell of Frederick rider Bryan Bemisderfer, starting third, got the jump on Estok and Bilansky to lead the first lap. Estok passed Bilansky (running second) and Bemisderfer together on lap two, and the trio raced in tight formation until Bemisderfer dropped back with a fading clutch on lap four. Both Estok and Bilansky broke the Thunderbike track record during the race, with Estok establishing a new mark with a lap time of 1:34.160 on the 2.38-mile track.

"In the end, I had a little better luck with some lapped traffic, and that helped me hold Bilansky off," Estok said. "The Veatch team put a great Buell motorcycle under me today."

Four weeks later, Bilansky got some measure of revenge, grabbing a win at the Autobahn Festival of Speed, held at the Autobahn Country Club South road course. Estok finished second, with Bemisderfer filling out the podium in third.

It was Bilansky's second straight Thunderbike win at Autobahn.

"Dan has had great success at this track, and he was very fast all weekend," Duga said. "There's just something about it that seems to suit his setup and riding style. He's also done several track days there, so he's very familiar with it. He gets around it fast."

"Hal's team had a flawless weekend," Bilansky said. "We didn't have a single mechanical problem, the Buell V-twin engine was strong, and I think we broke the track record for Thunderbike during the race."

Suzuki rider Ed Key finished fourth, followed by Buell rider Paul James (Hal's Speed Shop/Spyder Leatherworks), Sam Rozynski (Sound Waves/Hal's Speed Shop), and Dave Myers (Delta Distributing). Ron Kopec was eighth on a Honda, followed by the Buells of Greg Avello (Hal's Speed Shop/Badger Motorsports) and Darren Conrad (Conrad's H-D/Buell).

With his second-place finish, Estok extended his series lead on Bemisderfer, 191-180. Bilansky moved to third with 164 points, Sam Rozynski to fourth with 142, and BMW rider Nate Kern, who skipped Autobahn to vie for the season championship at his home track, Summit Point, falls back to fifth with 134 points.

THUNDERBIKE STANDINGS

191	Dave Estok (Veatch Motorsports)
180	Bryan Bemisderfer (Harley-Davidson/Buell of Frederick)
164	Dan Bilansky (Hal's H-D/Buell-Hal's Speed Shop)
142	Sam Rozynski (Sound Waves/Hal's Speed Shop)
134	Nate Kern (BMW)

CANADIAN THUNDER
James, Buell Extend Canadian Domination

Deeley Harley-Davidson/Buell Canada rider Darren James captured his second consecutive Canadian Thunder national championship aboard a Firebolt XB12R at Ontario's Shannonville Motorsports Park.

James, of North Vancouver, British Columbia, placed fourth in the Canadian Thunder class at the Parts Canada Superbike Championship at Shannonville, the seventh and final round of the season. Oliver Jervis won the 14-lap race on a BMW RS1200.

James won the first two Canadian Thunder races of the season, at Shannonville in May and Le Circuit Mont-Tremblant in June, and added three second-place results to wrap up the season with 303 points. Jervis was second with 296 points; followed by James' Buell-mounted, 15-year-old Ruthless Racing teammate, Brett McCormick, with 233 points; Ducati's Derek Vammus in fourth with 203 points; and Ruthless Racing Buell rider Oliver Spilborghs in fifth with 173 points.

"Winning this year's Canadian Thunder championship was even sweeter than last year," said James. "This year was more of a struggle. The competition was stronger. And we had to overcome some adversity. We really worked hard all season, and to get the championship with three riders in the top five is a great feeling."

EUROPE
Michel Amalric, XBRR™ Prevail in France

Creteil Cedex, France – France's Michel Amalric, racing his Macadam Moto sponsored Buell XBRR, secured a dramatic win at the famous Magny-Cours circuit last weekend.

In only his second competitive outing on the Buell XBRR, Amalric beat the challenge of a 39-strong field in the Pro-Twin Final and took the checkered flag 1.14 seconds ahead of Alain Cottard's Aprilia RSV 1000 and 3.94 seconds ahead of Stephane Molinier's third-place Ducati 999.

Amalric's stirring performance for the Macadam Moto team (the official Buell dealership in Montpellier) proved to be even more impressive when the news emerged that the race at Magny-Cours was mainly being used as preparation for the 2007 Pro-Twin championship season.

"The Macadam Moto team had decided to use this last race of the 2006 season as an opportunity to get some quality racing experience under their belts in preparation for a full race program in 2007," said Jean-Luc Mars, managing director of Buell France.

"Michel also overcame the additional problem of qualifying on a wet surface, and then the final took place on a dry track. Due to tight time constraints, as well as the newness of this team, he simply had not been able to get any practice in on dry conditions," Mars added.

Although this was only the Moto Macadam Buell XBRR's second competitive race in France, the team was quietly confident that they might be able to spring a surprise after Amalric finished a creditable fifth in their debut race at Ledenon in August.

Buell's European marketing director John Lewis commented:

"We're delighted that Erik Buell's vision of offering private racers with a professional-level, race-ready, production-based racing motorcycle is now succeeding so well here in Europe. The Moto Macadam team has certainly underlined the real potential of the XBRR in just their second outing and we're really looking forward to seeing what they can achieve next season."

A FEW LAPS WITH ANTHONY CALIGIURI

Photography: Wendy Mellinger

Keeping his KNEE TO THE GRINDSTONE

The first time Buell® racer Anthony Caligiuri felt his knee scraping the asphalt at his very first track day, he braced himself for impact.

"I thought I had already crashed!" he recalls with a hearty Brooklyn laugh. "But then, when the bike lifted up and straightened out on the straightaway, I realized I had done what I was supposed to do. I had no idea I was doing it right!

"It was unbelievable."

Needless to say, he was instantly hooked. With a background in go-karting, Anthony was not completely unfamiliar with the racing world. But four wheels never grabbed hold of him the way two wheels did.

Path of Brief Resistance

Born in Brooklyn, Anthony spent his teenage years in Staten Island, New York before moving to Old Bridge, New Jersey as a young adult. It was there he got interested in – and showed a definite knack for – go-kart racing. With his father's help, he won a championship in the 100cc Spec Class in just his second year.

"I was always excited about things that go fast – cars, motorcycles, go-karts, whatever," he says. "It was a lot of fun racing go-karts, but then it kind of died out after a few years because the tracks started disappearing."

At the time, as Anthony describes it, his life was starting to "go in a direction that wasn't too good." But a job offer from a friend (Mike D'Angelo) at Edison Harley-Davidson in Edison, New Jersey helped put him back on the straight and narrow.

"That got me going in the right direction, and things really took off from there."

His enthusiasm for Harley-Davidson and Buell, however, helped him become a quick success: Within a couple of years he became Sales Manager. A few years later, an offer came to manage Electric City H-D in Dickson City (outside Scranton), so he loaded up the truck (figuratively speaking) and headed for the Poconos with his new bride, Star.

And that's where we pick up the racing story. After that surprisingly successful "introductory" track day, he persuaded his boss to help him prepare his Buell Lightning® X1 to go racing.

"Then we went and raced at Pocono – and we didn't finish last!" he says. "To me, that was a real accomplishment. Especially since I was running a nearly stock X1 against a lot better bikes."

That was in 2002. For the next couple years, Anthony only raced twice a year – at Pocono and Daytona – because that's all he could afford. In 2004, however, he decided to get serious, putting aside $15,000 to fund his racing "team" – which consisted pretty much of him and Star (as crew chief). In 2005 he "upgraded" from the X1 to a new Buell Firebolt® XB12R, which he's now riding in pursuit of several CCS regional championships for Liberty H-D/Buell in Rahway, New Jersey. He's also running nearly a full season of ASRA Thunderbike races, sitting 10th overall through 7 of 8 races.

"Not bad for a guy with a yellow plate!" he says proudly of his amateur status.

The move to Liberty H-D/Buell coincided with a career move, as well. And though the new dealership/employer/sponsor is more than 100 miles away from the home he built in Effort, Pennsylvania, he has no intention of moving back to Jersey any time soon.

"When I tell people it's a two-hour drive each way, they go 'Ugh!'" he explains. "But when you work at a place you really love to work, you have something to look forward to in those two hours. My boss, Tom, is not just a businessman, he's a biker.

"And coming home, I have my beautiful wife, my two beautiful boxers, and my beautiful home – which I could never afford in New Jersey, by the way – to look forward to. So the ride, it's nothing. It's worth it."

One reason Anthony likes working for Liberty so much is that they provided him with a new Buell XBRR,™ which he'll begin racing soon. As one of the few (perhaps the only?) amateurs to get to ride on an XBRR, Anthony knows how fortunate he is – in life and on the racetrack.

"Who'd ever have thought that I'd be racing the same bike Jeremy McWilliams is riding?" he says. "I definitely consider myself one of the lucky ones – to work for a dealership like this, and to ride a bike like the XBRR, and have guys like my crew chief, Moose, and my buddy, Rob, to support me. It's a real privilege."

FAST FACTS

Name: Anthony Caligiuri
Age: 35
Birthplace: Brooklyn, New York
Residence: Effort, Pennsylvania
Started Riding: Age 19
First Motorcycle: Honda Shadow
Racing Motorcycles: Buell Firebolt XB12R and Buell XBRR
Sponsoring Dealership: Liberty H-D/Buell, Rahway, New Jersey
Family: Wife, Star, and two "kids": boxers Dixie and Jet
Hobbies: Flying remote control airplanes
Nickname: The Mutant
Quote: "You can't say nothin' bad to me about a Buell, because I'll put my fists up! In a split second!"

SUPER TUNING

YOUR SUSPENSION

BY SHAWN HIGBEE, TEST TECHNICIAN

Your Buell® XB Owners Manual is a great starting point for providing suggested suspension settings for various rider weights. But what if you are looking to dial in the suspension setup even more? Rather than providing setup instructions, I have found it is sometimes better to introduce a rider to suspension terminology and tuning methodology. This information helps riders to teach themselves about suspension tuning (See sidebar for a definition of these terms. For details on the adjustment procedure, consult your Buell XB Owners Manual).

The first thing a rider needs to clearly define is how he/she expects the suspension to perform. Secondly, learning terminology to identify the different types of road surfaces and bumps is important for understanding which suspension variable to adjust to achieve the desired results. And finally, it is important to have enough experience with a particular bike to change the adjuster positions so the suspension actions match your expectation. If you determine your expectation, know the road, estimate how the suspension should react, and adjust to match the expectation, you will have found the optimal setup for you.

WHAT DO YOU WANT?

There are three main functions of the suspension. One is to isolate the rider from the severe bumps in the road. Another important function is that the suspension should work to keep the tires in contact with the road surface to maintain traction. The final function is to help control the weight transfer of the bike during dynamic changes (braking, cornering, accelerating, etc.). Knowing how you want the bike to feel under the different conditions is the first step in understanding your personal suspension setup.

In the city where speeds are lower and the bumps can be bigger, smooth ride quality is pretty important if you're going to be spending much time there. In these situations you want the wheels to move over the bumps and obstacles and the rider to be isolated from these inputs.

For your favorite canyon roads or country twisties, you'll probably be going a little faster than in the city, and the bumps are hopefully smaller and more spread out. For these conditions riders typically are looking for more road and chassis feedback. For these spirited rides, handling and precision may become more important to you than comfort. Keeping the tires in contact with the ground when they do encounter bumps is also a very important job of the suspension in these conditions.

KNOWING THE ROADS

The road provides input to the motorcycle through the suspension. Road surfaces can vary greatly in texture and contour, from smooth and polished to coarse and jagged, or anything in between. The road contour variations include a mixture of bump types and sizes. If the bump type is understood, then the rider has a better chance of tuning the suspension for the best performance. A few of the bump types, as we classify them when analyzing suspension data, include swells, seams, step-ups, step-downs, or any combination of those. The severity of the bump can be tall or deep in amplitude, long or short in duration, and few or many in series. The "Bump Characterization Matrix" shown below can help you understand the combination of bumps that make up stretches of road.

BUMP CHARACTERIZATION MATRIX

Riders can replace the example data in this matrix with approximations of bump types that apply to a section of commonly traveled road. This bump information can be a reference to understand the suspension actions required to achieve good ride quality.

BUMP TYPE	BUMP SEVERITY: AMPLITUDE TALL » DEEP	DURATION LONG » SHORT	SERIES MANY » FEW
SWELL	2 inches	36 inches	10/mile
SEAM	6 inches	1 inch	100/mile
STEP-UP	1 inch	0.1 inch	5/mile
STEP-DOWN	1.5 inches	0.2 inch	3/mile

Knowing the differences between these bump types helps identify the required suspension motion to maintain tire contact with the road and to provide the desired level of road isolation or feedback to the rider. The profile of the road directly affects the required suspension velocity (how quickly the suspension needs to compress or rebound).

SUSPENSION DEFINITIONS

(FROM 2007 BUELL XB OWNERS MANUALS)

Damping: Resistance to movement. Damping affects how easily the suspension can move and limits oscillations of the system once movement has begun.

Compression: The suspension is compressed when the wheel moves upward.

Rebound: The suspension is rebounding when it is moving back from being compressed.

Vehicle Sag: The amount of rear shock and fork springs are compressed by the weight of the motorcycle.

Rider Sag: The amount of the rear shock and fork springs are compressed by the weight of the rider on the motorcycle.

Preload: An adjustment made to the rear shock and front fork springs to limit vehicle and rider sag to a standard percentage of total suspension travel.

Imagine a large manhole cover, one that over the years has become recessed below the road surface as new asphalt is added, creating a sharp two-inch drop-off on the near side and a sharp two-inch step-up on the far side. What suspension adjustments can you make to better handle this situation? One thing that's important to remember is that how your suspension handles that pothole will depend a great deal on how fast you're traveling.

In the manhole example, you have two approaches for the step down. One is, if you go fast enough and run with high enough rebound control, you can prevent the tire from falling into the hole in the brief time it takes to go over it. So when it hits the step up on the far side, it has less energy to absorb, less work to do coming out of the hole. And that can translate into a smoother ride; however, the tire may not actually get to the bottom of the hole. The other approach for moderate vehicle speeds (and what we typically shoot for in our street bike development) is the perfect "step-down" feeling. The approach we take for fall-away bumps is to reduce the rebound damping, which gives the wheel every opportunity to gently and quickly roll into the hole.

Adjusting for the far side of the manhole (step up) you would start to look at the compression damping. Less damping here will allow the wheel to quickly and smoothly compress to absorb the bump. It is possible, however, to reduce the damping too much, in which case you may experience what we call "overshoot," where the suspension compresses too much, to where the tire may momentarily lose contact with the road surface after the step up.

The swells have a minor slope and will require less suspension velocity than square-edged bumps, but because they are longer duration events, a setup that is balanced front to rear becomes important to prevent too much pitching or rocking motion. Seams are very vehicle-speed dependent and usually not too severe unless the gap is wide and/or the speed is too slow.

That should give you some insight into how your suspension reacts to challenges you encounter in your "everyday" street riding and what you can do to make the ride better. As you experiment with different settings, it's important to keep a few things in mind. The key thing is to understand what effects each of the different adjustments has. Then go out and try different setups.

OK, now you know what performance you want, and a little about the roads you will be riding, but how do you get there? When

Continued …

developing the Buell XB suspension, we focused on giving the rider a nearly unprecedented amount of suspension-tuning freedom. One of the targets for development was to center the adjuster position near the middle of the damping force range, which allows the rider to increase or decrease the damping from the nominal position.

I would really like to see more riders tune their bikes to the specific conditions they encounter – for instance, the daily work route – and then re-tune it on the weekend before they hit the twisty back roads or head to a track day. If you could tune your bike to make that stretch of road more manageable, would you? The good news is you can.

Think about your ride to work or a road you ride on frequently. Would you like to feel more or less road inputs? Maybe focus on one part of it that gives you particular trouble or takes the fun out of your ride for that one stretch? Identify the bump types – do you encounter a rough railroad crossing that steps up, or a stretch of concrete seams that is cracked and uneven, or a series of swells? Based on the bump types, decide how the suspension should react to the road surface. Does it need to move quicker or slower? The final steps are to decide on what adjuster to change, evaluate that setting, compare the result to your expectation, and repeat that process until you are satisfied with the performance.

When your goal is maximum comfort, reducing the damping levels will allow the wheels to follow the ground easier, making the ride more enjoyable. If the spring preload is reduced slightly, this allows more free sag, which is useful for step-down bumps with significant amplitude. The extra free sag allows the wheel to drop into the hole further before the bike and rider follow the wheel down. But, if the preload is reduced too much without making changes to rebound, it can slow the rate of extension when dropping into a hole and actually hurt ride quality. For a consistent extension speed, remember that as preload decreases so should the rebound damping and vice versa.

For maximizing handling and more precision, you can increase damping and even preload slightly. This added performance will come at the expense of rider comfort (there's almost always something of a trade-off between the two). Chances are when you are looking for these characteristics the roads are going to be fairly smooth, and you'll be riding a little more aggressively. When you're operating the motorcycle near the limits of traction, it becomes important for the rider to feel the details of the road. Under these conditions, increasing damping will give you a better connection with the road – but you don't want to go so far (as you might on a smooth track) so you can't smoothly handle the smaller bumps and other surface imperfections you're sure to encounter. If the damping levels are too high, you may experience reduced traction over rough surfaces.

If you go out for a canyon ride with the same setup you have for your city riding, you're liable to find that the feeling you get from the road is greatly reduced – and you'll begin to understand the limitations of that type of setup for that type of riding. Typically, a setup that works well on the rough city streets will lack the compression needed to feel confident in the twisties. Also, the reduced rebound damping levels may allow more chassis motion than you like under more aggressive rider inputs. Knowing why your bike is handling the way it is gives you options: You can either pull over and make a few adjustments on the fly, or simply adjust your riding style accordingly.

If you can, experiment under somewhat "controlled" conditions – even if it's that same ride back and forth to work every day. It's okay to make fairly big changes, but if you do, be prepared for the bike to handle the bumps differently, and cautiously ride at a reduced speed until comfortable with the performance. For instance, you might try turning the rear compression adjuster full hard, then riding it for 15 minutes. Next try turning it full soft, and riding it for 15 minutes again, over the same roads. This is a good way to give you a clear feel for what that adjustment does.

To speed up your learning as you experiment, change one thing at a time, and take notes. That way, when you feel the difference, you know what caused it. If you change a bunch of things, you won't know what it was that helped or hurt, or what to try next. Also, you can zero in on coming up with different standard setups for the different types of riding you do. For example, you would know exactly what settings you prefer for a ride on bumpy city streets, cruising down the highway, or Sunday morning canyon runs.

If back roads or a track is where you ride most often, or are most important to you, you may want to consider the Buell Pro Series Suspension. The trade-off is a little less rider comfort in exchange for better rider feel. (See the March/April 2005 edition of *FUELL*® for more information on the Pro Series Suspension.)

Having an idea of what your suspension setup goals are and knowing how you will be riding will guide you in your quest for understanding your bike and your preferred setup. With a little effort and some experimentation you will find that making minor changes to the suspension will make your rides more fun under a wider range of conditions. Before you know it, you'll find your Buell has even more potential than you ever realized.

IN DEPTH: A LOOK INSIDE THE DEVELOPMENT PROCESS

There are many variations on how to report suspension damping information. At Buell we use a tool called a suspension dyno to measure damping and spring forces during development. The graph type that we reference most often is damping force vs. velocity. The X-axis represents the stroke velocity (how fast the suspension moves up and down) and the Y-axis represents the damping force (the amount of resistance to that movement). The graph produces a half-football shape, with the upper Y-axis quadrant representing the rebound curve and the lower Y-axis quadrant representing the compression curve. See Figure A for a typical damping force graph.

An important concept to understand about your suspension is that the Buell damping adjusters change the damping forces for all velocities. If you look more closely at Figure A (at right) you see that changing the compression and rebound adjusters primarily offsets the damping force curve with minimal change on the slope or shape of the curve. For example, if you reduce compression damping to absorb a sharp-edged high velocity bump, you will also be reducing low-speed compression damping. Less low-speed compression damping will result in reduced chassis control and road feel. Now you can begin to understand why there is usually a compromise (for a fixed damper adjustment) between ultimate ride quality and ultimate handling performance and why one setting works better under one condition vs. a different riding condition.

As a development rider, experience gives us the ability to evaluate the feeling through the chassis while visual appearance of the road surface allows us to estimate what area of the damping curve the suspension was operating at during the bumps. Typically, a smooth road course produces chassis motion that is less than 5 inches per second in the front and 2.5 inches in the rear. A severe pothole, on the other hand, may produce fork velocities of 30 to 40 inches per second. Data acquisition of suspension travel is also very useful to correlate bump types to certain suspension velocities for a given vehicle speed and given road input.

During the suspension development process, the internal valve shim stack and piston design can be changed. These internal changes can be used to align the nominal damping values to the center of the adjuster range. With the damping adjuster centered, the suspension damping can be increased or decreased by similar amounts. This allows the suspension to perform well over a wide range of road conditions and rider preferences.

Internal changes can also alter the damping *curve* to provide more or less damping for a specific velocity range (see Figure B). This is commonly referred to as tuning "low-speed" damping or "high-speed" damping.

For the XB, we were able to take advantage of the low unsprung weight (less mass to control) and develop a damping curve that has relatively low damping forces at high velocities. This provides both good ride quality and good handling over a wide range of conditions. The owner's manual charts are then developed to provide a good baseline setting that works for a lot of riders under most conditions (a decent compromise between handling and ride quality). We also understand that different riders have different needs and provide a range of adjustability. We are constantly working on ways to enhance the riding experience and give the owner the ability to personalize their bike.

FIG. A DAMPING CURVE VARIATION DUE TO SUSPENSION DAMPING ADJUSTER CHANGES

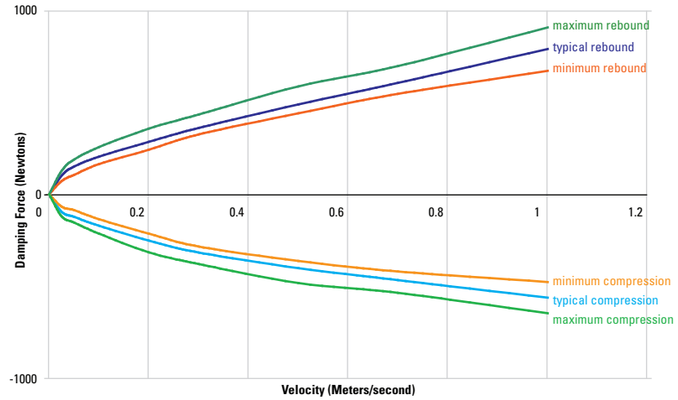
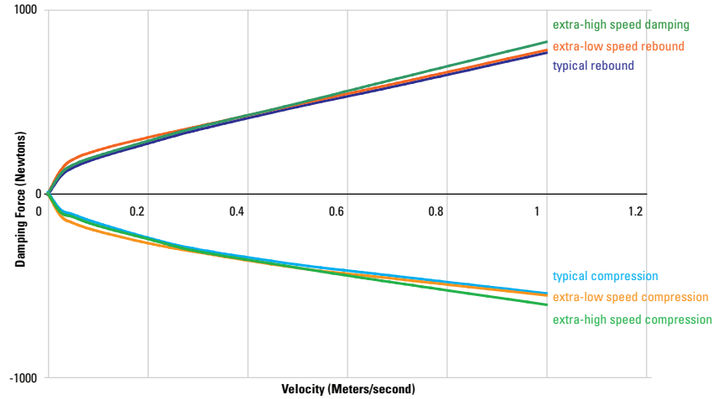


FIG. B DAMPING CURVE VARIATION DUE TO VALVE SHIM OR PISTON CHANGES



AN ENCHANTED EVENT

"… the routes were perfect for those with ice water in their veins and anybody craving the taste of adrenaline."

The Wicked Twisty Tour Takes to the Thrilling New Mexico Terrain

"Organizing these things is sort of like herding a group of wild cats," said Santa Fe BRAG Club Director Murrae Haynes, which says a little something about the energy level of the riders in attendance at the most recent Wicked Twisty Tour, held in New Mexico. Good thing for Murrae – and all those "wild cats" – the routes were perfect for those with ice water in their veins and anybody craving the taste of adrenaline.

Three loops in three days introduced riders to some of New Mexico's most diverse and thrilling terrain. From the tight corners and mountain roads of Madrid to the autumnal ash tree-lined alpine roads of the Enchanted Circle; from the wind-carved walls of Echo Canyon to the picturesque landscapes of Georgia O'Keefe country; and through the desert to Taos. There was even some adventurous food thrown into the mix – *how 'bout them green chili cheese French fries!* "It was all about riding motorcycles and making friends," says Murrae, who claims the wheels are already in motion concerning a tour in '07.

"We *will* be doing this again."

Photography: Nathan Harrmann

GETTING THERE

LESSONS LEARNED ON EXPERIENCE ROW

By Kyle Blades

When it came to experience, I thought I knew exactly where I stood on the road between Intermediate and Seasoned rider. Well, leave it to my father to knock me back a few notches, to where I truly belong. It wasn't until our recent trip to the Sturgis Motorcycle Rally that I fully understood – thanks to good ol' Dad – where I stood on that so-called Experience Row. It was my boss who showed me not only the importance of knowing where you are, but the importance of knowing just where you're headed … by lending me his Buell® Quest Navigation System.

As a commuter, about 90 percent of the miles I put on my bike are logged going to meetings, dropping off documents, or picking up a quick bite to eat. And while I'm reluctant to admit I seldom make it outside the city limits on my XB12X, I have no problem saying it's the perfect way for me to get from one side of Milwaukee to the other.

By the time my father asked me to join him on the road to Sturgis, I'd been riding for nearly two and a half years and had already logged more than 5,000 miles on the Ulysses™ I bought in April 2006. So I jumped at the chance for adventure and figured putting on a mere 3,000 miles in just over a week would be another drop in the bucket. I soon found out how big that "drop" was. Actually, all it took was that first 500-mile day before I fully realized what kind of learning experience the rest of this trip was going to be.

I DON'T STOP TO ASK GAS STATION ATTENDANTS – OR ANYBODY – FOR DIRECTIONS. *NOT EVER!*

As a Marine Reservist, I know what it's like navigating across some of the world's worst terrain, with nothing but a compass and a map to guide my way. Never in my life have I used MapQuest, and I don't stop to ask gas station attendants – or anybody – for directions. *Not ever!* So when my boss let me borrow his Buell Quest Navigation System for my trip, I had to stop myself from cracking up in a fit of laughter.

The way I see it, if you need someone (or some*thing*) to tell you how to *get* to where you're going, you don't deserve to get there in the first place. Don't get me wrong, I was very grateful for my boss's kind gesture. But *come on* … Marines don't need a GPS. Period! Despite my reluctance, I took the "machine" as a way of expressing my gratitude, and I can't express how thankful I am that I did so.

I tend to ride a lot faster than my 63-year-old father, so the ability to pick out an exit where my father and I could meet up, say, 150 miles down the road, was invaluable. On top of that, we never once had trouble finding gas, food, or anything else we needed for that matter.

Here's an example: Our first day in Sturgis, my cousin thought his XL1200 might be losing fluid. Luckily, my Buell Quest Navigation System was able to locate all Harley-Davidson and Buell dealerships within our vicinity and lead us directly to them in no time.

Before long, we were planning out precisely what roads we were going to ride, where we were going to eat, and what sites we wanted to see … all on the navigation system. I can't think of any other way to get around so easily. Had my boss not let me use his system, I know I would have spent a lot more time trying to figure out where I was instead of enjoying so much radical riding. But then, had my father not invited me along on this adventure with him in the first place, I wouldn't be the experienced rider that I am today. (Well, maybe in my *mind* I would be.)

The Marines have a saying: *Improvise, adapt, and overcome.* It's a motto I try to live up to as much as possible. But when push comes to shove, there's nothing that replaces having the right equipment with you when you need it most. There wasn't a day I left the house without my rain gear, a little water to keep hydrated, some basic tools, and the trusty Buell Navigation System. There are simply some things enthusiasts should carry with them at all times. Even if your bike is running flawlessly – as my Ulysses did the whole trip – you never know when you'll happen upon another rider without so much luck, stranded on the side of the road … someone who needs your help.

Before my Sturgis trip, I thought I knew a lot about what it means to be an enthusiast. But over the course of seven days (and 3,000 miles), I learned so many valuable lessons – lessons I wish someone would've shared with me a long time ago – and I'm a better rider for having learned them. Among them is the value of a Buell Quest Navigation System. If you're any bit as hardheaded as me, you'll probably ignore my advice and wait until you discover for yourself how wonderful GPS can be. And that's fine. But in the meantime, just think of all that time you'll be wasting … time that could be spent attacking the curves.

INTERNATIONAL MOTORCYCLE SHOWS®

If you're interested in the past, present, or future of motorcycling, you'll want to catch one of *Cycle World's* International Motorcycle Shows. You'll be able to check out everything from the large collection of vintage motorcycles to the new and improved lineup of 2007 Buell and Harley-Davidson motorcycles.

For more information, call the IMS InfoLine at 800-331-5706 or check out www.motorcycleshows.com. Schedule is subject to change.

DATES	LOCATION	CITY
November 10-12, 2006	Reliant Park	Houston, TX
November 17-19, 2006	Fort Worth Convention Center	Fort Worth, TX
December 1-3, 2006	Qwest Events Center	Seattle, WA
December 8-10, 2006	Long Beach Convention Center	Long Beach, CA
December 15-17, 2006	San Mateo County Expo Center	San Mateo, CA
January 5-7, 2007	Rock Financial Showplace	Novi, MI
January 12-14, 2007	Washington Convention Center	Washington, D.C.
January 19-21, 2007	Jacob K. Javits Convention Center	New York, NY
January 26-28, 2007	International Exposition Center	Cleveland, OH
February 2-4, 2007	Minneapolis Convention Center	Minneapolis, MN
February 9-11, 2007	Donald E. Stephens Convention Center	Chicago, IL
February 23-25, 2007	Georgia World Congress Center	Atlanta, GA

CONNECTING THE AMERICAS

Buell headquarters in East Troy received some very interesting visitors recently: Three Argentinian adventurers (Catia Regina Granelli Alves, Rodolfo Garcia Varela, and Victor Carlos Testoni) on two Buell® Ulysses™ XB12X motorcycles, in the midst of a ride from Washington, D.C. to La Plata, Argentina. While in town, they toured the Buell factory, met with a few key Buell personnel, and graciously accepted some cool Buell swag in appreciation of their love for motorcycling adventure – and their eagerness to put the Ulysses to such a difficult test.

"I was extremely impressed with our visitors from South America," said Bruce Champion, Buell P&A Manager – Operations, who led them on the factory tour. "A trip of this nature is mind boggling to someone like me who is reluctant to travel beyond Chicago!"

They're calling their trip "Enlazando America: Un Aventura en Moto." Loosely translated, that means, "Connecting the Americas: A Motorcycle Adventure."

We'll be monitoring their progress as they continue their amazing Ulysses odyssey. And you can, too, by visiting their Web site: www.enlazandoamerica.com.ar (hint: You'll get more out of it if you can read Spanish! But the pictures are worth countless words).

STREETFIGHTERS

STREETFIGHTER	**MAGGIE MAE MCKENZIE**
HOME BASE	**WESLEY CHAPEL, FLORIDA**
MACHINE	**2005 BLAST®**

I first got my taste for riding when I was 25, when I started taking trips on the back of my dad's bike. It didn't take too long to become hooked on – and then impatient for – those special weekend trips. So I took the MSF safety course and soon after, bought my first motorcycle. The Blast is actually my third bike, but my favorite … *by far!*

I ride to work as often as possible and spend every weekend riding around Florida. Three-day weekends have me surfing curves in the northern Georgia mountains. To date, I've logged 19,352 adventurous miles; most recently, a 4,221-mile journey from Florida to Michigan for a ride across the Mackinac Bridge. Every journey I take makes me even more passionate about what an incredible bike this is.

STREETFIGHTER	**GREG TEETER**
HOME BASE	**DUNNELLON, FLORIDA**
MACHINE	**2004 FIREBOLT® XB12R**

Most people my age settle for a nice, easy ride in the saddle – but at 60 years old I can honestly say my Buell is the most enjoyable motorcycle I've owned. My friend thought I'd lost my mind when I chose to ride my Firebolt from small-town Dunnellon, Florida to the Carolinas on an 18-day round-trip ride. But not only did I enjoy every day of my trip, my Buell met every demand I asked it to perform. Straight roads, dirt roads, rocky conditions, weather of all kinds, twisties, elevation changes … nothing was too much for my Buell. It's hard to describe the pleasure it is to ride such a bike around Grandfather Mountain and the back roads of Tennessee.

IF YOU ARE A BRAG® MEMBER, SEND IN YOUR PHOTO AND TWO TO THREE PARAGRAPHS ABOUT YOURSELF, YOUR BUELL® MOTORCYCLE, AND WHY YOU'RE "OUT ON THE STREET."

Photos taken and provided by Buell motorcycle owners. All Streetfighter submissions become property of Buell Motorcycle Company. If you would like to have your photo returned, please send a self-addressed stamped envelope with your submission.

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