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MOTORCYCLE CONSUMER NEWS

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PLUS

HONDA CB650F ■
KAWASAKI Z900RS ■

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FAT BOB

HARLEY-DAVIDSON'S SPORTY CRUISER

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Overextended

> Parts Unlimited, Tucker Rocky and Western Powersports account for over 50 percent of motorcycle aftermarket parts distribution.

MOST MOTORCYCLISTS HAVE never heard of Lacy Diversified Industries (LDI). However, this company has been taking a cut, if not all the profits, from a large selection of motorcycle parts and accessories, whether sold online or at a dealership.

In 1912, Howard J. Lacy Sr. founded U.S. Corrugated Fiber Box Company. Cleverly timing the market on regulations allowing cardboard in place of wooden boxes on freight trains, the company grew for six decades. The Lacy family recognized the need to diversify, restructuring into LDI as a holding company for investments in 1972.

Ed Tucker started his distribution company in 1967, selling to Bob Nickell in 1972, who merged it with Wheelsport Distributing and Rocky Cycle in 1986, creating Tucker Rocky. In 1989, LDI acquired Tucker Rocky, and in 1992 added NEMPCO (V-twin parts and accessories) to the portfolio, renaming it Biker's Choice in 1998. Tucker Rocky, under LDI, had become one of the largest motorcycle aftermarket parts distributors in North America. LDI followed this success by either acquiring or creating additional apparel and equipment brands, including Answer Racing (ANSR), BikeMaster, FirstGear, Malcolm Smith Racing (MSR), ProTaper, River Road, Speed and Strength and Twin Power.

MOTORSPORT AFTERMARKET GROUP (MAG) was formed in 2000 by private equity firm Duff Ackerman & Goodrich, to invest in the manufacturing and retail side of the industry. In 2001, MAG acquired online retailer J&P Cycles, building its portfolio by adding Kuryakyn, Mustang Seats, Performance Machine Wheels, Progressive Suspension, Renthal, Roland Sands Designs (RSD), Vance & Hines and White Brothers over the next decade. MAG added Cycle News in 2010 and Motorcycle Superstore and MotorcycleUSA in 2012.

In 2014, LDI acquired a controlling, 59 percent interest in MAG, merging it with Tucker Rocky and creating a motorsports conglomerate valued at \$382 million, totaling 30 brands. The combined company, doing business as MAG, had a vertical stranglehold on apparel and accessory manufac-

turing, distribution, retail and media.

In 2016, MAG shuttered MotorcycleUSA, sold Cycle News to Digital Throttle (online ad company) and merged Motorcycle Superstore into J&P Cycles. On Nov. 15, 2017, MAG filed for Chapter 11 bankruptcy, to protect 19 of its corporate holdings while it performed debt restructuring (reorg).

MAG accumulated \$440 million in debt during the 2014 merger. A 20 percent decline in sales afterward put the company at risk of default. To eliminate a majority of this debt, MAG performed a debt-for-equity swap, ceding ownership and control of the company to the lenders.

TO KEEP THE various companies afloat and prevent going into full-on liquidation (Chapter 7), MAG was approved for \$135 million debt-or-in-possession (DIP) financing. LDI management continues to run the company, but increased its outstanding debt to \$575 million and put the controlling lenders first in line for repayment. The new owners of MAG, and a sizable chunk of the motorcycle industry, are BlueMountain Capital, Contrarian Capital and Monomoy Capital.

There are thousands of other named creditors waiting in the wings, including most motorcycle dealers and manufacturers. Notable aftermarket creditors that are likely to be negatively impacted financially are (in order of amount owed): Sumitomo, Pirelli, Arai, Bridgestone/Firestone, Kenda, Avon, Cobra, Cardo, Yuasa-Exide, Ogio, Continental, FMF, EBC, Yoshimura and Shorai.

Attempting to identify motorcycle-related companies that are not impacted in any way by this bankruptcy would yield a very short list.

Expect more turmoil in 2018, as major changes to MAG, or its complete collapse, stretch across the entire industry. If this isn't the signal that our industry needs an overhaul, perhaps it will be the impetus. **MCN**

LETTERS

THE 1914 HENDERSON (MCN 12/17) mistakenly placed the Myreton Motor Museum in East Lothian, England. The Lothians are in Scotland.

—Bill McKay

MY PERIODIC EPISODES of tennis elbow, with debilitating pain (MCN 10/17), experienced over the last decade, were usually precipitated by jackhammering concrete, splitting wood or hammering nails. Though able to lift 80-pound bags of concrete, I was unable to lift a coffee mug and rotate my hand to drink.

Steroids, topical ointments, hot and cold applications, acupuncture and massage all relieved pain, without resolving the issue. The cure was injections to the affected area with Traumeel, a mixture of natural ingredients, including echinacea, arnica, calendula and others. Treatment was under \$100 and worth much more in comfort and productivity on the job.

—Ron Salzer

EXCITED ABOUT THE new Royal Enfield Himalayan and 650, I went to the Royal Enfield website and discovered there are no dealers in Vermont, New Hampshire, Maine or Massachusetts. The closest is Buffalo, New York, about 300 miles away.

I do not understand Royal Enfield's strategy for selling all these new models, but they certainly have retreated from New England.

—Bob Zeliff

Royal Enfield sold close to a million motorcycles last year, mostly in India (pg. 36). Unfortunately, it currently has less than 100 North American dealers.

Royal Enfield is making a strategic push in the USA, which looks promising. Bringing over the Himalayan and 650 Interceptor and GT will help here, but the company still needs to rebuild their sales and support network.

—David Hilgendorf

THERMAL SOLUTIONS

Gordon's Heated Clothing (Gordon Gerbing's new company) has a lifetime guarantee. The jacket liner and gloves are American-made and work very well.

—Len Lipton

A Widder Lectric Vest has been stuffed in my saddlebag since 1986. Over 30 years and almost 150k miles, it still works well. It has a rheostat type controller, which looked like an antique in 1986, and still works as advertised. It is an extremely durable piece of gear that has received absolutely no special attention.

—Allen Bradley

I use Smartwool base layers for cold weather. They are not bulky, but are moisture wicking and very warm. A fleece buff around the neck and tucking jacket sleeves inside glove gauntlets reduces heat loss from wind going through the jacket.

To stay cool in hot weather I wear Coolmax tops under a vented jacket and stuff ice in my sport bra and pants pockets. Body heat melts the ice and the evaporative cooling is very effective, but doesn't work as well in high humidity areas.

—Kathy Ripp

To stay warm in cold temperatures, learn and practice layering, with items that can be removed. If riders find themselves out of commission in a desolate area, powered clothing would be nearly useless.

—Humberto C Martinez

ONE GROUP HAS consolidated many formerly independent local shops (MCN 12/17). I was in the market for a new bike and able to compare shopping experiences.

The conglomerate dealer offered a \$1,250 HIGHER price than the independent shop, which was friendlier, more knowledgeable and where I purchased.

—Rolf-Immo Gabbe

YOU INDICATED THE 690 Duke (MCN 10/17) is too expensive compared to the pricing of an FZ-09. I believe the logic for the higher price is the weight and quality of the Duke. I doubt if the FZ feels as good going through curves as the Duke does.

—Tim Regehr

The value of the 690 Duke was compared to the identically priced and higher performing FZ-09, rather than the cheaper, but similarly sized FZ-07. Not everyone shops on price, and the Duke isn't priced competitively with its peers. It will still sell, regardless.

—David Hilgendorf

RIDING DIRT BIKES is risky, but promotes a challenge to be better. I finished a technical ride the week before, but while enjoying some sandy trails alone, my first awareness was finding the bike on top of me.

I was totally confused about the transition or cause. I picked up the bike and felt pain in my left shoulder, a fractured collarbone. As I rode home, the thought clearly came that I should never ride again.

My first three recovery days were very painful, I had no appetite and slept a lot, while keeping my arm in a sling. I was immediately angry that I had no control over the fall, nor another rider as witness, who could have seen what happened.

I could not ride for six weeks and again considered getting rid of the

bike and gear. Exercising helped counter the limitations of my injury and the advancing forces of age.

But, carefully riding on pavement changed my attitude to hopeful. Eventually, I planned a less aggressive and more supportive off-road program, so I could continue the dirt riding that I find so worthwhile.

—Bruce L Hilger

LOUD AFTERMARKET HORNS

make a world of difference. Instead of grabbing the brakes or making an evasive maneuver (MCN 12/17), a simple push of the button has been sufficient to send errant drivers scurrying back into their proper lane.

—Don Neilson

If your path of travel has already been compromised, escape and avoidance should be top priority. Horns can be useful when you have foresight of an errant vehicle and braking is not yet imminent. Unfortunately, most horns included as original equipment are near useless (pg. 42).

—David Hilgendorf

AS A FORMER MSF instructor, I preached "Make Yourself Seen," advising students to add auxiliary lighting and ride with their high-beam on during the day, state law permitting. Also, allowing new riders to buy a Hayabusa after only having ridden in a parking lot for two days is a blueprint for a disaster.

—Ken Bowen

Most people don't take issue with motorcycle high-beams in daylight. On many bikes that means having two



SEND LETTERS TO THE EDITOR

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bulbs lit versus only one. Riders aren't likely to be stopped or cited for having the brights on in sunlight. The risk versus reward is probably worth it, unlike buying a Hayabusa as your first bike.

—David Hilgendorf

WHEN DAYTIME RUNNING lights became popular on cars, I thought it was a huge disservice to motorcyclists. Always-on motorcycle headlights used to help us stand out, now we are even more lost in the crowd.

—Phil Roper

HOW DO YOU report such low fuel mileage numbers? My 2017 SV650 gets 60 to 72 mpg. I even checked the odometer for accuracy. My 2016 Triumph America gets around 49 mpg.

—Jarvis "Jay" Knapp

We fill the tank and zero the trip meter, then ride until after the fuel light comes on. We fill it again, measure the mileage and how much fuel was used. We run at least three tanks of fuel through most bikes, and a mix of riding, including canyons, photography, performance and commuting. We take the highest and lowest mpg measured, then average all data. Bikes that achieve more than 70 mpg are typically less than 400cc. The 47 mpg average we recorded on the SV650 isn't bad, but we also don't ride around in sixth gear all the time.

—David Hilgendorf

SEVERAL GAS STATIONS nearby sell non-ethanol gas (MCN 12/17). Will that fuel be better for my bike?

—JP

The EPA no longer allows lead or MTBE in road vehicle gasolines. Without ethanol, the fuel's octane would be provided by lighter petroleum distillates.

If your owner's manual indicates you can use the specific octane, non-ethanol gas is recommended.

—Dave Searle

THE FUEL INSPECTOR told me they pump 2 gallons to clear the line before testing a single-handle pump. If I pump premium from a single-handle pump after the previous driver pumps regular, am I not getting what I paid for? Individual handles for each octane are disappearing.

—Peg Preble

The American Petroleum Institute says a pump hose retains about one-third of a gallon of fuel, generally not enough dilution to matter. You could also identify last-pumped premium and get a bonus by filling it with regular, but if your bike requires regular, don't waste money on premium (MCN 11/17).

—David Hilgendorf

WHEN TURNING A Can-Am Spyder, it felt like it was going to tip over, as my body was pitched in the opposite direction. Has anyone done a tech analysis of the forces involved and why the handling feels this way.

—John Rico

Like driving a quad, forces from intense turning push the driver toward the outside of the turn. Spyderys are virtually impossible to tip over (electronically limited), unless you hit something. If the Spyder breaks traction, it plows straight ahead (MCN 6/17), which is also scary when cornering. Once you've adapted to both, it's easy to drive.

—David Hilgendorf

PLEASE FOCUS ON motorcycles that embody the performance nature of the sport (not cruisers).

—Stephen Campbell

The performance segment of the industry is stagnant, while standards, cruisers, retro and adventure models are very popular. More than one-third of MCN readers ride cruisers and touring bikes, so we'll continue to test them.

—David Hilgendorf

Swelling, Schedules and Plugs

GOT PROBLEMS? MCN DOWNTIME

5151 California Ave., Suite 100, Irvine, CA 92617 or email questions with JPEG images to: editor@mcnews.com Subject: Downtime

A FRIEND ADVISED I pick up a power pack jump starter this past summer, before I left on a cross-country ride of about 6000 miles. I selected a well-reviewed and not inexpensive unit on Amazon, charged it per instructions and headed west for four weeks, during the hottest time of year.

I never used the power supply and left it in my side case after the trip for another few weeks. When I unpacked, I was concerned to see the lithium-ion battery had swollen enough to burst the plastic case of the device.

I rode through plenty of 100-degree weather and the outside temperature reached 112F near Las Vegas. Since I live in a hot climate, is there any design of these units that is safer or less likely to self-immolate when stored in my saddlebags during hot weather?

I like the idea of backup power, but not at the risk of spontaneous combustion in my luggage.

—J. Worth

I'd say this is a manufacturing defect. li-ion cells typically have a max charging threshold of 113F and upper storage limit of 125F. You possibly exceeded that limit, since it was much hotter in the pannier. At higher temps, you risk damaging them due to reduced internal resistance and over charging.

The cycles should decrease but the battery shouldn't distort, especially since the thermal runaway temp is 300-500F, where they will begin to self-destruct.

I haven't seen slightly higher temperatures cause ruptures, but it will deplete the life of the battery on a progressive scale. I typically see leaking from age, poor quality manufacturing and when overcharged or overdischarged.

I have a vehicle starter pack from Amazon that is a year old. It was stored in the back of a black car through Arizona summer. Ambient reached 120F and up to 160F inside. Temps stayed above 110F for six months and my garage maintained 120-130F.

The starter battery, several flashlights and my Shorai li-ion motorcycle battery have not expanded. I could probably buy a few dozen batteries from China and find some that do expand, as their quality control is not to the standards of U.S., Japan and Germany.

It is possible the manufacturing process had a short, causing excessive voltage bleed, a fast internal drain, overheating, expansion and rupture.

Once a short occurs, it will continue to discharge until depleted or the short loses contact between the cathode and anode. This causes exciting thermal events and insurance claims! Another possibility is the electrolyte was not contained and ate through the case. Dispose of or return it, but do not use it.

LiFePO4 batteries work well in heat. They have very high operating and thermal runaway temps and are considered one of the safest li-ion batteries, but are not the highest capacity. They also sustain better than lead acid batteries. The 18650 batteries seem to work well, I've heard some are LiFePO4 and there are many battery packs using them on Amazon. I have had no swelling issues and have cycled a couple of dozen.

You could also potentially source a cell with a metal case on it, which is used to keep it from deforming in high heat. Enersys does this with its military cells, and civilian versions are sold as Odyssey brand, but this may not exist in the emergency starter market.

—Kevin O'Shaughnessy

I BOUGHT A 2012 Ducati Multistrada used, and it runs great. I have 12,000 miles on this bike and need to pull

the fairing and gas tank this winter to replace a bad fuel sensor (common defect for this bike).

Since I will be that close to the valve heads, I wondered about checking the valve adjustment early? If I check and adjust at 12,000 miles, would I be good until the next scheduled valve service?

If I do not check the Ducati's valve clearance at 12,000 miles, the next convenient interval for me would likely be at about 17,000 miles (I ride about 5,000 miles per season). Checking at 12,000 or 17,000 is most convenient, so I do not tear the bike down during riding season and lose a couple of weeks waiting on shims.

—Bob Hill

Maintenance intervals are guidelines, rather than limitations. Fortunately, our bikes usually don't explode if we drive a mile, or even couple of thousand miles, over the suggested amount, but the longer you delay, the more chances of bad things happening.

Time is dependent on the loads you put on the system. Some of the older Desmo systems required 2,500-mile checks, but we'd check valve clearances every race. For wear reduction and preventative maintenance, sooner is better than later.

For OEM tests, we were allowed a 10-percent buffer of the mileage block. For instance, between your intervals of 14,000 and 29,000 miles is a 15,000-mile block. A 10 percent buffer would allow $\pm 1,500$ miles at OEM test standard.

The exception is the first break-in service. Never cut the mileage short and only allow up to 100 miles over the target. New bikes have special settings, fluids, production waste material and contaminate metals caused by break-in, which can cause excessive wear over time. It's best to have the bike serviced by the dealer within a hundred miles of the initial break-in mileage.

If you don't have records of the break-in service, in which the valves would be checked, you should inspect the valves sooner than later.

If your bike feels down on power, overheats or misfires, check clearances as soon as possible. These are symptoms of tight valves which could lead to accelerated wear. I do see wear on this type of valve train more than shim under configurations. It's possible you'll need to replace shims. As you said, prepare for a wait, so try to identify shim resources locally or that will ship quickly.

A check at either 12,000 or 17,000 miles would only be a couple of thousand miles out from 14,000, which should be fine. The measurements are not hard to do, but there are a decent amount of plastics and pieces to remove on the Multistrada. You should check clearances with the sensor fix, since you'll need to take off many of the same parts for both services.

Also, consider belt condition. These are interference engines. A broken belt will cause the valves to hit the piston and bend. Newer Desmo specs are 15,000-mile replacement, during each inspection. They run about \$80 each, which is much less expensive than a new valve train.

—Kevin O'Shaughnessy

THE E3 SPARK plug information is somewhat incomplete. First, the "C" shape of the ground electrode is how the E3 got around the international patent of the LSGBrisk "Halo Plug," from the Czech Republic. To increase the size of the kernel, the E3 has an excessive gap to start with, which seriously compromises the life of the plug. In two separate cars, both got about 7,000 miles before the E3 plugs failed due to excessive gap erosion.

On my 2004 BMW R1150RT, I found no improvement in gas mileage, or performance. The 2003 and earlier

engines had a single spark plug, and complying with U.S. emissions introduced a severe case of surging.

In 2004, BMW added a second spark plug to the RT to eliminate the problem, and to a large extent it worked. The only side effect was when coming off the freeway, it felt as though the drive shaft was no longer connected to the engine and you were coasting.

In 2005, I found LSGBrisk's Halo Plug. Before I could install these plugs, I had to reset the ECU MOTRONIC unit by pulling the fuse, or disconnecting the battery for a few seconds, as it would cause detonation if I didn't. The first ride on a freeway was a lot different, with engine compression braking all the way to idle, and fuel economy improved by 3-5 mpg.

If you don't know if the engine in your vehicle has knock sensors, I suggest disconnecting the battery for few seconds as cheap insurance.

—Tom Buckley

Zero change in fuel economy and performance is what I've seen from most "performance" plugs. It's interesting the E3 plugs failed so quickly. I'm a skeptic, but open to new possibilities. You are correct, a wider gap will wear faster, due to higher voltage requirements and heat.

I'd speculate the huge electrode surface areas would still reduce combustion efficiency. The improvement from the Brisk is not expected, but I find it interesting that you had similar gains to what Dave had on his 2012 KLX250S.

I'm curious why the E3 worked on Dave's 250, but not on your autos and why the Brisk plugs worked on your bike? I'd love to do dyno testing back to back and on the same vehicle.

I expect some of these results may be due to the condition of the previous component or a problem that was inadvertently fixed during the plug swap.

Big gains in fuel and performance

from a plug could indicate preexisting ignition problems, which could be caused by worn plugs. I find it fascinating to hear about gains and losses due to different designs, but I haven't personally seen big gains from plug design. I do see big gains when replacing badly worn plugs with new ones.

For instance, after 100,000 miles, I didn't notice the slow reduction in power and fuel, but the check engine light came on. My vehicle was throwing O2 sensor codes, due to plug misfires. The iridium plugs were backordered and time was tight, so I got nickel.

I replaced the badly worn iridium plugs with the nickel and immediately noticed it accelerated better. Within a day, long-term trim adjusted, codes disappeared and economy increased a couple mpg. The immediate observation would support that nickel plugs were a performance improvement, true in comparison to badly worn plugs.

A week later, I replaced the nickel plugs with stock iridium plugs. The nickel plugs were still good, and the burn quality looked normal. The new iridium plugs increased fuel economy slightly, but there was no additional performance change. The nickel plug would probably continue to work fine until it wore, but may carbonize the combustion chamber over time from inefficient burning.

I don't do everything by OEM standards, but when it comes to plugs, it's a must. Newer engines are very sensitive to change. An inefficient plug could cause misfires, carbon deposits, hot spots, preignition and detonation. For emissions, it's in the best interest of OEMs to create a clean and long-lasting spark condition, so trust them.

—Kevin O'Shaughnessy

Kevin O'Shaughnessy is curriculum developer at Motorcycle Mechanics Institute, formerly R&D at Race Tech.

Pipeline

> Edited by **Russell Evans**

» Moto Guzzi

THE V7 III FAMILY grows with three special versions, each built with Moto Guzzi high quality specialized parts, to create a different connotation and a unique character.

The V7 III Carbon (in numbered limited edition) celebrates customization, combining V7 style with many carbon fiber components, as well as numerous contrasting details in red, such as the engine heads, the seams of the new seat in Alcantara material and the Brembo front brake caliper.

The V7 III Rough has knobby tires cast on radial-spoked wheels and other details that give it a rural feel. The dedicated seat is neatly stitched. A passenger grab strap and aluminum side fairings complete the customized package.

The V7 III Milano has a refined

V7 III Carbon



style and high-end gear, including dual circular instrument dials, chrome exhausts and passenger handlebars. It is distinguished by the shiny tank colors and spoked wheels

that contribute to its modern look. Standard equipment is completed by prestigious details such as the aluminum fenders and side fairings. motoguzzi.com

» MV Agusta

THE F3 LINE exists for those in the market for a near-race bike option. For those days at the track when sheer horsepower and pinpoint handling matter.

MV Agusta once again highlights its aptitude for racing. The F3 675 RC and F3 800 RC have much in common with the bikes seen at national and international race events, yet are also exhilarating road bikes.

A variety of updates have been implemented to comply with Euro4 standards, which requires a 50 percent cut in emissions and 48 percent less noise. On the styling front, new colors and graphics mirror those seen on actual race bikes, such as the red wheels—a direct Supersport offshoot.

The F3 675 RC touches 128 hp at

14,500 rpm with 71 Nm of torque at 10,900 rpm. The F3 800 RC reaches 148 hp at 13,000 rpm with 88 Nm of torque at 10,600 rpm.

The most significant technical redesigns on the 2018 models were focused on the balance shaft, primary gearing, intake cam profiles and the valves. The gearbox has undergone a complete overhaul to make shifting easier and reduce clutch lever effort.

Exhaust manifolds have also been redesigned, while the silencer—supplied

by SC Project—was derived directly from the Racing Department. mvagusta.com

F3 675 RC



MP3 500



» Piaggio

THE MP3 500 is a new version of the original and most popular three-wheeled scooter, with more features and comfort, plus improved design and finish. The Piaggio MP3 500 features a redesigned grille on the front shield and full LED lighting system. Also new is the more protective smoky windshield and the seat with more comfortable padding, equipped with a new backrest for the passenger. It also boasts new handlebars.

The standard equipment is improved, featuring more spirited and effective gas shock absorbers as well as a pair of front disc brakes with a daisy profile. The single-cylinder MP3 500 also receives a power bump, up to 41 horsepower, and a tuned exhaust sound to go with excellent fuel economy. ABS and ASR (traction control) remain standard.

There is no change to the exclusive Piaggio technology for the dual independent and tilting front wheels. Regulated by a unique four-bar linkage suspension—designed, developed and in production before any other manufacturer in the world—ensuring maximum riding pleasure and safety.

piaggio.com

INDUSTRY NEWS

» ENERGICA BIKES SELECTED FOR FIM MOTO-E

The FIM Moto-e World Cup is becoming a reality in 2019, ushering in the beginning of a new era for two-wheeled motorsport: sustainable and environmentally aware competition on electric motorcycles.

Dorna, the race circuit's governing body, announced that the sole supplier of bikes for this new prospect will be Italian innovator Energica. Energica, a pioneer in high-performing electric motorcycles, will draw on its rich history of racing, combined with the genuine engines tradition of Italian Motor Valley.

The Energica concept came from the eCRP 1.4, the runner-up World Champion and European Champion electric racing motorcycle. The team completed two years of racing before working on the road version, Energica.

Energica's race bike benefitted from the CRP Group's know-how and development of CRP technologies produced for aerospace and F1 racing. Hence, the team was able to shorten development time to market and the timing of the research, and keep products state-of-the-art.

Energica Motorcycles can be purchased in Europe and in the United States. Among the three models of the manufacturer, with powers from 80 to 107 KW, there is the sportbike Energica Ego. This model will be used by teams that will race the Moto-e, in a tuned version.

All Energica models are equipped with DC fast-charging

capability, allowing the motorcycles to recharge in less than 30 minutes. Energica is the only electric motorcycle manufacturer to include the DC Fast Charging technology based on CCS Combo. energicamotorusa.com

» MV AGUSTA TO USE ONLY PIRELLI TIRES

Pirelli and MV Agusta have reached a partnership agreement in which Pirelli will be sole Tire Supplier for all the motorcycles manufactured by the Schiranna company.

The agreement makes official what has been a profitable and reciprocal collaboration for decades between two popular Italian giants. It is bound by common core values such as design and the "Made in Italy" brand, combined with a spirit of sports and maximum innovation.

To celebrate the deal, a limited edition Brutale 800 RR—customized by the Castiglioni Research Centre in collaboration with Pirelli Design with truly exclusive equipment and components—was built and dubbed "Brutale 800 RR PIRELLI."

The technical base is made up of the Brutale 800 RR, the sport naked bike with a compact, inline three-cylinder engine. Chassis architecture is built around the original, mixed-structure steel tube trellis frame with aluminium alloy lateral plates, essential to achieving the riding feel and dynamic handling that the Brutale 800 RR has provided since it was first launched.



PRIMAVERA

SPRINT

» Vespa

THE PRIMAVERA 50th Anniversary celebrates the first fabulous 50 years of a timeless classic. An updated approach to enhance comfort and safety and renew the style, starts with 12-inch wheel rims made of aluminum alloy and distinguished by an unusual five-spoke design.

There is also LED lighting both front and rear, while a Bike Finder and remote-control seat opener are now standard. The Primavera also has a distinctive “tie” featured on the front and chrome crest on the front mudguard.

The sportier Vespa Primavera S has adopted totally digital instrumentation through a 4.3-inch full color TFT display. The instrument, in addition to displaying all the classic information, works as a display

for the Vespa Multimedia Platform in its latest release.

Offered with the i-get 50cc and 150cc engines, Primavera S is distinguished by unusual Light Blue and Brown color ways with coordinated seats, the sleek grey finish of the five-spoke wheels and of course the logo that elegantly marks the back shield.

Vespa’s Sprint has also adopted many of the same feature as the Primavera, including: LED lighting both front and rear; Bike Finder; remote-control seat opener; “tie” featured on the front; and the full color TFT multifunction display on the S model.

Vespa Sprint S is designed to be the most spirited of Vespa’s newly reinvigorated “small body” family.

vespa.com

» Benelli

SSR MOTORSPORTS/BENELLI Motorcycles USA has launched its all new electronically fuel injected 2018 Caffenero 150 scooter, plus the popular Razkull for 2018.

The Caffenero is the fourth Benelli unit to be released to the SSR / Benelli dealer network, along with the Zafferano 250EFI scooter, and the TnT300 and TnT600 naked street motorcycles.

Benelli is a 100-year-old motorcycle manufacturer, engineered and designed in Italy and produced in China.

The Caffenero has a water-cooled engine with Electronic Fuel Injection, automatic transmission, disc brakes, a 31.5-inch seat height and 16-inch wheels. The Caffenero is designed for short hops around town, with a MSRP of \$2,399

CAFFENERO



The Razkull has developed a bit of a cult following among 125cc enthusiasts. The 2018 Razkull comes in red, black and white with an affordable and class leading MSRP of \$1,999. Both units are available at SSR / Benelli dealers.

usa.benelli.com

LATEST RECALLS

Make: Kawasaki
Model: 2017-2018 Z125 PRO & PRO KRT Edition
Component: Electrical System, Fuel System
NHTSA #: 17V774000

Make: MV Agusta
Model: 2017 Brutale 800 Dragster RR
Component: Wheels
NHTSA #: 17V772000

Make: Zero
Model: 2018 S ZF13.0, S ZF7.2, SR ZF14.4, DS ZF13.0, DSR ZF14.4, FX ZF7.2, and FXS ZF7.2
Component: Equipment
NHTSA #: 17V762000

Make: Triumph
Model: 2016-17 Speed Triple
Component: Electrical System
NHTSA #: 17V700000

Make: Honda
Model: 2017 CBR1000RR
Component: Fuel System
NHTSA #: 17V681000

Make: Victory
Model: 2010-2017 Models
Component: Engine and Engine Cooling, Service Brakes Hydraulics Equipment
NHTSA #: 17V647000

Make: Indian
Model: 2017-2018 Touring Models
Component: Exterior Lighting
NHTSA #: 17V682000

Make: BMW
Model: 2014-16 F800GT, F800R
Component: Equipment
NHTSA #: 17V591000

Make: BMW
Model: 2017 C evolution
Component: Wheels
NHTSA #: 17V467000

Make: BMW
Model: 2014-17 R nineT
Component: Structure
NHTSA #: 17V502000

For more information, contact the NHTSA Safety Hotline: 888.327.4236 or safercar.gov

Strategy

» **STREET** BY WALT FULTON

Don't Chill Out

RIDERS IN MANY parts of the country require insulated and waterproof gear for the winter months. Southern California resists this transition most of the time, but the topography creates microclimates. A winter ride might start warm and sunny in the valley, turn to drizzle near the coast, and a canyon run up the local mountains might see temps dip below freezing when the sun isn't shining brightly overhead.

Motorcyclists must learn to adjust to temperature swings with the gear we wear. Riding in heat requires good ventilation and extra hydration. Riding in cold weather leads to potential effects of hypothermia. Time to break out the heavy gear and stay warm.

It's no surprise that a small drop in ambient temperature makes a big change in rider comfort. The reason for this is the wind chill—what the temperature feels like, taking into account wind speed and heat transfer rates (wikipedia.org/wiki/wind_chill). Riding faster doesn't make the air any colder, but the wind dissipates more heat from your body. Wind chill factor is a relatively unscientific and imprecise way to measure temperature, but it helps to explain why riders need to be even more cautious in low temperatures.

There is a dramatic change at slower speeds, but minimal change at speeds in excess of 60 mph. Therefore, riding 30 mph at 35 F, the wind chill makes the temperature feel like 30 F. Double the speed and it feels like 17 F, but increasing speed from 60 to 80 mph drops the wind chill factor only one more degree. It's important for motor-

cyclists to be aware of this phenomenon as we ride in winter months, but not solely because of discomfort.

Your body's core temperature hovers near 98.6 F. Physiologically, a 1- to 2-degree drop in core temperature causes shivering. The hands and feet become numb as the blood vessels constrict in extremities in an effort to keep the core warm. Decreased tactile functions are a major operational challenge when we're coordinating use of the throttle, clutch, brakes and shifting. More importantly, loss of fine motor skills are closely followed by delayed reaction times and impaired judgment as the body continues to conserve energy. It's a lot like riding under the influence of alcohol, but it can happen much faster.

The technique of layering was once the only solution to staying warm in a hostile winter environment, but it is very difficult to put on enough layers to comfortably or functionally ride a bike in extreme cold. Long thermal underwear and shirts, a wool sweater, multiple layers of socks, pants and a heavy insulated jacket were once the only option. But, how many layers can one wear on their hands and feet, while still maintaining tactile communication with the controls? Luckily, there is a better solution.

TECHNOLOGY AND ELECTRICS

have come a long way. We now have several improved choices in nonbulky base-layer fabric, plus electric gear that is lightweight, durable and warm. While the expense of electrics may be greater than layering, the advantages more than offset the extra cost.

Maintaining complete control of your motorcycle and arriving at your destination with fingers, feet and core temperature in the comfort range is priceless. Electric gear is also less bulky than multiple layers of thick clothing, leaving more room to pack other items.

There are two basic types of electric gear designed for motorcyclists: those powered by the motorcycle's battery or by a self-contained rechargeable battery. Some recent products can be powered by both. Available gear includes vests, jacket liners, pant liners, gloves and insoles, designed to keep you warm from top to bottom.

THERE ARE ADDITIONAL things you can do to reduce the effect of wind chill. Start by making sure every inch of skin is covered, including a full-face helmet with anti-fog shield and a thermal balaclava to protect the neck and head. A windscreen or fairing is a great addition to bikes without them. Heated grips and seats keep body parts toasty and are always on the bike, in case you forgot to pack electric gear. There are also third party products that mount to the bike to help deflect wind and rain.

When the weather cools, leave the fingerless gloves and half-helmet at home. Block the wind and chill by investing in purpose-made, quality gear that keeps your body heat in and the elements out. There is no longer any excuse for being cold on two wheels.

Walt Fulton is a retired roadracer, product specialist at Kawasaki and proprietor of Streetmasters Motorcycle Workshops.

» ADVENTURE BY DR. GREGORY W. FRAZIER

Knock-Offs

"MADE IN THE USA" was a catch phrase when I purchased my first adventure motorcycle. I was not a flag waver, but had been told by respected motorcyclists at the time: "The British stuff is junk and the Japanese bikes are made out of beer cans."

While my learning curves were nearly vertical for maintenance and driving skills, my adventure seeking curve found me on a Honda 305 Super Hawk. I had ignored the flag wavers, realizing I could explore further and easier off pavement, without repairs or maintenance, on the beer can model than I could on an American made-of-iron 1945 Indian Chief.

My loyalty to geographically manufactured motorcycles moved to Germany with a new BMW 1969 R69US after some experiments with a couple of Harley-Davidsons, which greatly assisted my motorcycle maintenance learning vector. Eventually, I became a multi-geo-political owner of numerous motorcycles, sometimes using a half dozen different makes and models in an average year of 50,000-60,000 miles.

While I was morphing my equipment requirements, I was also testing add-on accessories like saddlebags, boxes, panniers and other luggage carrying systems. I bought junk that cracked, leaked and fell off. At the other end of the spectrum, some expensive accessories that a German tank could run over and leave unbent.

Eventually, I found products that worked for me, but I've always kept an eye out for updated solutions that were an improvement over what I was using.

TIPS AND TRICKS

"Caveat emptor" warning lights go on when I see any knock-off motorcycle products. In many cases, the product has been purchased in the USA, sent to



Prime knock-off: A Water-trace bag, left, and Wolfman Dry Duffel bag, right.

the Pacific Rim, copied, then sold back in the USA, at a lesser price.

A set of American-made aluminum panniers I bought had been knocked off in Taiwan, then sold stateside under a different name. They looked the same and cost a third less, but after some use, they leaked. The U.S. set did not.

Closer inspection found the Taiwanese manufacturer had skipped a step (or two) and not welded the inside bends and corners, which eventually caused cracking in the outer welds, allowing water to enter. The additional cost to have the insides welded correctly made the product just as expensive as buying American.

A STREET VENDOR in Thailand was selling a Chinese-manufactured bag for \$30, I rolled my dice and bought it. The bag was a pretty close copy of an American-made dry duffel bag selling for \$175. To see if it was waterproof like the U.S. bag, I filled it with water and there were no drips. While tying it to the rear of a motorcycle, I found no clips cracking or connections breaking or snapping.

I considered swapping it with my American bag, while continuing my trip around the world, to see how it would hold up. Instead, I recalled the

maxim, "If it ain't broke, don't fix it."

At the end of my world tour, my American bag was still keeping things dry and none of the straps needed repairs, however, the question lingered, "Would the 80-percent less expensive copy have held up?"

While passing through Southeast Asia, I saw a copy of a Honda Cub motorcycle being sold under a different name. When I asked the salesman about the copy and how good it was, he was quite clear, "It is not a copy, it is a replica." I passed on purchase, "buyer beware" ringing in my ears. I have since learned the company making the replica eventually folded due to quality control and performance issues. The knock off was not built to the standards of the original.

I describe myself as being a frugal versus cheap adventurer. Purchasing and using a knock-off can be an adventure in itself. I appreciate when things work, but prefer being able to call a U.S. manufacturer and tell them how well their product has performed over trying to figure out where any random knock-off actually came from.

Dr. Gregory Frazier has authored four global motorcycle adventure books, logging six circumnavigations and over a million miles.

GREGORY W. FRAZIER

Buyer Beware

I recently sold my 2012 Ducati 848 Evo with 11,153 miles. It was in excellent condition and always properly serviced. The buyer called two months after the sale, saying the cam drive belt failed and caused substantial damage to the valves. He claimed I owe him for repair costs because I did not maintain the belt properly. Am I responsible for repairs on the bike two months after his purchase? Can he collect from me?

— David J

In the absence of a written contract of sale or promises made by you, the purchaser will not likely have a valid claim.

Your local state law determines questions of warranty on the sale of vehicles. I am not aware of any states with laws which include “implied warranty” on private sales of a motorcycle. The buyer purchased the bike “as is,” meaning he accepted it with whatever defects may

have existed at the time of delivery.

A private sale is “as is,” unless the seller and buyer enter into a written purchase agreement clearly stating any additional responsibilities.

You should not respond to the purchaser in this situation. Any written reply can be misconstrued to imply promises or warranty which were not a part of the deal. Also in some states, a response can possibly create a contract that did not exist or extend the applicable time limit that may apply if the buyer elects to file a lawsuit. There is nothing to be gained by asserting your position in correspondence or conversations after the sale.

Do not reply to his calls or letters other than asking him not to call again if you happen to answer the phone.

Based on the year and mileage described, we can estimate the purchase price was below \$8,000. That means it would cost the purchaser more than

the net value of his claim to employ an attorney to file a lawsuit against you. His only viable avenue to attempt collection may be in small claims court, without an attorney. If that procedure is followed, you will receive a summons from the court system which provides a specific time within which you must reply.

If you are served with lawsuit papers, you will need to write a response denying the claim. In most court systems, you will need to file the original with the court and mail a copy to the other party before the time limit expires. The judge or magistrate will set a hearing date at which both sides will appear and tell their side, very much like the TV reality show “Judge Judy.” Most judicial officers have knowledge of the law and exercise good common sense.

Harry Deitzler is partner at Hill, Peterson, Carper, Bee and Deitzler, PLLC. Submit questions at Motorcyclejustice.com

Line Selection

The “line” is an imaginary path you intend to follow that is usually the width of your tires. Therefore, the wider the trail, road or track, the more lines are available. If you have the skills, you can take lines that other riders can't even consider. Proficient motorcyclists constantly hone the ability to quickly and accurately identify the best line, then put their tires on it.

Line Selection is second on our motorcycle riding checklist, right after Terrain Reading and before Technique Execution. If you crash, be sure to ask yourself if it was because you incorrectly read the terrain, picked a bad line or did not apply the right technique? Understanding which mistake(s) you made will help prevent making the same mistake(s) again. Often, if you trace your tracks

back, you will find the crash occurred because you failed to select and stick to the best line.

Good motorcycle riders frequently adjust their lines, because the best line constantly changes due to wear, environmental conditions and obstacles. Good visual habits are critical and only lots of perfect practice will make you perfect at reading terrain. But, what defines a good line? Racers often seek the fastest line, but for most riders it's more important to identify the safest, smoothest, firmest, highest traction, flattest, driest, shortest or easiest line.

Adjusting your line requires some advanced riding techniques that change as your speed and the terrain changes. At slow speeds, counterbalancing with your body and turning the handlebars are priorities. At mid speeds we begin countersteering, leaning the bike further and decreasing counterbalancing, de-

pending on the surface. At high speeds, leaning becomes much more important, even sliding sideways becomes an option.

One great way to develop line selection skills and perfect your line-changing abilities is (you guessed it) off-road on a light dirt bike. Our rider training starts with low-speed exercises like sitting and standing turns. Next, we move to mid-speed exercises like a slalom and board ride. Then, higher-speed exercises, including a sand wash and hill climb. Finally, we practice brake sliding and power sliding, two of the most fun and advanced skills you can learn.

Practice constantly and take this skill seriously and you will enjoy a longer, safer motorcycling future.

Gary LaPlante is the author of *How to Ride Off-Road Motorcycles* and proprietor of MotoVentures.com Dirt First training.

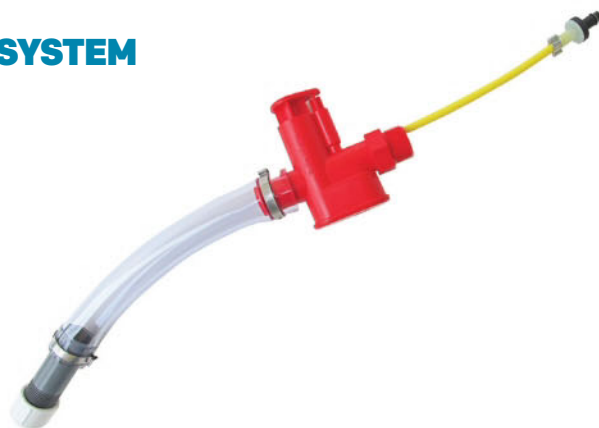
REVIEWS

» Stroker **TRIGGER FLUID CONTROL SYSTEM**

We've used other products designed to reduce the awkwardness of filling a bike's gas tank with a clumsy, heavy, five-gallon fuel jug; see our review of Pit Posse's Spout Bender (MCN, 9/13) or Google the Hose Bender from Risk Racing. These use a wire tether to hold the jug's flexible spout at a fixed 90-degree angle, thereby reducing the likelihood of spillage. They also leave both hands free to support the weight of the jug and control its tilt. These have proven very useful aids, but managing fuel flow is still tricky while balancing 32 pounds of sloshing liquid and keeping an eye on the rising level of gasoline in a tank's shadowy interior.

Stroker Industries' Trigger Fluid Control System supplies another type of spill prevention with a conveniently operated valve positioned at the base of the jug's spout. Though stiffly sprung and not exactly a "trigger," the push-button mechanism effectively regulates the flow of fuel exiting the jug, and does so more precisely than is possible by merely adjusting the container's angle, since flow through the valve isn't vulnerable to surging with shifts in the fuel's weight distribution. Just keep the jug's bottom high enough to feed the valve and modulate the tank filling speed with the button.

Adding to the smoothness and controllability of fluid transfer is the Trigger's self-venting action. A short straw, tipped with



a one-way valve, extends from the mechanism's upstream end. This allows air to enter the jug in place of the flowing fuel without turbulent gurgling in the hose. The jug's built-in vent remains closed, eliminating steps before and after use, along with any concern that fuel might escape during operation.

At \$26.99, this U.S.-made product is a bit pricy, but still worthy of inclusion in your garage or trailer. Now, if only someone would make a spout with both a valve and a hose-positioning tether, that would be the ultimate fueling experience upgrade!

—Mark Barnes



Stroker, strokerindustries.com

» HJC **RPHA 70 HELMET**

This is slowly becoming my favorite. It's all about the fit. I tested a full-face HJC Riberte and a DS-X dual sport model. Neither came close to fitting as well as this one; I felt only a few contact points around my head. With the new RPHA 70, I feel just the right amount of snug, even pressure all around my oval-shaped bean.

HJC says the RPHA series is constructed of PIM+ materials, for a strong shell with significant weight reduction. It does feel slightly more compact than previous models I've tried, and it's got some great features, starting with the ventilation.

HJC reworked its Advanced Channeling Ventilation System to flow with upright-style riding for touring and downward angle for sport with a hybrid top vent that adjusts itself, depending on angle. This kind of "great for everything" feature rarely works, but it seems to with the RPHA 70, with intake and exhaust in the same venting.

Construction is reinforced with carbon and carbon-glass hybrid fabric that is anti-bacterial with moisture-wicking and quick-drying qualities. The crown and cheek pads are removable for cleaning.

The anti-fog visor and internal sun shield work well, the latter with a progressive sun shield actuation control (not a Transitions-type photochromic shield). This one is progressive in the sense that the rider can bring down the inner-mounted sun shield as low as desired with a slider on the lower left exterior of the lid.

HJC says the RPHA 70 ST shield seals completely to prevent rain and noise from entering the helmet, with a two-step locking system. Haven't seen any rain in a while out in California, but the noise suppression is substantial and appreciated. The design accommodates eyeglasses and sunglasses easily, and the included chin curtain helps keep out dust and moisture. DOT/ECE. Sizes XS-2XL. \$399.99.

—Russell Evans



HJC Helmets, hjchelmets.com

» Deer Screamer **WHISTLE**

Several years ago I was involved with an extensive test of over a dozen so-called “deer alerts.” This involved a number of zoological and auditory experts and actual field testing with several different species of deer. The details of that test are too involved to regurgitate, but produced the same results as numerous other studies conducted by several noted scientific organizations:

- 1) So-called “ultrasonic” whistles of any type are totally ineffective;
- 2) Whistles that produce an audible tone (that can be heard by humans) work about 30 percent of the time, depending on conditions.

Those conditions include, but are not limited to: Time of day; season of the year; ambient wind conditions; speed of the vehicle; age and sex of the deer; presence of other vehicles; and density of roadside foliage. The only whistles that are even partially effective are those that emit an audible tone that can be heard at least 30 yards forward of the vehicle.

For the past couple of months, and about 2,000 miles, I have been using the Deer Screamer mounted on my bike. This is an air-powered whistle that very simply



uses the air pressure at the front of your vehicle to produce an audible, forward-facing tone “alert.” In its favor, I can say that I hear the whistle at speeds of approximately 50 MPH and above. If I’m riding into the wind, I can sometimes hear it at 40 MPH, but if I have a tailwind, I don’t hear it until I reach 60 MPH or better.

Observers placed at the roadside in the quietest possible conditions, noted they could hear the whistle on my approach at an average of about 30 feet away. The only two times I actually saw a deer at the roadside on approach, one ran away and one didn’t. Of course, I have no way of knowing what spooked the one that ran. It could have been engine noise, my headlights, or just the motion of the bike.

The best I can tell you is the Deer Screamer makes noise, of a type that can be heard by deer. Will the deer hear it and run away? Maybe, if you’re going fast enough to activate it, and there are no obstructions to block or dampen the sound, and it’s not a buck during the rutting season, etc. I wouldn’t want to bet my life on it, and still believe that your best defense is to be extra-alert in areas deer frequent, particularly at dawn and dusk. Slow your pace, and if you see a deer, blow your horn, loud and long.

Still, from previous testing results, I would have to say there is a chance the Deer Screamer might be effective, some of the time. The unit is very small, unobtrusive and inexpensive (\$9.00 each or two for \$16), and if there’s even a chance that it might work some of the time, my take is that another level of protection certainly couldn’t hurt. I’m going to leave it on my bike.

—Fred Rau



Deer Screamer, deerscreamer.com

» Aerostich **UTILITY PANTS**

Aerostich’s Utility Pants bridge the gap between the comfort of casual denim and the functionality required in serious rider’s gear. On the casual side, there are no outseam zippers, fancy graphics, or reflective trim. In addition, the cut is low on the hips, like typical blue jeans.



On the functional side, the pants are constructed of 500 Denier Cordura bonded to Gore-Tex, for serious abrasion resistance and all-weather capabilities. They’re well armored, with Aerostich’s large, removable TF3 kneepads and optional hip armor.

The interior is completely unlined, with visible sealed seams. However, they cannot be felt and wore like iron over thousands of miles of testing. We expect the seals to last the life of the pants. The exterior features two front pockets as the main storage compartments and a smaller pocket on the left rear of the seat area. The waistband is gusseted and belt loops are integrated into the garment, though no belt is included. The Cordura is doubled up in the knees and seat areas for added protection, and three strips of velcro per ankle cuff allow adjustment for close fitment around any size riding boot.

The Utility Pants were practical for nearly all conditions. They’re lightweight, and the material is breathable enough to wear over a wide temperature range. Fitment is roomy, typical for American gear, so they can be worn as pants or overpants. Because they don’t look like moto-centric riding pants, they can pass as casual gear off the bike, and removing the armor takes seconds, if a social situation calls for it. The quality of construction is superb, and there is no question the Utility Pants will last many years and tens of thousands of miles.

Our only criticism is the zipper fly, which is not waterproof or sealed. The American-made Aerostich Utility Pants are available in men’s sizes 30-44 regular or long. MSRP is \$297.00 for black or grey colors, or \$342 for the tan color shown here.

—Moshe K. Levy



Aerostich, aerostich.com

MODEL EVALUATION



Fat Bob is based on the first major Softail platform change since 1999, part of the biggest consolidation of models in Harley history.

HARLEY-DAVIDSON **FAT BOB**

The Motor Company Shakes Things Up With a Radical, Custom-Style Monster

> By **David Hilgendorf**

Harley-Davidson created the first “factory custom” FX Super Glide by mating an XLH Sportster front-end with the chassis of an FLH Electra Glide in 1971. By 1986 all FX models were migrated to the FXR chassis, based on 1980 FLT Tour Glide, with its rubber-mounted engine and five-speed transmission.

The Softail chassis (FXST and FLST)

was introduced in 1984, featuring solid-mounted engines and a single hidden rear shock. In 1991, the FXD Dyna chassis introduced a rubber-mounted engine with dual external shocks. For 2018, the Dyna platform has been eliminated and merged into a completely redesigned Softail frame.

While the combined platform includes the Low Rider, Fat Bob and Street Bob names from the Dyna lineup, the Switchback is replaced

by the all new Sport Glide. No longer rubber-mounted or dual-shocked, all nine 2018 Softail models, including the carry-over Breakout, Deluxe, Fat Boy, Heritage and Slim, have a solid-mounted Milwaukee-Eight, single underseat shock and share the same frame.

Variance between Softail models comes by way of three steering head angles, two ride heights and two swingarm widths. Cosmetic items, including seats, pegs and handlebars,

GINA COLEMAN

further alter the feel of each bike.

This is the first major platform change since 1999 and the biggest consolidation of models in Motor Company history. Customization becomes easier via parts interchangeability and manufacturing costs should also be reduced, increasing profitability.



ENGINE

The year-old Milwaukee Eight engine (MCN 12/16) adds twin counterbalancers and ups displacement to 107ci, among other upgrades and refinements from the outgoing Twin Cam.

Fat Bob is one of four new Softail models (also Breakout, Fat Boy and Heritage) available with a stock 114ci powerplant, which we were unfortunately not able to test, despite numerous requests. The 114 offers a bit more power, but also supports a Stage III kit, providing 117 cubic inches, and bragging rights. Owners can juice the 107 to a 114 the same way, but it will cost more than buying the 114 outright.

The 107 has plenty of grunt, but it's the same engine. Like any enthusiast, we wanted to talk about the big gun.

TRANSMISSION

The six-speed gearbox was smooth and precise, its hydraulic assist and slip action never missing a beat. Clutch pull is firm, but not as difficult as some other models. Neutral was easy to find.

BRAKES & WHEELS

ABS is standard on Fat Bob 114, which is a value-added argument, considering it's an \$800 option on the 107.

We experienced rear-end lockups on the Ultra Classic (MCN 12/17), but the ABS on Fat Bob was much more dialed



SUSPENSION

The conventional, nitrogen-charged, progressive-rate, coil-over spring shock improves damping, increases wheel travel and offers a larger range of adjustment—big improvements over both outgoing configurations. Rear preload is adjustable with a knob under the right leg and the shock resides under the seat, where the preload adjuster used to be.

Up front, Showa Dual Bending Valve technology is carried over from last year's touring lineup, but Fat Bob forks feature a 43mm inverted setup. More linear damping and reduced weight combine for better handling, though the forks still aren't adjustable.

Overall the suspension was compliant, never harsh, and positively amplifies the impact of better brakes. While we'd always prefer more tunability, the stock setup should be adequate for most riders.

and compliant. This bike is capable of stable stops in 120 feet from 60 mph.

This is probably due to the lighter weight, combined with four-piston calipers clamping dual rotors up front (all other Softails have one disc). The brakes did an excellent job of hauling this beast down from speed.

Wheels are an attractive flat black cast aluminum with laser-etched H-D logos. Tires are sticky 150/180 custom Dunlop D429s, also H-D branded.

CHASSIS & HANDLING

The redesigned frame is claimed to be 62 percent stiffer than the Dyna and 34 percent stiffer than the outgoing Softail, by using 50 percent fewer parts with 22 percent less welds. Combined with other platform changes, the frame helps reduce overall weight by 33 pounds, while increasing overall torsional rigidity, making for a more stable and better handling ride.

A sporty 28-degree rake and compact-for-a-Harley 64.5-inch wheelbase make Fat Bob feel infinitely nimbler than its namesake implies.

Grinding a smidge of metal off the exhaust while cornering will allow 32 degrees of lean on both sides, which is probably enough for most riders. While this is the best cornering clearance in Harley's current lineup (the XR1200 had 39), there appears to be room enough to raise both the pipes and pegs, and the aftermarket will surely figure that out. Besides, with the seat as low as it is, higher pegs would raise the knees above the waist, which would be even more uncomfortable.

As it is, its nimble handling quickly overcomes its heft. The stiffer chassis, better suspension, low center of gravity and wide bars manage to overcome fatty tires and 669-pounds of obesity.

Turn in is easy, power is always at the ready and brakes are effective. Nothing in Harley's current lineup matches Fat Bob's combined ability to accelerate, lean over and stop quickly. It was a joy to wind it up, but we hope it gains fully adjustable suspension and pursues intense dieting in future incarnations.

ERGONOMICS

The low 28.5-inch seat height and chair-like posture will help the bike fit more potential riders. All of our riders found the traditional low seat, combined with outstretched arms and feet-forward, to be uncomfortable.

To make the bike even more aggressive, Harley could have raised everything an inch or two, modifying the rider triangle and substantially improving comfort and clearance, which would likely make selling it even easier.



To step even further out of the comfort zone, and seek riders who don't relate to a traditional cruiser, why not double down and move the controls all the way back under the rider, like the VMAX this bike tries so hard to emulate? Still, we can't wait to see what builders do with this canvas.

INSTRUMENTS & CONTROLS

Every bike in the 2018 Softail lineup features LED lighting, security system with keyless start and USB charging ports—welcome to the 21st century.

Fat Bob's single clock is located on the tank, which takes your eyes off the road. It does make customizing the front end much easier and cleans up the handlebars, so somebody who doesn't care how fast they are going is sure to like it.

Reach to the straight bars is a bit long, but one of the easiest changes a rider can make upon purchase. Every thing else is typical.

ATTENTION TO DETAIL

An 2-into-1-into-2 exhaust points skyward and, oddly, isn't color-matched to the bike. Combined with a futuristic, rectangular headlight, chopped fenders and inverted front forks, Fat Bob makes a style statement that's completely different from anything else in the lineup, while remaining a traditional Harley at the core.

The fit and finish on this bike is top notch and there are details everywhere that will attract eyeballs and conversations. Since the unfortunate retirement of the V-Rod, Fat Bob becomes the closest substitute, probably by design.

VALUE

Harley wants to attract millennials, but Fat Bob starts at \$17k, without ABS (\$800). ABS shouldn't be expensive or optional, which makes the 114 a bargain, as it includes both ABS and larger displacement for \$1,700 more.

Add \$400 for any color other than gloss black, and a fully loaded Fat Bob 114 comes in a touch under \$20,000. That's more likely to turn the heads and open the wallets of Generation X.

If the price or styling is too much, Street Bob and Low Rider start under \$15k. Fat Boy and Heritage Classic start at \$19k, the rest fall in between. **MCN**

TESTERS LOG



I prefer a taller, more upright riding position to the standard, butt-on-the-ground, feet-forward cruiser.

Yet, Fat Bob pushes enough aesthetic and performance buttons that I would be happy to have one sitting in the garage, though I'd have to give him a cooler name, and better seat.

Fat Bob is the third Harley I'd consider owning, after the XR1200 (MCN 3/09) and the Hugo Moto conversion (MCN 12/17). The only thing holding me back is rationalizing how many other bikes I could add to my collection for the same \$20k, including both my Sportster choices.

That this bike is basically a blank canvas for customization would only fill my head with dreams that perpetuate its drain on my wallet.

—David Hilgendorf

With respect to the esteemed Motor Co., this is another case of Harley-Davidson getting it wrong.

Are we to believe this is supposed to be game for street tracker duty with the earthmover tires and lazy throttle response? The Fat Bob looks badass—I never wanted to jump on a bike so quickly, never wanted to jump off one so fast. This is a pain to ride any distance.

The Milwaukee-Eight engine once again tries to save the riding experience, and the power is smooth and strong once you're underway. But, the ride is still awful.

Next time, build a lighter, simpler, cheaper bike, with better geometry, and let the owners do the mods. That's what the young guys want.

—Russell Evans

I don't care if you wear glitter on your face; the Milwaukee 8 Fat Bob will erect chest hair. The ergos reminded me of squid days, breaking lumbar vertebrae on dirt bikes, but the LED headlights and that flat tracker front tire still said I was The Punisher.

Notably smoother giddy up, yet less heat and vibration than any H-D I've ever ridden and enough rumbles reminding me that I'm well fed.

The dump truck starter and motion of the huge V-twin pistons amplify the sensation that I am endowed in life.

No-futz refinements like EZ rear preload adjustment and electronic keys contribute to a boss look and are a gentleman's move by H-D. Well done.

—Brant Wiwi

GINA COLEMAN



QUICK HITS

MSRP: \$16,999 (107), \$18,699 (114)
Category: Cruiser
Displacement: 107 or 114 ci
Engine Type: V-twin
Warranty: 2 years
GVWR: 1160 lbs.
Wet Weight: 669 lbs.
Carry Capacity: 491
Seat Height: 28.5 in.
Colors: Gloss Black or Matte Black, Red, White or Gray (Gray only on 114)

SPECIFICATIONS

Valvetrain: Pushrod-operated overhead valves with self-adjusting lifters and four valves per cylinder.
Bore & Stroke: 3.937 x 4.374 in. (107) 4.016 x 4.5 in. (114)
Comp. Ratio: 10.0:1
Transmission: 6-speed hydraulic
Final Drive: Belt
Fueling: Sequential port injection
Tank Capacity: 3.6 gal.
Fuel Grade: 91 octane
Exhaust: 2-into-1-into-2
Ground Clearance: 6.5 in.
Wheelbase: 64.5 in.
Rake & Trail: 28°, 5.2 in.
Tires: Custom Dunlop D429, 150/80-16, front; 180/70B16, rear
Brakes: 4-piston fixed front and 2-piston floating rear; ABS (option)
Suspension: Showa inverted 43mm dual-bending valve fork; nitrogen-charged, progressive-rate, coil-over spring shock with preload.

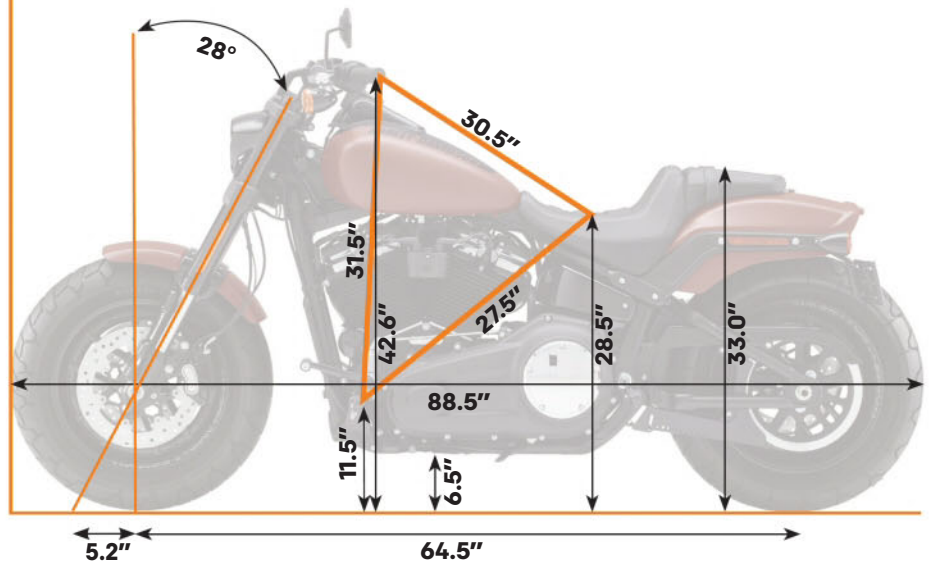
ELECTRICS

Battery: 12V, sealed, maintenance-free
Ignition: 1.6kW electric with solenoid shit starter motor engagement
Instruments: (analog) tach; (digital) speedo, odo, gear, trip, clock, range
Indicators: hi-beam, neutral, oil, engine, fuel, signals, battery, security, ABS

MAINTENANCE

| (\$130/hr.) | Miles | Labor | Parts | Total |
|----------------|-------|-------|-------|-------|
| Routine | 5,000 | \$455 | \$100 | \$555 |
| Valves | n/a | \$0 | \$0 | \$0 |

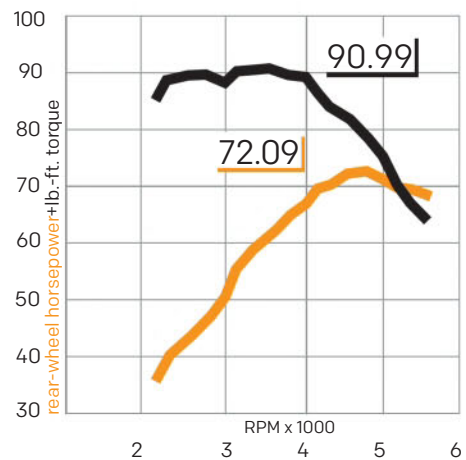
GEOMETRY



PERFORMANCE

Fuel Economy (MPG)
High: 44; **Low:** 35; **Average:** 39
Estimated Range: 140 mi.
60-0 mph: 120.34 feet
0-60 mph: 4.17 seconds
1/4 mile: 13.11 sec @ 102.91 mph
Power to Weight: 1:9.29
Speed @ 65 mph: 64 mph
RPM @ 65 mph: 2,500
RPM @ limit: 5,800

HORSEPOWER & TORQUE



SMILES

1. The sportiest Harley
2. Brakes work well
3. Edgy styling

FROWNS

1. Heavy
2. Expensive
3. Uncomfortable

EVALUATION

Engine: ●●●●○
Transmission/Clutch: ●●●●○
Brakes: ●●●●○
Suspension: ●●●●○
Handling: ●●●●○
Riding Impression: ●●●●○
Ergonomics: ●●○○○
Instruments/Controls: ●●○○○
Attention to Detail: ●●●●○
Value: ●●○○○
Overall: ●●●●○

MODEL EVALUATION



Available in the U.S. after a few years on the international market, Honda's CB650F is a steady and sporty, upright naked middleweight.

FOUR FUN

HONDA CB650F

Honda enters its smooth, naked, upright into a competitive U.S. middleweight market.

> By **Russell Evans**

With the 2018 CB650F joining the more racer-like CBR650F in Honda's middleweight lineup, there is another choice for those looking for steady, if unspectacular power and another prime example

of Honda doing what it does best: building high-quality, smooth and reliable motorcycles.

This mid-sized upright naked bike fits perfectly into the urban commuter niche, where Honda has made its bones all these years. It is a motorcycle that starts right up every time, purrs

quietly with the help of a massive 4-into-1 under-frame exhaust can, and dutifully pulls through the gears at the rider's whim. Many are likely to welcome the more upright ergonomics, with handlebars replacing clip-ons and a generally less severe riding position.

Honda may find itself outgunned by

GINA COLEMAN



Kawasaki's Z650, Yamaha's MT-07 and Suzuki's SV650.

It is priced well above its direct competitors, which points to banking on the good name and brand loyalty. Most everything else, with the exception of a few ergonomic issues, is Honda-good.

ENGINE

The bike's compact 649cc inline four-cylinder engine churns out a respectable 79 horsepower at the rear

wheel, 66.5 pound-feet of torque.

The power didn't yank our arms out, didn't knock our socks off. This type of power plant embraces the daily commute, provided not too much of it is on the freeway, where it starts to scream a little bit at 65 mph.

Around town, it is a silent servant that easily motors a rider to the next stop with the greatest of ease. The 4-into-1 exhaust system does an excellent job of quietly expelling spent engine gases, and has just enough of a growl to allow one to catch that familiar Honda note.

TRANSMISSION & CLUTCH

Shifting through the six-speed gearbox with the help of a wet multi-plate clutch is Honda-smooth, which means it don't get any smoother for manual shifting. Clutch pull is easy.

SUSPENSION & HANDLING

A conventional 41mm Showa Dual Bending Valve telescopic fork with 4.25 inches of travel neatly soaks up imperfections in the road, but flex too much under hard braking, indicating their budget nature.

A rear monoshock is effective, with just over 5 inches of travel. The suspension mostly stays out of the way, making ride quality good for most purposes.

The overall quality and efficiency of



the bike's components created nimble handling and planted tracking in turns, which really stood out. The more winding the road, the better the little red bike liked it.

We loved this aspect of the F's repertoire, as it inspires confidence, which enhances enjoyment. Novice riders are likely to improve quickly, and experienced riders can take full advantage.

ERGONOMICS

An upright seating position should, by definition, improve ergonomics, and it does with the CB650F. That being said, it is far from one-size-fits-all and could benefit from a taller windshield.

One of our testers had difficulty getting his size 12 boot in-between the footpeg and the gear shift lever and often had to upshift with the instep of his boot. Not good.

That same tester reported feeling quite bent up after a 100-plus-mile ride and his knees in full crouch position because of the rear-positioned peg. But, the large seat is quite comfortable, at a time when many in the category are going to a more minimal board.

INSTRUMENTS & CONTROLS

Honda's instrument panel with twin LCD readout screens is compact and basic, with digital speedometer and tachometer providing the most prominently displayed information. There's also a clock, trip meter and fuel

BRAKES & WHEELS

Our test bike came with the optional ABS, which adds \$500 to the MSRP and cannot be disabled. Unfortunately, the ABS engaged poorly, and our best 60-0 was over 135 feet.

The hydraulic dual 320mm discs had excellent feel when squeezed by the two-piston Nissin calipers. There's a single 240mm rear disc with a single-piston Nissin caliper.

The 17-inch black cast alloy wheels were sporty in an unimposing way. Dunlop Duramax (120/70ZR-17 D222F, front; 180/55ZR-17 D222 rear) tires were ideally suited for a quiet, ride in dry conditions, and handled leans well, but didn't change direction easily.



TESTERS LOG



I always look forward to getting some seat time on a Honda. The CB650F was solid and sound, but did nothing to elicit any kind of emotional response. That's not a knock, just a fact.

I can recommend this bike to anyone in the market for a dependable commuter that gets great gas mileage and who has no delusions about taking it to the track or railing the canyons on the weekend.

It is smooth enough and comfortable enough to do the basic transportation thing for many years. Still, it seems to be priced a bit high.

—Russell Evans

At age 13, the Honda Elite 250 scooter was a thrilling ride. So I checked my moto snobbery, remembering the industry needs entry level sportbikes, and a common denominator for motorcycling is to instill some simple emotion.

Conventional forks that flex under hard braking, poor aerodynamics (especially with such upright ergonomics) 7k rpm at 70mph, overly-intrusive ABS, docile engine sound and under-engineered attention to the OEM tires, all antagonized me.

The conical profile of the front tire created great mid corner feel, and the bike's only highlight, but the juxtaposed round profile of the rear tire caused sluggish direction changes, requiring way too much steering input for such a small bike. At nearly \$9,000, you might get more emotion out of a sewing machine.

—Brant Wiwi

GINA COLEMAN



gauge. The mirrors, on the other hand, are a bit larger than we'd expected, and that's not a bad thing.

Not Dumbo ears, but disproportionately large, though they still fit well into the overall compact scheme. A good view of the traffic behind is especially useful for decision making and appreciated from a safety standpoint in busy city conditions, as well as in heavy traffic at highway speeds.

ATTENTION TO DETAIL

Honda is a benchmark for quality and consistently excellent performance. The details derived from decades in pursuit of perfection show up in practically everything it manufactures.

With that in mind, there is nothing fancy or gimmicky about the CB650F. It is a solid, straightforward performer, built to start and run smoothly day after rush-hour day. The pieces all fit together, but nothing is exemplary or even out of the ordinary.

The balance, handling, gentle hum of the engine and smooth transmission are all typical Honda. The CB650F does exactly what it was designed to do. The somewhat mild thrust is quite forgivable, as this 650cc bike achieves 75 miles per gallon.

VALUE

Even without ABS, the CB650F comes in at \$8,249. Substantially more than Yamaha's MT-07 (\$7,599), Kawasaki's Z650 (\$7,399) and Suzuki's SV650 (\$7,049). It is priced lower than



the single-cylinder KTM 690 Duke (\$8,999) and 765cc Triumph Street Triple (\$11,200).

There is value in quality, but with the Yamaha and Kawasaki delivering noticeably more kick in the horsepower department and the Suzuki a proven mid-size winner, the question of whether the Honda name is worth hundreds more for a bike that performs well, but is largely unexciting, is one to reckon with. **MCN**

» QUICK HITS

MSRP: \$8,749 (as tested, with ABS)
Category: Naked
Displacement: 649cc
Engine Type: Inline 4-cylinder
Warranty: 12 mo., unlimited mileage
GVWR: 842 lbs.
Wet Weight: 445 lbs.
Carry Capacity: 397 lbs.
Seat Height: 31.75 in.
Color: Matte Black Metallic, Candy Red

» SPECIFICATIONS

Valvetrain: Chain driven DOHC, 4 valves per cylinder
Bore & Stroke: 67mm x 46mm
Comp. Ratio: 11.4:1
Transmission: 6-speed
Final Drive: Chain
Fueling: PGM-FI electronic injection
Tank Capacity: 4.57 gallons
Fuel Grade: 86 octane
Exhaust: 4-into-1
Ground Clearance: 6.5 in.
Wheelbase: 58.0 in.
Rake & Trail: 25.0°, 4.0 in.
Tires: Dunlop Sportmax2 120/70ZR17M/C(58W) front; 180/55ZR17M/C(73W) rear.
Brakes: Two-piston calipers with dual 320mm discs, front; Single-caliper 240mm disc rear.
Suspension: 41mm Fork; 4.3 in. travel, front; Single shock with spring-preload adjustability; 5.0 in. travel, rear.

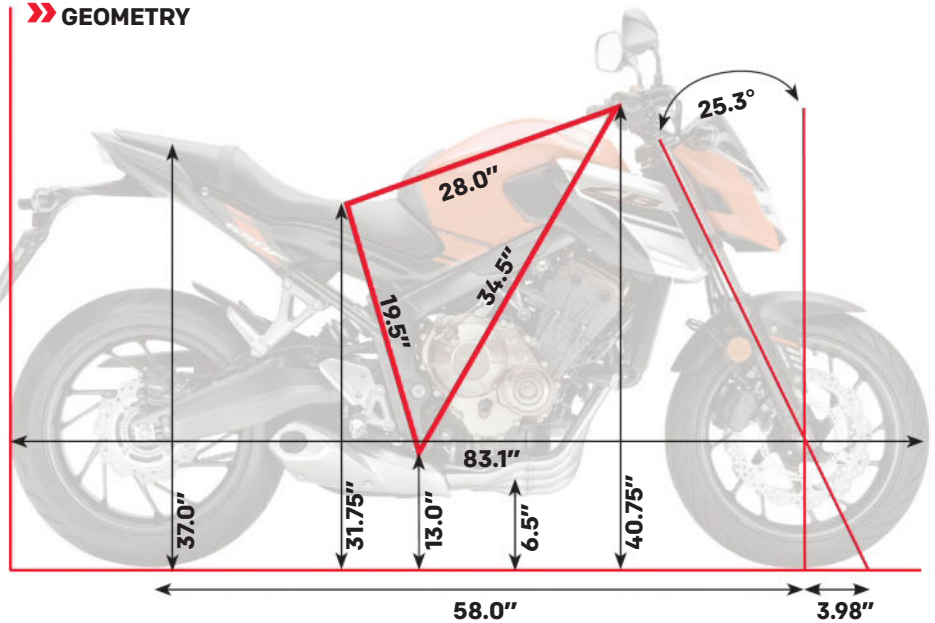
» ELECTRICS

Battery: 12V, 8.6 Ah (10 HR)
Ignition: Electronic
Instruments: (digital) speedo, tach, clock, fuel level, trip, fuel mileage.
Indicators: High-beam, neutral, oil pressure, turn, engine, ABS, temp.

» MAINTENANCE

| (\$130/hr.) | Miles | Labor | Parts | Total |
|----------------|--------|-------|-------|-------|
| Routine | 8,000 | \$455 | \$50 | \$505 |
| Valves | 16,000 | \$325 | \$100 | \$425 |

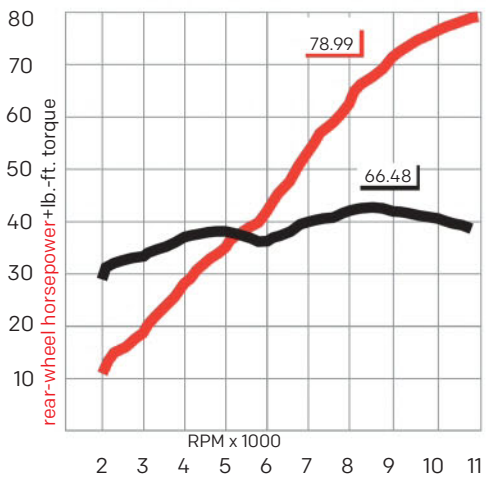
» GEOMETRY



» PERFORMANCE

Fuel Economy (MPG)
High: 75; **Low:** 73; **Avg.:** 74
Estimated Range: 338 mi.
0-60 mph: 3.27 seconds
1/4 mile: 12.3 sec. @ 111.81 mph
Power to Weight: 1:5.63
Speed @ 65 mph: N/A
RPM @ 65 mph: 5,000
RPM @ limit: 5,800

» HORSEPOWER & TORQUE



SMILES

1. Insane MPG
2. Smooth Honda power
3. Precise cornering

FROWNS

1. Extra-mild acceleration
2. Buzzy at highway speed
3. Overzealous ABS

» EVALUATION

Engine: ●●●●○
Transmission/Clutch: ●●●●●
Brakes: ●●●●○
Suspension: ●●●●○
Handling: ●●●●●
Riding Impression: ●●●●○
Ergonomics: ●●●●○
Instruments/Controls: ●●●●○
Attention to Detail: ●●●●○
Value: ●●●●○
Overall: ●●●●○

FIRST IMPRESSION

KAWASAKI Z900RS

Nostalgic? Yes. But this beauty has all the right stuff to be a modern marvel.

> By **Russell Evans**

When Ford rolled out its redesigned Mustang in 2005 and Chevrolet did the same with its Camaro in 2009, the two car manufacturers resurrected design cues of their most popular versions from the muscle car era, eliciting an emotional response from customers, who bought them up by the tens of thousands.

Kawasaki is banking on the same phenomenon with the unveiling of its new Z900RS. This striking upright standard model, introduced at the Tokyo Motor Show in October, is a modern interpretation of the company's 1973 903cc Z1. The world's first four-cylinder DOHC production superbike, which set 46 speed records on its way to standing the motorcycle industry on its ear.

The goal was to bring back the excitement, the fun and the performance of the bike that put Kawasaki on the map, packaged to incite passion.

They nailed it.

Though the RS mechanically shares much with the company's Z900 naked bike, it is its own entity. Kawasaki folks made that clear when they stated the bike's design started with and was built around its fuel tank, which is nearly indistinguishable from the one found on the 1973 bike and is offered in the same paint scheme: root beer and orange.

It's a big scoop of nostalgia, all covered with two sweet toppings from the past. The trip down memory lane continues with other Z1-inspired components: flat rear frame angle for a retro sport look; tail cowl and light positioning; cylinder

head with engine fins for air-cooled appearance; and twin chrome-wrapped analog speedometer and tachometer.

It would have been easy to just bolt that mod tank, raised, wide handlebars and a long strapped seat onto Kawasaki's new Z900 and, voila, a naked bike becomes a retro bike. But, the new RS has plenty to offer of its own.

While the Ninja 1000 and Z900 are Kawasaki-fast, built to do a job and work hard for their owners to get it done, this RS, though also endowed with arm-straightening power, was built to play. Where there is urgency with the Z900, the Z900RS is all about leisure.

The RS does so many things so well, it is easy to come away feeling there is nothing it can't do. It fires right up and rumbles with the satisfying growl of its tuned exhaust note. Pull in the clutch. The assist and slipper feature makes it easy. Gears are easy to find. So is neutral.

The sporty seat is quite comfortable and there is actually room to have a passenger onboard—the two-up aspect is another familiar sight from the 1970s. In fact, we couldn't find one thing about the RS to dislike or indict.

Start with the same liquid-cooled, double overhead cam, 948cc engine found in the Z900. Consistent with the RS's more docile profile, the engine has been tuned a little different, with an emphasis on delivering smooth, strong low to mid-level torque performance thanks to shorter intake and exhaust duration, as well as a larger flywheel than the Z900.



Kawasaki's new Z900RS has all the same great styling of the 1973 Z1, and rides like a dream, equipped with the best modern components—power, handling, braking, comfort, and, most of all, fun.

This power is balanced by agile handling, and managed by the selectable Kawasaki Traction Control system. The three-stage exhaust is built well, from stainless steel, looks good, with a buff finish, and may have the best "tuned" exhaust note on the market.

This all adds up to a phenomenal riding experience. Within the first mile, the light and nimble handling is already endearing itself to the rider. The power is immediate and plentiful with every twist of the throttle, though launches from a stop are smooth and gentle.

The exhaust picks up and reports hard acceleration, though not in annoyingly-loud fashion. Braking is stable and sure, and the handling is amazing. On a spirited, 60-mile Southern California ride along Pacific Coast Highway, through the twists and turns of Las Flores Canyon and back down Mulholland Drive, the RS turned into a racer, railing every turn.

These kinds of roads, you'd better be sure the bike is going to hold the line and that the brakes will be there on steep descents into sharp curves. The RS was fully up to the challenge.

It also proved to be competent and enjoyable in city traffic, its riding position comfortable. We couldn't help but think the RS would make an awesome street tracker. Who knows? Maybe Kawasaki already has one in the works.

Even if it does, it will have a hard time matching the kind of impact this new retro-inspired Z900RS is likely to have on the motorcycle-buying public. **MCN**

KAWASAKI

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The BMW Performance Center in Spartanburg, South Carolina, is a purpose-built facility designed to improve and develop street and off-road riding skills.



STREET Survival

BMW Performance Center teaches safety first in re-creation of real world situations.

> By **Arthur Treff**



Motorcycle riding skills are perishable. You've got to practice what you learn every time you ride, to keep it fresh." The words of wisdom

come from Aaron Rankin, lead instructor of Moto Street Survival for the U.S Rider Academy at the BMW Performance Center in Spartanburg, South Carolina. This is not a beginner class run in a parking lot. It is also not a racetrack, yet we rode all the exercises on BMW's track at real-world speeds.

We had just practiced avoiding an obstacle at highway speeds, something I had never practiced. "Take this exercise, for instance," Rankin said. "Every time you're changing lanes—high speed or low—practice avoidance. It might save your life someday, and it's fun!"

Rankin's grin underscored the fun aspect of the rider training course, as did those of fellow instructors, Richie Few and



Aaron Rankin took the lead in pre-ride classroom instruction, in which road dangers and situations were shown to the group via media.

ARTHUR TREFF

Michael Hardin. But there was a serious point to the concepts and enjoyable exercises: our safety, even our lives.

The curriculum was designed in Hechlingen, Germany, and is taught in the U.S. by BMW-certified instructors at the South Carolina center, home to the U.S. Rider Academy. It's the only location in the U.S. that offers both on- and off-road motorcycle classes in one location.

The \$12.5 million facility features a 2.3-mile paved track, a motorcycle off-road terrain garden and an impressive trackside building, which houses state of the art classrooms and a community room, where meals are served.

Student-to-teacher ratio is four-to-one, with a maximum class size of 12. Three instructors are supported by two logistics specialists who do whatever is needed to keep the class running smoothly. This allows the instructors to focus fully on the students, rather than fixing bikes or laying out the next exercise. Students can rent a bike or ride their own BMW.

The day started with a brief classroom lesson containing slides and video to raise awareness of common traffic traps and street strategies. Before we left for the track, Rankin stressed that the course was designed to push us beyond our comfort zone.

"We want you to have fun out there, so we give you the freedom to choose how difficult you want an exercise to be," he said. "We call it challenge by choice. If you're tired or become uncomfortable with an exercise, slow down or sit it out."

Bikes were assigned, and we went through a quick motorcycle familiarization session, including how to pick them up when the inevitable drop occurs. I've dropped many bikes in parking lots and



Much of the instruction focused on maintaining complete control of the motorcycle at all times during slow-speed drills.

my garage, so I was nervous about what came next.

One drill was to walk around my bike and keep it upright with just hand pressure. It wasn't pretty at first and my spotter had to intervene twice. Michael



ARTHUR TREFF

High-speed maneuvering exercises to change lanes or avoid obstacles in the road were designed to push students past their comfort zone.

Hardin appeared and coached me to relax, get my eyes up, not look down at the bike. It was then I discovered that I could feel the bike's balance point and make small corrections to keep it upright.

Minutes later, we were riding around the track in second gear, standing on the pegs and mimicking the instructor. Right foot on the seat for a lap, then switch to the motorcycle's left side, sit and ride sidesaddle for another. Next, switch your right foot to the motorcycle's left peg stand up and ride a lap, then repeat on the right side.

We practiced slow, straight line riding and trials stops—stop, balance in place, then ride off. We did tight inline and offset weaves, where instructors stressed eye placement and clutch control, with no throttle or brake inputs.

The morning's most memorable exercise was riding circles inside of an

18-foot box—less than two standard parking spaces wide. Next, we rode a figure-eight inside the same box. The perimeter was marked with cones every few feet, which added a bit of stress.

Just as I was getting comfortable with the figure-eight, I heard, "Hey Art, follow me!" Rankin was riding his bike in the figure-eight box with me. After a few passes, I became rattled. With the 1200GS leaned and handlebars turned, I stupidly applied a touch of front brake. Down went the bike. As I picked it up, I was glad it was a rental.

After lunch, we got to twist the throttle and speed up. Richie Few gave us a demonstration of an emergency stop from 55mph with and without ABS. We then had a chance to practice multiple stops with ABS, beginning at 25, then 35 and beyond.

Then, we practiced countersteering to

avoid an obstacle at highway speeds. My anxiety went up a notch while watching Richie Few avoid an obstacle at 55 mph. Standing only a few feet away, the speed and violence of the abrupt change in direction was palpable and I could hear the footpeg scraping.

"That's all you have to do," Rankin said. "Try it at 35 mph and work your way up to 45!"

"Right," a few in the group said, amid some nervous laughter from the others.

It turned out that thinking about a countersteer at speed was more difficult than doing it.

The next drill simulated a scenario that most street riders will encounter: Something crosses your path. You brake hard, but realize that a collision is inevitable, so you attempt to evade. We were instructed to accelerate to 55 mph, initiate emergency braking in



Tight turning drills, such as sharing a circle with another rider and figure-eight turns helped increase awareness of balance and control.

ARTHUR TREFF



At highway speed around the 2.3-mile long track, students get to immediately apply techniques learned during instruction sessions.

a short, narrow lane, then release the brakes, countersteer to the escape path and brake again. The demonstration was dramatic, but having already executed ABS emergency stops and obstacle avoidance, it was actually easy. I felt a dryness in my mouth as I anticipated my turn, but afterward, I was euphoric.

“We take every exercise and explain why we do it, where you can use it and how to execute it,” Rankin said. “We show techniques that we find to be the most efficient way. Not the only way, but the most efficient way.”

Efficient technique is safe technique in corners because when the bike is leaned, we have less traction available for braking. Getting the motorcycle turned quickly then upright is the goal. Rather than belaboring the physics of cornering efficiency, BMW students experienced it firsthand during the next drill.

Our instructions were simple: Ride around the perimeter of a 30-foot circle in pairs and practice three turning techniques: Press (counterweighting), Classic (lean with the bike) and Spiegel (body weight off the bike). I rode the ring of cones, adjusting speed to keep my partner in sight directly across the circle.

The Pressing technique was first, so I leaned right while pushing the bike left. This is a slow-speed technique, not efficient at all, so the speed around the course was slow.

After a few laps, Rankin signaled the switch to Classic, where I leaned with the bike. This was more efficient, and because of it, my speed increased while

riding the same radius turn.

Lastly, we were instructed to change to the Spiegel, or “Mirror,” technique. With our head and shoulders (therefore more body weight) moved toward the inboard mirror, efficiency increased significantly, as did our speed, but not the lean angle. I felt the difference.

MY ANXIETY WENT UP A NOTCH WHILE WATCHING RICHIE FEW AVOID AN OBSTACLE AT 55 MPH. STANDING ONLY A FEW FEET AWAY, THE SPEED AND VIOLENCE OF THE ABRUPT CHANGE IN DIRECTION WAS PALPABLE AND I COULD HEAR THE FOOTPEG SCRAPING.

For the finale, we rode hot laps on the track, which has increasing- and decreasing-radius turns, with elevation changes. This was a great way to reinforce all we’d learned throughout the day. Swapping bikes was encouraged, and there were several others to try: an R9T Scrambler, a K1600LT and 650cc scooter.

Students can rent the GS model of

their choice for \$755 or ride their own for \$595. I highly recommend renting their bikes. A rental will free you from the fear of dropping the bike when trying something new, and the extra \$160 could be far less than a repair to your personal bike, if dropped. The price is in line with most advanced motorcycle street training. The BMW road facility, combined with the posh classrooms, food and level of instructor proficiency more than justify the price.

The curriculum exposes riders to real-world crash avoidance skills and is well designed to challenge experienced riders. The exercises build upon each other, which is imperative for muscle memory learning.

I was impressed with the BMW instructors’ delivery of the curriculum and quality of the on-bike demonstrations. Their coaching tips on the track were short and quick, and the positive reinforcement was effusive.

BMW is about to release a two-day road class, which I’m looking forward to, especially if it contains more cornering and crash-avoidance scenarios. Additionally, the U.S. Rider Academy plans to offer an Authority Class, which will introduce students to the aggressive slow-speed maneuvering used in police rodeos. Sounds like fun.

Before taking Moto Street Survival, the only place I’d practiced high-speed evading and braking was in my mind. Now that I know how it feels, I can practice these skills every time I ride.

bmwperformancecenter.com **MCN**



NICECNC's 14-pack of brass spoke weights, with included hex-key for tightening set screws. Though advertised as pre-coated with threadlocking agent, our screws were bare. We added this essential ingredient ourselves, once we'd settled on the right weights and positions (more practical than the pre-coating would have been, anyway).

THE BALANCED

LIFE

Changing tires? Proper balance helps ensure a smooth ride. NICECNC has an excellent kit with brass spoke weights.

> Text and images by **Mark Barnes**

For those who change their own tires, learning to balance new tire and wheel assemblies afterward is a must. Even if you don't want to take on the messy, arduous chore of swapping out rubber at home, you should consider the potential benefits of being able to assess and adjust balance between tire changes. Balancing weights can be lost at any point in a tire's life, leading to annoying and potentially unsafe vibration and uneven tire wear. You've probably experienced smoother operation from having your car tires rotated and balanced between changes, as tires can become unbalanced with wear, even when no wheel weights have been shed.

Do you change the meat on your dual-sport rims, but never balance them? Don't write off this process because manufac-

turers treat dual-sport wheels like their dirt bike counterparts. Motorcycles that never see pavement can tolerate neglect without passing on significant additional vibration, because they're usually operated at relatively lower speeds, and off-road terrain creates much more drama than an out-of-balance hoop.

But, dual-sports that spend time traversing tarmac, especially at highway speed, deserve balanced wheels. We've found some very nice weights to use for this special application. But first, the basics.

WHY BOTHER?

Even the finest wheels and tires aren't perfect; they all come with manufacturing irregularities that make some spots heavier than others. It can be shocking to put a bare wheel on a balancing stand and see how far out of balance it is, even with-

out a tire in the equation. It's usually a safe bet that the extra weight of a valve stem will make a cast or forged wheel heaviest there, but tires don't allow for easy guessing, unless you know what to look for.

Most quality tires have been tested at the factory and dabbed with a dot of paint (usually yellow or red) to indicate where they're lightest. Savvy installers know to align this dot with the valve stem, so the heaviest spot on the wheel is at least partially offset by the lightest spot on the tire. This allows balancing to be completed with less additional weight.

Why all the fuss if we are only talking about fractions of ounces? Often the amounts are small, but not always. Even slight variations can create sizable oscillations when orbiting an axis at high speed, since centrifugal force increases with rotational velocity.

The heaviest part of the wheel and tire combo (referred to as the "wheel" hereafter) tries to pull the whole thing toward it as it's slung around. The wheel and everything attached to it—including the axle, suspension and ultimately the bike and rider—is forced upward when the heavy spot is up, and downward when it's down.

Regardless of the surface over which it's traveling, an out-of-balance wheel essentially bounces, due to its own rotation. Such action is usually felt as a vibration, and creates uneven wear and inconsistent traction, as the tire is yanked away from the ground one moment and flung down against it the next, even on a perfectly smooth and level surface. While the effects may be unnoticeable at low speeds, the amplitude of this bouncing action increases dramatically with wheel rpm.

To maximize tire life, traction, suspension function and rider comfort and control, the wheel must be balanced by adding weight to the lightest areas, negating the force advantage of heavier spots as they tug outwardly during rotation.

HARDWARE

A wheel balancing machine spins the wheel at high speed, detecting where centrifugal forces are greatest using sensitive instrumentation and computerized analysis, and indicating where and how much weight to add to achieve proper



This balancing stand has a movable arm (lower right) for truing wheels. When in use, it swings up with its tip near the rim, making lateral and radial runout easily visible when the wheel is held between the threaded black posts (to prevent lateral movement of the hub). An out-of-round wheel will not balance properly.



Wheel balancing weights come in many shapes, sizes and materials. Whether affixed with adhesive, crimping, clips or set screws, they add weight to offset heavy spots on the opposite side of the wheel.

balance. The home mechanic can do a fine job with much simpler technology.

Balancing stands are available at many price points, depending on quality of construction and number of features. Some even have attachments for wheel truing. Their primary function is to allow extremely free and even rotation of a wheel, usually using paired ball-bearing-equipped disks cradling a metal bar that serves as a substitute axle.

This setup minimizes friction and sources of inconsistency as the wheel turns. So, when given a gentle spin by hand, the wheel will eventually come to rest based on how its weight is distributed, with the heaviest spot at the bottom.

A wheel still mounted on a motorcycle won't enjoy the same freedom when suspended off the ground, since friction will vary at different positions on its (actual) axle and when brake components contact each other.

In addition to a balancing stand, wheel weights are required. These come in a variety of styles. Some are flat plates with an adhesive backing that sticks to a rim's broad, gently arcing surface (facing the hub). Others clip onto a central rib that runs around the rim's circumference. Still others get crimped or affixed with set screws onto wire spokes.

Because of its density, malleability and the ease with which it could be trimmed in small increments, lead was the wheel weight material of choice for decades. Safety concerns and regulations are starting to remove lead weights from the marketplace, though they remain legal for sale in 42 states and can be reused.

Modern weights are most often steel, zinc or brass, which require more volume to equal the mass of lead equivalents and aren't easily fine-tuned by trimming. Weights may be bare metal, chromed or black, and may be available in a range of fixed sizes, or just one small size for use in groupings.

HOW IT'S DONE

Balancing stands often come with an assortment of heavy rods in common axle diameters, though sometimes these must be purchased separately. Select the one matching the inner diameter of the wheel bearings, which should remain in place



A much more elegant solution than re-crimping salvaged lead weights onto our spokes! Though we later wrapped our NICECNC weights with self-fusing silicone tape to make absolutely sure none got free, the set screws have done their job just fine.

after the wheel has been pulled off the bike (and thoroughly cleaned).

Slide the bar through the wheel bearings and lay it across the stand after confirming that the stand's cradling disks and the wheel bearings are all turning smoothly and easily. Make sure there are no points of contact between the wheel and stand. This is a good time to carefully examine your tire, checking for odd wear patterns, punctures or other damage. Debris stuck in treads will create imbalance.

Now give the wheel a nudge just hard enough to send it through a few full revolutions, then patiently watch where

it comes to rest. Think of where the valve stem would be on a clock face, and take note. Spin it again and see where it stops. Take note and repeat once more.

If the valve stem ends up in a different place at the end of each spin, the wheel is already balanced. Since it's coming to rest randomly, no point around its circumference is exhibiting a weight advantage. Consider yourself lucky—you're done.

On the other hand, if the valve stem ends up in the same position several times, the associated low point on the wheel is heaviest and must be counter-weighted. First, assess the existing wheel

weights. If they're near the low point, it might be possible to achieve balance by removing some of them. Also look for adhesive residue at the high point to determine if a weight has flung off. It might be possible to simply replace the lost piece, after cleaning the spot thoroughly. In most cases, it's best to remove all installed weights and start fresh.

With practice, it's possible to discern how close a wheel is to being balanced by how it behaves after its rotation. If it comes to rest very gradually, without reversing direction at the end, success is near. If it flops quickly to one side or backtracks after stopping, lots of balancing remains. In any case, the procedure is the same: guess how much weight is needed and add it to the high point with a bit of tape, reserving more permanent mounting for the finalized arrangement. Check your guess with another few spins.

In many cases, this will be straightforward, with only a couple of weights required in a single spot. In other cases, each additional weight will seem to reveal a new imbalance. The wheel can end up with weights all over and still not be right.

Take a few deep breaths and start over, checking again for any possible interference with the free motion of the wheel. Experiment with symmetrical weight positions. For example, instead of putting 1 ounce at noon on the rim, try putting a half-ounce at both 11:00 and 1:00. Or put a half-ounce on opposite sides of the rim. Spreading out the weight can soften the effect and reduce the creation of new problems.

A particularly challenging wheel may truly have several heavy spots, necessitating placement of weights at multiple points around the wheel. The goal should be to condense the number and location of weights used to the least possible. Practice and patience pay off in time, and there's no substitute for trial-and-error learning. This is not difficult work, but it is annoying to chase what seems like a mysterious and invisible moving target.

DUAL-SPORTS

We love the TUBliss system (MCN 8/10), which allows regular dirt-oriented rims and tires to run very low pressures without conventional inner tubes, enhancing



Prior to our discovery of the NICECNC alternative, our dual-sport wheel balancing was done with old re-used lead weights crimped onto the spoke. We wrapped them with self-fusing silicone tape for added security—functional, but hideous!



The valve stem is usually—but not always—the heaviest spot on the wheel. Here's an exception, where it was light. Those lead stick-on weights come in 5-gram segments easily trimmed.

off-road traction, avoiding pinch-flats and facilitating quick tire changes. One downside of the system is its heavy rim lock, which throws the wheel way out of balance. This isn't a big deal in the dirt, but it is on the street.

At highway speeds with TUBliss installed, a dual-sport bike can feel like a paint-shaker. To be fair, TUBliss is neither

designed nor officially approved for street use, though we see no reason to deprive ourselves of its advantages on dual-sports that spend substantial time in the dirt.

Until recently, we had to remedy TUBliss-induced imbalances with ancient lead weights that could be recrimped around spokes. There isn't enough room on a dirt rim to mount stick-on weights, and weights meant for wire-spoked street wheels didn't fit securely enough to cope with off-road hammering.

Now, there's a far superior solution: NICECNC sells assortments of reusable brass wheel weights that mount securely with set-screws (use threadlocker) against the spoke's nipple. We keep ours wrapped in self-fusing silicone tape, to prevent loss if the set screws back out, but we haven't had any do so. With or without tape wrapping, they look much better than our old lead scraps, they're far easier to install and uninstall, and they're not degraded by reuse.

The especially bad imbalance caused by the TUBliss system prompted us to start balancing our dual-sport wheels, but there's good reason to do so with conventional inner tubes, too. Wheels with a single rim-lock will naturally be out of balance, though often not as extremely as with TUBliss.

Sometimes, a second rim-lock can be added opposite the first, which will reduce the imbalance. But this complicates tube removal and tire changing, and may not yield a precise solution. Given how easy it is to reuse the NICECNC weights, we highly recommend them, with or without TUBliss.

Note that similar wheel weight designs are available from No-Mar and K&L Supply, some with a chrome finish. However, we could only find single-size sets from these sources, making it prohibitively expensive for most home mechanics to amass an adequately diverse collection.

The NICECNC sets contain multiple sizes, making it more likely that a suitable combination can be achieved, with fewer pieces. Available on Amazon, the NICECNC sets range from \$30 for a 12-piece set to \$88 for 36 pieces.

We found the 14-piece set (\$35) more than adequate for balancing two TUBliss-equipped wheels. **MCN**



Fire Starters

Ignition systems provide spark. How they do that affects quality, intensity and duration.

> By **Kevin O'Shaughnessy**

Following a day of presentations and demos on ignition systems, a student came up to me and said, "I need help with my fire starter." I turned my head like a curious dog, as thoughts of self-igniting stoves, fireworks, pyromaniacs and 90s rave music came to mind. Picking up on my confused look, he told me that's what he called ignition systems.

I laughed loud enough to startle several students in the lab, then proceeded to help him with his problem. What a fantastic viewpoint. The term stuck with me and has made for many entertaining presentations ever since.

What kind of fire starter lies within your vehicle? They are self-explanatory in being called a black box and their inner workings are about as simple as opening and closing a door. We won't outline the entire circuit, but will cover fundamentals of the most common systems.

AC-CDI

There are 3 common systems in use. The simplest is an Alternating Current - Capacitor Discharge Ignition (AC-CDI). This system uses induction to power the box. A simple way to explain induction is by the push and pull of electrons.

If you take a magnet and move it toward a wire, the magnetic field excites electrons and pushes them through the wire one direction. As the magnet moves away from the wire the electrons move the other direction. This process creates Alternating Current (AC), which we can harness to do work. Using multiple coils, stronger magnets and faster motions creates more power.

Attach that system to a crankshaft and that's how our Permanent Magnet stators (PMS charging) and Electro Magnet alternators (EMS charging) produce power. In the case of an AC-CDI, the magneto charges the ignition circuit.

The AC-CDI is inexpensive and lightweight, but doesn't produce much reserve power, so you'll find it on many

off-road bikes and quads, with low power needs. Turning the crank with a kick or start mechanism produces VAC.

As soon as this voltage reaches the ignition module, it is sent through diodes and converted into Direct Current (DC). This power is used to charge a capacitor and power the module. We use a door or gate to control ignition.

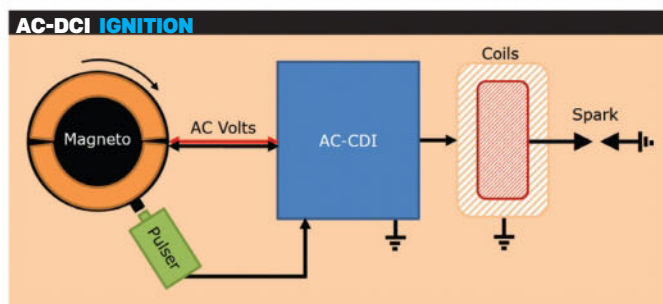
When I leave the house, I open and close a door, because we have undesirables like weather, flies, scorpions and neighbors that love to enter. I'm a poor host, so I use the door to keep them out.

Ignition systems are designed to open and close the door at the ideal time as well. There are three items that control an AC-CDI: the door, a signal and a clock. The door is a Silicone Controlled Rectifier (SCR), which is a solid-state component that acts like a transistor. It uses a voltage signal to close the circuit.

The signal is generated by a small coil, called a pulser. As the crankshaft spins, a magnetic tab passes the pulser and inductively creates a pulse. The clock is a

SHUTTERSTOCK

solid-state timer that receives the pulser signal and times the SCR activation. More sophisticated timers can retard or advance timing based on other inputs, such as throttle position or engine speed.



AC-DCI power flow:

The crank turns, the box is powered, the pulser is activated, the timer is set then the timer signals the SCR to close the circuit. This grounds the capacitor through the primary ignition coil—two sets of coils that are closely wound around each other.

The primary coil consists of a few dozen coils. The secondary coil has several hundred to thousands of coils. Capacitor discharge creates a rapidly expanding magnetic field that moves into the secondary coil and induces a charge.

The increase of coils steps up voltage and produces 5,000+ volts at the spark plug. With enough voltage, the gap of the spark plug creates a plasma channel (aka spark). This plasma peaks at an estimated 10,000° F. In this respect, fire starter sounds very appropriate.

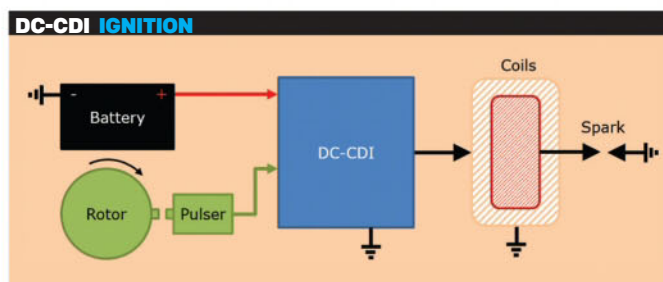
The down side to AC-DCI is the spark quality varies with rpm. Some AC-DCI use separate low and high rpm magneto coils to produce consistent source voltage throughout the rpm range.

DC-DCI

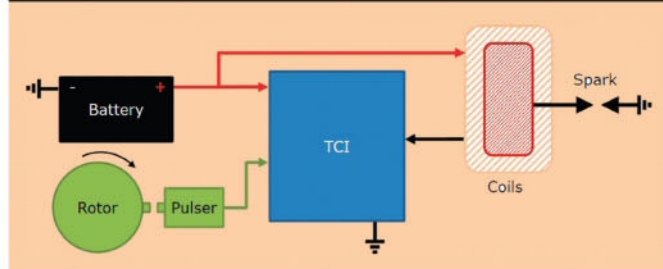
A slightly more complicated system is the Direct Current—Capacitor Discharge Ignition (DC-DCI). It is similar to AC-DCI, but solves the spark quality issue. DC-DCI uses a battery source and steps-up the 12 VDC to 100+ VDC. This fully charges the capacitor every event and produces consistent spark at all rpm.

DC-DCI power flow:

The battery powers the module, the engine turns over, the pulser signals the timer, the timer closes the SCR, the capacitor discharges through the primary coil and the secondary coil is inductively



TCI Ignition



charged. The magneto on this system is used to maintain the battery.

Generally speaking, a longer or more intense spark will improve combustion efficiency. CDI provides a reasonably intense but fairly short spark. A longer time to magnetically field (aka dwell) the primary coil could improve intensity and duration. Herein lies the value of transistor ignitions.

TCI

Transistorized Controlled Ignition (TCI), is essentially a digital version of the old mechanical point system. On points, the primary coil would continually charge until the circuit opened. Once opened the magnetic field collapsed and excited the coils, unlike CDI, which expands.

TCI versions replace mechanical points with transistors. The battery is connected directly to the primary coil and the voltage is not stepped up. The primary coil ground path is controlled by the transistor. The pulser is similar but the timer on a TCI is more sophisticated and may include digital maps and logic circuits.

TCI power flow:

Key-on powers the module and primary coil, the engine turns, pulser signals the timer, which starts then signals the transistor, the path closes and the coil begins to magnetically field.

The timer waits until the primary coil is fully saturated, then opens the circuit. This causes the primary field to collapse and induce voltage in the secondary coil. The result is a digital system that can produce a very intense spark, control ignition timing and theoretically provide longer spark duration.

TCI works very well, but it is not perfect. We are limited by the dwell time of a coil. I have a feeling the next step will be repurposing CDI with Pulse Width Modulation (PWM). This is not a new concept. They ran a similar system on the Kawasaki direct injected two-stroke watercraft, which fired

consecutively 20 times just before and way past TDCC. Direct injected autos are running similar systems.

PLASMA

One possibility is to create a plasma ball for ignition. When our fire starters initiate spark, the insulation breaks down between the electrodes of the plug and a plasma ball forms. It is significantly larger and hotter than the spark, but it doesn't stay in that form for long. It cools and turns into the typical plasma channel (visible spark) within microseconds.

The goal of plasma ignition is to sustain the plasma ball for a longer period of time. There have been many grand exaggerations, but some university level testing has shown improvements in this concept. Theoretically, it could improve combustion efficiency, or make holes in pistons. I'd be happy to test on your bike.

Whatever automotive companies adopt, is likely what motorcycles will end up using. Keep your eye on emerging technologies for automotive combustion engines, which are likely to trickle down to motorcycles, in a decade or two. **MCN**



Royal Enfield's designs for its twin 650's—the Interceptor, left, and the Continental GT, right—were, sadly, entirely predictable.

Opportunity MISSED

Royal Enfield's new GT Continental and Interceptor stylings are solid and safe, but they will, no doubt, leave many wondering what could have been, outside the box.

> By **Glynn Kerr**

It has been a while since I deliberately kicked a hornets' nest. For some time now, I have tried, and to an extent succeeded, to behave myself and not make waves. As someone whose job is to see flaws and resolve them, I'm not an easy guy to be around. Two successive Mrs. Kerrs would no doubt testify.

When ex-Ducati design chief Pierre Terblanche quit Royal Enfield, it was paradoxically both a surprise and a given. Shortly before, he had resigned from Confederate, after only a year with the extrovert Alabama constructor. Before that, he had spent an even shorter spell at the helm of Norton, which prompted me to suggest he might be going for the "World's Longest

CV Award." Terblanche failed to see the humor and promptly unfriended me—not just on Facebook. But that's all water under the Bridgestones now. The latest drama involves the product he no doubt helped kick off at Royal Enfield, the Interceptor 650.

My introduction to the Interceptor was via LinkedIn, when an ex-colleague, now at Royal Enfield, stated how the latest computer technology had helped the company achieve new design heights. I looked from his comment to the photo and back to the comment, then back to the photo. It was the most predictable piece of design I'd seen in years, yet everyone was acting as if it was something more.

Unfortunately, for their new UK R&D center, manned by 240 mostly-Europeans, it seemed to fall short by a wide

margin. It made me wonder what the other 239 were doing the whole time.

Don't get me wrong, from a marketing viewpoint, the new Enfield twins are absolutely what the company needs to expand. Without moving outside the established brand, it's all done with little to no risk. Their domestic Indian market is intensely patriotic, and with an expanding middle class, huge sales of a new all-metal icon from the most authentic of Indian manufacturers are guaranteed.

The fact that it has been entirely designed and developed in the UK is unlikely to dilute the enthusiasm. And why should it? It didn't put anyone off the original Bullet. The title Interceptor, while authentic to Enfield UK's last production model, and a twin at that, has since been taken for Honda's US

model VF750/800F (along with a British grand touring car in the 1960s), so the legal implications might be interesting.

In India, the new twins will be considered high-performance superbikes. Conversely, they'll be unimposing entry-level midsize models in developed markets, where 100 mph performance has been commonplace for decades. Whatever their stance, everyone will love it.

Describing it as "a poor copy of a 20-year-old Triumph" may have been an unfair taunt, but it certainly got the attention of the design team. What started as curiosity ended as pure sport, as tempers rose, but I'm still curious to know how the folks at Triumph perceive it.

Reflecting on my 33 years in the motorcycle business, the opportunity to make real advances in design seems to have declined exponentially. In the early 1980s, we were all struggling to understand the rules of what a modern motorcycle should be.

There were plenty of false directions before everything settled down. The freedoms, along with the responsibility to get it right, were terrifying. Over the years, those rules have become so well established that the challenge has become how to break away from them.

Some companies take on that challenge. They are driven to improve the product and advance the industry, with a longer-term outlook than just instant profit. I have acknowledged before that Honda and BMW lead the way in terms of innovative technology and styling, both helped no doubt by the technical and financial might of their automotive divisions. Even so, they take risks, and accept a certain percentage of failure as an inevitable byproduct.

Even Yamaha, historically famous for its wise fiscal policy of deliberately coming in second to Honda, has introduced plenty of innovative products. The new three-wheeled Niken, which appeared in prototype form at EICMA, represents a huge leap of faith that the concept will appeal to consumers. Urban scooter riders, who have already embraced three-wheelers like Yamaha's Tricity or the Piaggio MP3, are an entirely different species.



While Royal Enfield's classic design for its Interceptors of the 1960s casts a long shadow over current models, the new bikes are likely to sell extremely well in India.

Smaller companies like KTM and Husqvarna have also been pushing the envelope within their budget limits, with fresh new designs that challenge our preconceptions and move the industry forwards. Advances are still being made, but not every manufacturer is equal in this regard. Many companies, especially in East Asian markets, want short-term rewards with zero risk, which is hardly challenging creatively.

In purely financial terms, that logic makes perfect sense. But the policy exploits the industry, rather than contributing to it. We've seen recently how every manufacturer in China can turn out cafe racers and scramblers with minimal effort, tacking clip-ons and exhaust-wrap onto low-tech commuter bikes to create instant personality. It looks cool, but nostalgia is a finite market that draws from past glories and exhibits zero vision.

If a company only achieves the same result as any owner in their garage with a few tools and an accessories catalog, it doesn't bode well for the future of motorcycling. Fortunately, a few visionaries give others a path to follow, eventually.

Enfield's biggest success story has been the production leap from a quoted 32,000 units in 2006 to a projected 900,000 in 2018. Even that figure lies well behind Hero's target of 10 million units, though Enfield's higher price

points to higher profitability per unit. In the short term, Enfield's market is very clearly defined. From a marketing viewpoint, it would be an unnecessary venture into the unknown for them to deviate too far from proven success.

In sales terms, the company has hit the nail on the head with the 650 and it will no doubt find a ready market, but a design marvel it isn't. The visual balance is better than its predecessors, but the visible rear sub-frame behind the seat hump on the cafe racer is still an eyesore. Company executives are assured to become even wealthier, but instead of beating their chests, the UK development team should take the money and slip quietly out the back door.

Like many enthusiasts, I have waited a long time for the next generation of Royal Enfield motorcycles. This could have been a milestone product, while still ticking all the boxes. Instead, the utter predictability of the design is a huge disappointment.

If the Continental GT saw Enfield screaming into the 1960s, the Interceptor has catapulted them squarely into the 1970s. That's probably enough for the Indian market, which will make huge allowances for a traditional domestic motorcycle. But to anyone with an understanding of the international motorcycle industry, it could have been so much more. **MCN**

DAVE EKINS

ONE OF AMERICA'S ELITE OFF-ROAD RACERS



A five-time member of Team USA in International Six-Days Trials competition, Dave Ekins medaled each time. He also effected a shift toward smaller bikes with his success on small-bore Zundapps.



XXXXI. Internat. Six-Days 1966 Sweden:

Gold for Dave Ekins

ZUNDAPP
FIRST in the 50 cc class
FIRST in the 75 cc class
FIRST in the 100 cc class



ZUNDAPP

In his first attempt the American Dave Ekins succeeded in winning a fully contested FIM gold medal in these "Olympic Games" of motor-cycling. The distance of the cross-country test, the severest in the world, was 1000 miles. Ekins covered the track without a single bad wheel although he received his ZUNDAPP only a short time before starting. Also, the other ZUNDAPP riders came off well in the 50 cc, 75 cc, and 100 cc classes. Besides this, the German Silvercup-Team B won the precious SILVERCUP, 3 ZUNDAPP riders among them. Every ZUNDAPP owner profits from the outstanding features of ZUNDAPP motorcycles.

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> By Joe Michaud

Dave Ekins was born in Los Angeles in 1932 and got his first motorized bicycle, a Whizzer, in 1948. He joined his older brother James "Bud" Ekins riding motorcycles through the Hollywood Hills, when Mulholland Drive was a dirt road in L.A. County.

Ekins began racing at 20, and had such sponsors as Velocette, Honda, Harley-Davidson and Zundapp.

In 1959, Ekins and Andy Kolbe raced small-bore Hondas in local TT's and Scrambles. In 1960, the final Big Bear Hare & Hound event started with 1,000 riders. Ekins won the 125cc class and also beat all 175cc entries. Ekins helped design the first Honda Scramblers built for the U.S. market—the CL-72 and the CL-77.

The Ekins brothers excelled in desert racing and motocross. Both were members of the 1964 International Six Days Trials (ISDT) Silver Vase team with Steve McQueen and Cliff Coleman. Dave rode in five ISDTs, earning two gold medals and a bronze.

Ekins rode a Zundapp 100 to win the 1967 Greenhorn Enduro in California, demonstrating smaller and lighter motorcycles could be competitive. He dominated District 37 AMA 250 class for years.

In 1962, Ekins and Bill Robertson Jr. set the first timed Baja motorcycle record of 39 hours, 56 minutes from Tijuana to La Paz on a pair of 250CC Honda CL-72s.

The National Off-Road Racing Association was formed in 1966 and controlled off-road racing in Baja for the next 40 years. Ekins has proudly kept his NORRA membership card—No. 0001.

Q&A

WITH **DAVE EKINS**

Q: You were involved with Honda in 1959, soon enough after the war that anti-Japanese resentment still existed. How did that come about?

A: I was the first one to race a Honda in California, probably in the U.S., and I took a lot of flak for it, too. Some guys I had raced with for four or five years did not like Japanese bikes. Later, I spent some time in Japan on magazine assignments, and once you meet the people, you can change your opinion. But early on, it was tough.

Q: Early races were scrambles events. How was that in those days?

A: We raced scrambles events in Palos Verdes, where there used to be an Army barracks. When they tore them down, they left all the nails. We called that area “Rusty Nails Flats.” They used a big electromagnet to try to pick them up, but we still got plenty of flats. Now, it’s all houses.

Q: You were involved with the final design of the first Scramblers built specifically for the U.S. market. Honda flew you to Tokyo. What did you think?

A: I had ridden two prototypes here in the States, but the 1961 trip was designed to show off the U.S. market production bikes. It had plenty of motor, however they couldn’t decide between two crank designs, a 180-degree Type 1 and a 360-degree Type 2. They brought two bikes to the test track that I could ride, even though I was in a business suit with a borrowed helmet and gloves. After riding around for a while, they snuck in their test rider. I passed him and lapped him. That upset them a lot.

Q: Did they adopt your suggestions?

A: I preferred the Type 1 with 10 percent more horsepower and better traction, while American Honda wanted the Type 2 because it sounded more like British bikes. The homeland powers at HMC wanted to offer both, while AHM wanted to offer only the Type 2. The outcome? A brilliant decision was made by the homeland powers to choose performance over sound, so only Type 1s were sent to the U.S. Back in the States, after we extended the front fork travel and added Girling shocks to the rear, it was very competitive.

JOE MICHAUD



Dave Ekins was a machinist, a champion racer, international motorcycle consultant, even a motojournalist. And a bit of a legend.

Q: How did you prep your bike for the first Tijuana to La Paz event. Those were very early production CL-72 250cc Scramblers, right?

A: Bud, me and Bill Robertson Jr. were all Honda dealers, so we had the first-production bikes in the country. When we got them, Bill and I test rode them in the San Gabriel Mountains in light snow. The shocks were disappointing, so we used Girling short travel rear shocks off a Triumph 3T. Bud suggested six-ply tires, Firestones front and rear, but it all worked. It’s not like we were racing a Hare & Hound. It’s just riding down some dirt roads that turtle trucks drive on.

Q: You had a journalism career as well?

A: I was editor of Motorcyclist magazine for five years. A great experience, and I love the journalistic approach. I also worked at Modern Cycle and launched Dirt Rider, the first off-road motorcycle magazine.

Q: What, in your career, was most important for you?

A: Being the first American to swing a leg over a Honda in the United States in 1959, is the best. Also, I won the District 37 250 class, maybe two or three years, riding a CL72 with Webco cam and S&W valve springs. I won the 350 races at Hopetown three years in a row. And the ISDT medals. I just want to say motorcycles are great. I met some great friends in the industry.



Seeing is Believing

GOING BY CLEARLY visible evidence should put us in a reliably safe position, with decisions based on solid facts instead of iffy speculations. Unfortunately, it's not that simple.

Much is invisible to the naked eye. This may seem obvious, whether discussing metaphysical dimensions, microscopic germs or chemical bonds. People have thought in terms of hidden realities for as long as there have been people. This is true in both religion and science, with each asserting that elements not detectable directly by our native senses can be inferred on the basis of other factors, such as theological reasoning, intuitive convictions or instrument-aided measurements.

Yet the information readily available via our sensorium remains uniquely compelling. A critical part of pilot training involves learning to ignore visual and visceral cues in favor of data supplied by instrumentation, which is not vulnerable to the same errors of reasoning. Apparently, how things look and feel is so powerfully persuasive that sometimes even experienced aviators give such incoming streams credence, and crash as a result.

Consider motorcycle equipment with expiration dates. How many of us ride on tires or wear helmets past their five-year service lives? Old tires may show no visible signs of aging and still sport plenty of tread depth on a bike that's rarely ridden. A helmet still looks as good as new if it has never sacrificed itself for its wearer's cranium and has been carefully stored.

We're told the molecular structure deteriorates in our tires' rubber and our helmets' protective EPS layer over time, but it can be extremely hard to believe this while looking at objects with no trace of decay. At least it's hard to believe it enough to spend the money required to replace them with fresh kit.



We love our old helmets, but the time comes when we've got to let them go.

The same holds true for out of sight items, like brake fluid and motor oil, which may seem perfectly fine, even as they lose their integrity, function less well and harbor an increased risk of sudden and catastrophic failure. Other types of damage are also not readily apparent, but nonetheless present, due to the stress of chronic vibration or the acute trauma of a single impact, such as microfractures in metallic structures or compressed EPS foam in a dropped helmet.

GIVEN OUR TENDENCY to believe what we can see, it's easy to be skeptical of manufacturer warnings and shop assessments based on nonvisual analyses. Prompts to replace and repair can be chalked up to the profit motive in those selling the products. After all, that 6-year-old tire still holds air and the helmet doesn't have a scratch on it.

We don't typically consider that equal doubt can reasonably be pointed at our reluctance, on the exact same grounds: it's in our own financial interest to believe there's no problem!

The adage, "a wise person believes what he sees, while a fool sees what he believes," has some bearing here, too. This saying doesn't take into consideration the wise person's limited visual capability, but it does point out yet another layer of complication. Not only do our own interests limit our willing-

ness to take seriously things we cannot see, but what we do see is heavily influenced by our beliefs, many of which may not even be fully conscious. This isn't only true of fools; subjectivity is an inescapable aspect of human nature.

Prejudice results in misinterpretation, and no one is without prejudice. When we're predisposed to suspect a certain culprit (whether human, mechanical, chemical or otherwise), we'll be unwittingly inclined to seek confirming evidence and construe existing evidence as supporting our preconceived notions.

On the other hand, if we're ignorant of certain possibilities, we'll neither look for them nor register evidence of their existence, at least not quickly. We see what we want to see.

ALL INPUT DATA have associations and connotations heavily reflecting our historical experience, which either deflects or exerts a gravitational pull on our attention and reasoning process.

We don't simply see "the thing, itself." Instead, we see through multiple lenses that enrich and distort our perception. Lenses shaped by what we've been taught and experienced firsthand, combined with our hopes and fears.

Our interpretations of those past experiences are shaped even further by what came before. Hence, the very same sight may appear positive to one person and negative to another.

All that said, none of us would have survived this long if our views were completely inaccurate. Usually, we get it "right enough" to muddle through, even with our inherently incomplete and unavoidably biased vantage points.

You should still replace your old tires, helmets and brake fluid. **MCN**

Mark Barnes is a clinical psychologist, in private practice, and author of *Why We Ride*, excerpts from 20 years of MCN columns.



Back to Backs

BACKS PROVE THAT human beings are a beta product. Human backs may go bad because we make it a habit of walking on our hind legs. Most four-limbed creatures walk on all fours, so their backs are held up on both ends.

For a wonderful explanation of why we may have ended up walking on our hind legs, check out William Calvin's, "The River That Flows Uphill."

There's been lots of research about treatment for back pain, because it's so common. Much uncertainty persists, but there are a few things that most health care providers agree on:

SEE A PHYSICIAN if back pain:

- ▶ starts without aggravation or injury in someone over 60.
- ▶ is associated with worsening weakness or numbness in your leg.
- ▶ is associated with fever.

ADDITIONALLY:

- ▶ Unrelieved nerve pressure may lead to permanent nerve damage.
- ▶ More than two days of bed rest isn't helpful for back pain.
- ▶ Avoid ongoing use of narcotics, like hydrocodone or oxycodone.
- ▶ Physical therapy or chiropractic works better than pain medicine.

MOST FOLKS START having some disc disease by their forties or fifties. Bending forward can irritate a bad back by squeezing bulging or ruptured discs backward, so they push on the nerves, causing pain or weakness.

Extension stretches (leaning as far back as possible, or doing a pushup with your legs and waist on the ground) pushes bulging discs forward, relieving pain. If you do this while standing, be sure to hold on to something!

My back's been painful, on and off, for 30 years. I've seen orthopedic surgeons, had injections and acupunc-



ture, done Feldenkrais work, endured all kinds of massages and spent far too long lying in bed doing nothing at all.

After I broke my ankle a couple of years ago, my back got worse. I started taking arthritis-strength acetaminophen (1,300 mg) twice daily, just to function. If I walked two blocks, I'd have to stop and stretch—depressing.

A local physical therapy and Pilates studio was having an open house. The owner saw me stretching and offered to show me some Pilates based therapy. I went twice for about an hour, where we used some of her impressive and intimidating Pilates machinery.

After only two sessions, my back was almost completely better. I only took acetaminophen once or twice after, but that's it. I've added a couple of brief extension stretches, which stopped any minor discomfort I had within 20 seconds. Having results this quickly and impressively made me curious about the Pilates method.

JOSEPH HUBERTUS PILATES was born in Germany in 1883 and suffered from asthma, rheumatic fever and rickets as a child. His father did gymnastics, so Joseph studied that, plus bodybuilding, yoga, boxing and Qi-Gong. At 14-years-old, he was toned enough to

pose for anatomical drawings.

Interned as a hospital orderly by the British on the Isle of Mann in WWI, Pilates helped patients with recovery. He achieved good results and used springs from beds to support the arms and legs he was working on, which seemed more effective.

After the war, he became an enthusiastic proponent of physical training, moved to New York and opened a successful studio, which focused on combining his knowledge.

Pilates emphasis includes breathing, concentration, control, centering, postural alignment, precision, relaxation and stamina. These are the same skills we use as motorcyclists.

I recall my first motorcycle training with Reg Pridmore's CLASS. He mentioned concentration, relaxation, smoothness and control—all central to Pilates training. I began to see how fitness skills might translate well into motorcycling, as well as other sports.

If you want to ride longer, with less pain before, during and after, consider stretching and other core-strengthening routines, like Pilates. **MCN**

Dr. Flash Gordon is a primary care physician, author of *Blood, Sweat & Gears*, and former director of Haight-Ashbury Free Clinic.



Silence

LOUD EXHAUSTS, ON all vehicles, are typically illegal. Regardless of what state you're in, there's likely a statute prohibiting excessive noise. Some are even more specific, citing permissible decibel levels. Additionally, every state adopts the Environmental Protection Agency's (EPA) rules. On any new motorcycle sold in the United States, you'll find verbiage on the exhaust pipe indicating it complies with EPA standards. States can be more restrictive with these rules, but cannot be more permissive.

Exhaust violations exist on every roadway in America; whether large commercial vehicles, Fast and Furious wannabees or motorcycles. Violations may include smoke and noxious fumes, excessive noise or unsafe alterations, yet enforcement seems nonexistent.

Let's delve into the notion that loud exhaust has the potential to make a rider safer than an OEM pipe. The "Loud Pipe Save Lives" argument is easy to digest—even if they don't see me they'll hear me. Despite potentially adverse effects, including hearing loss, citation by law enforcement and an adverse perception by others, there is a cultlike following, but zero empirical evidence to validate the claim.

In the police academy, we conducted real-world testing on the effectiveness of a siren on the interstate. We loaded a car with five recruits, traveling at 55 miles per hour, windows up, with no police radio, music, conversation or any other audible distraction. They were instructed to raise their hands when they heard a siren, as a police car with an activated siren approached from the rear at 65 miles per hour. We wanted recruits in both cars to experience the effectiveness of a siren at a closing speed of 10 mph, a far cry from what the closing speed would be in a true emergency.

In the typical experiment, recruits would raise their hands about two car

lengths away. The siren is mounted facing forward on a police vehicle, but nowhere near as effective as new officers anticipated. This taught them not to be dependent upon the siren in traffic.

They are also reminded to anticipate sudden and unexpected reactions from startled drivers, because motorists may not hear the siren until the last second. Loud pipes are even more useless at highway speeds, as they are pointing the wrong direction. In urban environments, where speeds are reduced, exhaust volume may be noticed, but the sound is still nondirectional.

Lack of enforcement has led motorists to assume the legality of what are illegal actions. The operators of sports cars with coffee can mufflers, twin smoke stacks through the bed of their pickups or unbaffled pipes on their motorcycles are all noncompliant. The confusion is exacerbated because the EPA leaves the onus of enforcement upon individual states.

BESIDES THE AMBIGUITY of laws and who should enforce them, there's also a cavernous gap in the ability to enforce noise laws. Some statutes are too vague to enforce, citing language such as "unnecessary" or "unreasonable." Others try to make it easier, stating exhaust cannot be louder than the original equipment, but this requires the officer know what the original equipment sounds like, to make the comparison.

If the law cites illegal decibel levels, then the officer needs a decibel meter. This requires funding for purchase, uniform training for the officers, calibration by a certified laboratory, acceptance by the courts and ultimately a desire by the officer to make the stop in the first place.

Stock pipes on new, street-legal motorcycles bear an EPA stamp. After-market pipes typically don't, because they either lack baffles or are minimally muffled. EPA stamping assisted law



Loud exhaust pipes are almost always illegal. Enforcement is left to each state.

enforcement somewhat, but pipes can be altered without the officer knowing it.

There's little motorcycle-specific training offered, so officers tend to stick with areas where they've received training. Pipes lacking the EPA stamp, those marked "track use only" or "not intended for highway use" are what law enforcement call clues.

When we look at the bigger picture, should officers even concern themselves with pipes, when so many more serious moving violations are taking place? It's a lot easier to stop someone for distracted driving and potentially much better time spent.

ENFORCEMENT ALSO SUFFERS from apathy, excuses ranging from, "No one is being hurt," to "It'll be thrown out in court," coupled with the standard officer's excuse not to stop motorcycles for any reason. If they decide to flee, there may be a chase, which rarely ends well. News headlines read, "Officer chases motorcyclist to his death." Such an excuse is real, and an pathetic cop-out.

Loud exhaust creates a less audible signature than a high-powered, front-facing siren, which we've proven is barely effective. Instead of relying on the ineffectiveness of noise, we should work on improving our visibility and obstacle avoidance skills. You have the right to remain silent. **MCN**

Jim Halvorsen is a retired police officer, MSF RiderCoach, police motor instructor and architect of motorcycle checkpoints.



Hog Heaven

HARLEY-DAVIDSON MUST be doing something right. The Motor Company may now count one Mickey Cohen as a fan, as well as a Street Glide owner. It wasn't always thus. In fact, Cohen, a lifelong motorcycle guy, is only a recent convert.

"I hated Harley-Davidsons. I thought they were the biggest damn pieces of crap," said Cohen, owner of Mickey Cohen Motorsports, one of the West Coast's premier motorcycle speed shops. "Then, the 2014's came in and you could just see the fit and finish was better. I thought, 'Hey, they're doing something to improve things.' Then, I started tuning them and, wow, it was amazing, the difference."

Cohen is all about performance. His approach in his Ford Mustang GT500 can be heard a block away. His Ford pickup is a monster. We won't even get started on his boat. He loves taking motorcycles—new ones, old ones, big ones, small ones—and tweaking and tuning and optimizing them until they are reduced to the simple equation of twist throttle/get power. He uses his own Harley-Davidson as his prime example, and he has a favorite analogy: "The throttle response on my Harley is just like a Japanese bike's."

Every rider knows what that means. Anyone who has ridden a stock Harley-Davidson understands the significance. Most of the big stock Harleys, the 103s and 107s, will give you about 75 rear-wheel horsepower and about 92 pound-feet of torque, generally in a roundabout way. Cohen says he now gets about 118 horsepower and 115 pound-feet of torque from his Street Glide—immediately.

"I love that thing," he said. "Now, it has all kinds of power. It sounds great. People get out of my way when they hear me coming. And, it's so comfortable. You can ride it all day."

SOUNDS LIKE THE greatest bike in the world, doesn't it? Harley V-twin power, delivered pure and strong, with a little turn of the throttle. No choking exhaust, no lag in throttle response.

How did he do it? Well, it's attainable through a process with which most Harley-Davidson owners are familiar: modification. Here's Cohen's own recipe for the sizable jump in horsepower, torque and enjoyment:

First, he recommends an engine kit. Cohen installed a Screamin' Eagle Twin Cam Tire Shredder Kit—103ci to 110ci. The kit includes Screamin' Eagle 4.0-inch bolt-on cylinders; forged 10.2:1 high-compression pistons and rings; Screamin' Eagle 58mm throttle body; high-flow fuel injectors; Screamin' Eagle CNC-ported cylinder heads; SE-259E cams; Perfect-Fit pushrods; Screamin' Eagle high-capacity roller tappets; top end and cam cover gaskets; and a heavy-duty clutch spring.

The best thing about this mod is that it's a new head with a cylinder that has not been bored out, so the sleeve is full thickness. Cost: \$2,649.95

Cohen put a robust aftermarket pipe on his Street Glide, which required a high performance 58mm air cleaner and recalibration with the Screamin' Eagle Pro Street Tuner. Cost: \$2,200

The work was done at his shop and he says labor is about \$1,500, though he'll do it for \$1,200 if all the work is done at once, and it can all be done in one day!

THAT'S ABOUT \$6,350, to turn a stock 103 into a fire-breathing beast that purrs like a—well, a monster. Cohen



says he installed about 20 such kits in 2017 for Harley-Davidson owners.

"They'd come in here and hear about this and say, 'How fast can you get it installed?' Then, they'd come back in and say, 'Damn. This is how the bike shoulda run in the first place.'"

Which begs the obvious question: Why don't they run like this in the first place? It's the emissions detuning, right?

"That's part of it," Cohen said. "But they also want to sell you a kit. You bought a motorcycle; now, maybe you'll buy a kit."

RIGHT. EVEN SO, you spend sixty-four-hundred bucks on top of the cost of the bike, and when you sell it...

"I'd never sell this bike," Cohen said. "Why would I ever sell it? It's perfect."

So, I find a lightly used Street Glide, on CycleTrader.com for about 16 grand. I kick in an extra sixty-four-hundred and I get back what is essentially a new motorcycle, with massive power and nearly instantaneous throttle response?

We get to ride a lot of different motorcycles, working on MCN, many of which I want to take home and never give back. I've owned a Honda, a KTM, a Victory, a Yamaha and a Triumph, but I've never wanted to own a Harley-Davidson.

Until now. **MCN**

Russell Evans is managing editor of Motorcycle Consumer News. He has been a motorcyclist for more than 40 years.



Give a Shift

MY INDOCTRINATION INTO rider education included taking many riding courses, editing articles by David Hough and Keith Code and then developing my own Advanced Riding Clinic. One challenge of being a safety curriculum developer is drawing the line between enthusiasm and advocacy.

As a rider, I love to share the joy of motorcycling with anyone who will listen. As a safety professional, I only want folks who have excellent skills and judgment to share the road with us. At the center of this internal struggle is an exciting campaign called “Give a Shift.”

The motorcycle industry has been shrinking. New riders are not being attracted to our sport as past generations have. The Give a Shift panel of experts identified five focus points the industry needs to address within the next three years. These pain points are followed by some of the panel’s comments relating to rider education and my own personal thoughts.

1. NO LONGER DESIRABLE.

“While there is an inherent draw to riding from those who seek adventure, the reality of low-income, difficult credit access and holistic cost of entry (including gear and training) conspire to reduce consideration by younger demographics. Another detractor is safety concerns from potential customers and their parents.”

We cannot make two-wheeled motorcycling safe, but we can make it a manageable risk, with smart choices about vehicles, gear and training, etc.

The best way for that to happen is for motorcycling to begin as a family activity, where parents and contemporaries can work on managing the risks as a team.

2. ELIMINATED BY AUTONOMY.

“Smart vehicles will register our presence and will deliver to motorcyclists the

same safety [they] promise the automotive community.”

New riders have become dependent on screens. The sooner we start the connectivity process, the better chance we have of integrating into the smart grid instead of being forced out of it.

This will likewise require integrating connectivity theory and operations into our training processes.

3. ACTION TOWARD GROWTH.

“The United States Motorcycle Coaching Association (USMCA.org) will help create rider bases for years to come, but has yet to be fully promoted and adopted by many OEMs and the aftermarket.”

USMCA is an industry-sponsored group that will work to bring some national standards for individual motorcycle coaches and instructors, as has been done in other industries, such as skiing and cycling.

While the USMCA has thus far not reached out to independent state safety programs or the National Association of State Motorcycle Safety Administrators (SMSA.org), it will, hopefully, open itself up to the vast knowledge and experience of these professionals.

4. WE MUST SELF-PROMOTE.

“Brand-neutral websites and media that tell stories of ridership and adventure, and approach safety and training in a more modern and engaging manner.”

The curriculum at Total Control is continuously improved, which is why it is not book-based. When research provides new data that suggest more effective ways to train, an updated version can be released electronically virtually overnight—similar to computer software updates.

5. BAD FIRST EXPERIENCES.

“Speakers at the recent MIC Symposium noted that some students’ desire to ride

was squashed by the training experience, rather than inspired by it.”

The only way the sport of riding can grow responsibly is to continue to raise the standards for becoming both a licensed rider and a licensed motorcycle safety professional.

That means letting some folks know motorcycle riding (or instructing) is not for them, and inspiring others to continuously strive for perfection. We should always model safe behavior while riding.

It is irresponsible to not be upfront and honest about the dangers of riding to prospective motorcyclists. Similarly, if the instructors are not subject matter experts, and are not genuinely enthused about lifelong learning, they will not inspire the students to take the sport seriously or continue their education.

WHEN TOTAL CONTROL Training took over the California Motorcyclist Safety Program, I was shocked that virtually none of the training sites offered anything other than beginner training, which provided a DMV licensing waiver.

Even worse, approximately half of the instructors had never taken a riding course beyond the beginner level, and virtually none of the instructors wore riding jackets when demonstrating techniques to the students.

If there’s one thing I’ve learned in all my years in the motorcycle industry, it’s “The more you know, the more you spend.” Educated riders spend more money on bikes, gear, accessories, training, travel, etc. That’s something that both sides of the counter can be happy about.

You can read the entire Give a Shift roundtable discussion at: spaces.hightail.com/receive/SdhSlwvnDH. **MCN**

Lee Parks (MCN editor '95-'00) is author of Total Control: Performance Street Riding and proprietor of Total Control Training.



Bulletproof

I RECENTLY MADE my annual trek to the International Motorcycle Show in Long Beach, to spend the day slobbering over all the shiny new models, daydreaming of which ones I would add to my stable should I happen to win the lottery. It happened to be one of the warmest, most beautiful November days ever and the free motorcycle parking was jammed with like-minded riders. The convention center floor was shoulder-to-shoulder black leather and bright textile riding jackets.

The three bikes getting the most attention were the all-new Honda Gold Wing, the Yamaha Star Venture and the BMW K 1600 Bagger. Each of these bikes carries a plethora of the latest electronic gadgets, including programmable suspension, keyless ignition, semi-automatic transmission, LED instrumentation, Bluetooth, GPS, self-adjusting headlights and myriad other gewgaws.

Slithering my way through the crowd surrounding one of these bikes, I overheard a conversation on a topic that used to be commonplace, but not in the past decade or so. A couple of older riders (like myself) were decrying that all that fancy electronic crap means a lot of extra things to breakdown.

I specifically remember applying that logic to the 1988 BMW with ABS and the 1984 Honda Gold Wing Aspencade with the first digital dashboard instrumentation. The first digital dash turned out to be a disappointment and was quickly dropped by Honda, but ABS caught on and is rapidly becoming an industry standard. Now that technology has caught up, the digital dash has achieved the same status. You can't stop progress.

IT ALL BOILS down to reliability. Early electric starters on motorcycles were not very reliable and were backed up with kick starters. Believe it or not, even the vaunted Gold Wing carried a kick starter



The all-new Honda Gold Wing is one of the latest models to push the limits of the technology envelope.

the first few years it was produced, hidden under the side panel—just in case. Early fuel-injection systems tended to vapor-lock in high-temperatures, leaving you stranded until they cooled off. The early mag wheels, which replaced industry-standard spokes, cracked easily if you hit a good-sized pothole.

Some of us are old enough to remember when we didn't trust tubeless tires or hydraulic clutch and brake controls. If your clutch or brake cable broke out on the road, at least you could jury-rig something to get you home! I limped home once with a pair of vise-grips tucked between my knee and gas tank, clamped onto what was left of my clutch cable, so I could pull on it to shift. And you never went anywhere without a patch kit and a spare tire tube.

I even carried a couple of spare sparkplugs, in case one fouled-out, plus a master link and chain-breaker tool, for when the drive chain inevitably broke.

THIS WAS WHAT motorcycling was about. Though I wax nostalgic about it here in print, the truth is I don't really miss it. Sure, motorcycles have become much more complex, and when something breaks, the chances we can fix it

ourselves out on the road have become virtually nonexistent. The last two times I broke down, the best I could do was punch buttons to bring up a fault code on the dash. I barely had a clue what the heck had gone wrong before I called for a tow truck. On the flip side, I've only had two breakdowns in 110,000 miles.

Were we correct in assuming new and more complex technology equated to bikes somehow becoming less reliable? The answer isn't a simple yes or no. In some cases, very new and untested tech increases the risk of a problem, but when it's technology we've become accustomed to using every day in our homes, cars and at work, it becomes an improvement that has already proven trustworthy and reliable.

Thinking back to the 1980s, I could count on something going wrong with any bike every 5,000 to 7,000 miles, rather than 110,000. The old bikes may have been a lot easier to fix when they went balls-up, but they also crapped out a lot more often. Embrace the technology and ride on! **MCN**

Fred Rau (MCN editor '91-'95) is author of *Motorcycle Touring Bible* and proprietor of Fred Rau Adventure Tours - FredRau.com.



Ideal Cylinder Boring

CREATING STRAIGHT AND true large diameter holes in materials like iron, steel and aluminum has never been easy. Since men first made war with cannons in thirteenth century China, the need to make accurate bores has been critical to technology around the globe.

GUNS

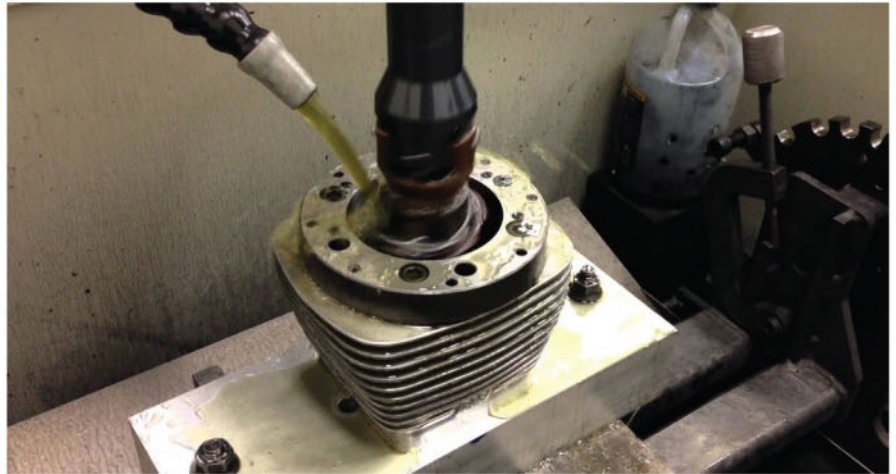
Gun drilling, or the process of machining holes in solid metal barrels was developed in the late 18th century. It began by using traditional twist drills that needed to be regularly withdrawn for the removal of chips. Over time, the gun drill design incorporated a hollow center so that pressurized cutting fluid could be applied directly to the cutting surface and a V-shaped flute on one side so that chips could be flushed away without stopping.

Even with good tooling, a drilled bore may deviate from its desired path by as much as several thousandths of an inch per foot. The traditional method of centering the bore in a gun barrel was to locate the true center of the drilled bore and then recut the outside of the barrel around that center. The old hexagonal rifle barrels were hand filed to be symmetrical with the bores in the same fashion. As a test for straightness, a tight wire passed through the barrel could be eyeballed for reference.

Careful hammering on a rifle barrel's sides was the preferred method to correct the worst bends. After gun drilling, handheld reamers were used to smooth the rifle barrels, and the best old-time gunsmiths could achieve tolerances of just 0.0005 inches—excellent even by modern standards.

ENGINES

Without equipment developed by John Wilkinson in 1774 to accurately bore large cast iron cylinders—now referred to as the first true machine tool—the



To duplicate the mechanical stress of bolting the cylinder head to the cylinder, boring and honing done with torque plates can improve rings sealing, reduce friction and oil consumption and boost power. The unit is made from 2-inch thick, 6061-T6 aluminum.

improved steam engine designs of James Watt, which powered the industrial revolution, would have been for naught. Sixty years prior, Tomas Newcomen's steam engines relied on hand-hammered iron bores that leaked badly around their disc pistons, despite wetted leather piston rings to improve sealing.

Besides the obvious machining challenges to achieving truly straight machined holes, modern engine cylinders have all sorts of challenges to overcome if they are to remain adequately true in a running motor. Perhaps the most unexpected is the issue of proper

metal casting.

As someone who once made a living selling hand thrown ceramics, I learned how important it was to let pottery cool gently after the kiln was turned off at approximately 2,300° F I'd leave the top damper shut for at least the next eight hours, but in school I witnessed many people who were too eager to open the door, hoping to speed the cooling phase and retrieve their treasures. A loud tinkling sound inside the kiln was the audible sound of the warping, cracking and glaze crazing that invariably occurred.

Iron castings do the same thing. If you let them cool slowly in the mold, the parts' final structure can be very stable, ideal for machining to tight tolerances. But if you take them from the mold too soon, they warp, and the metal's internal grain structure will be inconsistent, with hard and soft spots that make accurate tooling difficult, if not impossible.

When I spoke with Millennium Technologies, a premiere shop for motorcycle cylinder boring and refinishing in Plymouth, Wisconsin, problems related to inconsistent metal casting were high on their list of possible reasons for poor cylinder cores. Note that motorcycle and



James Watt's "double acting" steam engine was the first to use a separate condenser and utilize rotary motion, more than doubling fuel efficiency.

Dee Works, CA

car OEMs are as eager as my one-time students to speed production and open casting molds as soon as possible.

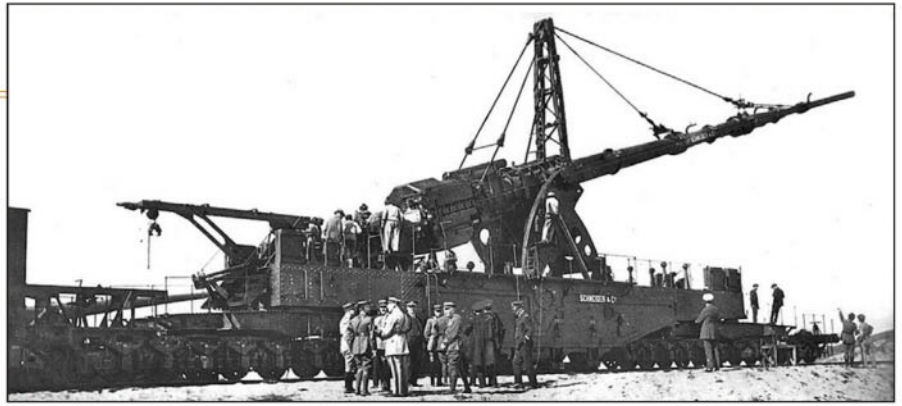
Also consider that cannons were essentially symmetrical shapes, so that the inevitable effects of metal shrinkage during casting were confined to a single axis. Engine blocks are much more complex, and different wall thicknesses and irregular shapes greatly complicate uniform cooling. The artistry of metallurgists and foundry men were key to successful results for hundreds of years and still make metal casting its own specialty.

RACING

Note that the metals in engines will tend to take a set after aging and many heating and cooling cycles, sometimes referred to as “seasoning.” At one time, Nascar engine builders would comb junkyards for serviceable engine castings that wouldn’t warp like new parts, justifying all their expensive machining efforts. Later, techniques were developed to pre-season castings, using high-frequency vibration tables, heat- or cryo-treatment and various stress-relieving and tempering methods. Such techniques are still employed on the best racing engines.

Even if you can cast a metal part without flaws, insuring an accurate bore in the finished product is still difficult. It’s normal practice that machinists will bore cylinders to a close approximation of the desired final dimension, then use honing stones to achieve the final finish, further straightening the bore in the process. At one time, craftsmen skilled in honing were essential to creating fast engines, but computer controlled hones are currently the preferred method.

I can personally attest to the difference computer honing makes. When I was teaching mechanics in Santa Fe Springs, California, I would carry engine blocks to Vance & Hines’ nearby race shop for CNC boring and honing. The engines ran so smoothly, with such reduced friction, I was convinced.

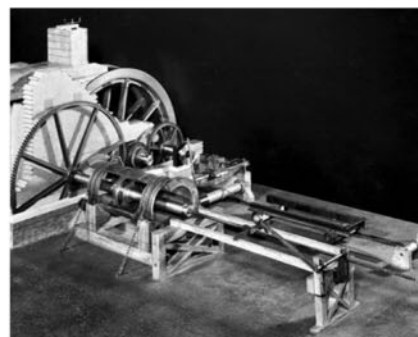


The technique of boring originated with cannons. Used by the Germans in WWI, the largest gun ever fired had a 112-foot barrel, an 8.3-inch bore (later 9.25 inches) and could fire a 234-pound shell a distance of 81 miles, reaching 25 miles high, into the stratosphere.

In addition, racing engines are regularly treated to techniques that are not always applied to mass-produced products. For instance, the technique of using torque plates—thick sections of aluminum or steel, depending on the engine’s construction—bolted to the tops and sometimes bottoms of cylinders, using the same cylinder head bolts, gaskets and same bolt torque values used to assemble the engine. This duplicates the mechanical stresses on the cylinders present in an assembled motor, which tend to warp bore straightness, causing bulging of the metal adjacent to the bolts and can amount to several thousands of an inch on large-bore cylinders.

By doing the boring and honing (sometimes just honing) with torque plates installed, the finished bore will be straighter in the running motor, improving ring sealing and reducing blow-by, and of course, making more power.

For the ultimate in boring technique, it’s now standard procedure for Formula



Considered the first true machine tool, John Wilkinson’s original boring machine made James Watt’s improved steam engine practical, ushering in the industrial revolution.

One and other pure racing motors to be “hot honed,” a process in which the cylinder block is not only torque plated, but also filled with hot coolant under full radiator pressure, just as it would be on the track. In fact, hot bore distortion can be twice as great as the distortion eliminated by torque plating, and coolant pressure can cause the cylinders to “hourglass” or narrow in the middle.

The advantage to hot honing is that you can run even tighter clearances, for even better ring sealing and 1 to 2 percent less friction. Strangely, when the block cools down after such machining, the bore shapes may be minutely, but distinctly, oblong, rather than round. In order to start up these motors, their coolant must be at 80° C, otherwise they seize. You don’t simply turn the ignition key on an F1 car, it may take a half-hour or more to prepare one for starting.

BECAUSE THE HIGHLY developed tooling and expert manual skills needed to make straight, true holes were originally concentrated in arms factories, it should be no surprise that the same companies would also utilize their talents by manufacturing cylinders for internal combustion engines. The names of famous gun manufacturers that also built motorcycles is long: Benelli, BSA, CZ, Enfield, FN, Husqvarna, Iver Johnson, Simson, Mauser and Winchester, to name the most well-known. **MCN**

Dave Searle (MCN editor ‘00-’16) started freelancing for Road Rider in 1988 and became the technical editor of MCN in 1996.

- » Indian Scout Bobber
- » BMW G 310 R

Vintage



Striking a Blow for Quality

In the mid-1960s, the term “Made in Japan” was a punchline. Japanese motorcycles sold in the U.S. were generally small, like the step-through Super Cub that starred in the company’s “You Meet the Nicest People on a Honda,” advertising campaign.

For large-displacement bikes, American motorcyclists favored British imports by a wide margin over Japanese brands, and Honda’s largest was a 650. The introduction of one motorcycle in 1969 was instrumental in changing perceptions—the Honda CB750 Four.

Honda had achieved a high level of success on the World GP circuit, but withdrew from racing after the 1966

season. Upon learning of Triumph’s plan to develop a 750cc triple, Honda set out to build a large-bore bike to compete with offerings from BMW, Harley-Davidson and Triumph, using knowledge gained in its racing efforts.

In 1967, Honda determined it would also build a bike around a 750cc engine that would produce a maximum of 67 horsepower. Honda sought to satisfy a few key directives: High speed cruising stability; reliable braking; minimal vibration; excellent ergonomics and ease of instrumentation use; long-lasting, quality components; and original designs for surface treatment technologies that would be easy to mass-produce.

Once the inline four-cylinder engine with a transverse overhead camshaft was designed, tested and ready, MSRP was set at \$1,495. At a time when most large bikes were priced between \$2,500 and \$4,000. Sales exploded.

The initial production forecast was for 1,500 units annually, which quickly became a monthly figure, then doubled. Demand was such that some buyers paid a premium of more than \$500 to get their hands on one.

The SOHC 750 that transformed motorcycle sales and growth for Honda stayed in production through 1978, then continued with a double-overhead cam until 2003. **MCN**