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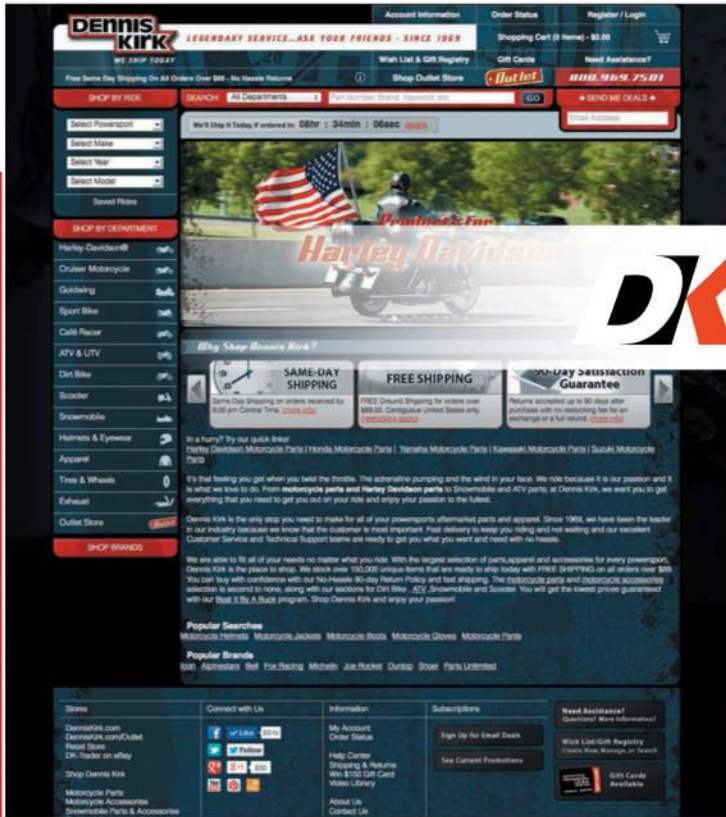
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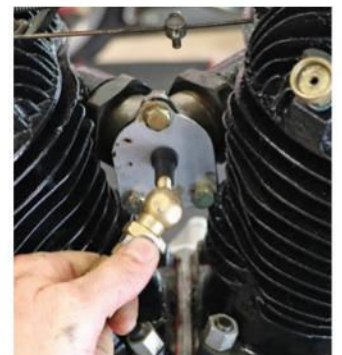
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ITEM 95896



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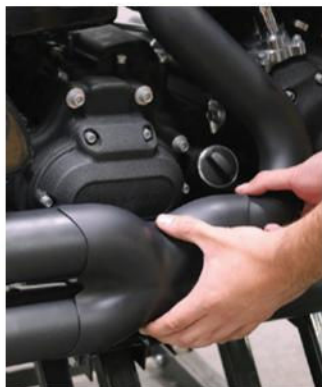
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Unfinished Business

I just got a text from a friend in the midst of working a deal to buy an unfinished project bike. It's a rigid Ironhead Sportster chopper with an extended springer front end and wire wheels. From the grainy cellphone shot he sent me it looks like the bike has no paint, and the tank (with obligatory see-through sight-window tubing) and rear fender are bare metal.

*...could be a blessing or a curse,
or a combination of the two*

There's a tubular steel fabricated sissy bar and an ill-fitting seat, which bears a slight resemblance to a Softail seat you'd commonly find at a swap meet. The handlebars are straight dragbars, with controls in place, but apparently no cables, and there don't seem to be any instruments. The engine is bolted in place but doesn't appear to be wired up, and there's no chain connecting the sprockets together. There are tires mounted on the wire wheels, but I can't tell the condition from the image, and the bike appears to be a roller sitting on a homemade wooden workbench.

There you have it. I'm sure you get the mental picture of what I'm looking at. There might even be one sitting in your garage right now. Accompanying the picture in my text window is the question: "Think this is worth \$2,600?" Well, that's a loaded question, I thought. That price is a smoking deal if the engine and trans are ready to run, if the tires aren't dry rotted, and if the welds on the rigid rear end were done by a qualified and licensed welder. My immediate response to the sender was "Well, it's a better deal at 2K." Without being there to inspect the bike, I couldn't really say for sure if it was worth the coin.

Buying someone else's unfinished project could be a blessing or a curse,

or a combination of the two. As you can imagine, there are both positives and negatives. On the plus side, most of the major purchase investments are already done. In this case, the project seemingly needs paint on the body, which is a plus, as it allows the new owner to personalize the bike; it's also a minus, as quality paintwork can be expensive and take a long time. The bike needs electrical wiring and lighting, which shouldn't cost too much. It also needs hoses, cables, and a chain, which can be a pain to measure for and get just the right length, but once that's determined, those should be off-the-shelf items. And any miscellaneous hardware should be easily obtainable.

That's all fine, granted all the work that was done thus far is up to snuff. As mentioned earlier, were the welds done properly? How about that fuel tank clear hose sight-window? Are the fittings brazed or welded? It would be a shame to see any bike go up in flames because the previous owner didn't make sure the fuel tank was leak-free. Is the springer front end ready to roll? There's a lot of hardware holding that thing together. Are any of the bolts even tightened?

The list of questions in my head goes on and on. Sometimes going



to buy a partial bike ends up taking hours for me, as I dig deeper and deeper for information from the seller. Where the wheels true before the tires went on? Are they balanced? Heck, do they even hold air? And what's going on inside that engine? What's the history? How old is it? And when did it last turn over? (I usually ask that, as I've found asking when it last ran is a futile question.)

Far be it for me to turn you off from buying someone else's unfinished project. But I just wanted to point out some things that can go both right and wrong. Besides, I'm a sucker for a full or partial basket case. In the end I encouraged my friend to do a little more investigating and ask the seller some of these questions I've listed here. We went back and forth a few times via text, and he was off to finalize the deal. I hadn't heard back from him after a few hours, so I lobbed a text at him and told him if he did get the bike, we'd love to have him shoot some good pictures before he got started on finishing it up. And if he could take pictures all along the way, we'd be happy to run a story in *American Iron Garage*. So, stay tuned, folks, you may get to see this bike that's in my phone's text message. Now let's just hope the seller wasn't a hack. **AIG**



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Bearing Down On Your Bling

It's important to keep your bike clean and in working order. This makes your bike more reliable, but, more importantly, safe! But how well do you know your bike? This reminded me of something that happened at this year's Bonneville Motorcycle Speed Trials.

It's important to know your bike and check it out before you ride

I had just finished a run on the salt flats, returned to my pit area, and parked my bike on the blue tarp. For those that haven't been to Bonneville, you place a tarp on the ground of your entire pit area. This serves two purposes: first, it protects the salt from any contamination from sources such as engine oil, chain lube, cleaners, and fuel. Second, the salt clings to everything—shoes, tires, tools, and other items in your pit area. The tarp is the barrier to keep things clean.

So after I parked in my pit area, I went to get my timing slip and was happy to see another new AMA record. Now it was time to check over my bike prior to my next run. As I sat on my stool and started wiping the bike down, I noticed a shiny ball bearing underneath the bike. Nothing else had been on the tarp since I had spread it out, and now I see this. My bike only features a single ball bearing at the kick-starter detent ball, which was still there. The clutch rod has one, but that was fine, too. There is a ball on the detent for the shifter drum, but that assembly was tight—it's even safety wired. Man, my mind was a mess trying to figure where this ball came from. I kept on cleaning and thinking, and I eventually loaded the bike up for the day, preparing for my next run the following day.

But that night my mind was still trying to figure out where that ball bearing came from. Was the bike safe to run the

next day? After a night of restless sleep, I was still thinking about it.

As I was brushing my teeth something clanged in the sink. I looked down and saw my earring! It had fallen off because...the ball bearing from it was gone!

It's important to know your bike and check it out before you ride. There are checklists, but I thought it would be handy to have a daily check list.

My Daily Checklist

1. What condition are your tires in? Check for any cracking and check the tire pressure before every ride. Be sure to use a metal valve stem cap. These metal caps ensure keeping contaminants out, and they have a rubber seal to hold air pressure.
2. Check the lubricants and other fluids. Check the engine oil; when was the last time it was changed? Are there any visible signs of fluid leaks? Don't forget the hydraulic brake fluid, and be sure to use the correct type if you need to add some.
3. How are the hand controls? When you pull the lever in, is it properly adjusted and smooth? Does the throttle assembly feel smooth so that when you take your hand off, it snaps back to the closed position? If not, time to get your cables lubed or replaced.



4. Do all your lights work? Be sure to check that the brake light works with the front lever and your rear brake pedal.
5. Are your fuel lines starting to show signs of aging? Maybe they're stiff or beginning to crack. If so, it's time to replace.
6. Check that your brakes work. Do you hear any scuffing sounds from a worn pad or shoe? Are the axle bolts tight and cotter pins in place?
7. If you have a chain drive, be sure that the chain has been cleaned, lubed, and adjusted correctly. If you have a belt, check for cracking and proper tension.
8. More generally, check your bike entirely, and if something doesn't look right or feel correct, take the time to get it fixed.

Hopefully with a daily checklist, you'll become more familiar with your bike, reliably keeping you on a safe path. Oh, and if you find a loose ball bearing, check your earring! **AIG**

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Old Bikes Yield New Projects

In my last column I talked about how the building bug had gotten me pretty bad. Well, in true Chopping for Broke fashion, I went out looking for cheap, buildable Shovelheads. I had a couple of unpromising leads, and the prospect of finding a bike was starting to look a bit dim. Don't get me wrong, there were plenty of bikes out there, but most of what was in my price range was pretty much just a titled frame and an engine, some with or without the transmission. From a builder's standpoint, that really is all you need. But half of the fun of getting a new bike is tearing it down and learning every nook and cranny of your chopper-to-be. After a bit of looking I finally found my bike. A 1976 FXE in about as bone stock a condition as you could hope for.

... it wasn't in perfect shape, but are any of the bikes we start with?

A day later, my friend Kyle and I went out to take a look at the bike. As we were looking at it, it became apparent the old bike needed a little bit of love. The worn out cylinders didn't have much compression left, the stock carb left the 74" gasping for air, and the front brake might as well have been nonexistent. Still, the 41-year-old Shovel sitting there was almost to a T what I was looking for. Sure, it wasn't in perfect shape, but are any of the bikes that we start with? Being able to look past the imperfections and find the good things is what can set a bike apart. There were no case repairs, the frame was uncut, the transmission shifted through all the gears, and there was a clean title. We settled on what I considered to be a very fair price, and I hauled my new bike home.

I had started collecting parts for this bike a while ago, and by the time

I had brought it home I already had a taillight, Fairbanks-Morse magneto, and 10-spoke rear invader, and I had just picked up a five-spoke dual disk Invader for up front and rebuilt a Lectron 38mm carb that I picked up on eBay for a pretty good deal. It seemed like this bike was coming together little by little. The style of bike I am aiming for on this is sort of a mid-1980s "tough guy" bike. Something centered on performance, while maintaining streetability. Rebuilding the engine is my first priority. The old, worn-out stock bore pistons are getting replaced with a set of 9:1 compression Wisecos, the hydraulic lifters are getting the boot for a set of solids, which are slightly noisier, but you can squeeze out a bit more power with them. The stock cam is getting swapped with a brand-new A2 grind from Andrews, and the icing on the cake will be a set of S&S Superstock



heads, which will be getting the dual-plug treatment.

Of course, all of this is going to cost a pretty penny, and being that I'm still a college student with a ramen noodle budget, this means something else has to go. First thing up on the chopping block is my Ironhead chopper that I recently finished. While I do like this bike—a lot—it's the only thing that I own that I can actually let go of. I do have another bike, a 1998 Road King Classic with substantial engine work, but this is a bike that has been in my family since I was 8 years old, and there is no amount of money that could buy it from me. It will definitely hurt seeing the Ironhead that I poured two years of my life into, working and reworking until it was something that I was proud to call my own, leave with a new owner, but knowing there is another chopper in my future will be worth it. I should note that this will be my last column as a college student, as I graduate in December and will be moving back to the Milwaukee area. That's right, Milwaukee Benny will be in Milwaukee once again, so if you see a hot rod Road King cruising around with my ugly mug on it, feel free to say what's up and we can swap some stories. Until next time, my friends, keep choppin'! **AIG**

Ben Gardner is a Harley lover and home builder who's currently studying physics and engineering in Pittsburgh.

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Diggin' The Pride

I'm especially proud of this bike. I restored it to its original mechanical condition and performed some custom work. I chose to set up the primary like a 1998 Evo, using the inner and outer primary as well as the clutch assembly; this just seems to work very well for my style of riding. My friend Tommy Hill at Pete Hill Motorcycle handled the electrical and wiring work. Thank you!

Richard Robinson
Via Internet

Fueling The Artist's Inspiration

I am an artist from London. I usually do sculptures, but I found bike tanks really inspiring, so I am making tanks with my own style.



I think each motorcycle is a piece of art, so why not go further and make it a masterpiece? I am from Bosnia and have lived in London a long time. In the future I will show a whole bike in my style in copper. I'll make sure you see this. Inside of the copper is an aluminum or steel layer, as it is more durable when exposed to prolonged contact with gasoline. I also turn existing tanks into copper art.

Emil Bah
London, England

Send us your photos and story

We welcome letters on any subject, whether we agree with the writers or not. Electronic letters, both with and without photos, can be e-mailed to Garage@AmericanIronMag.com. Photos should be high-resolution, JPEG images (at least 300 dpi at 4" x 6"). Please also include your name, address, and a brief description of each photo. And although we reserve the right to edit, shorten, or change your letters so they make no sense at all, we do promise not to mess with your images. That means no phony mustaches, tutus, etc. (However, we may slip an issue of *American Iron Garage* into the photo somewhere.)

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Tell Us A Little About It...

I don't know where to start. After putting about 90,000 miles on my pretty much stock Low Rider, I decided I wanted to customize it. So one day I totally disassembled it. I had no idea what I was going to do or how much work (and problems) was in store for me. My friend gave me some advice (I did my work in his garage); he told me to build the bike I wanted, not what someone else wanted. First thing I wanted was a Stroker engine. I had the cases machined and bored for S&S flywheels and larger cylinders. It has 11.5:1 forged pistons. I spent the summer on the deck wet-sanding the cases (they had that nasty black wrinkle paint on it) and then polishing them nice and shiny. I had the S&S heads ported and flowed and installed JIMS roller rockers. I installed the highest lift and longest duration cam I could find. It has a S&S super G carb. When I went to mock it up in the frame, it wouldn't fit. So I had to modify the backbone for clearance. I wanted a 3" open belt primary but had trouble finding one that would work with my stock tranny, so I went with the Rivera Primo kit for Shovelheads. There were clearance issues while installing this, too. The exhaust pipes are custom-made, 2" stainless steel with a ceramic coating. I wanted a horseshoe oil tank and had to move the oil lines on the tank to the other side of the post due to clearance issues with the exhaust. I bought the front end at a swap meet. It came off a 1994 Springer Softail. I put in 3-degree rake cups and lowered the headlight. I wanted a big back tire, so I extended the swing arm 4" so it would fit. I built my own fender mounts (polished stainless steel) so the fender would hug the tire. The dual shocks were totally my idea. Brake lines are all hard polished stainless steel with braided stainless steel flex at the pivot points. I just love the style of the buddy seat and had to have it on mine. The horn and the single-fire ignition coil are hidden underneath it. I built my own wiring harness. My son painted my tanks for me, and I went with the Inferno dash and speedometer to match the tanks. The frame is powdercoated black with a blue flake clearcoat on top. The flakes actually change colors from teal green to blue to purple depending on the angle of light. It took a lot of patience and hard work. My advice to anyone wanting to do what I did: you're going to have to mess with everything!

Jeff West
Via Internet



Ah, the Dutch! Usually at the forefront of technological advances, "Dutchman" **Richard Siegmeier** still rolls on this Buell XB12S that he bought in 2009. It's one of the last ones produced, and Richard isn't looking to move forward any time soon!



Richie Linneman rolls with a couple of hell-rasiers, his brother and nephew on these Indians. Richie notes that he felt like a serious cowboy chasing those two Indians across Missouri, as his Harley was pitted against Indian in a battle for the plains.



Bob Cornelison loves to show off all the hardware his Shovelhead constantly picks up on the road—it's basically a magnet.



Short Work

About two days after selling my finished Road Glide and buying this Road King, I tore the Road King apart, cut the neck off, and haven't stopped since. Now it's a lay frame with a 26-incher up front and an American Suspension short neck. For being built solely on my little red jack, it's turning into a bad little bike. I did absolutely every bit in my garage, from the front and rear air suspension to the seat pan and cover to the re-fiberglassing the nacelle and fender. That's my fresh paint, and I wired the bars and even put the tires on the wheels.

Rob Gullion
Reno, NV



Tom Morrison out with his 2010 FXDC. As sure as the leaves change in autumn, so, too, will the Harley jackets creep out of closets everywhere.



Matthew Lear is in the forefront of the next generation of riders, and he's off to a hot start, donning all black and working on his chopper scowl. His 2013 883 has a FuelPak tuner and Vance & Hines pipes—also not a bad start.



David Howe took a trip to the Arctic Circle on his 2014 Road Glide custom. Looks awfully sunny there! We aren't sure this isn't a Disney World attraction. Either way, keep the dream alive, David!



Michael Carter's Sportster 48 with a larger-than-your-average gas tank, comes in at 4-1/2 gallons. Size isn't everything, Mike! Still looks like a stellar ride. AIG



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Like A Bull

*Kalan performs some “surgery”
of his own on a Seventy-Two*

By **Steven Wyman-Blackburn**
Photos by **Brie Smith**





We think Kalan Adams' 2013 Sportster Seventy-Two is trying to kill him. Either that, or the speed bump he and his Sporty hit while going 40 mph is trying to do the deed.

Regardless of who is trying to do in whom, the combination of Harley and inclined pavement equaled Kalan flipping over his handlebars, "soaring through the air" (his words, not ours), and skidding about 20'-30' on the pavement. He didn't even get road rash!

What he did get, however, were the bones in his arm shoved upwards into his left hand, shattering it completely. The arm, as a result, was shattered also. (He additionally severed one of his nerves and tore three ligaments in his fingers.) Doctors ended up putting 14 pins in his left hand and implanting four bone anchors into his forearm. "They ran 4' of surgical wire from those anchors down the bone, wired some bone together, and then wired them back up into the other anchor to tighten it up so it would keep my hand together," Kalan says. "It looked pretty wild, man. The X-rays are gnarly." We believe it.

As one can imagine, Kalan wasn't allowed to ride for a while—two whole years—which was unfortunate, but he used that time to customize his then-trashed ride. Much like how surgeons

were the only ones allowed to have their hands on Kalan's arm, only Kalan's hands were allowed on his Sporty. "Everything that was done to my motorcycle was done by me," he proudly says. "Every wrench that was put on it was put on by me. The paint job, everything. I did it right here in my garage."

Sure, the fact that Kalan was sentenced to "no riding" gave him the time to customize, but what really got the process going was the feedback he got from messing with his seat.

Kalan originally didn't like the dogtail on it, so he fileted the back, shaved it down, and then rewrapped it in leather. He then decided to wrap it in bandanna print and reupholstered everything. "That was really the starting point of it all," Kalan recalls. "It was because of all of the attention I got from that damn seat."

TECH SHEET

Owner	Kalan Adams
Builder	Kalan Adams
Year/model	2013 Harley-Davidsons Sportster Seventy-Two
Time to build	One-year-plus
Chromer	N/A
Polisher	Kalan Adams
Powdercoater	N/A
Painter	Kalan Adams
Colors	White and black with red and white pinstriping

POWERPLANT

Engine	2013 Harley-Davidson Evolution
Builder	Kalan Adams
Air cleaner	K&N
Exhaust	Vance & Hines Big Radius with Fuel-Pak
Transmission	2013 Harley-Davidson five speed
Clutch	Screamin' Eagle performance kit

CHASSIS

Frame	2013 Harley-Davidson XL
Front forks	Harley-Davidson Sportster 883, gaiters
Front tire	Shinko 90/90-21"
Rear tire	Shinko 16"
Rear fender	Shaved

ACCESSORIES

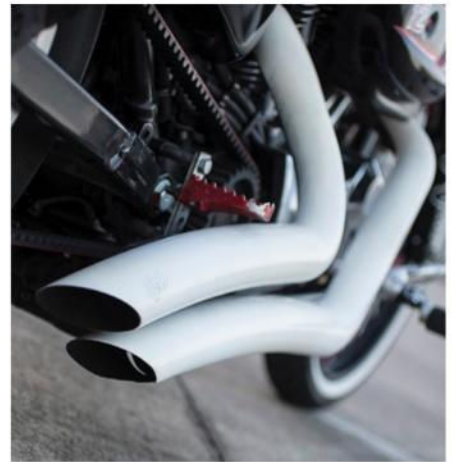
Fuel tank	H-D Sportster 1-1/2 gallon
Handlebars	Custom
Seat	Stock, shaved and reupholstered
Pegs	None
Speedo	Stock, relocated
License bracket	Custom fabricated

From there, Kalan installed a new set of pipes from Vance & Hines (complete with the Fuelpak) because, as he says, "Harleys purr like a little kitten when they're brand new." He needed it to roar like a lion.

Kalan then stripped everything off, starting with the blinkers. He also took off the rear fender, but not to remove it completely. Kalan turned it backwards, cut it in half, and shaved it back until it looked bobbed.

He also fabbed the bars himself, but not from a single rod. Kalan made it from a bunch of old handlebars he had lying around. "I cut 'em up and welded them all together," Kalan says. "It looks like something from Arlen Ness, like it was bought from somewhere."

To make it rigid, Kalan bought a hardtail weld-on kit and got it done



at a shop—sike! This is what he did. Kalan took an old exhaust mount made from two billet aluminum struts, or, as Kalan described them—"two big @\$\$ pieces of billet"—and cut them up until they looked like a dog bone. "I thought, 'Billet aluminum is pretty strong. It can hold my weight and the bike,'" Kalan remembers. He was right. This lowered the bike 3-1/2" in the rear, which he notes "is a little more than what it should be on a Sportster." But that's how he likes it.

With the back end lowered, the front end needed to get slammed. He fixed that by swapping out the stock forks with a pair from a friend's unused 883 Sportster. (The gator boots and air cleaner are also from the 883.) "My bike sits really low now," Kalan says. In fact, he can't ride without scraping the bottom. When he turns, his exhaust definitely throws up some sparks. "They don't scare me none," Kalan says. "Might scare people behind me, though."

Kalan also made the sissybar out of solid round stock himself. Speaking of which, the story behind why he fabbed them is pretty intense. One time when he was riding with a girl, her clothing got sucked up underneath the fender and into the tire. "It was pulling her off the bike," Kalan remembers. "She bear-hugged me so that I was getting pulled back. That's when I pulled

over and said, 'I need something back here.'" And, yes, the girl's fine.

Kalan also had to fix the tank—which had gotten dented during the accident—so he purchased some Bondo and "Bondo-ed" the dent out and repainted it. Kalan first applied the tank with Satin Black paint, then made it two-tone in the middle with a white stripe. Interestingly, the pin-striping started as an accident. "I was originally going to pinstripe where the white and black come together with a red stripe," Kalan says. "But

then I dropped the little bucket of paint I had all over the bike. It pissed me off."

Actually, he originally believed he'd somehow splattered blood on it. "But then I thought I might as well roll with it. It turned out pretty damn good," he says. And, yes, like everything else, Kalan handpainted the brass knuckles himself to add to the accidental blood splatter theme.

"I don't make very much money, and the money I do make, it goes towards my bills," Kalan explains.

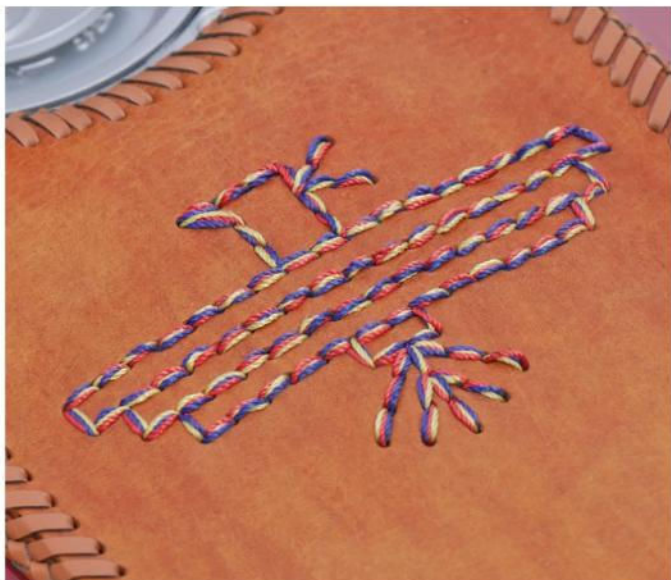
"I hardly have money to spend on my bike. So I'll study up on the part I want, look at it real hard, and figure out how to make it myself." Basically, Kalan is kind of a bad ass. And so is his bike.

"She's rough," Kalan says when asked how she rides. "I will say this. If you don't know how to ride a rigid, I won't let you ride my bike because it will throw you off. It went from being a really smooth ride to a rough, full-on-vibration, out-of-control, tough ride." We believe you. **AIG**



Stitching Goddess

Teresa adds her personal touch to the Red Eagle



Thank God for the Revved-Up Women Motorcycle Expo! We mean this in pretty much every way imaginable. For one thing, it puts a spotlight on the female riders and manufacturers of the world, all of whom play a crucial part in the motorcycling community.

Secondly, if it weren't for the expo, we may have never found this beautifully put-together 2015 Indian Scout built by Teresa Morgan from Blessing, Texas.

Luckily, *AIM's* Creative Director Tricia Szulewski was at that same gathering, and at one point she spotted the Scout amongst the sea of bikes. Turns out, Teresa was at the expo with her husband, Tom, and he, too, came astride



an Indian, a 2015 Chieftain. But it was the Scout that caught Tricia's attention.

From her years as an art director, Tricia thought it would pop out in the very pages you're looking at now. Unlike Tom's Chieftain, Teresa's Scout has many additions, including hand-stitched leatherwork done by her—yes, her. She did all that. But before Teresa could do anything to the



Scout, she first needed to buy it. Speaking of which, she is one of the first people to own this particular model, having put in a preorder for the First Run Scout in September 2015. “I wanted to be part of the hype,” Teresa says. “Plus, I’d dropped my Honda VTX 1800 twice and was looking for something smaller.”

Once she got her Scout in April 2015, Teresa pretty much started customizing immediately, or, as she puts it, started “adding my personal touch.” But there were a few barriers in the way of getting it done. “Like with any new model, it takes time for the aftermarket companies to catch up,” says Teresa. “So the only

problems I had were waiting for stuff to become available." But she made-do by doing some catching up of her own, beating out some of the aftermarket companies in the process.

For one thing, Teresa knew she wanted a tank bib, but Indian's factory accessory didn't quite hit the mark. So she instead turned to Tandy Leather. But Teresa didn't order a premade tank bib. She purchased leather, dye, and lacing so she could do everything

herself. "There are no patterns for that sort of thing," Teresa says.

Luckily, she's good at that so-called sort of thing. "I've been a crafty person all of my life, and I knew what I wanted. I just had to make it a reality," she says. First, Teresa got some waxed paper because of its durability and transparency and laid it out over the tank and drew out the shape. Then she proceeded to cut and even out the pattern before putting it on the leather





and cutting it out. Originally, Teresa had thought about making a pocket and stitching it onto the bib, but then she decided to make a windshield bag instead. This bag, however, was going to have to have a bit more flair than the bib. “I wanted to put some kind of decoration on it that was Native American in nature,” remembers Teresa. “I drew out a few designs and then settled on a Thunderbird.”

Sure, Thunderbirds are majestic as all heck, and any rider with an ounce of taste would want one on his Indian. But Teresa had more of a reason to go this particular route. She calls the bike Red Eagle, so a Thunderbird just makes sense.

“I’m still surprised that it went together as fast as it did,” says Teresa of stitching together the bib and bag. “I think it only took me about four to five



hours to complete the bib and six to eight hours to finish the windshield bag!" We're surprised, too!

Other leather handiwork stitched by Teresa includes leather grip covers with fringe and leather braids on the levers. Once the aftermarket companies finally started catching up by releasing Scout-friendly products, Teresa could finally start executing her master plan for Red Eagle, which was pretty much all figured out. Doing so wasn't going to be difficult.

For one thing, she's had a great deal of bikes (all Hondas), and she's added her personal touch to each of them. Plus, Teresa has a great deal of toys to work with. "My husband and I have an entire garage full of tools," she says proudly. This includes two hydraulic bike lifts, multiple other jacks, a bead breaker and, as she says, "whatever hand tools you can imagine." With so much at her disposal, Teresa went right to work. The first order she put in was for an Indian extended-reach seat. "I'm 5'9", and there wasn't enough room for my legs," she says. Sure, the extended reach made things easier, but what

Teresa really wanted was one from Corbin. Once one finally came in stock, she pounced on it. Turns out, the Corbin seat arrived at the same time as the Motherwell fender rack she ordered. "This made it very convenient," Teresa recalls.

Now, if you're a rider who "really, really, really hates footpegs" because they make your feet "numb," what are you going to do? Get rid of 'em. Teresa said this—verbatim. As a consequence, she purchased and installed floorboards early on. Next, she bolted-on case guards and slip-ons; the latter she installed but had a shop perform a Stage II re-flash.

As you can imagine, Teresa still has a lot of items left on her bucket list for customizing Red Eagle. This includes a horn that says "Get outta my way." She also figures that since installing the horn will require her to remove the seat and tank, she'll probably take advantage of this by adding a charging outlet for her GPS and cellphone.

Sure, those ideas are great and all, but what we're really interested in is if there is any hope for more leather goodness. Luckily, there is.

TECH SHEET

Owner	Teresa Morgan, Blessing, TX
Builder	Teresa Morgan
Year/model	2015 Indian Scout
Time to build	Work in progress
Chromer	Indian Motorcycle
Color	Indian Red

POWERPLANT

Engine	Indian liquid-cooled V-twin
Builder	Indian Motorcycle
Displacement	69"
Horsepower	105
Torque	72 ft.-lbs. @ 6000 rpm
Cylinders	60 mm
Air cleaner	K&N
Exhaust	RC Components Excalibur Eclipse slip-ons
Ignition	Electronic
Transmission	2015 Indian six-speed
Mods	Stage 2 re-flash
Clutch	Wet clutch
Primary drive	Gear
Final drive	2.357:1
Kickstarter	N/A

CHASSIS

Frame	2015 Scout
Rake	29"
Front forks	Telescopic fork 4.7" cartridge-type
Shocks	Dual 3"
Front wheel	16 - 3.5"
Rear wheel	16 - 3.5"
Front brake	Single rotor, two-piston caliper
Rear brake	Single rotor, one-piston caliper
Front tire	Kenda 90816 67H-130"
Rear tire	Kenda 80816 77H-150"
Trail	4.7"
Seat height	25.3"

ACCESSORIES

Taillight	LED
Fuel tank	3.3 gallons
Seat	Corbin Classic Solo
Pegs	Aeromach floorboards
Speedo	Electronic
Dash	Electronic
License bracket	Black barbed wire frame with Swarovski crystal studded bolts
Foot controls	Forward

Teresa is currently in the process of fabricating a trunk, which would need some leather, and she wants to add some fringe to the saddlebags. She also wishes she'd have gotten the cool Indian logo with the embroidered feathers included on the seat.

We bet you could create your own version, Teresa! You definitely have the skills. Just one suggestion: please do another Thunderbird! **AIG**

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The Poor Man's Bike

Mark went slowly to win "the race"



By **Steven Wyman-Blackburn**

Photos by **Larry Olsen**



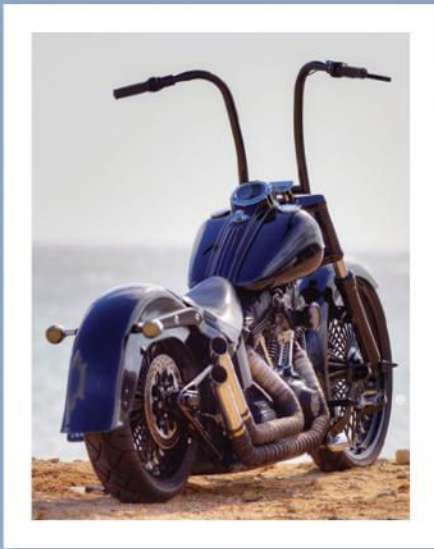
Let's face it. People are jerks.

It doesn't matter if you're living in California, Ohio, New York, or Texas...or Honolulu, Hawaii. Yes, even in Honolulu, where our story takes place. You're bound to run into a jerk. Or, in this case, they're bound to bump into you, which is exactly what happened to Mark Inoshita.



This bump-in came after Mark had finally found his dream bike. He still remembers the day he laid eyes on the magnificent iron steed as though it were yesterday. "I was looking through a mag and came across an ad for the Harley-Davidson Night Train," he recalls. "It was jade and emerald green with low dragbars, which put you in an aggressive clam-shell position."

The bike called out to Mark—so alluring that he bought a 2005 Night Train right off the showroom floor in August of that year. Mark loved the bike so much that he'd even promised



his girlfriend he'd leave it alone because it was perfect as is. "I really wasn't lying," says Mark. "I just didn't know any better at the time."

Six months later, Mark had remained true to his word. He'd been able to keep mods to a bare minimum, having only installed an air filter and pipes. Not bad. But then something happened in the next six months. And this "something" wasn't Mark losing will power. "My Night Train was my daily rider at the time," he begins. "I rode it to work and parked it. And someone reversed into it, knocked it over, and took off."





Yup. That's definitely a jerk. But rather than take his damaged bike to a shop for repairs, Mark decided that he would replace the parts himself. It didn't take long before the project changed from a fixer-upper to something more. "I never really thought of it as a build," Mark says. "It just slowly evolved into what it is today."



And by slow, Mark means *slow*. That's because he's approached every "first" on his bike with trepidation. "Believe it or not, I was scared when I put gas in it the first time, scared when I washed it the first time, and definitely scared when taking stuff apart the first time," he comments.

But Mark's wariness of firsts wasn't the only reason why the building process took him forever and a day. He

wanted his bike to be practical for daily riding, and this involved trying out different parts. But when an install didn't work, he had to wait (for quite some time) before he could try something else because he had a limited budget.

"When I had the extra money, I would change the parts I didn't like out, but I bought a lot of stuff off eBay because I couldn't afford to buy them new," he says. That's why Mark lovingly calls his Night Train "the poor man's bike," a build anyone can do.

While Mark didn't have much cash, he did, however, have a good number of tools at his disposal, including ratchets, sockets, and combination wrenches. However, he did have to buy a bike jack and some larger sockets, among other things.

Armed with basic tools, Mark started by getting some new pipes, an air cleaner, handlebars, and seat, before slamming both ends. The next install (triple trees) was made possible by a friend who got them for him. Mark then "finished" the build by putting in an internal stop race and bearing.

We put "finished" in quotes because Mark rode it like that for a while, before that incessant voice in his head started nagging him to get back into the garage. He appeased the voice by installing a jockey shift and foot clutch, but he would only swap them out later for a kit with better quality parts. Mark refers to the switch as "another lesson learned and extra money wasted." Luckily, one of his friends welded a bracket for the jockey shifter in order to bolt it to the transmission, thus changing the angle for more support.

A new air-ride suspension later made it onto the poor man's bike because some of Mark's friends, who were already purchasing their own air rides, said that if he bought one, they

would all get a better price as some sort of package deal.

Next, Mark installed an aftermarket open primary and an aftermarket transmission pulley. Mark also addressed the well-known "Harley cam tensioner issue" by replacing the carb, gear-driven cams, adjustable pushrods, and gear drive setup.

The build, however, wasn't just a bolt-on-only kind of affair. Mark shaved and smoothed out an aftermarket rear fender he later purchased, for which he also fabricated a support bracket. (A friend, however, made the steel front fender because he could only locate fiberglass fenders.)

When he got some spoked wheels, Mark also fabbed some wheel spacers for the front hoop. (He's still scratching his head as to why he got them in the first place because he doesn't like cleaning spokes.)

Mark also cut up the apes he bought to accommodate an aftermarket internal throttle setup. "That was my fault," comments Mark. "I didn't think about

internal wiring when I ordered them." Regardless, the cables and wires now run through the bars, thanks to his friend Jay who welded the bars back together. Mark also fabbed a headlight mount and spacer so the controls on the left handlebar would flow better.

Even though this was his first build, Mark says he didn't really have any problems. Though he admits breaking a bolt off when working on the triple trees. "I wasn't happy at all," he remembers. And despite the fact there are some quality parts on his Night Train, he still calls it his "poor man's bike."

"Anyone can buy a finished bike if they have enough money," says Mark. "But if you modify it yourself and put your heart into the work, that's when a bike has a soul. It's not something you can see, it's something you can feel." **AIG**



TECH SHEET

Owner	Mark Inoshita, Honolulu, HI
Builder	Mark Inoshita
Year/model	2005 Harley-Davidson Night Train
Time to build	Five years
Powdercoater	Hi-Tech Coatings, Kapolei, HI
Painter	D.A. Customs, Honolulu, HI
Color	Vivid Balck

POWERPLANT

Engine	2005 Harley-Davidson Twin Cam
Displacement	88"
Horsepower	90
Torque	90 ft.-lbs.
Cylinders	Harley-Davidson 88"
Pistons	9:1
Heads	Port and polished
Cams	S&S Cycle Gear Driven 510
Lifters	Andrews
Pushrods	Andrews Adjustable EZ Pushrods
Carb	Mikuni 42mm
Air cleaner	Roland Sands Design velocity stack
Exhaust	Sampson Original Big Guns Upsweep
Wires	Taylor ThunderVolt
Mods	LaBriola jockey shift kit
Clutch	BDL
Primary drive	BDL open belt 3"
Final drive	Harley-Davidson 70 tooth

CHASSIS

Frame	2005 Harley-Davidson FX
Rake	Pro-One triple trees 3"
Stretch	None
Front forks	Harley-Davidson 2" tubes and stock lowers
Mods	Accutronix Beauty Tubes, progressive lowering drop-in 2"
Shocks	Shotgun Air Ride
Front wheel	DNA Mammoths 3.50-23"
Rear wheel	DNA Mammoths 4.25-18"
Front brake	JayBrake six-piston caliper, Performance Machine Hooligan rotor 13"
Rear brake	Four-piston caliper, Performance Machine Hooligan rotor 11-1/2"
Front tire	Avon Cobra 130
Rear tire	Metzeler Marathon 160
Front fender	23" steel custom

ACCESSORIES

Headlight	Arlen Ness 4-1/2"
Taillight	Custom Dynamics Dog Eyes
Handlebars	LA Choppers Nice Curves 16"
Risers	Wild 1 Chubby 2"
Seat	Le Pera Barebones
Dash	Harley-Davidson Low Profile
License bracket	Kuryakyn
Hand controls	Hawg Halters (HHI)
Foot controls	DK Customs Trap Style
Levers	Hawg Halters (HHI) and Brake Master

READER
HOME BUILT

The Panacea Project

By **Wayne Scraba**
Photos by **Chris Gibbany**





*How to build your
dream bike with nothing*

Chris Gibbany is no stranger to these pages. She's had an Ironhead featured previously in *American Iron* (Boneyard Breakout), and, honestly, she should be an inspiration to us all. The reason is that Chris and hubby Gabe admittedly live modestly—very modestly.

Chris notes that she doesn't own a television set, nor does she have a clothes drier or even a microwave oven. Instead, she lives her dream. And that dream is building and riding motorcy-

cles and cars that she designs and builds with Gabe (who also happens to be a mechanic). To get there, Chris scrimps, saves, trades bikes, raises hedgehogs (seriously), plays the extreme coupon

game, shoots photos (Chris is good at it—check out her images here), and even writes freelance magazine articles. She has even become an official motorcycle ambassador for Arkansas tourism.



No secret she's dedicated to her passion. The story on this machine actually began more than eight years ago. Chris answered a call from someone she refers to as a "known time-waster." But instead of discussing his plans, hopes, and desires, Chris turned the conversation around and proceeded to tell him what she wanted. And that was a Knucklehead. He laughed while commenting, "Who doesn't?" Chris interrupted and pressed the issue, telling him about her hot rods, her years of drag racing, and the Ironheads she



already owns. She went on to say she was child-free by choice and admitted that her whole world revolves around motorcycles and hot rods. The guy on the end of the line paused for a bit and then commented: "Well, would you be interested in a 1956 Panhead engine?" Right then and there, Chris acquired the owner's number—the next night, she bought the engine.

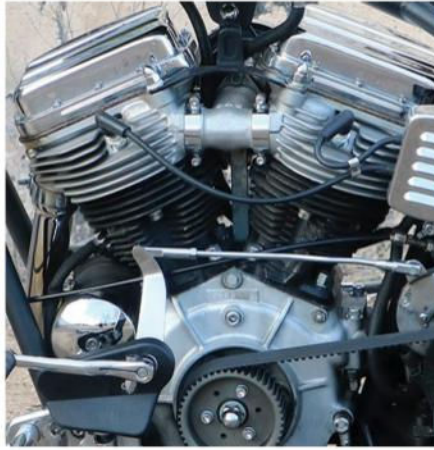
Chris relates that she designed this bike from start to finish. It spent half of its life being mocked up in her living room, where she actually slept beside



it for three years. Chris and Gabe finished building it in a little backyard shed. As building progressed, she came to the conclusion that this was actually her dream bike. As a result, she splurged on a lot of items that she could have done without. For instance, the Baker Drivetrain N-1 shift drum puts neutral on the bottom so you don't accidentally catch neutral when shifting up from first.

The rigid frame along with the ribbed rear fender came from Chica while the front end is a springer from Spartan Frameworks. According to Chris, "One day on the Internet, I found a picture of this awesome front end that I just had to have, a Spartan Frameworks springer. After contacting the owner, George Counes, we sent the measurements he needed and my

order was placed. Since he didn't take credit cards, I had to sell all of my guns to pay for it. I received it the day after Christmas in 2010, and his craftsmanship blew me away! It was the best gift I have ever given myself."



In order to keep the bike super clean, Chris decided not to run aissybar or fender strut out back. Instead, she went with the shortened, ribbed Chica rear fender. The gas tank is from an Aermacchi Harley-Davidson, while the oil tank is a chromed horseshoe job from Tech Cycle. The seat pan came from Baas Metal Craft. Chris custom-made the saddle cover, which is simply a piece of thin leather cut from a pattern she drew on a brown paper bag. It's all tied together by simply screwing the cover to the seat pan.

Gabe went through the Panhead motor. It's not a wild build, but it does include 8:1 S&S pistons, stock rods, stock flywheels, and stock cases. The valvetrain consists of an Andrews J-grind cam (0.425" lift), JIMS solid lifters, aluminum pushrods, and stock





rockers. Upstairs, Chris originally ran the machine with stock heads. Gabe suggested they probably wouldn't last long. And they didn't. After about 10 rides, the heads were swapped for a set of aftermarket jobs fitted with stainless steel valves. The carb is a S&S Super E topped with a heavily ventilated air cleaner. The pipes are over-under shotgun style. Meanwhile, Mallory supplies the spark. Chris was originally going to keep the bike a kick-only, but with the engine freshly rebuilt, coupled with the fact that she has a bad knee, a Tech Cycle electric start kit was added. Chris figures it's a lifesaver on "bad knee days." Pal Bobby Thompson gave her a new set of braided oil lines at a swap meet, which work perfectly. The bike has seen many changes since the build began. One of the biggest changes was the idea to run a 1-1/2" open primary instead of the factory tin job. Chris digs the open belt so much that it is her favorite side of the bike.

Accessory pieces include a set of broomstick-style handlebars mounted on 4-1/2" tall dog bone risers. There are plenty of swap meet pieces on the bike including the pegs and stock H-D controls. The headlamp is a traditional 5-1/4" Bates sealed beam. Outback, Gabe and Chris fabbed up the tag bracket that sees double duty as a mount for the Model A Ford taillight.

Rolling stock consists of 40-spoke Harley-Davidson reproduction wheels: 16" x 3-1/2", front and rear. Both ends of the bike wear the same tires: 5"-16" Avon Mark IIs. Calipers are identical, too, and the front and rear are four-piston aftermarket swap meet specials.

Once the bike was complete, Chris rode it in raw form. She dug the bare-bones look, but eventually



she followed through with her original plan to have it painted green. She picked Chrysler Lime Peel Effect for the tank, fender, and seat pan. Another friend, Jim Crabb, painted the parts for free as a favor since he had just painted her 1974 Rallye Charger and was in the midst of painting her 1973 Rallye Challenger.

Chris reminds us that since she and Gabe aren't exactly rich, she is always on the lookout for ways to make or save money. She was an extreme couponer for seven years and even turned down an appearance on TLC's *Extreme Couponing*. As it turns out, she was able to build her dream Panhead as a result of her extreme frugality and life choices. In the end, Chris tells us, she'd really like to motivate others and convince the world that if you have your priorities straight, anything is possible! And, by the way, Chris calls her Panhead Panacea, which means "a solution or remedy to all difficulties." We can't think of a better name. And by the way, remember Chris' dream of owning a Knucklehead? She now has two of them. **AIG**

TECH SHEET

Owner	Chris Gibbany
Builder	Gabe and Chris Gibbany
Year/model	1956 Harley FL Panhead
Time to build	Six years
Polisher	Chris Gibbany
Painter	Jim Crabb, Harrison, AR
Color	Chrysler Lime Peel Effect

POWERPLANT

Engine	1956 Harley FL Panhead
Builder	Gabe Gibbany
Displacement	74"
Horsepower	Approximately 65
Cylinders	Standard bore replica
Pistons	S&S Cycle's 8:1
Heads	Replica with steel seats
Cam	Andrews J grind 0.425" lift
Valves	Stainless steel Shovelhead
Lifters	Jim's solid lifters
Pushrods	Adjustable aluminum
Carb	S&S Super E
Air cleaner	5-3/4" drilled chrome
Exhaust	Shotgun drag pipes
Ignition	Mallory
Coils	Dyna
Wires	Spiral core
Charging system	12-volt generator
Regulator	ACCEL
Cam cover	1953 eight fin
Primary cover	Open belt
Transmission, year/model	1950 Panhead ratchet top four speed
Gears	2.60:1 first gear
Mods	Baker Drivetrain N-1 shift drum
Clutch	H-D-style Kevlar
Primary drive	Tech Cycle 1-1/2" belt
Final drive	Chain 23/51

CHASSIS

Frame	2008 Chica gooseneck
Rake	38 degrees
Stretch	3"
Front forks	Spartan Frameworks riveted springer
Swingarm	Rigid
Wheels	H-D replica 16" x 3-1/2", 40 spoke
Tires	Avon MK II 5.00-16"
Rear fender	Ribbed Chica

ACCESSORIES

Headlight	5-1/4" Bates style
Taillight	1930s Ford
Fuel tank	Aermacchi
Oil tank	Tech Cycle horseshoe
Handlebars	Broomsticks by Gabe
Risers	4-1/2" dog bones
Seat	Baas Metal Craft pan with custom paint by Jim Crabb and leather by Chris Gibbany
Pegs	Swap meet find
License bracket	Custom side axle mount
Mirrors	Chrome racer style on left

Motorcycle Measurements

Various tools for all your measuring needs

MEASUREMENTS AND DIMENSIONS ARE EVERYWHERE on our motorcycles. Some of the more obvious dimensions might include wheelbase and seat height; less obvious dimensions would include clutch plate thickness and brake master cylinder bore. One drawer in my toolbox is devoted to precision measuring tools including rulers, micrometers, thread gauges, calipers, and a few single-purpose gauges.

My first lesson regarding the importance of measurements was at a swap meet where a seller assured me that a decorative accessory would fit my bike. It didn't and has since been repurposed as a small picture frame. Subsequent lessons came during tech school classes in motorcycle maintenance and engine rebuilding.

Let's start with the most basic measuring tools: rulers and tape measures. These tools work fine for larger measurements like fork spring length or saddlebag size. However, more precise measurements require more precise tools. Dial calipers are available as metric or fractional tools. Of the two dial calipers in my toolbox, one is accurate to .01" and the other to .001". Both have jaws for inside and outside measurements and a rod at the end of the bar for depth measurements. The advantage of the dial caliper is that no batteries are needed to use it.

In recent years, digital calipers have replaced dial calipers. I have two digital calipers that can be switched from reading thousandths of an inch to small fractions

of a millimeter with the push of a button. Digital calipers generally have the same features as their mechanical predecessors in terms of inside, outside, and depth measurements. Some of the least expensive digital calipers on the market may lack the rod needed for depth measurements.

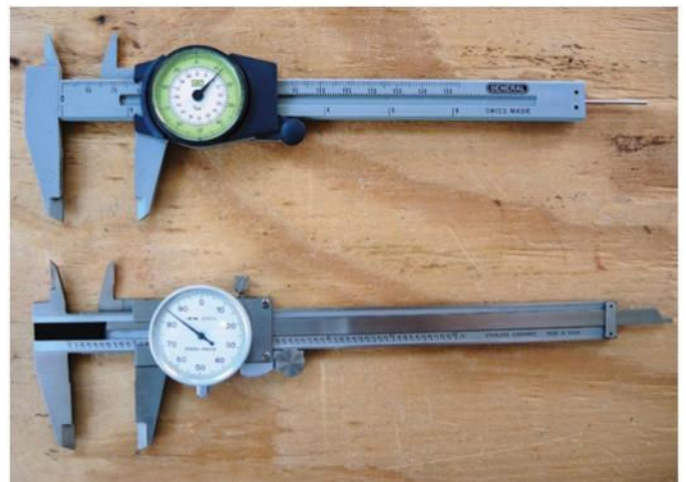
Many digital calipers have a function that allows the user to determine the difference between two measurements by letting the caliper do the arithmetic. Suppose you are obsessive about brake pad thickness, but your inexpensive digital calipers can't perform depth measurements. Measure the thickness of the brake pad backing plate and press the Zero button on the digital calipers. Next, measure the combined thicknesses of the backing plate and the friction material. The caliper's circuitry measures the increase from the thickness you set as a zero reference and indicates the pad's thickness. Read the instruction manual for your digital calipers because some tools may not have this feature.

Digital calipers are often no more expensive than their mechanical predecessors. The only downside of a digital caliper is that the battery may fail at the most inopportune time.

Feeler gauges have been around for decades. To the untrained eye they may



A tape measure and some rulers will suffice for measurements that don't require a great deal of accuracy.



Dial calipers vary considerably in price and features. The lower caliper in this photo has a lock knob and a dial accurate to .001" while the less expensive caliper has no lock knob and a dial accurate to .01".



Digital calipers have many functions in common with their analog counterparts but the less expensive tools (like the lower one in this photo) may lack the rod used for depth measurements.

look like a collection of identically shaped metal blades that have been drilled and fastened together near one end. Although the blades appear the same, they are of different thicknesses. The purpose of feeler gauges is to measure gaps. Years ago, a common use was setting the gap in ignition points.



These vintage micrometers still provide accurate measurements but have been replaced by digital devices in many shops.

The change from points to electronic ignition didn't completely eliminate the need for feeler gauges because the air gap between the rotor and a magnetic sensor in some systems had to be set precisely. Brass feeler gauges are used in this application to avoid the magnets grabbing a steel gauge.

Proper use of a feeler gauge requires practice and a bit of finesse. For example, if I were checking the end gap on piston rings in a freshly honed cylinder, I would start with a gauge smaller than the gap and move up to thicker gauges until I felt a small amount of resistance to the blade's movement through the gap.

Many sets of feeler gauges that are labeled in decimal fractions of an inch also have metric equivalents etched on each blade in a different or smaller font to increase versatility while reducing the chances that the user might read the wrong set of numbers on the blade.

Thread gauges save time, effort, and money by identifying thread pitch. One of the thread gauges in my toolbox measures the number of threads per inch while the metric gauge measures the distance between threads in millimeters. A thread gauge consists of a set of metal leaves with a series of very precise notches one edge of each leaf. Using a thread gauge is simple but requires patience and good eyesight.



This micrometer uses a mechanical readout similar to an analog odometer and a Vernier scale to provide accuracy of .0001". The small knob above the readout is a thimble lock.



Telescoping gauges provide indirect measurements of inner diameter.



The ends of the telescoping gauges are slightly convex in order to contact the cylinder wall at one point.

Suppose you were putting a vintage basket case back together. Your calipers indicate a bolt has a diameter of a 1/4", but you need to know if it has 20 or 24 threads per inch. First try the leaf labeled 24 and notice if the notches on the leaf don't properly line up with the threads on the bolt. Next try the leaf labeled 20 and if every notch lines up with every thread on the bolt, you know what nut will fit the threads on the bolt.

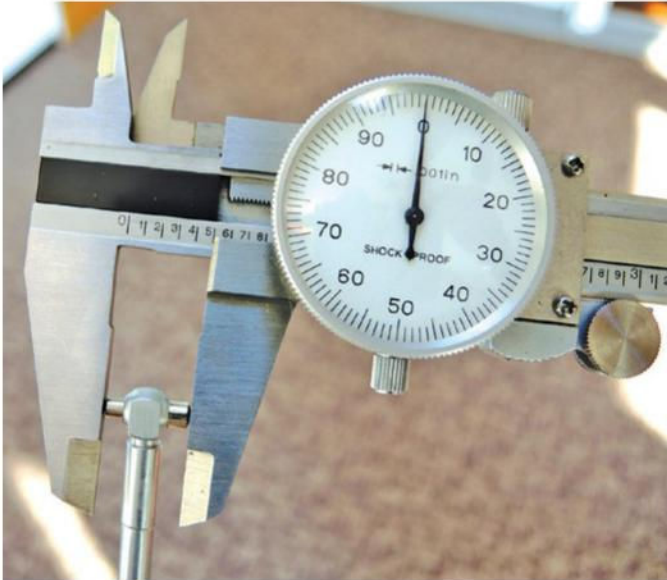
Dial indicators are unique because they are used to measure movement. Sideplay and endplay on shafts can be measured with a dial indicator. A typical dial indicator has



The telescoping gauge is inserted straight into the part being measured, then the measurement is locked in with the gauge's lock screw.



Thread gauges are available for checking thread pitch on metric and fractional bolts or shafts. Using them requires patience and good eyesight, but you'll avoid threading the wrong nut in the wrong place.



Calipers or a micrometer are used to measure the distance between the ends of the gauge.



Place the notched side of the blade into the threads you're checking. You've found a match when every notch fits every thread on the bolt or shaft.



Feeler gauges are available in stainless steel or brass. The brass gauges come in handy when setting air gaps on rotation sensors that contain magnets.

a round dial marked in thousandths of an inch. The spindle protrudes from the stem on the side of the case. The dial indicator is held firmly in a position so that the tip of the spindle touches the part that will be moving. As the spindle moves in or out of the stem, a pointer moves along the dial to indicate how far the part has moved. One common use of the dial indicator is truing flywheels.



This digital micrometer provides accuracy to .0005" and can switch to metric measurements with the press of a button.

A tread depth gauge should be in every motorcyclist's toolbox. A basic tread depth gauge can be found at most well-stocked auto parts stores. Harley-Davidson has combined a tire pressure gauge and a tread depth gauge into one tool (part number 75008-02A). Don't use Abe Lincoln's head on a penny as a tread depth gauge. Different states have different requirements for minimum acceptable tread depth, but Abe's head is a consistent distance from the edge of the coin.

Telescoping gauges are used to measure inside diameters in situations where a caliper can't reach into a cylinder.



Use the lower jaws on calipers to make outside measurements.



Many digital calipers allow the user to set a zero reference when comparing two thicknesses. This can be helpful if the calipers lack the depth rod.



Use the upper jaws when making inside measurements with a caliper.



After setting a zero reference, the calipers will do arithmetic for the user when comparing thicknesses.



Dial indicators measure movement when the probe at the bottom of the tool is moved towards or away from the dial.

Telescoping gauges are sometimes called *T-gauges* because of their shape or *snap gauges* because the ends are spring-loaded and snap outward when the locking mechanism is released. Telescoping gauges come in sizes from 3/8"-6". The ends of the telescoping parts are slightly convex in order to contact the cylinder wall at one point. It must be pointed out that a telescoping gauge provides what is called an indirect measurement or transfer measurement. This means the gauge determines what the measurement is, but a caliper or micrometer must be used to measure the distance between the ends of the gauge.

It takes practice and patience to get accurate, repeatable results with telescoping gauges. After choosing a gauge with an overall length slightly larger than the bore being measured, rotate the knurled part at the end of the handle to unlock the gauge. Compress the telescoping rods to a length slightly smaller than the bore you are measuring and lock them in position. Insert the gauge into the bore and unlock the gauge. The telescoping ends will snap outward to contact the cylinder walls. The handle must be kept parallel to the cylinder wall. Use the locking screw to lock the telescoping ends in position and carefully remove the gauge from the cylinder. Use a micrometer or caliper to measure the distance between the ends of the telescoping rods. Telescoping gauges should be stored with the locking mechanism unlocked to avoid prolonged and unnecessary pressure on the springs inside the gauge.

An alternative to the telescoping gauge is the bore gauge. The bore gauge contacts the cylinder wall at three points.



Using a traditional micrometer involves adding the reading from the thimble scale to the reading on the main scale to obtain measurements accurate to .001".

Two of those points are metal balls near the end of the tool opposite the analog dial or digital display. The third point is the end of a metal rod that screws into the tool across from the metal balls. Different rods are used for different bore sizes. The bore gauge can be moved up and down the cylinder to check for taper and can be rotated to determine if a cylinder is out of round. Bore gauges are more expensive than telescoping gauges and may be outside the budget of many do-it-yourselfers, but it's good to know what they are and how they work.

Spark plug gap gauges exist because they are the right tool for measuring and setting the gap on a spark plug. A typical spark plug gap gauge has six wire loops and two gapping tools each with two notches. The six wire loops are



Bore gauges make inside diameter measurements easier and faster than telescoping gauges. However, bore gauges are much more expensive than telescoping gauges.



Spark plug gaps should be checked with a spark plug gapping gauge, not a feeler gauge.



Metric measurements can be made at the push of a button on many digital calipers. I don't know why, but spark plug wire diameters are specified in millimeters.

made with different size wires. The body of a quality gauge will have the diameter of the wire indicated on one side of the tool in thousandths of an inch while the other side shows metric equivalents.

Suppose you are replacing spark plugs and the shop manual specifies a gap of .040". Try inserting the wire loop labeled .040 through the gap. If it's a tight fit, use the correct size notch on one of the gapping tools to slowly bend the ground electrode to increase the gap and attain the desired .040". If it's a loose fit, carefully bend the ground electrode towards the center electrode. The goal is to have the correct size wire loop move through the gap with minimal friction.

An article about measurement tools would be incomplete without mentioning the venerable micrometer. A micrometer consists of a C-shaped frame with an anvil at one end of the opening and a spindle that moves towards the anvil. The micrometers in my toolbox have a resolution of .001". Metric calipers often have a resolution of .01mm. Lefties haven't been forgotten by the micrometer manufacturers. Left-handed micrometers (as well as calipers) are available



This combination tool from Harley-Davidson measures tire pressure on the large scale and tread depth on the small scale when the depth probe (arrow) is pressed down between tread blocks.

but are much less common than right-handed tools. Never use any micrometer as a C-clamp.

There is a learning curve for traditional micrometers. Turn the lock lever or lock-screw to unlock the thimble and turn the thimble to move the spindle away from the anvil. Rotate the thimble so that both the anvil and the spindle are touching the part being measured. Use the lock lever or lock-screw to hold that reading. Add the reading on the thimble scale to the reading on the

main scale to obtain a measurement in thousandths of an inch. If the micrometer has a Vernier scale, use it to increase resolution to ten thousandths of an inch. It's not as tedious as it sounds, but it's not as quick as taking a reading with a digital caliper or micrometer. The advantage to a traditional mechanical micrometer is that there's no battery that might fail in the middle of a series of measurements.

What measurement tools does a do-it-yourselfer need? At the very least, he should have a tire pressure gauge and a tread depth gauge. Their use requires minimal skills, and they can also be used on four wheel vehicles. You need a spark plug gapping tool if you do your own tune-ups. My nonelectronic tools date back to the 1990s when I was in a tech school engine rebuilding class. Accuracy costs money and professional quality tools are expensive. **AIG**

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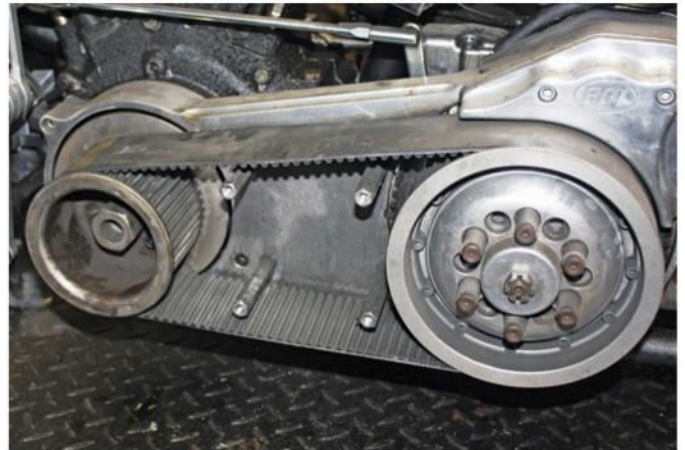
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Determining Stator Problems

What happens when you don't do it right



I HAVE SEEN THIS SCENARIO PLAY OUT MANY TIMES OVER the years. A customer will bring a bike to the shop with charging problems or a starter that turns the belt but doesn't turn the engine over. In this case the owner had previously installed a new stator, and I was

certain that the pulley drive insert had stripped the splines, since the belt pulley was turning but the insert engine shaft nut was not. But would there be other damage? Let's take a look.



1 The pulley insert nut has regular right-hand threads. Remember righty-tighty, lefty-loosey? I have a battery-operated impact driver that has a torque rating of about 50 ft-lbs. The insert nut should have been torqued to 150 ft-lbs., but the battery impact took the nut off easily.



3 Then the charging system rotor was removed, and all the splines that should have been on the rotor were no longer there. Notice that the stock rotor uses washers as spacers.



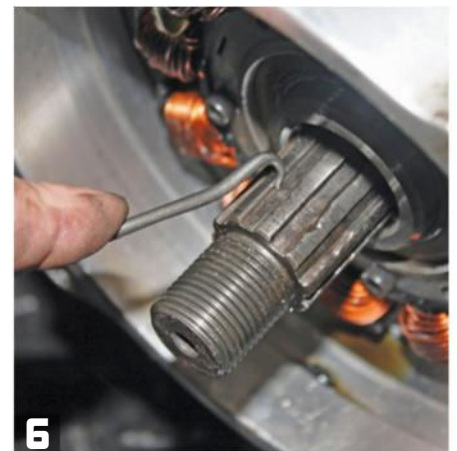
5 Now you can remove the sprocket shaft spacer. There is damage on the old spacer (left) from spinning on the crank bearing; a new one (on the right) will be installed. Luckily, the crank bearing has no damage.



2 The front pulley came right off, but the sprocket insert now has no splines! You can easily see that in the picture.



4 The seal is easily removed by screwing a couple of long drywall screws in a few threads. Then it can be removed using a set of pliers.



6 As you can see, the engine sprocket shaft has some damage on the splines. Carefully remove any metal debris from the stripped-off splines. Be careful to pull the metal debris out of, not toward, the engine crankshaft bearing!



7
Remove the three screws that hold the insert onto the front pulley.



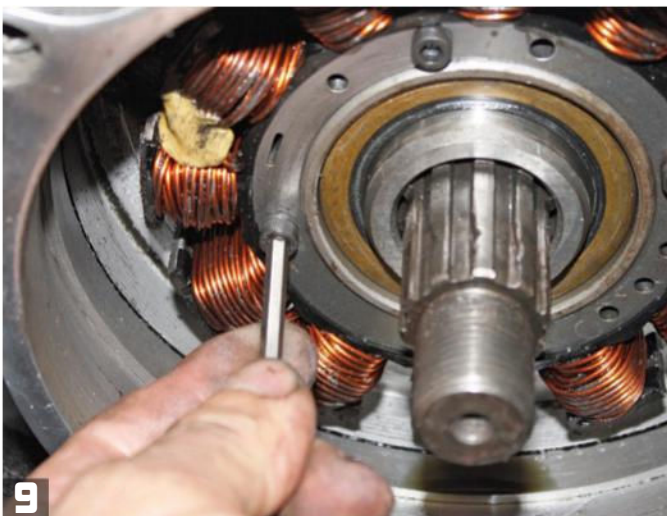
10
The new sprocket insert has three split pins for alignment. Press them into the insert, and then place the insert in the front pulley.



8
The insert comes out easily with a few light taps.



11
Be sure to use the lock washers and the new screws that come with the insert, and for added protection, place some Loctite on the threads.



9
While you are at it, now is the time to check the stator mount screws. Be sure you use some Loctite on them and then reinstall. Take your time to tighten the screws evenly around the stator.



12
Be sure to tighten these screws to the torque specs given from the primary drive supplier.



13 Time to install the new engine sprocket shaft seal. Lubricate the seal lip. Clean the area of the engine case where the seal goes in and apply a very light coating of gasket seal on the seal, not the case. This way any excess will not be pushed into the bearing area.



16 Place the primary belt on the front pulley; the unit should go on easily. Sometimes a few light taps with a plastic mallet are needed to be sure it goes on all the way.



14 Tap the seal in gently and evenly to prevent damage. Never hammer the seal on directly with the hammer head.



17 Now we come to the point in the installation that caused the original failure. The primary drive manufacture's tech said to put some blue or red Loctite on the insert nut to keep it from backing off.



15 The new stator rotor on the left is the heavy-duty one from Twin Power. The stock rotor on the right had a spline length of only .241" and used .260" of washer spacers. This heavy-duty rotor has a spline depth of .500. That is over twice the spline depth of the original rotor for added strength/protection for the splined engine sprocket shaft. Be sure this is clean and has no lubricants on it. Because this rotor has the extra spline thickness, do not use any spacers!



18 Tighten it up using a torque wrench; tighten the nut to 150 ft-lbs. This is very important because this is what holds everything in place and allows no movement of the spline areas. Any movement over time with the splines on the rotor or the sprocket insert will cause damage and fail again. Take your time and do it correctly the first time! **AIG**



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Intake Manifold Leak Tester

Build a \$20 DIY pressurization tool

A LEAKING INTAKE MANIFOLD IS A PROBLEM THAT CAN affect any motorcycle, whether it is carbureted or fuel injected, but older carbureted machines are much more likely to develop this issue. Unlike most leaks where you expect something to come out, an intake leak pulls air through the gap into the combustion chamber.

This changes the fuel/air mixture, resulting in a lean condition. A minor intake manifold leak may just result in poor performance or hard starting, but a major leak can cause the engine to overheat and seize a piston.

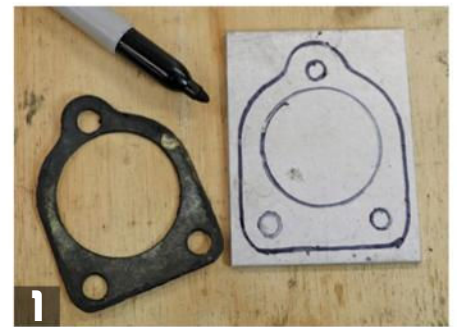
Over the years, engineers at Harley-Davidson experimented with a number of methods for providing a leak-free seal between the intake manifold and the cylinders (for flathead motors) or the cylinder heads (for overhead valve motors). These ranged from plumber-style threaded connections to various combinations of O-rings, clamps, and rubber bands. None of these solutions work 100 percent of the time, and leaks can be attributed to everything from improper installation to deterioration of seal material over time.

Finding and fixing these leaks before they damage your engine is extremely important and one of the best ways to check for intake manifold leaks is by pressurizing the system and using a gas leak detection solution (soapy water) to track down the precise location of the escaping air. In this article I will cover making your own intake manifold leak tester and explain how to use it to check for leaks.

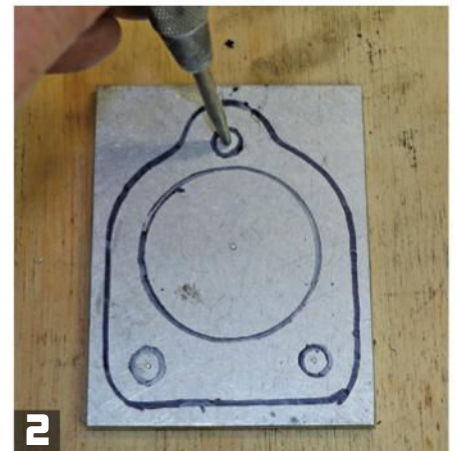
Besides testing for intake manifold leaks, this tool can be used to check for leaking head gaskets, cracks in the heads, etc. Just make sure that when checking for leaks in the heads that you have rotated the motor to a position where the exhaust valve is closed and the intake valve is open. Otherwise all the air will just go out the tail pipe.

TOOLS NEEDED

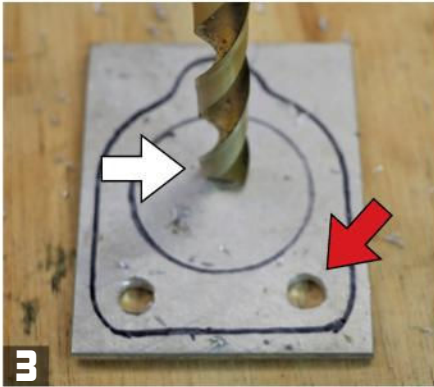
- 1/2" wrench
- 5/16" drill bit
- 29/64" drill bit
- Three 1/4"-20" x 3/4" bolts and nuts
- 2" x 4" x 1/8" piece of aluminum flat stock
- Air compressor or hand air pump
- Center punch
- Gas leak detection solution
- Hacksaw or vertical band saw
- Hand drill or drill press
- Intake manifold gasket
- Permatex High Tack gasket sealant
- Sharpie
- Tubeless tire valve stem for .453" rim hole



1 We'll be using a piece of 1/8"-thick aluminum flat stock (available at most big box home improvement stores), which is roughly 2" x 4", as the base for our intake manifold leak tester. In order to get the correct shape and hole spacing, simply trace your intake manifold gasket onto the aluminum.



2 Use a center punch to mark the center of each hole as well as the center of the plate.



3 Drill the carburetor mounting holes using a 5/16" drill bit (red arrow). Drill the center hole with a 29/64" drill bit (white arrow).

TECH TIP Make sure you deburr all the holes so that the plate will fit flush when mounted on the intake manifold.



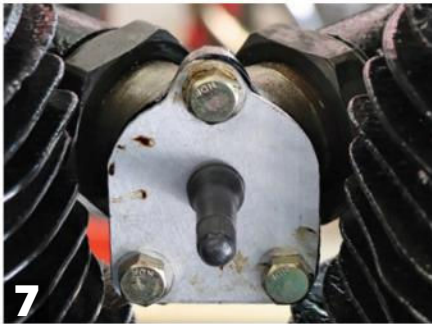
4 Use a hacksaw to cut off the excess aluminum plate. The plate does not have to fit perfectly and a little extra material is fine, as it will fit between the cylinders.



5 Mount the valve stem in the center hole by pulling it through the hole until the wide base seats against the back of the aluminum plate.



6 Using Permatex High Tack gasket sealant, adhere the intake manifold gasket to the back of the plate. This will not only hold the gasket in place while you are performing the test, but will also keep the gasket attached to the plate so you do not lose it in your toolbox.

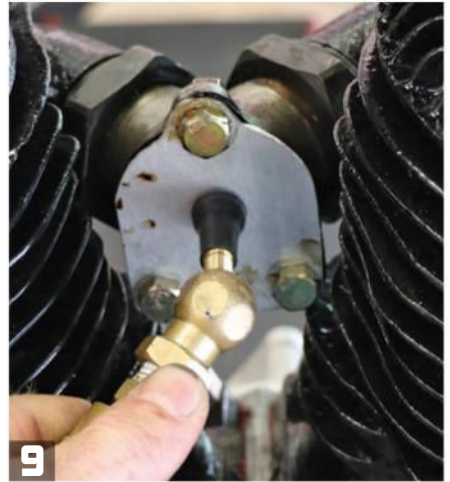


7 Remove your carburetor (follow directions from your shop manual) and replace it with the intake manifold leak tester using three 1/4-20" x 3/4" bolts and nuts to mount it in place. Tighten nuts using a 1/2" wrench.

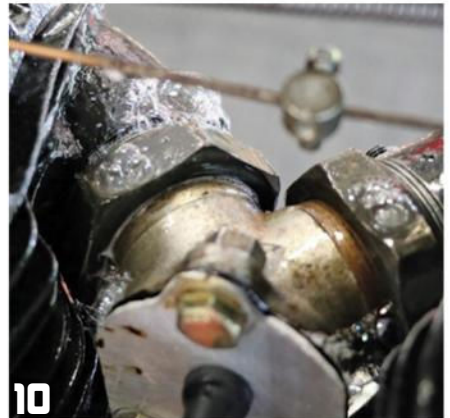


8 Liberally apply amounts of gas leak detection solution around the seals that connect the intake manifold to the cylinder (for flathead motors) or heads (for overhead valve motors). I find that a plastic lab squirt bottle works best because the long tip allows you to reach into tight places and dispenses a tight stream of solution.

TECH TIP You don't have to buy official gas leak detector solution from the store. Just do a quick online search to find various recipes for making your own; you can also use a bottle of bubbles from the toy section.



9 Using an air compressor or hand pump, add 5-10 psi of air through the valve stem. It's not necessary to increase the air pressure above this as a standard carburetor does not run at extremely high pressure.



10 Watch for bubbles. Any bubbling is the result of air escaping from the intake manifold seals.



11 If you find any leaks, first try tightening the intake manifold connections and test for leaks again. If this still has not fixed your leak, you may need to replace your seals. In the case of a motor that has just been rebuilt, it is possible that the cylinders are not aligned properly. This can be remedied by loosening the base nuts so that the cylinders can be rotated slightly to better align with the intake manifold. **AIG**

Winter Battery Storage

Prepare your battery for springtime start-up confidence

The Odyssey Extreme series of batteries are made with 99.99 percent pure lead and can be stored (disconnected) for up to two years without charging. This PC925 has 330 cold-cranking amps. The six-amp Odyssey battery charger can be left connected all winter without over charging the battery.

WINTER IS COMING. FOR MANY OF US IT'S TIME to put our motorcycles away until the warmer weather returns. Even riders located on the West Coast may have some downtime when the weather gets wet and nasty enough. How long your bike will be in a state of suspended animation depends on the outside temperature and your willingness to ride—or not—in cold weather. Whether your motorcycle is going to be idle for a month or the entire winter, the expectation that all riders have is that when that first nice day comes around in spring you are going for a ride. You insert the key, turn on the ignition, and just before you press the start button a quick thought

enters your head: “Hope the battery is charged.” Too often many of us get a dose of reality when the start button is pressed and nothing happens. Jump-starting or charging are options, but will there be enough electrical juice to start the engine again? Dead batteries are frustrating.

Battery Freezing

Caring for your motorcycle's battery over the winter months is simple if these two rules are followed: don't store it in a really cold environment and/or keep it charged. There is a direct relationship between a battery's state-of-charge and the temperature it will freeze at. Electrolyte in a battery is made up of a combination of sulfuric acid and water. When a battery becomes discharged the percentage of acid to water changes to mostly water, which will freeze at a higher temperature than acid. Freezing can crack the battery's case and buckle the plates, permanently damaging it.



The Yuasa GYZ20HL battery is designed for V-twin applications and has 320 cold-cranking amps. The battery is factory activated and is non-spillable. The Yuasa One-Amp High Efficiency Battery Charger provides a three-stage charging cycle and can be connected to a battery for long periods of time.



A fully charged battery can be stored at subfreezing temperatures (down to -75 F) with no damage. By contrast, a discharged (dead) battery will freeze at only 27 F. A battery not connected to anything can lose up to one percent of its charge each day at 70 F and more as the ambient temperature drops. If the battery is installed on a motorcycle, electronic fuel injection computers, clocks, and radios can drain the battery at higher rates even when the ignition is off. Conventional batteries (the ones with filler caps) need to be checked for state-of-charge every month and absorbed glass mat (AGM) batteries, called maintenance-free, about every three months. Temperatures below 60° F or above 80° F may require more frequent inspections and/or charging. To check battery state-of-charge, connect a digital voltmeter and read the voltage. If it's less than 12.25 volts, charge the battery.

Electrolyte Freezing Points	
State of Charge	Temperature
100%	-75° F
75%	-25° F
50%	5° F
25%	16° F
0%	27° F

As long as a battery is charged it can withstand very low temperatures. But when it becomes discharged it can freeze solid at 27 F, a typical temperature in much of the US during winter months. A frozen battery, even when thawed out, will usually have to be replaced because the case cracks or lead plates warp.

Battery Chargers

Yuasa's Automatic One-Amp High-Efficiency Battery Charger (#YUA1201000) is a good choice for winter storage. It can charge and maintain an AGM or conventional flooded battery. It uses a three-stage charging cycle and has a LED display to indicate charge status. The charger can be left connected to a battery all winter and will not overcharge it. It also has reverse polarity protection, so even if it's incorrectly connected it will not damage the charger or battery. The cable is 12 foot long, and the charger comes with a quick-disconnect fused ring connector that can be installed directly to the battery. The charger retails for \$40.95 and comes with a five-year warranty.

The Odyssey Six-Amp Portable Charger is designed to safely charge AGM and conventional flooded lead acid batteries. The battery charger comes in a rugged and weatherproof housing and features fully automatic

We want to help you avoid hearing the dreaded clicking of a dead battery when you hit the start button. The best measures are preventative measures, as we've laid out in this article. Here are some products that will keep your battery kicking not only through winter, but during any prolonged downtime. And if your battery is dead, we've got some options for jump-starting that puppy back to life. ■



Cen-Tech 12-Volt Charger/Engine Starter

This portable automotive battery charger has three modes, making it easy to charge, maintain, or jump start 12-volt batteries. This automotive battery charger has built-in safety features such as reverse polarity alert, thermal protection shutoff, and a self-resetting circuit breaker. Copper-plated clamps offer superior conductivity. It offers 2-10 amp charging rates, plus 50 amps for emergency jumpstarts. The Cen-Tech charger is available from Harbor Freight Tools, and can be purchased for \$29.99 using the coupon on page 5. Cen-Tech, HarborFreight.com.

750mA SuperSmart Battery Tender

The compact Harley-Davidson 750mA SuperSmart Battery Tender is an ideal take-along for touring riders. Its built-in circuitry cycles the charger to turn itself on and off as needed to prevent overcharging. Both of these chargers are sold with a fused alligator clip harness that's handy for charging the battery when it's removed from the motorcycle for long-term storage. They have a fused ring terminal harness that can be connected directly to the battery terminals and left on the motorcycle. It's then easy to plug the charger into the on-bike harness whenever it's parked. \$39.95. Harley-Davidson, H-D.com.



Deltran Battery Tender Portable Power Pack

Deltran's Power Pack is as convenient as a Swiss Army Knife. The Power Pack weighs less than a pound and is small enough that it doesn't take up much space in a saddlebag. What separates this power pack from the rest is that it can provide 400 cranking amps to jump start a car or motorcycle, in addition to charging smaller devices. It's got an LED charge indicator, LED flashlight, and offers reverse polarity protection and a power boost feature. It comes with a convenient carrying case, which has room for the charger, cables, and two supplied power cords—a 12V charger and a wall charger. Two alligator clips also come with the pack. \$150. Deltran, BatteryTender.com.



six-stage charging. A LED battery charge monitor and status indicator lets the user know how much charge is in the battery. The charger comes with 6' charging cables with large clamps and quick-connection-fused ring terminals so that the charger can be connected directly to the battery. The integrated cable wrap design allows the charging cables and power cord to be stored wrapped around the charger. The charger retails for \$128.18 and comes with a two-year warranty.



On-board computers, clocks, and radios can drain a battery during storage. During winter, disconnect one of the battery cables or connect the battery to an automatic battery charger for long-term storage. Both the Yuasa One-Amp and Odyssey Six-Amp chargers are ideal for battery-charging during winter.

Time for a New Battery?

Winter is a time that many owners work on their motorcycles to get them ready for the next riding season. If the battery in your bike is getting tired and you don't want to be left stranded, consider installing a new battery. Powersports battery technology keeps improving and having the latest battery will give you peace of mind. Two manufacturers that offer quality, Harley-Davidson-specific batteries are Odyssey and Yuasa.

The Odyssey Extreme Series of batteries offers deep cycle reserve and cranking power. The battery's cells are designed as flat plates made from 99.99 percent pure lead. The thin lead plates are arranged in a manner that provides up to 15 percent more surface area than other batteries. This design protects them from high-impact shock and mechanical vibration, a common cause of early battery failure. The no spill design allows them to be mounted on their sides. Uninstalled they can be stored for up to two years without recharging. This Odyssey Extreme PC925 (pictured) has 330 cold-cranking amps, comes with a four-year full replacement warranty, and has an expected service life from 3 to 10 years.

Yuasa's GYZ series of AGM batteries have been designed specifically for starting V-twin motorcycles. The GYZ20HL (pictured) can produce 320 cranking amps. This family of batteries offers an upgrade from stock batteries for applications that require high starting power and large capacity for non-factory electrical accessories. An extensive factory-activation process ensures complete absorption of the electrolyte so no liquid acid is contained within the battery. This series of batteries can be mounted on their sides as there is no liquid acid to spill. GYZ batteries are made in the USA and come with a one-year manufacturer's warranty. **AIG**

One Air Filter For A Million Miles?

Every little bit counts

An old friend and famous motorcycle racer, Ed Kretz, once said to me, “You never want a Baja bore job if you can help it.” Before your mind goes to places we don’t need to discuss here, let me tell you Ed was referring to running a motorcycle with open intake. When you run a motor with no filter it sucks in all sorts of stuff that works its way into your top end, damaging the cylinder walls (Baja bore job), pistons, rings, and valve gear. In other words, always run an air filter on your motorcycle or risk damaging your engine.

If you have never given much thought to the device on your motorcycle that filters the air and allows your engine to run, it consists of two major components: the filter housing and the filter element. The housing is the outer box, and its job is to direct the air through the element on its way to the intake of the carburetor on older motorcycles or electronic fuel injection (EFI) on newer ones. The element filters the large and small particles and traps them so they cannot pass into the intake. Typically the housing seldom needs any maintenance other than an occasional external wash and wax when you are cleaning your bike. The filter element, on the other hand, needs periodic maintenance.



Reusable Air Filter Do And Don't Tips

DO check and clean the housing and filter regularly

DO use factory recommended cleaning procedures

DO lightly oil the clean filter

DON'T over oil the filter (this cuts performance)

DON'T try to modify the filter element

DON'T use a filter designed for a different model

There are basically two types of air filter elements: disposable (as delivered in most new motorcycles from the factory) and reusable ones like the K&N one we discuss here. While the reusable ones cost a little more than the disposable ones, they should last for many more miles, saving you in the long run. K&N Filters has been in the business a long time and has a pretty solid reputation. So we ordered a filter element for a 2017 Indian Roadmaster Classic to try it out.

What Makes K&N High-Flow Air Filters Better?

K&N claims that its filters are designed to increase horsepower and acceleration and fit your motorcycle without any hassle. And you’ll want facts to back up our opinions. So here are the results from our friend John at Dyno Solutions in Brookfield, Connecticut. The increases in both horsepower (about 1 hp) and torque (a couple of ft-lbs.) might not sound exciting—frankly, they aren’t. But keep in mind this is pretty much free power for the cost of doing regular maintenance. The filter element fits right in with no muss and no fuss, as advertised. And the unit was pre-oiled, making it a true drop-in. Swapping the dirty old stock filter for the factory-oiled K&N filter takes five minutes with very simple hand tools. **AIG**

MagnaFlow Exhaust

Getting the Growl



WHEN IT COMES TO PERFORMANCE EXHAUST, MagnaFlow has been doing it for years on cars and trucks, but only fairly recently launched a line for Harley-Davidsons. Every manufacturer has a slightly different sound, and you can tell the throaty growl of a MagnaFlow system as soon as it hits your ears.

MagnaFlow took its years of churning out power and great sound in automobiles and applied that same attention to its Harley lineup. The result is not only a great-looking line of exhaust components from complete systems to slip-on mufflers, but they truly nail that quintessential growl that sets it apart from the other V-twin exhaust manufacturers. When it came time to pick an exhaust system for my blacked-out 2015 Dyna Street Bob, the choice was clear. I went with MagnaFlow's Legacy Gen-X exhaust system in black. I like the look and sound of a true dual exhaust system, but they simply can't put down the kind of power numbers that a 2-into-1 system can. With a single crossover between the two

pipes, the Gen-X has equalized exhaust flow and balanced backpressure. The black-coated stainless steel headpipes will not rust or blue over time while the black full-coverage heat shields create a smooth, blacked-out look. MagnaFlow's exhaust systems are made in the US. Importantly, the Gen-X has that classic MagnaFlow rumble.

Swapping out an exhaust system is one of those projects that can be different every single time you do it. Depending on the age, mileage, and wear on the old system and cylinder heads, the removal can be easy or require a ton of elbow grease. If your bike is older, or exhibits signs of wear, you'll want to get a new set of exhaust gaskets and flange nuts to go with the new system. When it comes to tuning, there are many different options that range from doing nothing, to installing

TOOLS NEEDED

- 1/8" Allen
- 1/4" Allen
- 10mm Allen
- 5/16" socket
- 3/8" wrench
- 9/16" wrench
- Anti-seize
- Flathead screwdriver
- Glass cleaner
- Retaining ring pliers
- Torque wrench (ft.-lbs.)





1 Our 2015 Street Bob is up on the lift with its stock exhaust system in place. That chrome has got to go.

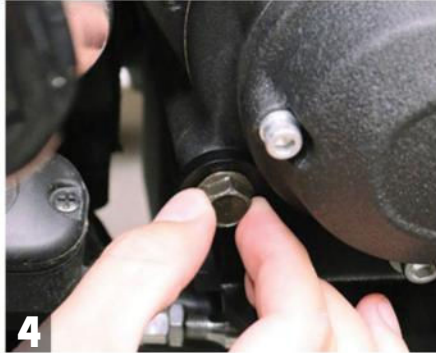


2 The stock exhaust system is removed, and the bike is ready for its new MagnaFlow system. Remove the two bolts underneath the transmission cover using a 1/4" Allen and set them aside for reuse.



3 After applying some of the supplied red threadlocker to the stock transmission bolts, install the MagnaFlow bracket but leave it hand-tight.

TIPS & TRICKS Wear eye protection when handling circlips as they can easily go flying up into your face.



4 Install the MagnaFlow-supplied long bolt into the location that previously housed the mounting stud and leave it hand-tight.



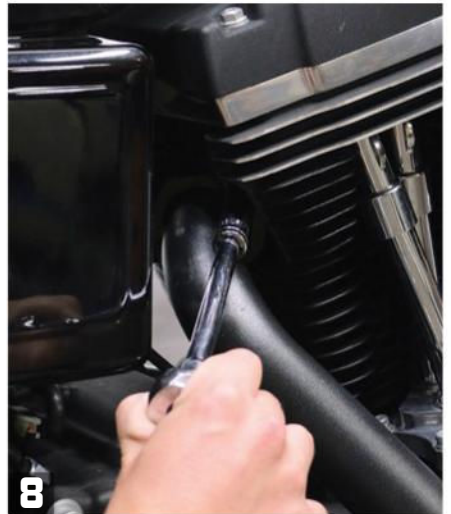
5 Using a light coating of anti-seize and a 10mm Allen, screw one of the supplied sensor plugs into the top location on the forward header.



6 Using a light coating of anti-seize, screw in the supplied O₂ adaptors to the remaining two locations.



7 Using retaining ring pliers, slip the mounting flanges over the headers and install the circlips.



8 Loosely bolt the MagnaFlow exhaust system to the heads using a 5/16" socket with an extension.



9 Using the supplied bolts and nut plates from MagnaFlow, loosely attach the exhaust system to the mounting bracket using a 3/8" wrench.



10

With everything lining up as it should, torque the upper flange nuts to 9-18 in-lbs. and the lower flange nuts to 60-80 in-lbs.



11

After applying a little anti-seize to the stock O₂ sensors, screw them into the bungs in the MagnaFlow pipes. Tighten gently with a 9/16" wrench, then plug the connectors in if you removed them.



12

Install the front MagnaFlow heat shields first using the supplied clamps and a flathead screwdriver. Leave them loose for now.

in-line enrichers, to getting a tuner and downloading the tune yourself, to taking your bike to a tuning shop for a complete, custom tune. If an exhaust system is your first performance upgrade, depending on the system, minor tuning work will be fine. Remember, the stock narrowband O₂ sensors can adjust plus or minus 5 percent. If you have other performance products already on your bike, a DIY tuning module or a trip to a reputable tuning shop is in order.

SOURCES

MagnaFlow

Legacy Gen-X Exhaust, \$749.95
800/990-0905
MagnaFlow.com



13

Loosely install the rear heat shields next by using the supplied clamps and slipping the shield over the end of the muffler. The MagnaFlow logo goes on the lower shield.



14

Install the MagnaFlow X-pipe heat shield by sliding the front and rear shields into the tabs on the X-pipe shield. Use the long clamp to secure it. Tighten the front shields at this time, too.



15

Before tightening the rear shields, install the MagnaFlow end caps using the supplied hardware and a 1/8" Allen. Dab a little of the supplied threadlocker on first. Then tighten the rear heat shields and remove the plastic cover on the MagnaFlow logo.



16

Wipe the heat shields down with glass cleaner before firing the bike up for the first time. AIG

A Cool Café Fairing

This easy bolt-on kit takes less than an hour to install

BEEN THINKING OF ADDING A SMALL CAFÉ FAIRING to your bike? Whether it's just for looks or a slick way to cover your bike's indicator lights so you can actually see when they're lit, bolting on a small fairing will make a big difference in your bike. And if you need just a little bit more of a nudge to do the deed, Father Harley sells a cool little kit that's so easy to install you can do it in only 11 steps. Yup, the H-D web site offers a Color-Matched Headlamp

Visor kit that fits lots of different year and model bikes! With a few noted exceptions (which are provided on the website), this fairing fits 1995 and later Sportsters, 1995-2005 Dynas, and 1982-94 FXR and FXRS machines. And, no, I don't know why they don't have a kit for Softails. Nor do I know why color-matched is part of its name since it only comes in Vivid Black. (If you don't want yours black, paint it before installing it.) Equally puzzling is why it's listed as a visor and not a fairing, or why Harley is going Continental on us with headlamp instead of headlight. No matter! What is important is that the fairing

is made of amply thick thermoplastic and comes with all needed hardware and bracketry. Checking out the accompanying photos and captions will show you what it takes to bolt one onto your bike.



Here's our test bike, a 2002 Dyna Low Rider, ready to receive its new H-D headlight visor, which is also known as a fairing.



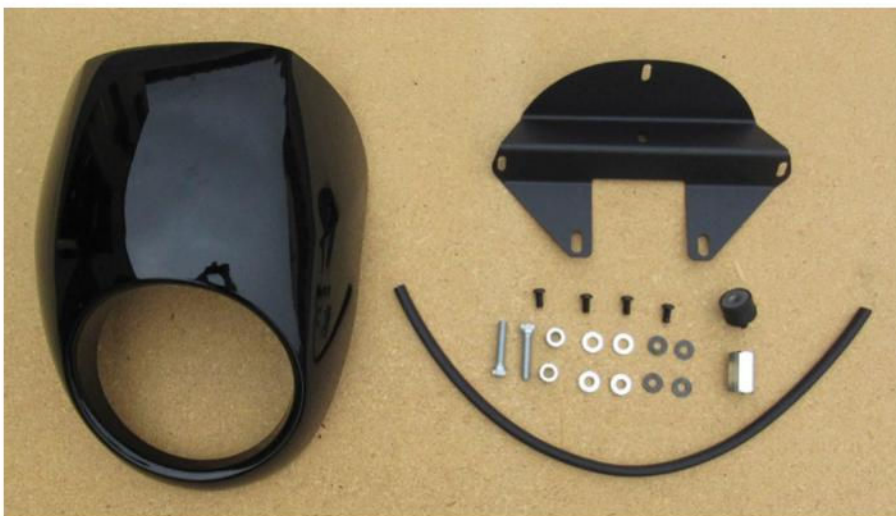
Start by removing the headlight bracket plug that covers the headlight assembly nut using a small flat-bladed screwdriver. This plug will not be reused.



Use a 3/4" socket to remove the nut that holds the headlight assembly to its bracket. Reusing the stock lock washer and beveled washer, loosely install the hex spacer that comes with the fairing kit. The stock nut is not reused.

TOOLS NEEDED

- Tape (beam marker)
- Blue Loctite
- Razor blade
- Flat-bladed screwdriver (small)
- 5/32" Allen
- 1/4" Allen
- 1/2" socket
- 3/4" socket
- Torque wrench (in-lbs.)
- Torque wrench (ft-lbs.)





4 Now install the kit's edge gasket around the headlight opening in the café fairing starting at the top and working your way all the way around. The seam should be at the top of the opening.



5 Our edge gasket is a little too long, so we have to cut about 1/2" from the end of the edge gasket using a razor blade.



6 After properly positioning the headlight as per the accompanying sidebar and tightening the hex nut using a 3/4" socket, install the kit's rubber mount onto the hex nut and tighten it.

Aligning A Headlight

Aligning your headlight is easy. Start by making sure the tires are properly inflated. Then, with the bike upright in a riding position and with someone the same weight as you on the bike, measure the distance from the center of the headlight bulb to the pavement. For our example, we'll say that distance is 40", which is the height you'll need to place your beam marker. Now find a relatively smooth exterior wall where the pavement is level and you can position your bike 25' perpendicularly to the wall with nothing between your bike and the wall. Once it's dark out, put an 18"-long strip of any color tape—but not the same color as the wall—onto the wall. Position the tape strip 40" (our example's height) from the ground. Position your bike 25' directly perpendicular to the wall opposite the tape strip. You want your bike positioned so that if you were to drive straight forward your front wheel would touch the wall directly below the center of the tape strip. Then, with the bike upright and you sitting on it, see where your headlight's high (not low) beam hits the wall in relation to the tape strip. The center of the high beam's well-defined area should be at the center of the tape strip both vertically and horizontally. If it's not, adjust the headlight using the two adjustment screws located under the stock trim ring to make it so. ■



7 Now remove the two bolts that hold the headlight bracket to the front end. Our Dyna's bolts require a 1/4" Allen, but on other models you may need to use a 1/2" socket.



8 Then slip one of the kit's flat washers onto one of the long bolts and put the bolt through the visor (fairing) mount bracket as shown. Then slip one of the kit's 1/2"-thick spacers over the bolt and under the mount.



9 With a little blue Loctite on the bolt, install the mount onto the front end using a 1/4" Allen but leave the bolts loose for now. You'll tighten these bolts to 12-15 ft.-lbs. in Step 12.



10 Loosely install one of the kit's black screws and flat washers into the slot and rubber isolating mount using a 5/32" Allen. You'll tighten this bolt to 40 in.-lbs. in Step 12.

SOURCES

Harley-Davidson Motor Company
Color-Matched Headlamp
Visor \$239.95
Harley-Davidson.com



11
Loosely secure the fairing (visor) to its mount bracket using a 5/32" Allen and the kit's remaining three black screws and washers. You'll tighten these bolts to 40 in-lbs. in the next step.



12
Now position the fairing so the headlight assembly is centered in the fairing and tighten all the fairing mount hardware you left loose in Steps 9, 10, and 11 to hold the fairing in this position.



13
Here's how the finished assembly should look! **AIG**

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P/N 08-0468 digital tire pressure gauge shown paired with the 08-0602 pro fill air chuck



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Legendary Ride

Legend Revo-A Shocks

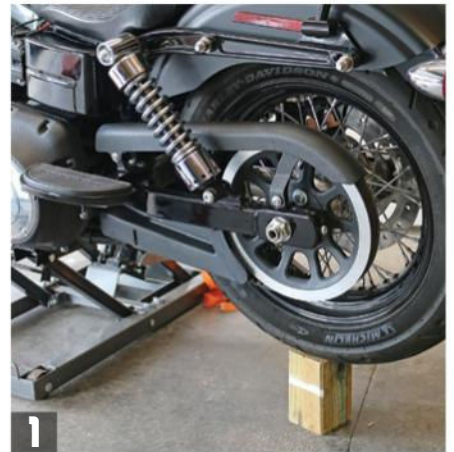
WHEN IT COMES TO ANY TWIN-SHOCK HARLEY, whether it's a bagger, Sportster, or Dyna, the most effective upgrade is usually in the suspension department. When it comes to what today's Harley riders are looking for, excellent performance is paramount, but looks are important, too. Everything else on your bike is beautiful, so shouldn't your shocks be, too?

Legend Suspensions nails both the looks and performance requirements with its line of Revo shocks to complement its existing line of air suspension products. For our blacked-out 2015 Street Bob, we opted for the black 13" Revo-A shocks (#1310-0947/\$925). The options, however, are plentiful when it comes to choosing a set of Legend shocks for your own ride. Lengths are available in 12" (stock), 13", and 14", and springs come in both standard and heavy-duty options, for combined rider/passenger loads over 500 pounds. They're available in both black and clear-anodized, but the most important option is an easily adjustable rebound damping switch, which distinguishes the Revo-A from the Revo. Legend's products are made by hand in Sturgis, South Dakota.

The extended coil length on the Revo provides a larger sweet spot without having to go to a longer shock, allowing

TOOLS NEEDED

- 3/4" socket
- 3/4" wrench
- Frame jack
- Red threadlocker
- T50 Torx
- Wooden block



Our 2015 Dyna is up on the frame jack with a wooden block underneath the rear tire. The block is there to support the wheel for when we remove the stock shocks.

for a plush ride, control, and bottoming resistance in whichever size you choose. This "sweet spot" softens the preload as well, so a 13" shock sits at almost the same height as a 12" stock shock, but with noticeably better handling confidence and cornering clearance. The 13", which we tested, is perfectly suited for single or two-up riding, be that every day on the street or weekend performance riding. The six rebound settings allow for specific adjustment based on whatever kind of riding you're doing that day. For track-ready use, set the damping to 6, and for the ultimate cushy commute, set it to 1. The difference between all the settings is readily noticeable when riding and takes only a second change. Further preload adjustment can be made by rotating the springs themselves by hand. The springs take some effort to spin, but I found the as-shipped setting to be perfect for solo riding or with a passenger.

The Legend Revo-A shocks came with everything needed to make the install easy, including the spacers that allow them to clear the belt guard on the left side. If you're running the stock exhaust—and going with an oversize length—mount the right-side shock first, starting at the bottom, otherwise the muffler gets in the way. Most aftermarket exhaust systems will clear just fine, but take a look at the relationship between the right side lower shock mount and the exhaust system before ordering a longer-than-stock size.





2 Remove the top shock mounts with a 3/4" socket. It requires some force to loosen.



3 Using a T50 Torx on the right and a T50 Torx plus a 3/4" wrench on the left, remove the lower shock mounting hardware and remove the shocks. Be cautious as there still could be some pressure left on the second shock to be removed.



4 With both shocks removed, lower the bike onto the wooden block bringing the wheel up into the fender. Then, after applying red threadlocker to the bolt, loosely install the right-side lower shock bolt using a T50 Torx. Put a supplied spacer on either side of the shock. Leave it loose enough to swing over the top mount. The shocks should be positioned with the adjuster knob on the bottom, facing rearwards, and the serial number facing in.



5 Now raise the bike up until the upper shock mounting hole can easily slide onto the stock stud. Slip a washer over the stud, followed by the shock, another washer, and then a spacer. Apply red threadlocker before reinstalling the stock nut with a 3/4" socket.



6 After applying red threadlocker to the stock bolt on the lower left shock mount, slide it through a Legend washer, then through the Legend shock, Legend spacer, swingarm bracket, and stock bolt. Be sure to mount the shock with the silver label on the bottom, facing inwards.



7 For the top left mounting point, with the Legend spacer and shock already slipped on, slide a Legend washer and the stock washer over the stud, followed by some red threadlocker and the stock acorn nut. Tighten it down. For 2008 and later models, slip a supplied spacer on the stock upper left stud. Slide the shock onto the upper stud.



8 To set the sag, simply twist the springs by hand. (the springs are attached to the threaded adjustment collars) Loosen (extend the spring) to increase sag and tighten (compress the spring) to decrease sag. You'll want to have a buddy measure while you sit on your bike with whatever gear you usually wear or carry. Set each side equally.



9 Adjust the rebound to your preferred riding style. Start at 3 on both sides and then go up for sport/performance or down for comfort. Set each side equally.



10 Not only do the black Legend ReVO-A shocks look better on this blacked-out Street Bob, but the improvement in performance makes this bike handle like it should! **AIG**

SOURCES

Legend Suspensions
LegendSuspensions.com

CREE LED Driving Lights

Big Bike Parts improves visibility



TOOLS NEEDED

- 1/2" wrench
- 9/16" wrench
- 10mm wrench
- 13mm wrench
- 5mm Allen wrench
- 1/8" drill bit
- Stepped drill bit (13/16")
- Electric drill
- Wire crimping tool

BOLTING ON A SET OF LED DRIVING lights is a surefire way to not only help you see better after dark, but also help other motorists see you better. This CREE LED driving light from Big Bike Parts is a great addition to 1996 and newer FLH baggers.

You may have heard the name *CREE LED* before but not known what it means. *CREE* doesn't refer to the round chrome driving

lamp, but rather to the LED unit being used inside the light housing. CREE is a company that makes high-output LEDs that are used in a variety of applications, such as home lighting, flashlights, and automotive lighting. The fact that Big Bike Parts selected CREE components for this kit means you can count on it being of superior quality.

Big Bike Parts makes a variety of 3-1/2" LED driving lights for Harley and Victory applications. This kit contains custom fairing mounts for a perfect fit. These high-intensity driving lights have dual CREE LEDs per light for a rating of 6000K brightness and are available in either all chrome finish or black satin finish. (For black finish simply add *BK* to the part number, cost is the same.)

This install was performed at Woodstock Harley-Davidson in Kingston, New York. Many thanks to Bill and Glen and the team at Woodstock for letting us use their shop to shoot these install pictures. The installation was straightforward and didn't take long. We kept the stock headlight on the bike for comparison. Watch for a future story about upgrading this bike's primary headlight to LED lighting for full frontal brightness.





1 This stock Street Glide had a bare-bones approach to forward lighting.



4 Remove the stock signal light and bracket with a 1/2" socket wrench.



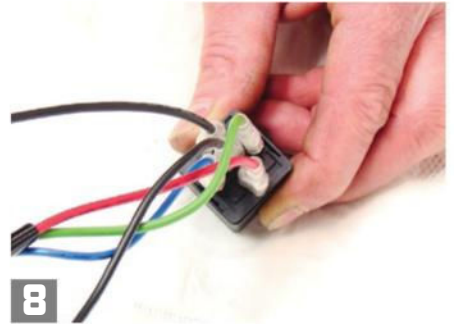
7 Remove the fairing outer shell with a T27 Torx wrench. A total of seven bolts hold it on. Four bolts are on the backside (fairing inner) and three on the windscreen. Disconnect the two headlight connectors to completely remove the outer fairing.



2 Preassemble the lights to the supplied brackets with a 9/16" socket wrench. Do not tighten yet, as light aiming will come later.



5 Mount the new driving lights to the bike using a 9/16" deep socket and route the wires to under the fairing.



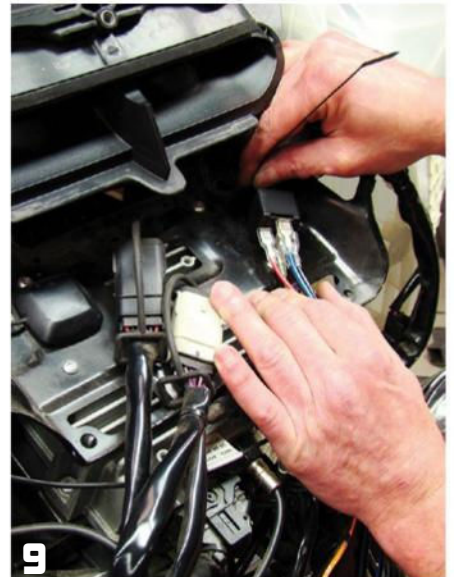
8 Pre-wire the relay to the Big Bike Parts harness as shown (also shown in detail on the instruction sheet).



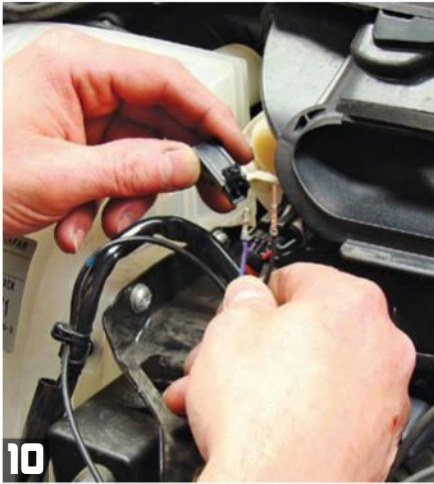
3 Using a 10mm wrench and a 5mm Allen wrench, snug the light pedestal bolt so it doesn't flop around.



6 Reinstall the factory signal lights with a 1/2" socket wrench.



9 Mount the relay to the inner radio bracket, and tap the supplied two black wires to the bike's blue light wire. Bundle up excess harness and zip-tie it so it's out of the way.



10 Disassemble the factory accessory lead connector (located inside the front fairing). The wire colors are purple and black. The purple lead is live when the ignition is *on*.



11 Connect the orange wire from the Big Bike harness to the purple 12-volt accessory wire and the two LED light ground wires, and the green Big Bike harness wire to the bike's black wire.



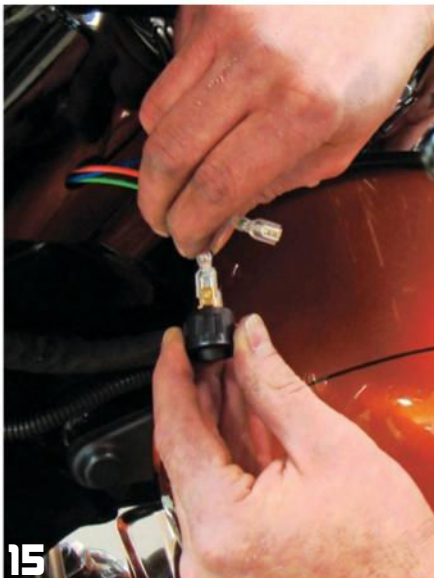
12 Use a pin punch to locate a spot for the switch and dimple the panel to be drilled.



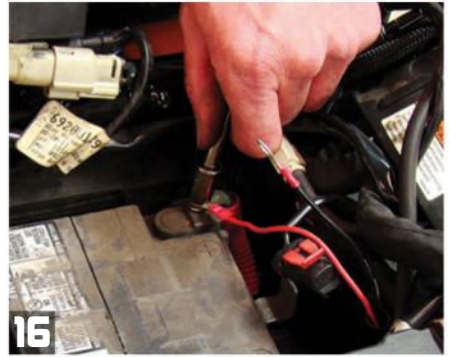
13 First, drill a pilot hole with a 1/8" drill bit.



14 Then use a stepped drill bit to open up the hole to 13/16" diameter.



15 Connect the harness wires to the switch and install the light switch in the hole.



16 Extend the main Big Bike wire harness with approximately 4' of red and black 18-gauge wire. These two wires will connect directly to the battery and will provide power to the driving lights.



17 Reassemble the front fairing and make final aiming adjustments to the lights and tighten them in place using a 10mm wrench and 5mm Allen wrench for the pivot and a 13mm wrench for the base.



18 This shot shows the difference in intensity between stock and CREE LED lights. Something needs to be done about that wimpy headlight. **AIG**

SOURCES

Woodstock Harley-Davidson
Kingston, NY
845/338-2800
WoodstockHarley.com

Big Bike Parts
#91-315L Cree Driving
Light Kit, \$369.95
BigBikeParts.com

Project Phoenix

Part I: The Phoenix ignites and flames out



BACK IN 2013, I STARTED OUT WITH JUST A SET OF matched 1933 Harley-Davidson VL engine cases. Over the next two years, I hunted down all the other parts and assembled a running and reliable machine, which I then successfully piloted from coast to coast (see *AIM* issues 348 and 349). Needless to say, after all the hours spent building and riding that old motorcycle, I had grown fairly attached to it. So when I found myself standing on the side of the road, watching it burn to the ground, you might say I was more than just a little disappointed.

The fateful ride started out as just a quick 30-minute run to a local bike night in Raleigh, North Carolina. Having rebuilt the motor over the previous winter, along with logging an additional 1,200 miles since, I expected that everything

would go smoothly. The motor was purring along at 55 mph down the highway when suddenly it started misfiring. This is not an uncommon occurrence on an older motorcycle, as a slight misadjustment on the carburetor can cause the plugs to foul, and, like most vintage riders, I carry a spare set along with the necessary tools to change them with me at all times.

Without giving it a second thought, I took the next exit, pulled off the road onto a sidewalk, closed the petcock, and turned off the motorcycle. Within



a few minutes I had the old sparkplugs removed and a new set gapped and installed. As I looked over the old set, I noticed that they did not look fouled at all and started to wonder if maybe there was another issue causing the misfire.

After opening the petcock and preparing to restart the motorcycle, I noticed a strong odor of raw gasoline. Looking down at my carburetor, I saw gas leaking out from the top of the fuel bowl. Just like fouled plugs, this isn't an uncommon occurrence on an old motorcycle, as the float or needle can sometimes get stuck so that the fuel bowl overflows. A couple of raps on the side of the fuel bowl with the end of a screwdriver seemed to jolt the float back into position and the gas leak subsided.

Now I felt like I had solved the problem; it wasn't fouled plugs, but a stuck float. As I looked down the left side of the motorcycle, I could see where gas had blown down the side as I was riding and that seemed to coincide with my roadside diagnosis. I breathed a sigh of relief, thinking, "Another successful roadside repair."

Since the motorcycle was still hot, there was no need to prime the motor, and I just turned on the ignition and jumped on the kicker pedal to start the motor. Unfortunately the carburetor decided it was the perfect time to backfire through the air cleaner. Normally this would not even be a problem, but my air filter was currently soaked with gas from the fuel leak. The gas-soaked air filter instantly ignited, and thanks to the light oil that it was coated with, it continued to burn. As the fire shot up between my legs, I decided it was a good time to get off the motorcycle.

At this point, things started to move quickly and not in a good way. One problem that has always plagued my VL is leaky petcocks. Unlike modern versions, these rely on a tapered brass plug that fits into a steel body to form a seal. Over the years I had tried lapping the surfaces, applying different lubricants, and even replacing the entire part, none of which ever resulted in a completely dry petcock. The best I had achieved were petcocks that didn't leak, but "sweated" a little gas. This was fine most of the time, but as soon as the fire



soon reached those sweaty petcocks they caught on fire, too.

Before I leapt from the motorcycle, I did turn shut off the main petcock, thinking that the fire would quickly go out once the fuel in the carburetor burned up. Of course now that my

petcocks were also on fire, that hope was quickly fading. Another interesting fact about old motorcycles is that some parts of the gas tanks are attached with solder—not braze or weld, but solder like you use for electronics. As anyone who has ever soldered two wires together knows, the melting temperature for solder is very low (around 370F). On my tanks, the gas

tank bungs that the petcocks screw into were soldered, and once those petcocks caught fire the next thing to go was the two gas tank bungs.

When the gas tank bungs dropped free, a 1" hole was exposed in each gas tank and the gas just poured out. Luckily, in my frantic attempts to put out the fire with my leather jacket (note that Harley-Davidson jackets look great but are not flame retardants) the motorcycle had fallen over. This occurred just before the gas tank bungs detached, so when the gas poured out it mostly ran onto the ground.

As I stood there watching my bike go up in flames, several people pulled over to offer assistance. No one had a fire extinguisher, but one woman did offer the use of an ice pack (I guess to freeze the fire). Even without any real help from passersby, the local fire department was on the scene in probably less than five minutes and hosed the motorcycle down with water until the fire went out.



With the fire extinguished, I was able to take stock of the damage. Clearly the tanks, fenders, seat, and tires were totally ruined. The glass on both the headlight and amp meter cracked from the heat, and the fire had run down each cloth-covered wire like a lit fuse until it reached whatever electrical component they connected. This meant I was probably also looking at a ruined ignition coil and generator. On the plus side, the engine and transmission seemed to be in good shape, and although the rubber on the tires had burned in places, the wheels still looked untouched.

After spending an hour on the phone trying to find a trailer, I gave up and called for a tow truck. Then I was left alone to sit on the side of the road and wait, just staring at the burned remains of my motorcycle. Finding a tow truck turned out to be a bit of an ordeal, as I needed a flatbed and not just a standard wrecker. I ended up waiting for hours in the dark as my insurance company searched for a suitable truck.

Once I got my motorcycle home, I went straight into full-blown parts hunting mode. There was really no time to spare because just a week prior to the fire I had accepted an invitation to show my VL at Fuel Cleveland at the end of July. That left me with just six weeks, and I was determined to get my motorcycle back together and ready in time to take it to Ohio. So with that, what came to be called "Project Phoenix" officially got underway. Stay tuned for the next two issues of *American Iron Garage* to see what it took to transform this smoldering pile of parts back into a running motorcycle. **AIG**



Beer Budget Bobber

Part II: Bought and built for under \$7,500

This Dyna was bought and built for less than the cost of a new Sportster. Built in a one-car garage with basic hand tools and wearing a rattle-can paint job!

IN THE LAST ISSUE WE SHARED HOW SANDY WANTED TO buy a used bike and build it as a practical and fun bobber with a total budget of \$7,500 or less, a cost that includes buying the used bike. He found a good base bike on eBay for \$6,500 and got right to work, stripping off what he didn't want and fixing what needed it. — *Buzz*

My Beer Budget Bobber is done. It took a lot less time than I thought, and we completed it under budget. The total cost of parts (almost all of them used) was under \$1,000,

and the total real labor time was a couple hours per night over two weeks, not counting all the many hours walking around the bike and thinking out details of the to-do and how-to-do list. The largest amount of time was spent waiting for parts to arrive!

While the vision was uniquely mine, the bike is based on a combination of Dyna Bobbers I found online. I pictured an all-black minimalist bike: low handlebars, a brown solo seat, brown soft grips, and exposed rear tire. Some details, like vintage-looking tires and black rims, changed as I progressed in the build. I also ended up with a black seat because I got a great deal on it. And I love the final look.

After removing as much of the rust and corrosion as I could with fine steel wool and elbow grease, I then stripped off everything I considered nonessential. In just a few hours I had a big pile



of take-off parts, the front fender, the two spotlights, front turn signals, saddlebags, sissybar, rear portion of the touring seat, taillight, rear turn signals, and rear fender. It took me two hours just to remove the passenger foot rests, as one of the Torx bolts was rusted in place. I had to cut the mounting area around it with a sawzall.

Next I replaced the chrome mini apehangers with the donated black Dyna sport low bars. While mounting the hand controls on the new bars, I realized that I would need shorter throttle cables. This is when I learned to really appreciate YouTube and eBay. Sellers on eBay offer just about anything you need for a project like this. And YouTube shows you correct installation. I wanted softer and smaller diameter handgrips and matching levers (my old hand levers showed signs of being victims of blunt trauma). So back to eBay to source Arlen Ness Knurled Fusion series black grips and a set of black-drilled hand levers.

I had to remount the rear fender and taillight, but soon realized after deep-sixing the back of the broken stock seat there were no mounts left for the front portion of the seat, so I used parachute chord to tie the seat on. No front fender was fine, but the handlebars were still a bit higher than I wanted. And riding with sport bars and forward controls was awkward. The jerry-rigged half seat and taillight were just plain ugly. Back to eBay to find lower black minimalist risers, 1"-rise black handlebars, and an original set of mid-set footpegs and controls.

I found small black plastic turn signals, an under-fender-mount brake/taillight, and solo seat. I had originally planned a retro-style taillight with a license plate mount, but after seeing the under-fender-mount lights at under \$15, I thought I'd give those a try. Still to come would be rubber fork boots, side license plate holder, and the swingarm-mounted rear fender. Buzz donated a gloss black derby cover to replace the stock silver one.

While waiting for the next batch of parts, I removed the rear fender and marked it to cut. Some bobbers online had kept the original rear fender but

Sandy putting the bobber through its paces.



A fitted \$12 plastic taillight was mounted under the rear fender.



The external sprung leather seat, along with the Arlen Ness grips and handlebar levers, were bought used on eBay.

Beer Budget Bobber Expenses

Here is the full list of expenses, plenty left in the budget for a case or two of beer! We have not included the cost of general maintenance and upkeep like battery, oil, filter, fork oil, and spark plugs.

2007 Dyna (used)	\$6,500
Leather saddle	\$90
Black riders	\$25
Black handlebars.....	\$48
Grips	\$42
Turn signals.....	\$21
Throttle cables	\$24
Mid sets (used)	\$160
Front brake line.....	\$20
Fork boots.....	\$18
Taillight.....	\$12
License plate holder.....	\$18
Cans of spray paint.....	\$16
Rubber grommets.....	\$6
Nuts and bolts.....	\$8
Black levers.....	\$36
Rear fender.....	\$350
Total.....	\$7,394

had a different taillight and blinkers, some had trimmed the back of the fender, and others had trimmed the back and sides. Starting with the sawzall, and finishing with a jigsaw, I cut the rear fender down in three stages. Each time I trimmed more, I'd remount the fender to check the look. After the third cut I drilled new holes for the mounting bolts higher on the sides to lower the overall unit. Then I removed the top shock bolts to remove the frame trim pieces and used new Allen head bolts in place of the original rusted hex heads.

Overall the look was good, but still not exactly what I had in mind. I'd seen a swingarm-mounted hugger fender, and eventually found the actual fender I'd seen in the photos. It was a must-have item. This rear fender cost \$350, my one big spend.

The fender is a hugger from Rocket Bobs in England. After committing to spend real money on this fender I ordered it online. To my surprise Rocket Bobs immediately responded, asking about the size wheel and tire, and if I wanted it painted or raw. The customer service was exceptional, keeping me up to date on all phases of the fender's



Veterans will recognize these magazine holders. Handy to hold registration and insurance papers — plus look like they belong.



Sandy's big splurge was on this handcrafted fender from Rocket Bob's in England. Stock repainted shocks.

construction and shipping. My hard-earned dollars were well-spent. Once in hand, the fender proved a truly custom-made part of the highest quality. It was packed and shipped across the ocean like an expensive antique!

The frame rails aft the shock mounting holes aren't needed with my new fender as it mounts solidly to the swingarm. Rails, say hello to my little friend, the sawzall. I hand-filed the ends smooth. Next, I mounted the new hugger fender to check for tire clearance. Not enough, so I added some steel spacers I'd taken off the stock set up. Nice! Now I had enough space off the tire to mount and clear the LED brake/taillight under the fender for a clean and minimalist look.

The next week was like Christmas, with daily deliveries to my front door from Dennis Kirk and my assorted eBay sellers. With new handlebars, risers, hand levers, grips, and throttle cables in hand, I went to work replacing the ones on the bike. Back to YouTube to better understand how to swap out the controls and handlebars. But first I wanted to dismantle the control housings to paint them. I lightly sanded and cleaned the chrome parts I planned



Lean and low (both the profile and the cost) — just what Sandy wanted .

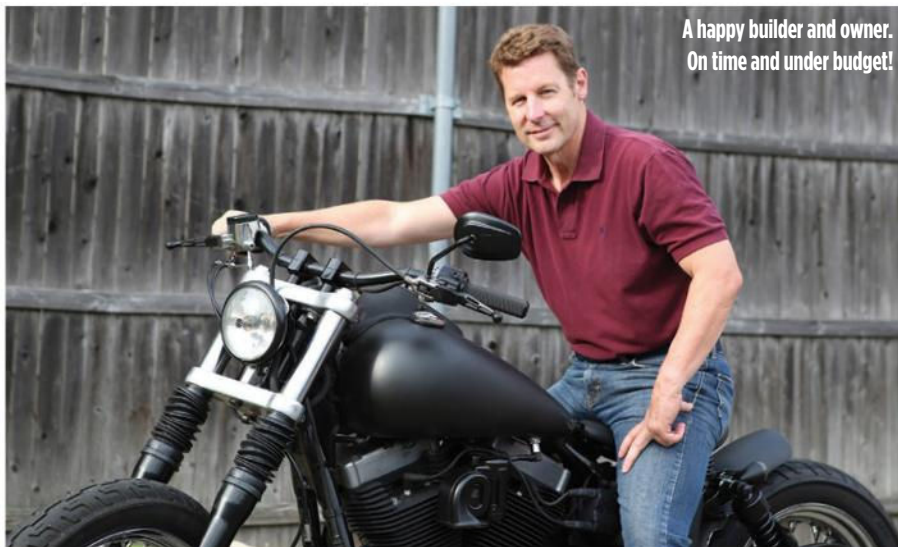
to paint, hung them outside, and over a couple hours applied multiple coats of black satin paint. I also painted the left-hand mirror and assorted Torx and hex head bolts. All the parts came out well except the mirror, which I dropped and cracked. This was my first casualty, but it still functioned fine.

I wanted to lower the front of the Harley but still keep all the fork travel. I loosened the Torx bolts on the triple trees and slid the tubes up about an inch. I slid large black O-rings over the tops of the fork tubes for a nice clean detail.

When working on the throttle cables I was pleased to discover a performance air filter under the chrome cover. I took off the filter, cleaned and painted the exposed outside metal black (but not the filter element), and remounted it using black Allen bolts with silver washers in place of the originals. Without the chrome cover, the black and silver added to the minimalist look I wanted.

The seat was one of the last items to arrive. While I had originally planned on a brown seat, I found a brand-new black Mustang solo spring saddle for sale on eBay for about half the price. Back to YouTube to figure out the best way to mount it. After installing the seat and new hugger fender I took a lot of time walking around the bike deciding where to mount the rear turn signals. Under the rear of the seat? Low on the swing arm? High or low on the shock bolts? I ended up buying two 4" metal straps at the local hardware store, drilling holes and bending them to fit. I mounted them on the shock bolts and threaded the signal wires through the holes and nuts. I then secured everything in place. I threaded the wires through black rubber grommets to cover the exposed nut and threads.

Almost done now. So I sat and stared at my bike, taking in all the details. Over time I picked out various parts to be blacked out. Using a combination of black satin, black Harley frame, and black Plasti-Dip paints, I got the finishes I wanted. I covered several nuts and bolt ends with black rubber grommets. This detail softens the hard edges and is cheap and easy to change. There was



Attention to detail — clever way to mount the rear fender to the swingarm.

only one part I couldn't properly refinish, as the front master cylinder cover was pitted with a worrisome small crack. I ordered a new black fish-scale cover from Lowbrow Customs. No YouTube help on getting the clear plastic window and gasket of the master cylinder cover separated or reinstalling the new cover. I eventually figured it out using the OEM parts books.

Yes, those of you with sharp eyes might note the M16/AR15 soft triple magazine pouch covering the battery on the side. I bought the bike without a battery cover and had an extra one. Besides, I thought this would be a cool touch.

The last two items on my punch list were the mid-set controls and a pair of rubber fork boots. In seeking some advice, I found swapping the forward controls for mid-sets could be a bit



New throttle cables, Ness levers, and painted master cylinder cover.

tricky. The local Harley dealer wasn't interested in the job, but a local bike shop, Sound Motor Sports in Fairfield, Connecticut, did a great job mounting the controls and fork boots.

I think the bike looks great, and it runs strong. It is my first Harley so as I rack up the miles I'm surprised at how stable, fast, and fun it is. When the weather cooperates, I ride about a half hour to work, and I love cruising the back roads where I live. I have so little invested in this project I am considering splurging in a suspension upgrade over the winter, front and rear. But first I want to get more miles on my Beer Budget Bobber.

Would I do it again? Absolutely. But I might go for a different look, maybe drag bars, a Voodoo rear fender, and Rocker Seat (Rocket Bobs), mini integrated LED blinkers, and ultra-modern LED headlight. In silver next time, and I'd keep both. It's all about the dollars and room in the garage. — *Sandy Reddin* **AIG**

Schumacher SchuLink Battery Charger

There's an app for that

WE'VE ALL COME TO RELY ON OUR SMARTPHONES these days. They can do so much. I'm all for jumping on the high-tech bandwagon, and here's a product that'll let your smartphone do even more work for you.

In this issue (page 54) we cover the importance of maintaining the battery in your motorcycle during the downtime of winter. The Schumacher SchuLink battery charger/maintainer is a 3-amp charger that can tell you what's up out in the garage. It basically talks to a smartphone app wirelessly through your home Wi-Fi network. The charger itself is a compact unit (7" x 3.5" x 2.5") that you position near the bike and connect to the battery via alligator clamps, hardwired to the battery terminals with a fused connector, or through the cigarette lighter. There's even a handy built-in plastic hook that allows you to hang the charger from the handlebars or frame tube. Once connected to the bike's battery and plugged into a wall outlet, the charger will ask for communication with the Wi-Fi system. Next, you fire up the free app on your smartphone; prompts guide you through the process of making all the connections.

The first time you fire it up, you'll need to register (through the SchuLink + app) and then identify the char-



ger via its unique serial number and password (provided). Your phone will communicate with the charger, and then you introduce the charger to the home Wi-Fi system (so you'll need to know your home Wi-Fi password. And if you're anything like me, it's scrawled on a piece of scrap paper buried in a desk drawer). A steady blue light on the charger indicates it's connected to Wi-Fi. Once everyone is talking to each other, you can control and monitor the charger through screens on your smartphone app. Your phone screen is now the dashboard full of gauges monitoring the charger and the battery. It's a clever system, really, and not the first time I've seen this done. I have action cameras that use phone apps to control activation and even aiming the camera lens.

The SchuLink charger can charge or maintain a 6V or 12V vehicle battery (it has automatic voltage detection), and can even warn of reversed polarity of the charging cables, and if the battery is bad and cannot take a charge. Another advantage of using this wireless communication system is that the app can control multiple Schumacher SchuLink chargers. Have a sports car in the garage and the motorcycle parked in the basement? Not a problem for SchuLink. Just as long as the Wi-Fi network reaches to the charger, you can see how it's doing. **AIG**



SOURCES

Schumacher
SchuLink SC1344 \$113.47
800/621-5485
BatteryChargers.com

Motion Pro Rear Wheel Alignment Tool

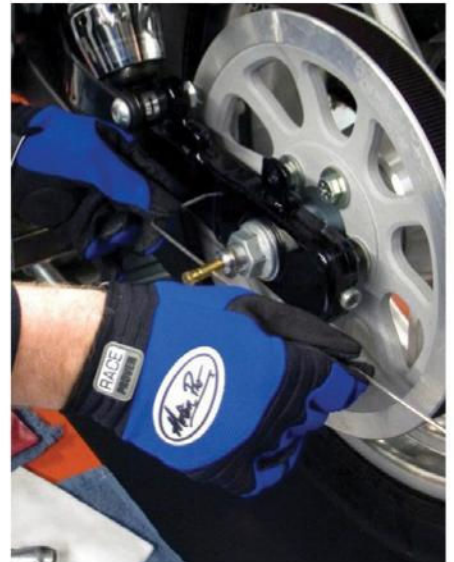
A simple measurement helper

THERE MIGHT NOT BE ANYTHING MORE FRUSTRATING to do on a motorcycle than set proper rear drive belt or chain tension, while simultaneously getting the rear wheel perfectly aligned. It's important to have the rear wheel pointed perfectly straight and in line with the chassis. If the rear wheel is angled, even ever so slightly, the motorcycle will track down the road slightly angled. I've called it the puppy walk in the past, and it's humorous to see a puppy doing it. (Actually, dog lovers have a real name for it: crabbing.) But when a motorcycle does it, the rider will have to compensate with the handlebars to keep the bike pointed down the road. And, as you can imagine, having to exert steering input to just keep the bike moving forward would feel quite odd.

One old-timer method was to count the threads and equalize them side-to-side on the rear axle adjuster bolts, but that gets old real fast. Another theory I've heard is to tighten or loosen the nuts on the rear axle adjuster bolts the same exact amount of turns on each side: a half turn on the left, a half turn on the right, over and over. But that's not an exact method, and what if you bought the bike used and the rear wheel was not pointed straight to begin with due to the previous owner not correctly setting the alignment?

Motion Pro offers this simple, inexpensive tool to help you do the job right. It looks basic, kind of like a bent-up coat hanger. But, in fact, it's a precision measuring tool. The main length of wire comprising the Motion Pro rear wheel alignment tool is much stiffer than plain old coat hanger wire, and the ends are ground to a point to help center the tool at reference points on your bike's swingarm and axle. One end of the tool is properly bent at an angle that can accommodate a Softail swingarm. While the other end is bent at just a perfect right angle for use on Sportsters and Dynas. By flipping the tool over, it can be used on quite a wide variety of Harleys. On the length of the wire is a sliding brass ferrule, again ground to a pointed tip, with a knurled lock bolt to hold it in place.

To use the alignment tool, loosen the axle enough to allow the axle to slide back and forth, but not enough to be completely loose. On Softails you line up the angular end of the tool with the swingarm pivot bolt. On Sportsters and Dynas you'll find a reference hole about 6" forward of the rear axle. This point was drilled at the factory and is equally



positioned on each side of the bike. Insert the pointed tip of the wire into the hole and slide the brass ferrule to seat into the divot on the center of the rear axle shaft. Tighten the knurled locking bolt, and then move the tool to the opposite side of the bike. The two points on the tool should line up perfectly with the swingarm reference hole and the divot on the axle (if the wheel is perfectly aligned). If not, then one or both sides need to be adjusted. Bear in mind that you can't do all the adjusting on one side, because maintaining proper rear belt (or chain) tension is important. One precaution: some exhaust systems may cause clearance issues when using this tool. So you may have to remove the exhaust can to gain access.

It's a bit of a dance, going from one side of the bike to the other and checking belt or chain tension. But with a little practice, and some help from this tool, the job will go much quicker and more precisely. For me, the Motion Pro alignment tool is a real confidence builder. When both of those pointed tips line up perfectly, and the belt tension is correct, everything is on the straight and narrow. **AIG**

SOURCES

Motion Pro
Rear Wheel Alignment Tool
#08-0368, \$15.99
MotionPro.com

Twist and Cut

CruzTOOLS safety wire pliers



IF YOU HANG AROUND ROAD RACING TRACKS OR AIRPLANE hangars, you've probably seen bolts holding components together by a finely twisted stainless steel wire. When done properly, the wire twists are perfectly uniform and arranged to hold the bolt head from turning counterclockwise (which would allow a conventional bolt to loosen). Another place that benefits from safety wiring is any fluid system on your bike, like the oil drain plug, filler cap, or brake banjo bolts. This whole process is called safety wiring, and for mechanical junkies like me, seeing a bike with lots of bolts safety wired is akin to gazing at a work of art.

The new SWP8 Pro-Grade Safety Wire Pliers from CruzTOOL are a must to do the job right. In the past, safety wire pliers were not easy to find at your local tool store, and while some outlets offer an inexpensive tool, this CruzTOOL version is a higher quality version that won't fight you when you do your job.

At first glance, all safety wire pliers may look the same. But when you start paying attention to details such as materials and workmanship, significant differences exist. The SWP8 pliers are

constructed from pro-grade chrome vanadium and have a nice fit and finish. The jaw and hinge action is very precise, as are the locking and twist mechanisms. The nose of the pliers is cut at a diagonal angle, and the wire-cutting jaws are heat-treated. The SWP8 version is a do-it-yourselfer friendly 8.5" long from tip-to-tip and retails for \$39.95.

While there may be plenty of other methods for making sure your motorcycle's hardware stays put, like lock washers and threadlock compound, there's nothing quite so industrial grade and beautiful at the same time as safety-wiring your bolts. And this is the tool that will help you create that masterpiece. **AIG**

SOURCES

CruzTOOLS

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HHI proudly announces the arrival of their NEW X-26[®], Bolt-On Neck Rake Kit for the installation of 26 inch wheels on touring bike platforms. This US made, multi-piece design delivers maximum strength, secure strong attachment and outstanding performance! Maintains your stock clearances and delivers full suspension travel.

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Tank Mounts

Now that winter is here, you will definitely get some work done on your bike. Some of this work will probably require removing the fuel tank. When your fuel tank is removed from your bike, it can create storage issues. A tank left on a workbench or otherwise exposed can typically create a disaster by being knocked to the floor or damaged on the bench. JIMS has the answer. The concept of its fuel tank storage was brought to us by Kevin Baxter at Pro Twin Performance. This FuelTank Wall Mount's base is to be mounted to a stud in a wall or other suitable mounting surface, where your fuel tank can be easily and safely mounted out of harm's way. The hanger justifies its value because the cost of a damaged tank can be significantly more. Additionally, fuel tanks can be displayed for show and "wall art" purposes. \$130. JIMS USA, JimsUsa.com.

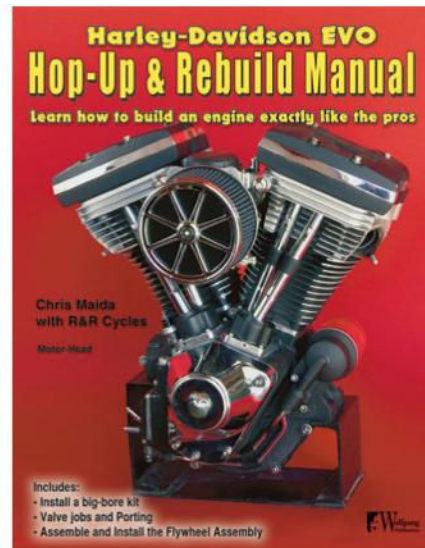


Switching Gears Real Quick

One of the latest additions to the long line of Harley Davidson clutch kits by Barnett is the direct-fit upgrade clutch kit for the 2017-18 Harley Davidson FL Touring models. This kit features Barnett's segmented Kevlar friction plates which are designed for more oil flow, longer life, and smoother clutch operation. Also included are a set of tempered steel drive plates and a set of three heavy-duty clutch springs. All kits are quality-checked for exact stack height prior to packaging to guarantee proper fit and optimal performance. These kits are made in-house and in the USA by Barnett. Barnett Clutches & Cables, BarnettClutches.com.

For The Bookworm Grease Monkey

Written by Chris Maida, the man who put in nearly 20 years as editor of *American Iron Magazine*, with help from the crew at R&R Cycles, this book shows the reader not what to build, but how to build a rockin' Evo-style engine. *Harley-Davidson EVO, Hop-Up e3 Rebuild Manual* is a must-have for anyone who wants to wrench on his own engine, as each section covers a specific subassembly of an Evo motor. The reader can pick and choose what guidance he needs, be it installing a new camshaft or a top-end kit. For anyone planning to build an Evo that combines power with durability, this book provides detailed photo sequences that show every part of the building or rebuilding process. The crew at R&R Cycles shows how to assemble the bottom end, gearcase, cylinders, pistons, and cylinder heads. If you're a rider who takes pride in doing most of his own work, this is a book you need. From a simple rebuild to a complete scratch-built motor, the how-to information and photo sequences you need are right here. *Harley-Davidson EVO Hop-Up e3 Rebuild Manual*, \$29.95 US, ISBN: 9781941064337.



Just One Pass Should Do

Tired of having to fire up the shop vac after every single task in the shop? Conventional brooms not cutting it? Nothing works as effectively as the One Pass Floor Blade when it



comes to collecting debris and fluid in one easy pass. Broken glass, metal shavings, mud—makes no difference, just One Pass it! Think of it as the broom reinvented. The One Pass Floor

Blade works for wet and dry. Its silicone blade wipes clean and stands up to chemicals, lubricants, and many solvents, and it's durable enough for concrete and safe for paint. Temperature safe from 180 F to 400 F, and has an extendable pole up to 75". \$32.95. One Pass USA, OriginalWaterBlade.com.



Monkey Business

Tru-Tension's new Belt Monkey finally enables belt-driven motorcycles to benefit from its unique, patented tensioning technology. After a year of research, testing, and refinement, the Belt Monkey has been developed to provide precise belt tension first time, every time. The tool enables the rider to tension his belt quickly and with ease. The simplicity of the product enables riders to maintain their own motorcycle, regardless of their level of experience. A belt at the correct tension optimizes power delivery, from your wrist to the road. Using Belt Monkey will dramatically reduce the risk of belt wear. Reduced friction by correctly tensioning the belt will result in prolonged life of the belt. \$39.99. Tru-Tension, Tru-Tension.com.



Switch-On Blade

Mychanic is helping light the way for a clearer future in your garage. The Blade Multi Light is an ideal companion for those tight spaces where the light doesn't shine. The handle is rubber with magnets on the back, and a metal hook allows you to hang it up for hands-free work. The lightbar itself (aka "the blade") spins 360 degrees and flips out 270 degrees, allowing you to cast light in any direction. The lithium ion battery is rechargeable, and it has a low heat output. \$34.99. Mychanic, Mychanic.com.



Lithium Technology Meets Soldering

Milwaukee Tool has introduced the industry's first lithium-powered soldering iron. Now users have a full solution for wire repair. It heats up quickly, taking just 18 seconds to reach the operational temperature. The Redlink Plus Intelligence monitors the temperature of the tip to power through demanding applications and prevents overheating or damaging wires. The head is a three-step pivot, and it comes equipped with a LED worklight. \$69 (bare); \$129 (kit). Milwaukee Tool, MilwaukeeTool.com.



Multifaceted Multimeter

Cen-Tech's versatile seven-function digital multimeter provides precise measurements and tests for a variety of electronics. This multimeter tests AC/DC voltage, DC current, resistance, transistor and diode, and the battery. It features an easy-to-read digital LCD display and automatic zero adjust. Two 32" test leads are also provided. Best of all, if you use the coupon on page 5 of this issue of *American Iron Garage*, you can have this multimeter for free with any other purchase. Otherwise, it retails for \$5.99. Harbor Freight Tools, HarborFreight.com.



Blemishes Magically Disappear

Wizards Products has introduced the Wizard 12 Big Throw Mini, a 12mm throw DA (dual action) orbital polisher, designed for use with 3"-and-4" faced pads. A perfect companion to the Wizard 21 Big Throw Polisher, now more detail is available in tight areas and style lines where the 6" pads won't allow full access. The Big Throw Mini is much faster than traditional smaller orbitals because of its larger 12mm orbit; it's also safer to use than a rotary polisher that can burn quickly if user is not experienced. The Wizard 12 Big Throw Mini is perfect for DIY motorcycle enthusiasts, easily removing swirls, buffer marks, and imperfections with minimal skill or effort, and without leaving nasty swirl marks or holograms. Features include 1 mm orbit, soft start/locking trigger, 2,500-5,500 OPM with constant speed control, supported with 1-6 speed options and a 16'5" rubber cord. The unit is supplied with a 3" backing plate that operates well with 3"-4" faced pads, both included in the SSR12 Kit. \$229.95. Wizards Products, 763/497-5155, WizardsProducts.com. **AIG**

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A Hardtail Vs. The Chicago Streets

A buddy build like many others

Wrenchin' on a bike is fun, but it can also be kind of a drag. You didn't purchase your Harley just so you could keep it in your garage 24/7, tinkering away every now and then, and staring at it lovingly from a dark corner within your workspace. Sure, you undoubtedly do all of these things, but what you really want to do is get your ride back onto the road as soon as possible where it belongs (with you on it, of course).

Ryan Cockerham of Chicago, however, was able to take the drag out of the building process (or maybe we should say teardown process). It all began when he bought a relatively stock 1986 Sportster 883 from one of his buddies (some drag pipes were the only

aftermarket parts). Luckily, Ryan got it for real cheap. But while his wallet may have gotten a break, that didn't mean his wrenchin' hand was going to get any slack. "The bike definitely needed some work," he says. "I was okay with that, though, because I wanted to chop it up anyway."

Rather than "chop it up" alone in his garage, Ryan made sure to make some good memories out of it. "I had a ton of fun with this thing," he continues. "I did it with a couple of good friends. We had some late nights, drinking beer in the garage." Undoubtedly, all festivities were had responsibly while operating any machinery.

What I've done so far

Ryan started the build immediately after he bought it by ripping the Sportster all the way down to the frame. "The scary part, though, was when it was time to hack the frame in half," Ryan recalls. "I told myself, 'There's no turning back now.'"

After welding on a hardtail to the frame, Ryan sent the bike to a local shop to get it powdercoated. Once he got everything back, it was "just a matter of putting it all back together with the new parts."

Ryan can't remember where he bought the add-on components, but what Ryan does know is that he installed a new oil tank, bars, fender, seat, and taillight. "The rest was just going through the motor and making a big heap of parts out of what I couldn't get back on," he says.

What I want to do to my bike

Going forward, Ryan definitely wants to add a springer front end and jockey shift. He also knows that if he could go back and start the build all over again, he would have installed Softail shocks instead of a hardtail weld-on. "Chicago streets are terrible. They're full of potholes," Ryan says. "I can't tell you how many times I had to fix something which broke because of how rough our roads are." **AIG**



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