

Three reasons not to set a bike on fire

By Wes Fleming #87301



WHILE RIDING the two hours home from Beemers Uber Alles, the shop where I work part-time in an increasingly sporadic fashion, I came up

with two reasons not to set my 2005 R 1200 GS on fire in the driveway upon my arrival home.

First, there is a significant chance of unintentionally setting the house on fire. I only bought this place in July 2016, and so far it's the only house I've ever purchased. I'm kind of attached to it, so setting the bike on fire in the driveway seems not to be a good idea.

Second, I see no reason to involve the authorities in my motorcycle woes by having the neighbors call 9-1-1. I'm not sure if they would call because of the fire or because of my hysterical, cackling laughter, but either way, I decided keeping police and other first responders away from my house is a good reason not to set the bike on fire.

I'm hoping one of you can give me a third reason, because that's kind of the kicker here. If I can't come up with a third reason soon, I may just have to put this motorcycle out of my misery.

A couple of months ago I talked about how I fixed the bike by using a GS-911 and a computer to clear the fault codes from the system and get my neutral light and the ability to start the motorcycle back. I traced the problem to a known issue (for my bike anyway) with the gear indicator potentiometer, a \$220 electronic doo-hickey that bolts onto the back of the transmission.

Any time I shift into 5th gear, after a few seconds my gear indicator on the dash changes to 6, then goes blank

when I shift out of 6th. For the first eight years I owned this bike, it would somehow magically reset itself and it wasn't a problem. However, recently, it stopped resetting itself, and because I have aftermarket levers on my bike that don't engage the clutch switch, when the display goes out, I can't start my bike because the computer doesn't know the transmission is in neutral.

My boss at the shop, George Mangicaro, swears he can replace the potentiometer without taking the swing arm off. I believe him, but I knew I couldn't get good photos or video (yes, there's a video – search “Nicht Uber Max” on YouTube) with the swing arm in place, so I committed to a much longer process for you, gentle readers.

To get the swing arm off, the rear wheel and muffler have to come off first. Then the final drive has to come off, but to get that off, first you have to disconnect the rear brake caliper (hang it from a frame rail so you don't stress the brake line) and then remove the ABS/speed sensor from the inside of the final drive. Put a drip pan under your final drive, because you're going

to lose oil from the sensor's hole.

Removing the final drive completely requires removing the bolt holding the top of it to the torque arm (BMW calls this the “tension rod”), then using a heat gun to get the two pivots out of the bottom of the housing. You'll need a 24mm socket to get the pivot on the right side (looking back to front), and I advise grinding your socket down a bit as the grippable surface of the pivot is shallow. As a matter of fact, the easy way to do this is to just drain the final drive, then refill it when you're done. Well, maybe not the easy way, but the least messy way. Support the weight of the final drive to make removal of the pivots easier, and take your time. The bolt going through from left to right has thread locking compound on it, so you should hit it with a little heat to loosen that goo. Not too much heat, and not too close, either – you don't want to melt the grease out of the bearings! Once the final drive is off, remove the rear shock.

Removing the swingarm pivots is a bit of a bear, but it's not complex. The pivots are asymmetrical, with the one on the left



Go ahead and drain your final drive before removing it – it's going to lose fluid through the fill hole anyway, so just be prepared with the required amount of the required oil and a catch pan.



Grind the top eighth of an inch or so off a 24 and 30mm socket (30mm shown here) to make removing the swing arm easier.

doing the lion's share of the work. There's a threaded pivot with a lock nut on the left, and a wide (but shallow) pivot with four bolts in it on the right. Depending on who owned your bike before you, there may be covers on either or both of the pivots.

Use a ground-down 30mm socket to loosen the lock nut on the left side, then remove all four small bolts from the pivot on the right. If you're not replacing those short bolts, then find another one that will thread into the center hole and use a pair of pliers to try to wiggle it out – supporting the weight of the swing arm will help here. If you can't wiggle it out, you'll have to use a slide hammer of some sort. With the right pivot out, you can remove the left side's lock nut and the actual pivot – for which you'll need a 12mm hex tool of some sort.

I always advocate cleaning as you go, so use some contact cleaner and rags to tidy up the parts as you remove them. The two boots on either end of the swing arm will be dirty. All four pivots you removed will have old, dirty grease on them. If you're reusing bolts which originally had dry thread locking compound on them, you'll need to clean the dried goo out of the threads and be prepared with fresh thread lock. BMW considers many of these bolts single-use, so I advise replacing them instead of reusing them.

With the swing arm cleaned up and set aside, you can finally see the gear indicator potentiometer. It comes out easily, provided you have a size 8 external Torx (E8) socket. If you don't, a quarter-inch wrench will do the trick. Remove the two bolts and the pot will pop right out.

There are two different versions of the

H HYPERPRO
SAFETY • CONTROL
COMFORT • LOWERING

Best Prices,
Service and Repair,
Standard and
ESA Shocks
for all models.

EPM
PERFORMANCE SPORTS
732-786-9777
epmperf.com

USED RECONDITIONED N.O.S. NEW
O.E.M. & AFTERMARKET PARTS & ACCESSORIES
/2 Thru R11 - K12 UPS Daily Used BMW Cycles

Re-Psycle
BMW PARTS

614/837-1160
24 HR FAX: 614/837-0359

Service • Rebuilding • Restorations
Fully Equipped • Exclusively BMW
Factory+ Quality Paint & Striping

ONLINE CATALOG
www.re-psycle.com

240 W. Columbus St.
Lithopolis, OH 43136

Mon. - Tue. - Thu. 11 a.m. to 7 p.m.
Fri. and Sat. - 11 a.m. to 5 p.m.
CLOSED WEDNESDAY

PORTUGAL & SOUTHERN SPAIN Oct 21 — Nov 04, 2018 **IMTBIKE**
PASSION FOR MOTORCYCLING

TOUR

Hidden Treasures of the South
Spain | Portugal

Official Partner of BMW Motorrad (412) 468-2453
tours@IMTBIKE.com
www.IMTBIKE.com

21 YEARS

Beemberboneyard.com

Used Oil-Head, K-Bike & Hex-Head Parts – 50% of New or Less
New Maintenance Parts & Tools – WAY BELOW Retail Prices

NO BACKORDERS – ORDERS SHIP IN 24 HOURS

10% BMW MOA Discount
Online Orders Only

Enter code **BMWMOA** in source code box @ checkout & click “apply”

Liqui-Molyoil - oil, fuel & air filters – 12/24K maintenance kits – brake pads & rotors – fuel pumps – Hall sensors – repair manuals & dvds–tools – fuel line disconnect sets – fuel injection controllers – exhausts – batteries & chargers – master cylinders & rebuild kits – starters – spark plugs & wires – cables – radiator fans – alt belts – fender extenders – Carbtune carb/TB synchronizers

ORDER ONLINE 24/7 – M/C, Visa, Discover, Paypal 973.775.3495 M-F 12-5PM



Use the ground-down 30mm socket to loosen the lock nut on the left pivot shown here a few inches above the foot peg. After you remove the right pivot, you can remove the lock nut and the left pivot, which requires a 12mm hex tool. Support the weight of the swing arm for easier removal.

pot, and which one you need is based on the protrusion from the end of the transmission's shifting roll. One version's shaft has a T shape; mine has a D shape. The pot with the D-shaped hole will fit on the T-shaped shaft, but it will provide incorrect information to the bike's computer, so be sure to double-check the shape of your fitting before installing the pot. Clean out the cavity where the pot goes, gently tighten the E8 bolts, and you're almost done.

The old pot had just an electrical connection on it; the new pot had its fitting on about a six- or eight-inch length of wire. Two things that could damage these wires are heat from the catalytic converter, which is directly underneath the pot, and pinching/twisting forces from the leg connecting the shift lever to the transmission. I pulled the starter cover, zip-tied the wires together, and tucked them up out of the way beside the starter.

It amuses me when my Clymer or Haynes manual says "installation is the reverse of removal," but it's true – with caveats. All the pivots have to be cleaned and regreased. I used a bit of moly paste – which is super slippery – and

something called "zig grease," which is sticky (sort of) and helps keep the moly where it's supposed to be. The one exception to this process is the pivot on the left

(brake disc) side of the final drive. The pivot rests on needle bearings and should get a bit of wheel bearing grease rather than moly.

The process for reinstalling the swing arm pivots requires a bit of attention to detail, and you really do have to support the weight of the swing arm throughout the process. Put the left side (12mm) pivot in and screw it in, by hand, a few threads – enough so the pivot will hold the weight of the swing arm. Then put the right side (four-bolt) pivot in; carefully center it and give it a tap or two with a mallet to seat it a bit. Use the three (longer) outer bolts to gradually draw it fully into place, rotating around the triangle of bolts as you tighten each one a few turns at a time.

Once the right pivot is in place, continue tightening the left pivot with a torque wrench until you get to 20 Newton-meters. Then loosen the pivot and retighten to 7 N-m of torque. Spin the lock nut into place and mark the pivot with a marker at the 12 o'clock position.

Get your ground-down 30mm socket



The gear position potentiometer is just to the left of the drive shaft, held in place with one electrical connection and two E8 (external Torx) bolts.

TORQUE OF THE MATTER



From left to right – new pot with D-shaped hole; pot with T-shaped hole; old pot with D-shaped hole. Note that the old pot lacks wires, while the new pot has them. The excess wiring needs to be carefully zip-tied and tucked out of the way next to the starter.

and tighten the lock nut to 145 Newton-meters of torque. Check your 12 o'clock mark; if it's not at 12 o'clock or real close to it, loosen the lock nut, loosen, retorque and mark the pivot, then tighten and torque the lock nut. Repeat until you get minimal to no movement of the pivot when you torque the lock nut. Replace the cover(s) on the pivots, reconnect the rear shock, then connect the final drive to the drive shaft (more art than science, that) after putting some moly on the drive shaft splines, bolt up the top of the final drive and refill the final drive with precisely 180 milliliters of the specified oil. You should probably look up the volume spec for your bike and double-check the torque values for each fastener along the way.

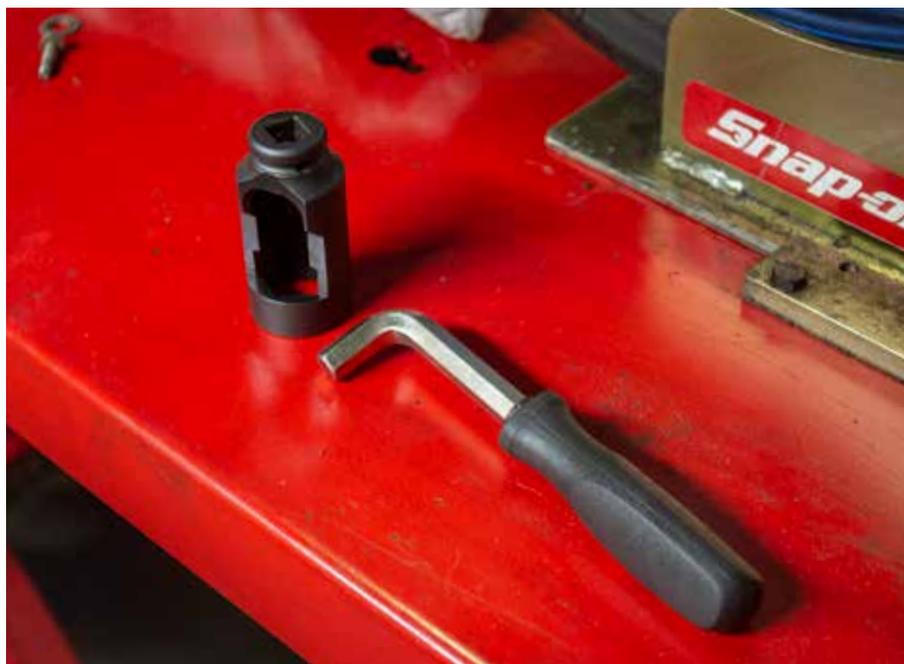
I planned on replacing my suspension during this little mechanical cycle, but getting the swing arm off and back on again took way longer than I anticipated, so the shocks will have to wait. I'm quite excited about the Touratech shocks that are going on the bike, though – they effectively add ESA-like functionality to my bike, which of course was released before BMW thought of electronic suspension adjustability.

The GS-911 enabled me to clear the fault code on my bike, and during the test in the shop the new gear indicator pot worked as expected in all six gears and neutral. However, during my test ride, just a half mile in 5th gear brought back the wonky dash

display and the inability to start the bike because the computer doesn't know the transmission is in neutral.

More or less stumped at this point, I took my GS to Morton's BMW in Fredericksburg, Virginia, and had them put it on the official BMW Motorrad computer. They updated all the computer stuff needing updated, but warned me the bike's computer was throwing an error code, one the GS-911 obviously does not pick up. They zapped the DME to clear the error, but the gear display problem recurred a few minutes down the highway. The solution is simple: replace the bike's \$1,200 computer. My alternate solution – never staying in 5th gear for longer than it takes to shift through to 6th – will have to suffice, because I'm not replacing the computer. I'll also be figuring out a way to bypass the clutch switch so I can hopefully start the bike even with the computer errored out.

Maybe instead of setting it on fire, I'll just shoot it right through the bike's computer. Surely *that* won't attract too much attention in my rural neighborhood. ☺



BMW makes two special tools used to quickly tighten the left swing arm pivot. Slide the 12mm hex driver's shaft through the cutaway on the 30mm socket and hold the pivot in place while tightening the lock nut to the proper torque. Alternately, you can mark the pivot and check to make sure it doesn't move when you tighten the lock nut.