

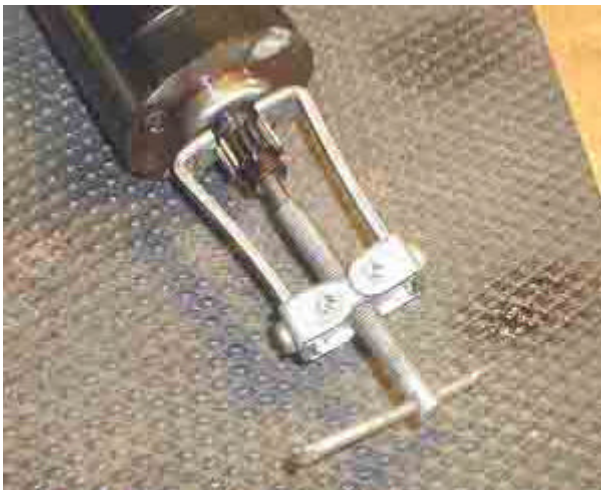
# Generator Fix (Oil leaking from generator.)

by Paul Rako



It's scary putting channel locks on a gear but that's the only way I have been able to do it all these years. Nut is conventional right hand thread.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only strip the threads as you turn the nut the wrong way using a half inch drive impact wrench on 200 PSI air line.



A cheap Taiwan puller is all you need to get the gear off.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only destroy the delicate tin cover behind the gear when you try to pry the gear off with a tire iron.



If you want professional results act like a professional. Have a tray or a pie tin or a mayonnaise jar but at least put all the parts in one place so you have some chance of reassembling the generator.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only forget about the generator and end up taking apart the washing machine as you look for a pie tin. It will suddenly be 8:00 AM and you will neither have clean clothes nor a functioning motorcycle in order to get to work.



This particular generator has a Frank's voltage regulator mounted on it. A 3/8 inch wrench or nut driver will remove the field and armature wires. Jot down the colors if you aren't sure of how they go. There is an "A" and an "F" stamped in the generator next to the terminals to identify them.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only strip the threads as you turn the nut the wrong way using a half inch drive impact wrench on 200 PSI air line.



I'm showing off using a socket for the cover-- all you really need is a 7/16 wrench. I did need the socket to get the regulator off. Please drop a few bucks and buy a set of phillips screwdrivers and use the right sized one for the bolt.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only strip the threads as you turn the nut the wrong way using a half inch drive impact wrench on 200 PSI air line.



Gently tap end bell off by lightly tapping under the cutouts with a small rubber mallet. Alternate tapping on both sides to insure nothing gets bent.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only peen the end-bell into a ball of useless metal as you use a 2 pound sledge or, worse yet, you will try to pry the end bell off with that tire iron you always have so handy.



To get the armature out of the frame you can gently tap on the armature with a small rubber mallet..

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only peen the armature into a ball of useless metal as you use a 2 pound sledge or, worse yet, you will try to pry the end bell off with that tire iron you always have so handy.



We finally get to see the problem: When the old '62 sat for a month the motor sumped. This means the oil in the oil tank leaked down into the motor. When I started it all the oil was forced into the gearcase. A bunch of oil blew out the gearcase breather tube but the pressure got high enough to push this oil seal out of the generator. Oil leaked out the generator every time I ran the bike since.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. Polishing armature will have no benefit in generator performance. It is shiny enough as it is.



Gently tap armature out off the end bell with a small rubber mallet. I really mean rubber-- if you use a regular hammer you will mash the threads on the and and life will be difficult. If you must be a wino at least thread the nut back on the armature and pound on the nut.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only peen the armature into a ball of useless metal as you use a 2 pound sledge or, worse yet, you will try to pry the armature off with that tire iron you always have so handy.





The seal was still in good condition. It just popped back in with finger pressure. You could use a tiny tiny tiny bit of Loctite or Permatex on the outside of the seal but be extremely careful. The tiniest bit of sealant can get into a roller bearing and start jamming a ball, making it skate instead of roll. The entire bearing will melt soon after. It gets really ugly then because the generator is gear driven and it will either seize the motor or break off the gear and then it could get really exciting. Don't glue your bike together. Silicone and gasket sealant cause horrible damage in a roller bearing engine. If seal won't pop in then use a large socket the size of the seal and our friendly rubber mallet to tap it in.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only mash the seal into a ball of useless rubber as you use a 2 pound sledge or, worse yet, you will glob silicone all over the seal that will get into the motor and seize all the roller bearings..

Assembly is essentially the reverse of disassembly-- good luck, see ya.



Ha ha, just kidding. We try to be a little more helpful then the factory manual. Tap the armature in with a small rubber mallet. Note that the vise is opened way up and gently tightened on the protruding rings of the end bell. You aren't supposed to use sandpaper to shine up the copper commutator because the grit gets stuck in the soft copper and then grinds up the brushes prematurely. You aren't supposed to break the speed limit or wear illegal helmets either and I do that too. The armature lathe I bought on e-bay isn't here yet.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will ruin the bearing surface by bashing with a two pound sledge. You will tighten the vise on one side of the armature and hammer on the other side. It will get ruined. It always does. Get wise.



It's usually easier to put the brush plate on after the frame is installed. This plate was too snug to pop out so the handle of the mallet was used to gently tap it free. You can leave the wire attached but don't get too rude with it. I also was using paper towels to dry off any oil on the parts.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. An ox acetylene cutting torch will not help in removing the plate and will have



Look carefully at the little paper spacer under the square head of the field terminal. If the terminal was torqued too hard this thin paper gets cut and the field gets shorted to the armature and the generator has no output. There are some plastic spacers around but I haven't found them yet. Anything including the plastic from a milk bottle is better than nothing. If you tighten the terminal up carefully you can insure the corner of the square head is not cutting through the spacer. This is a design flaw in the 65A generator.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will only end up with all the parts in a pile and no way to get it back together. That's what always happens remember?



Note the little pin in the frame and the little slot in the brush plate. It has to go together one way only.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will mash the brush plate in backwards and the generator will never work again.



Note the little pin in the frame and the hole in the gear side end bell. It can only go together one way.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. No matter how hard you pound the sledge hammer, the pin will not make a new hole.





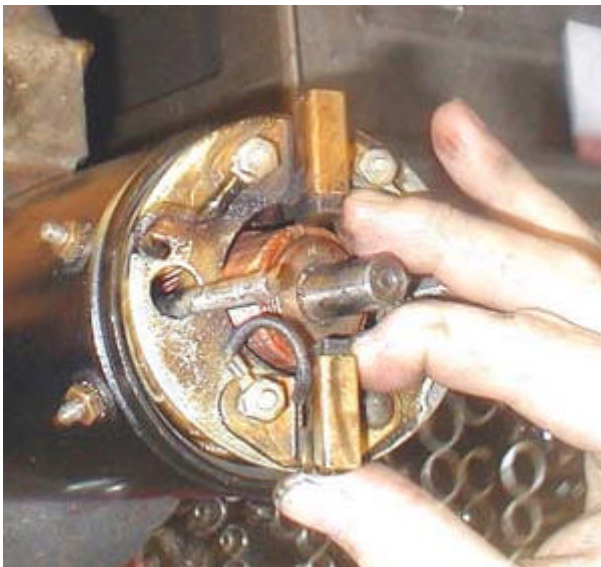
The frame didn't want to slip on so I pulled it from the vise and after cleaning the pin and hole, I gently tapped the end bell on with a small rubber mallet.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. It will never occur to you that the 2 pound sledge is not appropriate for generator work, but it is. Honest.



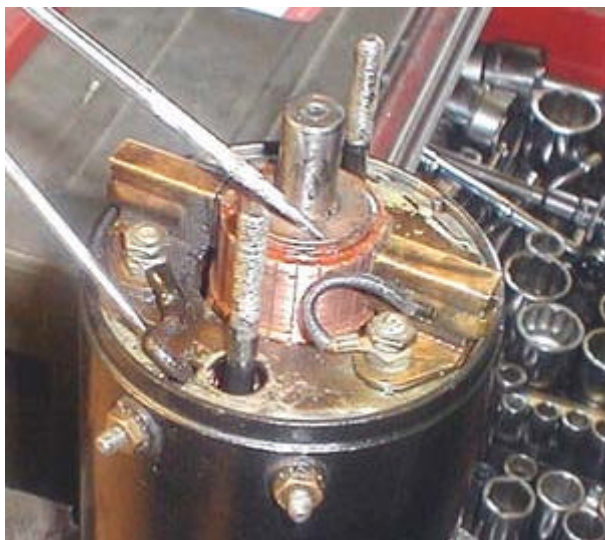
The brush plate should have enough wire to slip on after the frame and end-bell are assembled. Otherwise you may have to remove the wire or assemble the frame to the end-bell with the brush plate in place. See next step for getting the brushes over the armature. Remember the little slot in the plate and the pin in the frame have to line up.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will break wire or mangle to get plate installed backwards.



I dried off the brushes and slipped them back in the holders. You can use two hands because you aren't taking a picture at the same time.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. This is hard to do for straight people and winos. Doing while shaking uncontrollably and hallucinating is virtually impossible.



One wire is rubbing against the commutator and the other will get pinched by the end-bell. Bend them back out of the way or loosen and re-tighten the terminal to keep them out of harm's way.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. Sparks and fire will ensue when you pinch wires. It will be "really cool man" but your generator will still be broken.



Note that same little pin in the frame picks up a slot in the end bell. It can only go together one way.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will smash pin and generator will never work right again.



Since the voltage regulator uses the generator bolts I loose assembled the brush cover. I used to run without the cover to let cool air into the generator. It worked great in the rain, everywhere for 5 years. Until I blew a front fork seal and the fork oil splashed on the commutator. It glazed it over and ruined the voltage regulator. I went back to running the cover.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. An impact wrench will only strip out the tiny screw.



Because of the regulator I needed a deep well socket. Otherwise a 7/16 wrench will work. Always replace the lockwashers-- even if you tightened it and then had to take it back off for some reason. A brand new lockwasher every single time forever and always. Then you will not have to glue your bike together with Loctite. I replace the nylon prevailing torque nuts the factory uses with regular nits and lockwashers. Regular nuts free run the way god intended and all you have to do is buy a bag of lockwashers for less then a penny a piece and you are in business.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. Half inch impact drive will strip nuts or snap off studs or make studs spin in the end bell housing..



Now you can tighten the brush cover. This on is eye-balled so it points down when the generator is installed. This area was were the oil was coming out..

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will strip out this little screw for sure and the tab will hit the frame when you go to install it. You will use torch to bend frame out of the way rather then reposition the tab. It's all downhill from there.



For this setup that uses a Franks electric regulator you can hook the field and armature wires up now. Check your notes and you do have the original instructions on file don't you? Don't trust the color on these wires. Different regulators have different colors. Note the little internal tooth star lockwashers that insure good electrical contact. The hardware store is your friend. Spend time with your friends.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will reverse wires and melt generator.





Even non meth-amphetamine addicts can strip these 10-32 brass nuts. I turn the wrench like this or use a nut-driver.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You know what happens here, right? Every time. You have no nerve endings left in your hands. You cannot do work this delicate. Give up.



Make sure everything is spotlessly clean and especially this bearing cover. Dirt and grime in a precision ball bearing is not good.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will have lost this piece by now and yes, it really is needed.



The gear will only start on the shaft as it is a light press fit. Some gears do just slide on. Make sure it has started on ok and put the big washer and nut on and you can pull it on as tighten the nut. Factory uses nylon prevailing torque nut. I substitute regular 1/4-28 nut and a pair of the trick Disk-Lock lockwashers. A real touch here as you need to feel the subtle difference of the gear pulling on and, once it all the way on, the increase in torque as the nut tightens. These 1/4-28 threads strip easy. Be careful. Insert goofy zen parable here about ending up where we started. (Except for the oil leak.)

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. The more common 1/4-20 course thread nuts will ruin the armature (and the end bell studs for that matter).



See why professionals use the trays? The only things left over are the 3 lockwashers that were replaced with new ones. One for the armature nut, two others for the end bell studs.

Meth-amphetamine addicts: STOP NOW. Take generator to qualified service personnel. You will have parts left over and scattered in the gravel driveway. There will be parts from a Lucas MGA magneto in the generator. Every threaded fastener will be stripped and the generator will no longer be repairable by anyone, even a qualified service professional.