

Loopframe Alternator Kit Instructions

Introduction

First, thanks for purchasing this kit. We hope it will help make your V700, Ambassador, or Eldorado an even better "practical classic" than it already was.

Bob and I believe these "loop-frame" Guzzis will someday be valued collector machines, but only if left in stock condition or easily re-converted to stock. For this reason, our goal has been to make a kit that will bolt on, without need to modify any stock components. To return to stock, just unbolt the kit and re-mount the stock generator and bracket. The kit includes a new Nippon Denso alternator with internal regulator, a mounting bracket, and all the wires needed to integrate the alternator into your stock wiring harness.

The bracket is the heart of the kit and was made on a specially constructed jig so that it would fit precisely and bolt firmly to the top of a loop-frame engine while allowing clearance for installation and removal of the oil-sender unit independently from the alternator bracket. During design of the bracket, we bolted it on six different engines. We were surprised at the great differences in the "deck height" of the generator perch among all these engines. This variation is due both to production variation and wear on the perch caused by operating the engine with a loose or cracked bracket. Variation was such that brackets that fit perfectly on the engine from which we made our first jig would not fit one or more of the other engines. This forced us to build into the design a little "wiggle room" so the bracket would fit more engines.

The current design will fit all of the six engines we have to try them on, so we are hopeful it will fit your engine. As you are installing it, please check for alignment and clearances between the bracket and the block's and oil lines and alignment of holes. In extreme cases, you may have to slightly enlarge the oil-line hole or the hole in the distributor strap or slightly bend the strap itself. If this is the case and you do not feel comfortable making these modifications, send it back for us to modify, or for a refund.

If your bracket looks slightly used, that's because it was mounted on at least four engines to check fit and may have suffered a ding in the process. We did try to repair the paint on all of them but may have missed a spot. Brackets are painted with Rustoleum silver hammered paint. Should you wish to touch up the paint, it is available at Home Depot and other stores.

Finally, don't be dismayed by the size of this instructions sheet. It's really a straight-forward job that you should be able to accomplish in a few hours. Nevertheless, if you have any problems or questions, please call Greg Field at (206) 371-9623 or email me at gregf@gregfield.com.

What is Included

In the box should be the following parts:

- Nippon Denso alternator

- Alternator bracket
- 24-inch 10-gauge alternator-to-battery wiring harness
- 9-inch 16-gauge alternator-to-coil harness
- Spade-to-ring-connector adapter and 5-mm cap screw, washers, and nylock nut
- An 8x50-mm stainless steel socket-head cap screw with washer
- A 10x35-mm stainless steel socket-head cap screw with washer
- A Bosch-length drive belt in kits supplied for Marelli-equipped bikes.

Please make sure all of the above parts were included. If anything is missing, please let us know, and we will quickly make it right.

Other Stuff You'll Need

We designed the alternator bracket to be stiffer than the stock generator bracket, and included an extra fastening point to keep it from loosening under vibration. Even so, we recommend that you use studs to affix the bracket to your engine's block and red Loctite on the nuts. If your bike is not already equipped with studs, you'll need two 8x1.25-mm studs, plus washers and nuts. If you use bolts to mount the bracket, be sure to use red Loctite and tighten the bolts well. The cap screws that fasten the alternator and bracket will probably stay tight, but it couldn't hurt to use a little blue Loctite on them.

You will also need some electrical tape and two or three zip ties to tie the old generator wires out of the way.

Installing the Kit

Here are the major steps:

Preliminaries

Before starting the actual installation, turn on the petcocks to get gas in the carbs. Do this so you can test the operation of your alternator without having to fully reassemble the bike. Do not start the bike at this time.

1. Remove the sidecovers and disconnect the negative battery terminal.
2. Remove the gas tank.
3. Remove the generator-belt cover.

Removing the Generator

This is pretty straightforward; you've probably done it before. We have designed the kit so that it is easy to re-convert to generator, if you wish to do so in the future. We recommend you keep your generator, bracket, and regulator so you can put your bike back to stock condition.

1. Disconnect the wires from the generator and fold them back out of the way.

2. Remove the pinch bolt from the generator bracket and remove the generator. Leave the generator belt in place if you have a Bosch-equipped machine. Remove the belt if your bike is Marelli-equipped and install the Bosch-length belt provided.
3. Disconnect the three banjo bolts fastening the oil line and remove the line. Be sure to keep the banjos, oil line, and six crush washers together and clean.
4. Remove the bolts or nuts fastening the generator bracket, and remove the bracket.

Installing the Bracket and Alternator

Again, we recommend affixing your new bracket with studs mounted in the block. If installing studs, do it now. Clean out the holes with carb or brake cleaner and dry them. Then apply red Loctite to the bottom threads of the stud and tighten them in the block. If you are reusing the bolts, clean out the bolt holes with solvent, so that the Loctite can get a firm grip. Also clean the threads of the bolts.

1. Remove the front bolt from the base of the distributor and keep it handy.
2. Insert the left end of the oil line through the hole in the left arm of the alternator bracket and hold it in its approximate mounted position while dropping the bracket loosely in place on the mounting studs.
3. Thread the bolt through the distributor arm of the bracket and into the front hole in the base of the distributor. Turn the bolt in several threads but do not tighten.
4. If using bolts, apply Loctite and thread them through bracket and into block.
5. If using studs, fit a lock washer over each stud, apply red Loctite to studs, and thread on nuts.
6. This is where the "wiggle room" we spoke of earlier comes into play. Wiggle the bracket to best aligned position, and check for clearance between it and all points but the mounting perch on the block. Check to make sure the base of the bracket is in full contact with the mounting perch and does not contact the tappet/pushrod tunnels on the block and cylinder. On some machines, the stay arm of the bracket will need to be bent slightly up or down to allow proper contact with the perch. In extreme circumstances, the hole in the stay arm may have to be enlarged. If you are uncomfortable doing this, return the bracket, and we will make the modifications, or return the kit for a refund.
7. Once you are satisfied that the alignment and base contact are correct, fully tighten the two forward nuts or bolts, and then fully tighten the bolt affixing the bracket's rear arm to the distributor.
8. Attach the oil line, making sure that crush washers are in position over and under each banjo. Tighten the banjos carefully, because they will break if overtightened.

9. Check to ensure that the oil line does not contact the forward stud or the bracket. Production variation and oil lines that were bent in use means that it may be necessary to slightly bend your oil line or relieve the bracket opening with a file. If you are uncomfortable doing this, return the bracket for modification or the kit for a refund.
10. Attach the alternator to the bracket using the cap screws and washers provided. You may want to use blue Loctite on these cap screws.

Wiring the Alternator

You'll be connecting three wires to the back of the alternator. These are the long wire provided, the shorter wire provided, and the generator-warning-light wire of the stock harness. At the back of the alternator are two male spade connectors that form a "T" shape. The upright of the "T" is the spade for the warning light, and we use the spade-to-ring adapter to connect it to your bike's generator warning light. The crossways part of the "T" is the spade that energizes the alternator, and we'll use the 8-inch wire in the kit to connect it to switched power at the coil. The longer wire will carry the alternator's output to the battery. Find the adapter and two wires and the 5-mm cap screw and hardware provided.

1. Use the 5-mm cap screw and hardware to attach the adapter to the ring connector of the red generator-light wire. Plug the spade end of the adapter into the male spade that forms the upright leg of the "T" on the back end of the alternator.
2. Attach the ring end of the coil-to-alternator wire to the + terminal on the coil. (This wire was made long enough to work with both the crossways-mounted coil of the early Loops and the longitudinally mounted coil of the later Loops. This means it will be slightly long on the late machines. For these, form a small loop in the wire to take up the excess length.)
3. Then plug the spade end of the wire into the back of the alternator. Connect it to the spade that forms the crossbar of the "T." Gently bend the spade end to the right to ensure adequate clearance between it and the adapter at the back of the alternator.
4. Attach the long wire to the output stud on the top of the alternator.
5. Thread the wire up and back to the main harness and alongside the main harness all the way back to the battery's positive terminal. If your battery cables attach by means of bolts, attach the battery end of the wire to the bolt on the positive terminal. If your battery cables attach by means of posts, attach the battery end to the pinch bolt of the positive cable.
6. Zip tie the alternator-to-battery wire to the main wiring harness, ensuring that it will not be pinched or abraded with the gas tank and sidecovers installed.
7. You must either thoroughly insulate the disconnected and unused generator wires (white and red/gray) and/or disconnect these wires from the stock regulator. Use electrical tape to insulate the exposed terminals of the red/gray and white wires from each other and then to tie them out of the way. Then, it's a good idea to disconnect these wires from the stock

regulator, even though they are insulated. On Marelli-equipped machines (V700 and many Ambassadors), you can just disconnect the red power wire from the battery to the regulator. Wrap up the wire end with electrical tape and tuck it out of the way. On Bosch-equipped machines, you cannot just disconnect power to the regulator because this will also disconnect power to your starter relay. Instead, disconnect the white wire from the regulator's DF terminal and the red/gray wire from the regulator's D+ terminal. Wrap them up with electrical tape and tuck them out of the way.

Buttoning Up

All that's left is to fit the belt, test operation of the alternator and warning light, and then bolt everything back together.

1. Attach and adjust the V-belt. In most cases, you will be able to use the same belt as used with the generator, but you may have to adjust it. Use the normal procedure to adjust it. Proper adjustment is on the loose side, much looser than you would adjust a car alternator's belt.
2. Attach the belt cover.
2. Touch and hold battery negative wire to battery. If smoke or flame or sparks erupt, pull off the negative wire, and fix the short circuit. When all is well, bolt the negative wire to the battery.
3. Use the key to turn on the ignition switch. If all is well, the generator warning light should be on. If it isn't check for a good connection between the adapter and the wire. If that is OK, troubleshoot the rest of the circuit to find the problem. Check the bulb and any fuses in the circuit until you find the problem. Check to ensure that the alternator case actually grounds to the engine block through the bracket. Scrape off a little paint where the bracket and alternator touch, if necessary
4. Start the bike. The generator warning light should go out. If it does not, attach a voltage meter to the battery and rev the bike. Voltage should read 14.5-14.9 volts. If it does not, shut off the bike and check the alternator end of the wire between the alternator and the coil for battery voltage with the ignition switched on. If it is not getting full voltage, redo the connections until it does. If it has voltage, the alternator may be defective or may not be grounding through the bracket. Call Greg Field at (206) 371-9623 or email me at ggreg@gregfield.com.
5. Bolt on gas tank and sidecovers, ensuring that no wiring is pinched in the process.

Care and Feeding of Your Alternator

This alternator is meant for use in motor vehicles exposed to the elements. Keep the belt adjusted properly, and it should last indefinitely on your Loop. Maximize chance of that by not spraying water and soap directly into the alternator when washing your bike.

The alternator has an internal regulator that should keep it charging in the range of 14.5-14.9 volts, unless you exceed its maximum output of 40 amps. In this case, voltage will drop proportionately with load. If the alternator overcharges or undercharges, the regulator may have failed. This is available separately from the alternator. The alternator and regulator are new and covered by Nippon Denso's warranty. I'm told that repair parts for these are commonly available at any good rebuild shop, should the unit fail after the warranty period. If you can't find needed parts in your area, we will assist you in obtaining them.

The bracket should also last indefinitely. If it breaks in the first year, we'll fix or replace it. We painted the brackets with Rustoleum's silver hammered paint. This is the toughest rattle-can paint we know of, and its finish should also last for years. It is readily available at Home Depot and other stores should you ever need to re-touch the finish.

If you have any questions call Greg Field at (206) 371-9623 or email me at gregf@gregfield.com.

Thanks again for your business and for keeping your old Guzzi on the road!

Bob Nolan and Greg Field