



Sport Performance Aviation LLC
Sales@FlywithSPA.com or 904.226.1881
Support@FlywithSPA.com or 904.563.4337
www.FlywithSPA.com

Introduction

Thank you for purchasing the Corvair rear generator kit from Sport Performance Aviation LLC. We strive to design products that strike a balance between functionality and economy. It is our goal to have product installation go well. If you have any issues or feedback for us please feel free to contact us at service@FlywithSPA.com or 904.563.4337.

An SPA rear generator kit uses the popular John Deere/Kubota style permanent magnet generator and regulator (part number 129150-77712) combined with our bracket and drive coupling mated to the rear end of the Corvair engine.

This system is designed for aircraft with modest electrical loads. It produces ten amps at approx. 2000 RMP, 18 amps @ 2600 rpm or above. This is plenty to power the typical day VFR sport plane with modern avionics, a pair of LED strobe lights, two fuel pumps and the Corvair electrical dependent ignition system.

Overview of Installation

The basic steps to install this system include:

1. Installing the drive plate onto the JD generator.
2. Installing the drive pins into the harmonic balancer
3. Assembling the generator to the drive plate
4. Installing generator drive plate assembly onto the engine
5. Generator Mount Detail Diagram
6. Regulator/Limiter Wiring Layout and Diagram

Parts List

This is a list of what is included in the Alternator Drive Kit offered by SPA LLC. This kit does not include the JohnDeere/Yanmar generator and regulator. We do have a kit that includes these additions if you do not already have them.

Quantity	Part Description
1	CNC 6061 T6 .250 Rear Generator Drive
1	CNC 6061 T6 .250 Rear Generator Plate
2	Drive Pin
2	Drive Bushing
1	Aluminum Unthreaded Round Spacer, 3/4" OD, 1-1/4" Length, 3/8" Screw Size
2	Type 316 Stainless Steel Split Lock Washer, 3/8" Screw Size, .68" OD, .09" Min Thick
1	Aluminum Unthreaded Round Spacer, 3/4" OD, 1-1/4" Length, 5/16" Screw Size
1	Grade 8 Alloy Steel Hex Head Cap Screw, Zinc Yellow-Plated, 3/8"-24 Thread, 2-3/4" Length
1	Grade 8 Alloy Steel Hex Head Cap Screw, Zinc Yellow-Plated, 5/16"-24 Thread, 2-3/4" Length
4	AN960-616 - Washer, Flat AN960-616
2	AN960-516 - Washer, Flat AN960-516
2	AN3-6A Bolt Undrilled
2	Stop Nut AN363-1032 MS21045-5
1	Stop Nut AN363-524 MS21045-5
1	Stop Nut AN363-624 MS21045-6
1	6061T6 Angle 1x3x1/8 3 inches long
4	Washer, Flat AN960-10

Installing the Drive Plate onto the JD Generator

The drive plate installs on the JD generator in place of the front pulley half. To install this you will need to lock the front pulley in a vice and remove the nut on the back of the generator shaft. Very carefully remove the generator shaft and replace the pulley with the drive plate ensuring the flats on the shaft engage the recess in the plate.

If you disassemble the generator use caution to get the spacers in the proper order. Also, use caution that no loose parts stick to the magnets, which can be easily damaged.

Installing the drive pins in the harmonic balancer

Next install the drive pins into the harmonic balancer. Clean the threads of the drive pins and the threads in the harmonic balancer with your choice of cleaning solution. Install the drive pin with provided flat washer and lock washer. Use Loctite 620 on the threads. The lock washer should go against the face of the harmonic balancer followed by the flat washer. The flat washer may tend to float, so manually center it while you tighten the drive pin.

Next – slide the two rubber drive bushings over the pins.

*Note – these are the only parts in this assembly that may wear over time. Replacement Mc Master-Carr part number = 99025A709

Assembling the generator to the drive plate

The generator assembly mounts to the aft side of the mounting plate with the supplied bolts and spacers. You will need to carefully drill out the smaller hole, the one with threads in it, to 5/16. We use a steel stop nut vs. using a metric bolt. The head is so close to the harmonic balancer face that adequate locking is not possible with a bolt screwed into the generator. The bolts come from the front side of the drive plate and point aft.

See diagram below.

Leave nuts slightly loose at this time.

Installing the generator drive plate assembly onto the engine.

Remove the outer two lower 3/8 nuts (or bolts if equipped) from the rear accessory case. Slide the generator assembly into place, engaging the holes in the drive plate to the drive bushings.

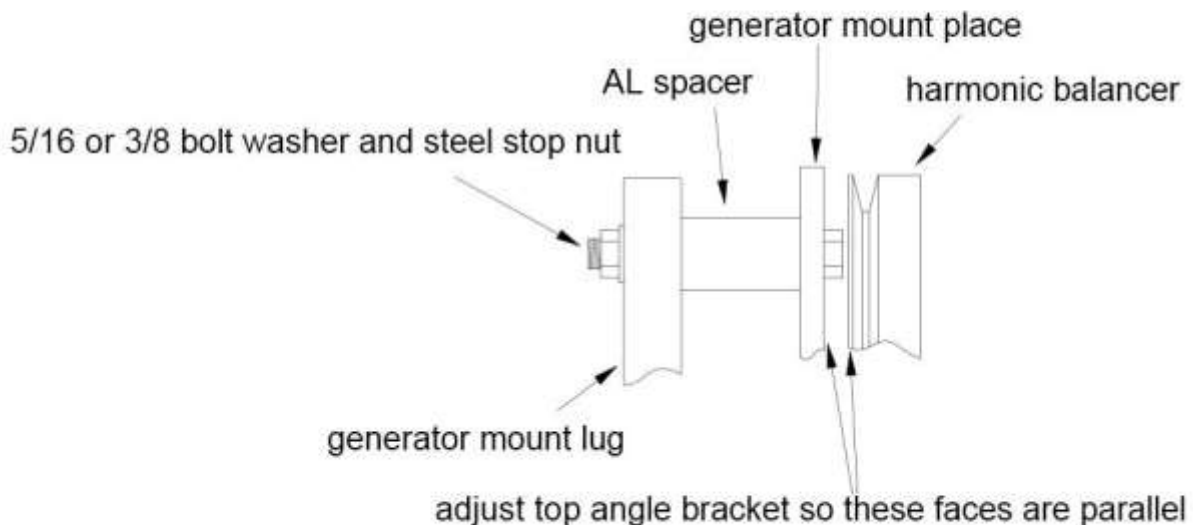
Loosely install 3/8 nuts and lock washers on lower outer studs. If you have bolts you may need to use ones that are a 1/4 longer than the ones you removed. The generator plates are designed to allow the generator to self-align. The goal is to have the generator free to rotate at any crankshaft position so it is not bound. In our experience simply installing the plate and slowly snugging all bolts results in adequate. Alignment is not critical as long as there is no static pressure on the bushings at any crankshaft position.

The upper bracket should be fabricated and drilled with the supplied, CNC machined, angle bracket and template. When finished the bracket installs under the most right hand oil filter housing bolt (you may need one slightly longer than your current bolt). The 11/32 hole can be slightly elongated with a round file so the angle bracket sits firmly against the generator mounting plate. Note – the generator drive plate needs to be equal distance from the face of the harmonic balancer. Adjust the hole position of the angle bracket so the generator plate lines up in parallel to the harmonic balancer. If the generator plate is leaned slightly aft, it may be due to drive bushings being slightly too long. Use a belt sander to shorten the rubber drive bushings just enough so the plate can sit parallel.

When satisfied with the alignment of all brackets, drill two 3/16 holes using the mount plate as a guide. Deburr and install 3/16 bolts and hardware. Verify all bolts are tight. Install voltage regulator and wiring to complete your installation.

Generator Mount Detail

(typ not to scale)



Regulator/Limiter Wiring Diagram

With the Yanmar Generator unit we've been using the regulator/limiter part number (129150-77712)

Red = battery (load line)

Blue = Generator

Blue = Generator

Green = Indicator light (other side of "light to ground") we don't typically use this

Yellow = Voltage sensing line (run to any 12v, sometimes we just jump over to red or hook to battery)

Black = is ground

*Note! The wiring at the plug is in correct order and same as older JD units. Where the wires enter case is not in the same order!

