

VIC
MAG. Assembly
ON
PART 2

AERO—VEE ENGINE CONVERSION MANUAL



MONNETT EXPERIMENTAL AIRCRAFT, INC.

INTRODUCTION

This manual is provided to guide you through the conversion of the VW Engine by simple step-by-step procedures. Each step is important! Read all the sections pertaining to your conversion parts before starting work. A packing list for the conversion parts you ordered is enclosed. Check and inventory all parts as you un-pack them.

CONTENTS

Pages

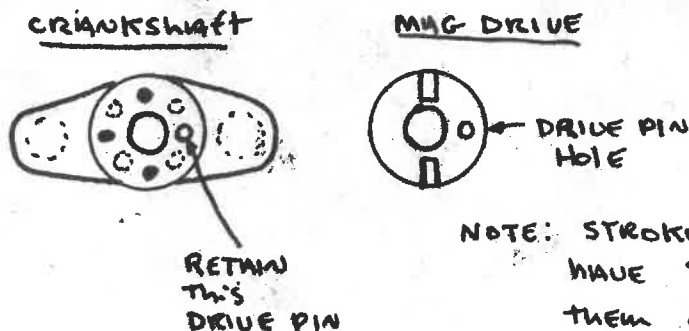
1. Installing "EV" prop hub unit.
2. Installing the magneto mount unit.
3. Timing magneto with engine.
4. Installing the electro X 10 amp alternator.
5. Engine operation recommendations.

INSTALLING THE "EV" PROPELLER HUB

Page 1.

1. Check crankshaft end for any foreign materials, dirt grease, chips, etc. Check the key and key way, align key in the key way.
2. Heat the hub in an oven at 450° to 500° for 20 minutes.
3. Have engine near oven.
4. Remove hub from oven - without - delay - align key way of hub with key in the shaft, press hub on.
5. Install 20 mm bolt and retaining washer tighten to make sure the hub is seated.
6. Remove the bolt.
7. Drill a 3/32 hole through the corner of the hex head of the bolt for safety wire.
8. Use "loctite" on the bolt. Re-install the bolt and retaining washer, torque to 65 - 70 pounds.
9. Drill two 3/32 holes in prop centering boss adjacent to holes in retaining bolt.
10. Safety wire bolt to prop hub.
11. Drill "EV" breather plate to fit studs for generator tower
Drill 1/2" breather holes in boss and fit with a 1/2" OD tube - epoxy into casting.
12. Install breather plate with a gasket to the engine.
13. Connect to 1/2" dia. breather line exiting bottom of cowl.

1. Remove gland bolt, flywheel, rear seal, "end play" shims and bottom 10 mm transmission mount studs from the engine. Remove 3 of the 4 crank shaft pins.
2. Carefully align the magneto drive (with "O" Ring Seal installed in groove) with the crankshaft pins and tap it on with a plastic mallet. Use gland bolt, wavey washer, and 1-1/4" ID spacer washer.
NOTE: With engine at top dead center on #1 cylinder, the magneto drive lugs should be nearly vertical. See timing instructions.
3. Check crankshaft end-play with a dial indicator. Select three flywheel shims so the end-play is between .003 and .006 with paper flywheel gasket in place. Paper gaskets compress to .006". Use 5/16 N.F. bolts screwed into tapped holes in the magneto drive to remove the drive only. (like a gear puller)
NOTE: Use 1-1/4" ID spacer washer and wavey washer under gland bolt.
4. Once proper end-play is achieved, install a new rear oil seal. Replace the drive, paper gasket, and torque gland bolt to 200 pounds. Take care that the gasket and "O" ring seals or an oil leak will develop here ! !
5. Fit aluminum magneto drive coupling in place over magneto drive lugs.
6. Using 10 mm bolts and nuts provided, bolt rear casting in place, magneto boss to rear. Use "Loctite" on threads. Check centering carefully. File casting if necessary to center it with magneto drive.
7. Time and install magneto with 5/16 N.C. bolts, lock washers, and "Loctite."
8. Connect primary lead to magneto switch. Make sure magneto and switch are grounded ! !

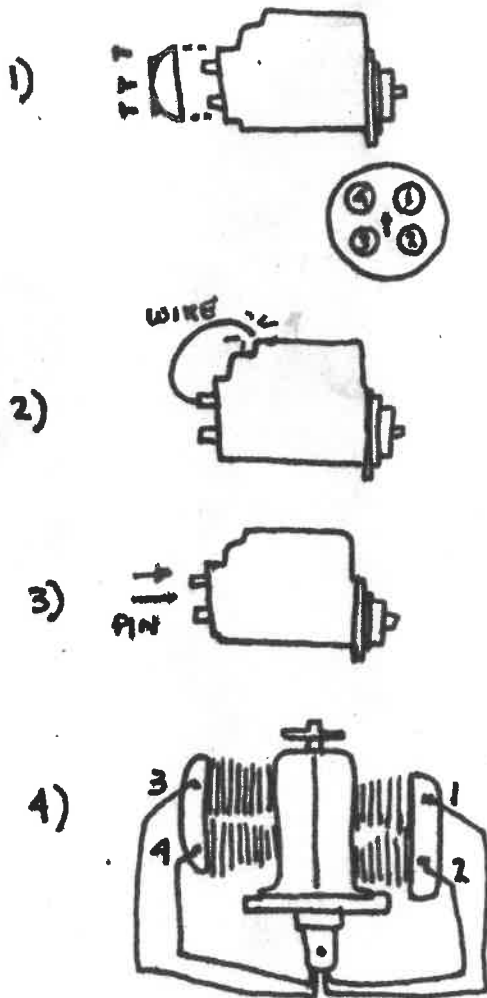


NOTE: STROKED CRANKSHAFTS MAY HAVE 8 DOWEL PINS. REMOVE THEM OR REDRILL THE MAG DRIVE TO MATCH. THE MAG DRIVE LUGS MUST BE 90° TO THE CRANK SHAFT THROWS!

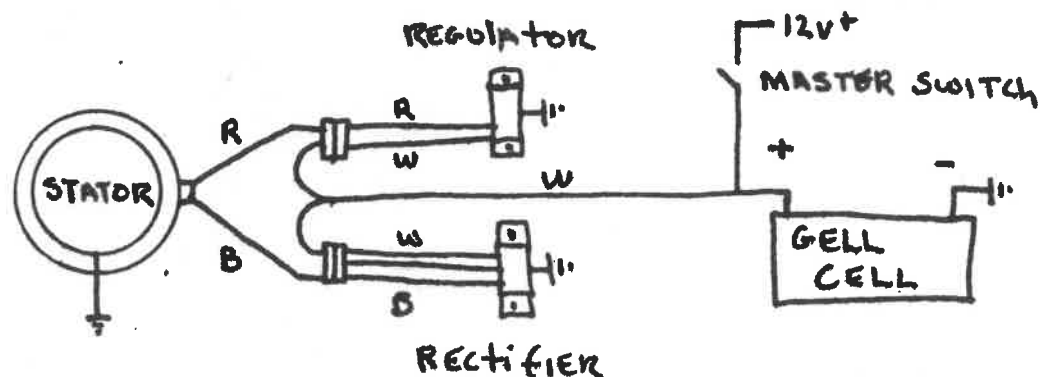
TIMING THE SLICK 4216 MAGNETO

Page 3.

1. Remove magneto harness cap (3 screws at back of mag.)
2. "Spark out" mag by rotating the drive clockwise until the hole fires. (A small length of wire stuck in #1 hole and held close to mag case will spark when the mag fires.)
3. Rotate the drive slowly counter clockwise until the timing pin can be inserted into the timing hole marked "R". This locks the mag in the timed position.
4. Install the mag onto the engine with the crank shaft set at 28 degree BTDC for #1 cylinder (forward right cylinder when using shielded harness).
5. Remove the timing pin and re-install the harness cap.



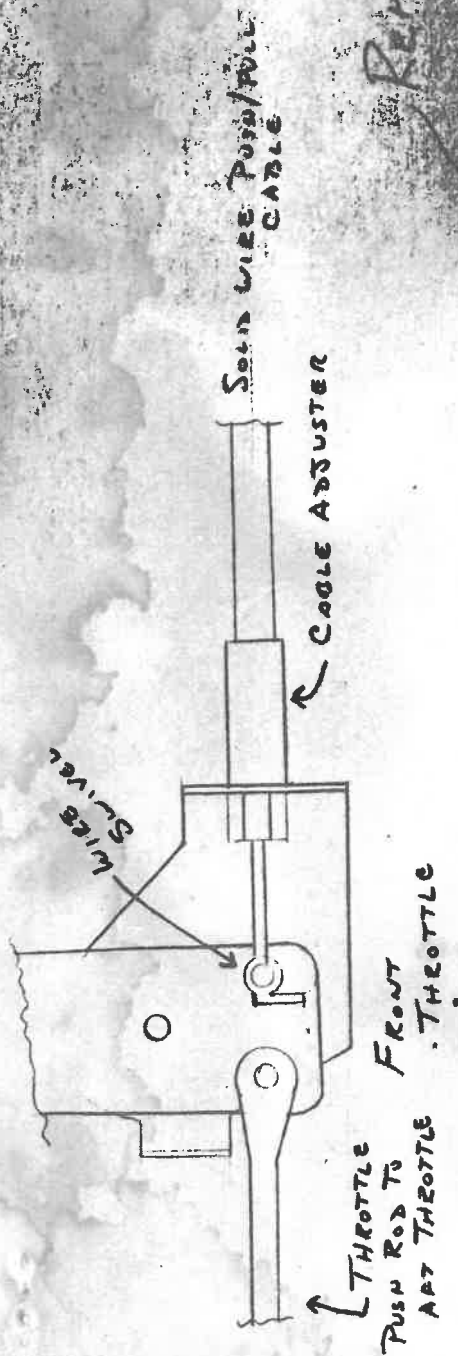
1. Remove gland bolt from crankshaft mag drive.
2. Remove and discard the 1-1/4 x .065 spacer washer.
3. Push alternator magnet flywheel over the 1-1/4 centering boss on the magneto drive. The magnet drive lugs will extend through the holes in the flywheel.
4. Re-install gland bolt using "Locktite" torque to 190 to 214 lbs.
5. Install aluminum magneto coupling on the drive.
6. Center alternator on the inside boss of the "Electro X" casting with the lead wires towards the rear (A recess notch is provided for the harness. This may have to be filled to provide clearance so the stator will seat properly).
7. Bolt stator in place using AN bolts provided and "Locktite."
8. Center and install "Electro X" on the engine block using 10 mm bolts provided. "Locktite" !
9. Check clearance between magnet ring and the stator O.D. by rotating crankshaft.
10. Time engine and install magneto.
11. Plug the regulator and rectifier into their respective color coded plugs on the stator harness.
12. Connect the white wire to the battery positive lead, connecting wire should be of equal gauge or larger. Do not fuse or install a switch in this line. (We recommend the use of a voltmeter to monitor battery condition).



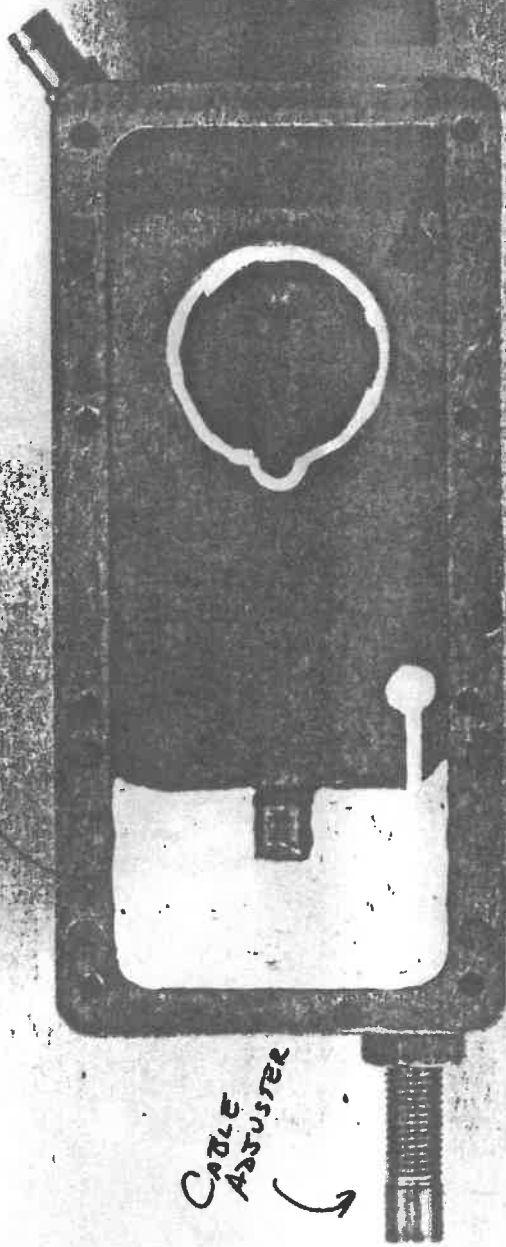
ENGINE OPERATION RECOMMENDATIONS

Page 5.

1. Use 50/100 wt. oil for summer operations. Use 40/80 wt. in the winter. (A small VW block heater is helpful in the winter for pre-heating.)
NOTE: Use non detergent oil for first 25 hours, detergent or synthetic oil after first 25 hours.
2. Run engine on the ground for a couple of hours at various throttle settings. Static RPM should be at least 2800 RPM for most prop-engine combinations. Expect static RPM's up to 3200. When the engine idles at 1000 RPM or under and takes throttle well, it is ready to fly. Exhaust stacks should be a light buff color if your carb is set right.
3. Recommended cruise RPM should be between 3200 and 3500 RPM max 4000 RPM. Depending on prop combination you may only see 3800 RPM (with a cruise prop).
4. Oil temperature max should be red lined at 250°F. Normal oil temp will be between 190° and 220°. It is not uncommon to see 230° in a prolonged climb on hot days - take it EASY ! Cylinder head temp at 450°F. Oil pressure green arc at 25-50 lbs. at cruise. (When hot the oil pressure oil drop to 10 - 15 lbs. at idle, when cold at high RPM oil pressure may reach 60 lbs.) If these temps can't be controlled, a remote oil cooler (Corvair or equal) may be in order or a change in engine baffels. Expect relatively high temps during break-in of new engines.
5. Re-adjust the valves at .006 to .008 after 3 to 6 hours of operation. Check and re-adjust at regular intervals (25 hours) for insurance.
6. Basic engine rebuilding procedures should be followed as outlined in any good VW rebuilding manual such as CLAMER'S.



REMOVE SPRING



CABLE ADJUSTER

