

# TECH TIPS

## 200 WATTS FOR YOUR ROUND-CASE DUKE

BY Lee Samuelson

The 200 watt alternator will fit into a round-case readily. I like at least 100 watts of quartz-iodide to drive behind, and the old system wasn't up to the job. No one up here admits to the swap, so I did some eyeball engineering and decided to pioneer. Here's how to do it:

### 1.A.) Parts needed:

- Ducati 200 watt alternator assembly, complete, part #0759.46.400
- Ducati 200 watt voltage regulator, part #0759.46.750 or: Tympanium voltage regulator, part #620401, from: Tympanium Corp.  
68 Cummings Industrial Park  
Woburn, MA 01801  
Phone: 1-617-935-7790  
(cheap, US \$24.95, ppd.)
- Sidecover Gasket, part #0755.49.135
- Loctite: Clean 'n Prime, red or blue resin (see note later)
- 4 allen screws, 6MA x 30

### 1.B.) Tools needed:

Lathe big enough to swing the stator, i.e.: 4.5", boring bar vernier or dial calipers accurate to 0.001" dial gauge, and stand, accurate to 0.001" straightedge, high quality

### 2.A. Procedure

1. The point-of-reference used is the gasket face between the right-hand crankcase half and the sidecover containing the stator. The rotor will be inset on the crankshaft extension until the inner side of the rotor magnets are in line with the outer edge of the crankcase. See Fig.1. The stator is recessed into the sidecover until the outermost lamination is flush with the gasket surface. See Fig.2.

NOTE: Measurements given - in brackets - are those that worked for my Duke. Please do not use them without checking your machine first as production variations could upset everything.

### 2.B. Measurements, preliminary

1. Rotor, Figs. 3,4
  - a) width of rotor (1.520")
  - b) distance edge of magnet to edge of rotor (0.200")  
The side with the greatest dimension will be bored for the bevel pinion.
  - c) distance bevel pinion extends beyond crankcase edge (0.220") Use straightedge and calipers
  - d) diameter of bevel pinion (1.820")
  - e) width of rotor retaining nut and washer (0.360")
  - f) diameter rotor nut and washer (1.4")
2. Stator, Figs. 5,6
  - a) width of stator laminations (1.150")
  - b) diameter of stator (4.409")
  - c) depth, stator seat to gasket surface of sidecover (0.810")
  - d) diameter, minimum, lower stator, near steady bearing (4.3")

### 2.C. Measurements, calculated

1. Rotor, figs. 3,4
  - G: depth of recess to be bored for bevel pinion insert  $G=B+C$  (0.440")
  - H: diameter, bevel pinion recess - allow at least 0.050" clearance  $H=D+0.050$  (1.870")
  - J: depth of recess for retaining nut and washer  $J=E$  (0.360")
  - K: diameter of recess for retaining nut and washer - allow 0.050" clearance  $K=F+0.050$  (1.450")
2. Stator, figs. 5,6
  - e: stator diameter to clear lower i.d. of stator support, allow 0.050 - 0.100" clearance  $e=d+0.050$  (4.2")
  - f: length of above cut  $f=a-c$  (0.340")

### 3.A. Machining

1. If the lathe you will use does not have an Accurate 3-jaw chuck (most aren't), use the 4-jaw even if it seems a bother. If the rotor is turned less than truly, strange vibes will result; not to mention internal abrasion/seizure with curious magnetic particles all through your engine. Try to maintain the high standards Doctor T designed into this masterpiece.

### 3.B. Rotor, figs. 3,4,7,8

1. Chuck the rotor by the machined magnet faces. Leave sufficient protruding for the tip of the dial gauge to touch.
2. Centre the rotor truly, see fig. 7. Use the tip of the dial gauge against the machined surfaces of the magnets. Achieve ZERO runout.
3. Remove wobble, see fig. 8. ZERO to tolerance again.
4. Tighten chuck jaws firmly. Recheck as above. Correct as above.
5. Bore the bevel pinion recess to depth G and diameter H. The interior corner may have a slight radius, but the face of the bevel pinion must bear truly against the new surface. If it doesn't, increase diameter H or add a slight radius to the shank of the bevel pinion.

NOTE: There are all sorts of layers to the rotor, so take it COOL. The steel under that soft aluminum hide is some tough. Be Warned.

6. Turn the compound slide to an appropriate angle and cut a chamfer for the gear end of the bevel pinion. Remove sufficient material so that the sides of the bevel pinion do not contact the rotor.
7. Inspect, remeasure. Only the outside face of the bevel pinion should touch the inner face of the bored recess. On my Duke the O.D. of the bevel pinion shank was grossly eccentric - therefore the 0.050" clearance.
8. Reverse the rotor in the chuck.
9. Repeat steps 2,3 above.
10. Bore the recess for the nut and washer to diameter K and depth J. The washer must seat truly.

### 3.C. Rotor, trial assembly

1. Place bevel pinion, rotor, washer and nut on crankshaft extension. Tighten moderately.
2. Assure that inner magnet edge and gasket face of crankcase lie on the same plane. Use the straightedge. See fig. 1.
3. Remove the sparkplugs (valve rockers too if you're weak/curious).
4. Attach the kickstart.
5. Spin the engine, examining the rotor for wobble. Use the dial gauge if the means exist for attaching it.



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