



CONVERTING A JUNKYARD AUTOMOTIVE ALTERNATOR INTO AN EFFICIENT ALTERNATIVE ENERGY PERMANENT MAGNET ALTERNATOR

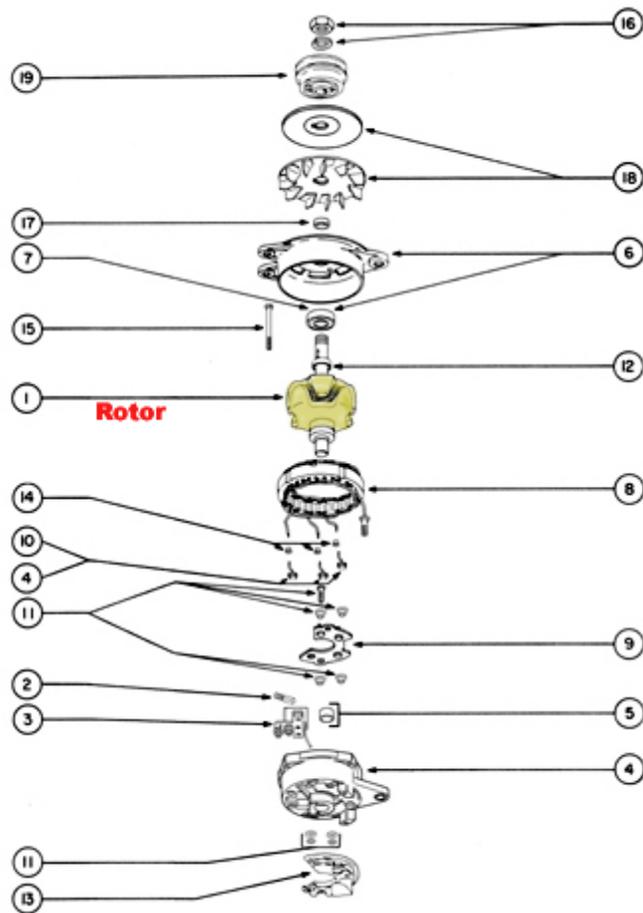
You do not need to machine anything, nor do you need to wind your own coils or purchase any expensive magnet wire.

And no, you do not have to worry about stray induction or eddy currents damping out the energy production or causing inefficiencies. All you have to do is go to a pull-it-yourself junkyard and find the largest automotive alternator (in Ampere rating) you can find. If you have a very small prime mover energy source to tap, do not go too big, or you will not have the power required to turn the permanent magnet alternator. Also, the higher the amps, the higher the "E Squared losses".

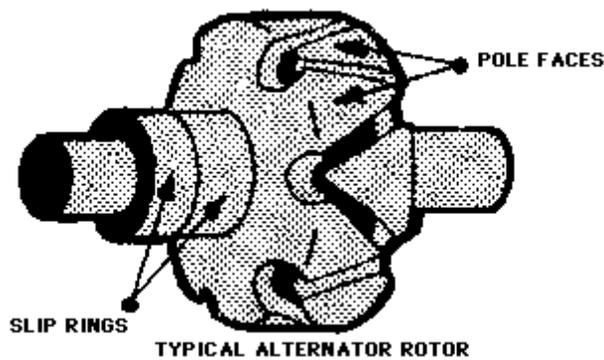
(Power =electromotive force squared divided by resistance, or Power equals voltage in volts squared divided by resistance in ohms of the windings) Some mechanical energy input is required at the shaft to overcome the E-squared losses in the stator coil windings before any excess power can be produced or removed from the alternator.

(Where I am in Richmond VA , junkyard alternators cost about 10-15 bucks each and are readily available.)

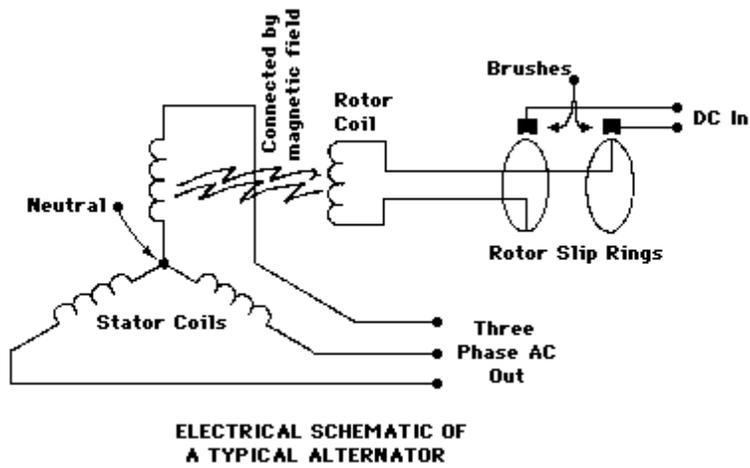
Automotive alternator exploded view
The only part that needs to be modified is item 1, called the rotor.



BASIC CONSTRUCTION

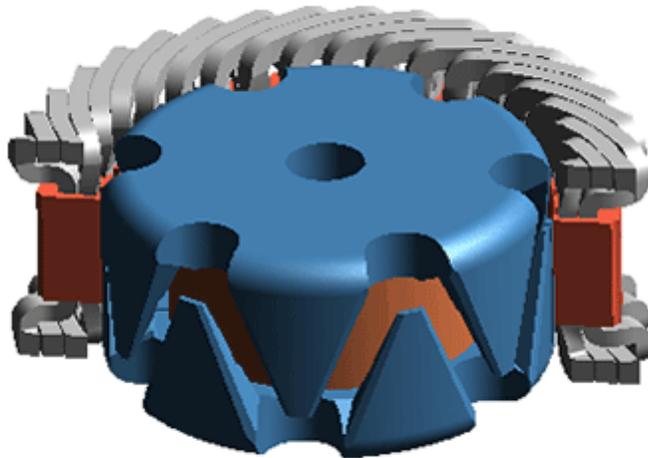


THE (SIX POLE) CLAW POLE ROTOR DESIGN PRODUCES 12 ALTERNATIONS IN THE MAGNETIC FIELD PER ROTATION PER SHAFT ROTATION, ALLOWING MUCH SLOWER SHAFT SPEED TO SUFFICIENTLY PRODUCE THE REQUIRED MAGNETIC FIELD "ALTERNATIONS"



A modern alternator contains both moving and stationary coils of wire. In the alternator, however, the moving coil, called the rotor, uses current supplied through slip rings to generate a moving field. Power is extracted from the stationary field coils.

To convert to permanent magnet, the claw shaped pole pieces of the rotor need only be removed from the shaft temporarily and the rotor coil, a donut shaped coil of wire is then discarded along with the carbon brushes and slip rings. The rotor coil is simply replaced with the strongest available donut magnet of equal size to the rotor coil. The magnetic field in the donut magnet must be aligned so that the flat ends of the donut cylinder are North and south poles.



In the picture above, of the two blue claw-pole rotor pole pieces (with the shaft removed) can be seen nested in their normal operating position within a cutaway view of the power producing three phase stator coils. Note the orange donut shaped powerful permanent magnet that now replaces the old electromagnet coil sandwiched between the two claw shaped rotor pole pieces.

A hydraulic bench press will be required to press the pole pieces off and then back on the shaft, after the rotor coil is replaced with a powerful permanent donut magnet. An experienced motor electric re-builder shop should be consulted to teach you how to do this without deforming and ruining the pole pieces. It is very important to get a tight fit on the shaft so that both claw-poles are snug against the magnet. Wetting the ends of the magnet with ferro-fluid can help here, by forming a trapped magnetically conductive layer that fills any slight surface irregularities to maximize the magnetic force of the rotor assembly.



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