

Congratulations on your purchase of a new *Stream Engine*! With a proper installation and a little routine maintenance, your Stream Engine will provide you with years of trouble-free operation. The most important maintenance for your Stream Engine is replacing the bearings on a regular basis. We have included a set of #6203 ball bearings with contact seals for your first replacement.

BEARINGS, SERVICE & ASSEMBLY

In order to remove the generator you must first remove the turbine wheel. The machine's wheel is unscrewed from the shaft by holding the rotor using the 1/4" diameter rod inserted into one of the holes in the edge of the rotor. The turbine wheel is assembled with a washer and then a spacer on top. The shaft is made with standard right hand threads for the turbine wheel so it will unscrew in a counter-clockwise direction when looking at the shaft (with the machine upside down). Then you can remove the four bolts that hold the base of the generator with a 4mm (5/32") hex drive.

IMPORTANT Bearing maintenance is important. You should replace bearings **ONCE PER YEAR** or as soon as you notice any looseness from wear. If they are too loose, severe damage to both the rotor and the stator can result. Check the clearance often making sure you can insert two business cards (or something the same thickness) between the rotor magnets and the stator. Even if the bearings are not worn, changing them once per year will help keep the area free of corrosion and make future bearing changes easier. This machine uses three 6203 ball bearings with contact seals. Presently the bearings in the machine are a slip fit in the housing bore and Loctite 243 has been applied to the bearings before assembly in order to secure them. This adhesive and corrosion may make the bearing difficult to remove. Tapping with a block of wood should be sufficient but the use of a press may be required if the bearings are stuck in the housing.

To replace bearings:

1. Using the rotor pin to hold the shaft, unthread the runner from the generator shaft.
2. Remove rotor. To remove rotor and shaft raise the rotor as described in *output adjustment* until the magnetic attraction is low enough to separate the rotor/shaft assembly from the housing and stator.
3. Unscrew two bolts and washers that retain the bearings.
4. With the Stream Engine sitting inverted, using your thumbs, push out the bearings from the housing or tap the bearings out. This may require a press in some situations.
5. Clean bearing sleeve and insert new 6203 bearings and apply Loctite 243 or equivalent. .
6. Reassemble.

PLEASE READ CAREFULLY

It is very important to keep the alternator rotor from contacting the stator (the stationary part under the rotor). If this occurs, serious damage may result.

Whenever you are operating the machine with a small air gap (distance between alternator rotor and stator) you should check the gap whenever an adjustment is made!

Do this by inserting a shim (0.020" or 0.5mm thick), or something thicker in the gap when the rotor is stationary (hint: most business cards are 0.010" thick, therefore, using two business cards of this thickness could be used to check the air gap). Check all the way around the rotor. This is also a way to check for bearing wear on a monthly basis. If you **cannot** easily insert the shim into the gap, either all or in part, it is necessary to adjust the rotor upward (see *Output Adjustment* in this manual). **DO NOT USE** steel feeler gauges as they will be attracted to the magnets.

When making air gap adjustments, make sure the larger bolt is tightened (clockwise) against the shaft and the smaller bolt is also tightened (clockwise); so as to lock both parts in place.