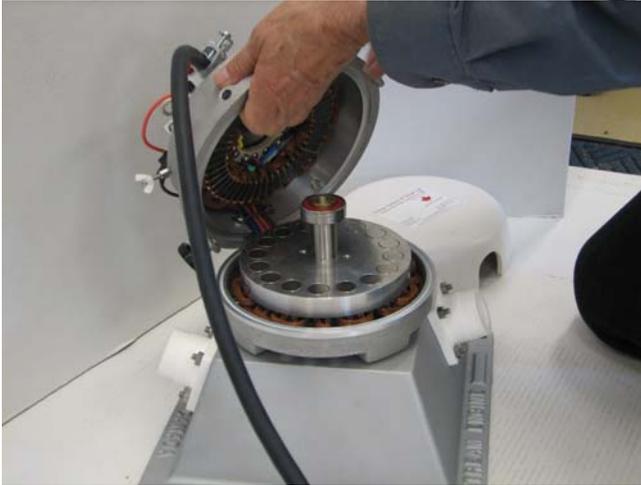


## DISASSEMBLY and BEARING REPLACEMENT

In order to replace bearings, the turbine runner must first be removed. Take the small steel rod (1/4") that is supplied with the machine and insert it into one of the holes in the side of the machine casting. First rotate the runner so the shaft will turn and then find the hole in the rotor and insert the pin. This will keep the shaft from rotating. Once the shaft is stable you will need to remove the runner wheel. If your machine has a turgo runner, unscrew it as you would a large nut by turning it in a counterclockwise direction while looking at the runner. If it is the type with the low flow runner, then remove the center bolt by turning it counterclockwise. Now the generator can be removed from the machine by removing the four nuts (7/16" 11mm) that are on the underside of the housing.

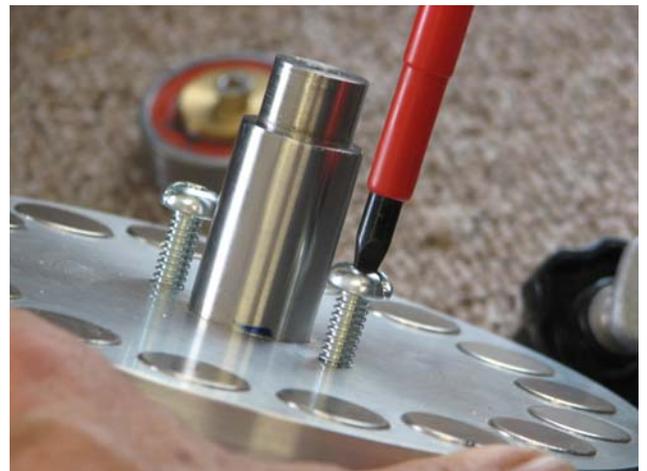


The upper casting is now removed by tightening the 5/8" bolt that is supplied with the machine into the center hole in the top of the machine. Make sure that the adjustment knobs are backed off enough to clear the casting when it is raised for removal. Then tighten the bolt. When the bolt contacts the shaft end it will start to raise the upper part of the generator until it is high enough so that it can be pulled off. When pulling the upper part of the generator away from the bottom do so very carefully and set it closely aside, as the wires from the bottom are still connected.

The upper bearing can now be replaced if required. The bearing is slip fit on the shaft and should come off easily. Remove the center retaining screw and washer and remove the bearing. A puller may have to be used if there is corrosion between the shaft and the bearing. The upper bearing must be removed in order to remove the rotor.

To gain access to the lower bearing, the rotor must first be removed. This is done once the top is off by using the jacking screws that are supplied with the machine. These two screws are 1/4" diameter and 2 1/2" long. Tighten these evenly and fully and then the rotor can be removed. **BE CAREFUL!!!** The rotor is made with very strong magnets and will attract any iron or steel pieces that are near it.

Once the rotor is removed, the lower bearing carrier can be removed by first removing the six screws on the outer edge of the carrier. This is a slip fit in the housing and should come right out. If there is corrosion it may be necessary to press this out. Then the three screws that hold the stainless steel may be necessary to press this out. Then the three screws that hold the stainless steel retaining plate can be removed and then the bearing can be removed. A new bearing can then be installed and the carrier replaced. The rotor can be replaced by lowering it with the jacking screws. Once this is done, and the screws are removed from the rotor, the top can now be installed by using its one large jacking bolt. Make sure that this bolt is centered so it fits over the bearing bolt before the top is gently lowered into place. Once all this is done, make sure that the wires that go to the lower piece are pulled up so there will not be any slack that could contact the rotor.





The photo shows how to remove the hub for a machine with a low flow runner.

**IMPORTANT**

Bearing maintenance is important. You should replace bearings on a regular basis. If they are worn, severe damage to both the rotor and the stator can result. 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 two 6203 ball bearings with contact seals.