

HM Review

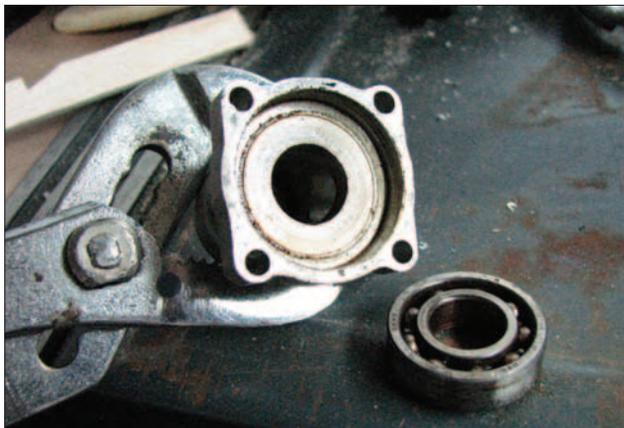
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Boca Bearings

Adding value to our brick and mortar stores through service.

We have all experienced this, a customer comes in with the latest “Internet Store” pricing demanding we match it. Competing against a web only vendor dollar for dollar is a no win situation. However, brick and mortar dealers have something web only folks can’t provide, and that is face-time with our customers.

How do we take advantage of face-time? It’s easy; we call it service. Value and profit can be added to our stores by providing service. As an example, to help with those not comfortable with glow engines, it’s time for a basic course in bearing replacement.



Once the aluminum crankcase is heated the main bearing will drop out with a gentle tap.

A prime candidate for bearing replacement will exhibit slight bumps when the shaft is rotated. A customer recently dropped off an older, Enya .61 in dire need of new bearings. Boca Bearing was contacted and they were able to supply a set of replacement bearing of higher quality than original, and for less money. The needed bearings arrived quickly and were packaged in a neat zip-lock packet.

When working on any engine, cleanliness is critical for success. Get a small storage tub for the parts and take some digital pictures of the engine at the beginning and throughout the disassembly process, especially if this is your first attempt at bearing replacement. Photos are a great resource especially if you get stumped or have parts left over at the end.

Needed for the job is a paint removal-style heat gun or Propane—not MAPP—torch, quality screw drivers, Allen keys, paper towels, isopropyl alcohol, and



castor or model engine oil. When working on the internal parts of any engine, avoid metal tools. The tiniest burr or scratch can be the end of a successful repair. For the internal work you will need some hardwood or synthetic dowels, and a small plastic head hammer. Lastly you will need a pair of oven mitts to protect your hands during the bearing removal and replacement process.

Disassembly begins by removing the screws that hold the carburetor in place. A slight rotation will release it. Some engines have an “O” ring or fiber gasket. If, so remove it carefully and save it for reinstallation. The front thrust washer (the part the propeller or flywheel sits on) differs from engine to engine. Some have conical seats, and some a keyed shaft. The Enya had set screws to keep it in place. Whatever holds the thrust washer in place must be removed so the thrust washer can be removed also.

Holding the crankshaft vertically, thread a nut on a few turns, just enough to protect the threads. A few light taps on the nut with a plastic head hammer will



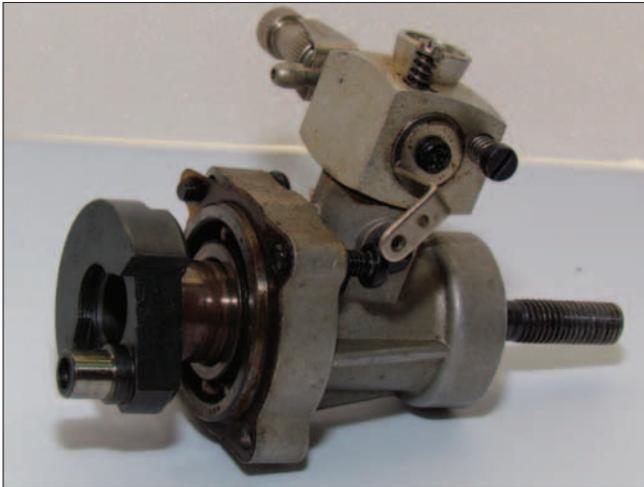
For this repair, the front bearing was gently tapped out of the crankcase using a Delran rod.

dislodge the crank. If you’re really lucky the rear bearing will come out with the crankshaft.

Most times, including this Enya, heat is needed to remove the bearings. Bearings are held in place by what is called an interference fit. This is a fancy technical term for nothing more than a really tight fit. Aluminum and steel expand at different rates and by heating the crankcase just enough to allow the aluminum to expand

without using so much heat the steel bearings begin to expand will allow the bearings to be removed from the crankcase without too much difficulty.

To accomplish this, set the torch to the lowest possible flame. Direct the heat to the outside of the crankcase around the bearing. Avoid having the flame spill over to the bearing, as we want the case to expand, not the bearing. By rotating



The bearings of this old Enya were well worn and in need of the type of service your store can provide. the flame evenly it should take less than a minute before the bearing is ready to release. Give the case a gentle tap with the plastic hammer, and—*voilà!*—the bearing will pop right out. Do not pick the old bearing up in joy, as even without direct heat, it's still very hot and will burn skin in an instant. Note that some of the old hardened oil may liquefy and smoke, so always have adequate ventilation.

Every engine is different, but with an Enya crankcase, the prop bearing is easy. This can be pressed out with a non-metallic rod. For clarity, I used some wooden jaws in a vise to just hold everything in place. Do not squeeze down with



A light application of oil during reassembly will protect the engine during the initial start up.

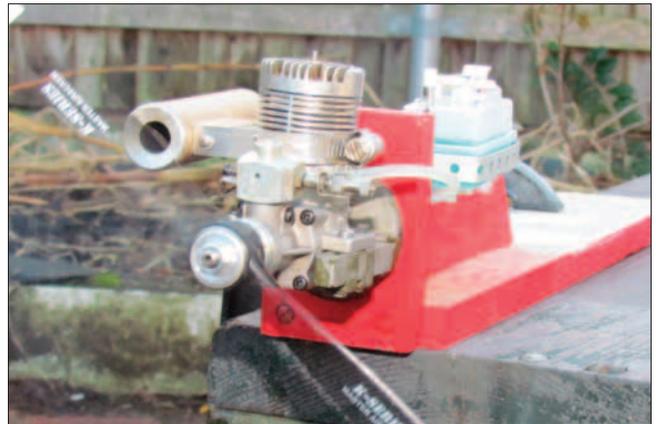
the vise or the case will be damaged. In this instance a Delran rod was used to dislodge the front bearing. Do this while the case is still warm, and gentle even tapping will get the job done.

With the bearings removed, clean the bearing seats of any residue. Also clean the crankshaft with a dry non-metallic green scrub pad. Once everything is clean, apply a small amount of assembly oil to the shaft and the large rear bear-

ing should slide onto the shaft smoothly. Seat the bearing to the crankshaft counter weight. Now start the front bearing in the case with a gentle tap of the hammer.

It's now time to get the crankshaft and bearings back into the crankcase. To do this, gently heat the crankcase to begin expansion, but only enough so the front and rear bearings will both seat in one step. When the case is hot enough, feed the crankshaft into case and through the front bearing. It sounds like you need three hands, but at the same time push the front bearing into its seat. Now with your hand in an oven mitt, hold everything in place. Do this quickly as the new bearings will immediately draw the heat out of the crankcase and it will start to shrink, creating a new interference fit.

Engine reassembly is a simple matter of reversing the process. If you get distracted use your digital photos as a reference. Light application of assembly lube on all moving parts is always a good choice as this will protect the engine during the initial startup. Pay attention to the piston and connecting rod alignment, and when replacing the back-plate and cylinder head, use a cross-pattern to tighten the screws. Also use multiple passes when tightening screws.



Don't throw an engine away. A good cleaning and new bearings brought this old Enya back to life.

First only snug everything down, then go back and tighten everything to its final torque using the same cross-pattern.

Check the engine by hand for smooth rotation and replace the glow plug with a fresh one. Before returning any engine to the customer I recommend mounting it to a test stand. Check the engine for good idle and smooth transition to high power. If there is any damage causing leakage the engine will not idle reliably and choke on quick transitions. If the engine passes all tests, like this Enya, congratulate yourself, you deserve it.

Now you can offer bearing replacement service to your customers or help them identify the bearings they need and provide the parts. Either way, you win. If you can't find a match using the charts provided by Boca Bearings a phone call will get you some great folks to provide assistance. Boca Bearings doesn't just sell engine bearings. Should you have customers looking for robotic supplies or working on some sort of weird science project, you have a resource and that means a sale.

Boca Bearing information, including its dealer program, can be found at www.bocabearing.com. **HM**