

Rebuild Your Pullstarter!

This page will take you through step-by-step instructions showing you how to rebuild your pullstarter.

These instructions are meant for car or truck owners who have taken apart their engine, only to have the pullstarter come apart or the spring fall out. To diagnose your pullstarter and reinstall it correctly, [click here for directions](#).

Complete Rebuild

The first step is take the engine out of your car or truck, then remove the pullstarter from the engine with the appropriate screwdriver. For our .12 and .15 engines, either a #1 (small) Philips head screwdriver or a small flat head screwdriver is required to take out the pullstarter screws. Some engines require an Allen head (hex) driver, make sure you use the right size driver or you will strip out and damage the screws.

It is beyond the scope of these instructions to show you how to remove the engine - see the [Instructions Page](#) for your kit for details.

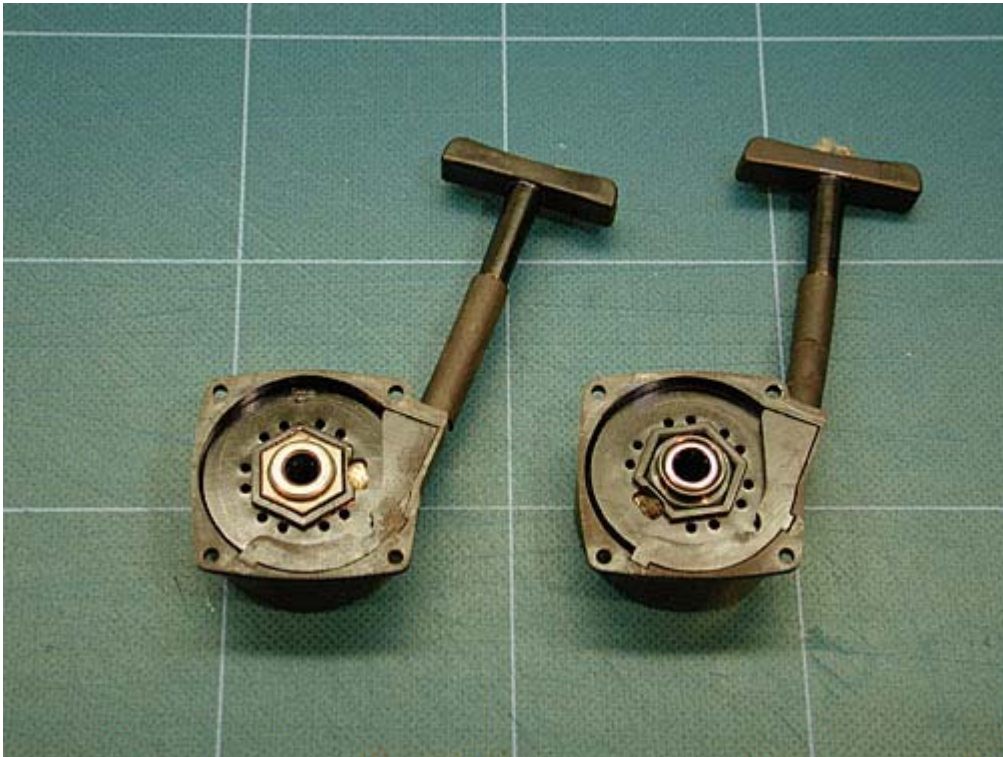
The only tool needed for rebuilding your pullstarter is a pair of needlenose pliers, although a #2 Philips screwdriver will help if the diameter of the screwdriver shaft is 6mm. This is the inner diameter of the pullstart one-way bearing on our 15FE, 15SS and 12R SS engines, and will speed up the assembly of the pullstarter.

Note that the spring is NOT an item that HPI Racing sells; normally it only comes installed in a pullstarter assembly.

As with any instructions, read through this entire walkthrough before starting the rebuild process.

Below is a picture of two pullstarters from our engine line. These are used, actual customer-owned pullstarters, used for the purposes of this demonstration.

Notice that the pullstarters have two different types of one-way bearings (the hex-shaped metal pieces in the center of the assembly). HPI engines have used both types of one-ways in the engines. Both one-way bearings work the same, but you should be aware that the one-way shown in the following pictures may not match the one in your pullstarter.



Note that on the silver-colored one-way bearing, the side with the angled edge faces the open side of the pullstarter.



The first step in rebuilding is to take everything apart. We start with the plastic retainer clip that keeps everything in place.



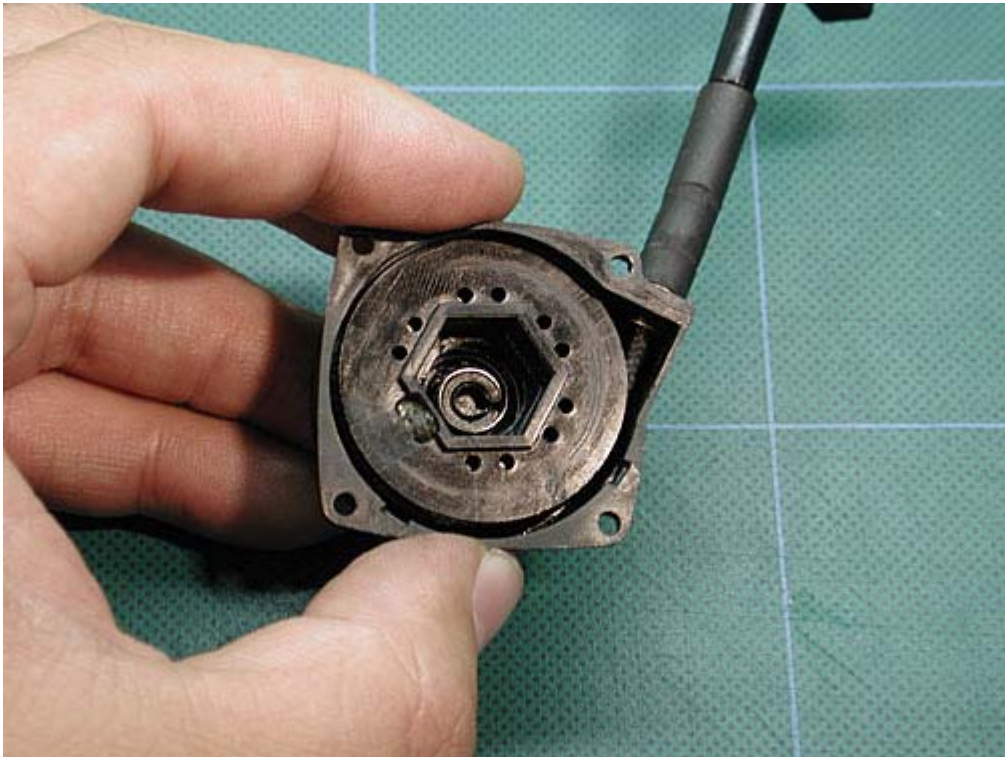
Be careful and don't use too much force to pull out the clip, it must snap back into place when you are finished with the rebuild.



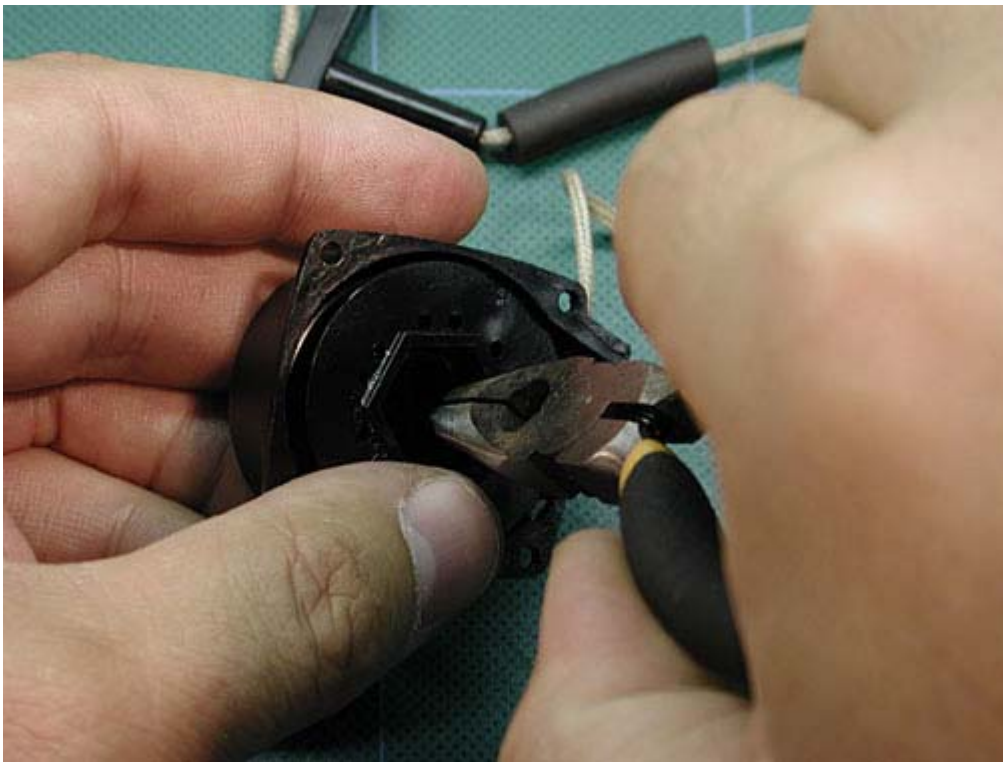
Use your pliers to carefully pull out the one-way bearing. Keep it from dropping on the ground, you don't want any dirt or foreign objects to foul up the bearing!



Look inside and see how the end of the spring inside is wrapped inside the C-shaped plastic part moded to the inside of the pullstarter case.



Put your thumb over the spring assembly and pull out the cord holder a little so you can pull out the end of the spring from the plastic part holding it in place.



When the end of the spring is free, pull out the spring assembly. This part also holds the spring, so wear eye protection and be careful so the spring doesn't jump out and hit you.



[Next page: diagnosing the problem with your pullstarter](#)

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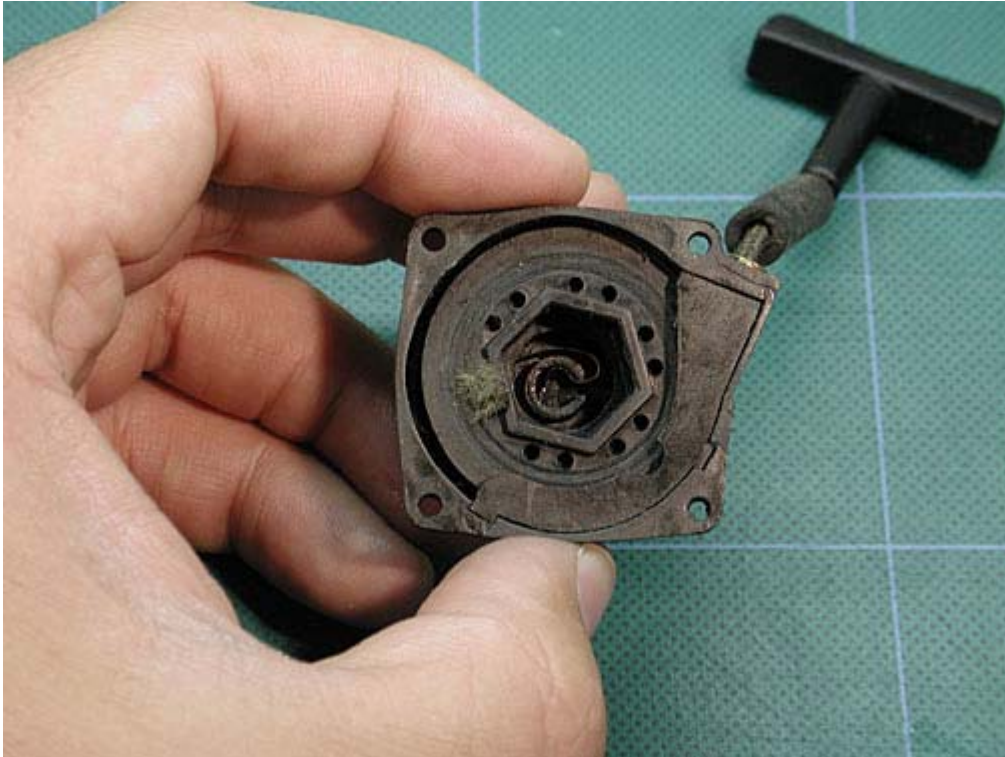
Remember be careful when pull out the spring assembly! The rat's nest below can be the result of problems that were caused before you took apart the pullstarter, or it could happen if you're not careful taking out the spring assembly.



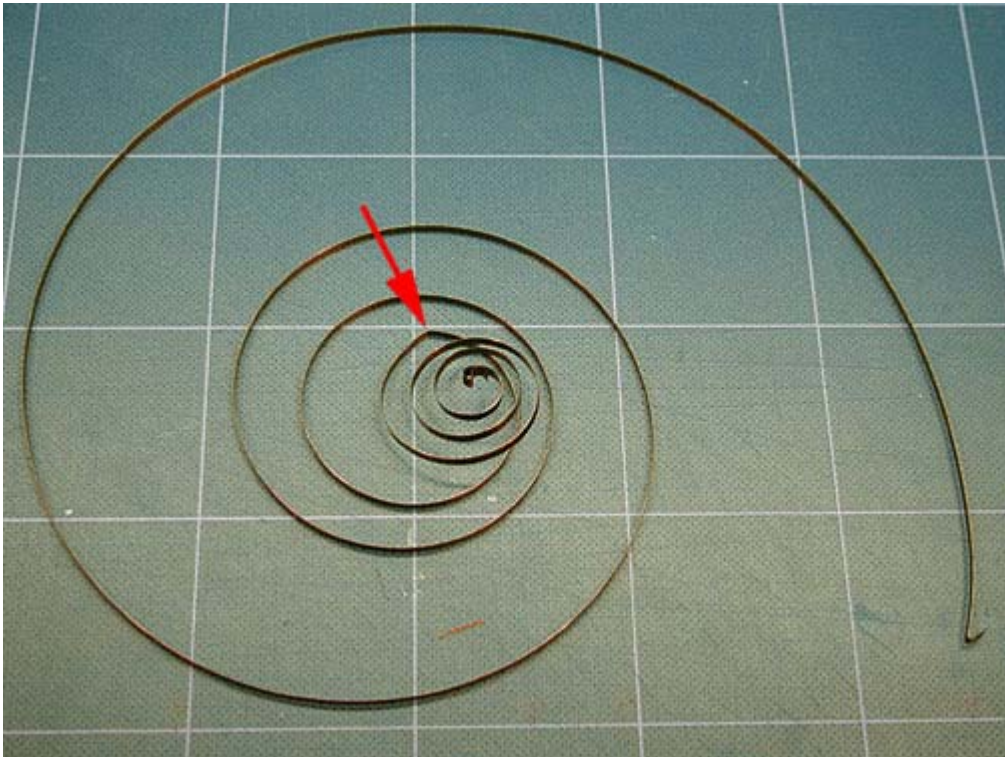
After pulling out the pullstarter's spring assembly, take a look at the curled end of the spring. If it's broken off like the example below, that could be the result of normal wear and tear, an overactive yank on the pullstarter, pulling the cord out too far when starting, or trying to start the engine when it was flooded.



Sometimes you can see the problem before even taking apart the pullstarter. The example below is the spring with the broken end that we showed you above.



The bend in this pullstarter spring is the result of user error, and not the heat/cool/heat/cool cycle that a pullstarter spring goes through.



The springs inside your pullstarter is made from spring steel, a special type of steel that is heat-treated and specially bent for maximum life. Below you can see a brand new spring. Notice how the ends where the metal is bent have been heat treated? You can tell from the

blue-purple coloration about an inch from each end.

With this in mind, any spring steel part that is bent beyond what it was designed to WILL fail, the question is just how soon before it fails. You can bend the spring above back into shape to try and get more life out of it, just keep in mind that it's considered an "emergency" action only, since you should know the spring is about to fail, and soon.



Next page: winding the spring

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There are two ways to wind the spring back into place. We will show you both, they take roughly the same effort.

The first method starts by hooking the sharply bent end of the spring into the corresponding slot in the spring assembly.



Then you just wind, until the spring is completely wound up into the spring assembly. The trick with this method is to keep the spring in place with your thumb, so it doesn't spring back out.



The second winding method uses your hands instead of the spring assembly, it's a little quicker but takes more pressure from your fingers to keep it in place.



Keep winding until the spring is completely wound upon itself.



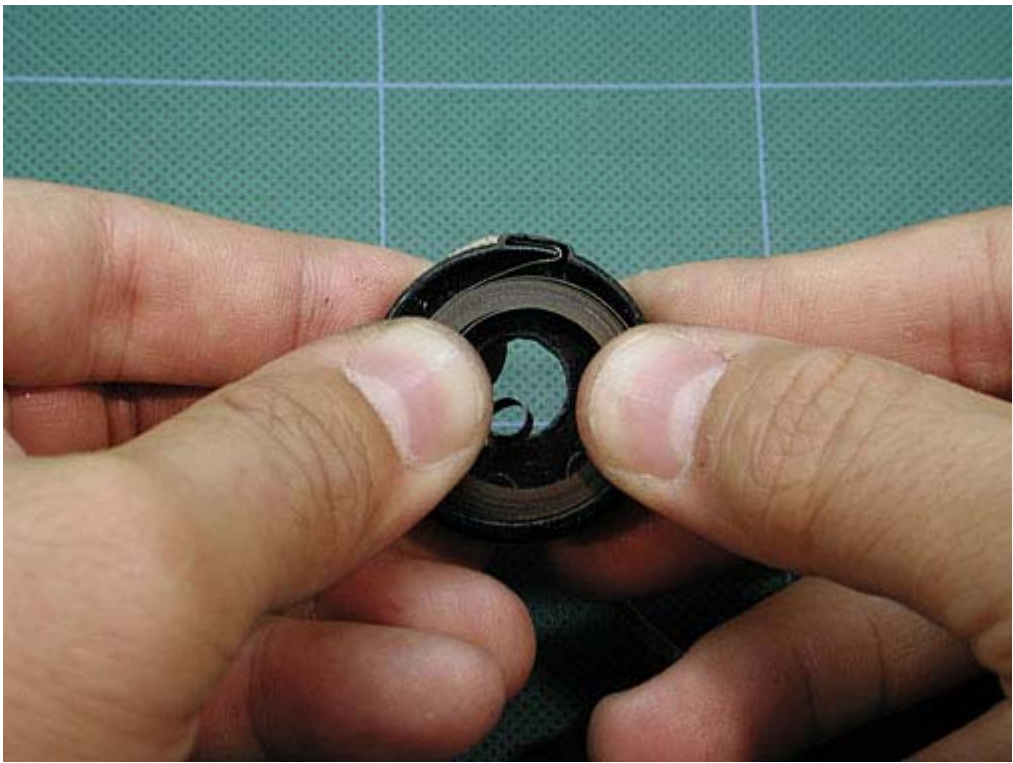
Pull it tight and wind it again until it will fit inside the spring assembly.



Then hook the bent end into place and carefully set the wound-up spring into place.



When you are finished, the spring assembly will have the spring full in place. Keep pressure on the spring so it doesn't pop out!



Next page: winding the string

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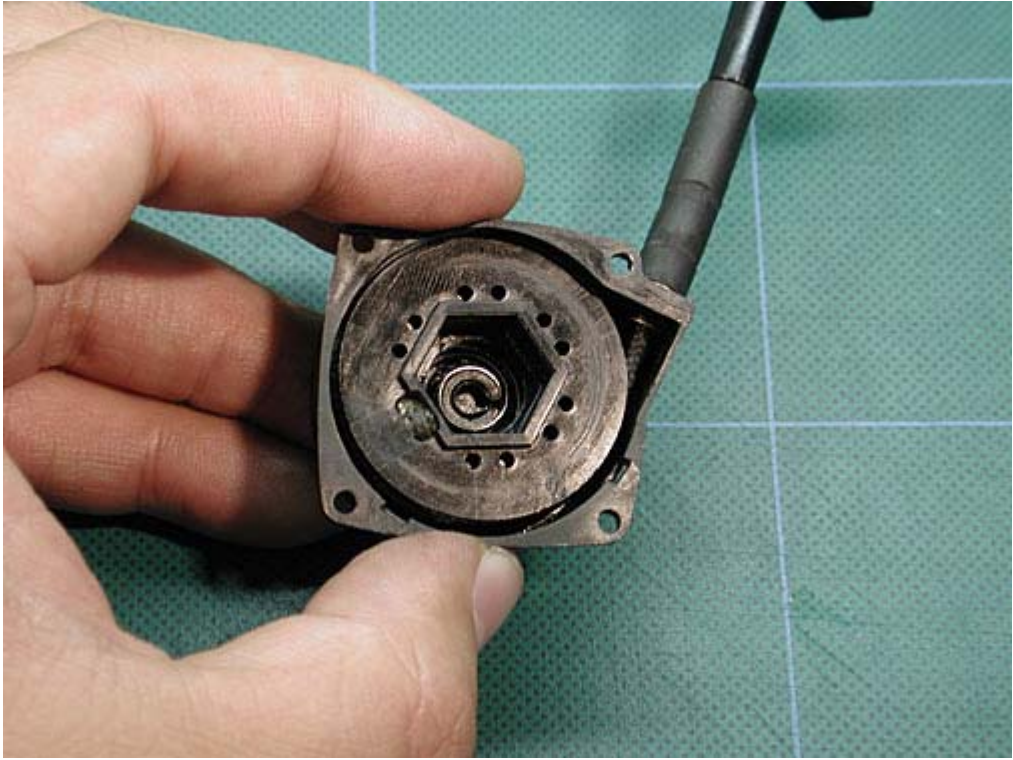
With the spring assembly in place, carefully put the starter cord all the way out of the pullstarter housing.



Use the needlenose pliers to carefully put the curled end of the spring inside the plastic C-shaped part of the pullstarter housing in the center of the assembly.



It should look like this. If you've bent the curled end slightly, don't worry about it, just use the Philips screwdriver to widen the curled part of the spring so it is snug inside the plastic piece.



Drop the one-way bearing back into place. Notice the black one-way bearing goes into place as shown below.



Remember that the silver-colored one-way bearing should have the angled edge face the open side of the pullstarter.



For the 15FE, 15SS and 12R SS engines, you can use a screwdriver that has a 6mm shaft to turn the one-way so it will wind up the cord. For our Nitro Star Pro engines you can use the pullstarter shaft that is attached to the pullstarter.

If you do not have a screwdriver that will fit, you will have to use a pair of pliers to wind up the spring.



Once the cord is fully wound, hold the spring assembly in place firmly with your thumb and use the screwdriver or pliers to pull out the cord from around the spring assembly.



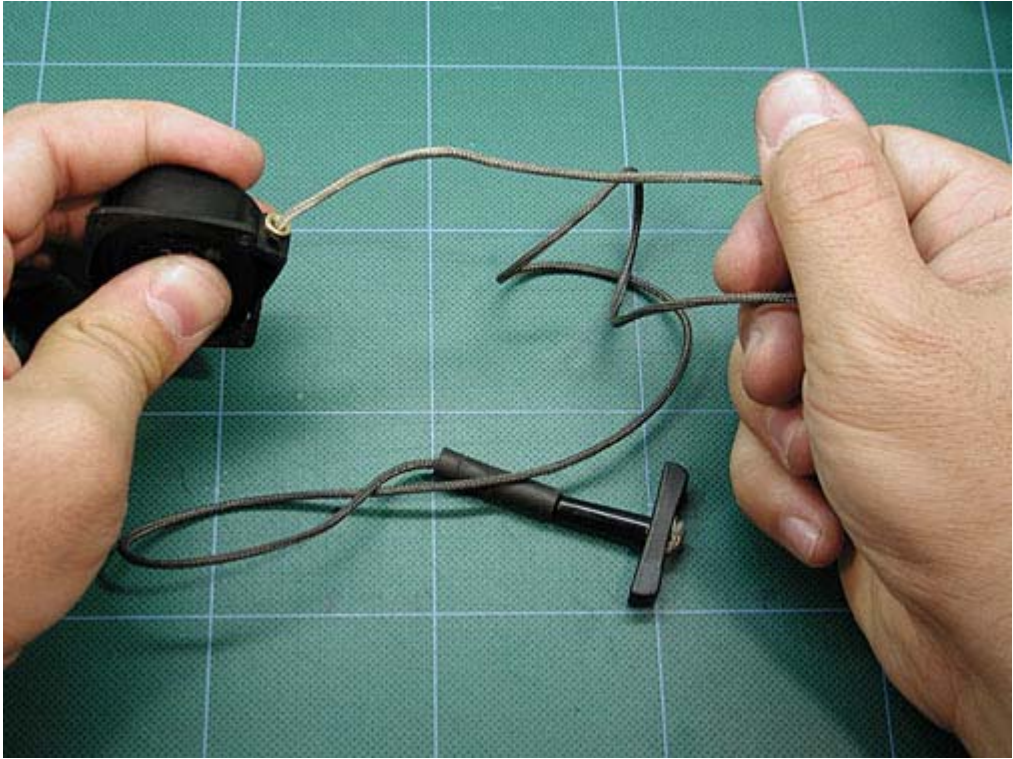
Continue to hold firmly on the spring assembly as you pull out all of the cord.



Pull the entire length of cord out from the inside of the pullstarter housing.



Then, pull the cord out of the main body of the pullstarter. Make sure to let it untangle itself.



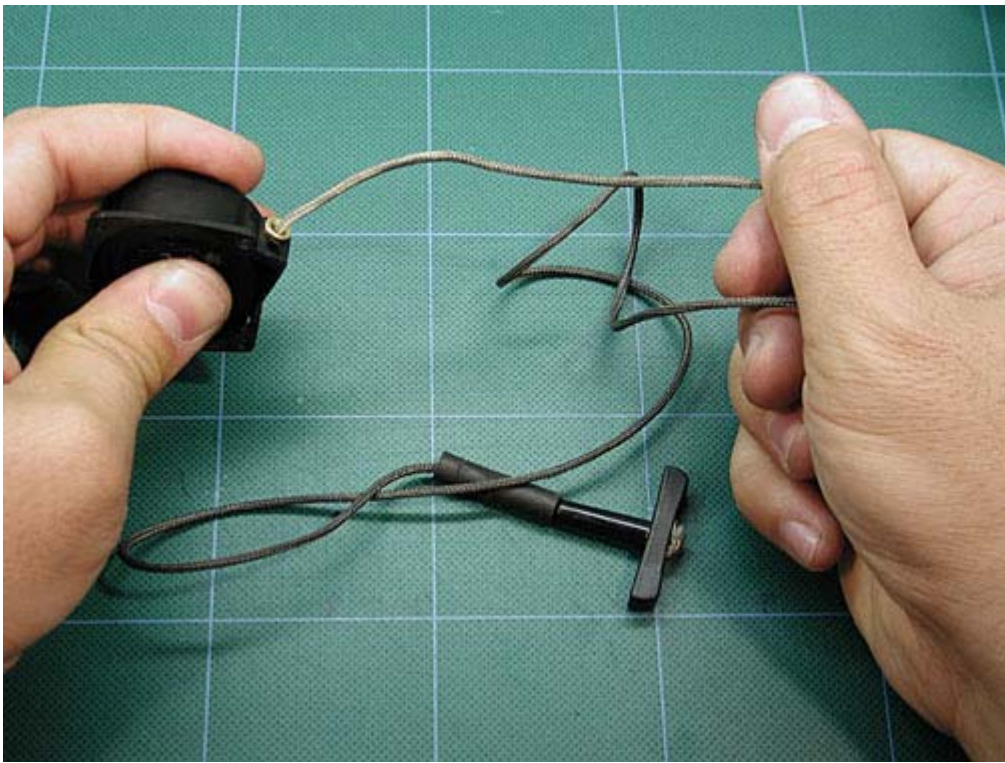
Wind it up one more time.



Pull the cord out again, following the same steps as above.



Untangle the cord again and take the twists out, then slowly let the cord retract.



When the cord is finished retracting, snap the retainer clip back into place.



And you are finished!



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