

AutoCocker Timing

Written by Joe Rieger

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Timing may be a heavily debatable issue with autocockers, since it can determine to some extent the feel of your trigger and how reliably the gun fires. I hope to explain in depth exactly what timing your AutoCocker does and how tiny little changes can alter completely how your gun fires. Please note that all cockers come from WGP pre-timed, so you shouldn't need to do this unless you took something apart.

Step 1: Adjust back block position

This is probably the easiest of the timing steps to perform. First, remove your beaver tail (1/8 in. allen wrench). Now, unscrew the cocking rod, located directly below the bolt. Next, pull out the pushpin holding in the bolt and slide the bolt out of the back of the marker. Now you should have just your back block threaded onto the pump arm. Rotate the back block clockwise until it is touching the body of the AutoCocker, and then back it out one turn. If you're unsure how large the gap should be, do the paper test. Take a sheet of loose leaf, or equally thin paper, and try to slide it between the block and the body. If it doesn't fit, you're block is too close to the body. The width of the paper should be the width of the gap. There should be a small gap in between the body and the block. Setting the back block position does a few things. One is that it gets rid of the annoying clack sound that many people associate with AutoCockers. Another is that it makes the rams stroke shorter, hence lengthening the life and reducing the stress put on the ram. It also ensures that the bolt is in it's fully forward position when the marker fires, hence preventing most blowback.

Step 2: Adjust cocking rod length

Reinsert your bolt, pushpin, and cocking rod. Without air on the gun, pull back on the pushpin/bolt to cock the marker. Do not push the block back forward, and look down the feed tube of your gun. The front face of the bolt should be just in front of the feed tube. If your bolt is covering more than half of the feed tube, you will need to lengthen your rod. If it's way behind the tube, you will need to shorten your rod. Generally, you want about an 1/8 of an inch between where the marker cocks and where the back block is fully retracted. When fully retracted, there should be a 1 inch gap between the back block and the body of your cocker. Changing the rod's length is quite easy. Look at the back of your cocking rod: there should be a small set screw (3/32 in.) located in the back. Loosen this set screw, and adjust the rod by turning the loose part forward or back, moving forward to shorten the rod and backward to lengthen the rod. Once you have the length set, unscrew the rod from the marker, and crank down on that set screw so that it won't easily come out. (Note: If you are confident that you will not be re-adjusting this in the future, you can put a small drop of BLUE (not red) loctite on the threads to prevent the back of the rod from coming unscrewed.) Adjusting the cocking rod length ensures that the bolt will clear the feed tube and completely open up the breech so that a paintball will fall in unobstructed. Second, it makes sure that the ram is not overworked by having to push farther than what it really has to be.

Step 3: Adjust sear lug length

This step of timing sets where in your trigger pull your marker will actually fire the paintball. You want your marker to fire the paintball BEFORE you re-cock the gun, otherwise you have turned your gun into an open-bolt marker, which means horrible inefficiency and many chopped balls. On post (1999?) 'cockers you can adjust the sear lug length through a hole in the top of the marker. Remove the bolt, and insert a 1/8 in. allen wrench into the hole, and rotating it until you get the firing point where you want it. Rotating clockwise moves the firing point later into the trigger pull, rotating counterclockwise moves the firing point earlier in the pull.

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If you think about what the turning is doing, you can understand better how this part of the timing works. When you turn the lug to the right, or clockwise, you are lengthening the lug. By doing this, the sear has to drop down more to slip under the lug and release the hammer. Turning left does the opposite, the sear has to move less to release the hammer. So, in effect, when you lengthen the lug, you have to pull the trigger farther to drop the sear more. When you shorten the lug, you have to pull the trigger less to drop the sear.

You can test for the firing point by pulling back the cocking rod until it engages the sear, and then slowly pulling the trigger until the gun "fires." This is the firing point of the gun. Be careful not to set the firing point too far forward, other wise you can fire the gun with the safety on, and that could be a bad thing (or maybe not!)

Step 4: Adjust timing rod length

This step of timing sets the point in the trigger pull where the marker recocks. Because of the nature of the Autococker, you want the recocking point after the firing point. If it's switched around, you have an open bolt gun, which defeats the purpose of buying an Autococker. Unless you're really skilled, you'll need your marker gassed up for this step. First, slowly pull your trigger until your gun fires and begins to recock. Pay close attention to where you start to hear hissing from your three way. If you hear your three way switching before you fire, you may need to lengthen the timing rod. To change where in your trigger pull the marker recocks, loosen the set screw with a 1/16 in. allen wrench closest to the trigger. **DO NOT REMOVE THE OTHER SET SCREW.** It holds the three way shaft to the timing rod, and having it slip off basically disables your marker. Now, with the set screw loosened, rotate the collar/three way shaft toward the marker to move the recocking point toward the front of the trigger pull, and rotate it away from the marker to move the recocking point toward the rear of the trigger pull. Tighten down the set screw (but don't crank on it), and test by pulling the trigger slowly to see where marker recocks. If your recocking point is now behind the firing point, your marker is timed.

If you have either a hinge frame or a 3-oring based 3 way (Shocktech bomb or Dye PMP) but not BOTH of these then you should be moving this collar in the opposite direction, ie rotate the collar toward the marker to move the recock point later in the pull, and rotate it away from the marker to move the recocking point sooner in the pull. You need to do this because of the fact that the 3-way or hinge frame works in the opposite manner of normal slide frames/3-ways. All 2k3 Autocockers and newer should time using this method.

There are two basic ways to time your trigger pull: very closely or the "correct" way. The "correct" way to time the marker is to have the recocking point well behind the firing point, probably about 1mm back at least. The firing point should also be at about the halfway point in the trigger pull. This timing minimizes blowback and/or completely eliminates it. However, it tends to be quite long and could be a problem for people that have a tendency to short stroke their 'cockers. The close pull has the firing point at about 1/4 the way through the pull and the recocking point at almost the same spot. This way can help reduce short stroking problems and can cause excessive blowback. However, if you time them close enough and the right way, you can produce what some would call "suction timing." What happens with suction timing is that excess gas being used to propel a ball out of the barrel actually pulls the next ball down into the marker, hence "sucking" the next ball into the breech. This would be an ideal situation in rapid

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fire and especially if you have a small amount of blowback in your gun. Not to mention you can say, "My 'cocker sucks balls!"

Personally I prefer the shorter timing method, although the "correct" method supposedly produces a more true ball flight, hence better accuracy.