

Matrix Rail Cutter ver. 13

Some important things to keep in mind before beginning at Step 1 below:

Use cutting oil on each pass. Amazon or Home depot has an easy to apply Oatey 30200 Clear Cutting Oil, 16-Ounce. Using cutting oil will make a significantly smoother cut. You don't want to cut dry. Do not use light oils like WD-40 that will dissolve the grease on the slide. Re-grease slide on all contact surfaces after every frame to prevent galling of the slide surfaces.

Make sure the top of the car and your frame is clean and free of chips before installing your frame. One chip can put the rail cut off several thousandths. Use a magnifier to check.

Advance the cutters by turning the adjustment knobs clockwise $\frac{1}{2}$ turn for every cut pass, then retract them $\frac{1}{4}$ turn counter-clockwise before returning the slider to start position. Failing to turn the knobs $\frac{1}{4}$ turn counter-clockwise before returning the slider can chip the carbide cutters

Each rotation of the cutter knobs produces .0125" cut depth. Depending on what your slide measures, you will be advancing the cutters approximately five complete knob rotations, which would produce a cut .0625" deep per side. Each cut pass done at $\frac{1}{2}$ turn (it is actually only $\frac{1}{4}$ turn of new cut depth because on the retract stroke you retract the knobs $\frac{1}{4}$ turn) of the adjustment knobs will result in .003125" of cut, so approximately 20 cut passes will be needed, again, depending on your desired cut depth.

The set screw that holds each carbide cutter was adjusted before shipping, and should not normally need adjustment. If there is any up and down movement, or if you are installing new cutters, carefully adjust the set screws located in the center of each cutter housing to keep the cutters pressed down onto the fixture to get an accurate cut. Cutters should not have any vertical play, but should still move back into housings when pushed in by hand (though with some effort) when the adjustment knobs are retracted. VERY IMPORTANT: If the set screws are too tight you will chip your carbide cutters on the retract stroke of the car. The cutters must be loose enough that you can push them with your fingers. Also, never reverse the drive screw when in the middle of a cut. That will also chip the cutters.

1911 Builders, Dlask Arms, and Maverick Arms, steel and stainless steel frames must be decked before cutting the rails. If the barrel seat has been cut when you purchase your frame, it needs to be decked, it's a compliance cut.

Step 1 - Video

Watch the instructional video. (Available on our website main page.) Also, check for updated written instructions available for download on our main page, www.matrixprecisionparts.com

Step 2 – Mounting The Rail Cutting Jig

Mount the rail cutter in a vise or use the four mounting holes to mount it to a board or workbench.

Caution: the rail cutting jig body has tight tolerances, so if using a vise, **clamp down low** (the first $\frac{1}{2}$ to $\frac{3}{4}$ " so you don't squeeze the jig body walls. If using the four machine bolts or lag bolts, use $\frac{3}{8}$ diameter and just hand tighten them to avoid racking the jig body.

Step 3 – Install Cutter Knobs

Carefully install the two threaded adjustment knobs. Turn counter-clockwise a bit to get them started straight. They aren't tight threaded, so if they aren't threading in easily back off and try again. They have very fine threads and easily cross threaded. Push the cutters into their sockets, and screw each knob in until you feel the cutter move. Stop and mount the frame next.

Step 4 – Mounting Your Frame

Place the frame in the car, dust cover facing away from the drive shaft. We no longer put a stop on the car because it isn't necessary and some frames wouldn't fit with the stop. To locate the frame on the car, place the frame on the car facing forward, and move the frame so the edge of the mounting hole in the car is at the rear edge of the magwell, about $\frac{1}{16}$ inch away so the bolt won't touch the frame, which can be seen by looking into the magwell. (The Sig car has a stop since all the frames are the same)

If your frame deck is slightly narrower than the car's frame seat, push your frame against one side of the frame seat and tighten the hold down bolt firmly. (Alternately, you can use shim stock to center the frame in the slider. .004 each side

works well for the thinner frames.) Rotate the shaft until your frame is in front of the cutters.

Step 5 – Locating the starting cutter position

Slowly advance the cutters until each one is just almost touching the frame. We recommend using a strong light and a magnifier to visually verify that both cutters are almost touching the frame. If you advance the cutters all the way to the frame it is easy to embed them slightly into your frame, and then your first cut will be extra deep and difficult. Next, back off the cutters counter-clockwise $\frac{1}{4}$ turn and then move the slide into the cutting position which is all the way forward, by turning the drive shaft counter-clockwise until the frame is clear of the cutters.

Another method that people are using, is to run the frame in the car past the cutters in the cut direction, and progressively sneak up on the frame with the cutters, until both cutters are just barely cutting the sides of the frame. This allows you to be certain that both cuts are started at the same depth. An added bonus is that you will be able to check to see if your frame is parallel to the slide, by observing this skimming of the surface of the frame by the cutters, and making sure it is even, from front to back of the frame. By loosening the frame and rotating it slightly in the needed direction, you can get a straight cut (front to back).

Step 6 – Cutting the Rails

Next, back off the cutters counter-clockwise $\frac{1}{4}$ turn and then move the slide into the cutting position which is all the way forward, by turning the drive shaft counter-clockwise until the frame is clear of the cutters. Squirt cutting oil on the frame above the rail cut so that it runs down into the cut as you are cutting. Turn the cutter adjustment knobs clockwise $\frac{1}{2}$ turn (which will really only be $\frac{1}{4}$ turn of new cut depth because of the $\frac{1}{4}$ turn counter-clockwise for the retract stroke of the car) and rotate the shaft, pulling the frame backward to make your first cut pass. Remember to always retract the cutters $\frac{1}{4}$ turn counter-clockwise after your cut, and before you return the slider to the ready to cut position. Keep track of the number of cuts or full rotations so you know how deeply you have cut. Calipers can also be used to measure the rail depth at back of frame when it is in rearward position.

As you are cutting, take frequent measurements, it is very easy to cut too deep. Also, when you get close to the final dimension of your slide, you can take smaller cuts to sneak up on your final fit. Taking smaller cuts at the end will also give you a nicer finish on the rail cut. If you find it difficult to measure the frame, you can stop and remove the car from the jig (leaving the frame in the car) to get a good measurement of your progress using a caliper micrometer.

IMPORTANT:

Some people make the mistake of testing their slide fit, and then when it doesn't fit, they continue to cut deeper, ending up with rails cut too deep. Please keep in mind that some slides need WIDER rails, not deeper, even with a .119 cutter.

We have had a couple cases where the bolt that holds the frame down contacts the threaded drive rod and strips the threads on the rod. Apparently some frames have a different magwell cutout than standard. A quick check is- after installing the frame in the car and tightening down the bolt, make sure the threaded drive shaft turns by hand, if it's stuck, loosen the hold down bolt and see if it now turns. If you determine the bolt is contacting the threaded rod, add a washer under the bolt and re-check.

For Limited 10 Frames- Limited 10 recommends cutting the rails slightly higher than a normal 1911, about .005 to .008. Here is the response Mosin received from Limited 10:

"2011 frames have a shorter deck height than a standard 1911. We try to keep ours at .445 to the middle of the slide stop hole, minus a few more since we relieve the top of the frame so most slides will fit with a few thousandths clearance. This is inline with every 2011 frame on the market (which measure about .340-.343 depending on brand//batch). 300-.320 is also a common depth for the feed ramp, depending on the builders philosophy. Many gunsmiths have the ramp sit on the frame and use it as an impact surface, or with a small clearance, and many just hog it out. .300 allows the builder to choose for a majority of barrels on the market."

So, for customers building a 2011 with our Rail Cutter, we will provide free shims, a .003 and a .005, just email us and we will send them to you. These shims put the frame up higher in the jig, thus the rails will sit higher, with the option of .003, .005, or .008 higher as you so desire.

We have had a couple cases with 1911 frames where the bolt that holds the frame down contacts the threaded drive rod and strips the threads on the rod. Apparently some frames have a different magwell cutout than standard (**especially the officers version**). A quick check is- After installing the frame in the car and tightening down the bolt, make sure the threaded drive shaft turns by hand, if it's stuck, loosen the hold down bolt and see if it now turns. If you determine the bolt is contacting the threaded rod, add a washer under the bolt and re-check.

BE SURE TO GREASE YOUR RAIL CUTTER SLIDE AFTER EACH USE, WE USE WHITE LITHIUM