Installation Instructions for the Extreme Service Thumb Safety

These instructions will show you how to fit and install the Harrison Design Thumb Safety to a properly manufactured 1911 pistol. It is assumed that you already know how disassemble and reassemble your 1911 pistol, possess common gunsmithing hand tools such as files, stones, magnifiers, etc. and know how to properly employ them.

WARNING!

Before beginning to work on your pistol, unload it by removing the magazine, ***then*** remove any ammo from the chamber. Inspect the chamber and magazine well to insure all ammo has been removed, ***then*** put all live ammo in another room.
Use safety glasses as you will be dealing with springs under compression.

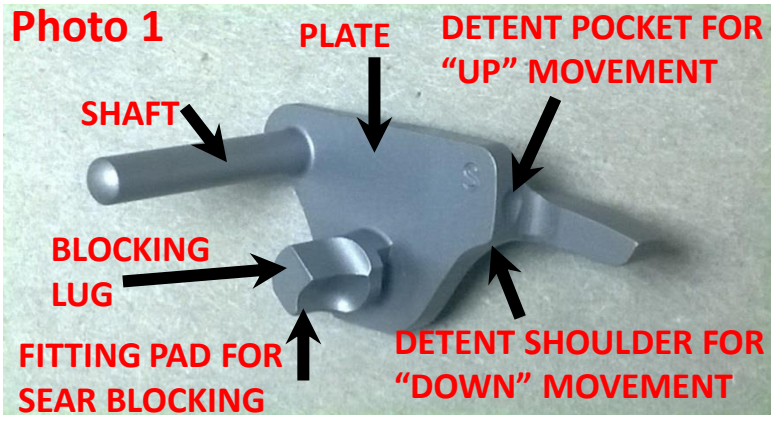
BEFORE YOU GET STARTED

You will need a good light, a magnifier, tools necessary to detail strip your pistol, and assorted files and abrasives to do the fitting with. Note that all directional references, (up, rear, left, right, etc.) are given assuming you are holding the pistol (and any part in question) as if it were being fired.

The H-D safety is made toward the high side of dimensional tolerances, so a nice fit can be obtained even in frames that are out of spec around the window.

HOW TO INSTALL

1) Detail strip the frame. Disassemble the frame to the point where the only small parts left on the frame are the ejector, plunger tube and grip screw bushings. Remove the safety from the bag and familiarize yourself with the parts of the safety according to Photo 1. Familiarity with the parts of the safety will help you as you go through these fitting instructions.



2) Begin by inserting the shaft of the safety into the pivot hole in the frame. Turn the safety so that the blocking lug is hanging off of the rear of the frame tang, so only the shaft fit is being tested. The shaft should slide cleanly in to full depth. Should your frame have a too-tight pivot hole, open it slightly by using a chucking reamer that is the same decimal size as the shaft diameter. Turn it slowly with a variable speed hand held drill.

PRO Tip – *When I fit a new thumb safety, I will often bead blast the back side to create a matte silver surface that will then serve as a spotting aid, showing contact with the frame, etc. This is especially useful on a blued safety to help you see what's going on.*

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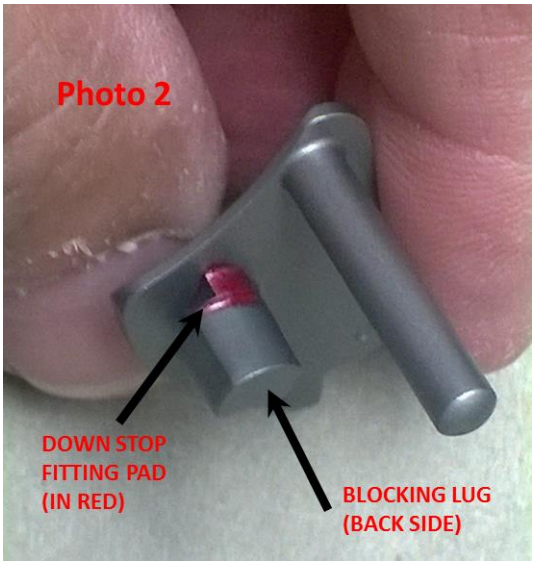
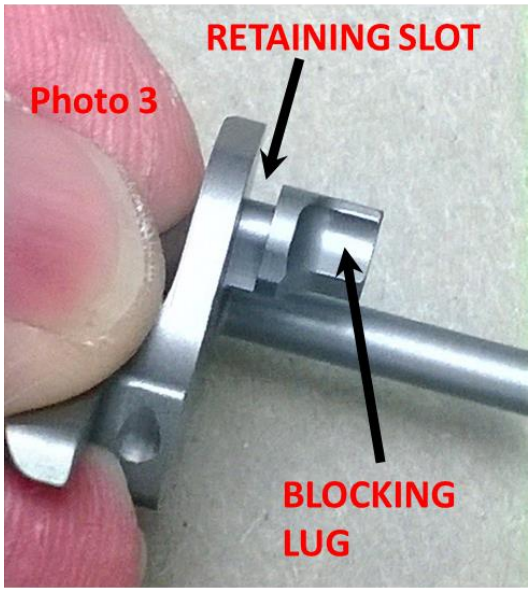


3) If your safety will not fit into the window due to interference between the down stop and the edge of the window, color the fitting pad and test again to see if you can find where the contact occurs. If the fitting pad on the rear face of the blocking lug (Photo 2, highlighted in red) is stopping it from going in, you may have to file a few strokes from the down stop fitting pad to get the safety to enter the window, if you have a tight window opening. If you find interference, remove material from the thumb safety as needed to gain free movement. Enough extra material was left on this fitting pad to allow you to correct for frames with worn or mis-located frame windows and also let you control the downward stopping point, so that your safety's plate doesn't hang off the edge of the frame. If you have a frame with a perfectly sized and located window (unusual nowadays) you may find yourself filling the down-stop fitting pad completely away. This is the normal configuration of the blocking lug. It has been really rare that I have needed to file it away.



4) At this point, the safety should seat completely into the frame. It should swing up and down freely. If it is tight, or won't move at all, the cause is probably a bind between the edge of the frame window and the width of the retaining slot (Photo 3). Before you start any filing, hold the assembled frame and safety up to a light and see how closely the plate and the frame are to each other. You should be able to slip a piece of paper between them, but not much more. If the gap between the safety plate and frame is excessive, check to see if there is adequate chamfer at the edge of the frame pivot hole to allow for the radius found at the joint between the shaft and plate.Do not alter the radius on the safety, instead if you need more chamfer, increase the chamfer with a 45° countersink. If you still have bind after confirming the plate to frame gap is about that of a piece of common note paper, then perform Step 5.

5) If the stand-off gap between the plate and frame is reasonable and the safety still will not swing up & down or is stiff, then the lip of the frame's wall may be too wide for the notch to fit over. You may need to widen the slot by filing away a little material from the inboard side of the slot that is between the safety's blocking lug and the plate, as shown in Photo 3. Material should be removed from the side of that slot on the lug's side of the slot. I use a Grobet 6" flat needle file with one edge ground smooth. The inner edge of the notch is all that need be cut and the bulk of the removal needs to be done in the back half of the slot (the end closer to the shaft). Test fitting and additional filing may be necessary to gain free movement. Inspection of contact patterns with a strong magnifier will reveal where contact is being made.

PRO Tip – *I always use a machinists vise, or some way of holding the safety still while I file on it. That's the only way you can really control what you're doing*.

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6) Now that the safety will swing up and down to the normal limits, verify that the forward edge of the safety's plate (near the detent pocket) is not rubbing on or hitting the back end of the plunger tube and that the safety's thumb shelf is not rubbing or hitting the outboard side of the plunger tube. With the safety in place, install the slide and see that the top front corner of the plate clears the bottom edge of the slide by .020" or so (Photo 4). If it doesn't clear, you can do two things to clear it. Confirm that the safety is really going to full down position and it correctly lines up with the plunger. If it is still a little high, you can remove a few more file strokes from the Down-Stop fitting pad. If the safety is as low as you want it to go, then you can file from the top corner of the plate until you get clearance and then reshape the corner into it's original appearance.

7) Now add the plunger spring & pins, the grip safety and the thumb safety to the frame and slide. Work all parts through their range of motion, checking for tight spots. Assuming everything moves as it should, return the frame to it's stripped status. Add the trigger, mag catch, ignition set, sear spring and MSH. Leave the plunger assy, and grip safety out at this point. Cock the hammer to the full-cock position. Do not dry fire your pistol with the slide removed as this will batter the frame. With the hammer at full-cock, try to insert the safety. It should go in part-way and stop when the edge of the fitting pad on the blocking lug makes contact with the side of the sear. You can see this when you look through the opening where the grip safety goes. Mark the side and contact face of the blocking lug as shown in the Photo 5 with a Sharpie marker to better help you see the points of contact.

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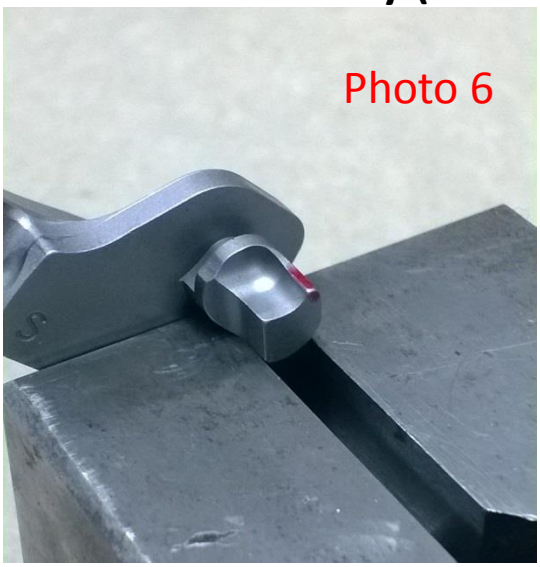

8) Hold the safety in your vise by the shaft, resting the blocking lug on top of the jaws as indicated in Photo 9. File the fitting surface in Photo 6 marked in red parallel To the top of the vise. I use a 6" mill smooth file and I watch the progress of removal, comparing it to the scuffs On the side of the fitting pad made by contact with the sear.
Stop periodically and test fit the safety into the gun, Observing the interface between the fitting pad and the Sear leg. Once your safety will just start to enter past the Sear, file one stroke and re-test until it will go in and flip up To the "On Safe" position with only normal effort pushing up.
Test the blocking engagement by pulling back on the trigger with the safety "On Safe". No movement to the sear should occur. Release the trigger, flip the safety down to "Fire" . The hammer should stay cocked. Pull the hammer back past full cock slowly while listening closely. You should not hear a tiny click, which would indicate that the sear had moved In relationship with the hammer hooks.
If either of these tests fail, you have most likely filed too much material from the fitting pad. Your choice is to either start again with a new safety, or have a qualified TIG welder, to weld a bead of weld on to the fitting pad and file it down until a correct fit is achieved.

9) Once you have the sear blocking lug fit to the sear, remove the safety and install the plunger assembly, then reinstall the thumb safety. Work the safety up and down to evaluate how stiff it is and if you want to make any changes in how firmly it snaps on and off safe. The stiffness of it flipping up or "on safe" is controlled by the detent's depth and how the ramp that is on the underside of the detent is shaped. I will work on the depth with a rotary tool and a 1/16" and a 1/8" carbide ball-shaped burr, as well as abrasives. A very minor change can make a big difference, so check your work often. See Photo 1 for location of detents.

The "down" stiffness is controlled by the size of the radius that's on the front edge of the plate, just below the detent. The stiffness can be reduced by reshaping this to a larger radius and increased by reshaping it smaller. Obviously, the plunger spring has a bearing on both the up and down stiffness. I always install a new Wolff plunger spring before I make and physical changes to the detents.

You should now have a correctly functioning thumb safety. The last thing I do is to look for any rub points around the back edge of the plate and the thumb shelf and soften or reshape as needed. If you prefer a different shape on the thumb shelf, you can readily shape it to whatever feels good to you. Thanks for purchasing a Harrison Design thumb safety. I hope you enjoy it!

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