

Benelli MP95E Target Pistol: Exploded Trigger Repair

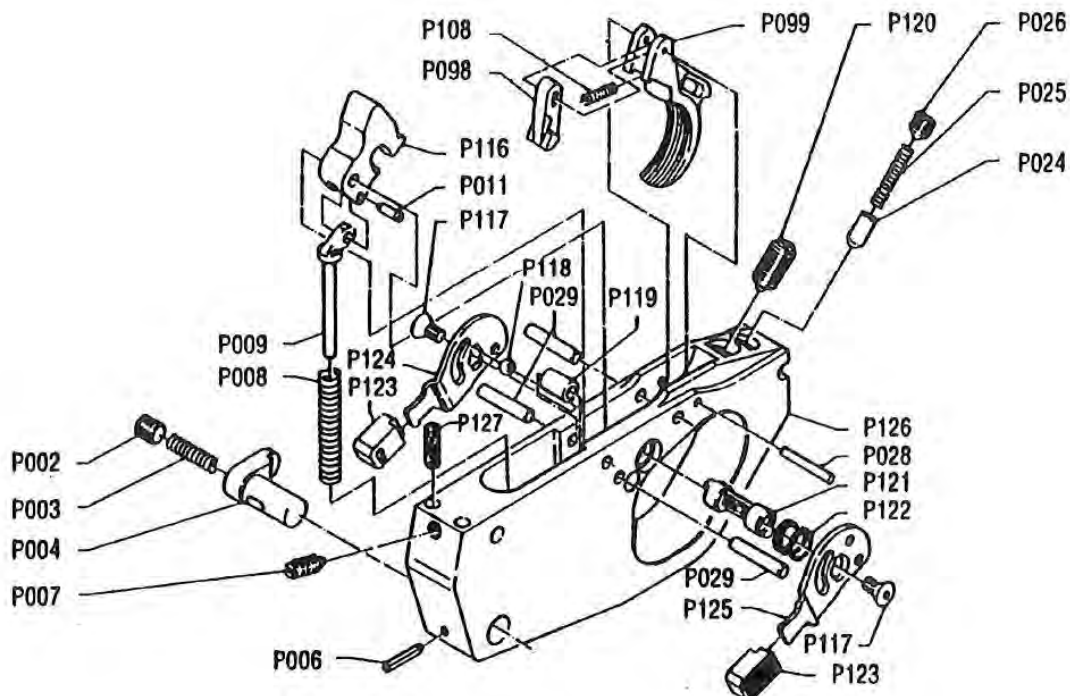
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Introduction: The Benelli MP95E design is approaching 30 years old. Some of the older pistols can suffer a catastrophic failure when the bottom of the plastic trigger housing becomes brittle and/or stressed over time. Especially if the pistol is stored cocked (or even with the dry fire block/plug in place), the hammer spring can break out through the bottom of the trigger assembly:



This document will describe the steps required to disassemble a deceased trigger, and install all the parts in a new trigger housing.

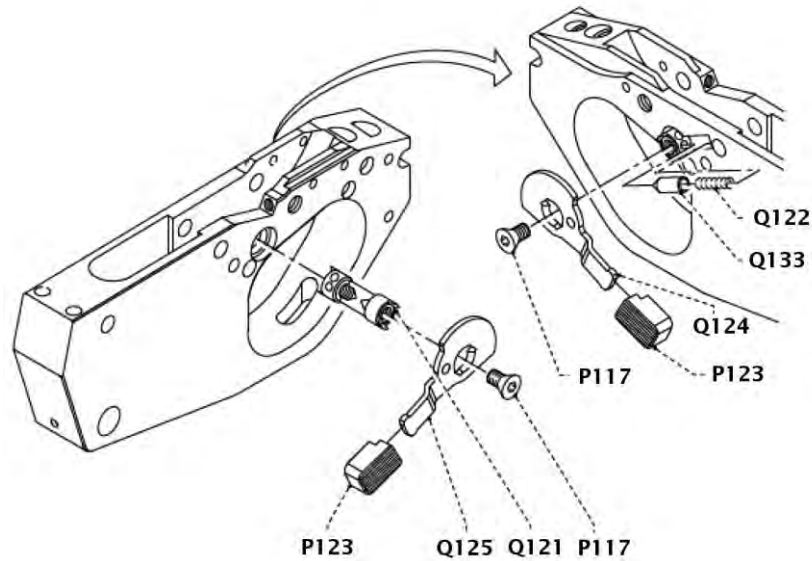
Getting Started: Here is a diagram of the parts of the older MP95E trigger assemblies (which is the vintage most likely to fail). This version doesn't have the newer disconnecter lever on top. This diagram appears to be for a slightly older version than any I've encountered. The safety detent parts aren't correct, the safety levers are the wrong shape, and it shows the cross pin for the hammer & safety as being identical to several of the other large cross pins (#P029). The correct cross pin is actually longer, with one end ground flat (listed as part #129Q in another manual).



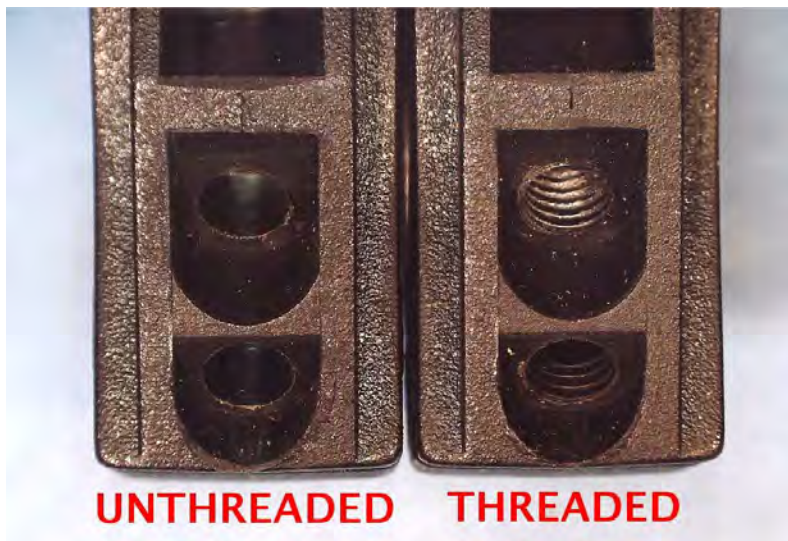
Here's a diagram with the correct safety components:

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Step 1 is to obtain a replacement trigger housing. You want to examine it carefully before you get started. The first thing to check is if yours comes threaded for the three screws (below, left). If it's not threaded, it's not the end of the world. Do NOT use regular cutting taps to thread the holes. The screws will be way too loose to stay in place. The holes are sized for the threads to be swaged/pressed into the plastic, rather than cut. In the righthand photo, you can see where the plastic has been pushed back out of the holes by the forming process. There are special taps to do this, but to keep the screws tight, the factory apparently uses actual screws (which are smaller than a tap) to form the threads.



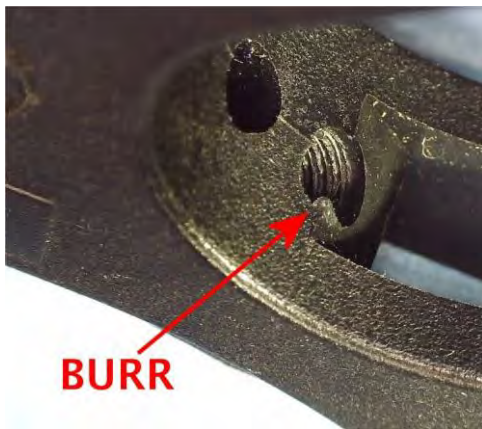
There are a couple of ways to go about threading the holes. You can just use the old screws, but it can be tricky to get them started going in straight. This is especially true for the 1st stage adjustment screw, which is quite short. I used 2 cm long hardware store socket head cap screws (M4x0.7 mm & M5x0.8) to help get the threads started straight, and then used the original trigger parts to finish the threads. I had to thread several housings, and I turned down ~ 1 cm of the end to be a slip fit in the holes and act as an

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alignment pin (see Appendix A). Even when pre-threaded, the plastic is soft enough that it is VERY easy to start the screws in crooked, so align them carefully before you go very far.

Once you have a housing with threads, check for burrs, and remove any that might interfere with the smooth operation of the trigger. All of the housings I examined had a large burr on the inner end of the 2nd stage adjustment screw, and several of them had burrs inside the front take-down pin holes. There can also be burrs around the holes for the safety shaft.



To make it easier to install them to about the same location in the new housing, I took photos of where the screws were positioned in an original housing. The left photo shows the two trigger adjustment screws at the back, the middle picture shows how far the 2nd stage adjustment screw sticks down behind the trigger, and the photo on the right shows the location of the take-down pin detent ball.



Before you start taking apart your old trigger, take a moment to compare your trigger adjustment screws with the photos to see if you may need to modify their positions slightly when you reassemble things.

In most cases, it's best if you take a part or assembly out of the old frame and install it in the new one before proceeding to the next part/assembly. That minimizes the odds of getting interrupted and having to figure out which parts go where. There are some trigger/hammer parts where it's easier to do things in a specific order, which will be described below. You want to clean & lubricate all the pieces as you go along. I have some actual Benelli oil I use, but any good, light gun oil should be fine.

In the plastic MP95E frames, the pins are only a light press fit, and can be pushed in or out of place with a punch by hand. If you need to use a lot of force to drive out or install a pin, something is wrong. To

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avoid the punches slipping off the polished round ends of the pins, Brownells has special “cup tip” punches that work extremely well. I found that their #3 punch (1.8 mm dia.) was small enough for all the 2 mm pins, but large enough to work OK on the bigger pins as well.

Parts to Transfer in A Specific Order:

Step 1) Removing & installing the hammer assembly: With the housing broken, the hammer cross pin is under no force, so it should come right out of the old trigger. If the hammer is cocked, you will want to uncock it first. However, without the force of the hammer spring, the disconnecter will prevent the trigger from releasing the hammer. Make sure the safety is off. If the hammer is cocked, the hammer strut (#P009) will be sticking out the bottom of the housing. Press the pin down on a hard surface until you see the disconnecter lift. You can then pull the trigger and release the hammer. Push out the cross pin, remove the hammer and spring, then clean and lubricate everything.

Installing the hammer in the new housing is the only part of the re-build process that requires much force. By doing this step first, nothing else is in the way. You will need to push down on the top of the hammer fairly hard to get the pivot hole aligned with the holes in the frame. The hammer pin goes in rounded end first, from right to left, so the flat end ends up on the right side. You want the pin to stick out roughly equal amounts on both sides. The final lateral position of the pin needs to be set once the safety is installed (described at the end of that section).

Step 2) The 1st stage trigger adjustment sleeve/cup (part # P024) it held in place by the trigger. You want to remove the screw, spring & sleeve (#'s P024, P025 & P026) before you take out the trigger assembly to avoid launching the sleeve & spring. Clean and lubricate the parts, but don't install them in the new housing until the trigger is in place (see Step 5).

Step 3) There is a fat pin (part #P029) just in front of the smaller trigger pivot pin. (Note: the same part # pin is used in several locations). If you take that pin out before removing the trigger assembly, it takes a lot of the tension off the disconnecter spring, so it's less likely to go flying. Push the pin out of the frame with a punch, but be careful when you remove the punch to prevent the disconnecter from flipping up and launching the spring. Set the pin aside for now.

Step 4) Removing and installing the trigger assembly: With the large cross pin removed, you can gently lift up the disconnecter, and remove the spring. At this point, nothing should be under any force, and driving out the trigger pin is straightforward. Remove the disconnecter from the trigger, then clean and lubricate the trigger, disconnecter and spring. I've found quite a bit of caked on grease in the disconnecter spring holes, and the grooves on the front of the trigger tend to collect grime. Besides a coating of oil on all the parts, there are a pair of hooks on the front of the trigger that should get a small dab of grease.

In order to install the trigger parts in the new housing, you will need a short (slightly less than 8 mm) dummy/slave pin to hold the disconnecter & spring to the trigger while you slip everything down into the frame. The shank of a #48 drill bit is 1.93 mm in diameter, and can be cut with a Dremel abrasive disk to make the required pin (see Appendix A). Once the trigger assembly is in place in the new housing, press the pivot pin through the frame, which will eject the dummy pin out the far side.

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Step 5) Re-install the remaining trigger loose parts: Hold the disconnecter down and towards the rear, and re-install the large cross pin. You can then install the 1st stage pin, spring and set screw, being very careful to get the screw started in straight. Refer to the picture on Page 3 to see roughly how far in it needs to be located.

Step 6) Transferring the 2nd stage trigger screw: You can now remove this part (#P120) from the old housing, then clean and oil it. I've run into some where the spring-loaded ball "sticks" slightly. This can usually be corrected by putting a drop of thin oil on the top of the ball, and then repeatedly depressing the ball to loosen up any grime or corrosion. Once you've got it working smoothly, install it in the new frame, taking care to get it started straight into the threads. Use the photo on page 3 to get it in roughly the right position.

Step 7) Transferring the forward cross pin & sleeve: Drive the pin (#P029) that holds the sleeve in front of the hammer (#P119) out of the old trigger housing. Remove and clean the sleeve. At this point, with the trigger component in place, you should be able to cock the hammer, which makes installing the sleeve & pin in the new housing very straightforward.

Step 8) Transferring the safety components: The screws that hold the safety together also have thread-locking compound on them. Fortunately, you only need to remove one side. I prefer to take off the righthand lever, so you have easy access to the detent parts. You want to use a good quality 2 mm hex key that fits the screw well, and it should come out without a lot of drama. I've had no problem getting the screws loose on 4 different triggers, although one shooter had a battle that required drilling the screw out. If you got that route, I'd invest in a left hand drill bit that will try to back out the screw once it warms up. Once you have the righthand lever off, you need to remove the remaining safety parts. The detent pin & spring are under considerable tension, and will go flying quite a way if you aren't careful. With the hammer pin removed, you can rotate the left safety lever up past the "Safe" position, which pushes the detent pin out of the dimples in the safety shaft. Put a piece of paper towel on top of the detent parts, and hold them down with a thumb. At that point, you can wiggle the shaft out of the left side, and the detent pin and spring will just expand into the hole where the shaft was. Clean the various parts, and put a thin coat of oil on the shaft & levers to minimize rust. Depending on how sharp the safety detent pin is, you may also need to remove any small burrs if it dug into the shaft as you wiggled things apart.

Assuming you managed to get the right side screw out OK, slide the safety shaft (#Q125) with the left side lever through the new frame. Put a dab of grease onto the large dimple for the detent pin, and oil the pin and spring. Put the detent spring into the pin, and seat the point of the pin into the dimple. You need to compress the spring, and then push the free end of the spring down into the slot in the frame. You can use a small screw driver to compress the back of the spring. Doing this inside a clear plastic trash bag will eliminate the risk of launching the parts into Never-never land if you slip. Once the detent is securely in place, you can install the right hand lever & screw. If you don't use the safety, you might be able to rely on the residual thread-locker to keep the screw in place. If you want to make sure it doesn't loosen up, I'd clean the threads with solvent and use a tiny dab of purple LocTite (#222).

Once the safety is installed, you want to check the position of the hammer pin. The flat end needs to be close to flush with the side of the right hand safety lever, which means the round end will stick out a bit further on the left. This slight offset is necessary to make sure the flat end doesn't hang up on the

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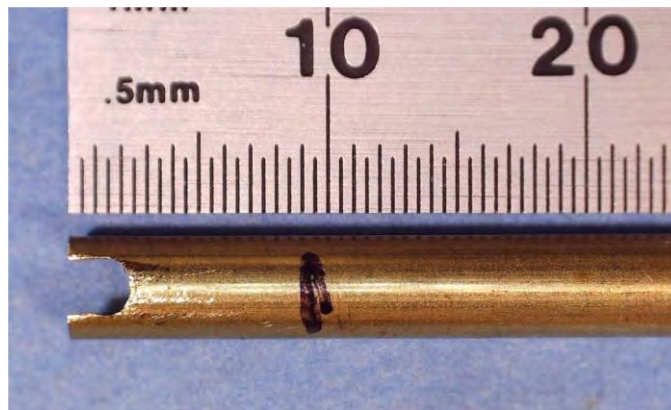
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clearance cut in the frame. If you have any trouble getting the front take-down pin installed when you re-install the trigger, this is usually the problem.

At this point, all of the parts that need to be transferred in a specific sequence are in place. The remaining pieces can be done in pretty much any order.

Step 9) Removing & installing the magazine catch: In order to remove the magazine catch parts, you need to push the roll pin (#P006) from the front, through the housing and into the magazine well. You want to use a punch that is long enough to get the pin all the way through the catch in one smooth operation. If you have a small roll-pin punch with a nib on the end, that would be ideal. Caution: If you stop part way through, the internal spring (# P003) can pop past the end of the roll pin, and the spring will be damaged when you try to drive the roll pin the rest of the way out. You will need to remove the screw (#P002) from the catch in order to reassemble things, and you may want to start by taking it out so you can see what's going on inside with the roll pin and the spring. They used thread-locking compound on the screw, but they come out fairly easily.

Install the magazine catch in the frame: The spring (#P003) gets held in place by the roll pin (#P006). That means you need to compress the spring far enough to get the roll pin installed, but the tool you use to compress the spring can't block the path of the roll pin. I suspect you can do this with a small screw driver, but you will need good light to see what is going on down in the hole, and there is a risk of launching the spring if you slip. Because I had a number of these to repair, I made a small tool out of a couple inches of 5/32" OD thin wall brass tubing to make the process fairly fool proof:



It only takes about 5 minutes with a needle file to cut a suitable notch in the end to clear the roll pin. The black mark is a reference so you know how far to compress the spring. If you only have one trigger to do, I'd try using a screw driver, but I'd work inside a clear plastic bag in case the spring tries to escape. Appendix A has a drawing with dimensions for a machined tool that has a shoulder to get the depth right.

I use the edge of a bench to put the pins in, holding the trigger in one hand and the spring compression tool in the other. You can start the process by pushing the roll pin in just far enough so the tip isn't quite sticking into the area where the spring goes. Oil the spring, insert it into the catch, compress the spring and push the roll pin into place. The catch gets used a lot, and is subject to a lot of vibration, so I think fresh thread-locker is a good idea. Clean the internal threads of any oil from the spring with a cotton

Benelli MP95E Target Pistol: Exploded Trigger Repair

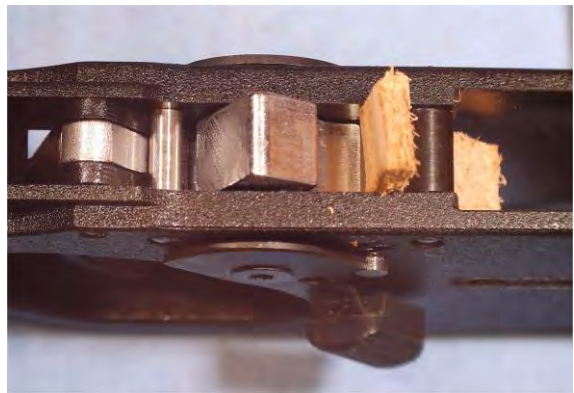
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swab & some solvent, clean the set screw, and apply a small dab of LocTite #222 to the screw. You just want to screw it in far enough that the end is flush with the surface of the catch.

Step 10) Try to transfer the rubber dampers: The biggest battle I had with several triggers was getting the two front rubber dampers out. They are hard to get a good grip on without chewing them up. Pushing the top back & forth sideways can help to work them out. If you are lucky, they will put up a lengthy fight, and then at some point, they just pop out. If they get damaged, you can replace them with 9 mm long pieces of 1/8" diameter O-ring cord stock (McMaster Carr #9407K12). A single edge razor blade works well to cut the cord square. These were the only parts I couldn't always re-use from the old housings. You may want to just order a pair when you get your new housing.

Step 11) Transfer the take-down pin detent screw (#P007): After you remove it from the old housing, depress the ball a few times to make sure it isn't sticking. If it does, work a little grease into the ball end and depress it a bunch of times until it feels OK. A lot of times, it will stick a little the very first time after it's been sitting, and then it frees up. As with the other screws, be careful to get it started straight into the new housing. You want to be able to see the tip of the ball sticking a little ways into the take-down pin hole (see photo on Page 3).

Adjusting the Trigger: Once the trigger is reassembled, the last step is to re-adjust the trigger pull to your liking. One of the nice features of the Benellis is that you can do this with the trigger assembly out of the pistol with all the screws all readily accessible. In order to save wear & tear on the trigger frame, I always use an 8 mm wide strip of leather tucked behind the forward cross pin to cushion the hammer fall (see photo). In the MP95E, there are really only two adjustments: 1) the total firing pull force, controlled by the 1st stage screw, and 2) the starting point/length of the 2nd stage, set by the position of the 2nd stage screw.



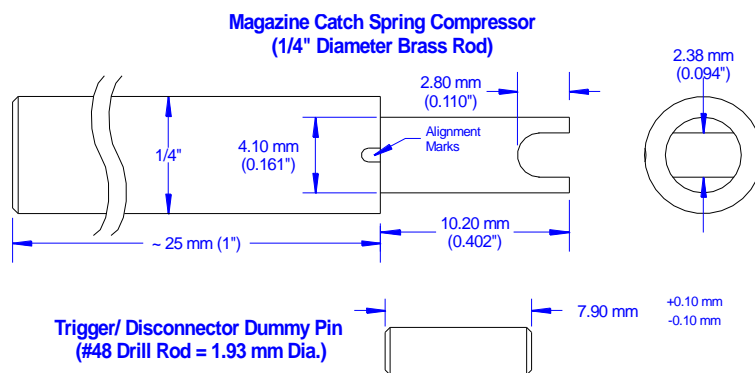
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Appendix A: Tools for MP95E Trigger Housing Replacement

The college team I help coach has ten MP95E's, most of them over 20 years old. To make the job of rebuilding exploded triggers easier both for myself and future team "armorers," I decided it was worth the effort to make a set of nice tools to make the job easier & more fool proof. I don't expect there are many people who will ever have to do more than one or two, but I figured I'd include my drawings just in case.

Tools For Assembling Triggers: These are also useful if you ever need to repair or replace certain parts in a functioning trigger, for either MP95E or MP90S pistols. The dummy ("slave") pin to reinstall the trigger & disconnecter is pretty straight forward. The magazine catch installation tool has a shoulder at the right location to park the notch at the correct depth to allow the roll pin to slide in smoothly. There also marks on the handle to help align the notch with the path of the roll pin. I cut the slot and the alignment marks with a 3/32" ball end mill.



Tools for Threading Trigger Housings: If you have more than a few housings to replace that need threading, here are the dimensions for making "forming taps" to get the threads started. They have a turned down section to guide them into the holes straight. In all cases, you want to do only about 3/4 of the length of the final thread, so the actual screws will finish the job and remain tight. The first stage screw (lower rear) is quite short, so you only want to "cut" ~ 3 or 4 threads.

