Gamo Stutzen

Below find the procedure for stripping down and tuning a Gamo Stutzen. The basic process should be the same for all Gamo's and for that matter to a certain degree all springers.

I decided to strip down my Stutzen because I was finding it increasingly difficult to get accurate groupings and was starting to get pellet scatter vertically on the target. So I decided maybe a tune is in order as something must be array. The information contained in this document is sourced from all over the web and also a little bit of my own. So please do not think I am the clever one.

First step - Work Space:

Find a place to work. You don't want to be working on a workbench or somewhere unsafe where you may scratch you stock. Synthetic stocks obviously excluded from this. Also you want open space to enable you to place the parts without then going missing or getting in the way. Also you must be able to store the parts if you do not have a few hours to work on the rifle. Least you want is for it to be lying on the kitchen table for a few days! If you are a bachelor feel free to use the lounge floor ☺ You would also need the following items:

1. Moly Grease(try get 60 or higher – highest I could find was 50) ;
2. No-detergant 30W motor oil(500ml/1pnt will be fine);
3. Red Rubber Grease – (Thanks airrifle.co.za)
4. A new seal (trust me, if you go this far you may as well replace the seal);
5. A new spring if you want to go the full-Monty;
6. A few sheets of various grit Water Paper 100, 200, 400, 800, 1600 (water paper is an indispensable item – go get some and keep them in the garage);
7. A Dremil tool – if you have;
8. Needle files;
9. Spirits of some sort – not the ones you drink.. or may be some of that as well;
10. A spring compressor of some sorts.
11. Pin punch/s.
12. And screw drivers/ allen-keys/ etc

2nd step - Taking apart the rifle:

1. Take one last photograph of her as she will never be the same again. Also take few shots so you can compare before and after.

2. Remove the scope and place it somewhere safe. Your scope, even though it will stand up the a springer is still a sensitive piece of equipment.

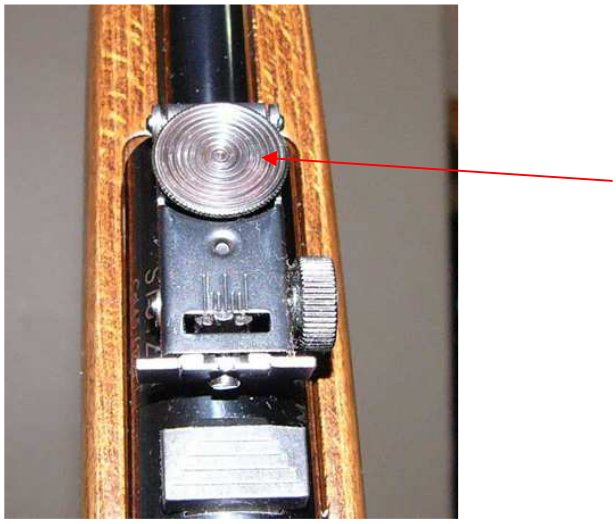
3. Remove the trigger guard. This is usually held in place by a screw into the stock (front) and a bolt through the stock into the receiver (the metal tube housing the piston and spring)

4. Now undo the screws holding the stock to the receiver and barrel. Mine has a screw 2 inches in front of the trigger guard and also a bolt under the cocking lever.

5. Now slowly separate the stock and barrel. On the Stutzen I first had to release the cocking lever from its locked position as there is stock between the lever and the barrel.

Ps: Take these plastic bushes that are on the cocking arm off else you will lose them somewhere along the line.. They are loose and just pull off.

6. Place the stock somewhere safe! Again, it will be sad to scratch it.Now remove the sights – if your rifle has any. You do not want these to break while you are working on the rifle. On the rear sight of the Stutzen, just unscrew the elevation adjuster. Here still pictured before taken from the stock.

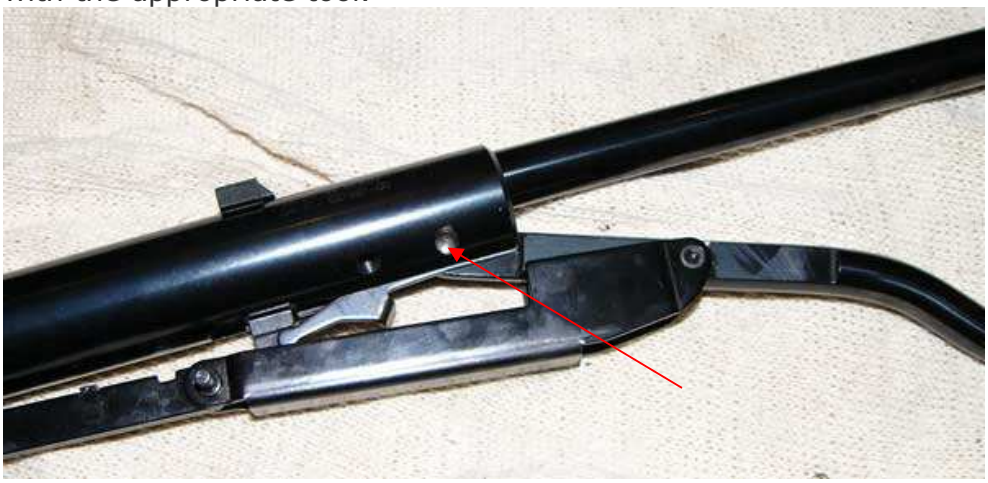


The sight will then be able to flip forward revealing a small bolt attaching it to the barrel. Unscrew and lift it off. Put it in a safe place.

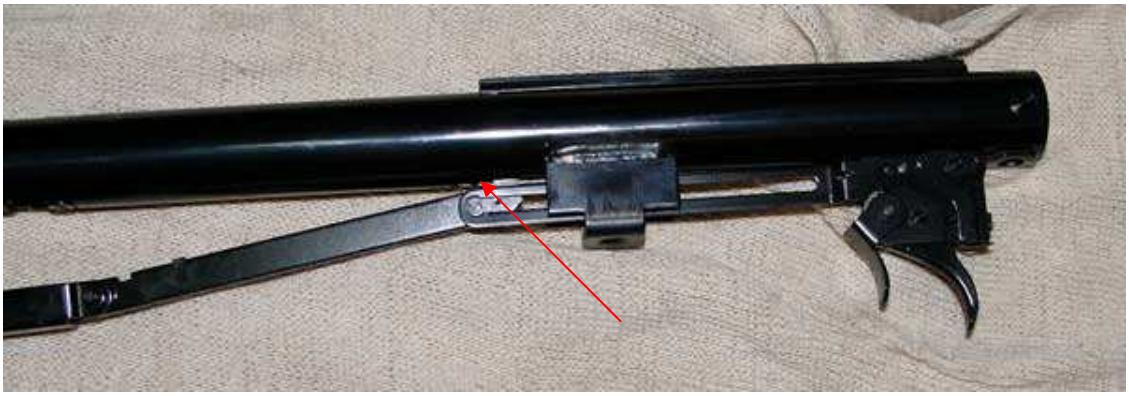
The front sight, if it is a shroud type, usually has two grub screws underneath the shroud. Undo and slide the shroud off the barrel. Place it with the rear sight.

7. Remove the end cap at the rear of the receiver. It is held I place by the trigger assembly screw. The big round thing that looks like a nut with two flat sides behind the trigger assembly. Undo this screw and remove the end cap.

8. Now you need to remove the barrel is it is a break barrel or the cocking lever for under-lever. The barrel and the cocking lever will be held in place by a pin or a bolt. If centre pin please knock it out on an appropriate surface with the appropriate tool.



9. Remove the barrel/lever from the action. You will find on the bottom of the receiver a groove for the cocking arm to operate in. in the front it will have a round hole. Remove the cocking arm by sliding the foot to this hole and pulling it out.



10. Now turn it 90 degrees with the sliding arm and you will be able to remove it. On the stutzen, due to the way the mounting bolt mounts the stock to the receiver, I have to remove the trigger assembly 1st. To remove the trigger assembly slide it rearwards in the receiver and pull it out through the recess at the rear bottom of the receiver.(right in front of where you unscrewed the trigger assembly screw.

11. Now for the sensitive part. The removal of the spring. I suggest you use a spring compressor. I however did not have one available and had all intentions of going to a shop so they could just remove the spring. I want to emphasize, it is extremely dangerous to remove the spring without the rifle in the appropriate clamp. I however tested the preload on the spring of mine and found it to be only a few pounds. I placed the receiver vertically on a stable surface such as a carpet on a small spacer(I used a motorcycle bar-end). I placed body weight on the top to the point where the pin becomes loose and pushed the pin holding the rear stop in place out. I then SLOWLY release pressure so that the spring could expand. I want to stress again. This is one part you can get seriously hurt in. If you are unsure have it removed professionally. Also, if when you are putting pressure on it and the pin is not loose, then do not proceed. If you have to knock the pin out you could easily knock the receiver off the spacer and cause yourself injury. If you are hell-

bent on doing it this way I suggest you get someone to help pushing out the pin so you can focus on keeping the rifle secure.

12. You can remove the guide, spring, tophat and piston now. Everything but the piston will just "fall out the back" so to speak. The piston you can push backwards gently with a screw driver in the cocking slot. Be gentle so that you do not scratch anything.

Ps: This seal has seen better days.. The scattered groups are starting to make sense…

13. Now please pat yourself on the back and have some of the spirits (the ones for drinking! – the others are poisonous)

3rd Step – Cleaning

This step will have to be completed once you are completed with the tune but needs to be done now to keep you clean and also show you where you need to work. Wash every thing in the alcohol. Use a brush for the tough parts and

a 20mm wooden stick with a, soaked in alcohol, cloth around it for the receiver. Do not use metal rods/ screwdrivers/ etc to clean. This will damage the surface. Take the trigger assembly and place it in a cup of alcohol and leave it there for a hour or so. Dunk it then and use a small brush for the hard to reach places ☺

4th Step – Tuning

De-burring in a nutshell is only the removal of metal ridges where they can in fact make contact and be a hindrance to other pieces.

1. Take the piston. Remove the seal by using a device such as a screw driver or knife to pry it off. Take you 200 grit water paper and in a circular motion (as if you are trying to wind it up) sand the outside until you only see the sandpaper marks. Now take increasing grits and continue.. If you make it to 1600 grit you are the man! 400 should be fine if you have a buffing wheel available to shine it with. You will see that if you stick you finger into the piston that there more than likely are ridges in the inside of the cocking slot.

I used a dremmel with small stones to remove these ridges as my piston, and yours likely too, seemed to be made of the hardest material known to man(probably some hardened stainless steel) You may use needle files for this application and work from the outside. Be careful not to touch the inside surface of the piston during this process as it will be near impossible to remove gouges from this surface without specialized tools. Create yourself a tool by cutting a grove in a 20mm dowl. You can use this to create a sander to work in the tube by putting a sliver of waterpaper in the grove and clean by putting cloth in the groove.

Now sand the inside of the piston using a rotating motion

If you have a polishing wheel you can now polish the outer surface of the piston. You should also polish the lip where the trigger catches to ensure a clean break

Why are we polishing these surfaces? To reduce rotational force. We are trying to prevent the spring when uncoiling from trying to rotate the gun and rather just rotate on the polished surfaces.

To explain this better: from my knowledge as a biker for suspension. ☺ You want as little as possible un-sprung weight. This means. As little as possible weight should be moved at any given time to increase response. To put this into Newton's laws.. Every action has an opposite and equal reaction. You may say that the tophat is already moving with the piston assembly. You are right. However, the spring rotates slightly as it coils and uncoils. We know we have to take the tophat with when the spring uncoils. But if we "attach" it to the spring we are also forcing the 50grams to rotate with the spring. This creates a rotational force in the opposite direction in what we call torque. In an ideal world the spring would not rotate on decompression but we do not have an ideal world so we have to minimize the weight of that which is rotating to decrease the rotational force as much as possible.

When done clean with alcohol using your newly made tool ☺

2. Now move on to the tophat. Here you can work on the stock hat or make your own. This is the main part that a tuner changes to mate the tophat to the spring. If you decide not to make your own: Put the top hat in a drill press if you have and use water paper on the rotating tophat. This makes the polishing process much quicker and uniform. Focus your efforts on the area where the spring makes contact with the tophat. Remember not to polish the bottom which makes contact with the piston for reasons as discussed above . Clean when done with alcohol.

If you decide to make your own you can replace the part above or go overboard. ☺ I will show you the overboard way. Take your newly debured piston and spring to a turner and as them to turn you a hat that has closed tolerances to the piston and spring. You will se that the stock hat fits very loosely in the piston. This lets the spring and tophat move around in the piston during the firing cycle creating forces in non consistent direction as it will never end up in the same place at the bottom of the piston at the end of the firing cycle. Find the inner diameter of the piston and spring and turn a tophat with the same length but with a diameter of piston – 0.3mm and to fit the spring without being gripped by the spring yet without sideways movement. Have him make sure that the surface on which the spring end rests is square as you do not want the spring to be pushed outwards as this may cause breakage. If you do not want to go further you may stop here. If you want to go further as him to turn you a washer for that can rest on the surface the spring end rests on the same diameter as the tophat. And then ask him to cut off a 3mm piece from the fat end of the tophat. This you can use as a washer at the bottom of the tophat between the tophat and piston to give another surface to reduce rotational force. You will see I also made a pilot hole in the middle of the tophat and pin on the disc to ensure they always stay centered.

Tophat Assmebled:

This will ensure that the least amount of rotational forces will be applied to the rifle when the spring uncoils.

3. Move on to the spring. Make sure it is 100% clean. Find a flat surface and place your 200grit water paper on the surface. Using a circular motion,

keeping it vertical and rotate it in your hand every few seconds, sand the ends of the spring.

Go to 1600 and you will find the surface starting to resemble mirror finish. This will help the spring rotate freely when coiling.

4. Move on to the Rear spring guide. Sand the outside surface to mirror finish and de-bur the tip of the guide. And clean it out with alcohol.

5. Now we can move on to the receiver. Here you need to work according to condition of the surface in your receiver. Once cleaned have a look in bright light into the receiver. If it is "prefect" you can leave it as is but it is still advisable to hone to uniformly scour the surface. If not you would need to hone the part of the receiver where the seal rides with a 3stone 200grit hone. If you are uncomfortable ask a skilled mechanic to assist you. You can purchase the hones in most auto-hardware shops. You would need to make an extension for it to reach the bottom of the receiver. I used a sprinkler pipe that screwed into the thread of the hone. Use paraffin as a lubricant and mount the hone on a cordless drill to enable you to control the speed better. Run the hone for 30secs or so in and out, in a cross action motion. Be careful not to pull it to far out to let the stones catch the opining in the receiver for the cocking action.

You would then need to use your dremmel or needle files to debur the insides of the slots in the receiver using the same technique as with the piston. It is important to focus on areas where when inserting the piston with new seal the seal wont catch or cut. Take your time here as the condition of seal is going to be one of the biggest factors for success and consistency.

Focus a lot of attention to the inside of the receiver where the trigger assembly hook in.

You can then use you dowl sander creation to clean up the inside of the receiver where you just de-burred. Clean the receiver very well using your dowl creation and alcohol, as anything left behind will be pushed into the piston chamber when re-assembling.

6. Lastly move onto the trigger assembly.

You may opt here for two things. Either get a replacement trigger from Charlie da Tuna (aka Bob) and drop that in or you may change the adjustment screw and spring on your stock trigger which will also make the world of difference. I would suggest the replacement trigger from CdT as it certainly elevates the gun to a new level. We will look at both options here.

As a bare minimum I suggest you do the following:

Polish using a 400grit stone or 400grit water paper on a block of some sort. It is important to use a flat surface to sand with as you want to prevent that you bevel the corners. Polish the surfaces as indicated.

You will see, if you are observant, that I already have a different trigger blade. This is the blade you receive from CdT and gives you true 2 stage adjustment on a Gamo trigger assembly. I would suggest you do not take the trigger assembly apart. Once you have polished the surfaces go to your hardware store and get yourself a replacement adjustment screw. This will allow you to adjust the trigger release to less creep than the stock adjustment screw. Please note Gamo placed a short adjustment screw in there for a reason. This reason is to prevent someone from adjusting the release in this manner. This is for safety reasons so that the trigger cannot accidentally release when the rifle is bumped. I am assuming that you will use this information responsibly! New screw:

If you do not want to go the replacement trigger route then at least polish the surface and replace the screw. This will already make you rifle infinitely more accurate as you will be able to predict the release every time. You may also replace the trigger spring to a lighter gauge as this will make the pull easer and it will affect your aim less. You can now leave the trigger submerged in some 30W oil mixed with a little moly grease. (the recipe come from CdT tuning instructions) The idea is the oil will carry the molly into the assembly and the moly will do the work of smoothing things out. Once you are sure the surfaces are nicely covered you can take it out and drip dry it for a few hours. After which you can clean off the excess on the outside. Your trigger assembly is now nicely lubricated.

Now you are ready to re-assemble your rifle in the knowledge that it will operate as well as it can!

5th Step – Assembly

Generally assembly is in reverse to the dismantling process. A few things needs to be done first though.

1. Insert new seal onto piston. There are many different ways to do this. The easiest, in my opinion, is to get yourself some rod that has the same diameter as the top of the dovetail, that receives the seal, on the piston. Place the seal on a hard level surface. Put some of the silicone oil on the seat of the piston, the rod and the seal. Take a hammer and lightly tap the rod into the seal. You will see that it stretches over the rod with a push. Now place the rod on the dovetail and just slide the seal off the rod over the dovetail. Easy as pie!

2. Clean the receiver. Take your dowel tool and put a piece of cloth on the end. Dip it in the Spirits. Push this into the receiver whiles turning it. The cloth will clean it nicely.

3. Now take the piston and place a thin film of the moly on the seal edge. Put your left index finger in the piston and coat the metal part of the piston with a thin layer of the moly grease. Now coat your tophat, new or old☺, with a thin coat of moly. You may place a bit more on the surface mating the

piston. Drop it down into the piston. Now gently push the piston into the receiver using your dowel lining up the cocking slot with the cutout on the receiver. Be careful that you do not damage the seal. Push it down slowly working it past the openings in the receiver.

4. Take the spring and lightly coat the outside of the spring with the red rubber grease. Use about a heaped teaspoon per spring and make sure you do not get any on the inside of the spring. If you are using your old spring, check if it has a "bend" in it. Make sure you put the bend over the spring guide and not the tophat side and also to the top of the receiver. Drop the spring into the receiver into the piston.

5. Lube the spring guide and push it into the spring. Now you can re-assemble the action using a compressor or if you are the stupid brave type my method explained during disassembly.

6. Put the trigger assembly and cocking arm back. Then the end cap and the trigger assembly screw.

7. The rest should be pretty simple. Put a drop or two of the oil/moly mix on the joints. Make sure non gets into the chamber or barrel. Put some blue locktight on the screws/ bolts to make sure they stay put.

That is it. You have a "new" air rifle! Please be sure that till you are sure your trigger is adjusted correctly you make sure the rifle is treated carefully when cocking. As the trigger may not catch and throw the lever/barrel up damaging your barrel and yourself in the process.
