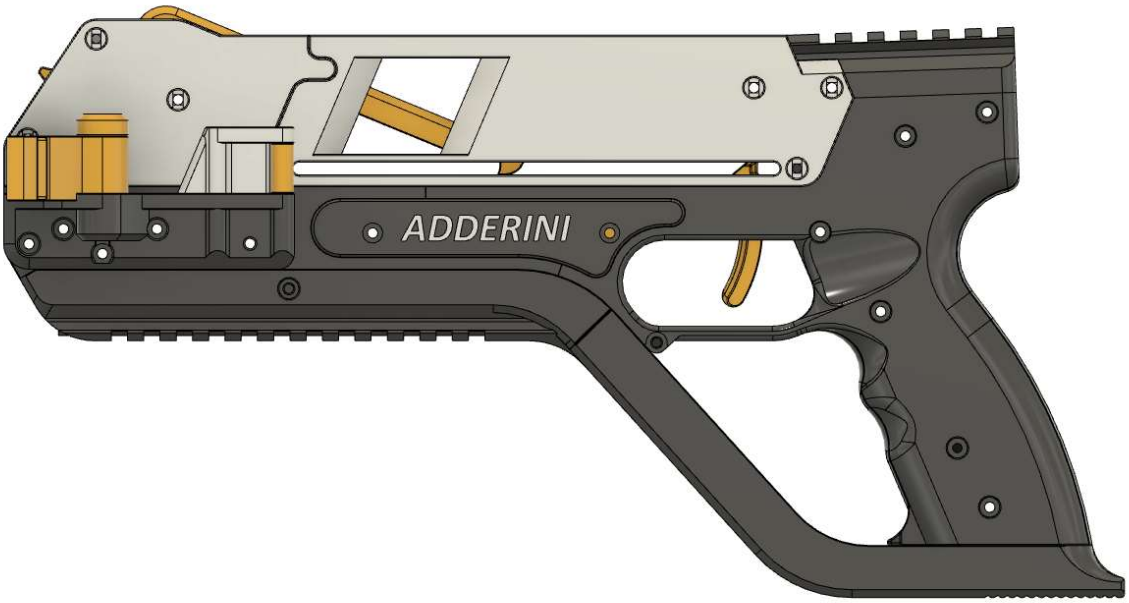
Adderini

3D Printed Repeating Slingbow/Crossbow Pistol

https://legolini.com

This toy is a lot of fun, but it can be dangerous. When not in use, always keep it under lock and key away from children. Do not shoot living beings, use an archery mat/backstop!



The following information will allow you to build your own 3D printed slingbow pistol.

This project is based on the ideas of Jörg Sprave from The Slingshot Channel
https://www.youtube.com/user/JoergSprave,
combined with several of my ideas, solutions and optimization for 3D printing.

Original video: *https://www.youtube.com/watch?v=cCz3i_h1vxU*

How it works? *https://www.youtube.com/watch?v=khtjkzfqMY8*

If you like this project and appreciate my work, you can support me through PayPal
https://www.paypal.com/donate?hosted_button_id=DTDGEWZF4YA44

You can also support the Inventor who inspires me to create interesting things
https://www.patreon.com/JoergSprave

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Introduction

Before you start making and using this toy, make sure it is legal in your country. According to some regulations, this toy can be considered a crossbow.

Even if the crossbow is illegal or requires a license in your country, you can still use this toy as a repeating slingbow/bow with cocking lever, just print alternative parts. Please read the chapter "Alternative no-crossbow version" first.

Adderini is the compact 3D printed repeating slingbow/crossbow pistol with integrated quiver (magazine) for 6 arrows (bolts). The pistol is powered by TheraBand Gold rubber or standard pistol crossbow limbs and has integrated ergonomic grip and cocking lever with about 4 times lever effect. The pistol is compatible with standard 160-163 mm long bolts (for pistol crossbows). It can be loaded manually or automatically with additional ammo clips (same as Sliding Legolini), after pivoting the magazine spring lever. A standard open sight system is used for aiming. Pistol is also equipped with 2 picatinny rails for laser sight/flashlight/front handle and red dot sight or short scope.

Total length: 345 mm (520 mm with stock)
Height: 182 mm
Mass weight (pistol only): about 0,6 kg
Mass weight (with 6 bolts, red dot sight, laser sight, stock): about 0,9 kg

<u>The slingbow version:</u>
Width: 100 mm (60 mm with folded slingshot arms)
Arrow energy: up to 11 J
(with Steambow Bodkin 10.5 g bolts and TheraBand Gold bands 60 mm per side - about 55-60 lbs)

<u>The crossbow limbs version:</u>
Width: 440 mm (EK Archery Cobra 80 lbs limbs)
Arrow energy: up to 10,5 J
(with Steambow Bodkin 10.5 g bolts and EK Archery Cobra 80 lbs limbs - in real terms about 50 lbs)

Choosing the right version for you

Adderini is available in several variants. The steps below will help you choose the correct version.

Step 1 - Power source

- Pistol crossbow limbs - choose " 3MF_Adderini_crossbow_limbs" folder

The version powered by the pistol crossbow limbs is wider but more reliable. It can also be used in subzero temperatures. This version is also a bit louder when shooting.

- Rubber - choose " 3MF_Adderini_rubber_powered" folder

The rubber powered version is really compact but more unreliable. The rubber age, wears over time, and may break. You should keep it unstressed and protect it from the sun. Rubber also loses its properties at low temperatures.
The performance of both versions is comparable.

If you want to try out the crossbow limbs version modified by Faramir, you can choose ***"STL_MiniAdder_v2_by_Faramir"*** *folder (or "STL_MiniAdder_by_Faramir" - older version). The text description of this version is in the folder.*

Step 2 - Your 3D printer bed size

3MF files are organized into 3 folders:

- 180x180mm_bed,
- 200x200mm_bed,
- 300x300mm_bed.

Choose the correct folder depending on what printer you have. **The files outside of these 3 folders are common to all printer sizes.**

Step 3 - Crossbow or no crossbow?

Depending on the legal conditions in your country, you can print the standard "crossbow version", which is locked when cocked.
You can also choose the "no-crossbow version" and files with the" *_no-xbow*" suffix, which does not lock while cocking.

Step 4 - Pistol or Carbine?

You have three options:

- the pistol that is only 345 mm long,
- the pistol with simple stock and aluminum tube - 520 mm long,
- the pistol with an adapter and an AR15 style stock - check the folder "STL_MiniAdder_by_Faramir".

Step 5 - Cocking lever picatinny rail extensions

You have three options:

- standard cocking lever,
- cocking lever with 3 holes for M3xD5xL4 brass threaded inserts (you can screw to the lever another parts with 2 M3x10 mm screw - for example custom laser holder or flashlight holder) - choose files with "*_threaded_inserts*" suffix,
- cocking lever with dedicated mount to popular Convoy S2+ flashlight. The flashlight is mounted directly to the lever with 2 zip ties - choose files with "*_convoy_s2+*" suffix.

Bill of Materials

To build this pistol you must have:

- FDM 3D printer with a heated bed of at least 180 x 180 mm square (round bed Ø242 mm)
- About 0.6 kg of PLA filament
- screws:
  8 pieces of M3x35 mm
  16 pcs. M3x20 mm
  2 pcs. M3x16 mm
  5 pcs. M3x12 mm
  4 pcs. M3x6 mm
  2 pcs. M4x40 mm Allen
- grub screws (headless set screws):
  3 pcs. M3x16 mm
  1 pc. M5x10 mm (for crossbow limbs version)
- nuts:
  25 pcs. M3
  2 pcs. M4
  1 pc. M5 (for crossbow limbs version)
  3 pcs. M3xD5xL4 brass threaded inserts (for cocking lever picatinny rail extensions)
- 1 piece of steel spring with a diameter 8 mm, length 20 mm and wire diameter 0.8 mm
- 1 piece of steel spring with a diameter 8 mm, length 20 mm and wire diameter 1.0 mm
- 1 small steel spring (from a clicky pen) with a outer diameter 4.2 mm, length 20-25 mm (half of the spring for *[C]_magazine_pivot_lock* and half for *[C]_cocking_lever_lock)*
- TheraBand Gold rubber band 130x128mm, circular blade knife
- about 2,5 m polyester bowstring, serving thread, bowstring wax
- fiberglass pistol crossbow 35-55 lbs limbs with bowstring and end caps (for crossbow limbs version)
- precision files, 180-240 sandpaper
- wrenches, screwdrivers, sharp knife, lighter, clamp, clothes pegs
- CA gel glue or two-component epoxy adhesive (for gluing parts)
- PTFE grease

3D files:

https://cults3d.com/en/3d-model/various/adderini-3d-printed-repeating-slingbow-pistol

3D Printing

The design is optimized for 3D printing with a layer height of 0.2 mm. For the purpose of strength and durability, I recommend printing all elements with an extrusion width of 0.45 mm, wall thickness of 2.25 mm (5 shells/perimeters), bottom and top walls thickness of 1.2-1.6 mm, and infill of 25-30%. I also recommend printing at a slightly higher hotend temperature than usual. I recommend printing on glass bed or PEI coated steel sheet to make the surfaces smoother. The 3D printer should be well calibrated (extruder steps, flowrate, first layer height). It takes about 40-50 hours to print all parts (depends on the 3D printer).

If you have a printer with a larger bed 300 x 300 mm, you can print large parts from the "300x300mm_bed" folder and avoid gluing. In this option, you do not need 4 M3x6 mm screws and 4 M3 nuts for pistol body left and right parts.

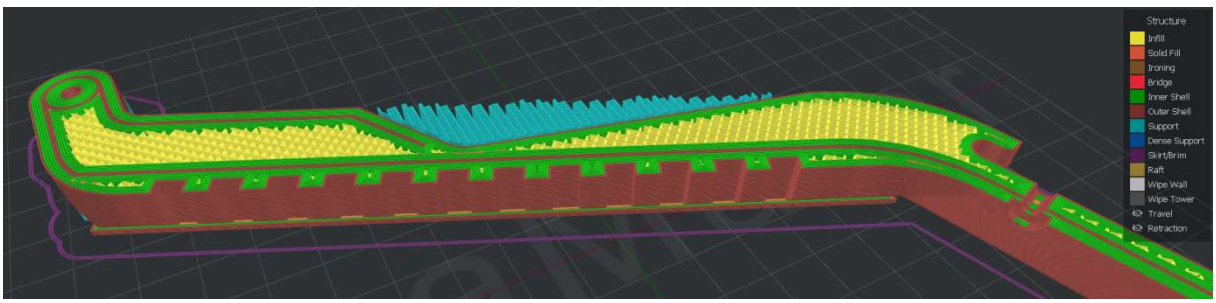
If you are using a standard printer with a 200 x 200 mm bed, print out the parts from the "200x200mm_bed" folder.

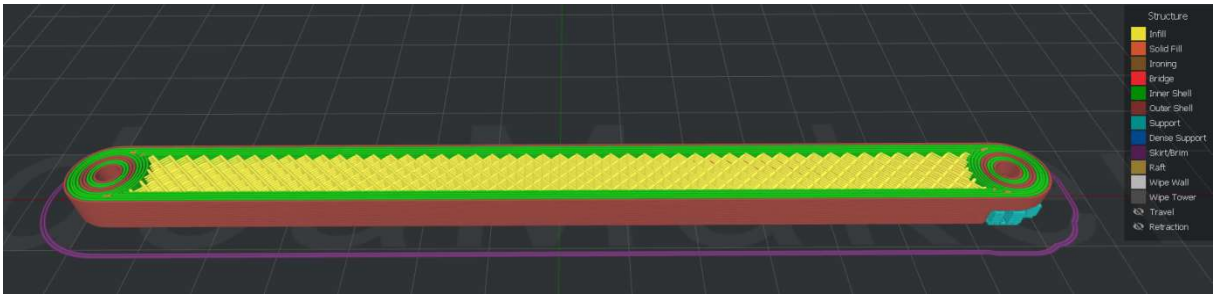
If you are using a Prusa Mini 3D printer, print out the parts from the "180x180mm_bed" folder.

You must generate bed supports in slicer program for printing parts:
- *[A]_magazine_left_front*, *[A]_magazine_left_rear*, *[A]_magazine_right_front*, *[A]_magazine_right_rear* or *[A]_magazine_left* and *[A]_magazine_right* for 300 x 300 mm bed
- *[B]_pistol_body_left_front*, *[B]_pistol_body_left_rear*, *[B]_pistol_body_right_front*, *[B]_pistol_body_right_rear* or *[B]_pistol_body_left* and *[B]_pistol_body_left* for 300 x 300 mm bed
(these parts can be printed without any supports, but the bridge direction must be properly done by the slicer program),
- *cocking_rod*
(it is possible to print this part without supports in a different orientation, but for strength reasons, I recommend printing in a horizontal position with supports),
- *[B]_cocking_lever_part1* or *[B]_cocking_lever* for 300 x 300 mm bed
(this part also requires internal supports in addition to those on the bed).

Supports for screws holes and nuts holes are not required.

The *[B]_cocking_lever_part1* (or *[B]_cocking_lever* for 300 x 300 mm bed) and *[C]_cocking_rod* have internal reinforcements designed. Make sure your slicer software executes them properly. If they are not visible, use a different slicer (IdeaMaker, Cura) or increase the number of shells/perimeters (PrusaSlicer). These are the most heavily loaded parts and this is very important.
Prusa Slicer - the solution is to change the "Printer Settings / Advanced / Slice gap closing radius" from default to 0.004. Many thanks to Jos B. for this tip.





All 3MF files already have the recommended orientation for printing when loaded into the slicer software.

Why I choose 3MF files instead of the STL files?

https://blog.prusaprinters.org/3mf-file-format-and-why-its-great_30986/

If you still really want STL files, you can easy convert 3MF files for free with *IdeaMaker*:

https://www.raise3d.com/ideamaker/

3MF files are named as follows ***[A]_filename_x2*** where:

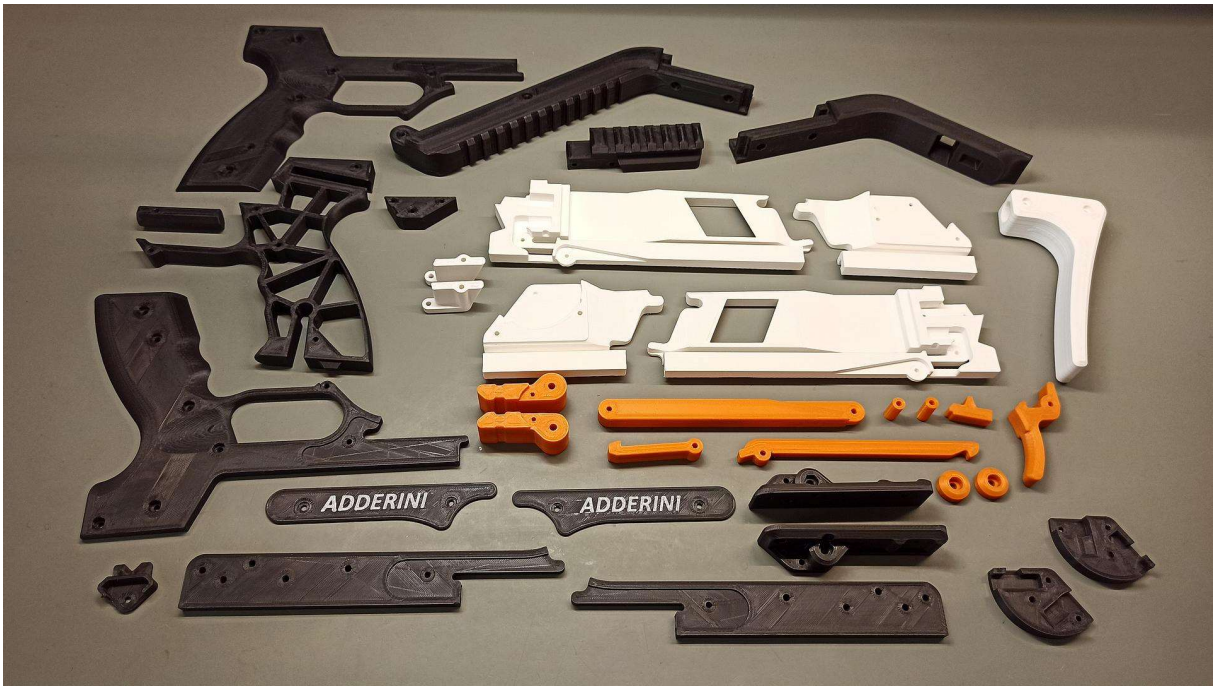
[ ] - suggested color of the part:

- ***A*** - light color, e.g. white, light gray,
- ***B*** - dark color, e.g. black, dark gray,
- ***C*** - intense color, e.g. orange, red, green, etc.,

D x2 - the number of parts to be printed (if not specified, it is 1).

The side covers with the name "Adderini" can be printed in two colors, if your printer supports the G-Code command to change the filament, e.g. M600. You need to set the slicer to change the color of the filament on the layer above 2.0 mm high.

For 3D printer with 300 x 300 mm bed use *[B+A]_pistol_body_left* and *[B+A]_pistol_body_right* 3MF files. You need to set the slicer to change the color of the filament on the layer above 6.0 mm high.



Crossbow version - 3MF files

<table>
<tr><th colspan="4">Basic rubber powered "crossbow version"</th></tr>
<tr><th>Part category</th><th>180 x 180 mm bed</th><th>200 x 200 mm bed</th><th>300 x 300 mm bed</th></tr>
<tr><td rowspan="12">magazine</td><td>[A]_magazine_left_front</td><td>[A]_magazine_left_front</td><td rowspan="2">[A]_magazine_left</td></tr>
<tr><td>[A]_magazine_left_rear</td><td>[A]_magazine_left_rear</td></tr>
<tr><td>[A]_magazine_right_front</td><td>[A]_magazine_right_front</td><td rowspan="2">[A]_magazine_right</td></tr>
<tr><td>[A]_magazine_right_rear</td><td>[A]_magazine_right_rear</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_picatinny_rail</td></tr>
<tr><td colspan="3">[B_or_A]_rear_sight</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part1</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part2</td></tr>
<tr><td colspan="3">[C]_magazine_pivot_lock</td></tr>
<tr><td colspan="3">[C]_magazine_spring_lever</td></tr>
<tr><td colspan="3">[C]_trigger</td></tr>
<tr><td rowspan="11">pistol body</td><td>[B]_pistol_body_left_front</td><td>[B]_pistol_body_left_front</td><td rowspan="4">[B+A]_pistol_body_left</td></tr>
<tr><td>[B]_pistol_body_left_rear_180_1</td><td rowspan="2">[B]_pistol_body_left_rear</td></tr>
<tr><td>[B]_pistol_body_left_rear_180_2</td></tr>
<tr><td>[B+A]_pistol_body_left_cover</td><td>[B+A]_pistol_body_left_cover</td></tr>
<tr><td>[B]_pistol_body_right_front</td><td>[B]_pistol_body_right_front</td><td rowspan="4">[B+A]_pistol_body_right</td></tr>
<tr><td>[B]_pistol_body_right_rear_180_1</td><td rowspan="2">[B]_pistol_body_right_rear</td></tr>
<tr><td>[B]_pistol_body_right_rear_180_2</td></tr>
<tr><td>[B+A]_pistol_body_right_cover</td><td>[B+A]_pistol_body_right_cover</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_front</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_plug</td></tr>
<tr><td rowspan="4">cocking mechanism</td><td>[B]_cocking_lever_part1</td><td>[B]_cocking_lever_part1</td><td rowspan="2">[B]_cocking_lever</td></tr>
<tr><td>[B]_cocking_lever_part2</td><td>[B]_cocking_lever_part2</td></tr>
<tr><td colspan="3">[C]_cocking_rod</td></tr>
<tr><td colspan="3">[C]_cocking_lever_lock</td></tr>
<tr><td rowspan="9">slingshot</td><td colspan="3">[A]_slingshot_string_stopper_left</td></tr>
<tr><td colspan="3">[A]_slingshot_string_stopper_right</td></tr>
<tr><td colspan="3">[C]_slingshot_string_stopper_roller_x2</td></tr>
<tr><td colspan="3">[B]_slingshot_mount_left</td></tr>
<tr><td colspan="3">[B]_slingshot_mount_right</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_left</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_right</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_washer_x2</td></tr>
<tr><td>stock</td><td colspan="3">[A]_stock</td></tr>
</table>

If you plan to use *[A]_stock*, don't print the *[B]_pistol_body_middle_rear_plug*. If you are not planning to use *[A]_stock*, please print the *[B]_pistol_body_middle_rear_plug*.

Alternative no-crossbow version - 3MF files

This is a special version for people in countries where the crossbow is illegal or requires a license. This version does not have the *[C]_cocking_lever_lock* mechanism, so you have to hold the *[B]_cocking_lever* with your pinkie while cocking and firing. It is quite easy because the lever has a specially profiled groove for the finger.

Thanks to this, it is no longer a crossbow, but a legal slingbow/bow with a magazine and a cocking lever.

The table below lists all the 3MF files needed to build this version. Parts that are different from the basic version are marked in red.

<table>
<tr><th colspan="4">Rubber powered "no-crossbow version"</th></tr>
<tr><th>Part category</th><th>180 x 180 mm bed</th><th>200 x 200 mm bed</th><th>300 x 300 mm bed</th></tr>
<tr><td rowspan="11">magazine</td><td>[A]_magazine_left_front</td><td>[A]_magazine_left_front</td><td rowspan="2">[A]_magazine_left</td></tr>
<tr><td>[A]_magazine_left_rear</td><td>[A]_magazine_left_rear</td></tr>
<tr><td>[A]_magazine_right_front</td><td>[A]_magazine_right_front</td><td rowspan="2">[A]_magazine_right</td></tr>
<tr><td>[A]_magazine_right_rear</td><td>[A]_magazine_right_rear</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_picatinny_rail</td></tr>
<tr><td colspan="3">[B_or_A]_rear_sight</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part1</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part2</td></tr>
<tr><td colspan="3">[C]_magazine_pivot_lock</td></tr>
<tr><td colspan="3">[C]_magazine_spring_lever</td></tr>
<tr><td colspan="3">[C]_trigger</td></tr>
<tr><td rowspan="11">pistol body</td><td>[B]_pistol_body_left_front</td><td>[B]_pistol_body_left_front</td><td rowspan="3">[B+A]_pistol_body_left_no-xbow</td></tr>
<tr><td>[B]_pistol_body_left_rear_no-xbow_180_1</td><td rowspan="2">[B]_pistol_body_left_rear_no-xbow</td></tr>
<tr><td>[B]_pistol_body_left_rear_no-xbow_180_2</td></tr>
<tr><td>[B+A]_pistol_body_left_cover</td><td>[B+A]_pistol_body_left_cover</td></tr>
<tr><td>[B]_pistol_body_right_front</td><td>[B]_pistol_body_right_front</td><td rowspan="3">[B+A]_pistol_body_right_no-xbow</td></tr>
<tr><td>[B]_pistol_body_right_rear_no-xbow_180_1</td><td rowspan="2">[B]_pistol_body_right_rear_no-xbow</td></tr>
<tr><td>[B]_pistol_body_right_rear_no-xbow_180_2</td></tr>
<tr><td>[B+A]_pistol_body_right_cover</td><td>[B+A]_pistol_body_right_cover</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_front</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_no-xbow</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_plug</td></tr>
<tr><td rowspan="4">cocking mechanism</td><td>[B]_cocking_lever_part1</td><td>[B]_cocking_lever_part1</td><td rowspan="2">[B]_cocking_lever_no-xbow</td></tr>
<tr><td>[B]_cocking_lever_part2_no-xbow</td><td>[B]_cocking_lever_part2_no-xbow</td></tr>
<tr><td colspan="3">[C]_cocking_rod</td></tr>
<tr><td colspan="3">~~[C]_cocking_lever_lock~~</td></tr>
<tr><td rowspan="8">slingshot</td><td colspan="3">[A]_slingshot_string_stopper_left</td></tr>
<tr><td colspan="3">[A]_slingshot_string_stopper_right</td></tr>
<tr><td colspan="3">[C]_slingshot_string_stopper_roller_x2</td></tr>
<tr><td colspan="3">[B]_slingshot_mount_left</td></tr>
<tr><td colspan="3">[B]_slingshot_mount_right</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_left</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_right</td></tr>
<tr><td colspan="3">[C]_slingshot_arm_washer_x2</td></tr>
<tr><td>stock</td><td colspan="3">[A]_stock</td></tr>
</table>

Do not print a *[C]_cocking_lever_lock* for this version, you also do not need 1 M3x20 mm screw.
If you plan to use *[A]_stock*, don't print the *[B]_pistol_body_middle_rear_plug*. If you are not planning to use *[A]_stock*, please print the *[B]_pistol_body_middle_rear_plug*.

In this configuration the cocking lever does not lock into a cocked position, so the device does not meet the definition of a crossbow. You need to hold the cocking lever with your pinkie while cocking and shooting. This is not difficult as the lever reduces the draw weight about 4 times. It also allows you to reload and fire faster.

Crossbow limbs powered versions - 3MF files

<table>
<tr><th colspan="4">Crossbow limbs powered "crossbow version"</th></tr>
<tr><th>Part category</th><th>180 x 180 mm bed</th><th>200 x 200 mm bed</th><th>300 x 300 mm bed</th></tr>
<tr><td rowspan="12">magazine</td><td>[A]_magazine_left_front</td><td>[A]_magazine_left_front</td><td rowspan="2">[A]_magazine_left</td></tr>
<tr><td>[A]_magazine_left_rear</td><td>[A]_magazine_left_rear</td></tr>
<tr><td>[A]_magazine_right_front</td><td>[A]_magazine_right_front</td><td rowspan="2">[A]_magazine_right</td></tr>
<tr><td>[A]_magazine_right_rear</td><td>[A]_magazine_right_rear</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_picatinny_rail</td></tr>
<tr><td colspan="3">[B_or_A]_rear_sight</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part1</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part2</td></tr>
<tr><td colspan="3">[C]_magazine_pivot_lock</td></tr>
<tr><td colspan="3">[C]_magazine_spring_lever</td></tr>
<tr><td colspan="3">[C]_trigger</td></tr>
<tr><td rowspan="11">pistol body</td><td>[B]_pistol_body_left_front</td><td>[B]_pistol_body_left_front</td><td rowspan="4">[B+A]_pistol_body_left</td></tr>
<tr><td>[B]_pistol_body_left_rear_180_1</td><td rowspan="2">[B]_pistol_body_left_rear</td></tr>
<tr><td>[B]_pistol_body_left_rear_180_2</td></tr>
<tr><td>[B+A]_pistol_body_left_cover</td><td>[B+A]_pistol_body_left_cover</td></tr>
<tr><td>[B]_pistol_body_right_front</td><td>[B]_pistol_body_right_front</td><td rowspan="4">[B+A]_pistol_body_right</td></tr>
<tr><td>[B]_pistol_body_right_rear_180_1</td><td rowspan="2">[B]_pistol_body_right_rear</td></tr>
<tr><td>[B]_pistol_body_right_rear_180_2</td></tr>
<tr><td>[B+A]_pistol_body_right_cover</td><td>[B+A]_pistol_body_right_cover</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_front</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_plug</td></tr>
<tr><td rowspan="4">cocking mechanism</td><td>[B]_cocking_lever_part1</td><td>[B]_cocking_lever_part1</td><td rowspan="2">[B]_cocking_lever</td></tr>
<tr><td>[B]_cocking_lever_part2</td><td>[B]_cocking_lever_part2</td></tr>
<tr><td colspan="3">[C]_cocking_rod</td></tr>
<tr><td colspan="3">[C]_cocking_lever_lock</td></tr>
<tr><td rowspan="5">limbs mount</td><td colspan="3">[B]_string_stopper_left</td></tr>
<tr><td colspan="3">[B]_string_stopper_right</td></tr>
<tr><td colspan="3">[B]_limbs_pressure_washer</td></tr>
<tr><td colspan="3">[hard_TPU]_optional_front_elastic_pad</td></tr>
<tr><td colspan="3">[hard_TPU]_optional_rear_elastic_pad</td></tr>
<tr><td>stock</td><td colspan="3">[A]_stock</td></tr>
</table>

As you can see, there are slightly fewer parts here than the slingbow version.

As standard, you print a version with a wider hole for mounting crossbow limbs. This allows the use of 1.5 mm thick rubber pads (or printed from the hard TPU) to reduce vibration and noise during the shot. This version also has a 3D printed washer under the set screw and prevents damage to the crossbow limbs.

You can also print the version from the "alternative_narrow_limbs_mount_without_rubber_pads" folder. This version does not have the advantages described above, but also works.

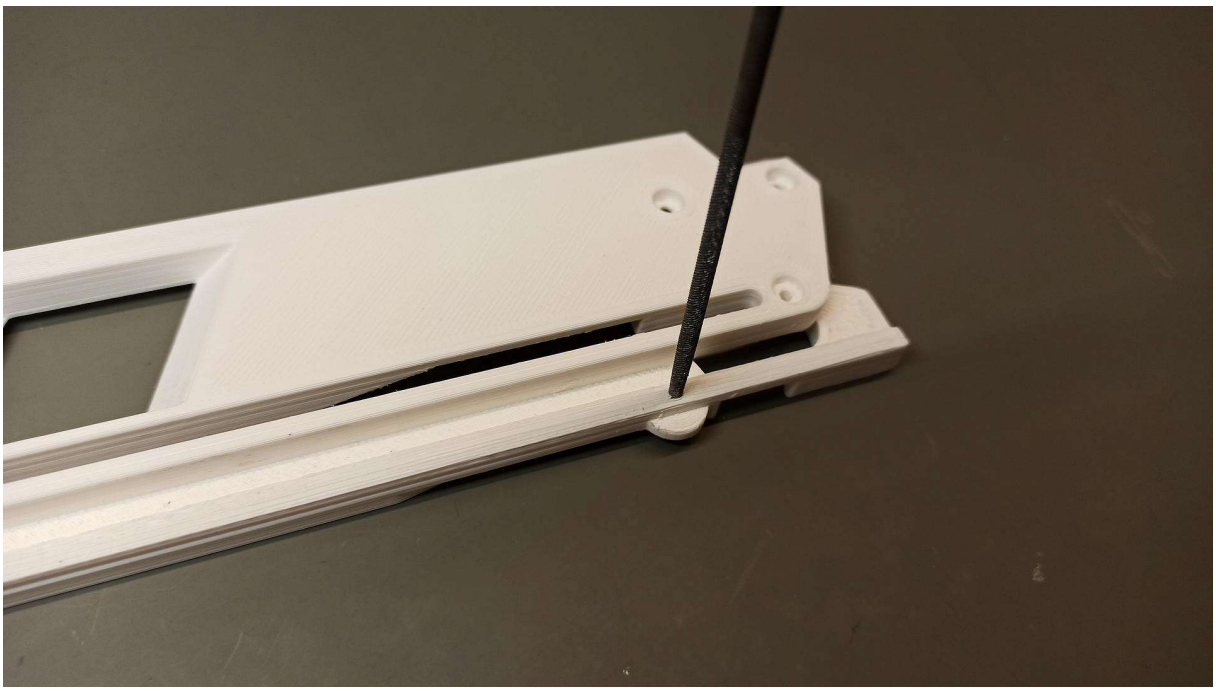
<table>
<tr><th colspan="4">Crossbow limbs powered "no-crossbow version"</th></tr>
<tr><th>Part category</th><th>180 x 180 mm bed</th><th>200 x 200 mm bed</th><th>300 x 300 mm bed</th></tr>
<tr><td rowspan="12">magazine</td><td>[A]_magazine_left_front</td><td>[A]_magazine_left_front</td><td rowspan="2">[A]_magazine_left</td></tr>
<tr><td>[A]_magazine_left_rear</td><td>[A]_magazine_left_rear</td></tr>
<tr><td>[A]_magazine_right_front</td><td>[A]_magazine_right_front</td><td rowspan="2">[A]_magazine_right</td></tr>
<tr><td>[A]_magazine_right_rear</td><td>[A]_magazine_right_rear</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_picatinny_rail</td></tr>
<tr><td colspan="3">[B_or_A]_rear_sight</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part1</td></tr>
<tr><td colspan="3">[B_or_A]_magazine_pivot_part2</td></tr>
<tr><td colspan="3">[C]_magazine_pivot_lock</td></tr>
<tr><td colspan="3">[C]_magazine_spring_lever</td></tr>
<tr><td colspan="3">[C]_trigger</td></tr>
<tr><td rowspan="10">pistol body</td><td>[B]_pistol_body_left_front</td><td>[B]_pistol_body_left_front</td><td rowspan="4">[B+A]_pistol_body_left_no-xbow</td></tr>
<tr><td>[B]_pistol_body_left_rear_no-xbow_180_1</td><td rowspan="2">[B]_pistol_body_left_rear_no-xbow</td></tr>
<tr><td>[B]_pistol_body_left_rear_no-xbow_180_2</td></tr>
<tr><td>[B+A]_pistol_body_left_cover</td><td>[B+A]_pistol_body_left_cover</td></tr>
<tr><td>[B]_pistol_body_right_front</td><td>[B]_pistol_body_right_front</td><td rowspan="4">[B+A]_pistol_body_right_no-xbow</td></tr>
<tr><td>[B]_pistol_body_right_rear_no-xbow_180_1</td><td rowspan="2">[B]_pistol_body_right_rear_no-xbow</td></tr>
<tr><td>[B]_pistol_body_right_rear_no-xbow_180_2</td></tr>
<tr><td>[B+A]_pistol_body_right_cover</td><td>[B+A]_pistol_body_right_cover</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_front</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_no-xbow</td></tr>
<tr><td colspan="3">[B]_pistol_body_middle_rear_plug</td></tr>
<tr><td rowspan="4">cocking mechanism</td><td>[B]_cocking_lever_part1</td><td>[B]_cocking_lever_part1</td><td rowspan="2">[B]_cocking_lever_no-xbow</td></tr>
<tr><td>[B]_cocking_lever_part2_no-xbow</td><td>[B]_cocking_lever_part2_no-xbow</td></tr>
<tr><td colspan="3">[C]_cocking_rod</td></tr>
<tr><td colspan="3"><s>[C]_cocking_lever_lock</s></td></tr>
<tr><td rowspan="5">limbs mount</td><td colspan="3">[B]_string_stopper_left</td></tr>
<tr><td colspan="3">[B]_string_stopper_right</td></tr>
<tr><td colspan="3">[B]_limbs_pressure_washer</td></tr>
<tr><td colspan="3">[hard_TPU]_optional_front_elastic_pad</td></tr>
<tr><td colspan="3">[hard_TPU]_optional_rear_elastic_pad</td></tr>
<tr><td>stock</td><td colspan="3">[A]_stock</td></tr>
</table>

Sanding and smoothing

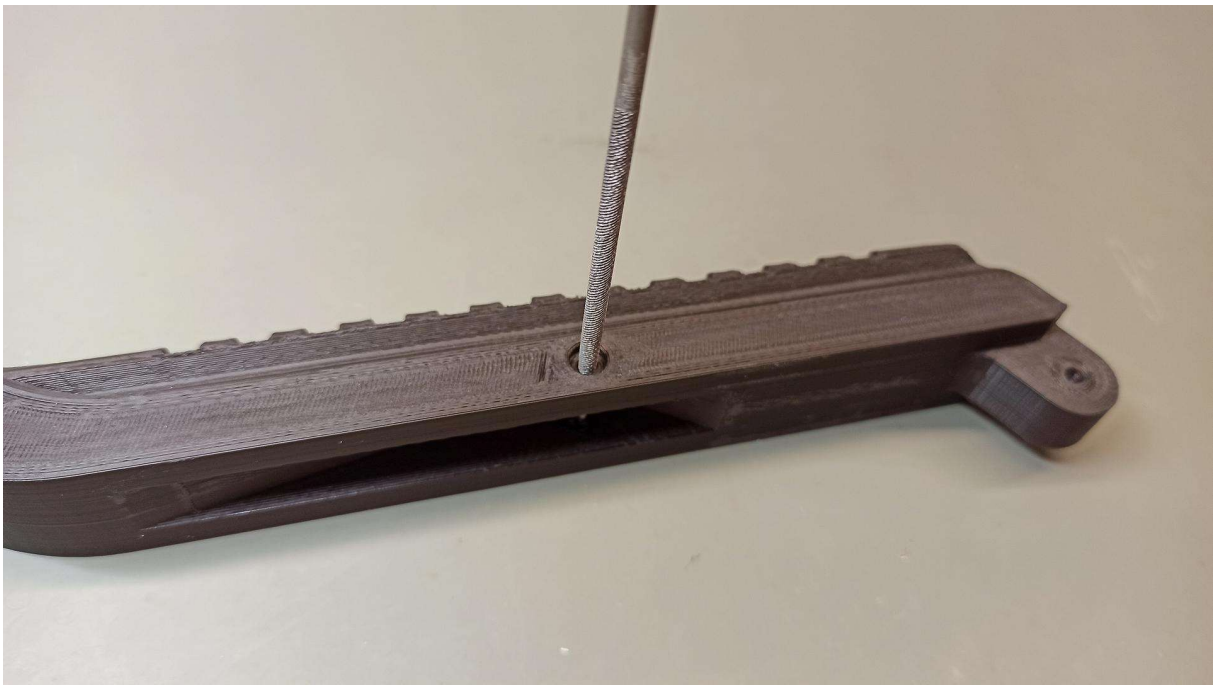
After printing, it is absolutely necessary to sand and smooth all print surfaces. All blobs and overflow of filament should be removed. The most important are the upper surfaces of prints, magazine and pistol body joints and rails.

You need to carefully check all the 3D printed elements and perform sanding and smoothing if necessary.

The *[A]_magazine_rear_left* (or *[A]_magazine_left*) part have 1 blind hole for M3x16 mm grub screw (connection pin with *[C]_cocking_rod*) to facilitate the generation of supports and 3D printing. You need to open the hole with a round precision file or gently with a 3 mm drill bit.



The part *[B]_cocking_lever_part1* (or *[B]_cocking_lever*) has an integrated support to facilitate printing its picatinny rail. You need to cut this additional part off with a sharp knife and smooth the picatinny rail with a file and sandpaper. This part has also 1 blind hole for M3x20 mm screw. You need to open the hole with a round precision file or gently with a 3 mm drill bit.



Gluing parts

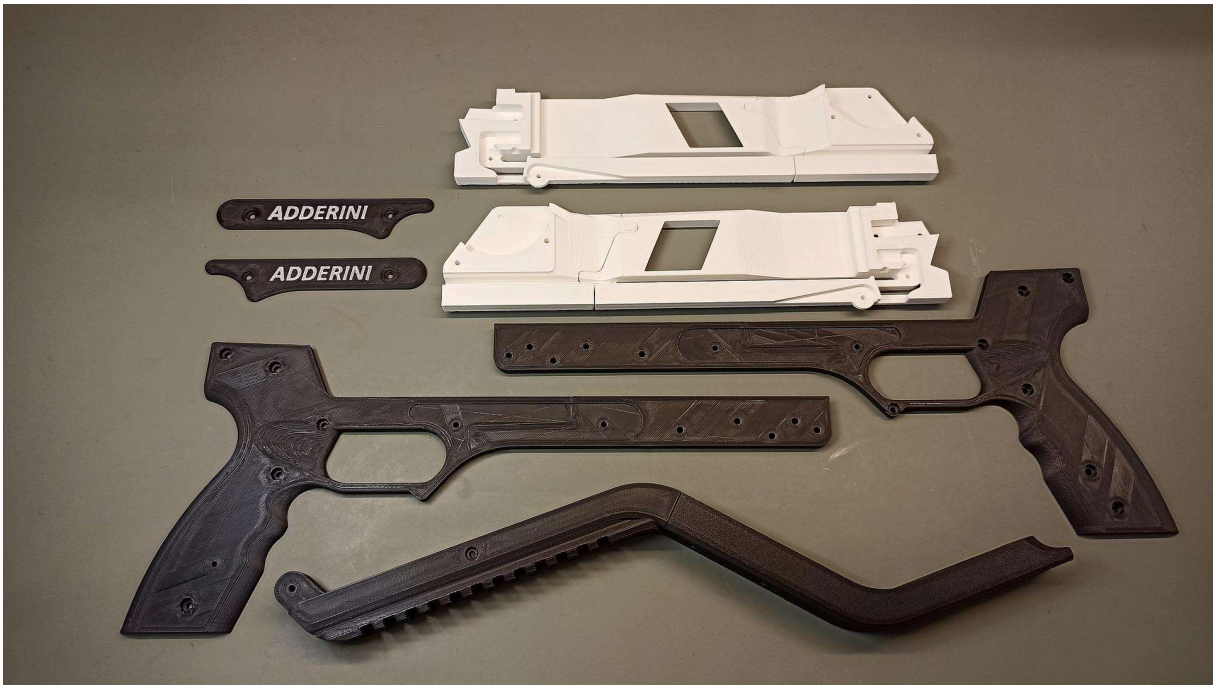
If you have a printer with a larger bed 300 x 300 mm, you can print large parts and avoid gluing.

The elements of the pistol model are divided into smaller parts to allow printing on printers with a 200x200 mm bed. You need to glue these parts together.

Gluing should be done on a flat surface (e.g. table or desk top) so that the glued parts are even and straight. I recommend using a CA gel glue or two-component epoxy adhesive. CA gel glue is very effective in the case of PLA, but gives a short time for possible adjustments of the glued parts. I do not recommend regular CA glue as it may leak when the parts are glued.

Excess glue should be removed immediately after gluing. Once the adhesive is dried, sand the surfaces.

Before gluing, make sure that all parts fit perfectly together.

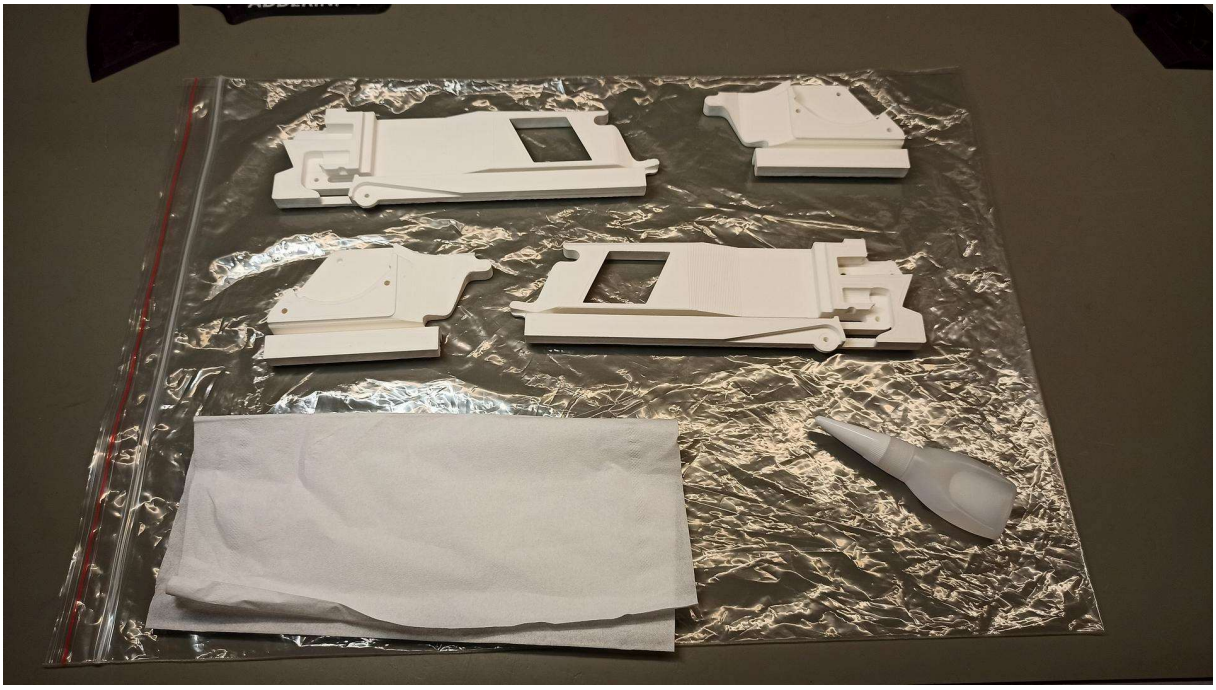


Parts to be glued together:
- *[A]_magazine_left_front* and *[A]_magazine_left_rear*
- *[A]_magazine_right_front* and *[A]_magazine_right_rear*

If you have a printer with a 180 x 180 mm bed, you need to first glue the rear side parts of the pistol body together**:**
- *[B]_pistol_body_left_rear_180_1* and *[B]_pistol_body_left_rear_180_2*
- *[B]_pistol_body_right_rear_180_1* and *[B]_pistol_body_right_rear_180_2*

Parts to be glued and screwed together:
- *[B]_pistol_body_left_front*, *[B]_pistol_body_left_rear* and *[B+A]_pistol_body_left_cover*
- *[B]_pistol_body_right_front*, *[B]_pistol_body_right_rear* and *[B+A]_pistol_body_right_cover*
- *[B]_cocking_lever_part1* and *[B]_cocking_lever_part2*

You can put a PET foil under the glued parts, which does not react with the CA glue and protects the table top from getting dirty.



1. Gluing the magazine parts is very simple. Place the parts on the table with the flat side facing down. Apply glue on one of the glued surfaces. Press both parts together and hold for a while until the CA glue catches. Wipe off any excess glue and let it dry.

2. Gluing *[B]_pistol_body_left_front*, *[B]_pistol_body_left_rear, [B+A]_pistol_body_left_cover* and *[B]_pistol_body_right_front*, *[B]_pistol_body_right_rear*, *[B+A]_pistol_body_right_cover.*
First, glue the main parts together. Apply glue on one of the glued surfaces. Press both parts together and hold for a while until the CA glue catches. Wipe off any excess glue and let it dry.

You need 4 pcs. M3x6 mm screw and 4 pcs. M3 nut.

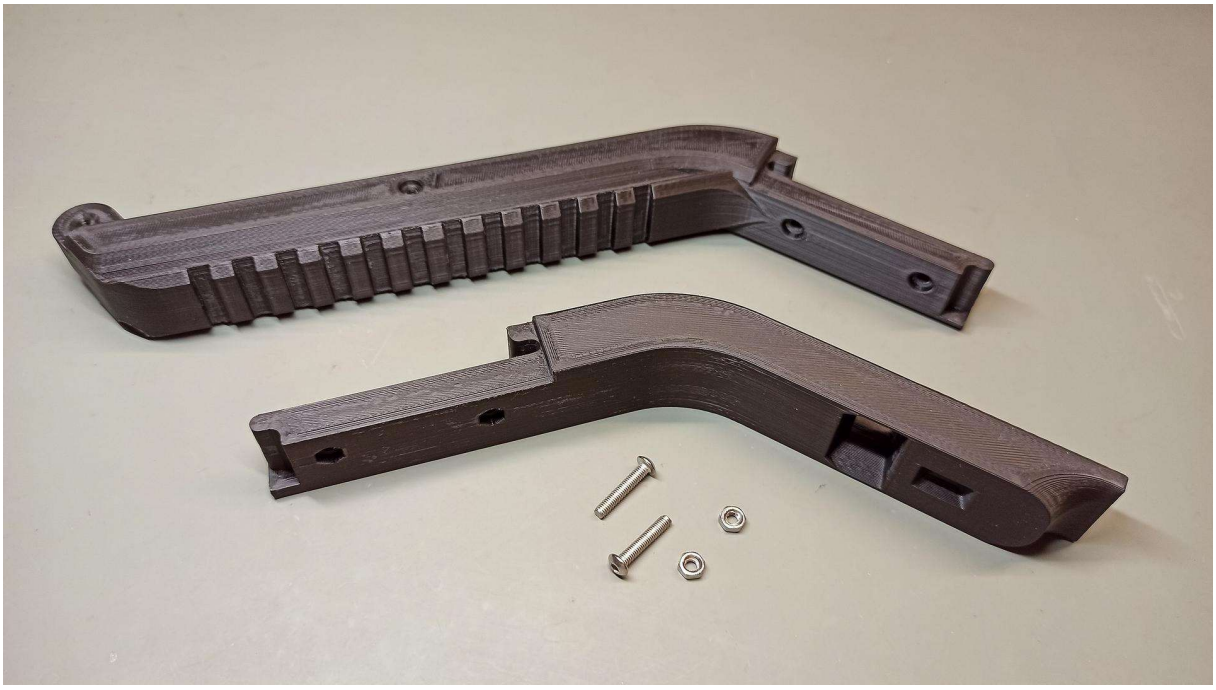
Insert the M3 nuts in the right places. If it goes in tight, you can use a longer M3 screw and a small hammer. Be gentle so as not to damage the parts.

Prepare the parts for gluing and the necessary tools.

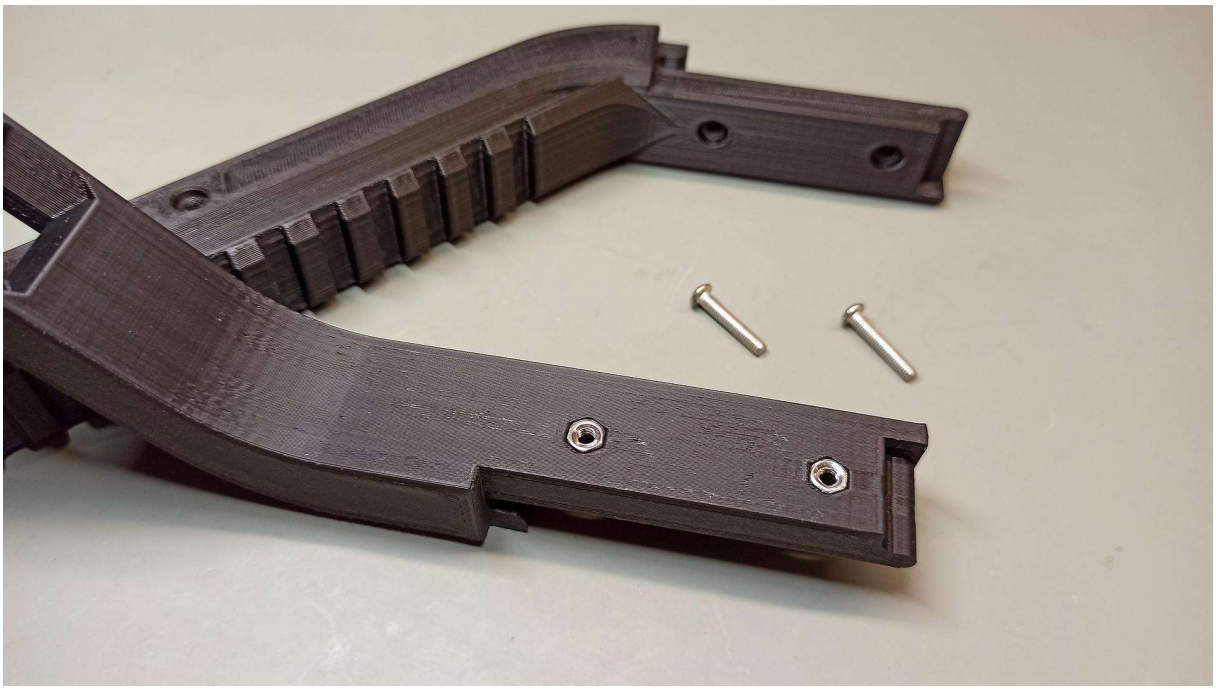
Apply glue to the surface.

Press down the glued *cover* part from above and tighten 2 M3x6 mm screws. Do the same for the other side of the pistol body. Remove excess glue. Allow the parts to dry.

3. Gluing *[B]_cocking_lever_part1* and *[B]_cocking_lever_part2* - you need 2 pcs. M3x16 mm screw and 2 pcs. M3 nut.

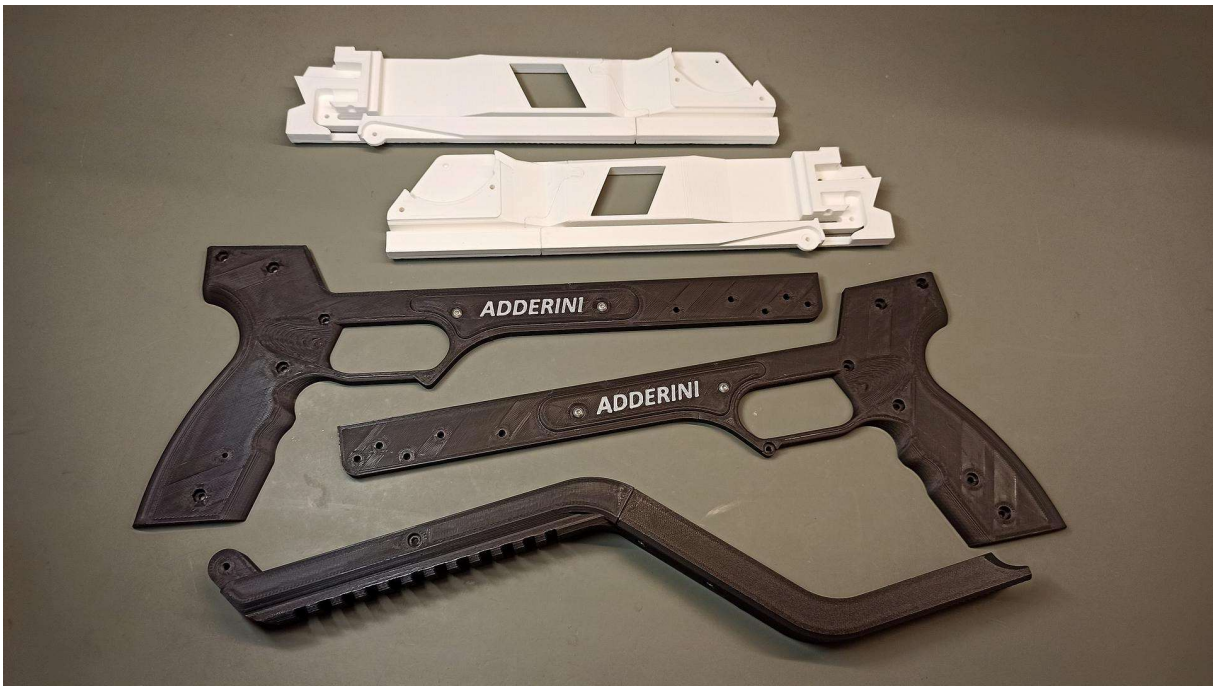


Insert the M3 nuts into the holes.

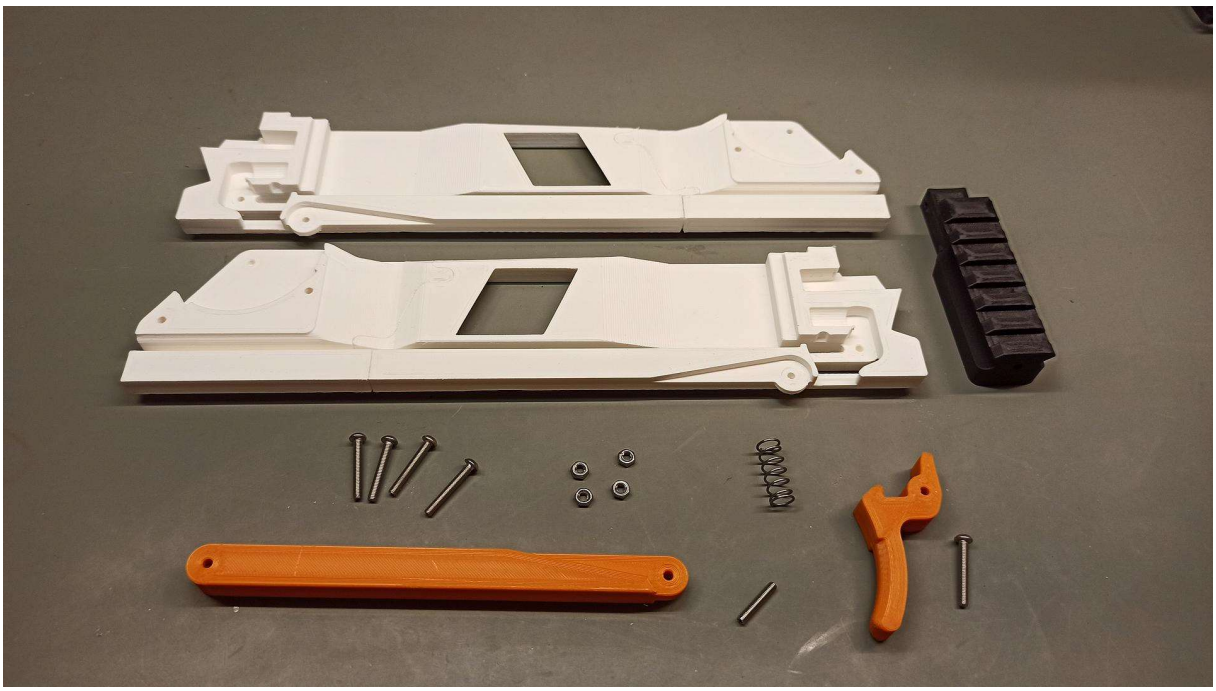


Apply glue to the surfaces to be glued. Put them together and then tighten 2 M3x16 mm screws. Remove excess glue. Allow the parts to dry.

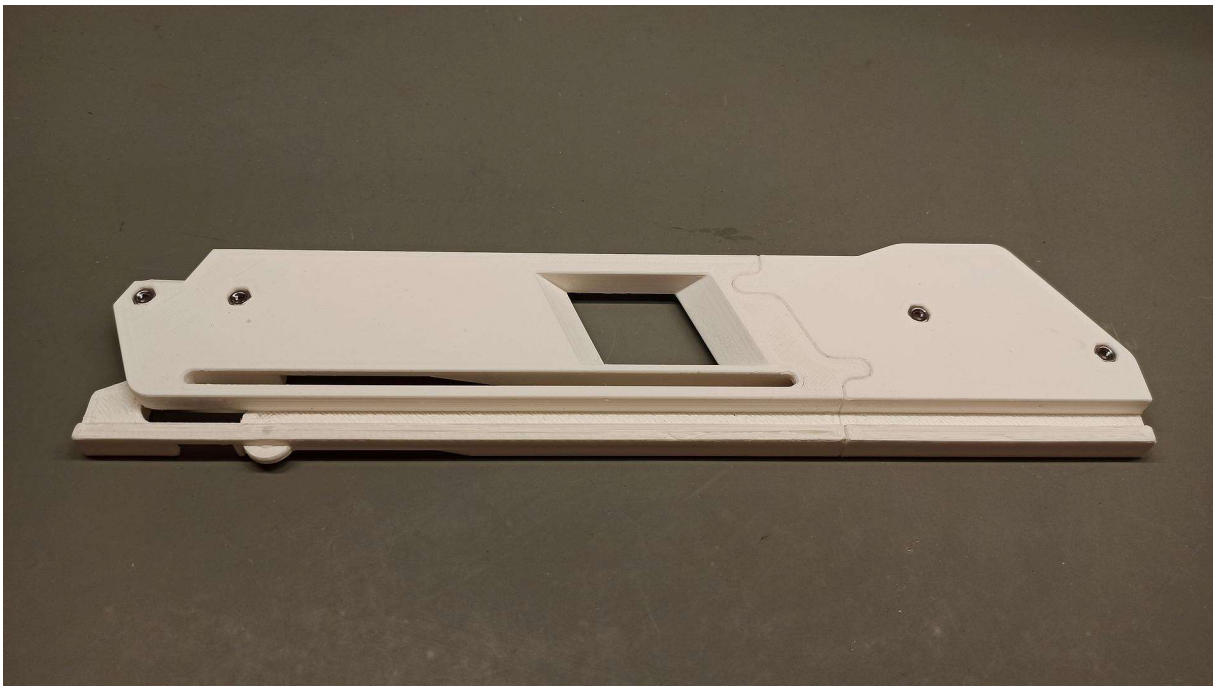
Once dry, sand all joints with sandpaper. The parts are ready for assembly.



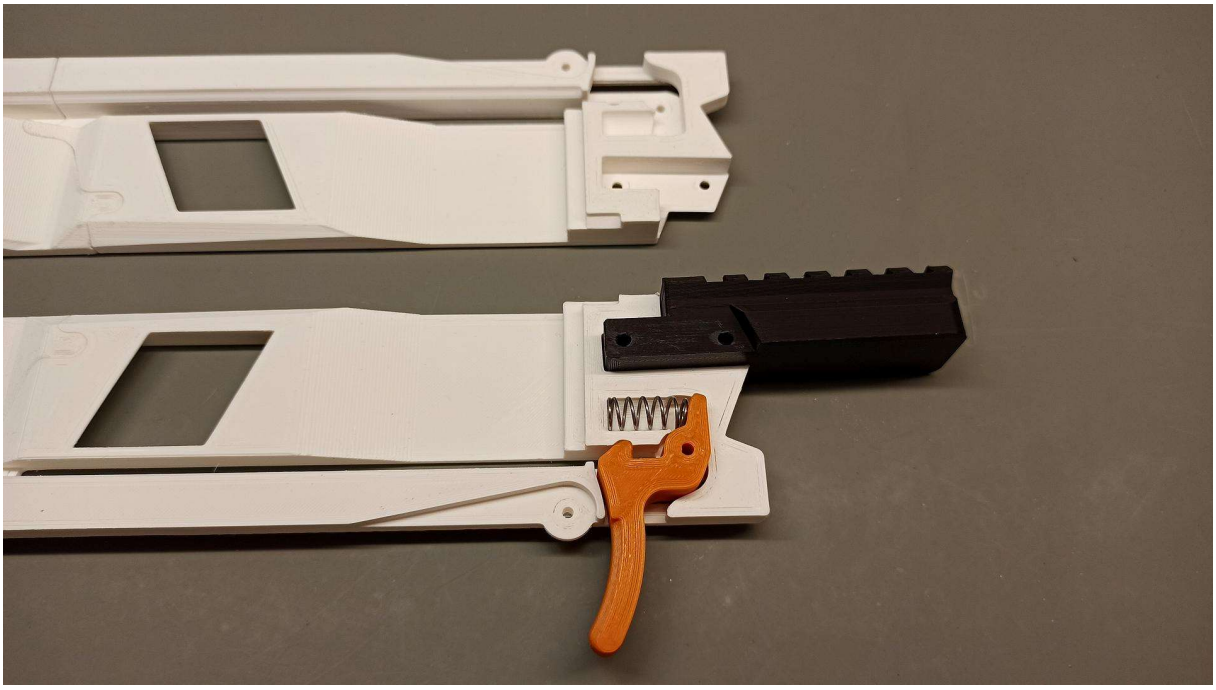
Magazine assembly



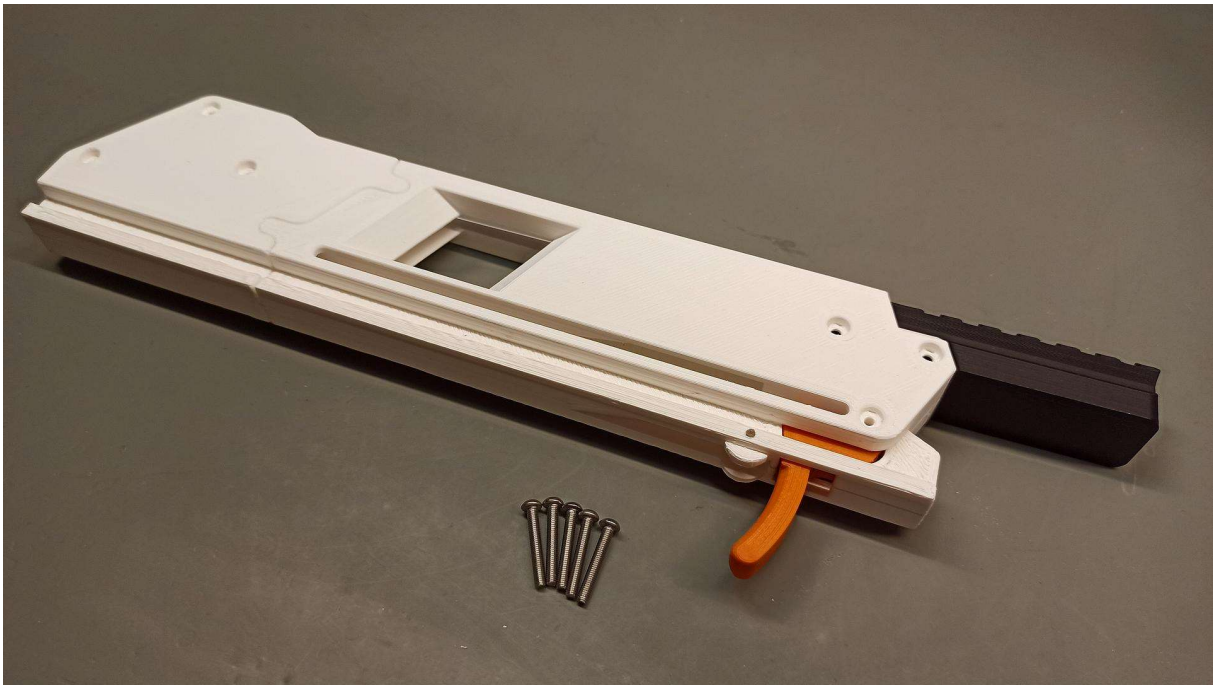
Take the right side of the magazine (*[A]_magazine_right*) and insert 4 M3 nuts into the holes.



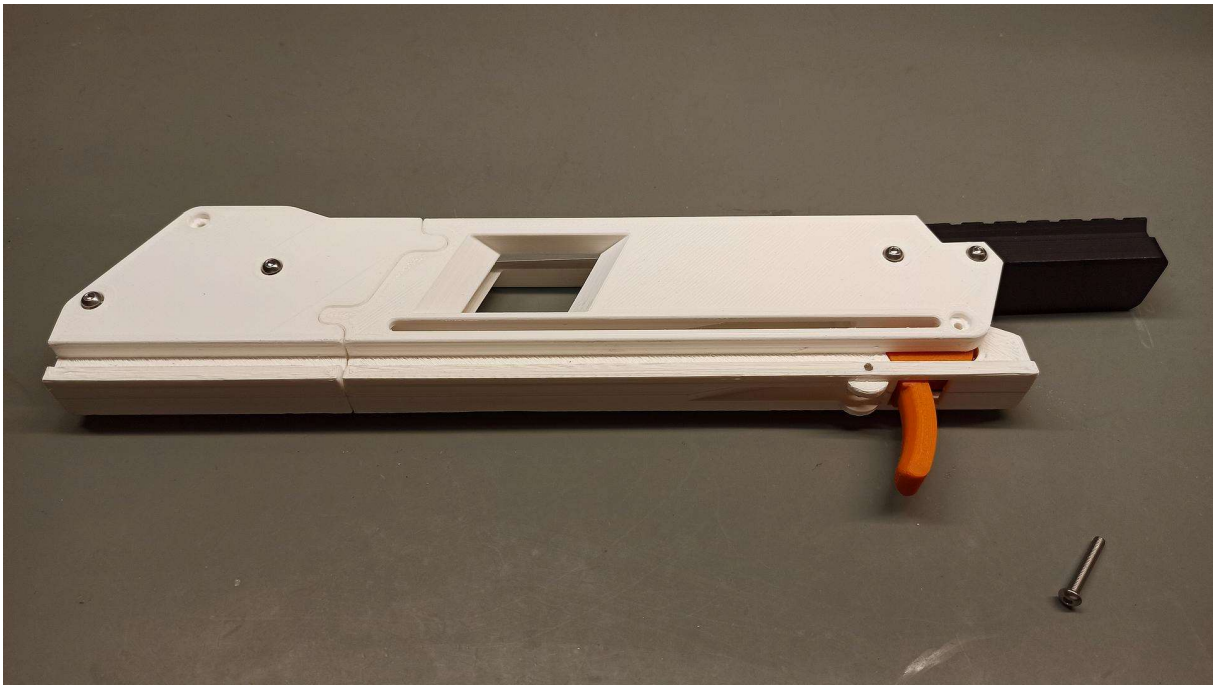
Install the *[B_or_A]_magazine_picatinny_rail*, *[C]_trigger* and 8x20x0.8 mm steel spring.



Take the left side of the magazine, put it on the right side.

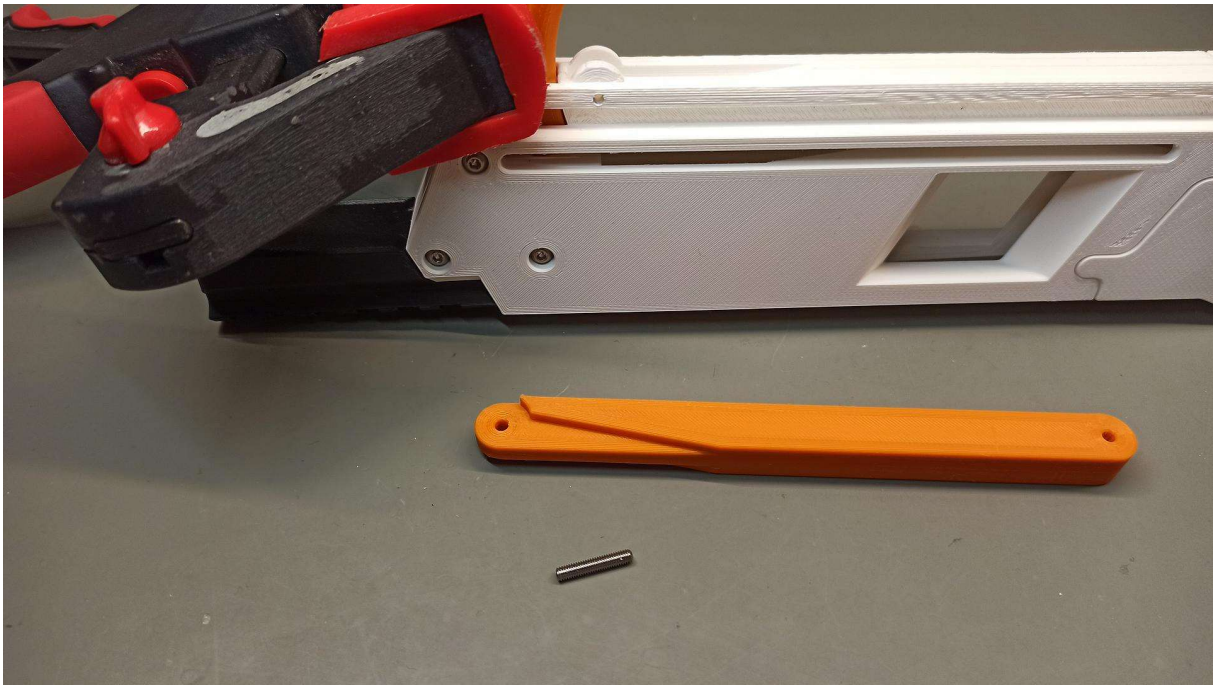


Screw it all together using 4 M3x20 mm screws. Before tightening the screws, make sure that the parts are aligned and there are no gaps between them.

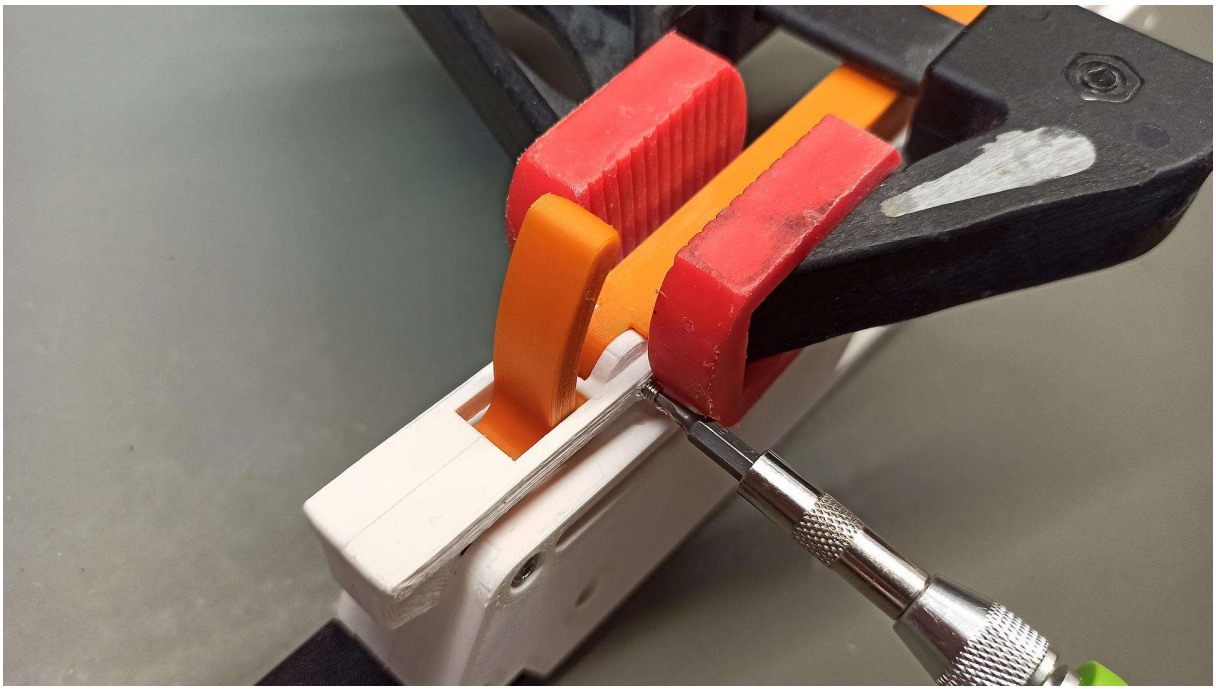


Secure *[C]_trigger* into place with M3x20 mm screw. The screw is screwed directly into the plastic, so make sure there is no gap between the parts on the bottom of the magazine. Use a clamp to squeeze the parts together while tightening. Be careful, not to over tighten it.

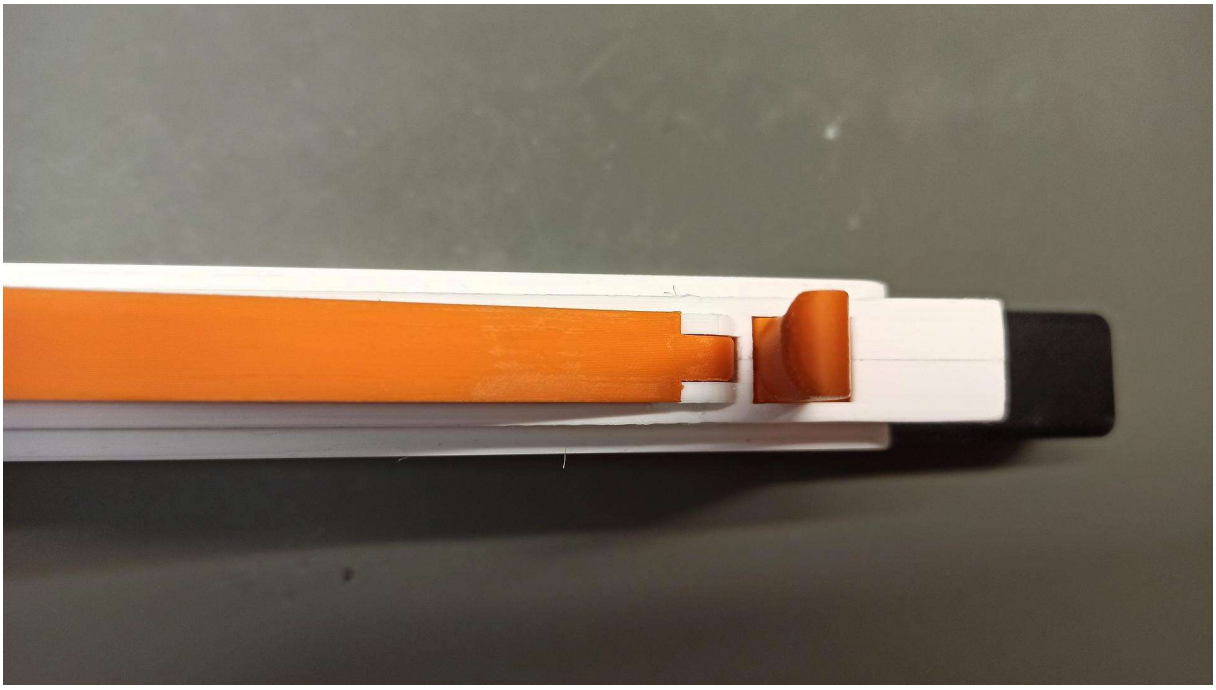
Take the *[C]_cocking_rod* and screw it to the magazine with a M3x16mm grub screw.

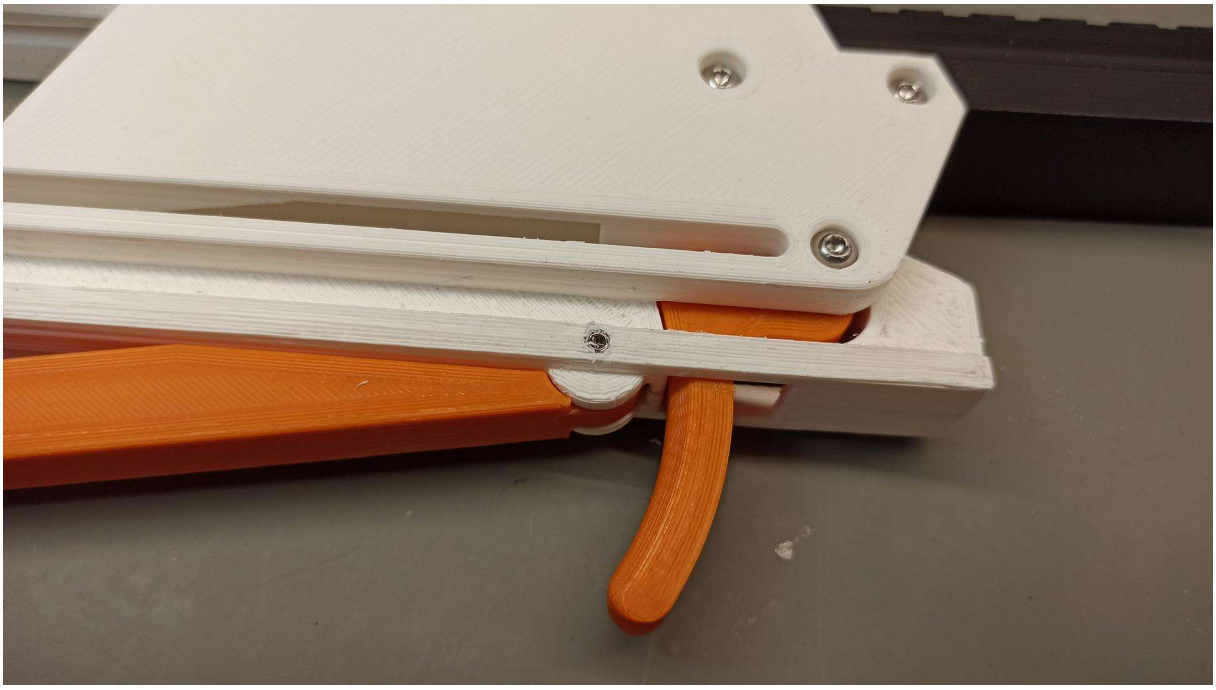


The grub screw is screwed directly into the plastic, so make sure there is no gap between the parts on the bottom of the magazine. Use a clamp to squeeze the parts together while tightening.

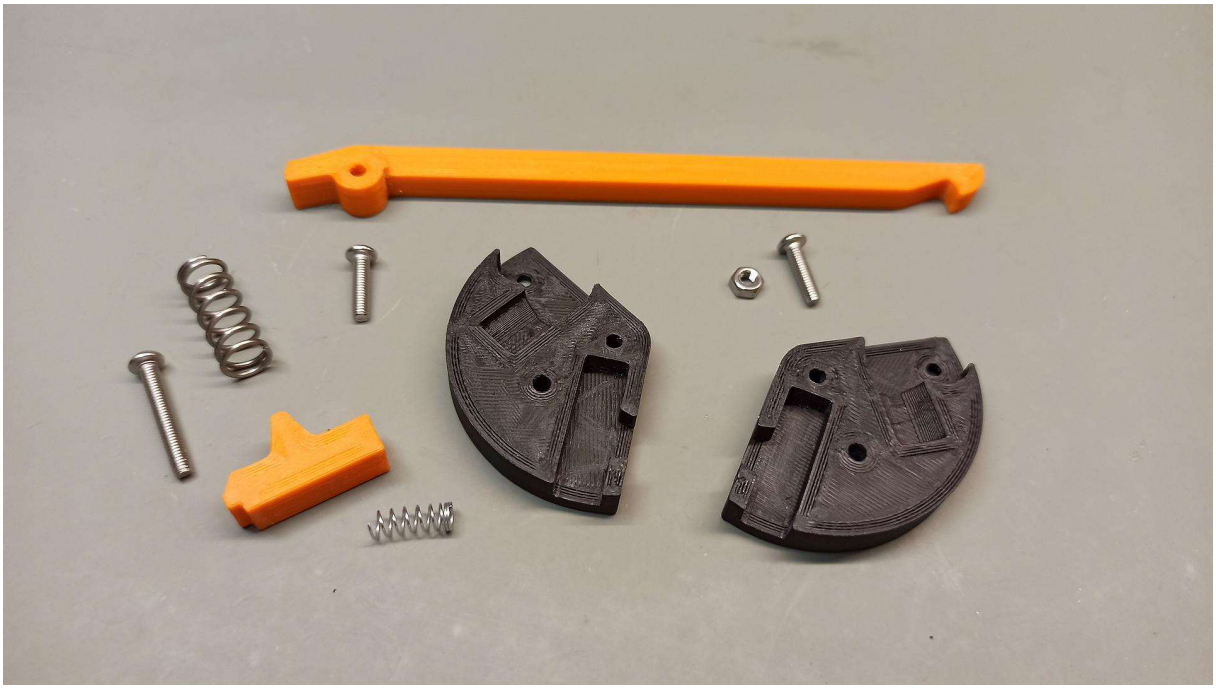


After screwing the parts, there should be no gap at the bottom of the magazine. The grub screw should be almost invisible.



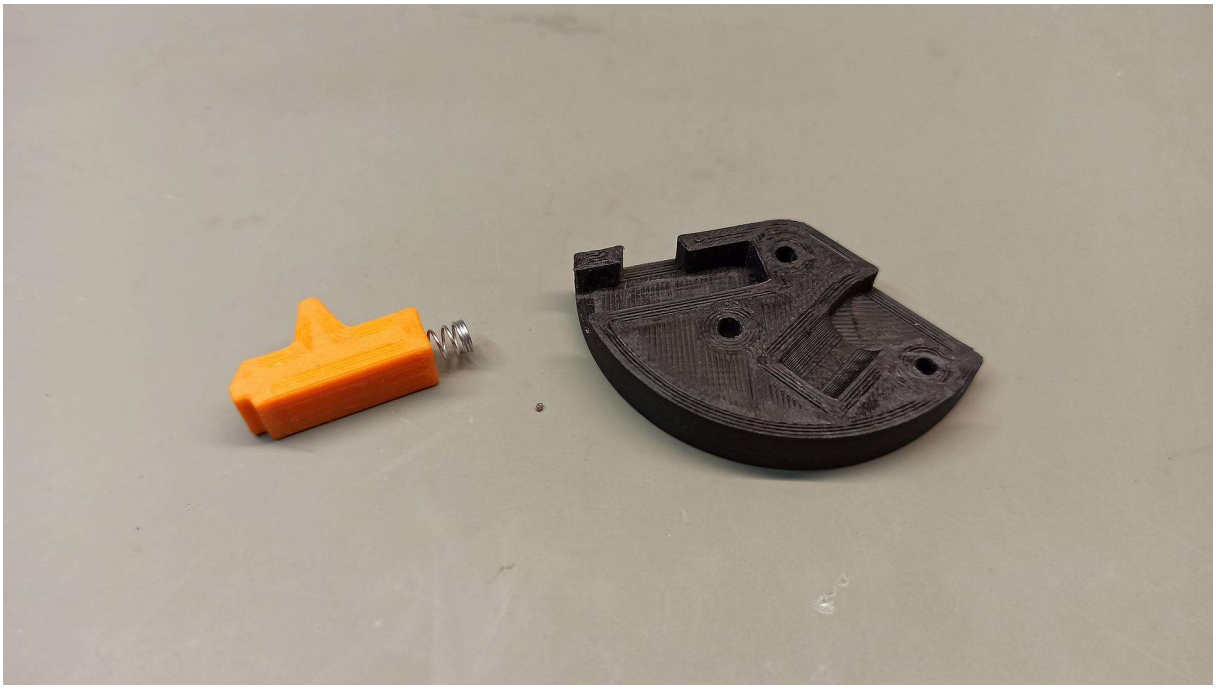


Magazine pivot assembly

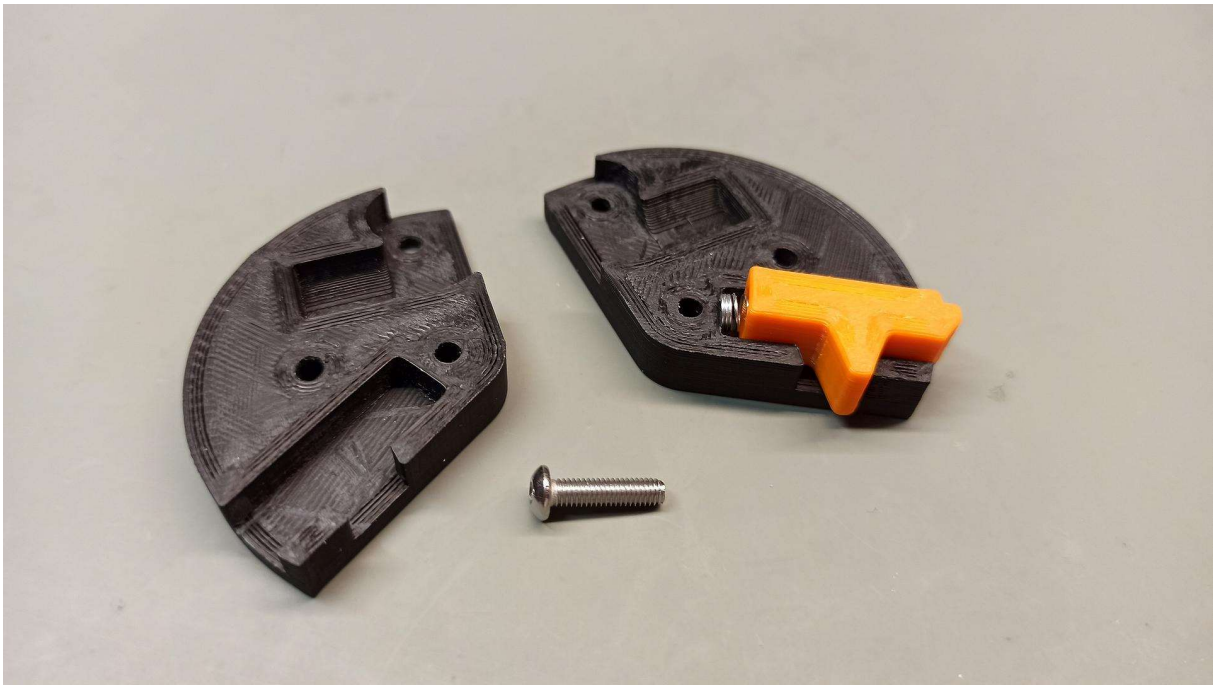


Insert M3 nut into the hole of the *[B_or_A]_magazine_pivot_part2*.

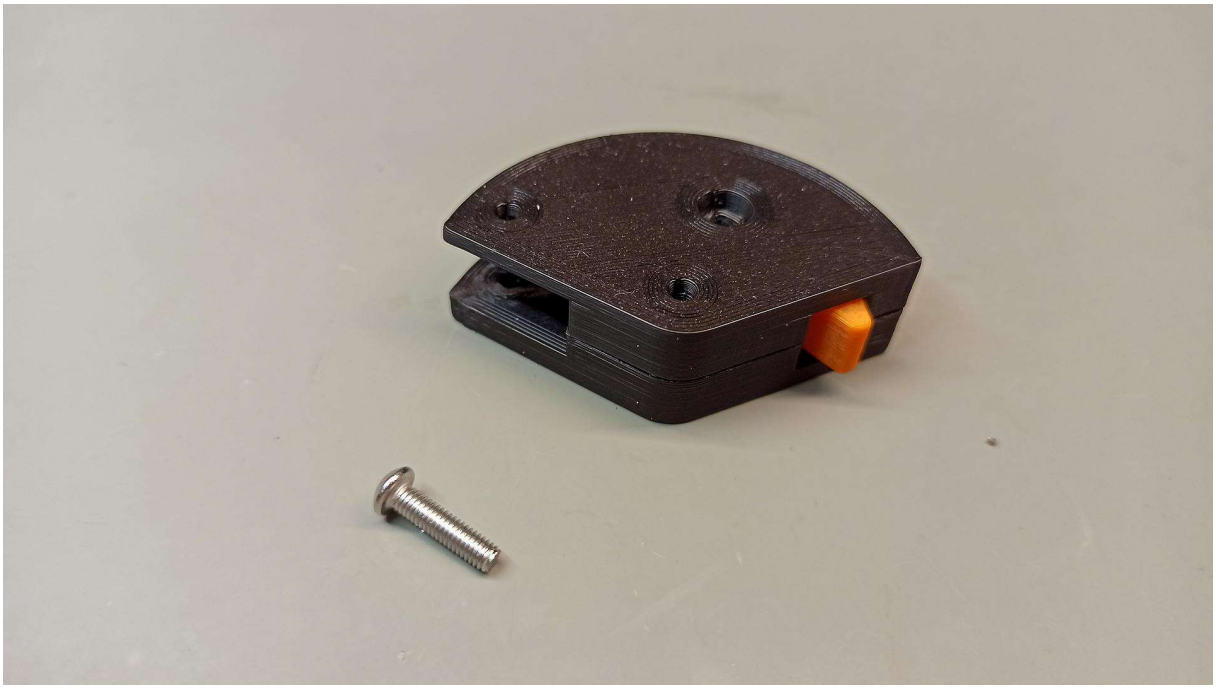
Insert half of the spring from the clicky pen into the *[C]_magazine_pivot_lock* hole.

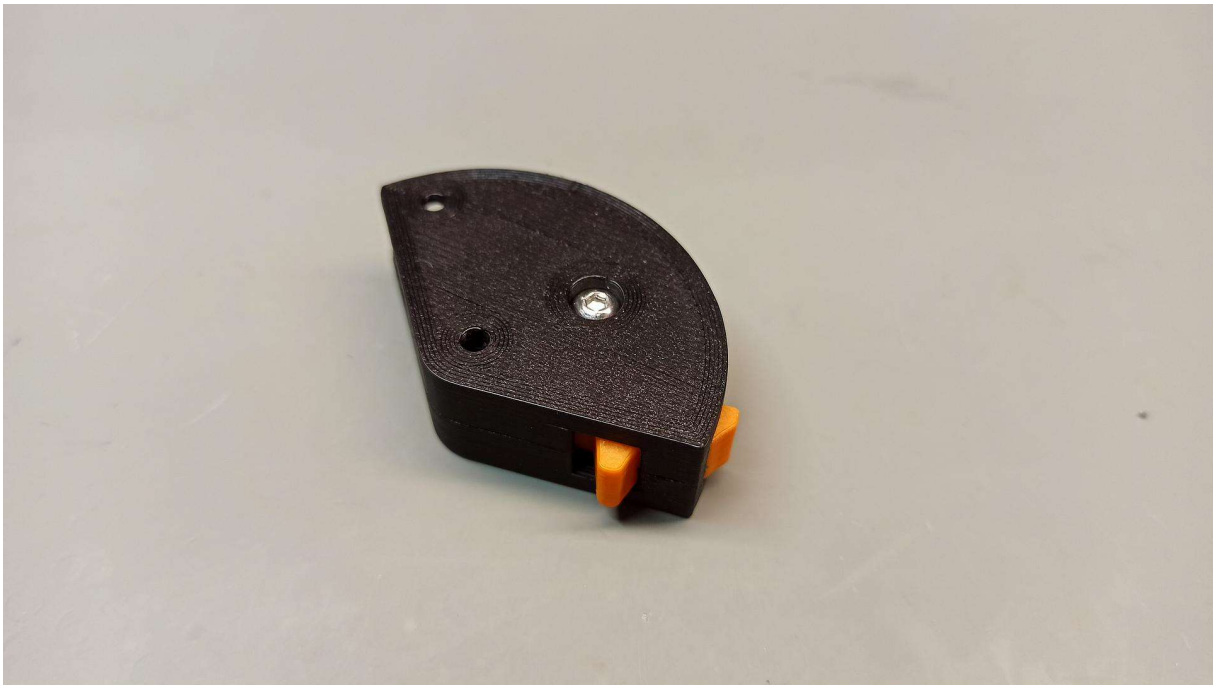


Insert *[C]_magazine_pivot_lock* to *[B_or_A]_magazine_pivot_part2*.

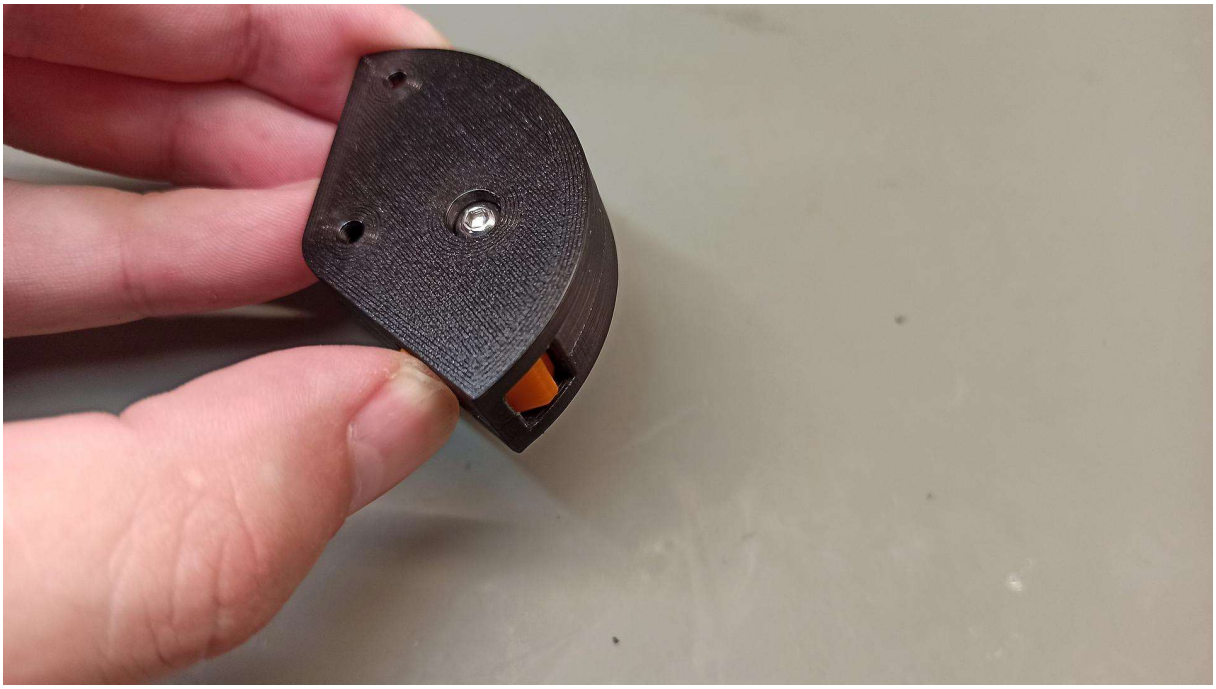


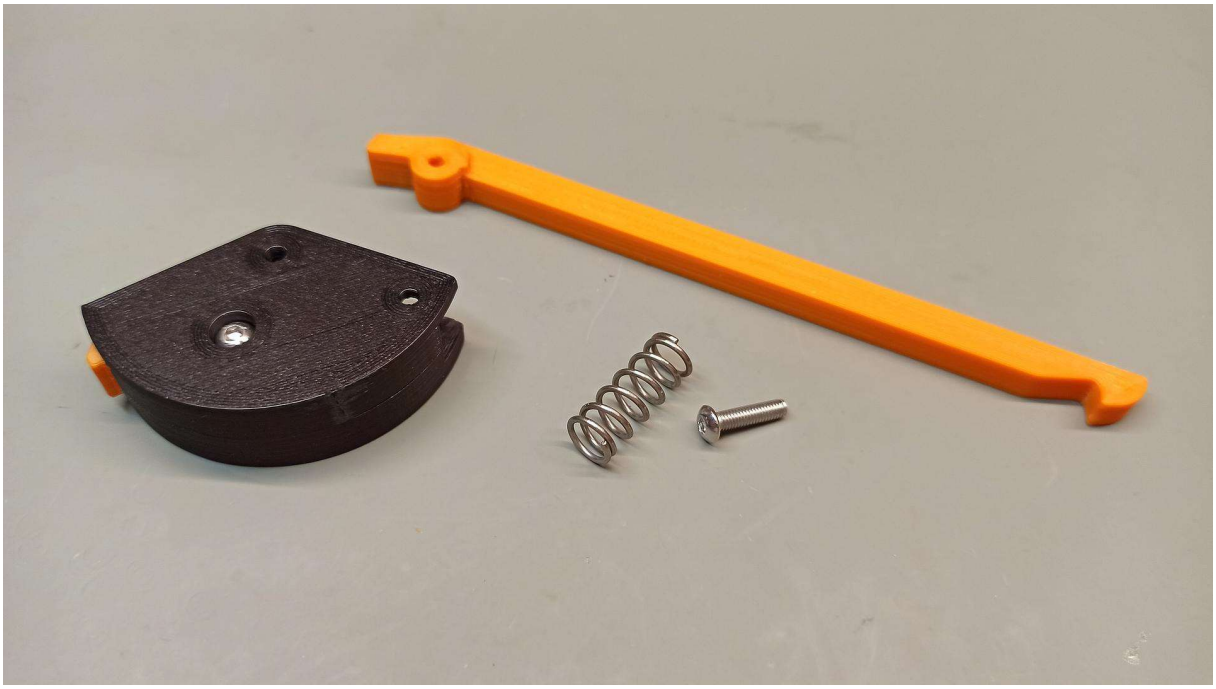
Join together *[B_or_A]_magazine_pivot_part1* and *[B_or_A]_magazine_pivot_part2* using M3x12mm screw.



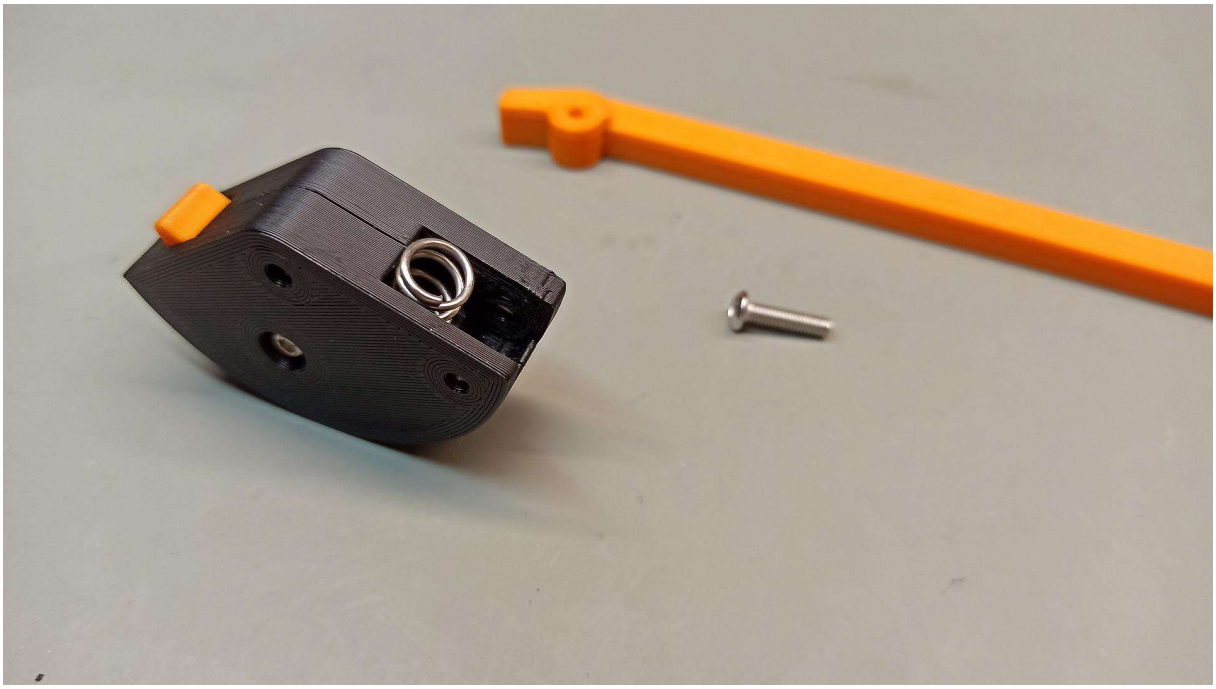


Check that the *[C]_magazine_pivot_lock* slides easily into the groove.

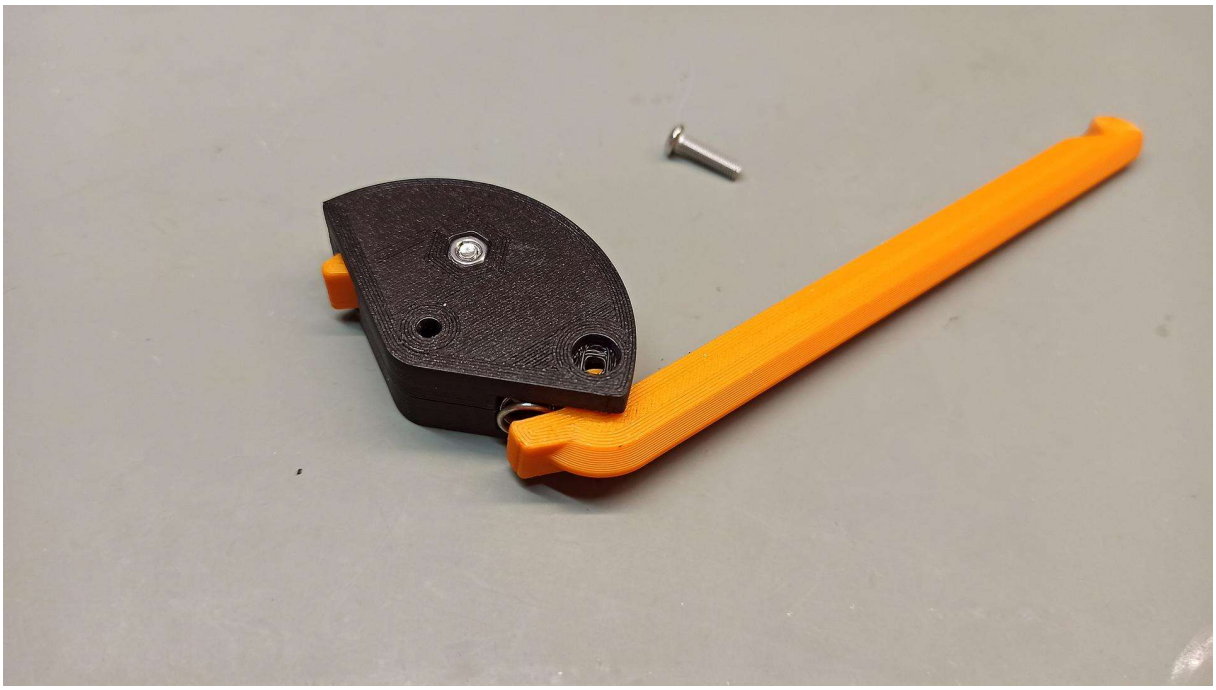


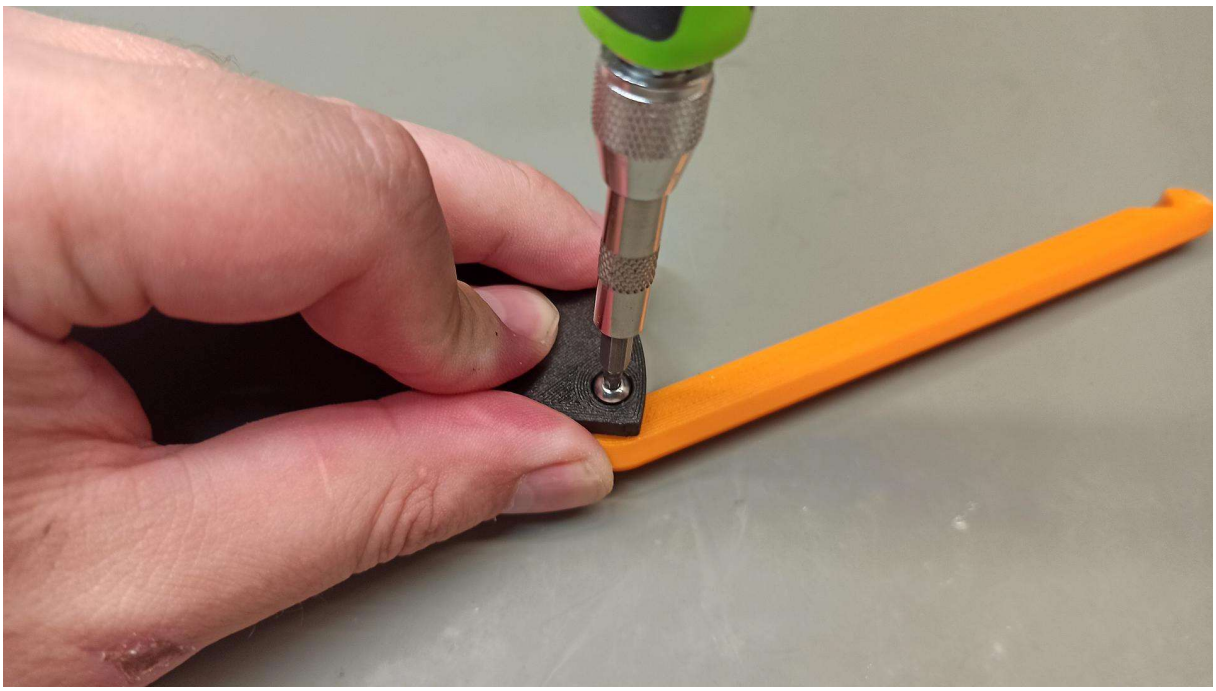


Install 8x20x1.0 mm steel spring into hole.

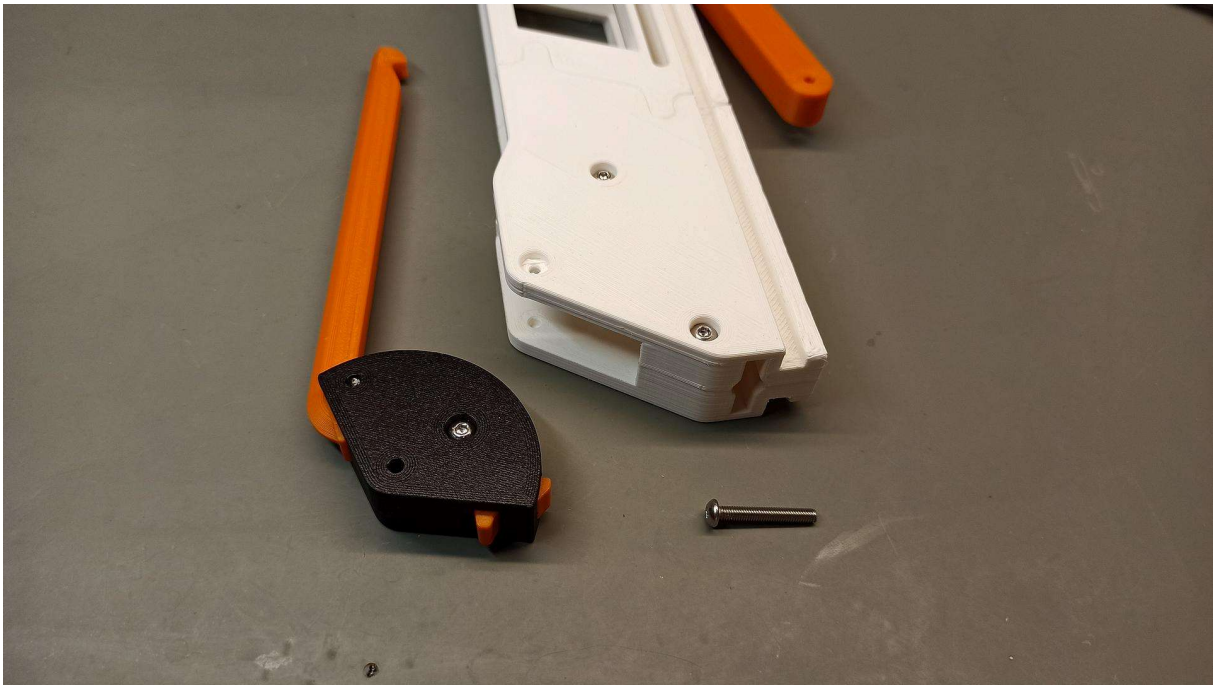


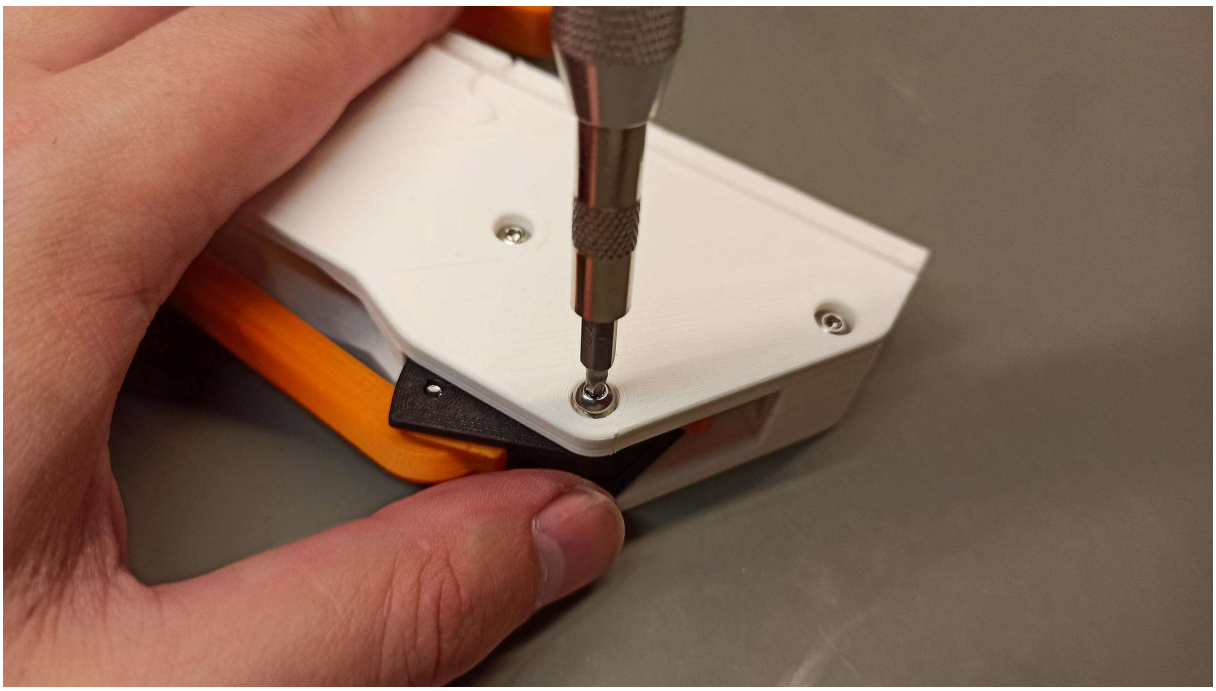
Insert *[C]_magazine_spring_lever* into place and secure it with M3x12 mm screw. The screw is screwed directly into the plastic. Be careful, not to over tighten it.



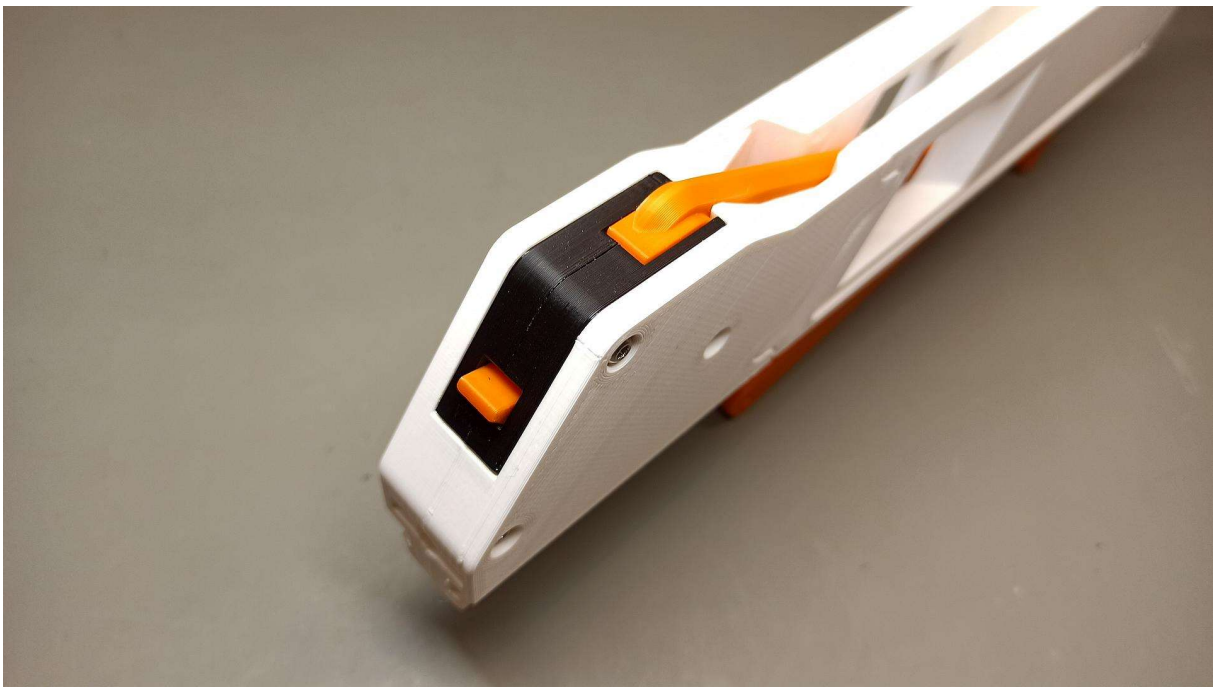


Put the whole thing into the magazine and secure it with an M3x20 mm screw. The screw is screwed directly into the plastic. Be careful, not to over tighten it.

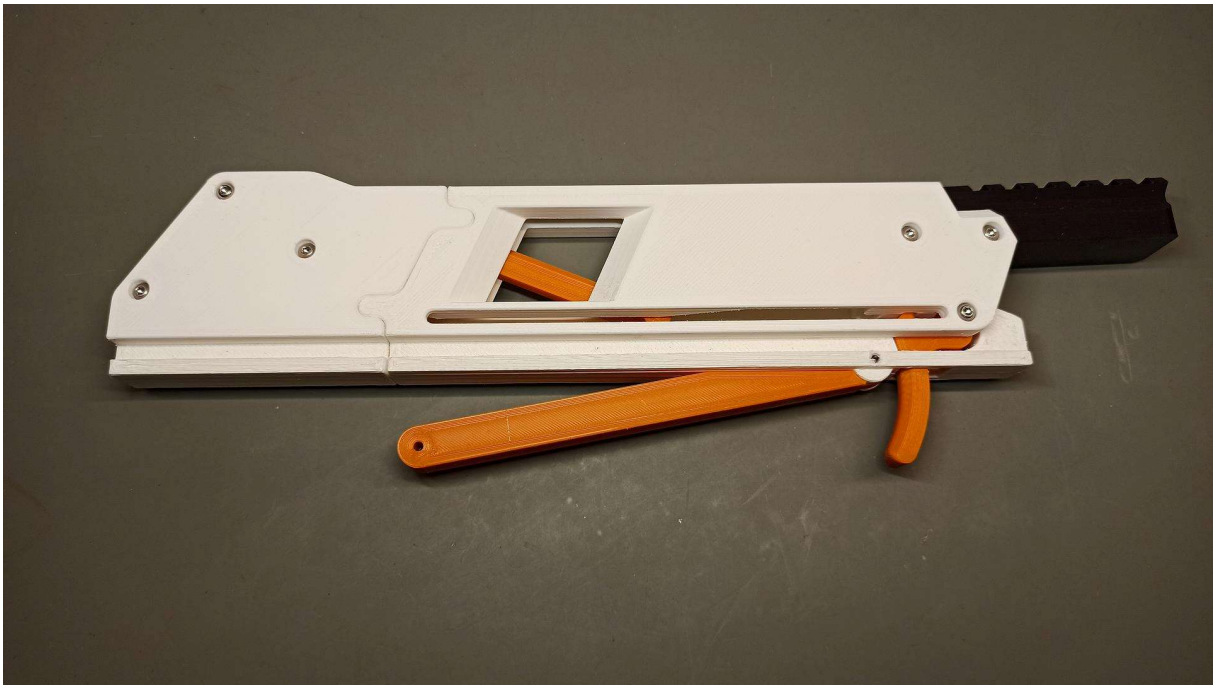




Make sure the *[B_or_A]_magazine_pivot* and *[C]_magazine_pivot_lock* mechanisms are working properly.



The entire magazine is ready.



Pistol body

If the crossbow is illegal or requires a license in your country, you can still use this toy as a repeating slingbow with cocking lever, just use alternative *_no-xbow* parts.

Whichever version you choose, I think the following information will help you assemble a complete pistol. Parts are slightly different and in the no-crossbow version there is no *cocking_lever_lock*.

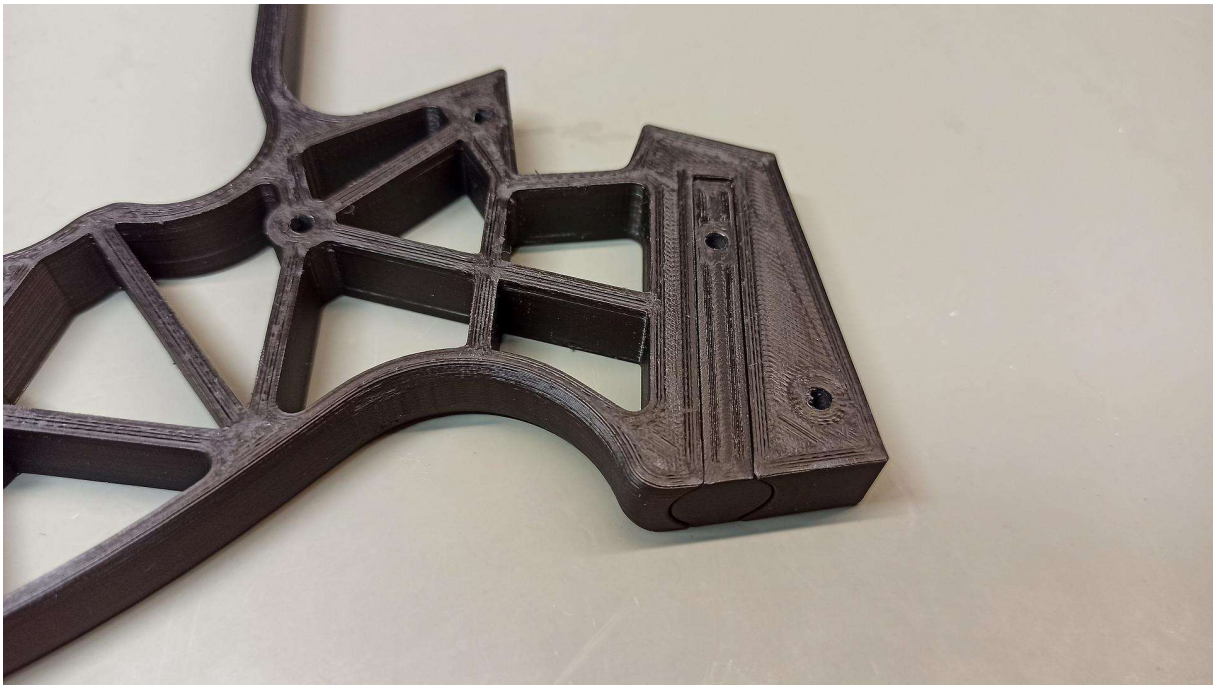
If you chose the crossbow limbs powered version skip to the chapter "Crossbow limbs powered version assembly" for more details. The principle and sequence of assembly are similar, but some details are explained there.

Take *[B]_pistol_body_middle_rear*, *[B]_pistol_body_middle_rear_plug* and *[C]_*cocking_lever_lock.

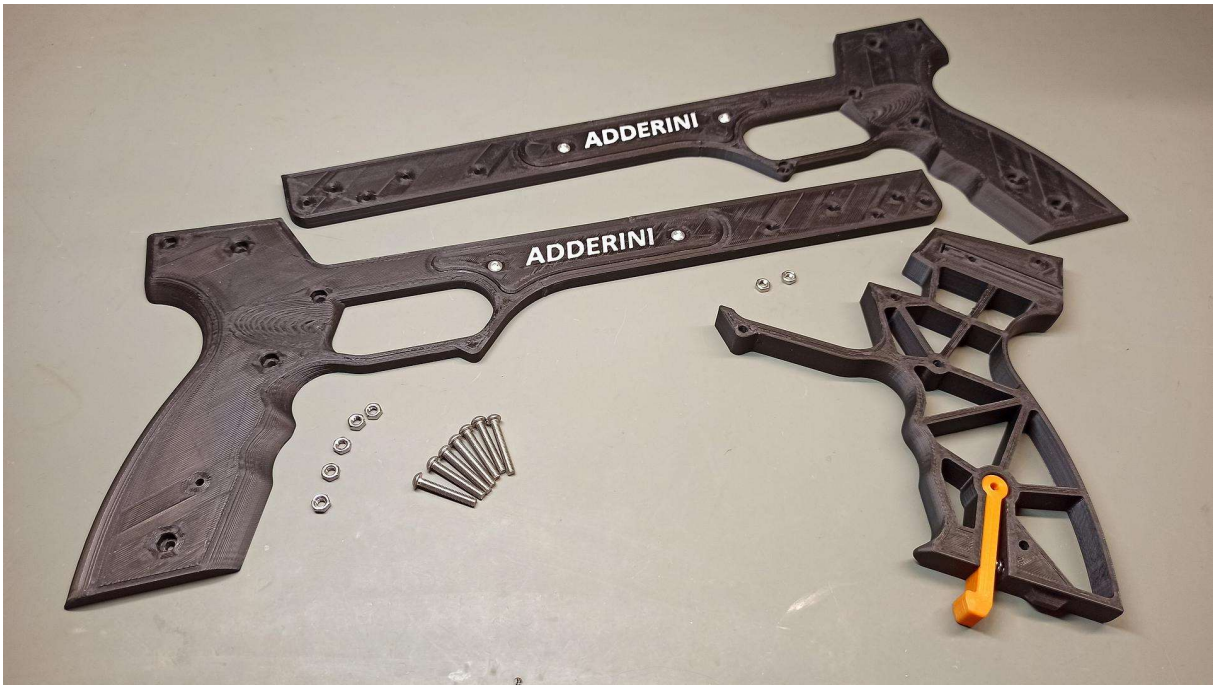
Insert half of the spring from the clicky pen into the *[B]_pistol_body_middle_rear* hole.

Insert *[C]_cocking_lever_lock* into place. Help yourself with a knife or flat screwdriver to compress the spring.

Install the *[B]_pistol_body_middle_rear_plug*, unless you want to use *[A]_stock* later.



Assembling parts of the pistol body.



Take the right side of the *pistol_body* and insert the 5 M3 nuts into the pistol handle part.

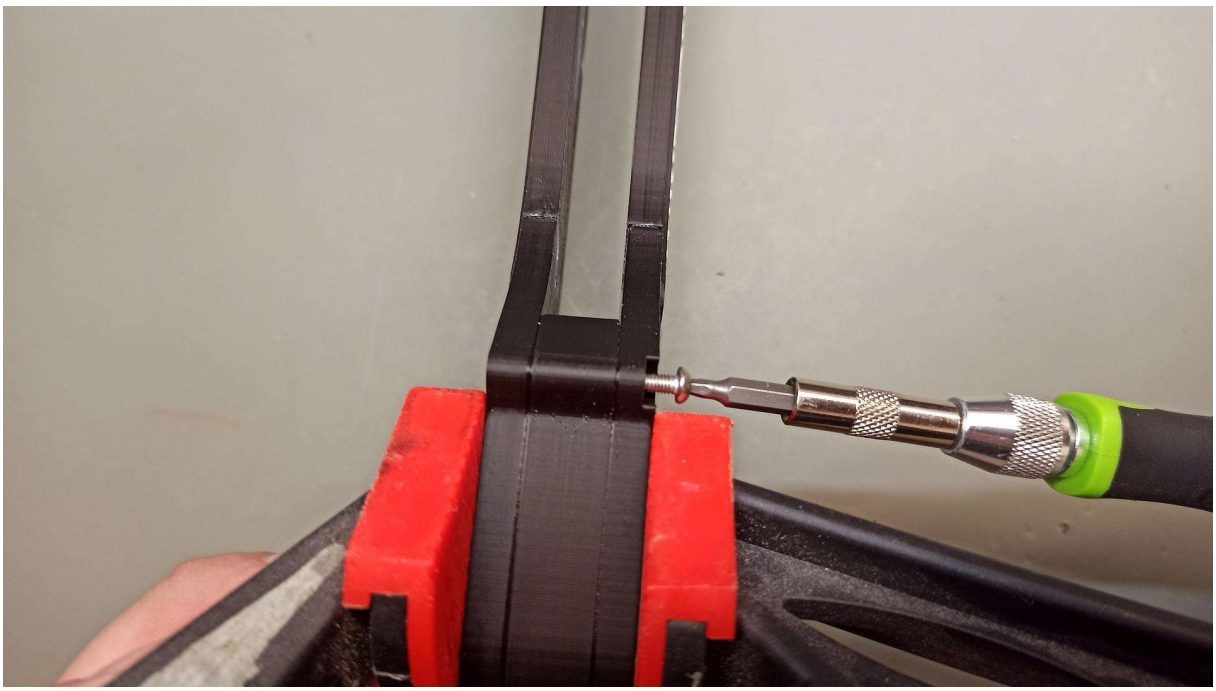
Insert the 2 M3 nuts into the holes on the inside of the pistol body.

Install *[B]_pistol_body_right, [B]_pistol_body_middle_rear* and *[B]_pistol_body_left* to fit together.

Screw all together with 5 M3x20 mm screws. I suggest inserting 2 stabilizing M3 screws and nuts in the front part before tightening the rear screws. Both sides must be in right place.

Secure the *[C]_cocking_lever_lock* and the trigger guard parts with 2 M3x20 mm screws. The screws are screwed directly into the plastic. Be careful not to over tighten them.

Make sure there is no gap between the trigger guard parts. Use a clamp to squeeze the parts together while tightening

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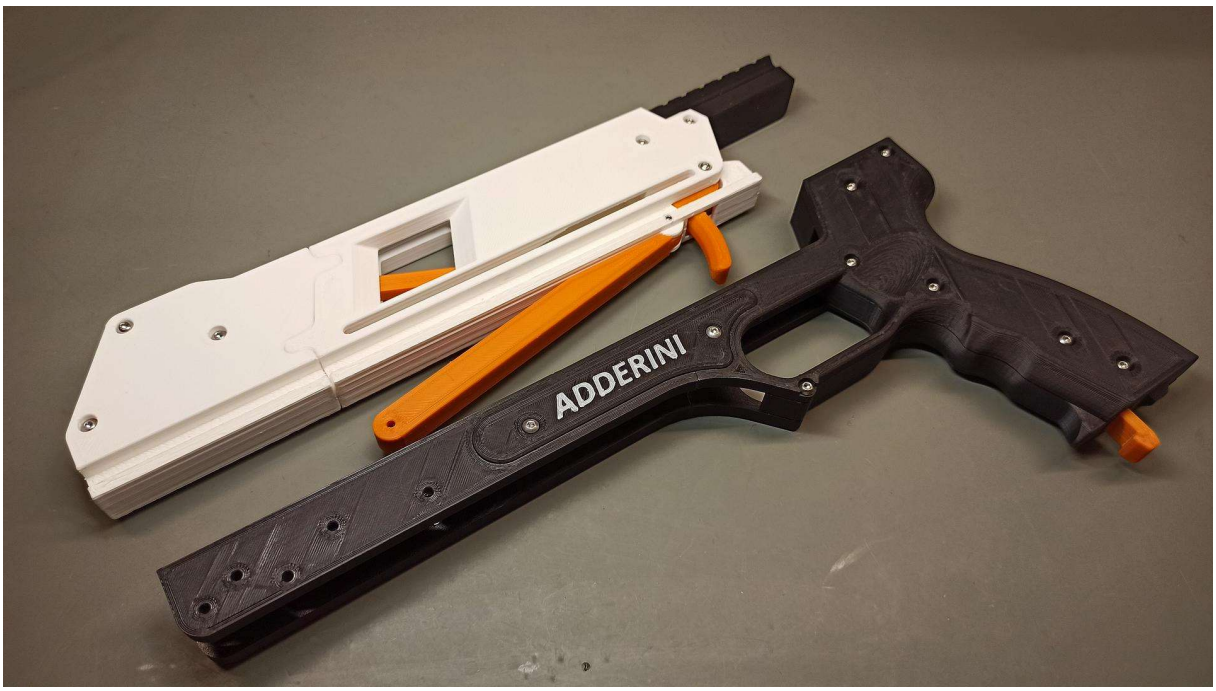
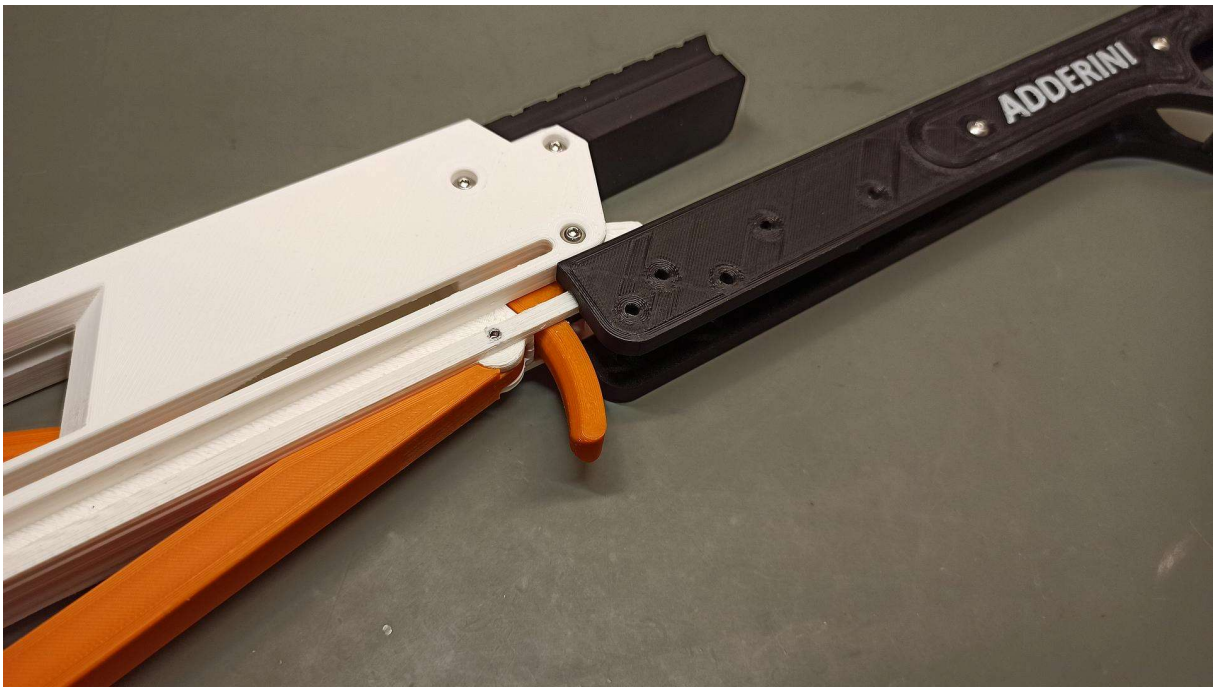
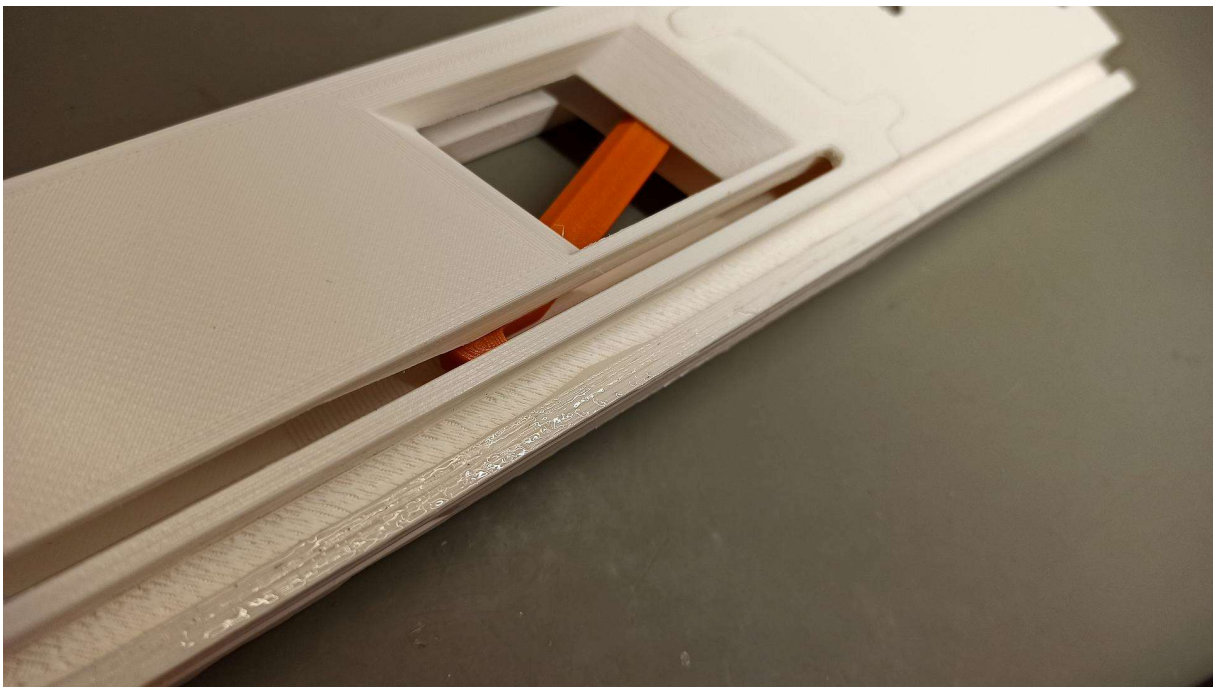
Magazine and pistol body rails



Take *pistol_body* and *magazine*. Slide the magazine rails into the pistol body rails. The movement in the rails should be smooth, without much friction between parts. If not, use a file or sandpaper to grind the magazine rails.

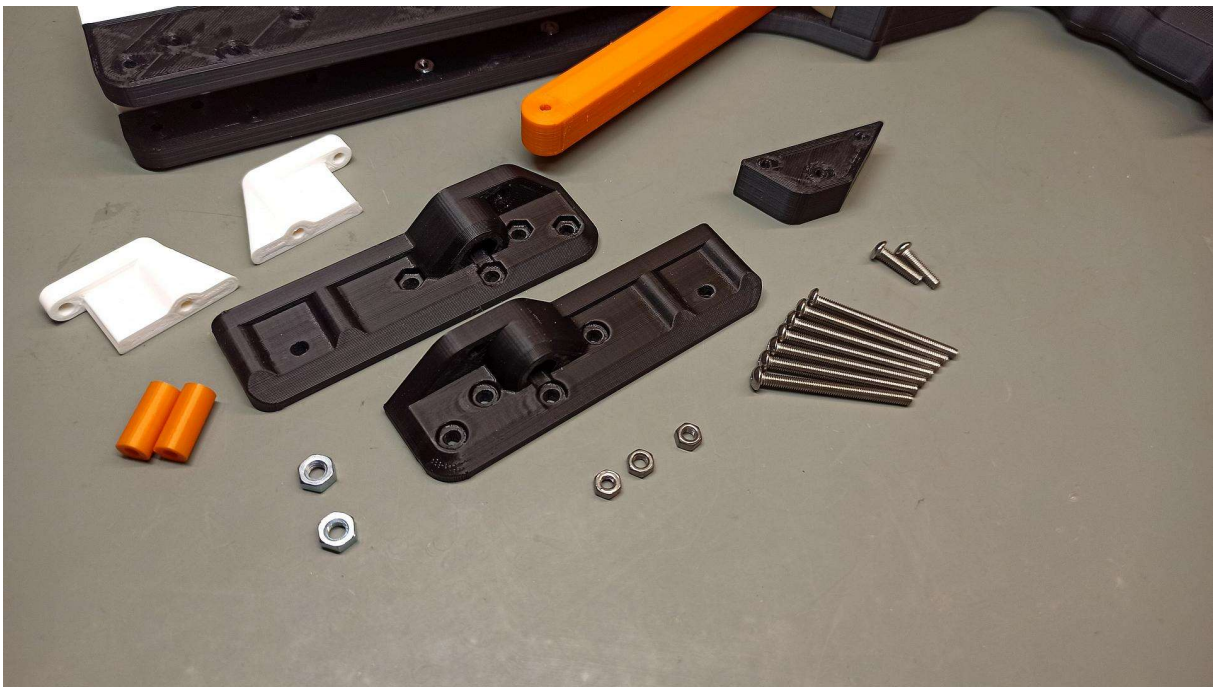


If both parts fit together, slide out the magazine and coat the rails with PTFE grease. Then slide the magazine back.



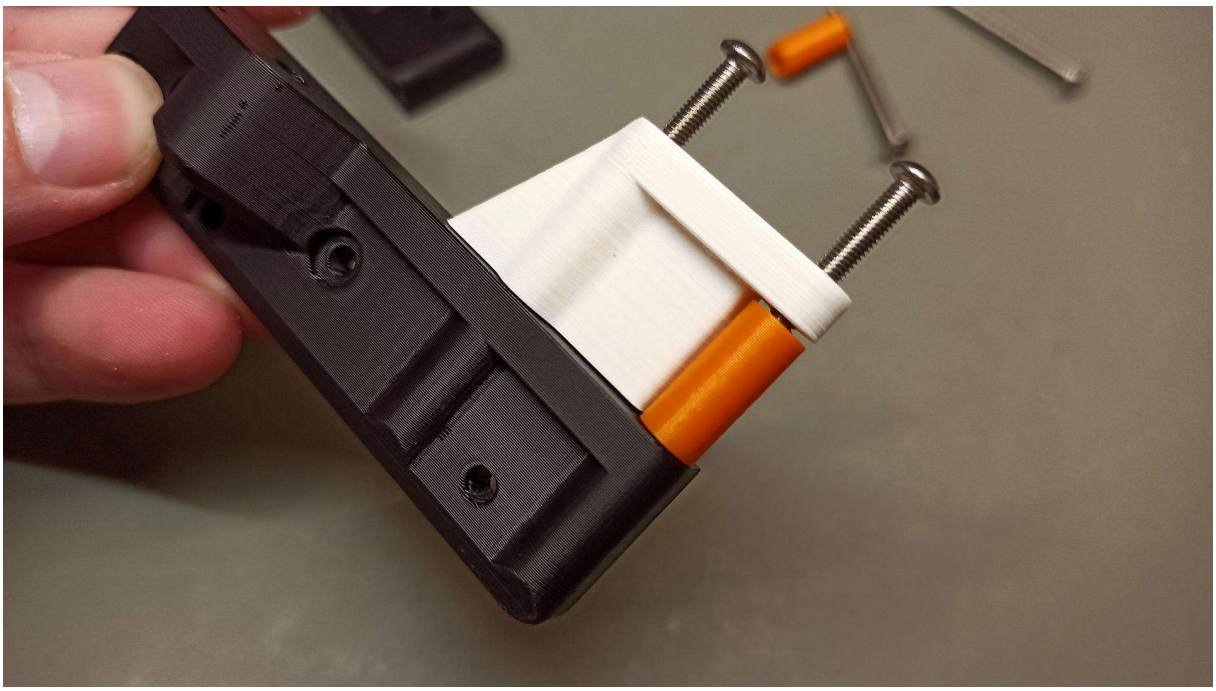

ADDERINI

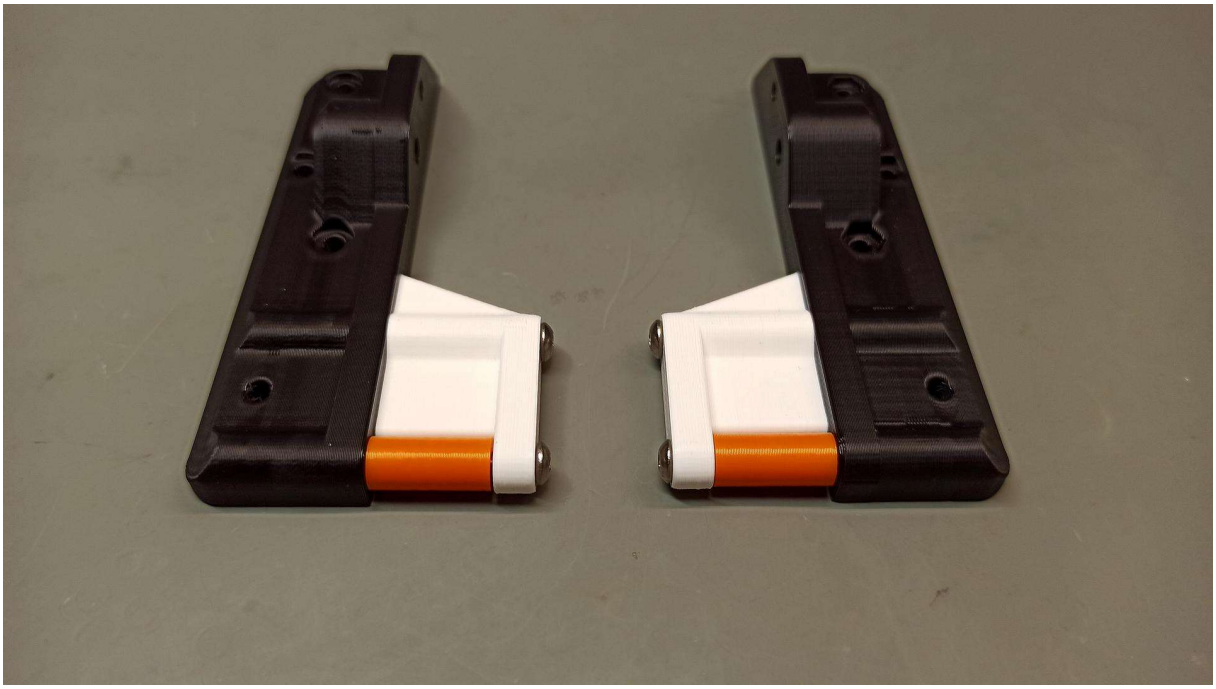
Slingshot mount parts and string stoppers



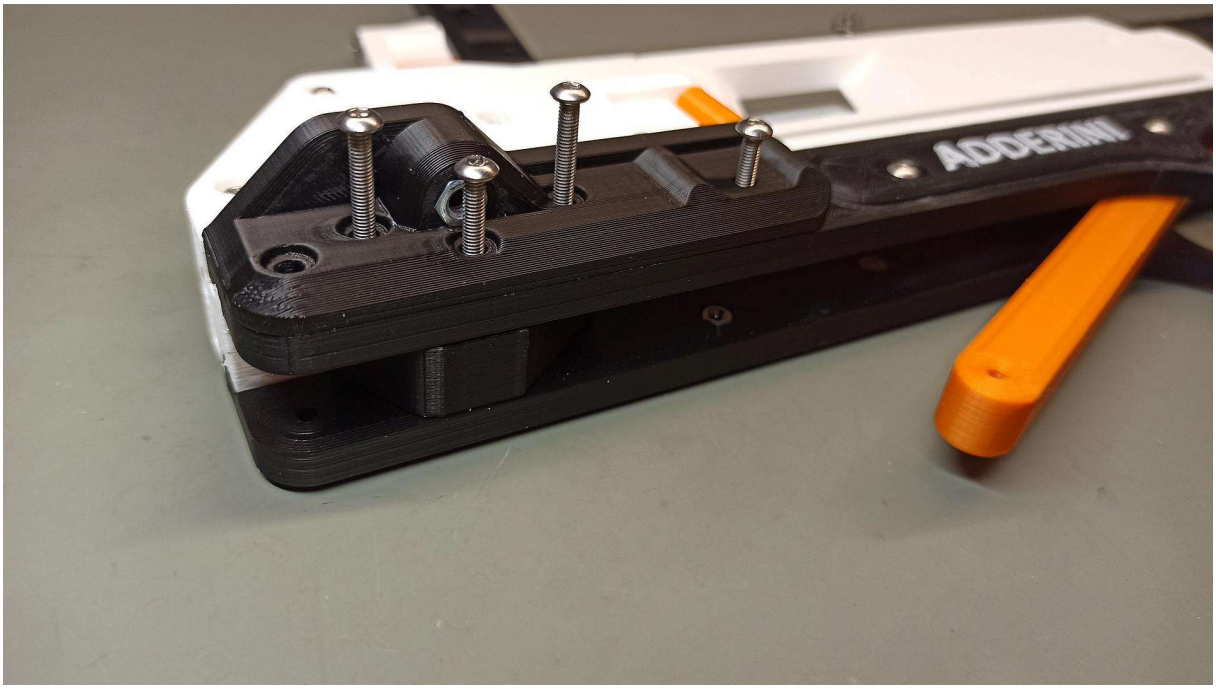
Insert 2 M4 nuts into the holes of the *[B]_slingshot_mounts*.

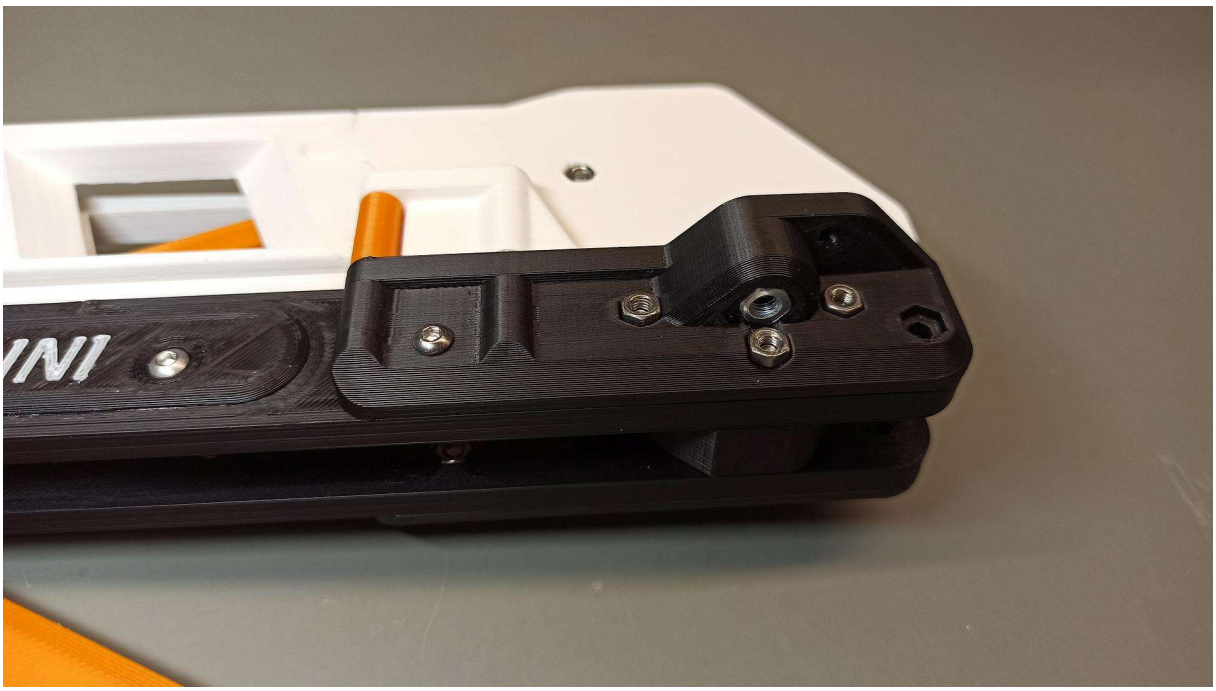
Attach *[A]_slingshot_string_stoppers* with *[C]_slingshot_string_stopper_rollers* to the *[B]_slingshot_mounts* with 4 M3x35 mm screws. Make sure the rollers turn freely on the screw. If not, you have to drill or file slightly larger holes in the rollers. The rollers protect the rubber and the bowstring against abrasion. Alternatively, you can install five 683ZZ bearings per side in place of the rollers. The screws are screwed directly into the plastic. Be careful not to over tighten them.





Assemble the *[B]_slingshot_mounts* parts together with *[B]_pistol_body_middle_front*. Use 3 M3x35 mm screws with 3 M3 nuts and 2 M3x12 mm screws.

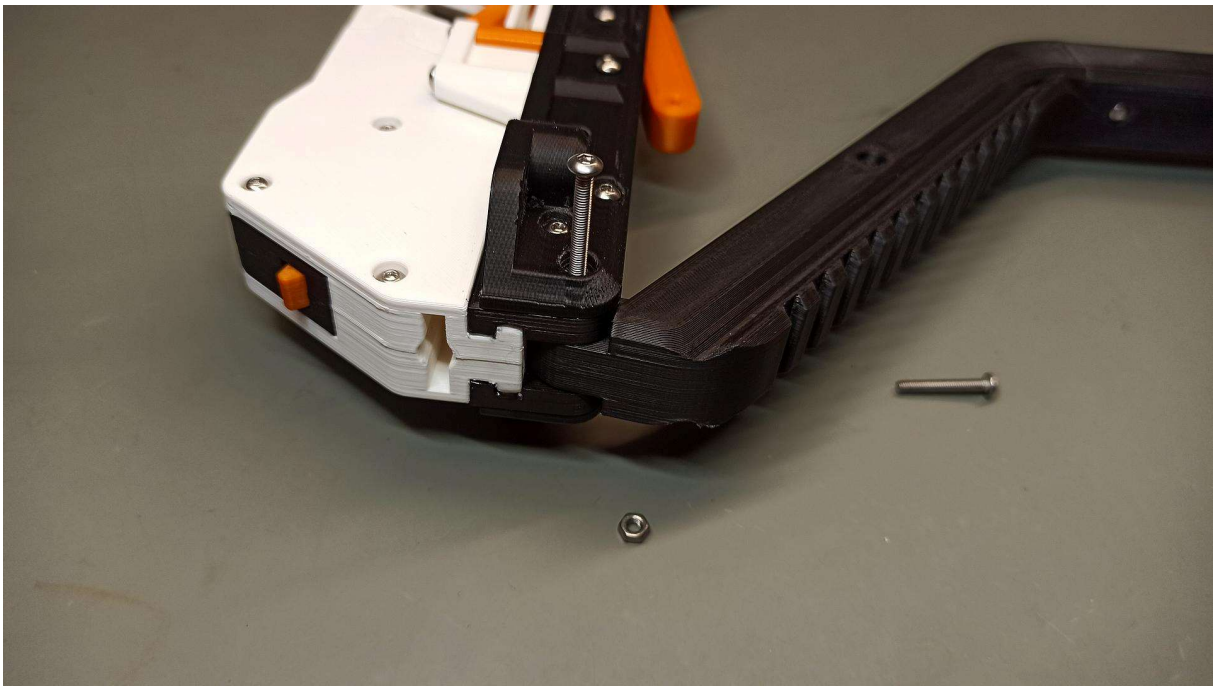




After tightening the M3x35 mm screws, check that the magazine moves in the rails without much friction. If not, loosen the top 2 M3x35 mm screws a little. If there is still a lot of friction then you need to print the wider part *[B]_pistol_body_middle_front +0.2mm* or *+0.4mm*.

Cocking lever

Insert the *cocking_lever* into the *pistol_body* and secure it with the M3x35 mm screw and M3 nut.

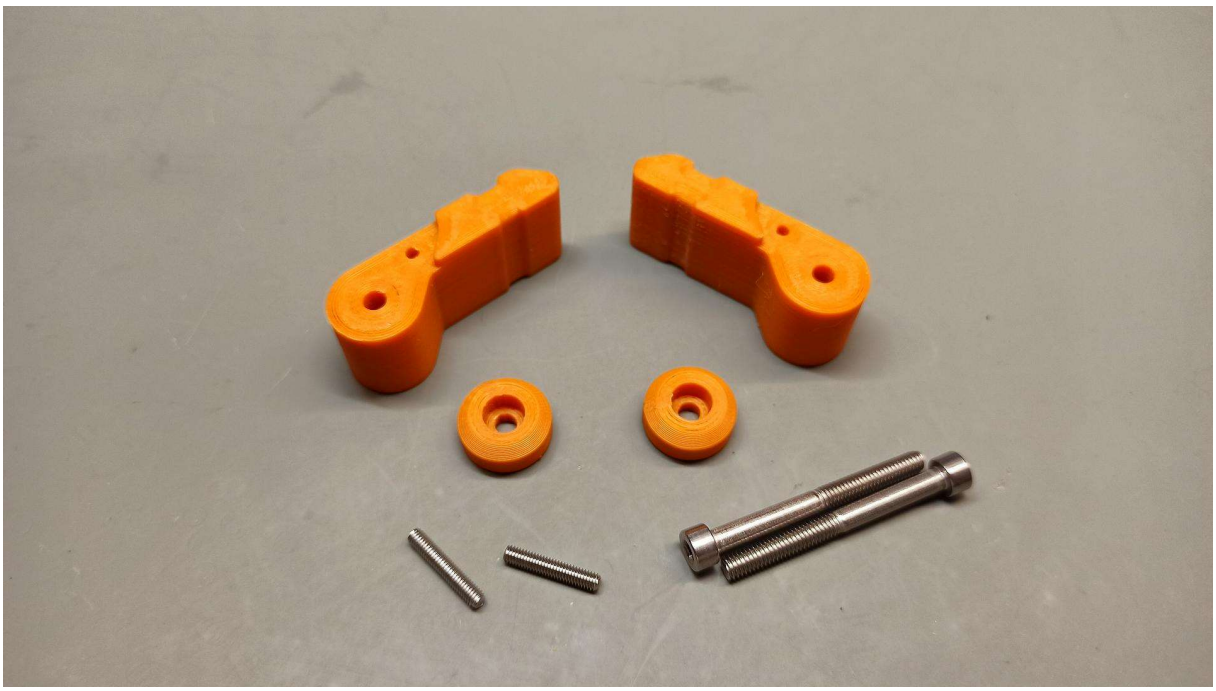


Combine *cocking_rod* with *cocking_lever*. Secure the connection with the M3x20 mm screw. The screw is screwed directly into the plastic. Be careful, not to over tighten it.

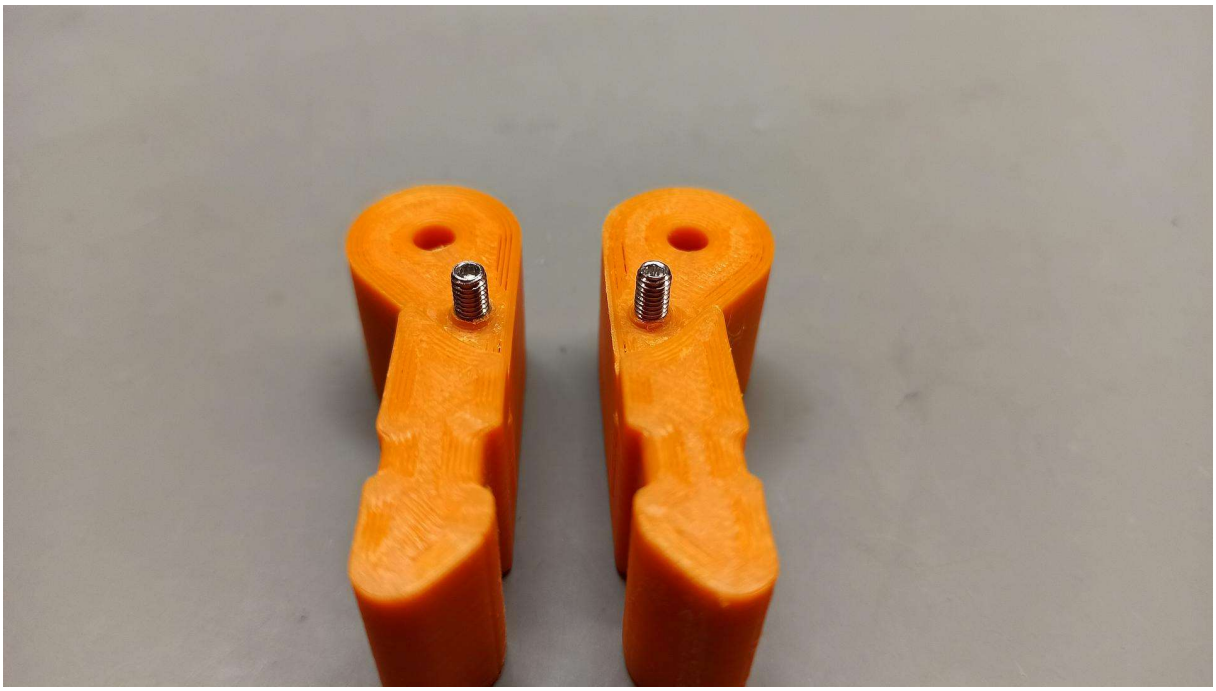
Check that all pistol mechanisms are functioning properly and *cocking_lever* locks into place. If not, file the *cocking_lever_lock* hook or cocking lever catch hole a bit.


ADDERINI

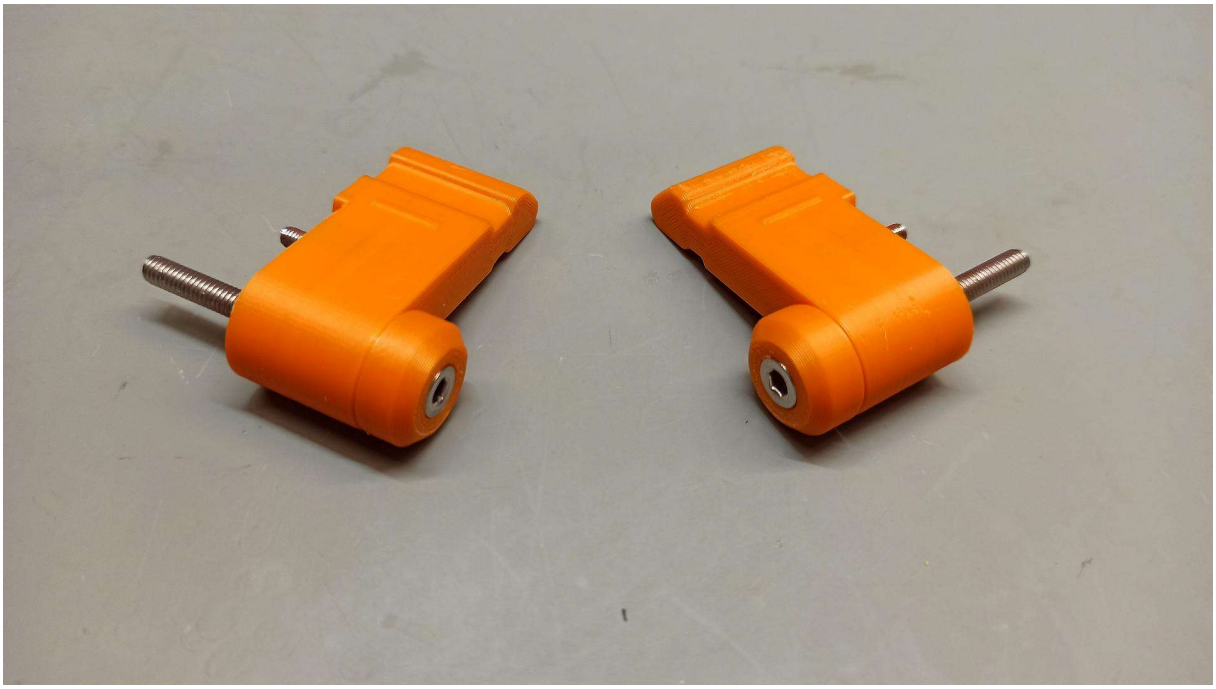
Slingshot arms



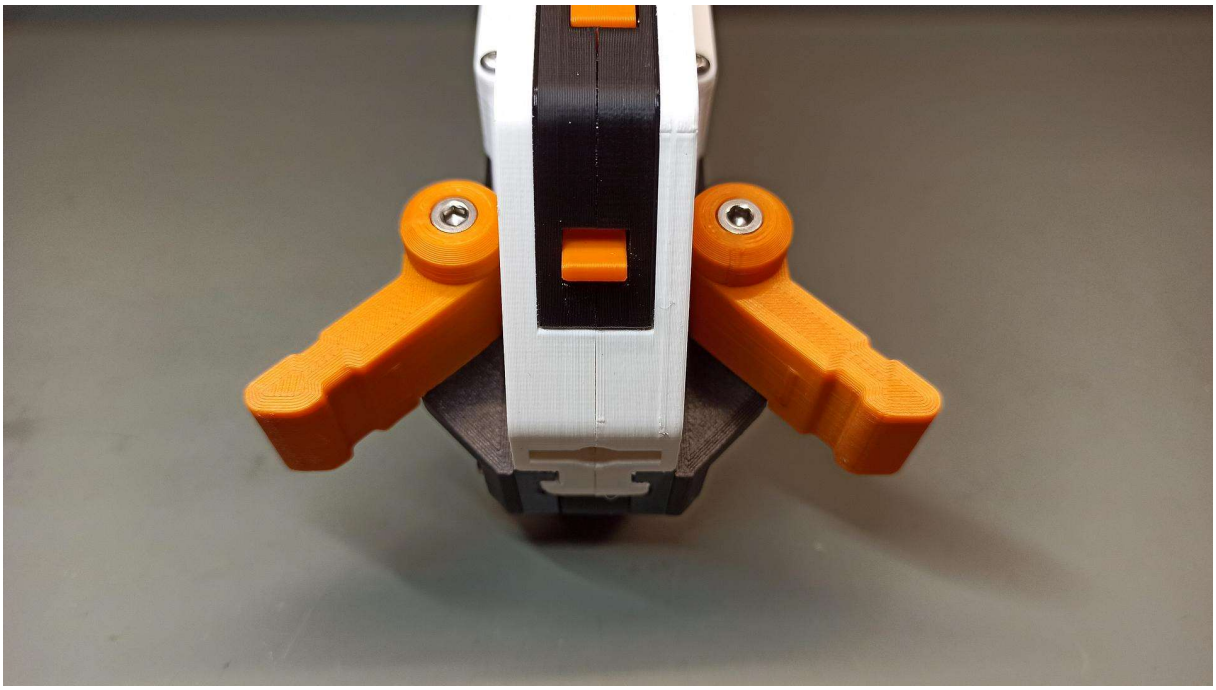
Screw in 2 M3x16 mm grub screws into the *[C]_slingshot_arms*. The screws should protrude approximately 4-4.5 mm.



Insert 2 M4x40 mm Allen head screws into the 3D printed washers.



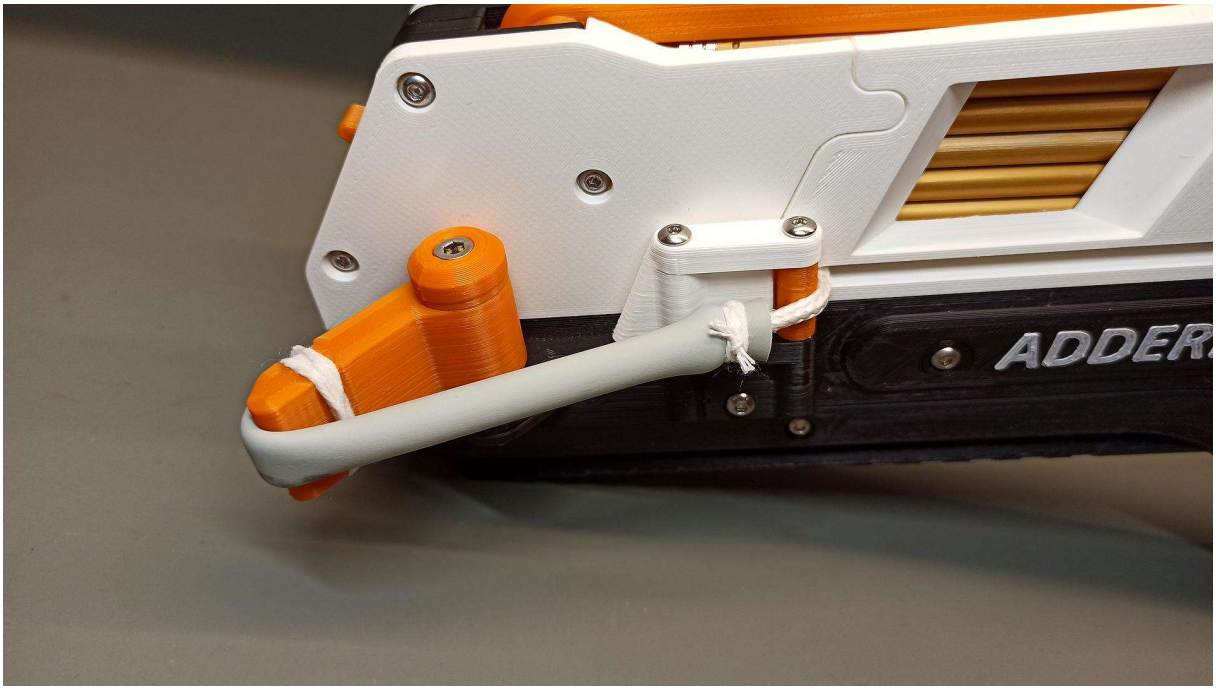
Attach the slingshot arms to the pistol. Make sure the parts fit together and lock into place in correct position.



Rubber

You can use a solution similar to the Sliding Legolini (tube rubber and 3 mm polypropylene rope string with middle serving), but I haven't tested it on a pistol. TheraBand tube should be attached to the arms directly with using the rubber straps or a thin rope or string. You can probably also use the zip ties.

Use a 60-65 mm long TheraBand tube rubber per side and 3 mm rope with middle serving as a bowstring (about 110 mm between knots).



This is the simplest solution. It works really well, but you can do something better.

From the beginning I was going to use TheraBand gold bands and a dedicated bowstring. This made it possible to reduce the size of the slingshot parts, achieve high power and ensure high reliability.

Slingshot arms are designed for 20 mm wide TheraBand gold bands. You can use 20 mm, 40 mm or 60 mm strips on each side. I recommend 40 mm per side because it allows you to get around 6-7 Joules of arrow energy (about 35-40 lbs of draw weight) and it's very easy to fire and cock the pistol.

The 60 mm bands per side are already 10-11 Joules of arrow energy (about 55-60 lbs of draw weight) and probably close to the total strength of this 3D printed pistol design. However, I did not notice any major problems, although *cocking_lever* bends quite significantly in this configuration. I guess that's absolutely maximum for that 3D printed pistol.

I recommend using the entire width (130 mm) of TheraBand gold band to cut 2x40 mm for power and 2x3 mm or 2x4 mm strips to mount the rubber on the slingshot arms. You need cut 2x60 mm if you want to use the maximum power.

So you need 2 pcs. 130x40 mm (or 130x60 mm) and 2 pcs. 130x3 mm (or 130x4 mm) of rubber. The rubber should be cut with a knife with a circular blade next to a ruler.

Bowstring

The easiest way to make a bowstring is to use Dyneema cord, as in Joerg's video:
https://www.youtube.com/watch?v=fkuMtmP95f4

The excellent instruction was made by *SPRAYINPAINT* in his *RS-X-BOW rubber gun "GOVERNMENT - 1911" STYLE*:
https://cults3d.com/en/3d-model/various/rs-x-bow-government-1911-style

See on pages 18-21:
https://drive.google.com/file/d/190J5u_FYbUCT8YIQ7cWcnYda4BJb6jx2/view

I highly recommend this solution, because it is much simpler, cheaper and gives comparable results with the complicated traditional bowstring, described below.

For hardcore enthusiasts of traditional solutions

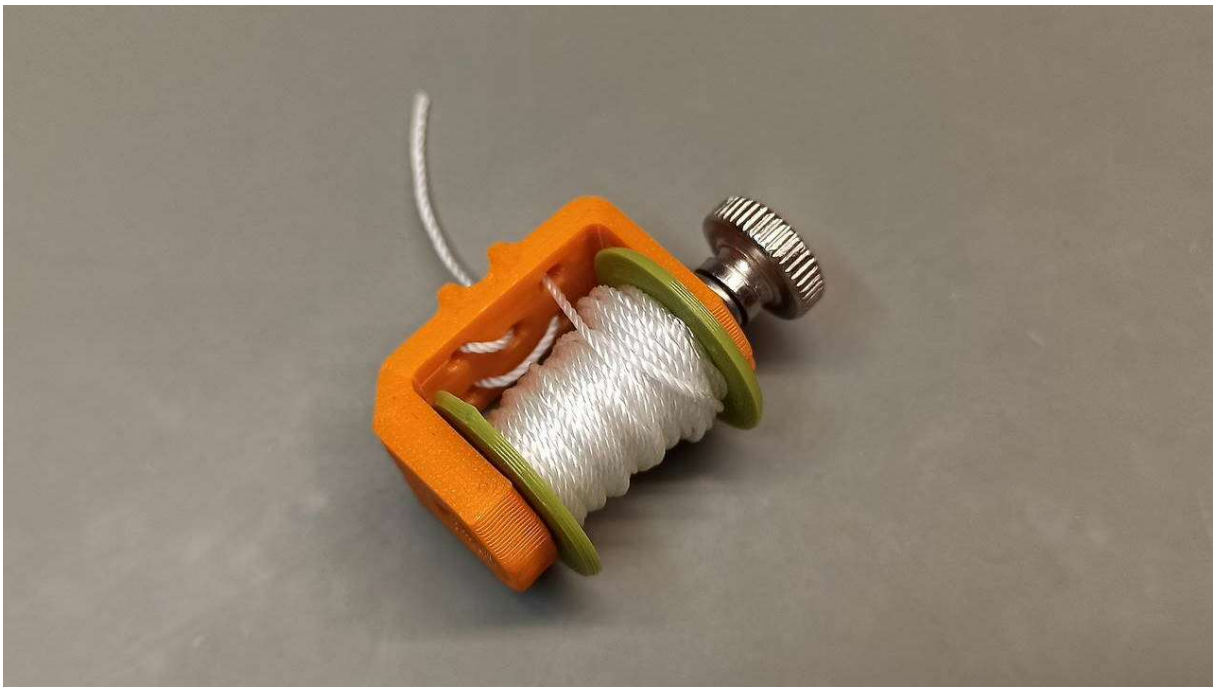
It is more difficult and time-consuming to make a dedicated bowstring. To make the task easier, I designed a printable mini Bowstring Jig and mini Serving Tool. I highly recommend using these tools.

The bowstring should be about 100-110 mm long. End loops of approximately 20-25 mm each in string length.

A longer string provides a safer distance between the rubber and the sides of the magazine and protects it better against damage. A shorter bowstring gives a slightly better performance.

Serving Tool

Print *serving_tool* and 2 *serving_tool_spool_half*. Glue spool parts together with CA glue. You need also M3x30 mm screw with HEX head, M3 thumb nut, one washer, and one spring washer.

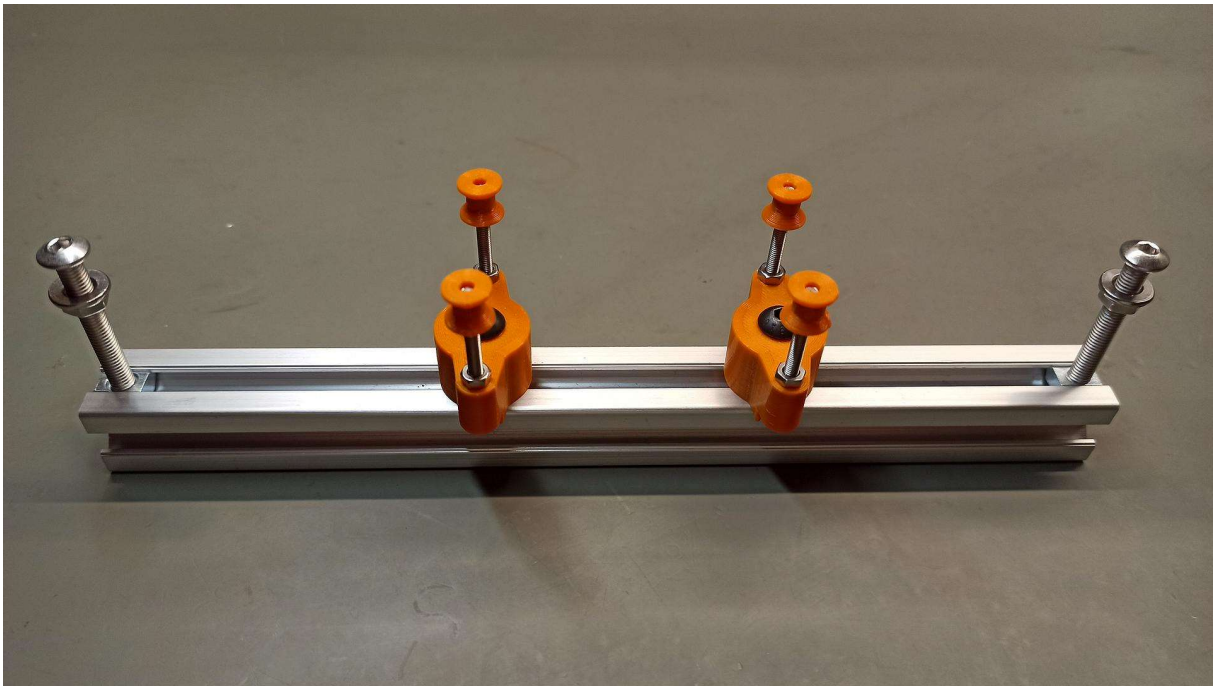


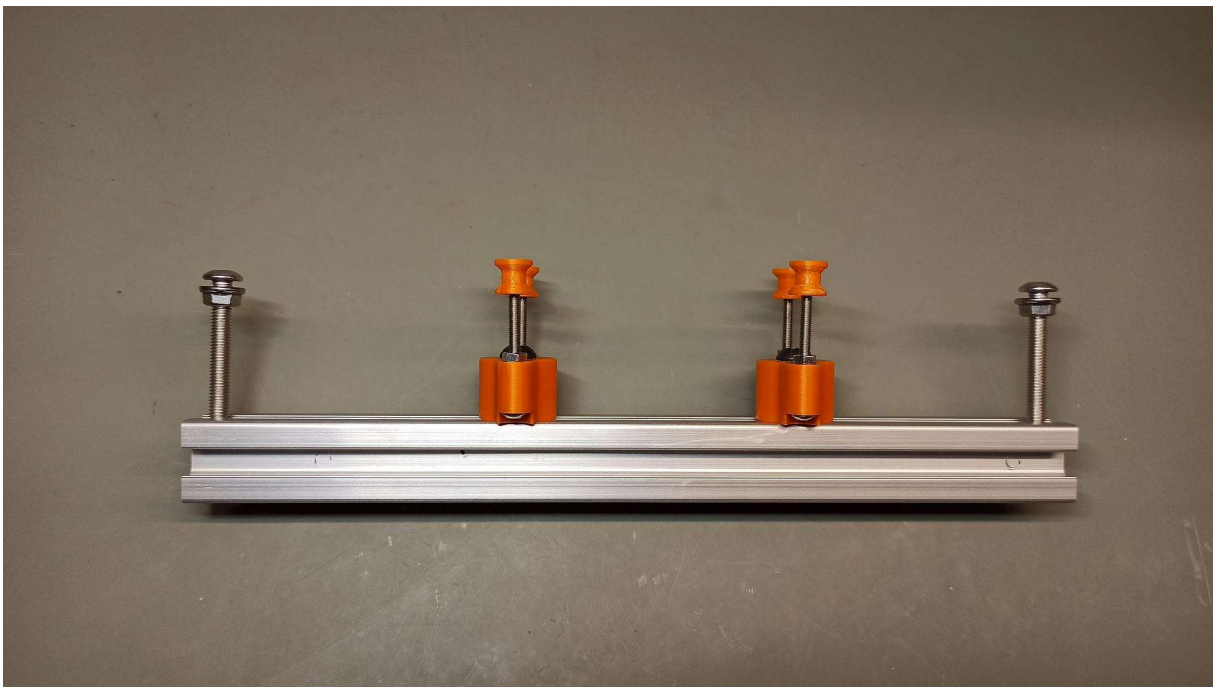
Bowstring Jig

Print 2 *bowstring_jig* and 4 *bowstring_jig_roller*. You need also 200 mm of 2020 aluminum profile, 4 M3x35 mm screws with 4 M3 nuts, 2 M5x20 mm screws, 2 M5x40 mm screws, 2 M5 nuts, 4 M5 T-nuts for V-groove.

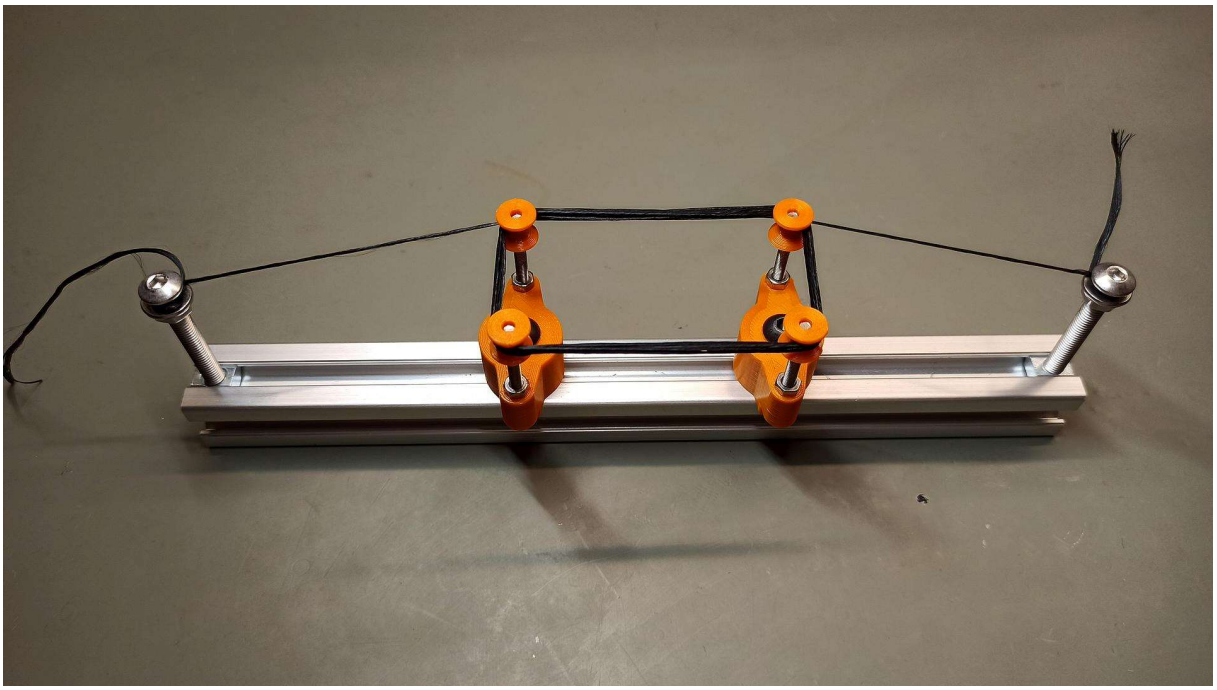
If you don't have the 2020 aluminum profile, then you can print it:

https://cults3d.com/en/3d-model/tool/structural-aluminum-20x20



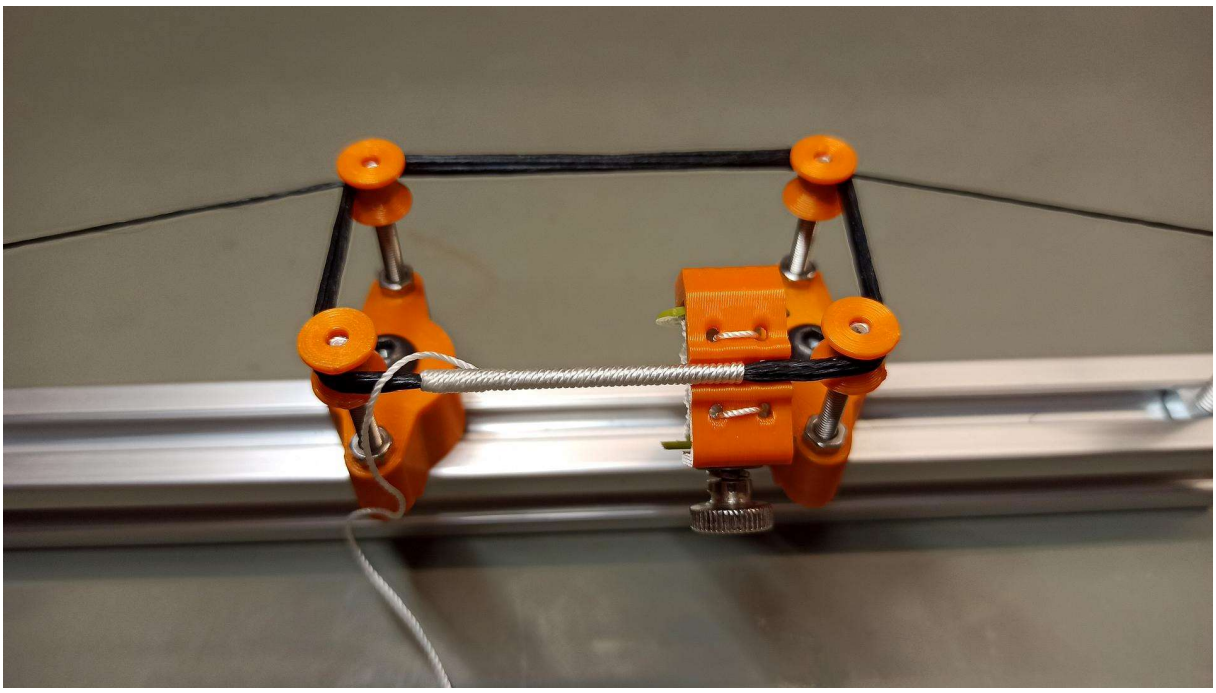


Set Bowstring Jig to about 65 mm between screws axis. Use polyester bowstring and make 7 tight loops.

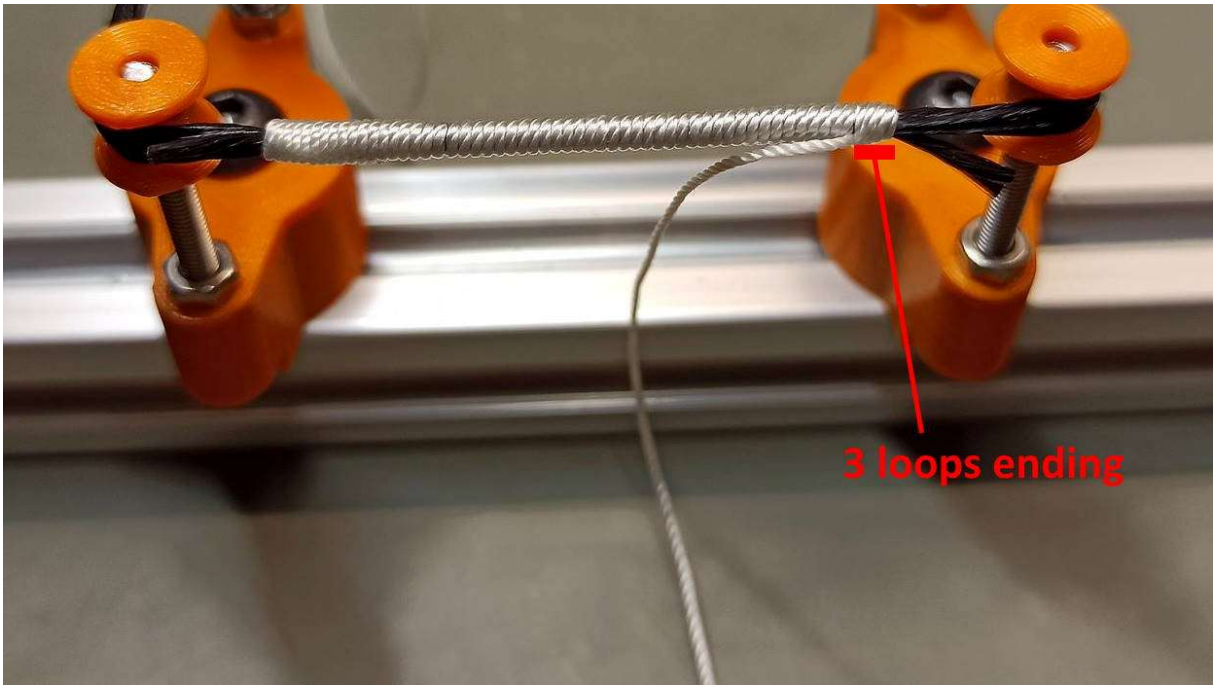


Start serving the string. You need to make about 45-50 mm long serving.

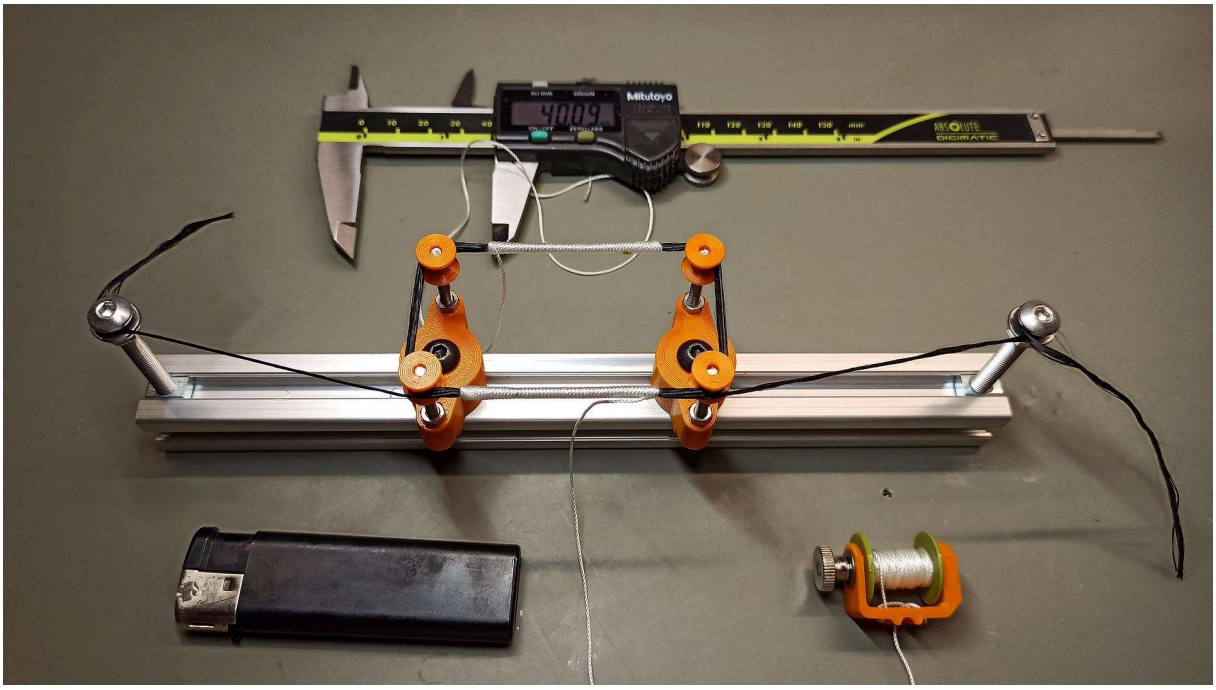
How to make a serving? Watch this video *https://www.youtube.com/watch?v=0hwQiKAWl2k* and this *https://www.youtube.com/watch?v=wZCz-wGBvRM*



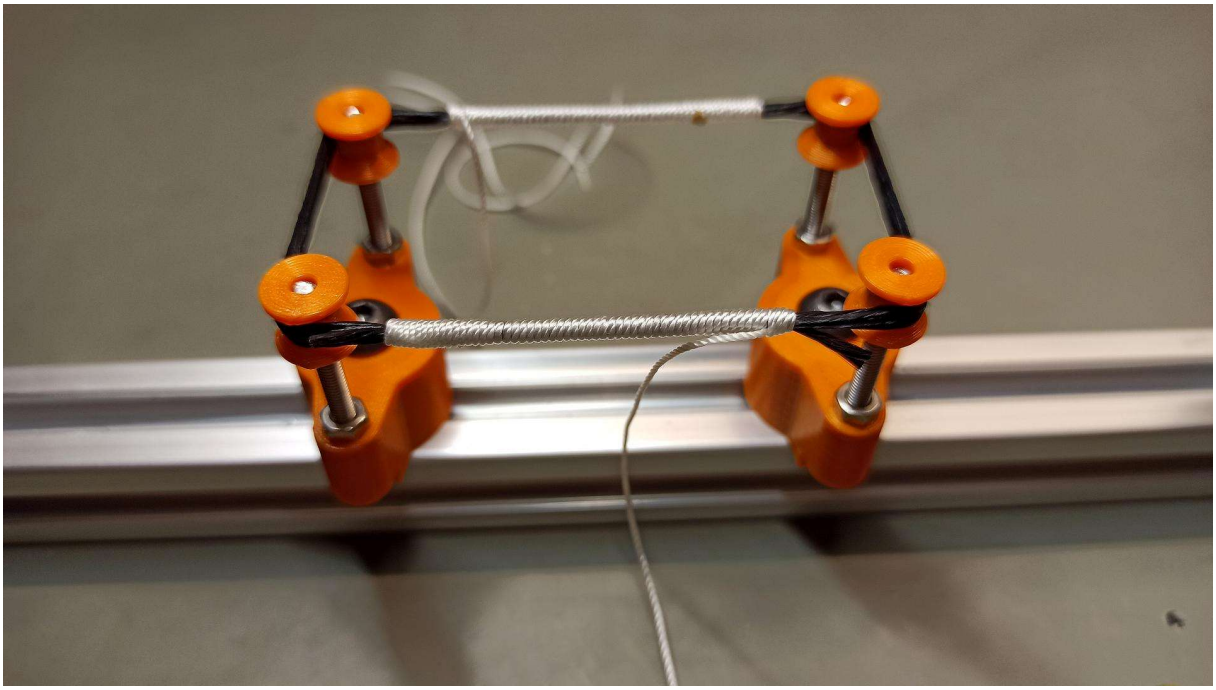
When serving is finished with 3 loops, leave about 30 cm of thread. You will need it later.



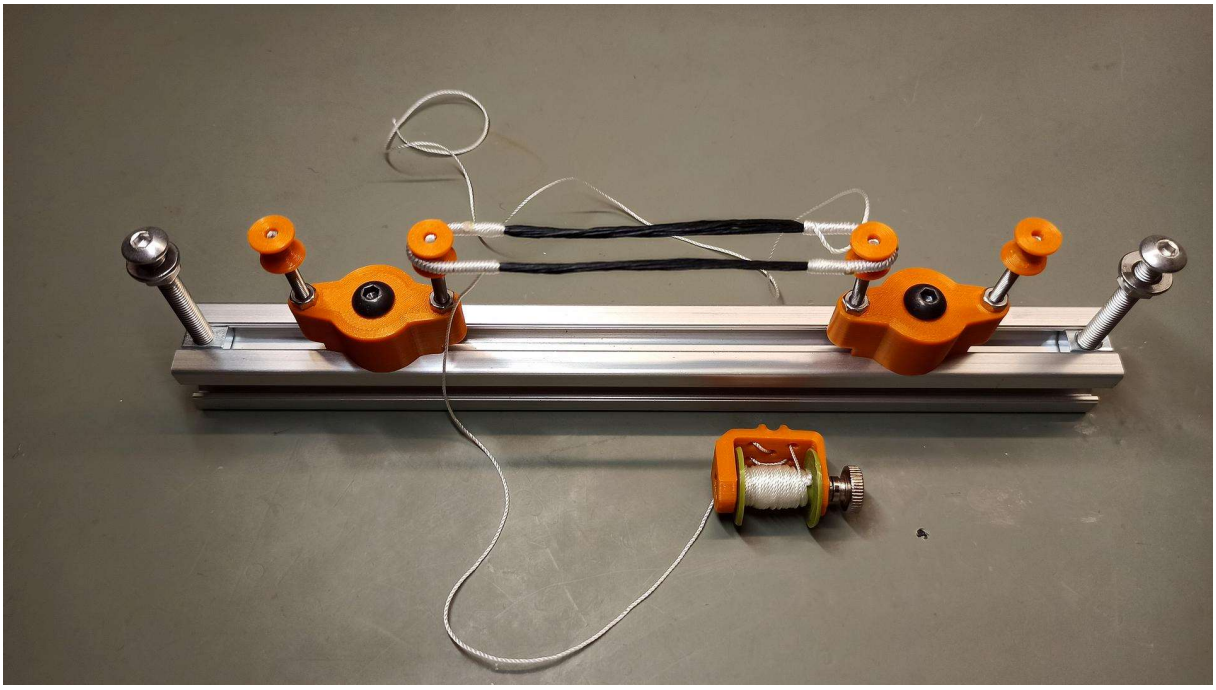
Same on the opposite site. Make sure that serving length is similar on the both sides.



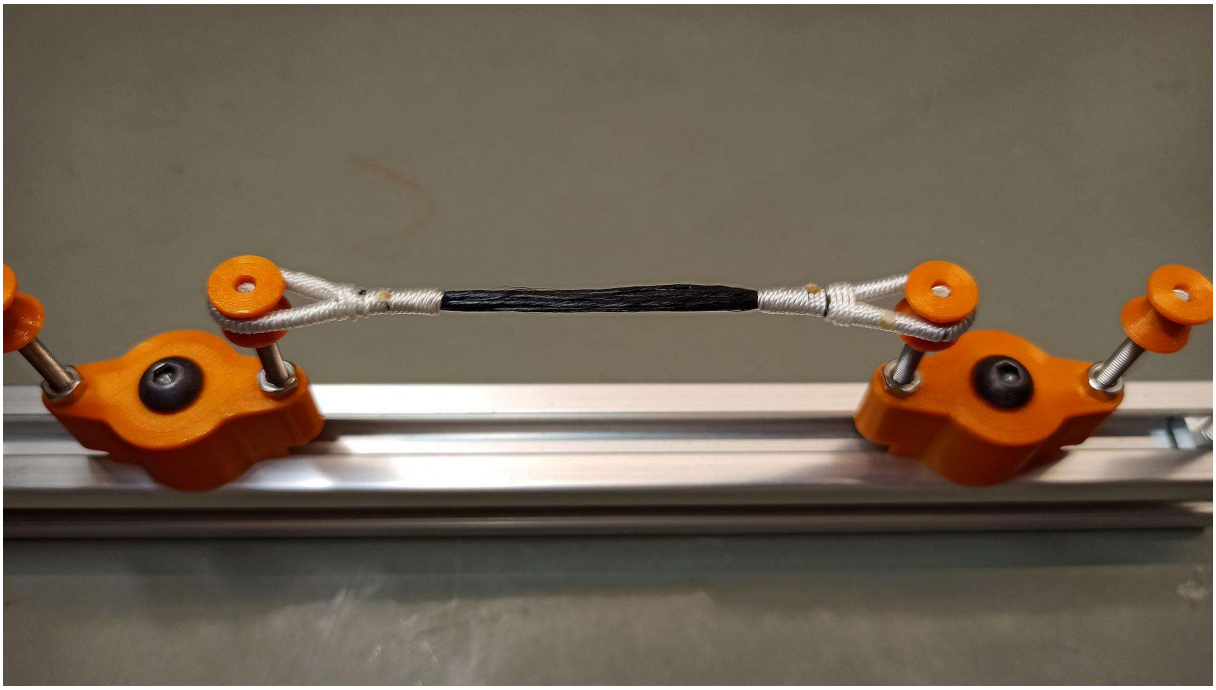
Cut ends of polyester bowstring.



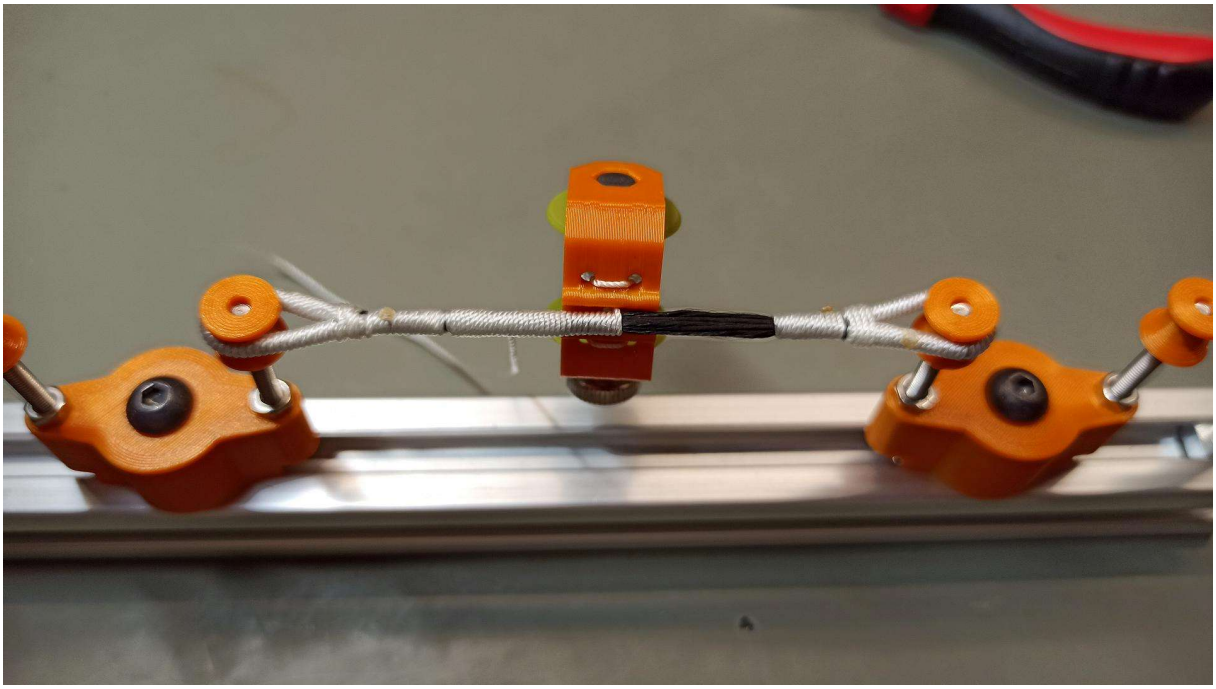
Change Bowstring Jig into the following configuration.

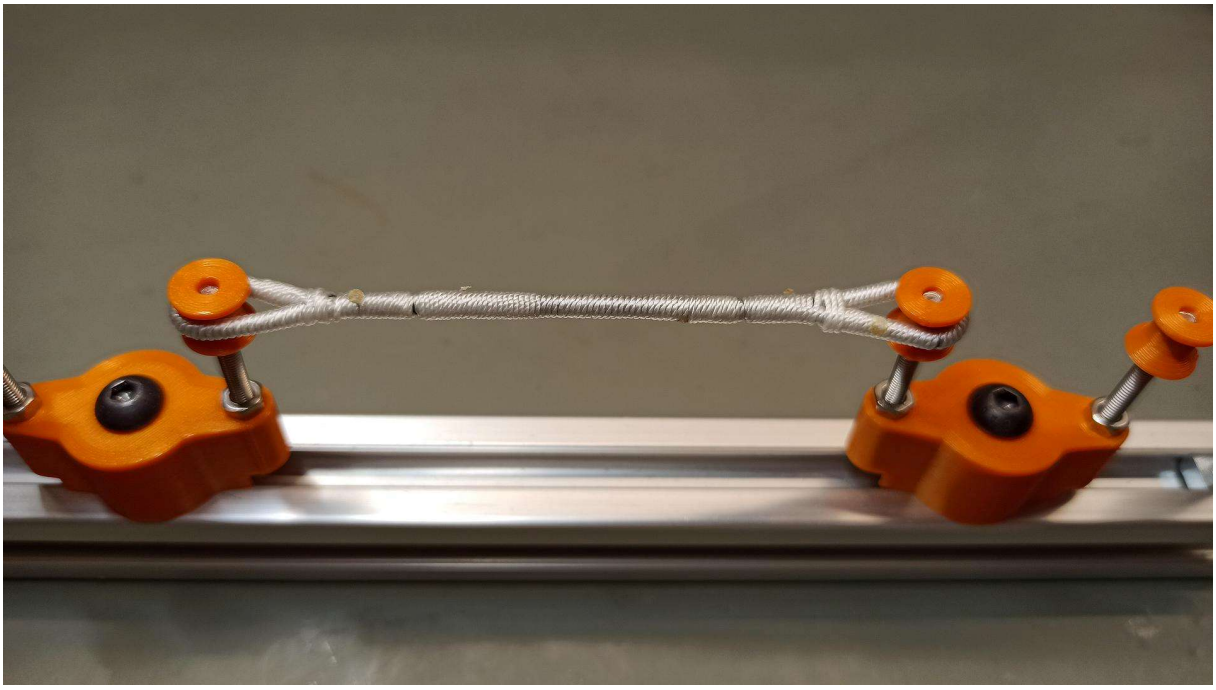


Finish the serving loop on both sides as shown below.

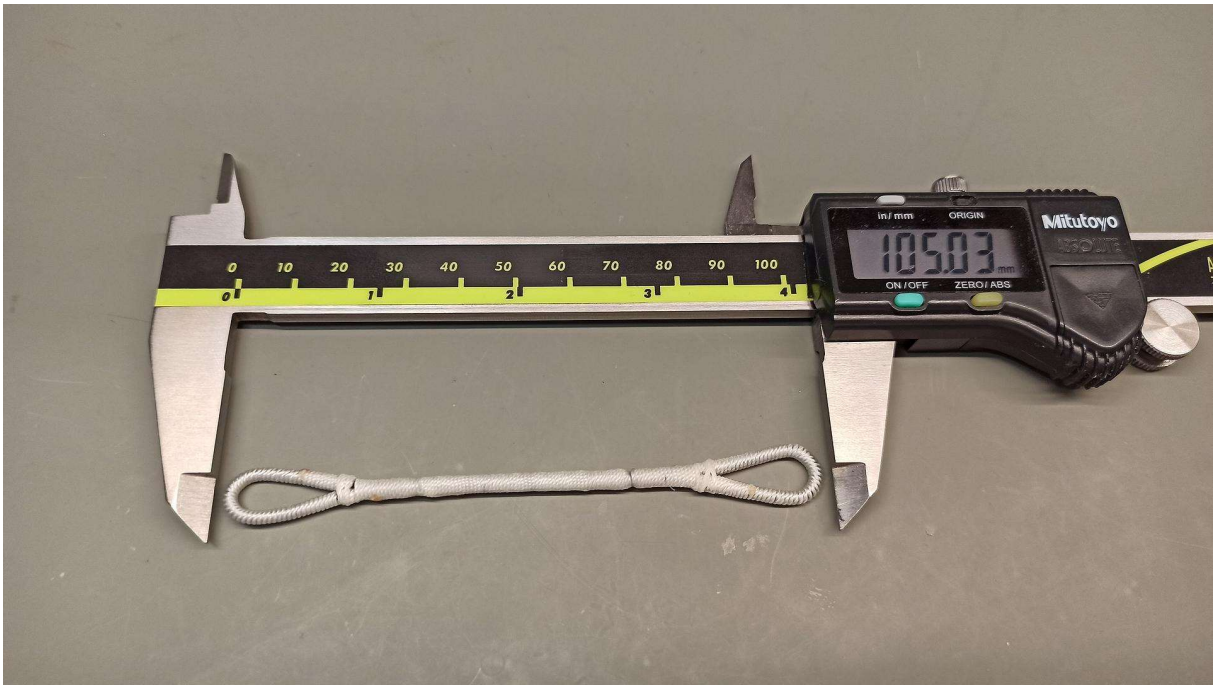


Complete the 1 layer middle serving of naked polyester bowstring.





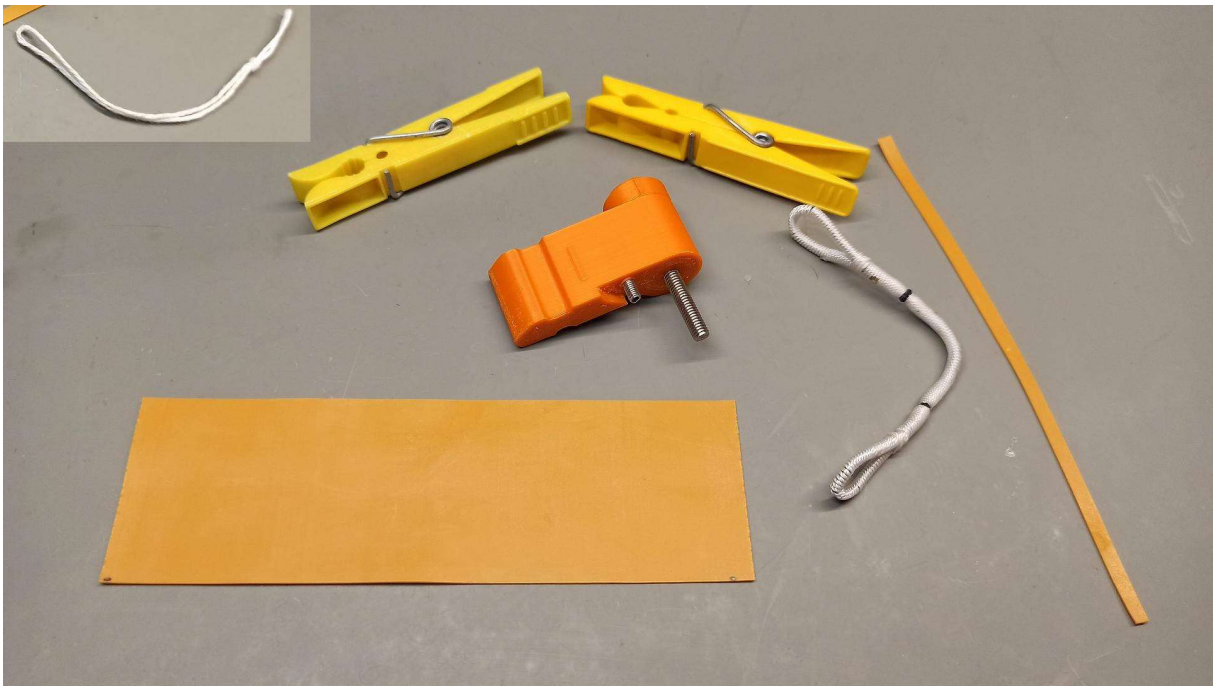
Use bowstring wax and the bowstring is ready.



Warning! If the middle serving of string starts to fray from the trigger and arrow, replace it.

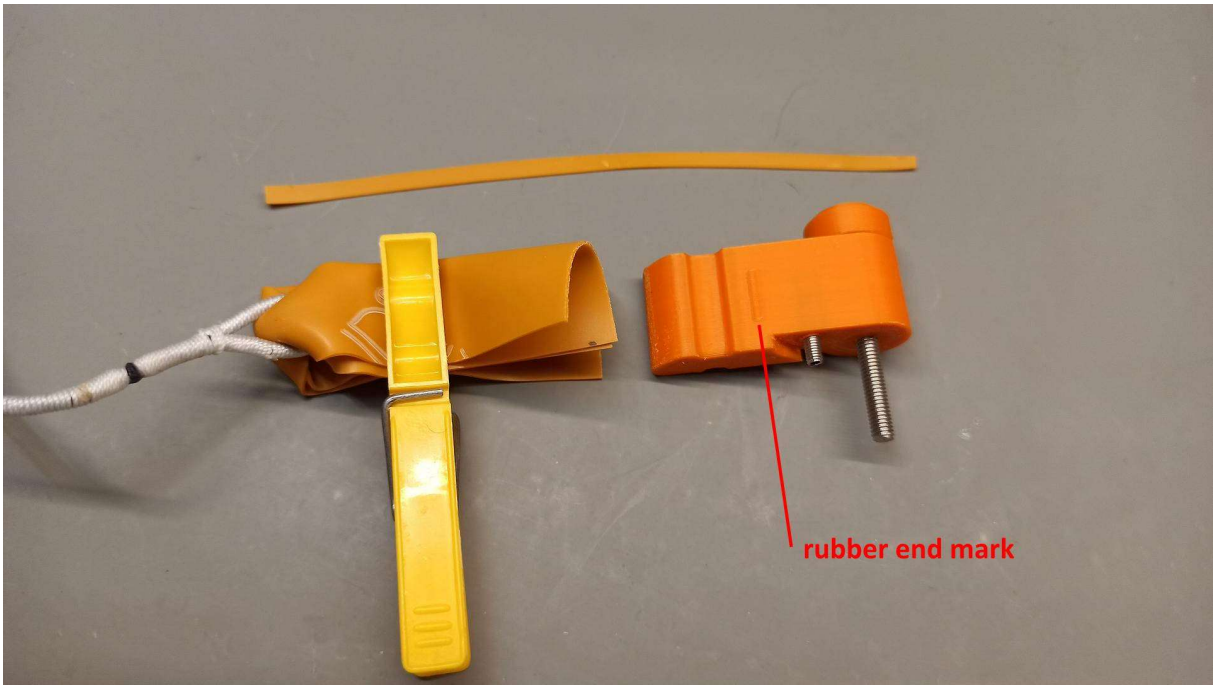
How to tie rubber bands on arms? ***https://www.youtube.com/watch?v=_N_ecPjjuzc***

Prepare the parts shown below. Bend the bowstring in half.

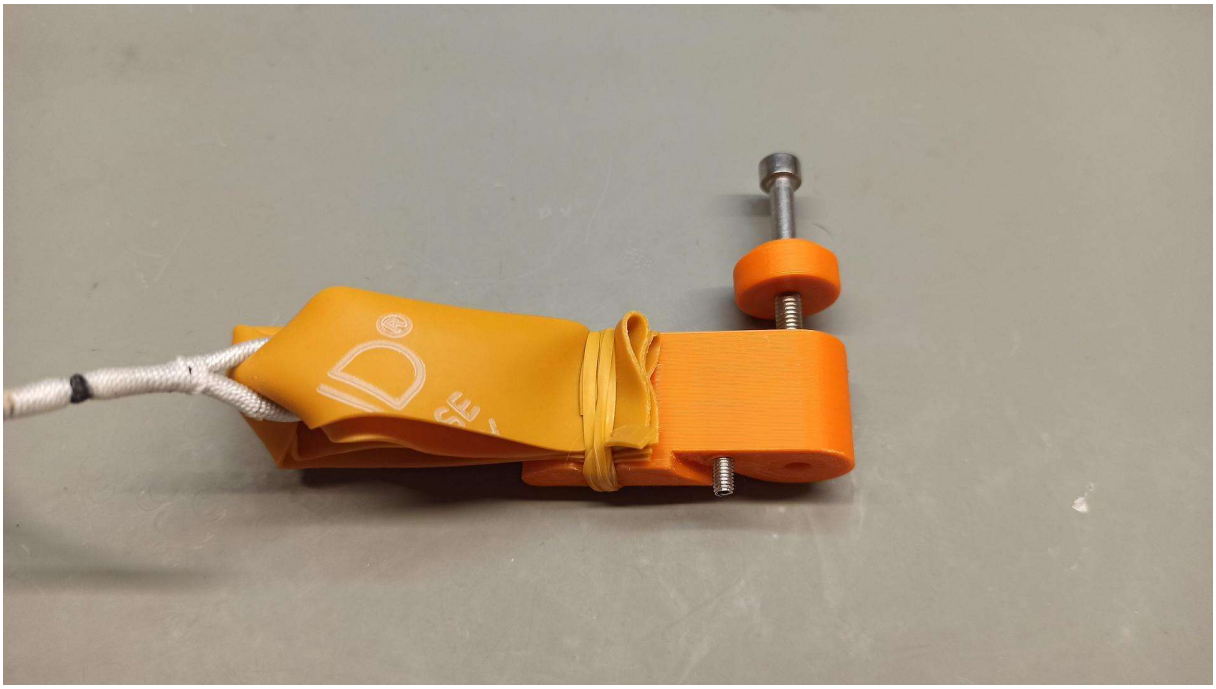


Fold the rubber band and go through the bowstring loop.

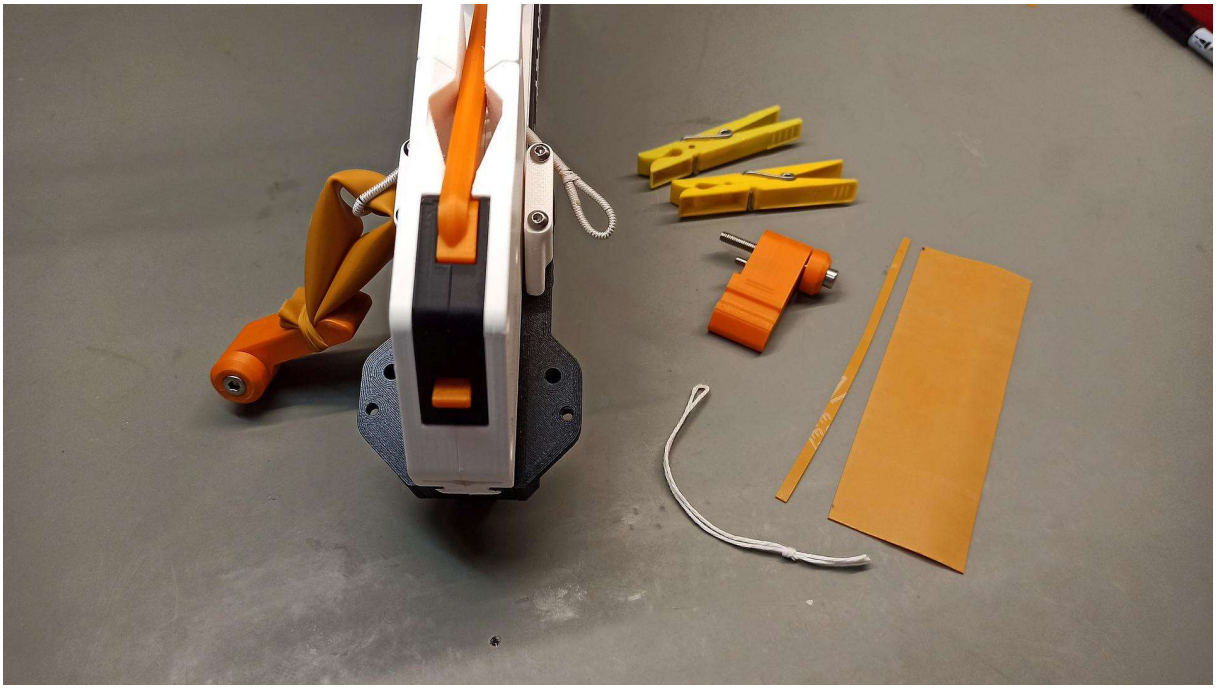
Align the ends of the rubber and prepare to tie. The mark on the slingshot arm marks the place where you need to put the ends of the rubber strips.



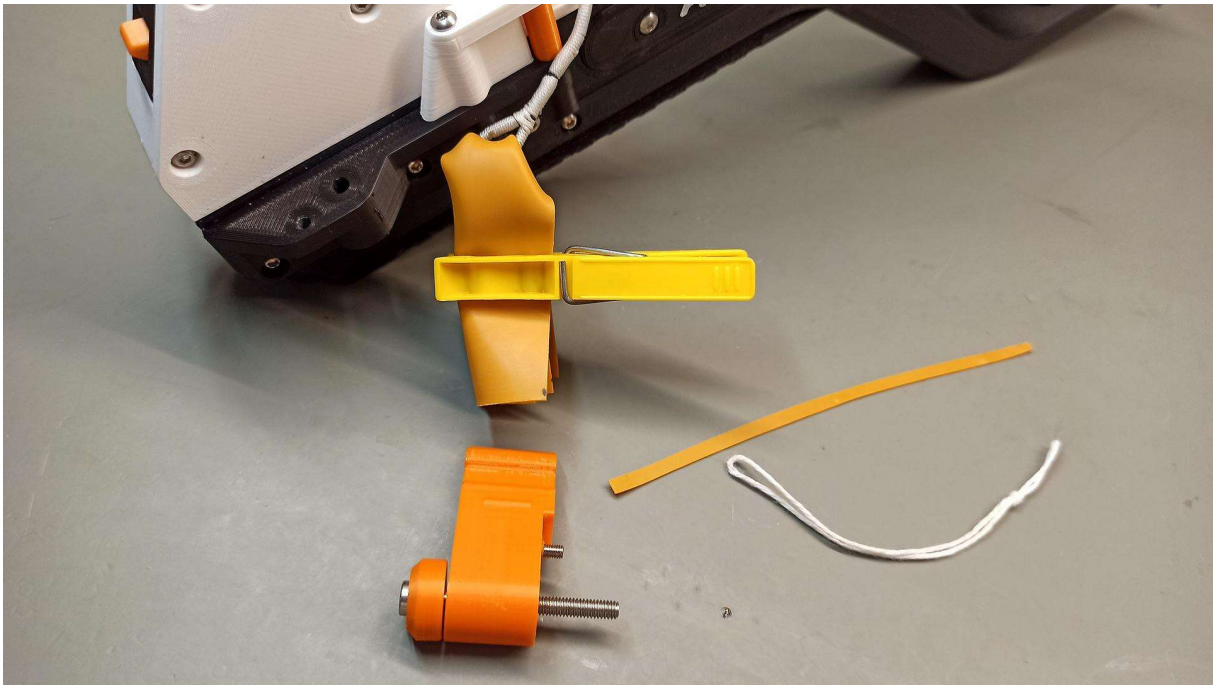
Tie rubber band on arm.

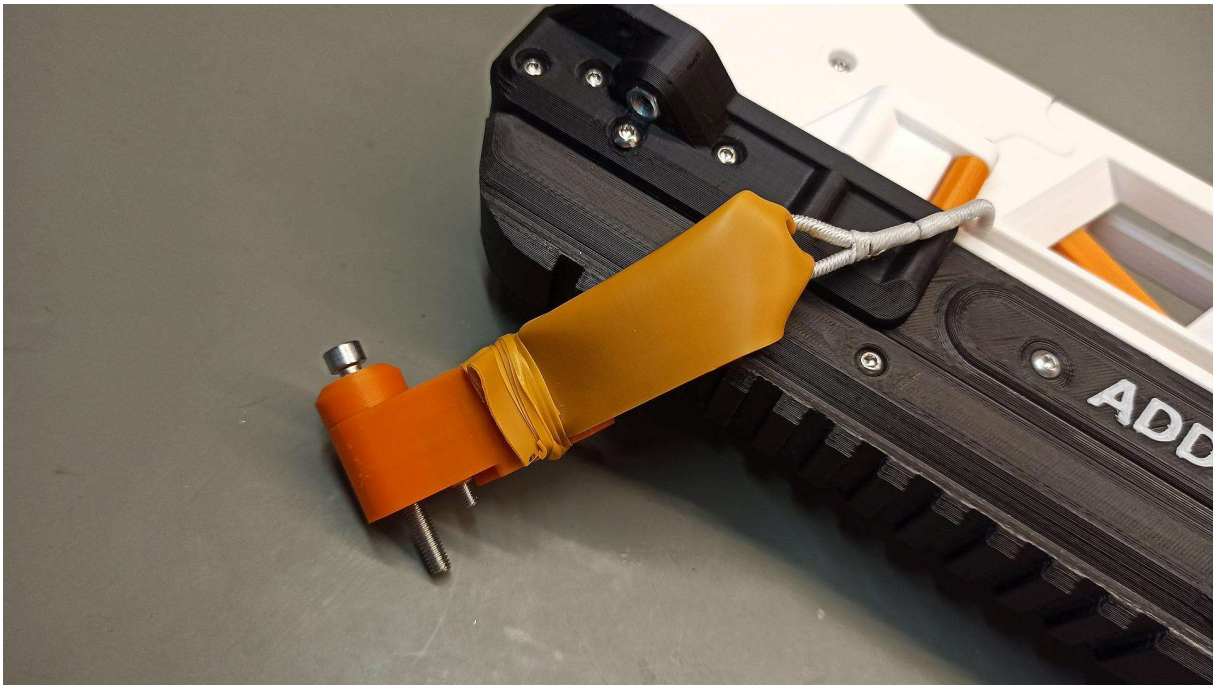


Push the bowstring through the string slot in the pistol.

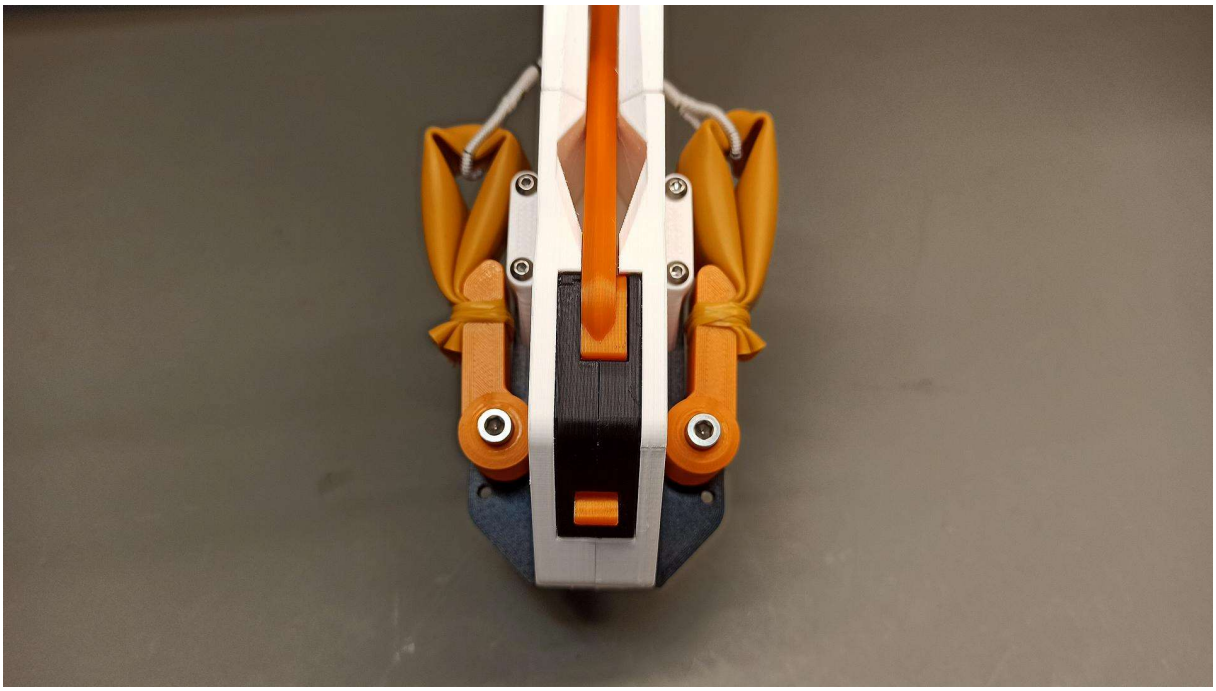


Prepare a second rubber band to tie.



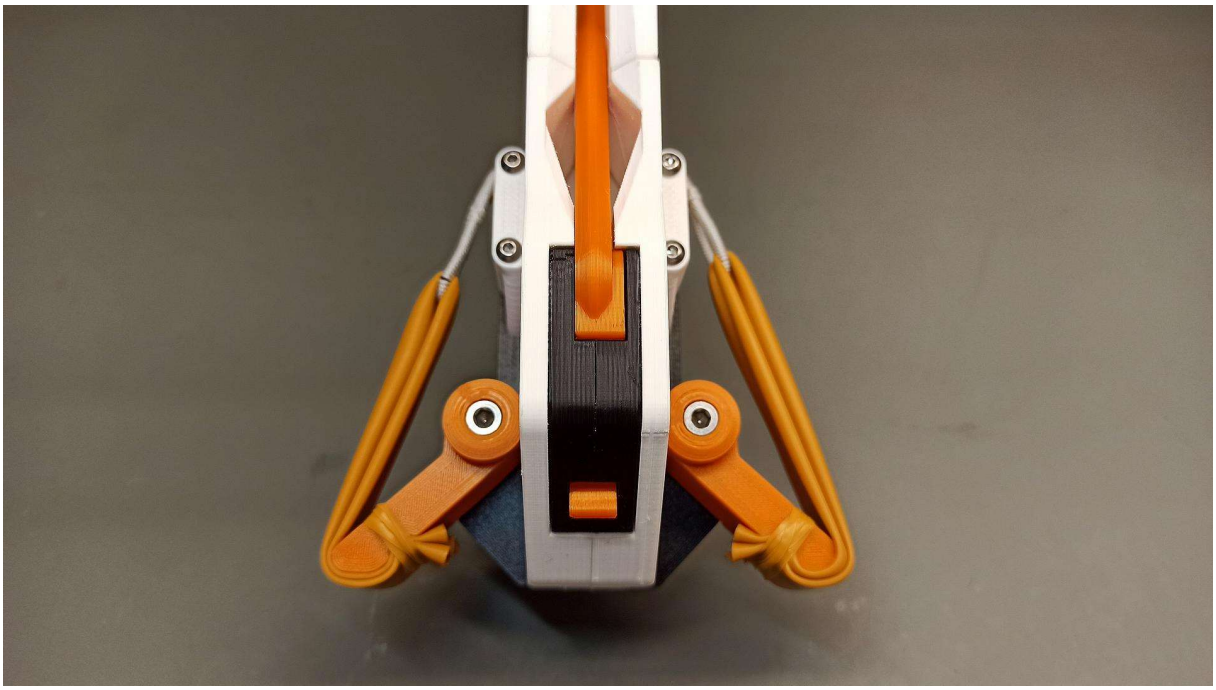


Attach the slingshot arms to the pistol. The slingshot arms are folded along the magazine. **This is the resting state of the rubber bands. If you are not shoot for a long time, this is the recommended storage position for the pistol.**



The photos below show unfolded arms of the slingshot. This is the starting position of the pistol when it is ready to pull the string and fire.

The length and pre-tension of the rubber on both sides should be similar. If the bowstring is significantly shifted to either side, the rubber may be damaged during the shot.

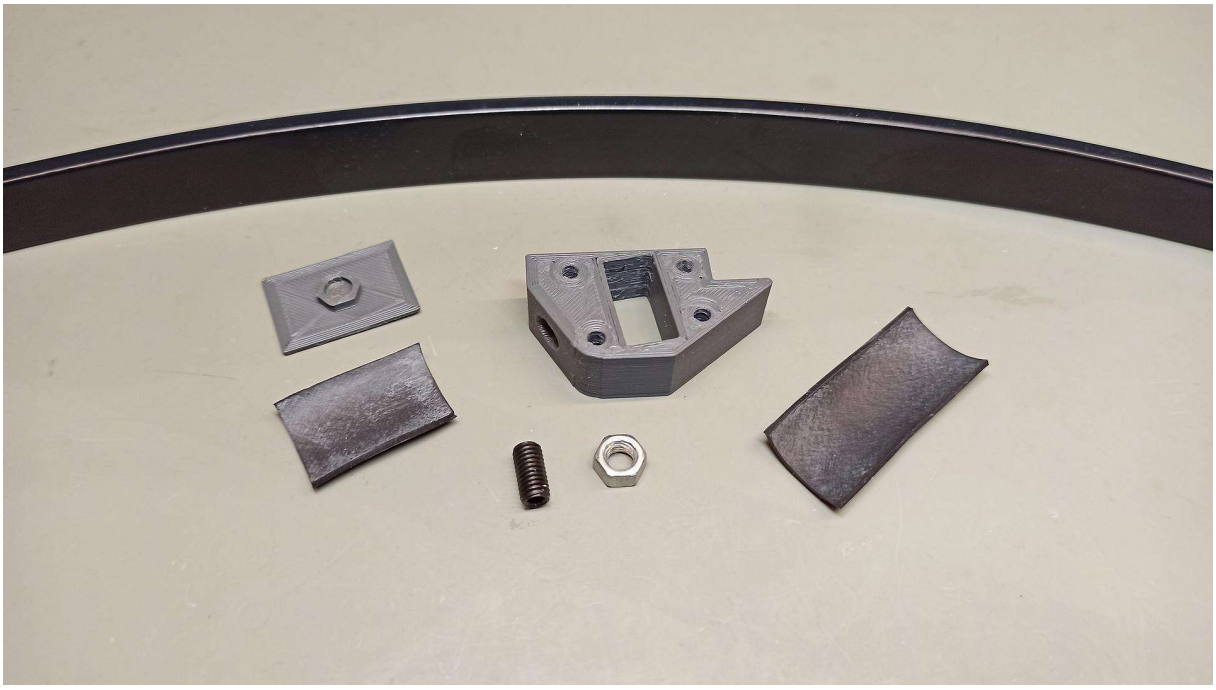



ADDERINI

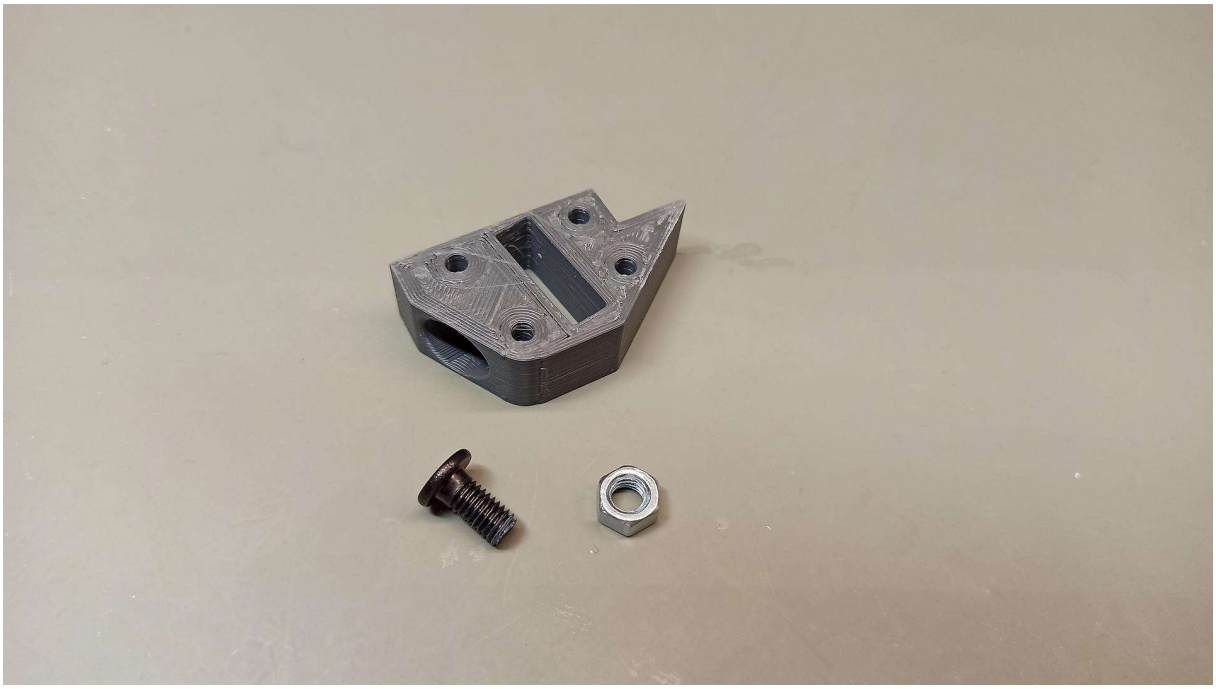
Crossbow limbs powered version assembly

You need extra M5 nut and M5x10 mm grub screw. You also need 2 rubber pads 1-1.5 mm thick with dimensions: 19x40 mm and 19x24 mm.

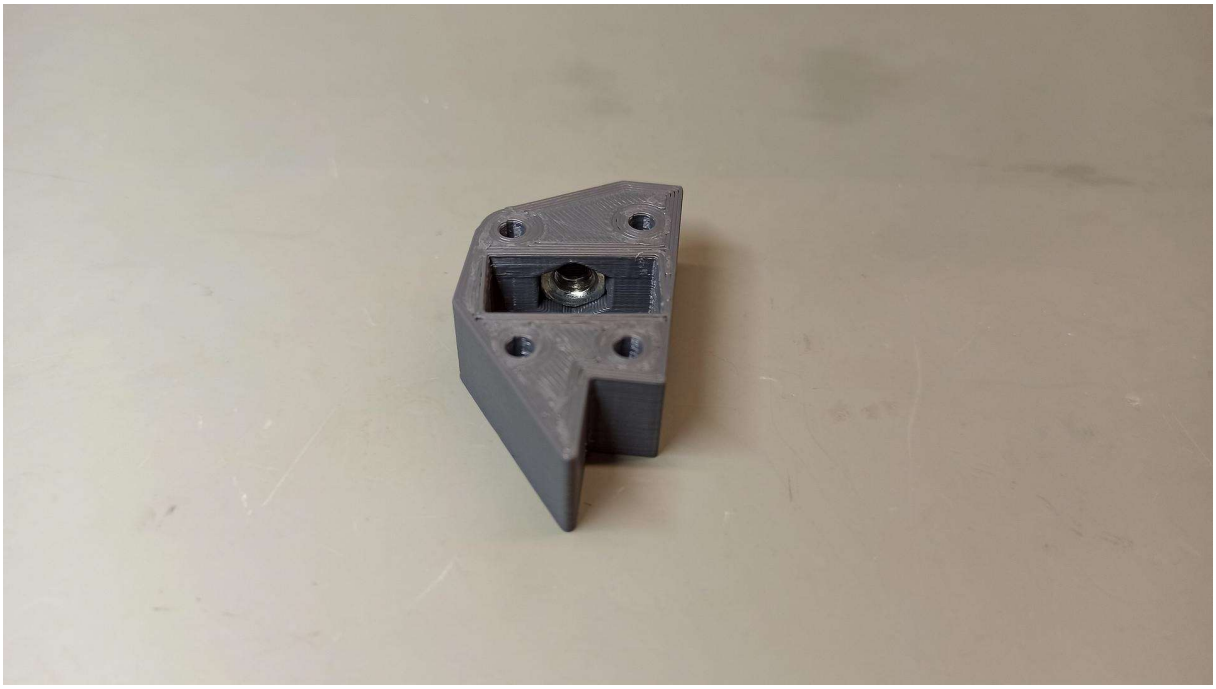
You can use rubber pads, e.g. from a bicycle inner tube. You can also print these pads from harder TPU.



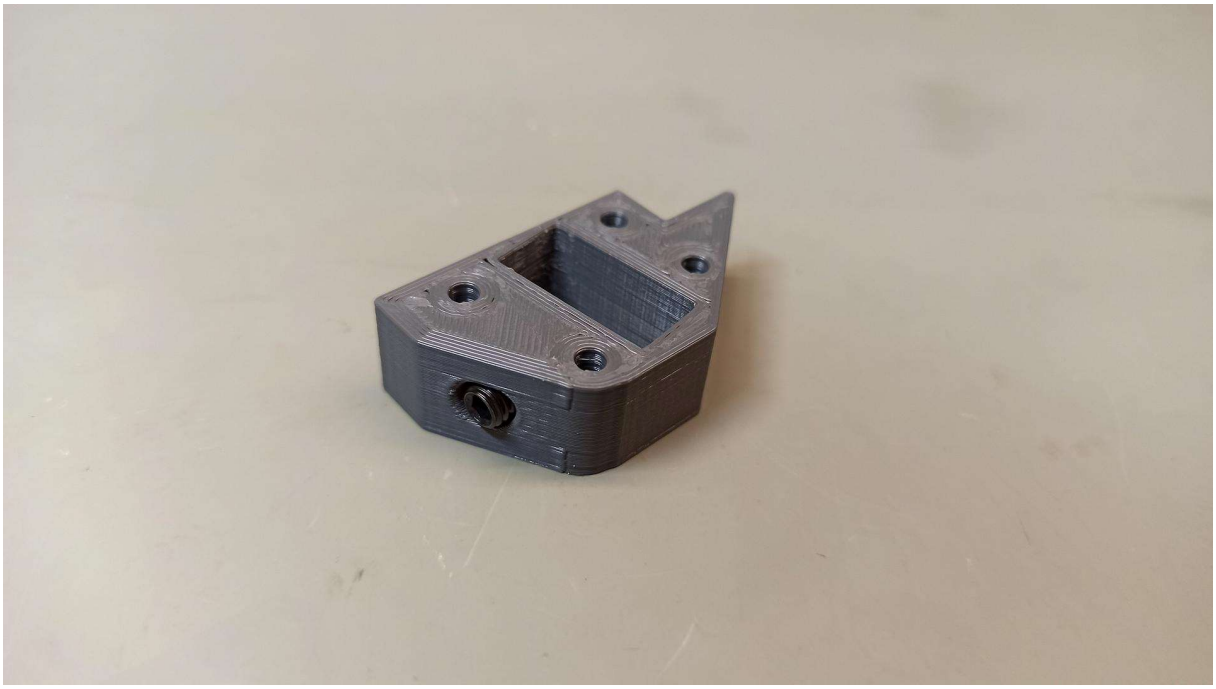
If you printed the version "alternative_narrow_limbs_mount_without_rubber_pads", then you can use you can also use M5x10 mm Openbuilds screw instead of M5x10 mm grub screw.



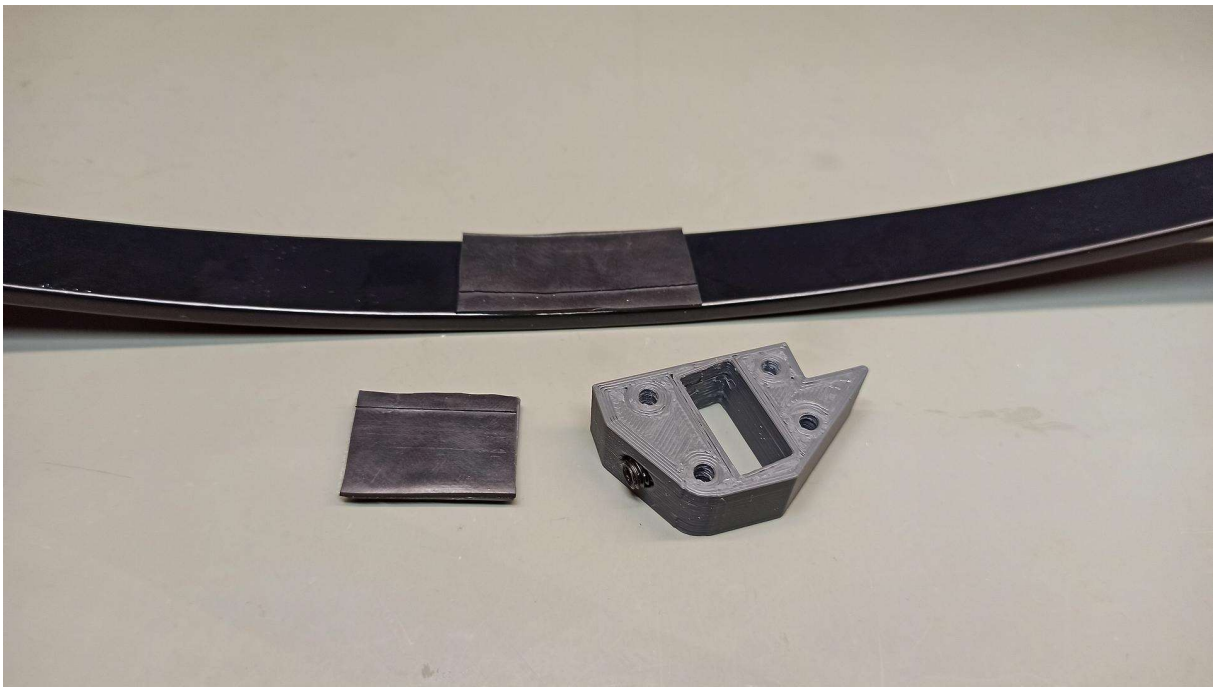
Insert an M5 nut into the hole. I recommend that you use some CA glue to prevent it from falling out.



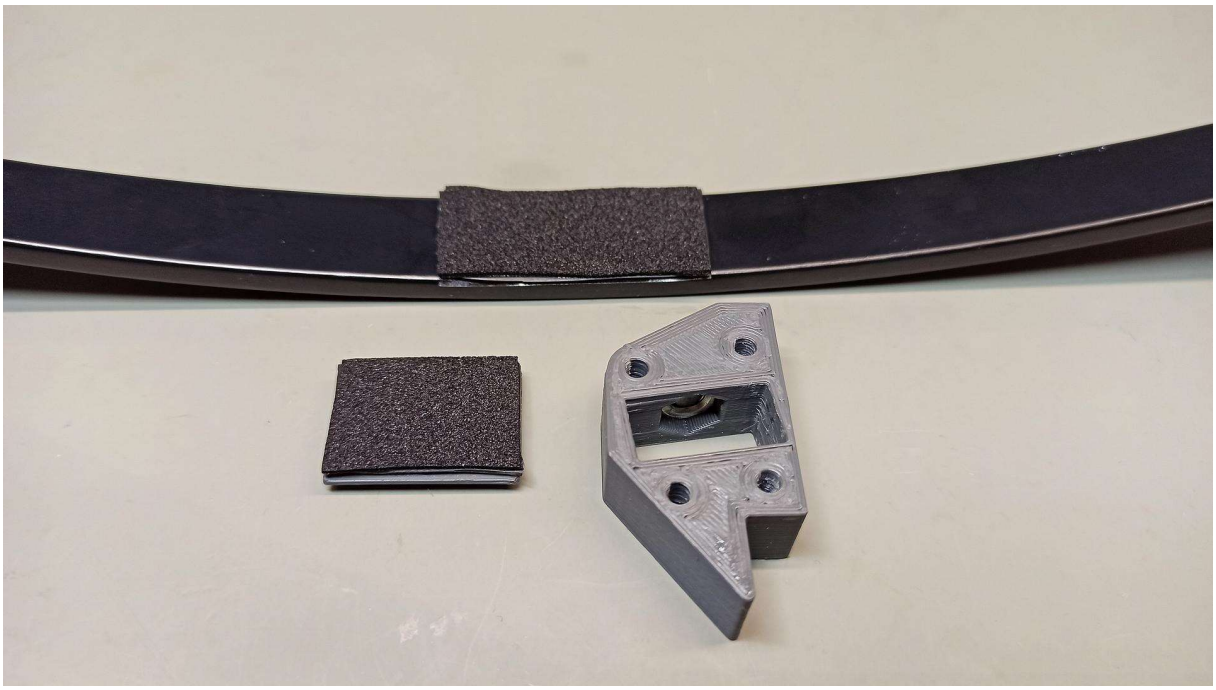
Use a M5x10mm grub screw.



Glue the rubber pads to the limbs pressure washer and the limbs. You can use rubber pads, e.g. from a bicycle inner tube, or print pads made of hard TPU. For sticking, you can use glue or a thin double-sided tape.

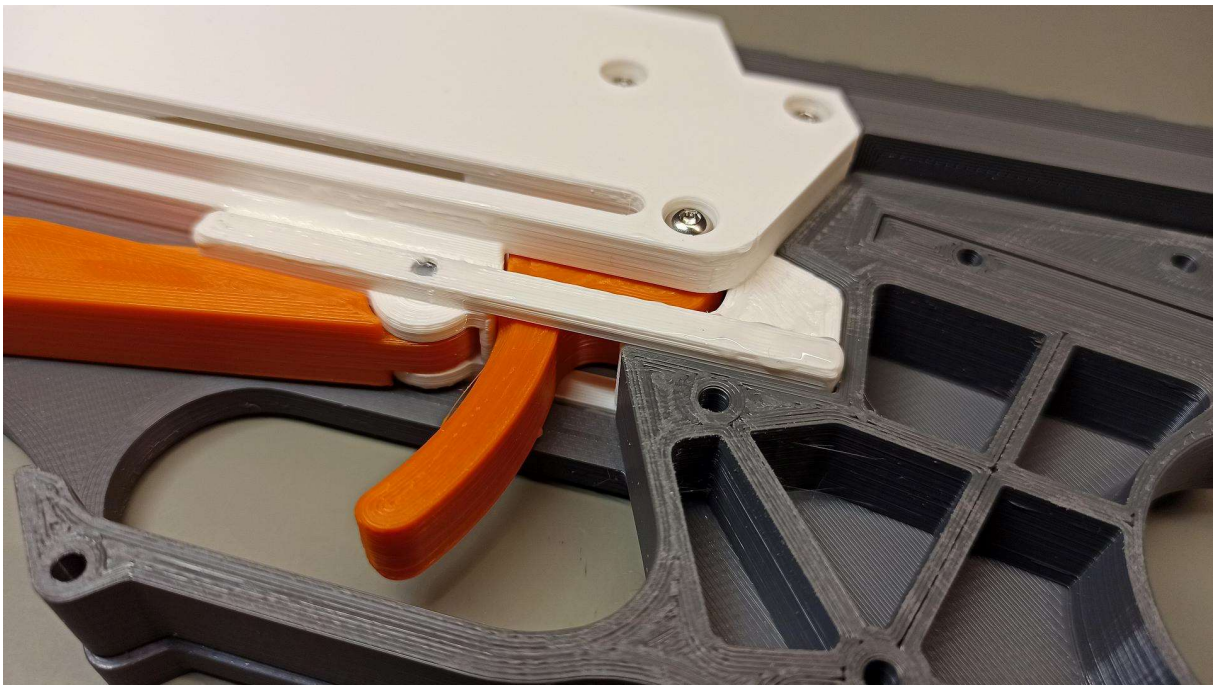


In addition to 1 mm rubber from the bicycle inner tube, I also used additional 1 mm self-adhesive EPDM foam pads.



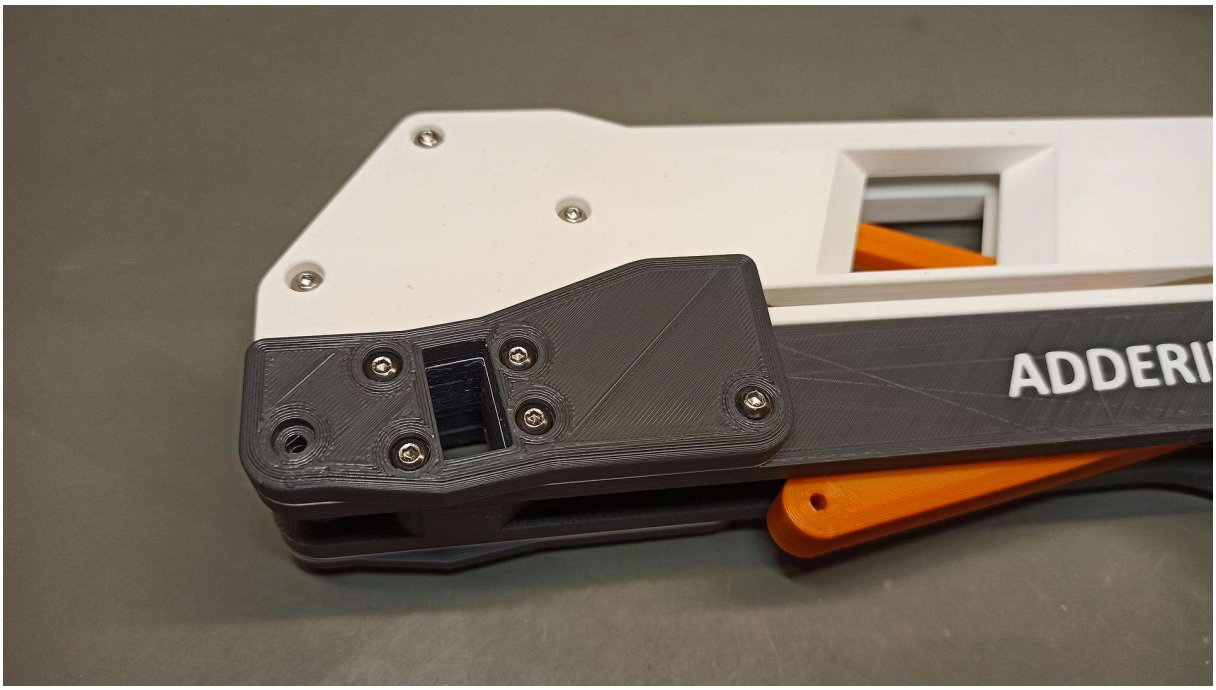
Insert the assembled magazine into the pistol body rails. Make sure the movement is smooth.

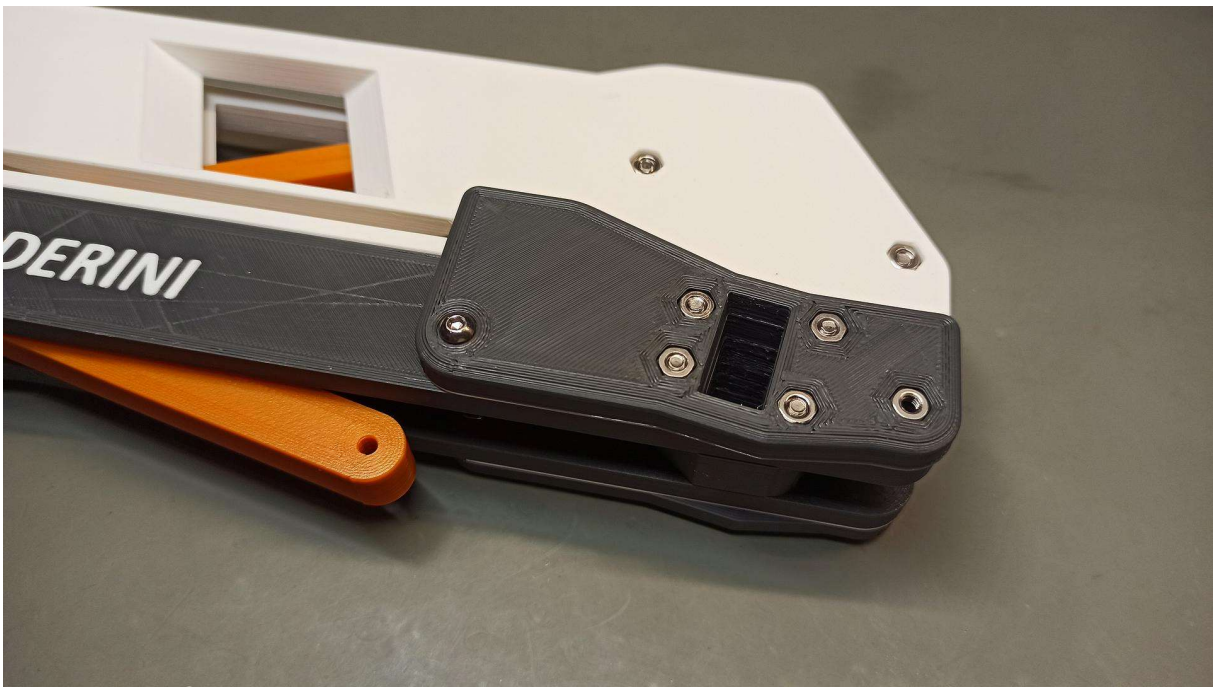
Coat the rails with PTFE grease.



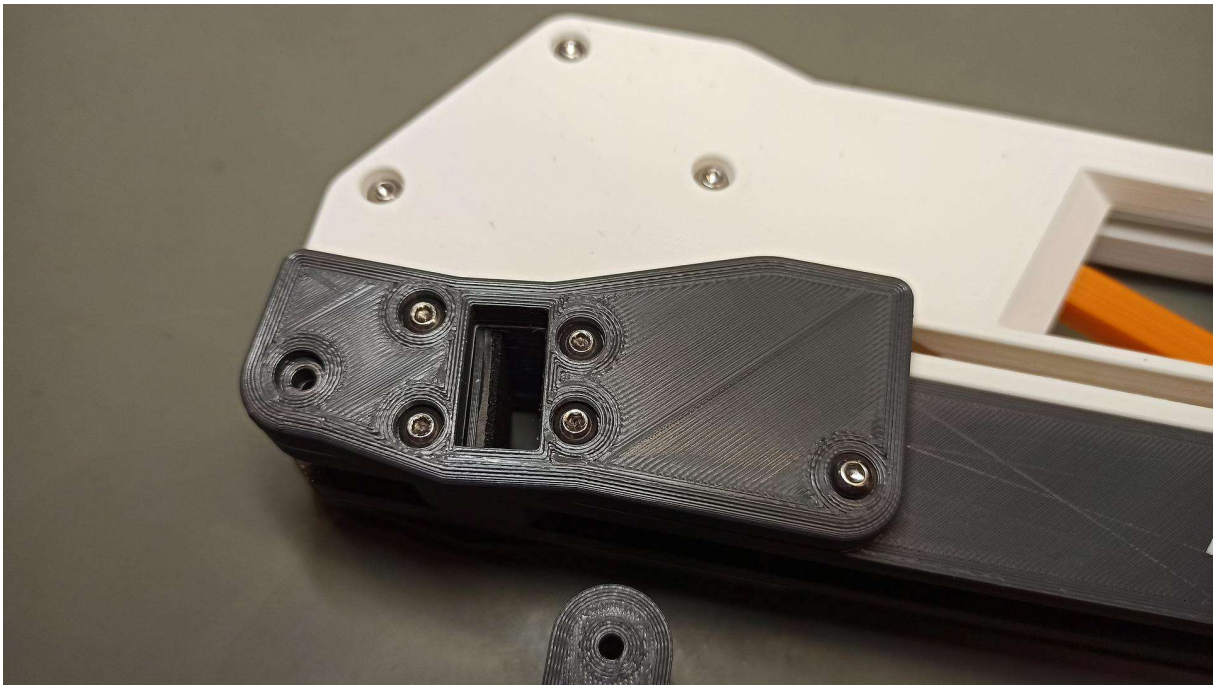
Assemble the pistol body parts together using screws and nuts.

Join the front parts together. Use 4 M3x35 mm, 2 M3x12 mm screws and 6 M3 nuts.



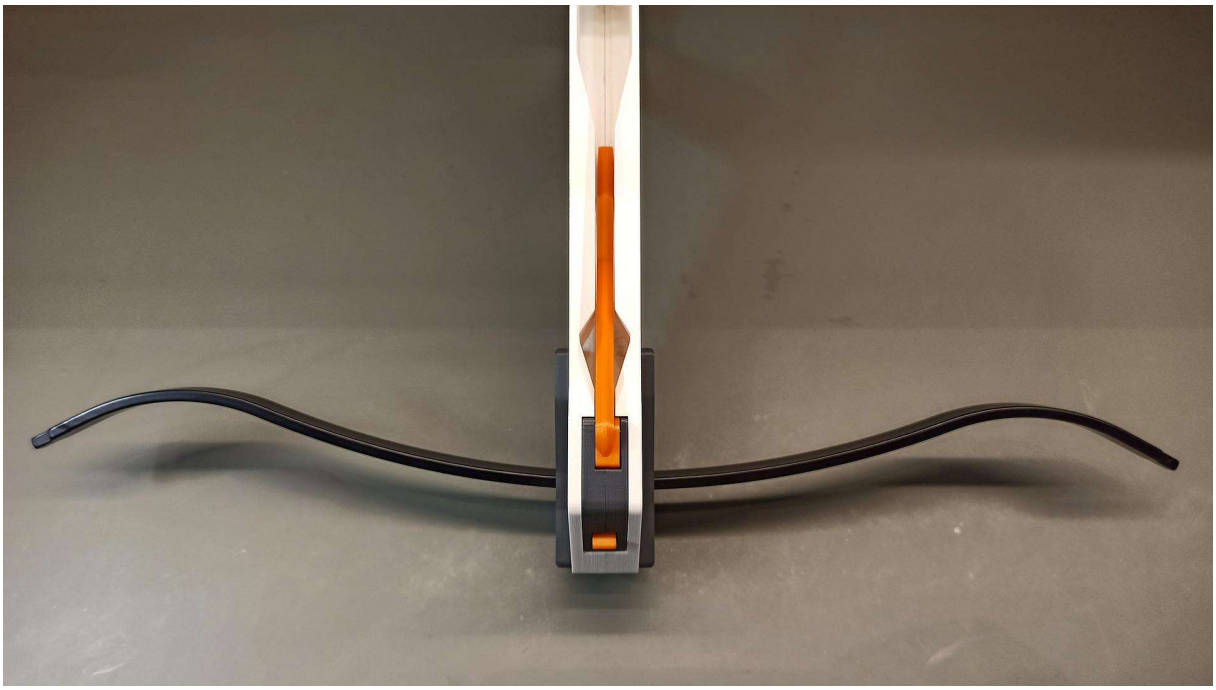


Insert limbs pressure washer into the mount hole.

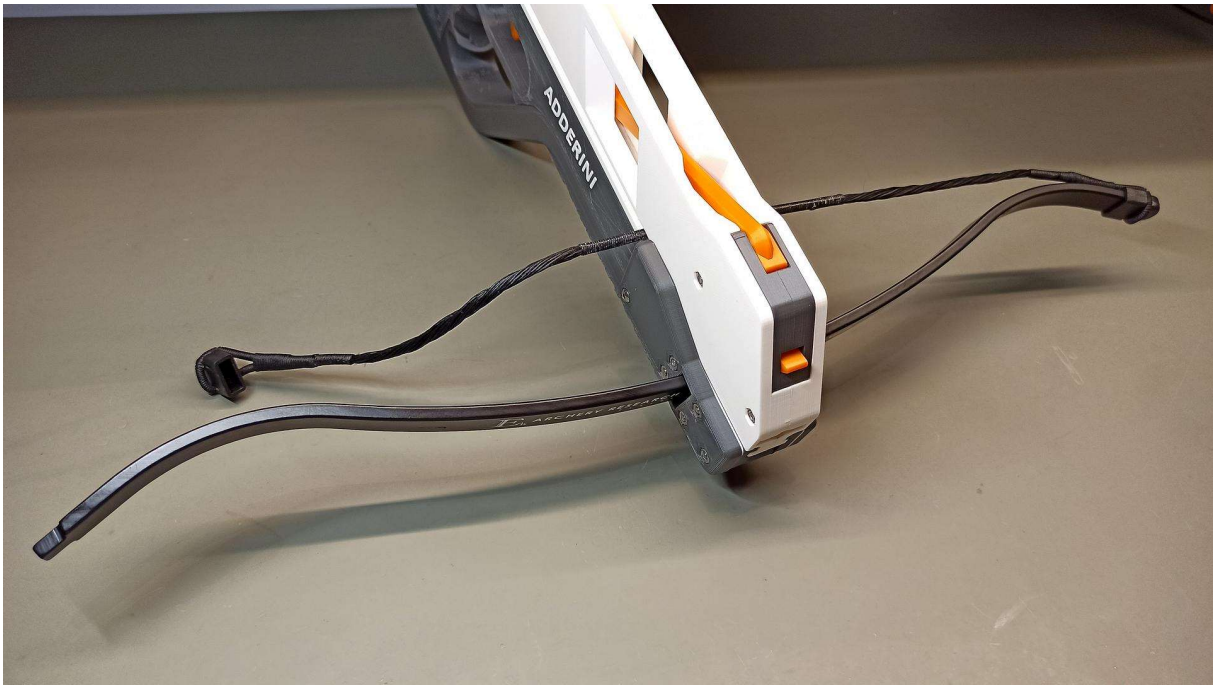


Insert the crossbow limbs into the hole, center it and tighten the M5x10 mm grub screw gently. Do not over tighten the screw.

Combine *cocking_rod* with *cocking_lever*. Secure the connection with the M3x20 mm screw. The screw is screwed directly into the plastic. Be careful, not to over tighten it.
Then insert the *cocking_lever* into the *pistol_body* and secure it with the M3x35 mm screw and M3 nut.

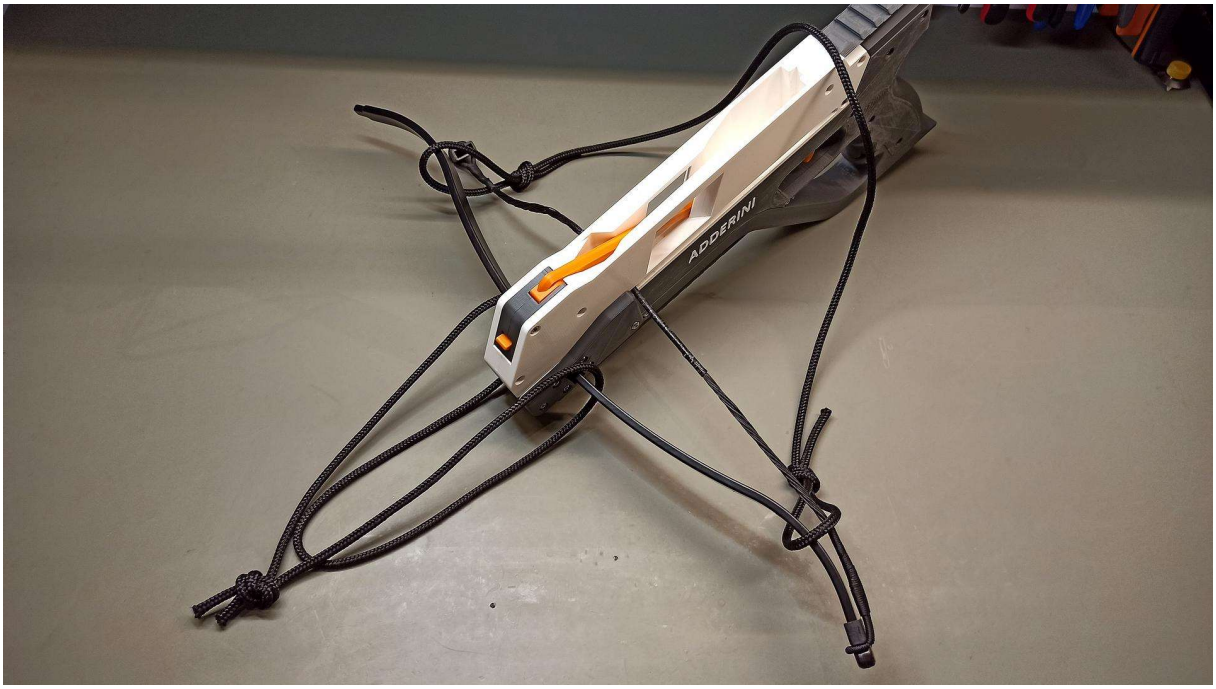


Mount the bowstring on one side and insert it through the string slot.



Mount the bowstring on the other side. You can use synthetic rope to help yourself.

If you have a vice, you can also use it to mount the bowstring. Fix one end of the limbs in a vice, bend the limbs with your hand and slide the bowstring into place.

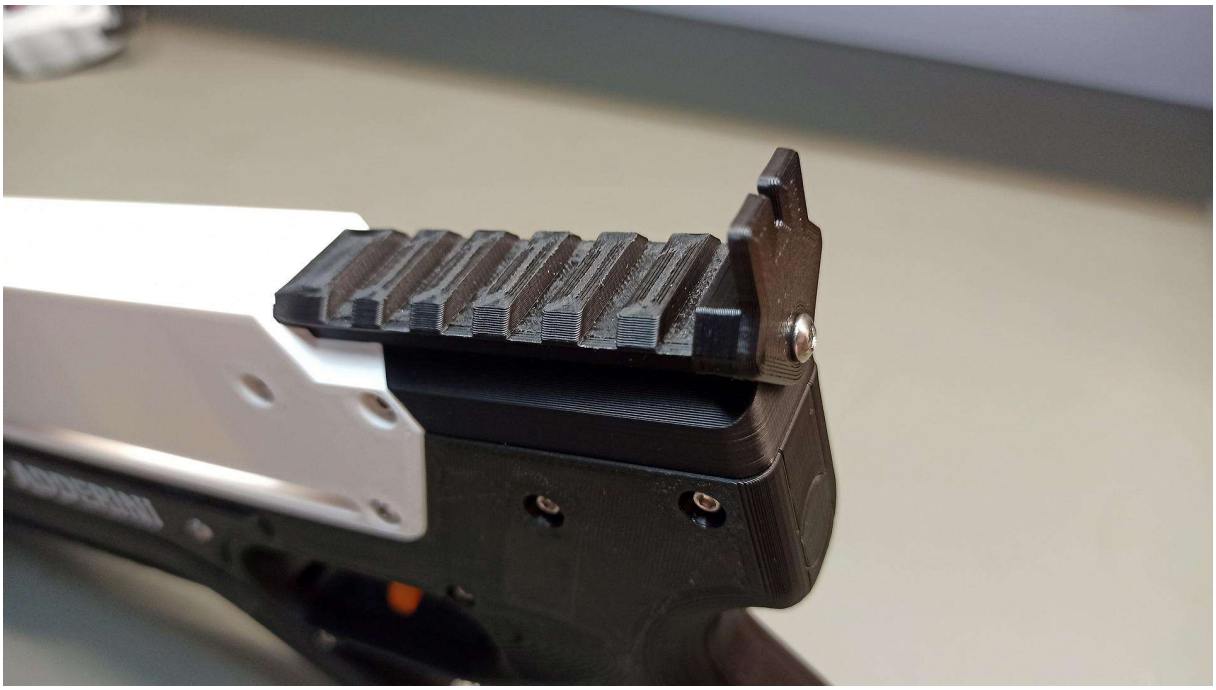


The distance between the bowstring and string stopper should be approximately 7-8 mm. If it is smaller, the pistol may not work properly and the trigger will not catch the string while cocking.

If the distance is too short, disassemble the bowstring on one side, twist it tighter and put it back on.

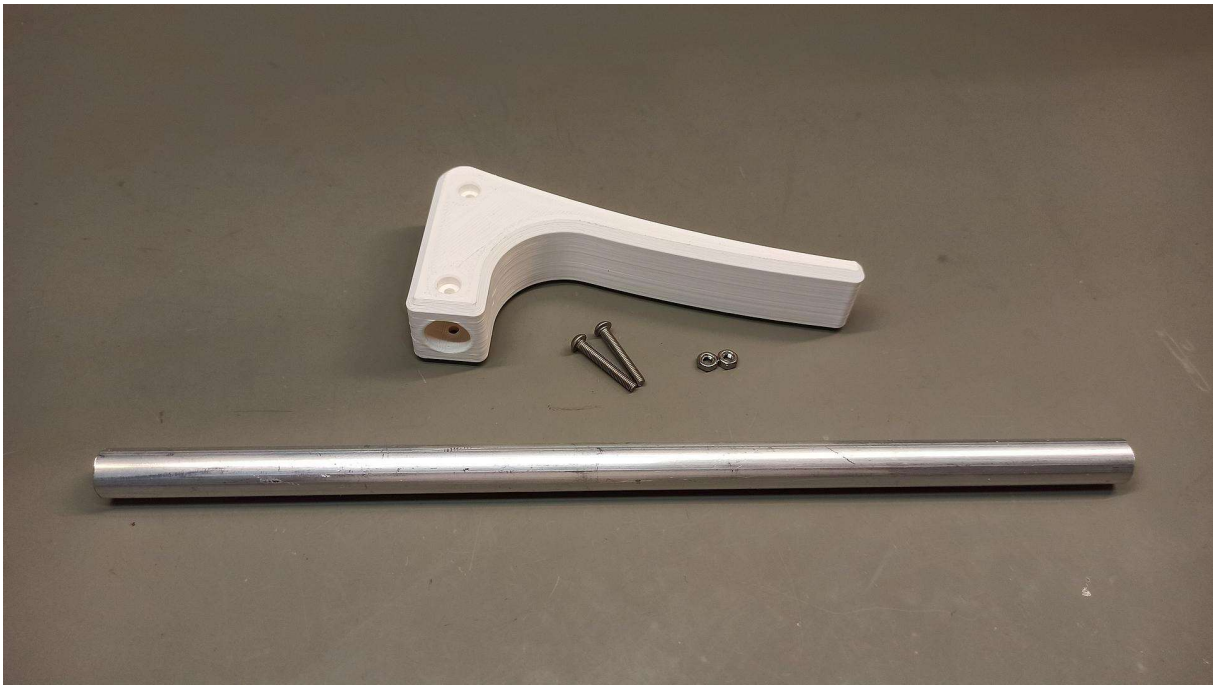
Open sight

This is the easiest way to aim. Install the *rear_sight* onto the rear picatinny rail with the M3x12 mm screw.



Stock

This is an optional part. Makes it easier to aim and allows you to extend the pistol to 520 mm. You need 250 mm long aluminum pipe with a diameter of 12mm and wall thickness of 1 mm, 2 M3x20 mm screws and 2 M3 nuts. You need to drill holes in the pipe so that the *stock* is in line with the *pistol_body*.

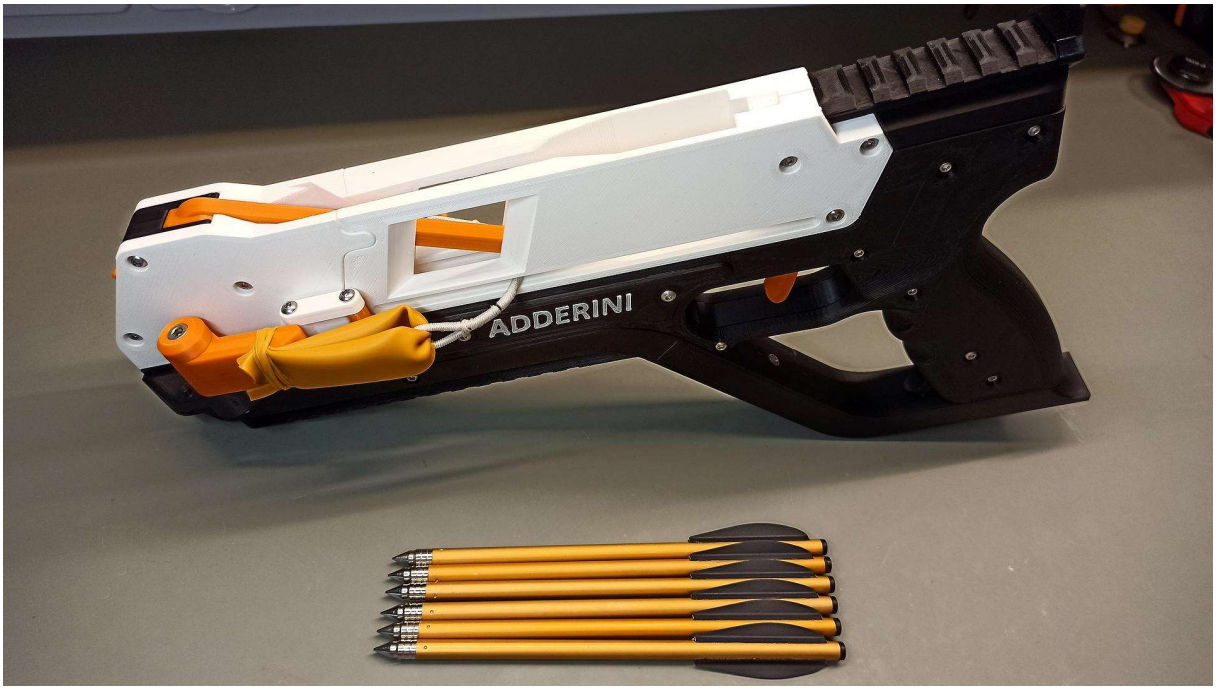


When drilling a hole in the front of the pipe, place the rear part of the pistol body and stock on the flat surface.

If you want to have an AR15 style stock, print the necessary parts from the "STL_MiniAdder_by_Faramir" folder.

Compatible bolts / arrows

The pistol is compatible with all the bolts as shown below. These are standard bolts for pistol crossbows 160-163 mm long. Regular training arrows as well as broadheads and bodkin tips are available. The magazine chamber holds 6 such arrows. I recommend using bolts with an full aluminum shaft.



Picatinny rails for optional devices

The pistol is equipped with two picatinny rails. I suggest using the lower rail only for devices such as flashlight, laser sight or front handle. The cocking lever may bend a bit when tightening the string, but it does not significantly affect the accuracy of aiming the laser at a short distance.

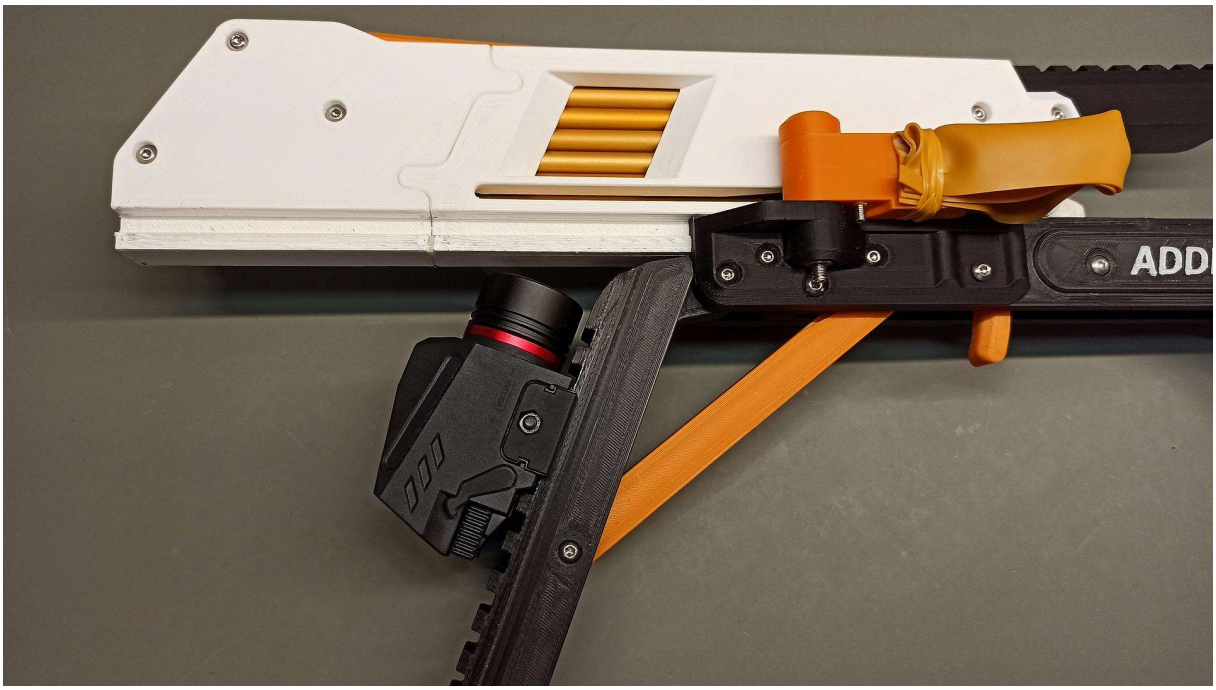


Image from the FB group "Cobra Adder & Steambow Stinger & Fenris".

You can also print a different version of the cocking lever with holes for M3 threaded inserts and design your adapter for any device. The distances between the holes are 30 mm and 50 mm.

Flashlight holder made by one of the Adderini users.

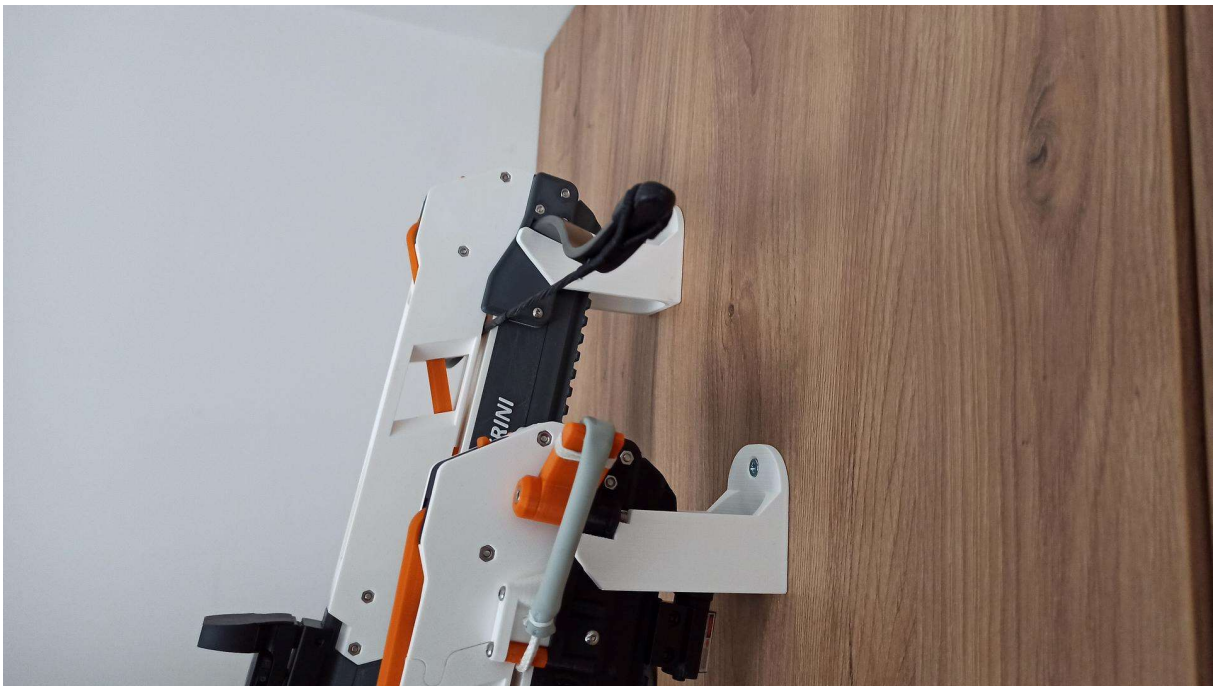
You can also mount the Convoy S2+ flashlight directly to the cocking lever. Print the appropriate part and use 2 zip ties.

The upper picatinny rail combined with the magazine allows for the installation of a red dot sight or short scope. The rail is tilted towards the front by 2 degrees, so it is easier to set the sights over longer distances.

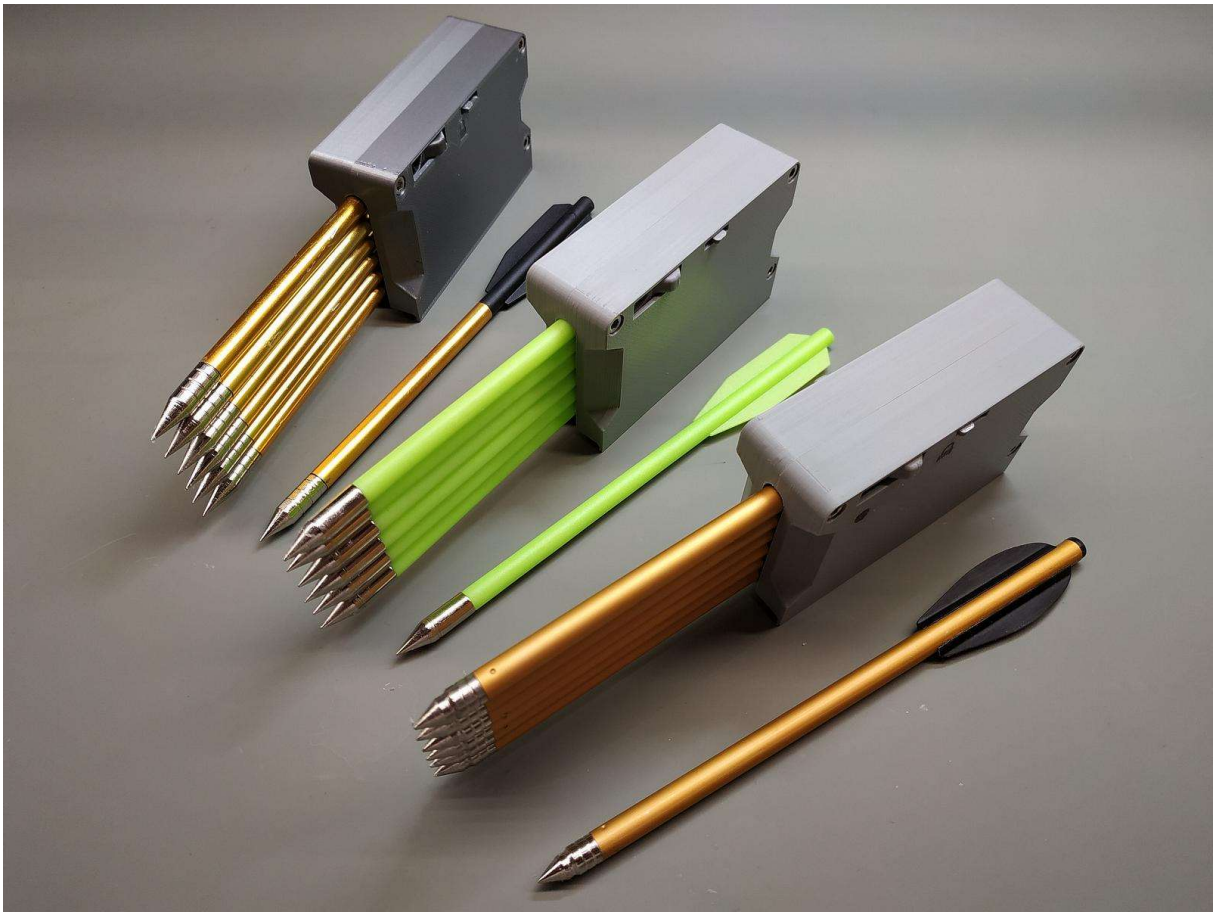
Wall mount

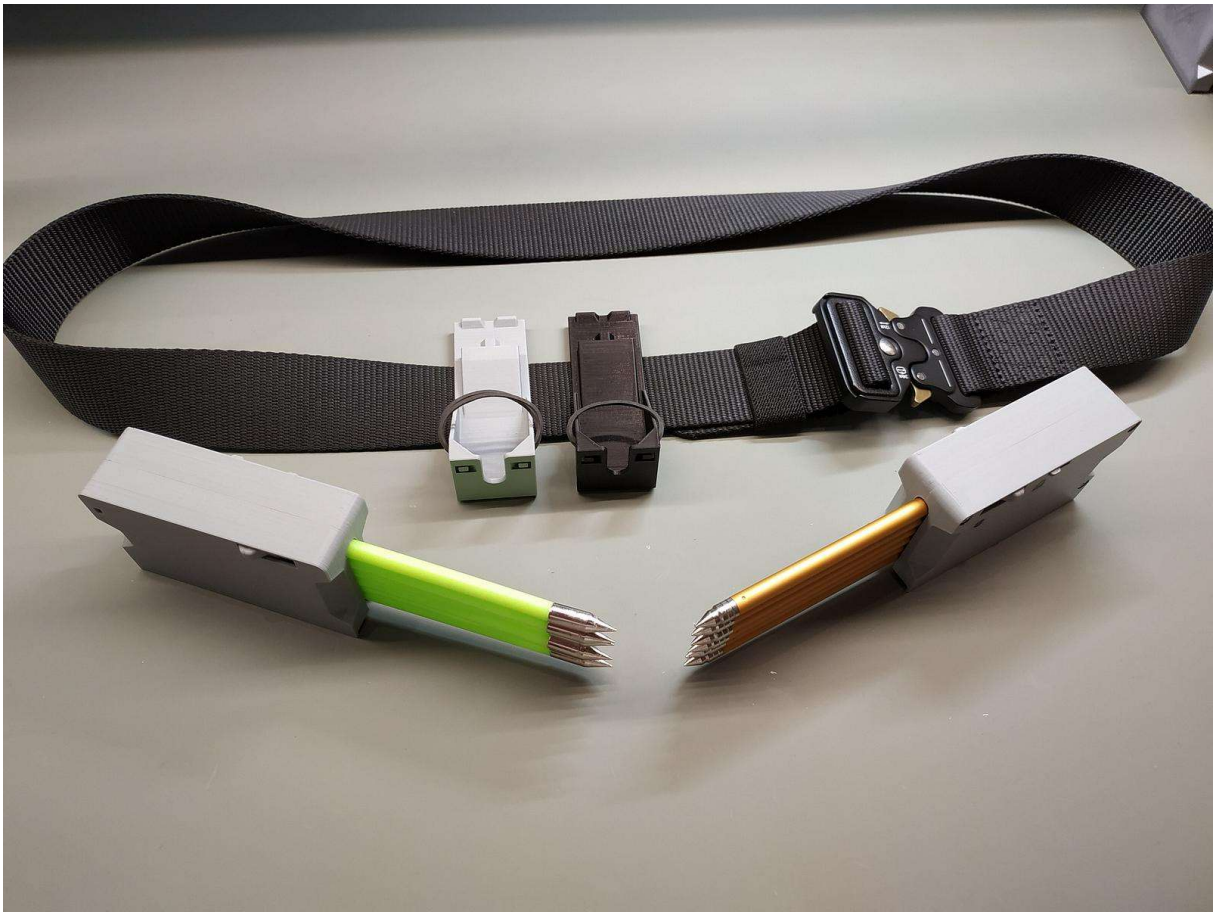
You can hang Adderini on the wall so it's always easy to reach. You just need to print the 3MF file "*[A]_optional_wall_mount*" and use the mounting screws. The wall bracket has 2 holes, but in most cases it is enough to use the top hole.

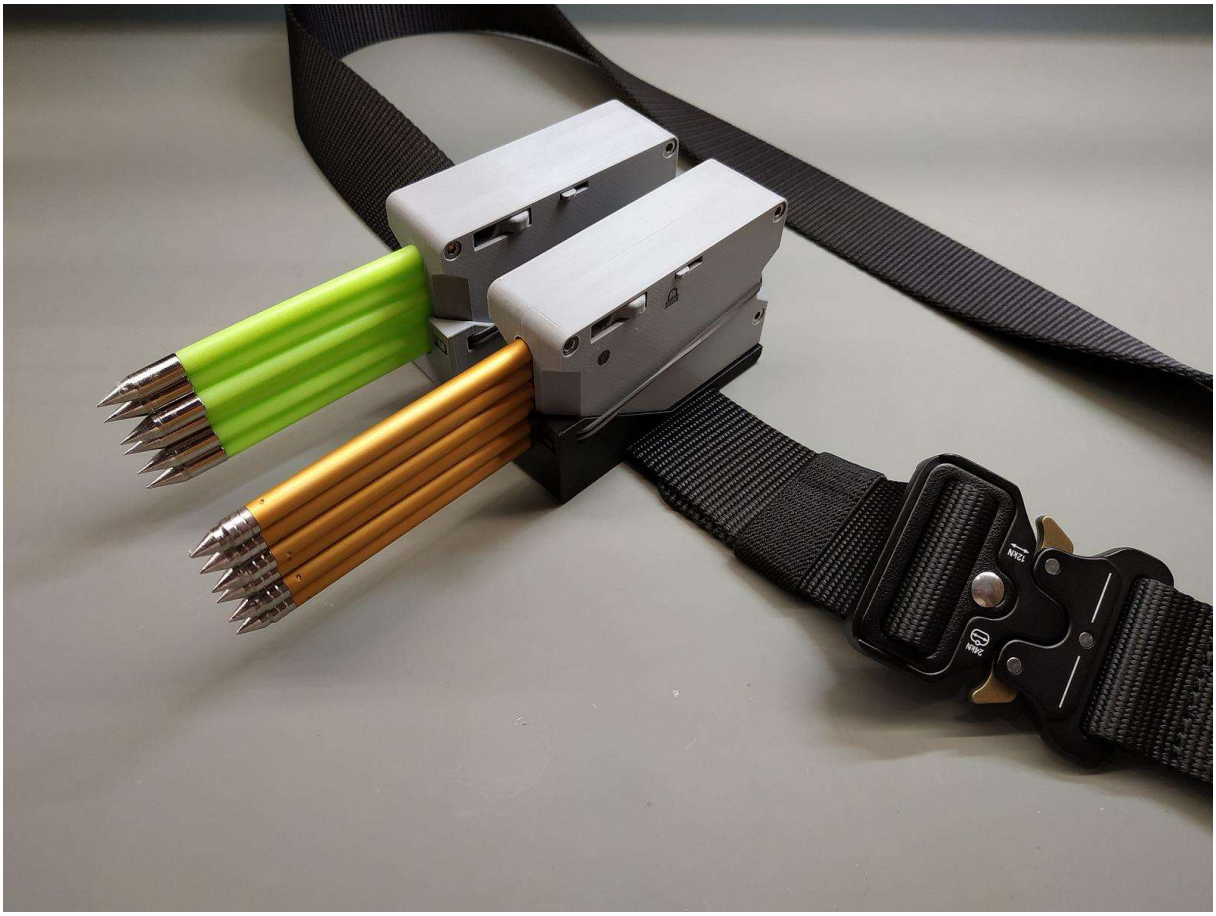
The wall mount is available for the rubber powered and for the crossbow limbs powered version. Choose the compatible wall mount for your Adderini model.

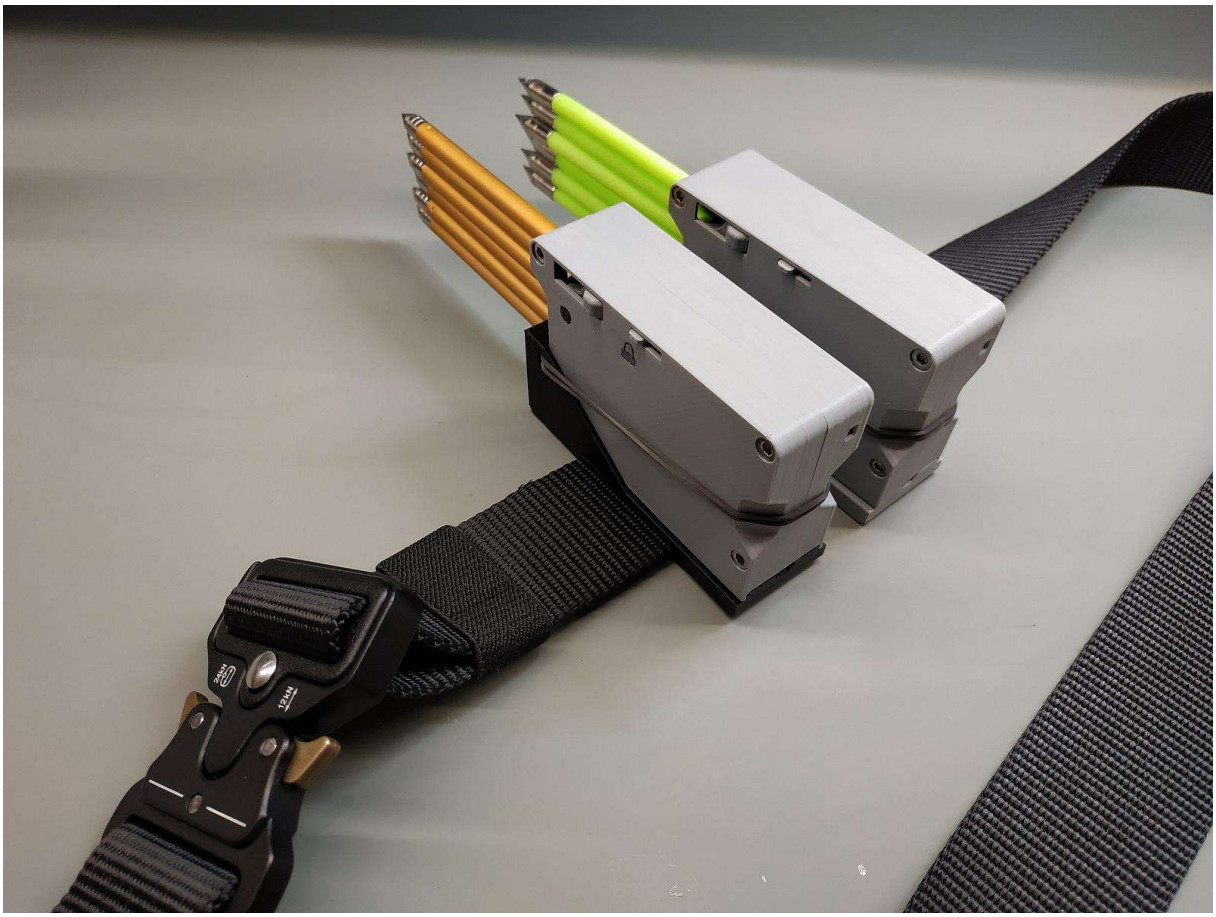


Optional ammo clips with automatic magazine loading









I think this video will explain how it works.
https://www.youtube.com/watch?v=hbBHbEoSbZ0

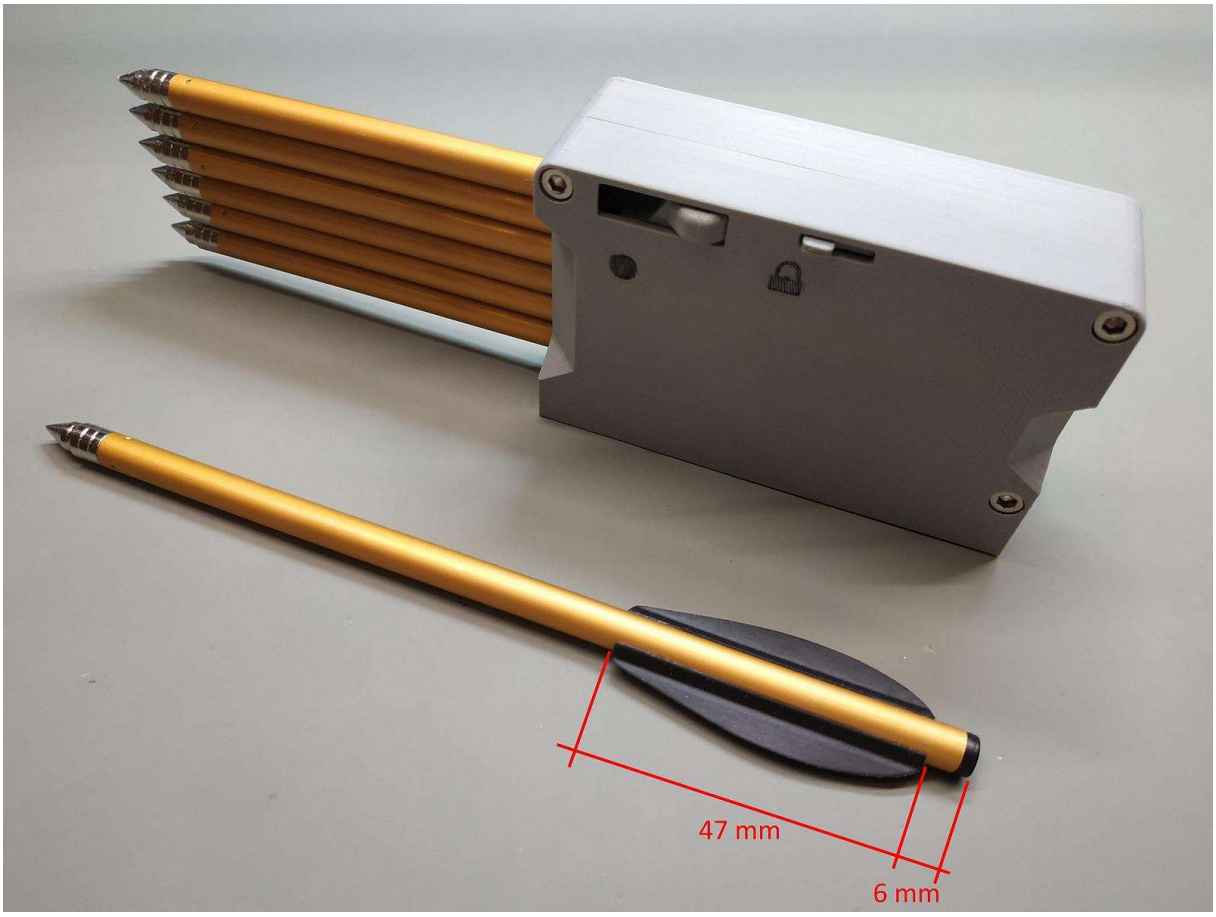
When loading the magazine, it is recommended to tilt the pistol back about 15-45 degrees. The rest is done by gravity when the ammo clip moving backwards. With a little practice, you can load a magazine very quickly.

This ammo clip is 3D printed (9 parts) and requires only 4 external elements to work (3 pieces M3x20 mm Allen screws and a small spring from a pen - 4.2 mm diameter and about 25 mm length).
The arrow release mechanism of the ammo clip is triggered by the movement of the clip backwards. At the end of the bow magazine is a small notch that works with the ammo clip main slider.
The ammo clip has a small lock switch that makes it difficult to accidentally unload the ammo clip when placing it in the belt attachment. The trouser belt attachment has an additional lock that immobilizes the whole mechanism, so when walking or running the bolts will not fall out.

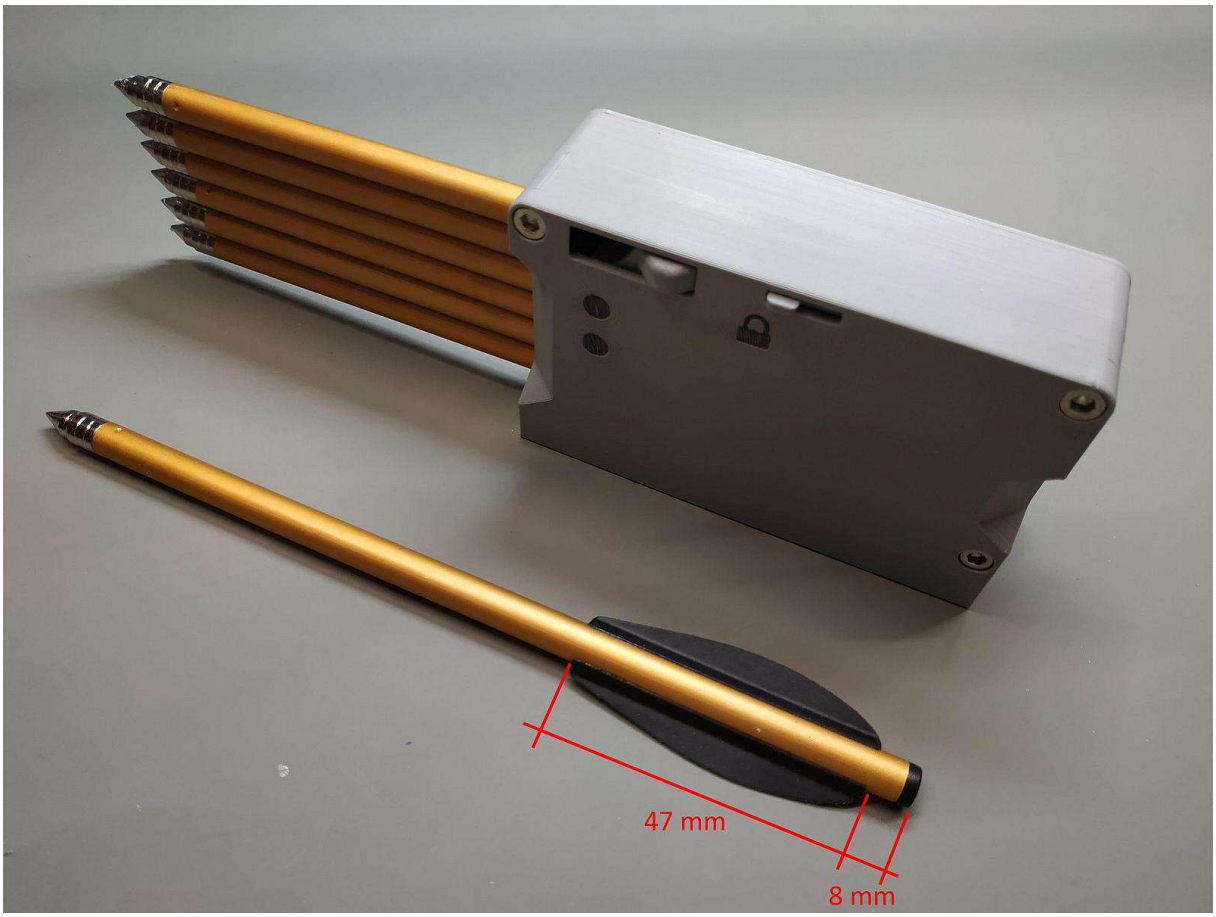
3 versions ammo clips are available - please choose the right one for your arrows/bolts:
"A"without circle on the housing - https://www.thingiverse.com/thing:4214277
- for 160 mm bolts with steel point head, aluminum shaft (6.2 mm diameter) with plastic fletching or full plastic shaft (6 mm diameter) and fletching (cheapest bolts available also on Aliexpress)

"B"with one circle on the housing - https://www.thingiverse.com/thing:4214299

- for 161 mm bolts with steel point head, aluminum shaft (6.35 mm diameter) with 6 mm back and 47 mm silicone fletching (for example some POE LANG bolts)



"C"with two circles on the housing - https://www.thingiverse.com/thing:4214302
- for 161 mm bolts with steel point head or broadhead, aluminum shaft (6.35 mm diameter) with 8 mm back and 47 mm silicone fletching (for example bolts for pistol crossbows Viper, Stinger, Armex Tomcat, NXG Cobra or comparable models)



Other useful add-ons for the Adderini

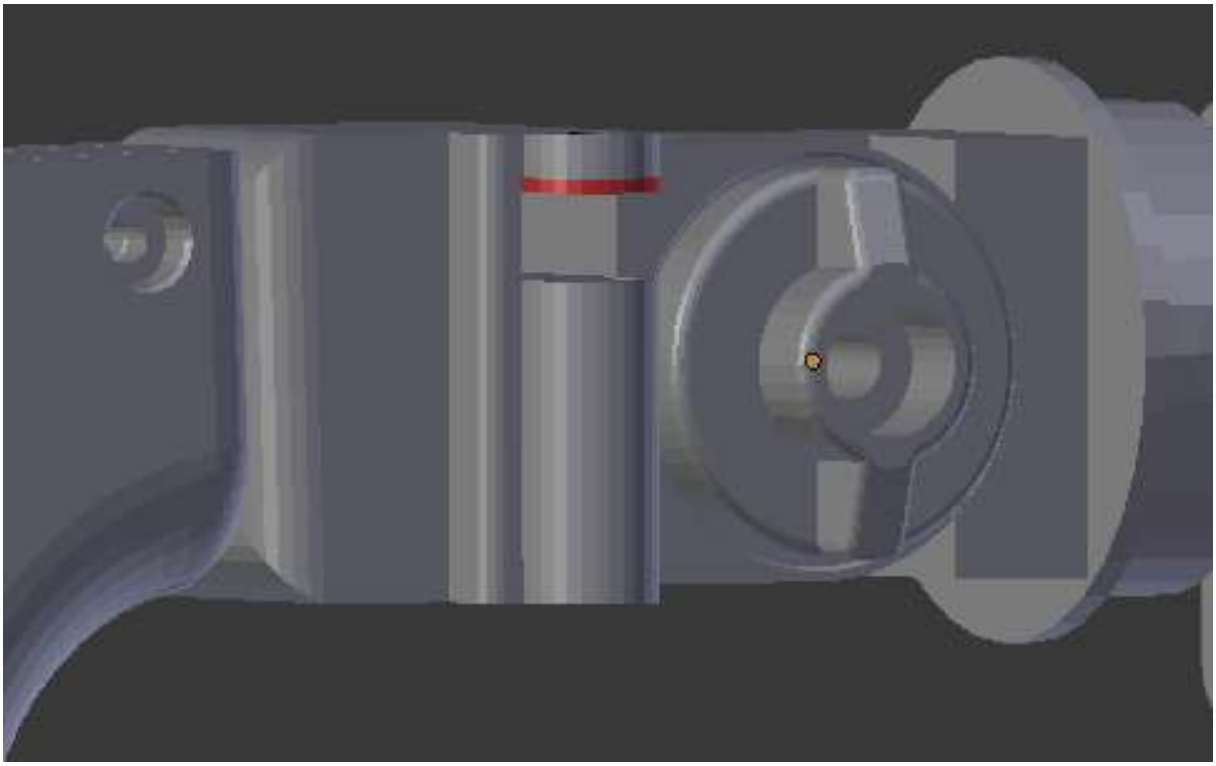
Below are some of the add-ons created by the Adderini users. You can try them out if you want.
For many more see: https://www.yeggi.com/q/adderini/ or https://www.yeggi.com/q/miniadder/

Front handle and AR15 style stock adapter - created by FARAMIR

STL files included in the ZIP package. This adapter works with the Adderini and the MiniAdder.

The adapter is also available in the "foldable" version.

Please find the two STL files for the foldable stock.
You need a 2.8 x 35mm nail with a very broad top where you cut off the tip (~3mm) and a 8 x 8mm spring (the same that you use for the trigger and the magazine spring cut to 8mm).
The washer needs to be put between the front part and the spring and prevents friction of the spring ends (see picture (red) - the spring is missing in the picture).



Adderini mods - created by LUPUS

STL files included in the ZIP package. Many thanks Lupus!

Please read *README.txt* file in the *STL_Lupus_mods* folder.

Large and extralarge arms - created by HOLGERBEETZ
https://cults3d.com/en/3d-model/gadget/large-and-xl-slingbow-arms-for-the-adderini

Slingshot arm washer modification to use hex bolt - created by POTSUI
https://cults3d.com/en/3d-model/various/adderini-slingshot-arm-washer-modification-to-use-hex-bolt

Simple stand - created by HOLGERBEETZ
https://cults3d.com/en/3d-model/gadget/adderini-stand

Cocking lever reinforcement - created by POTSUI
https://cults3d.com/en/3d-model/game/adderini-cocking-lever-enforce-picatinny-rail

German flashlight mount - created by HOLGERBEETZ
https://cults3d.com/en/3d-model/gadget/german-flashlight-mount-for-the-adderini

German laser-flashlight mount - created by HOLGERBEETZ
https://cults3d.com/en/3d-model/gadget/german-laser-flashlight-mount-for-the-no-crossbow-adderini-holgerbeetz

Bolt holder - created by GUITARDUDE
https://www.thingiverse.com/thing:5262668

Throwing arm claws - created by FWGLASER
https://cults3d.com/en/3d-model/tool/adderini-throwing-arm-claws

Slingshot arm for TheraBand tube rubber - created by KRASI50
https://cults3d.com/en/3d-model/home/slingshot-arm-for-the-adderini-is-for-the-theratube-6mm

Safety plug - created by GUITARDUDE
https://www.thingiverse.com/thing:5239157

Changelog

2022.11.28
Added "MiniAdder v2" STL files modified by Faramir.
Updated PDF manual.

2022.07.05
Added STL files with Lupus mods.

2022.01.04
Added 3MF files for wall mounts.
Added Faramir's STL files for foldable AR15 style stock.

2021.12.12
Updated the crossbow limbs version. The widened mounting hole allows the use of rubber pads to reduce vibration and noise during the shot.

2021.11.30
Fixed 3MF file "[B]_pistol_body_left_front" in the crossbow limbs version - missing chamfer added on the rail side. Please do not print a previous version of this file.

2021.11.22
Fixed 3MF files for cocking lever and cocking rod.

2021.11.21
The premiere of the Adderini powered by the pistol crossbow limbs.
Included "MiniAdder" STL files modified by Faramir (crossbow limbs + AR15 style stock).
Added 3MF files for the printers with a 180 x 180 mm bed size (Prusa Mini).
STL files changed to 3MF files. File reorganization.

2021.10.05
The premiere of the Adderini no-crossbow version.
Shared STL files for large printers with a bed of 300 x 300 mm.

2021.09.18
Premiere of the Adderini - 3D Printed Repeating Slingbow Pistol.

Summary

I hope you can build your own *Adderini* based on my pretty detailed instructions. It's not particularly complicated, but it does require patience and some manual skills.

This is by far the most complicated of my designs. It took many many hours of designing and solving various problems along the way. It is a compromise between the size of the pistol, magazine capacity, length and durability of the cocking lever and the decent power. The shared 3MF files are the sixth version of the project.

It's a 3D printed toy, so it's not very strong, but it's definitely fun.

Now some good advice:

- remember about your safety and the safety of others during DIY works and using this device
- use only good-quality and undamaged parts and bolts
- regularly check the condition of the bowstring serving
- before starting the shooting, check the condition of the entire device, in particular the tightening of the screws and the condition of the 3D printed parts
- to prevent jamming and damaging the device, before firing the first shot, make sure that only one arrow is in the string slot and arrow guide
- if you not shooting, store the pistol with the folded slingshot arms to extend the life of the rubber
- do not expose PLA printouts to temperatures above 40 degrees Celsius, because they may be permanently deformed

I would like to thank my beta testers and many Adderini users who helped me improve many things on the device.

I would like to thank Jörg Sprave for his inventions, help, good word and inspiration to act.
Without him, this project would certainly not have been possible.

Łukasz Janikowski