SW1522
Assembly Guide

Version 2.00
2022-12-15

Vinh Nguyen (nguyenkvvn)

CONTENTS

SECTION I: INTRODUCTION

The SW1522 and DS1913 were one of the first models I began my CAD journey on. It was based on a (self-declared) untested AR-15 model by Disruptive Solutions from the FOSSCAD repo.

My skills in 2020 have vastly improved since then. (As of writing, nearly 2023.) I have learned a lot of techniques and principles since then regarding 3D printing and firearms, so I've incorporated them into this update.

Changes for the SW1522 (and its derivative CM1522) such as reintroducing the takedown detent system, eliminating a "friction fit" of the receivers, and tweaking magazine fitment. (And of course, this assembly guide too.)

Vinh Nguyen

SECTION II: TOOLS AND SHOPPING LIST

To assemble this firearm, you will **need** the following tools:

- Gunsmithing Punch Set
- Metric Drill Bit Set
    - 2.5mm Drill Bit
    - 3.5mm Drill Bit
    - 4.0mm Drill Bit
    - 6.5mm Drill Bit
- Large Stick File
- Narrow, but not needle nose, pliers

The following tools may help, but are **not required**:

- Flathead screwdriver

You can check out a recommended shopping list of tools Vinh keeps at his desk at www.vinhstoolbox.com.

SECTION III: PARTS KIT CHECKLIST

In order to successfully build your SW1522/CM1522…

UPPER PARTS

A complete slide parts kit, or a complete slide assembly should compose of the following:

- Smith and Wesson 15-22 Upper Receiver Assembly

LOWER PARTS

A complete lower parts kit should compose of the following:

- AR-15 Lower Parts Kit, including:
  - Trigger Bow
  - Trigger Bow Spring
  - Hammer
  - Hammer Spring
  - Fire Selector
  - Fire Selector Detent
  - Fire Selector Detent Spring
  - 2x Takedown Detent
  - 2x Takedown Detent Spring
  - Bolt-Catch
  - Bolt-Catch Detent
  - Bolt-Catch Detent Spring
  - Bolt-Catch Pin
  - Magazine Release
  - Magazine Release Button
  - Magazine Release Spring
  - AR-15-compatible grip of your choosing

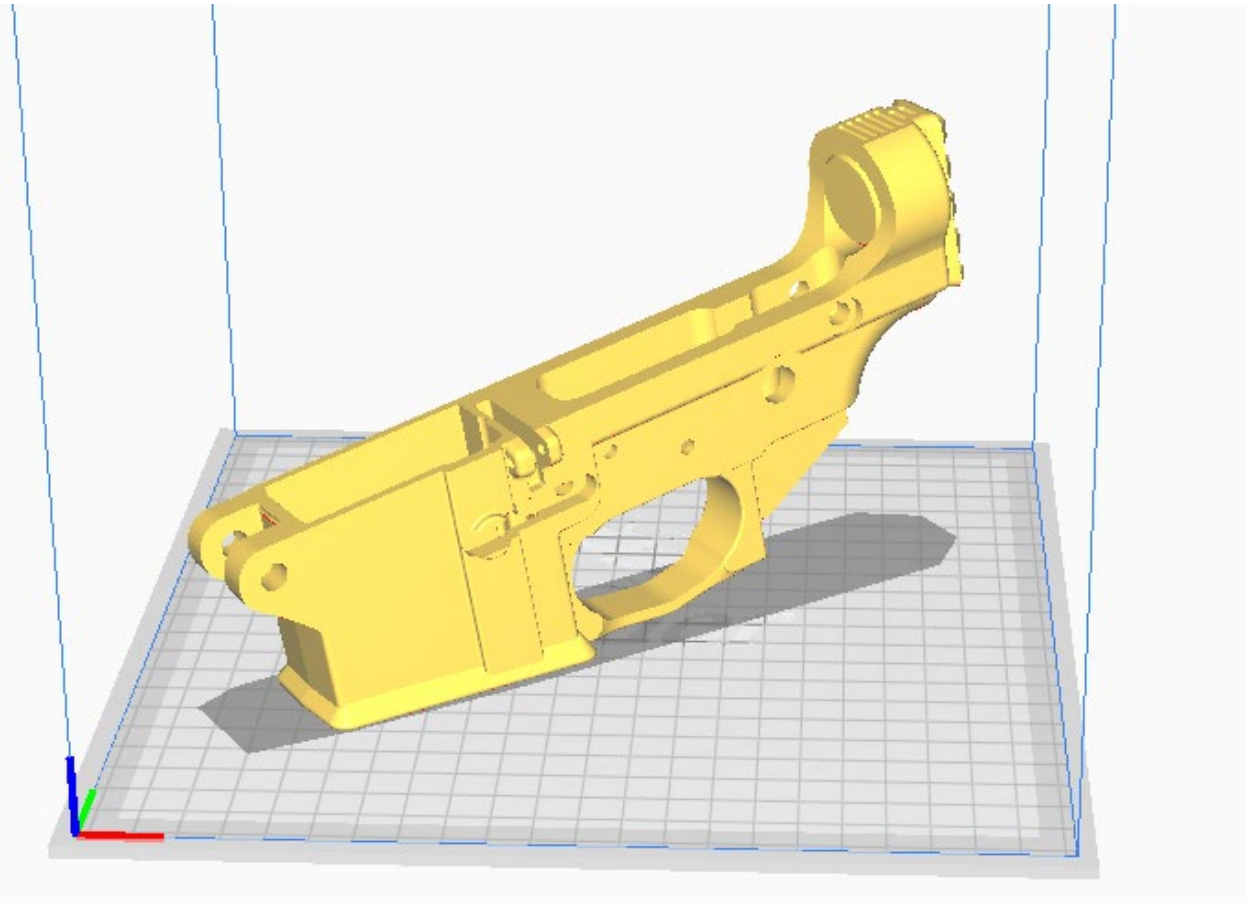
NOTE: The M&P 15-22 rear detent takedown is not compatible with this model. You must replace it with a standard, mil-spec AR-15 rear takedown pin.

MAGAZINES AND ACCESSORIES

Don't forget you will also need:

- Magazine
  - *M&P 15-22 Magazine*

PRINT SETTINGS AND ORIENTATION



Print using the above orientation. Use Cura's "Align Face to Build Plate" tool under "Rotate" to orient the lower receiver with the magwell facing downwards onto the build plate.

These were the printing settings used:

- Nozzle Size: 0.4mm
- Layer Height
  - Height: 0.16mm
  - Initial Height: 0.16mm
- Walls: 8
- Infill Density: 100%
- Supports: Tree Supports
- Bed Adhesion: Brim

eSUN PLA+ or PolyMaker PolyMax PLA+ is recommended.

SECTION IV: ASSEMBLY

In this section, we will cover the settings you should print your frame and assembling it.

SAFETY FIRST

Putting a gun together is no joke. Firearms are dangerous tools that must be treated with care and respect. **You are responsible for your safety, and those surrounding you** when you work with or operate firearms. Fellow developers or engineers cannot be responsible or liable for what you do or don't do.

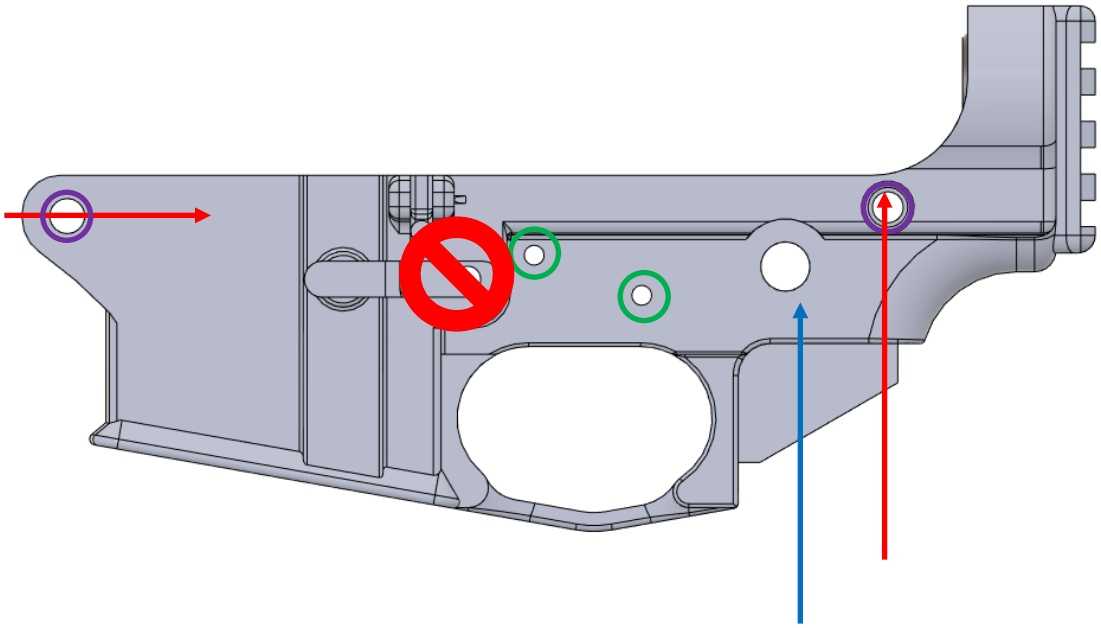
As a general reminder, here are some rules to keep in mind:

1. **Always treat a gun as if it is loaded**. Remove the magazine and check the chamber yourself to verify the gun is unloaded.
2. **Keep your firearm always pointed in a safe direction.** Never point your gun at anything you don't intend to destroy.
3. **Be aware of what is in front and behind of your target.**

But specifically, for working on your firearm, you should remember the following too:

1. **Keep live ammo away.** Use snap caps or dummy rounds to verify function of your firearm. Never keep live ammo around your workspace, and certainly never mix them with your dummy ammo.
2. **A clean gun is a safe gun.** Never leave your firearms uncared for to foul or dirty up. Debris can cause malfunctions, which can be dangerous.
3. **Always read and follow directions.** Don't ignore a warning or follow instructions out of order.
4. **Use prudent judgement.** If something doesn't add up- use common sense. Stop, inspect, and re-evaluate your previous actions and procedures.

DRILL BIT CHASING GUIDE



Use a drill bit to deburr and chase out the highligted holes above.

- RED - 2.5mm Drill Bit
  - 2x Takedown Pin Channels
- GREEN - 3.5mm Drill Bit
  - **CHASE THIS BY HAND.**
  - 4x Fire Control Pin Holes
- PURPLE - 6.5mm Drill Bit
  - 4x Takedown Pin Holes

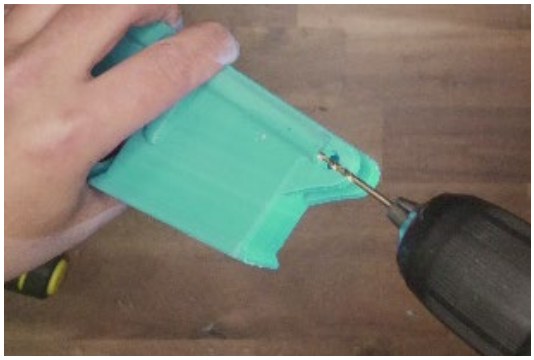
TIPS:

- Use a power drill at low speed.
- Be gentle and work slowly to ensure the holes are clean and rounded.
- Insert the bit straight in- don't cant the bit or enter at an angle.

PREPERATION

Using a 6.5mm drill bit, chase out the takedown pin holes.

Chase the hammer and trigger pin holes by hand with a 3.5mm drill bit.



Using a 2.5mm drill bit, chase out the front takedown spring channel.

Using a 2.5mm drill bit, chase out the rear takedown spring channel.

LOWER RECEIVER INSTALLATION
BASIC AR-15 ASSEMBLY

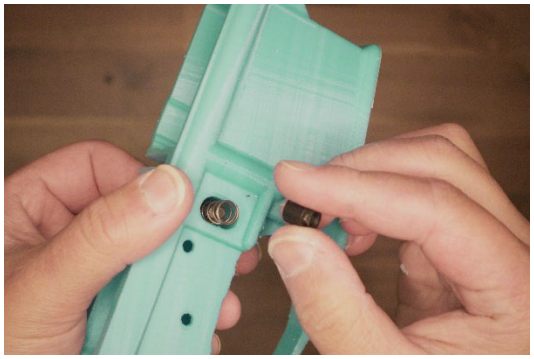
These steps will walk you through the basic AR-15 lower receiver part installation, but with detail given only to the SW1522 specific parts and instructions, as AR-15 lower assembly is considered common knowledge.

Place the takedown detent spring and takedown detent into the channel.

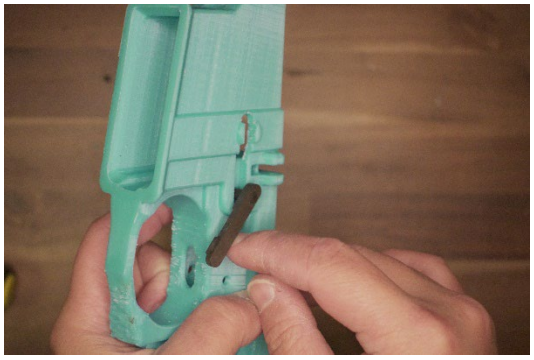
Install the front takedown pin.

Remove magazine catch geometry of all debris.

Fit and insert the magazine catch.



Place the magazine catch spring and magazine catch button into the lower receiver.



Spin the magazine release to secure it in place with the magazine release button.

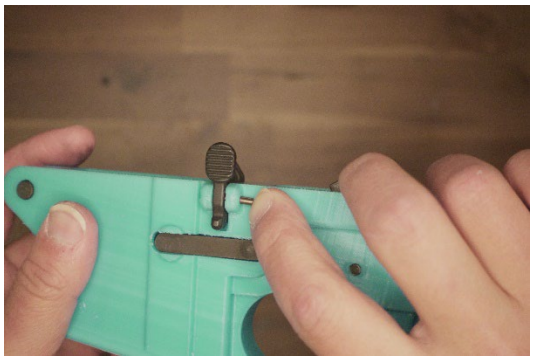
Prepare the AR-15 trigger. Insert this into the fire control pocket.

Hold down the disconnector to align the hole with the trigger bow to the receiver, then drive a fire control pin through.

Likewise, do the same for the hammer. Reset the hammer after you insert the pin completely.

Insert the bolt catch spring and detent.

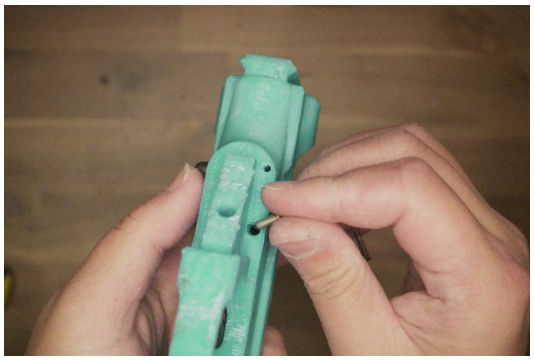
NOTE: This is not applicable for the CM1522 model.



Install the bolt catch, and gently insert the bolt catch pin.

NOTE: This is not applicable for the CM1522 model.

Insert the fire-selector.



Insert the fire-selector detent.

Be sure it moves freely, without binding in the channel.

Insert the rear takedown detent and spring into the channel, with the rear takedown partially inside the lower.

Be sure it moves freely, without binding in the channel, too.

(Continued.)

Ensure that the rear takedown spring and the fire-selector detent spring does not kink as you attach the grip.

Screw in the grip to the receiver.

Be sure you do NOT overtighten the screw, or it will strip the lower receiver.

The screw should self-tap into the lower.

SECTION V: FUNCTION CHECK

Verify your firearm works by evaluating each of the following functions.

BE SURE YOUR GUN IS STILL UNLOADED.

Check that your chamber is empty, and that there are no rounds in the magazine.

- Magazine Release Function
  - Insert and remove the magazine.
  - Test the magazine release for fluid movement.
- Fire Control Function
  - **DO NOT LET THE HAMMER FALL FREELY ONTO THE LOWER.**
  - The hammer should fall when the trigger is pulled.
  - The hammer should be held back when it its reset while the trigger is held down.

    - Release the trigger while the hammer is in the disconnected position should gently put the hammer back into the cocked state.
    - The safety should freely rotate between SAFE and FIRE.
    - When the safety is in SAFE, the hammer should not drop when the trigger is pulled.
- Takedown Function
    - The takedown should be able to move freely, with or without stiffness.

When you have completed the function check, the assembly process is complete.

Be sure to remove your magazine and store your firearm in a secure and safe place.

SECTION VI: TROUBLESHOOTING

You may encounter certain problems with your firearm either during usage or assembly.

- Grip screw geometry stripped
    - Do not over tighten the grip screw. You can still salvage this if you melt some loose filament against the wall of the grip screw channel.