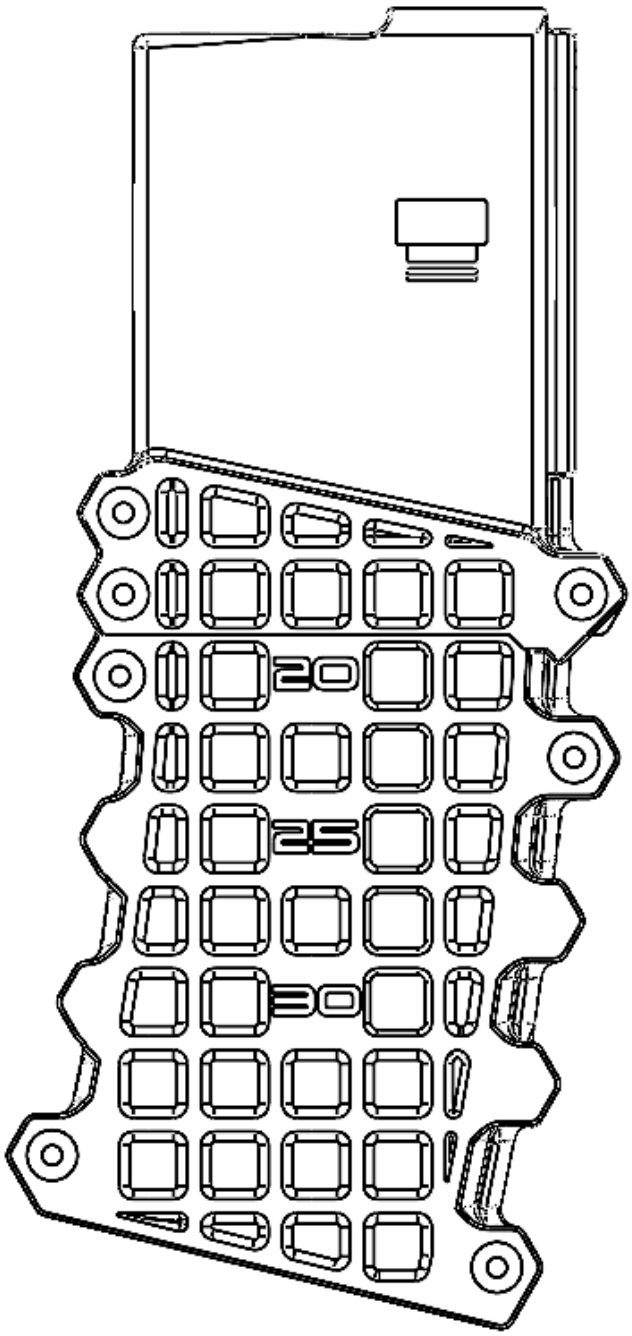
Waffle Magazine



Released: 5/x/20

Version: 1.0

Acknowledgements

Thank you to the Rocketchat beta team at Det_Disp that spent multiple weeks testing out new builds and proposing new ideas, as well as giving the Waffle mag its name. Thanks to Jny for the crisp propaganda art, as well as Dr. Swag for the constant presence and fast feedback. Also thank you to Ivan for the original model. I greatly appreciate all who helped!

-Spooky

Original Design by IvanTheTroll

Modifications by Spooky

Description

Functional 13-round, 20-round, 30-round, and 40-round AR-15 magazines with bolt-up frames. No post-production steps necessary. Facilitates LRBHO functionality and handles both 5.56 NATO as well as .458 SOCOM.

Instructions

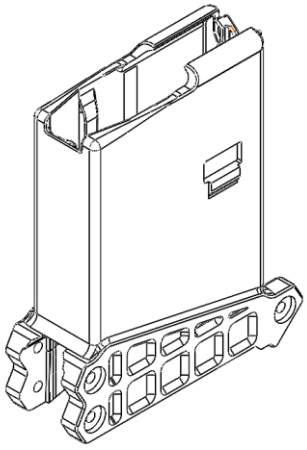
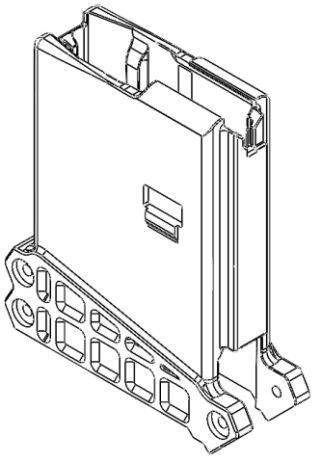
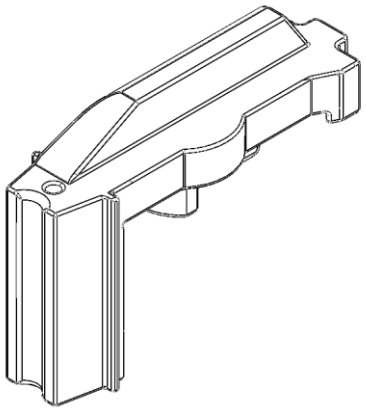
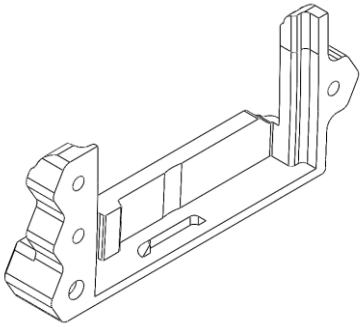
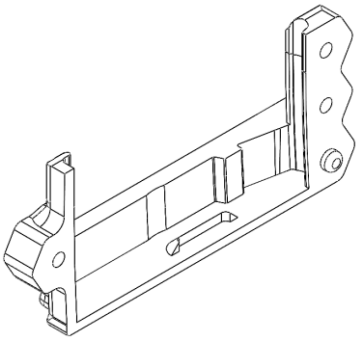
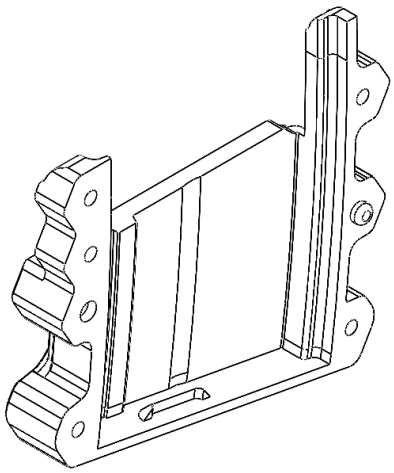
Hardware Requirements:

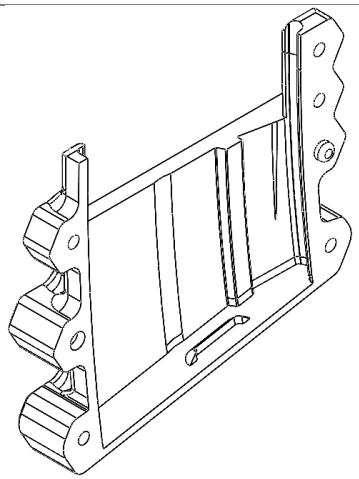
- 25mm M3 Bolts and Nuts
    - 3x for 13 Round Magazine
    - 5x for 20 Round Magazine
    - 7x for 30 Round Magazine
    - 7x for 40 Round Magazine
- AR-15 Mil-Spec Magazine Spring
- **REQUIRED FOR 40-ROUND MAGAZINE**: AR-15 “Extra Power” 30-Round Magazine Spring
- **REQUIRED FOR 13, 20-ROUND MAGAZINE**: AR-15 20-Round Magazine Spring
- **OPTIONAL FOR WINDOWED MAGAZINE**: 1/16” Thick Transparent Plexiglass sheet

PRINT SETTINGS

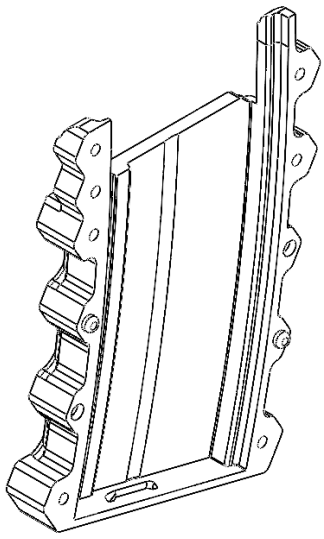
Material	PLA / PLA+ / ABS / PETG / Polycarbonate / Filled Nylon
Nozzle Size	0.4 mm
Filament Size	1.75 mm
Layer Height	0.16-0.20 mm
Top/Bottom Layers	15-20 Layers
Wall Line Count (Perimeters)	6-8 Walls
Infill Pattern	Triangle / Cubic
Infill Percentage	25-75%
Supports	None included, required.

MATERIALS LIST

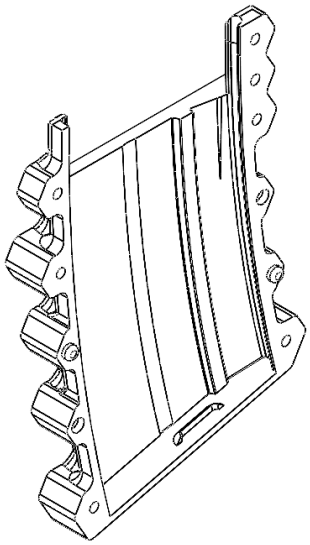
		
Mag Body Top	**Mag Body Top Wide Bolt Catch**	**Mag Follower**
		
Ten Round Mag Body Bottom Left	**Ten Round Mag Body Bottom Right**	**Twenty Round Mag Body Bottom Left**



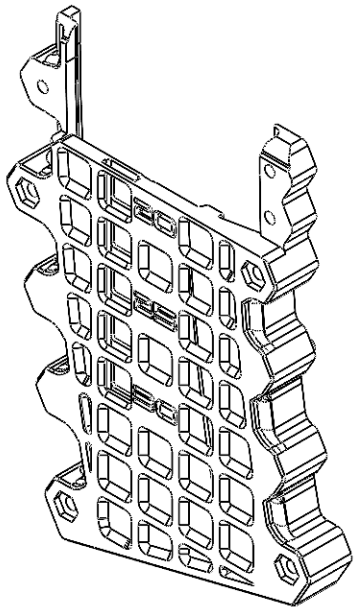
Twenty Round Mag Body Bottom Right



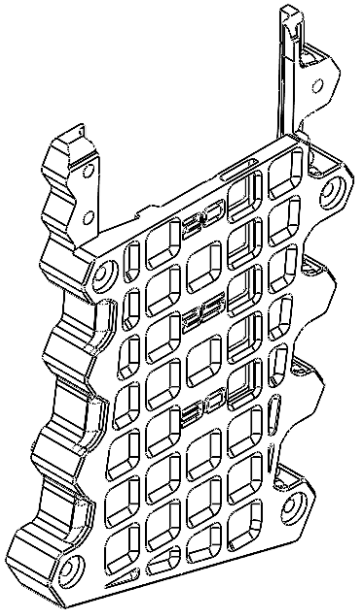
Mag Body Bottom Left



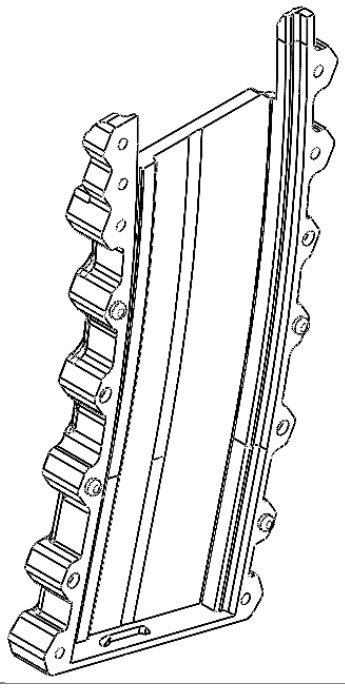
Mag Body Bottom Right



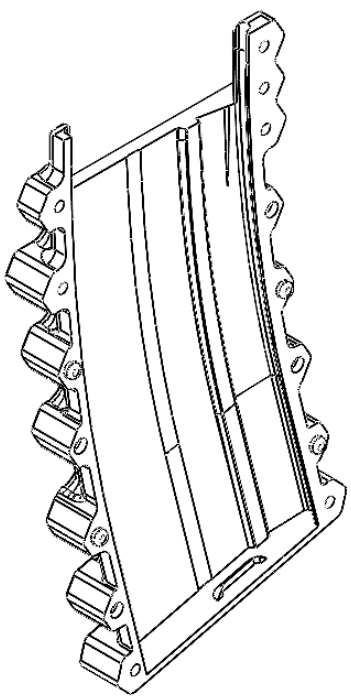
Mag Body Bottom Left Windowed



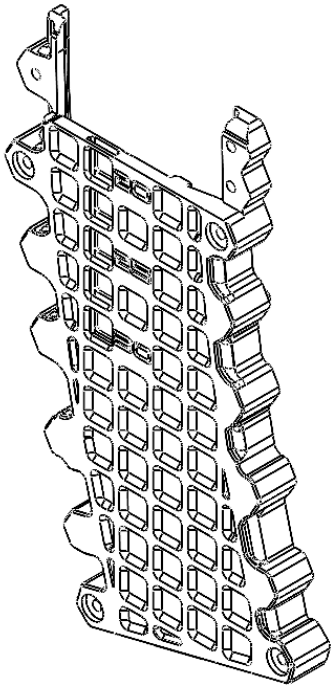
Mag Body Bottom Right Windowed



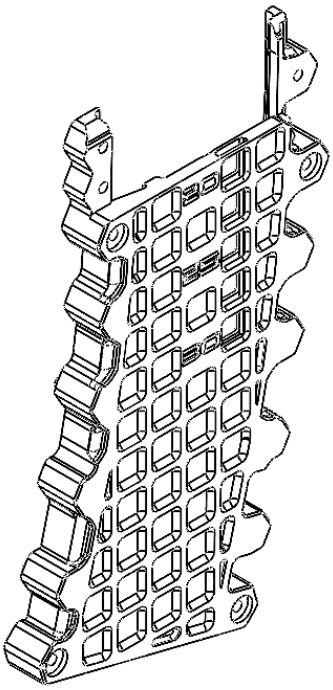
Extended Mag Body Bottom Left



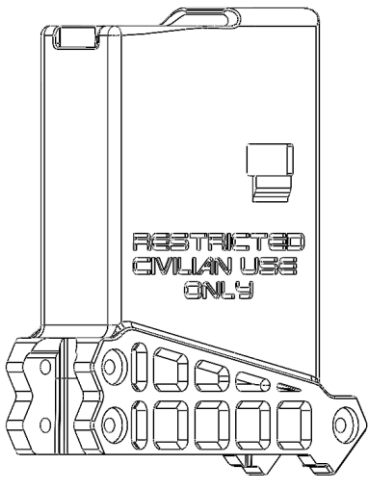
Extended Mag Body Bottom Right



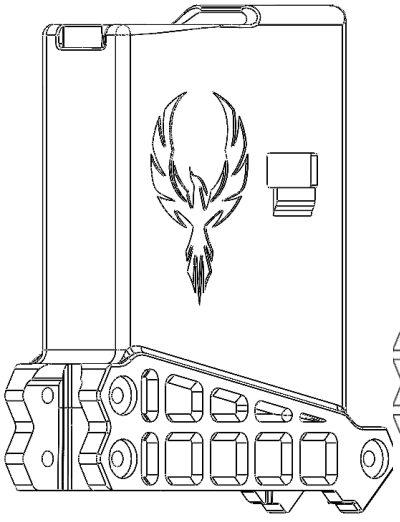
Extended Windowed Mag Body Bottom Left



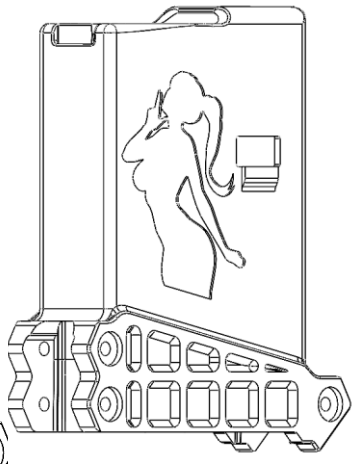
Extended Windowed Mag Body Bottom Right



Mag Body Top Restricted



Mag Body Top Phoenix



Mag Body Top Samus

Printing Orientation

Mag Body Top

The top piece needs to be printed as imported at an angle resting on the back feet to give the feed lips the necessary strength. The part will require supports. The following figures demonstrate an example method of supporting the part. Figure 4 shows how one could position support blockers in Cura to remove unnecessary supports to save material and print time. Acceleration and Jerk settings should be optimized to create the cleanest possible print. If you have trouble getting the print to stick to the bed, use a large brim.

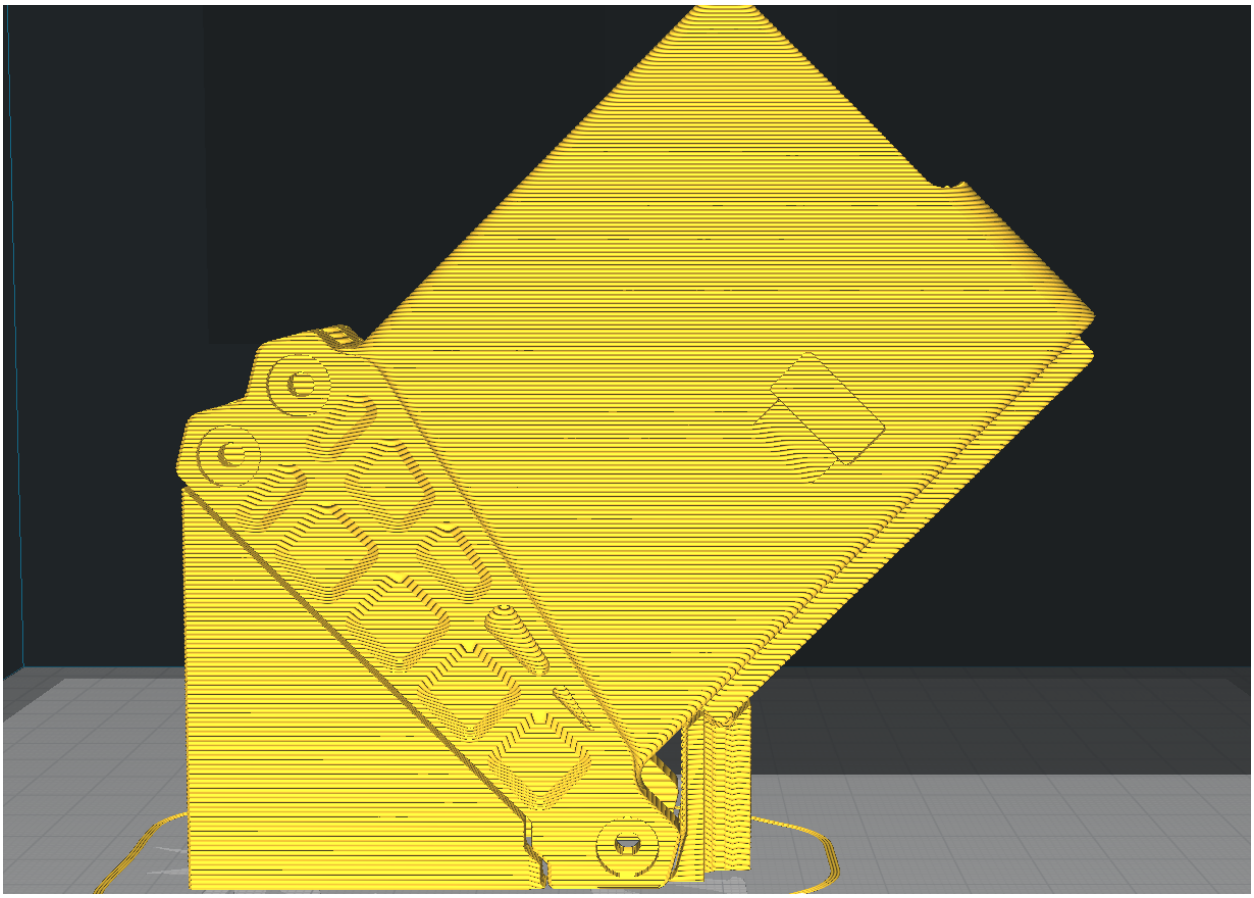


Figure 1

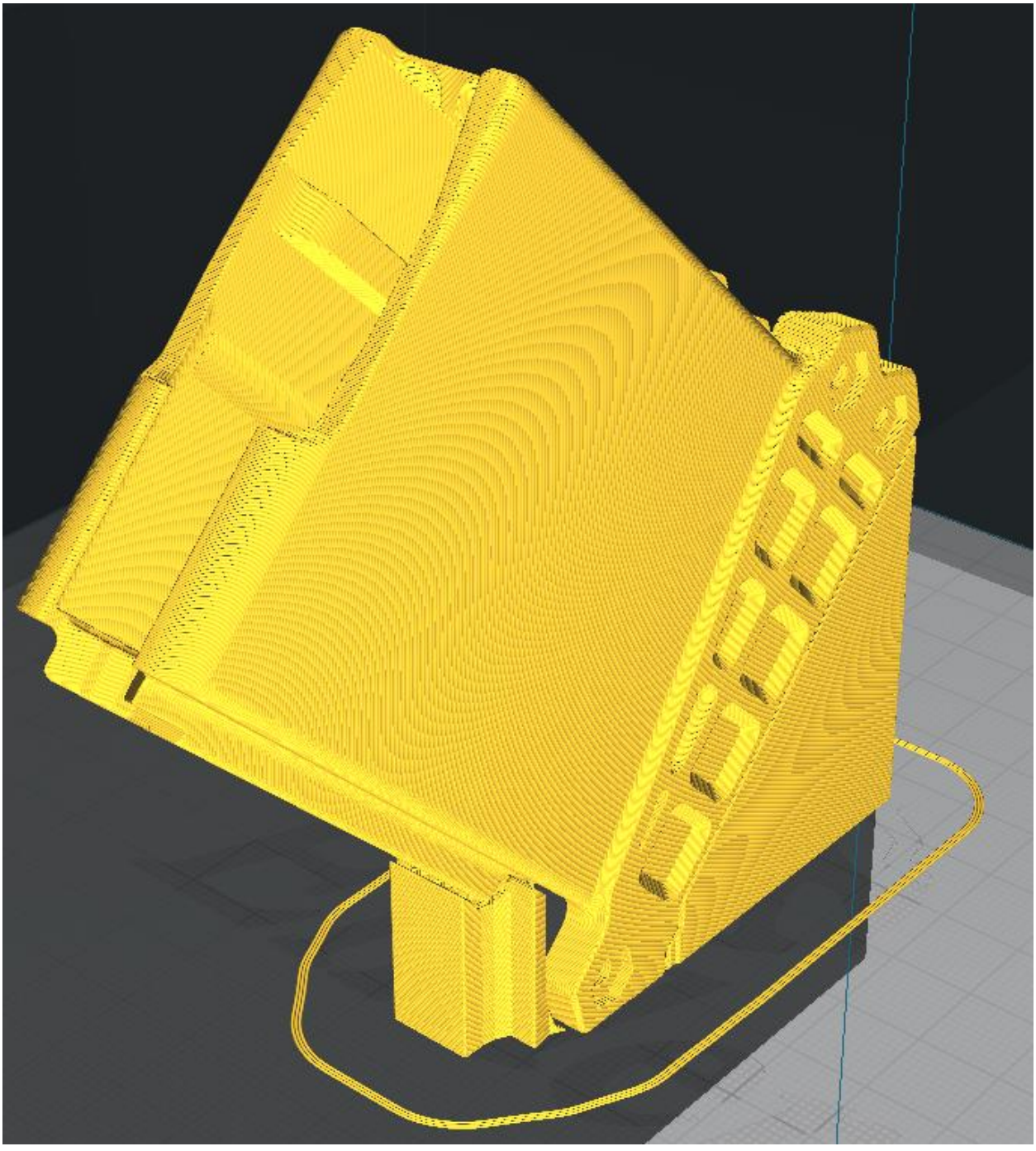


Figure 2

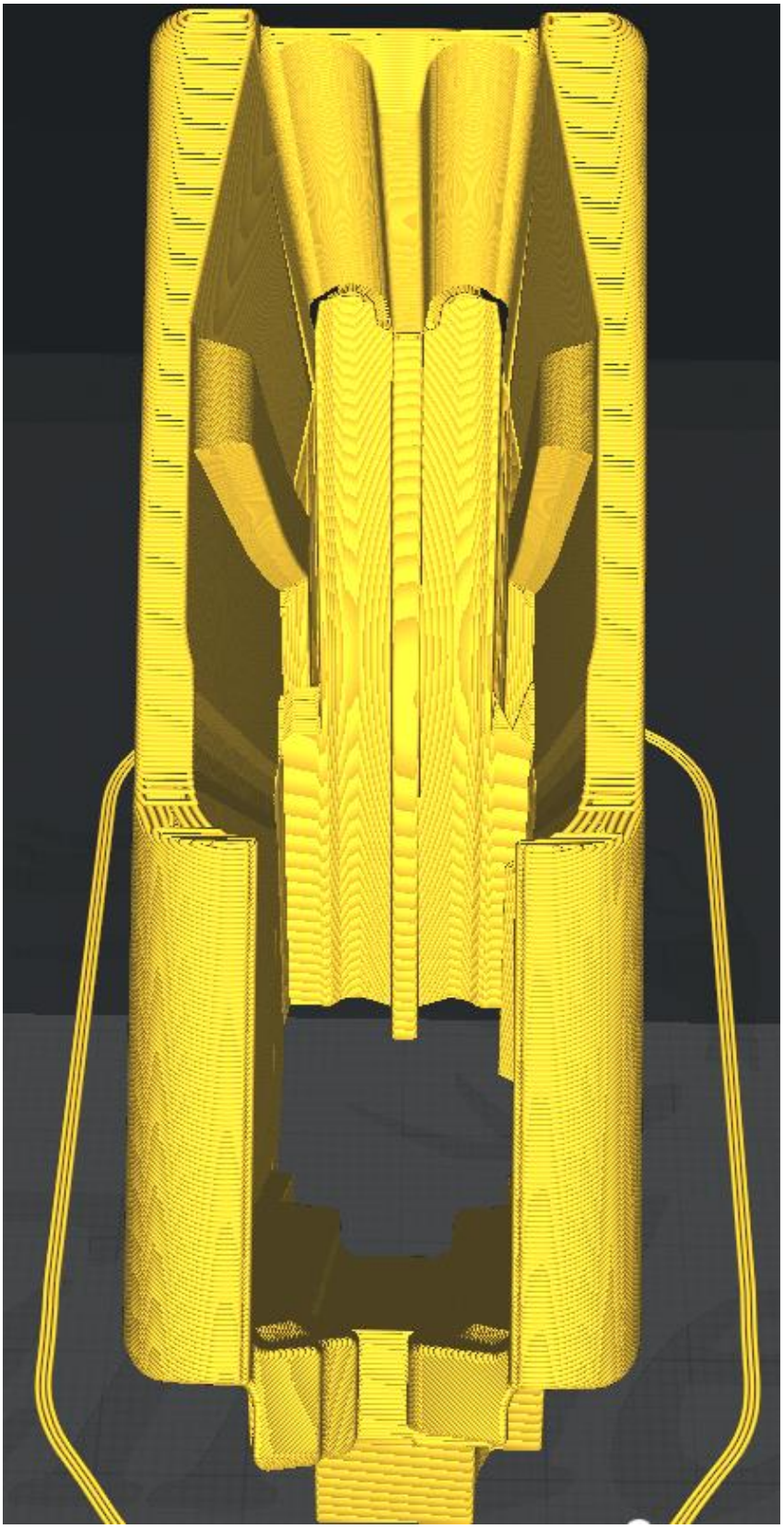


Figure 3

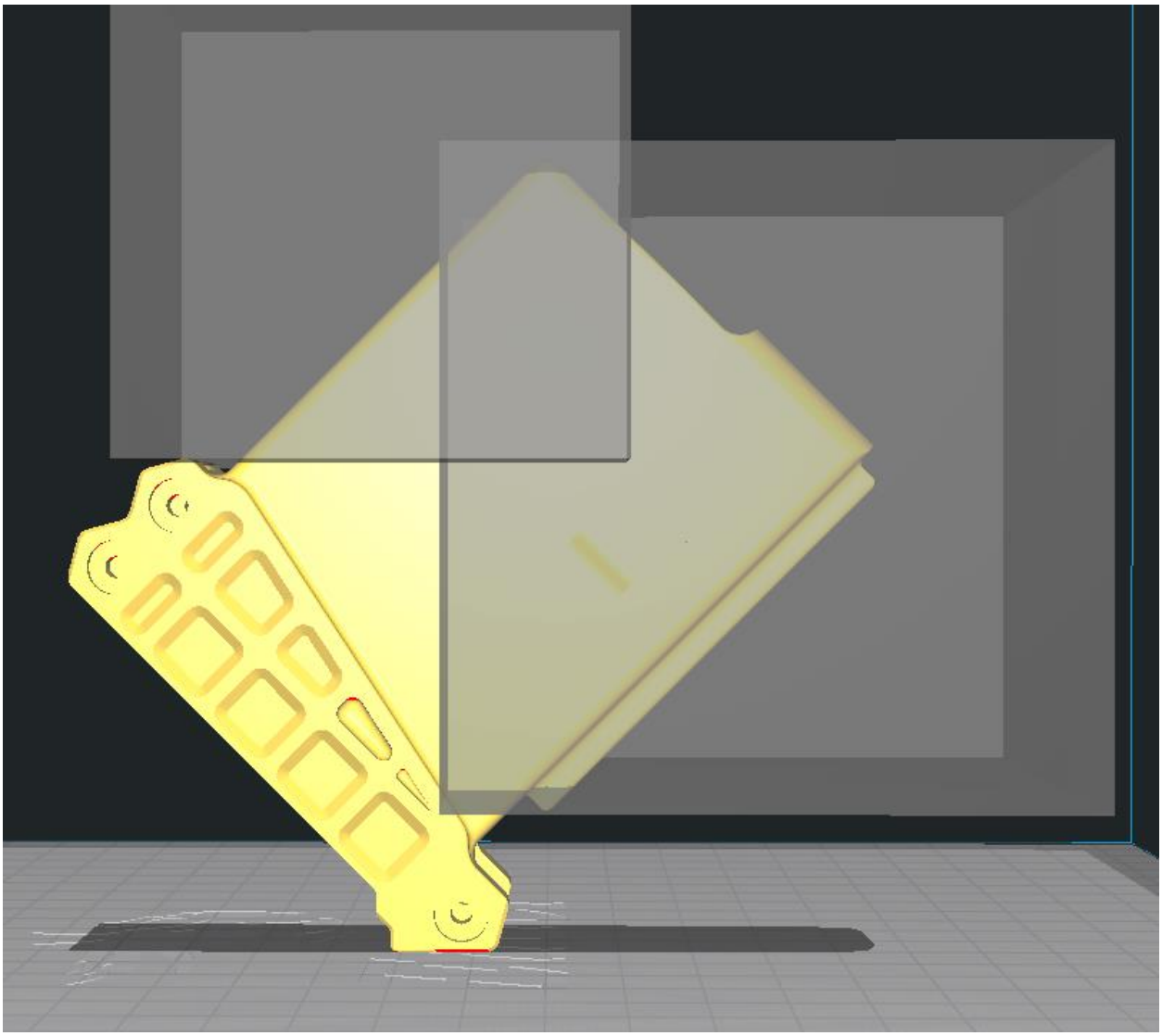


Figure 4: Optimal Support Blockers

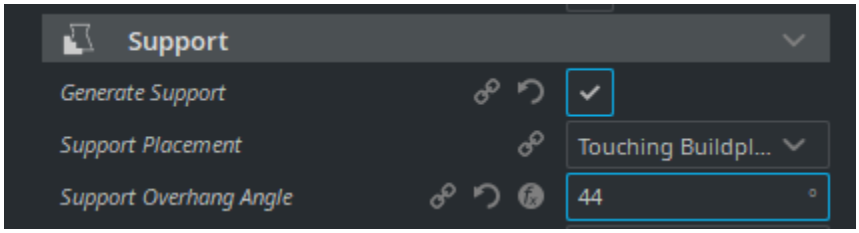


Figure 5: Support Overhang Optimal Angle

Mag Follower

The follower should be printed upright with supports to produce the cleanest faces on the top, reducing friction. A support blocker can be used inside of the front leg to prevent unnecessary supports. Take special note of Figure 7, as extra distance between the supports and the print are necessary for clean removal (use this setting ONLY if you are slicing with Cura.)

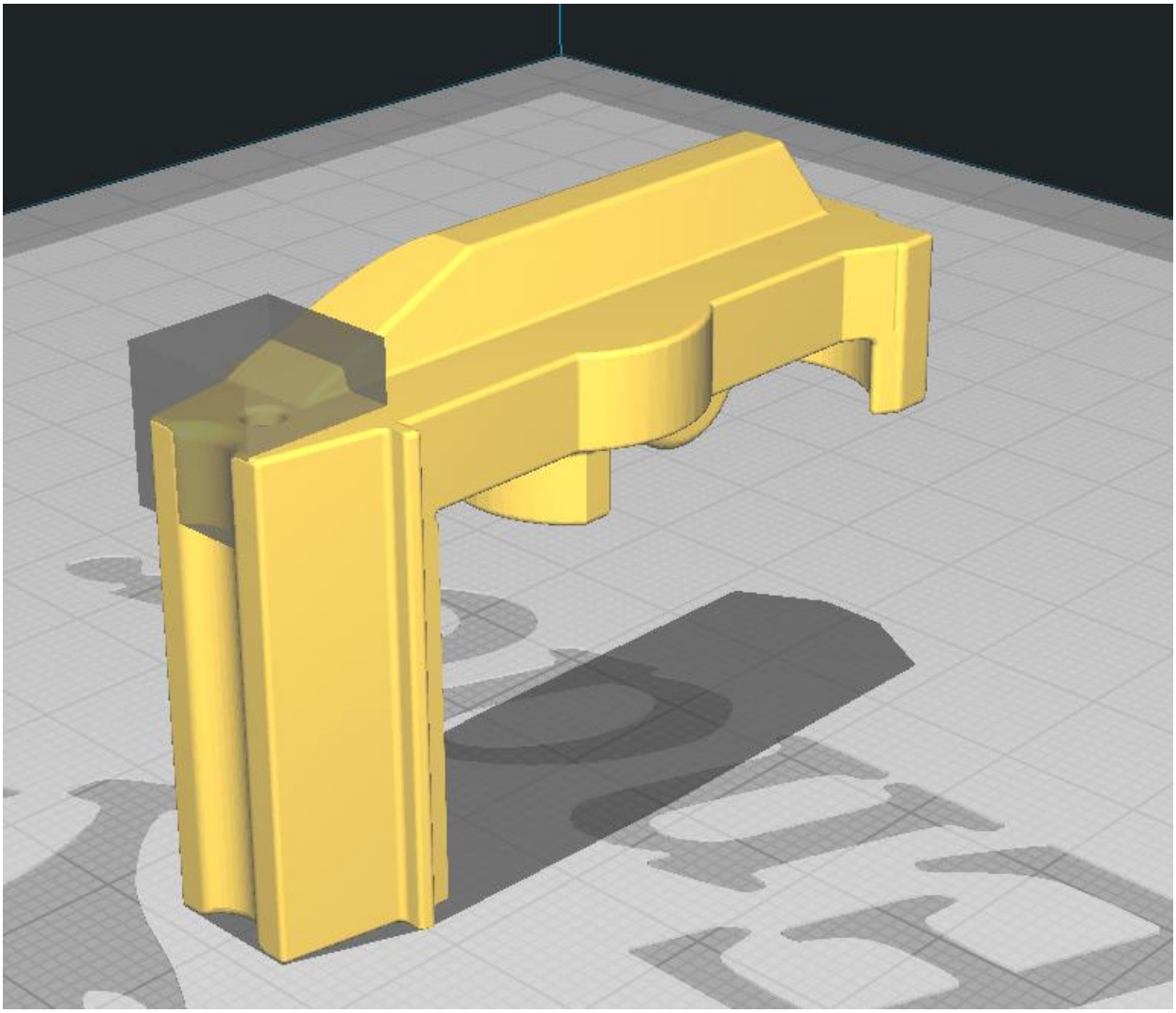


Figure 6

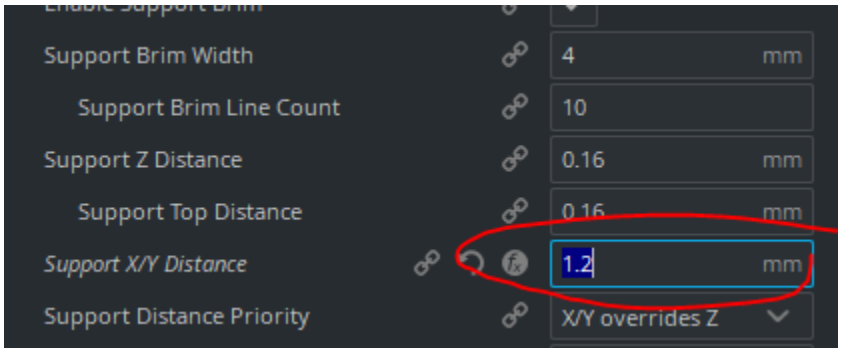

Support Brim Width
4
mm
Support Brim Line Count
10
Support Z Distance
0.16
mm
Support Top Distance
0.16
mm
Support X/Y Distance
1.2
mm
Support Distance Priority
X/Y overrides Z

Figure 7

All Mag Bodies Bottom Left and Right

The magazine bottom parts should be printed as imported: on the outside face. Supports must be used to support the magazine connection points, but blockers should be used to block supports in the dimples and windows if printing that version. Do not block supports in the screw holes.

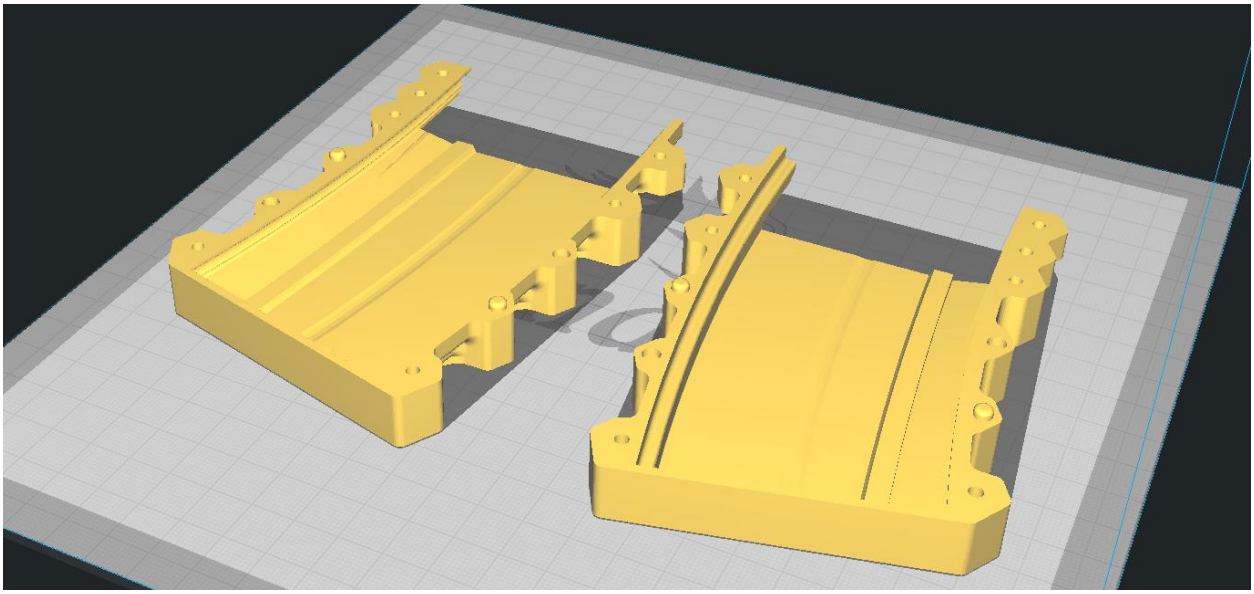


Figure 8

Assembly

NOTE: Assembly instructions will only display the standard capacity magazine assembly. Other frame styles follow similar assembly steps.

1. Using the printed guide pegs, assemble the two bottom parts.

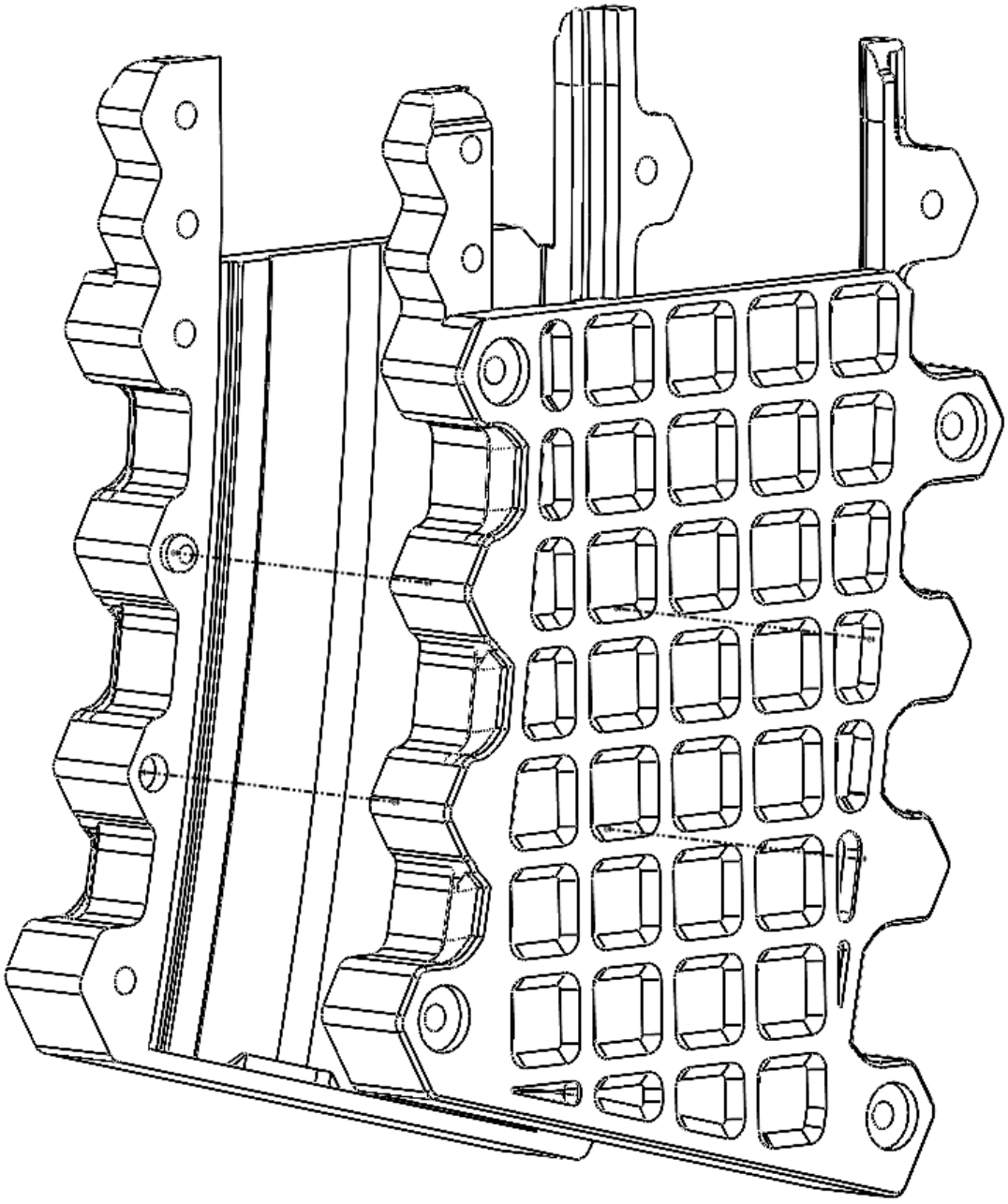


Figure 9: Standard Magazine Bottom Parts Assembly

2. Using four 25mm M3 screws and nuts, bolt together the bottom parts of the magazine.

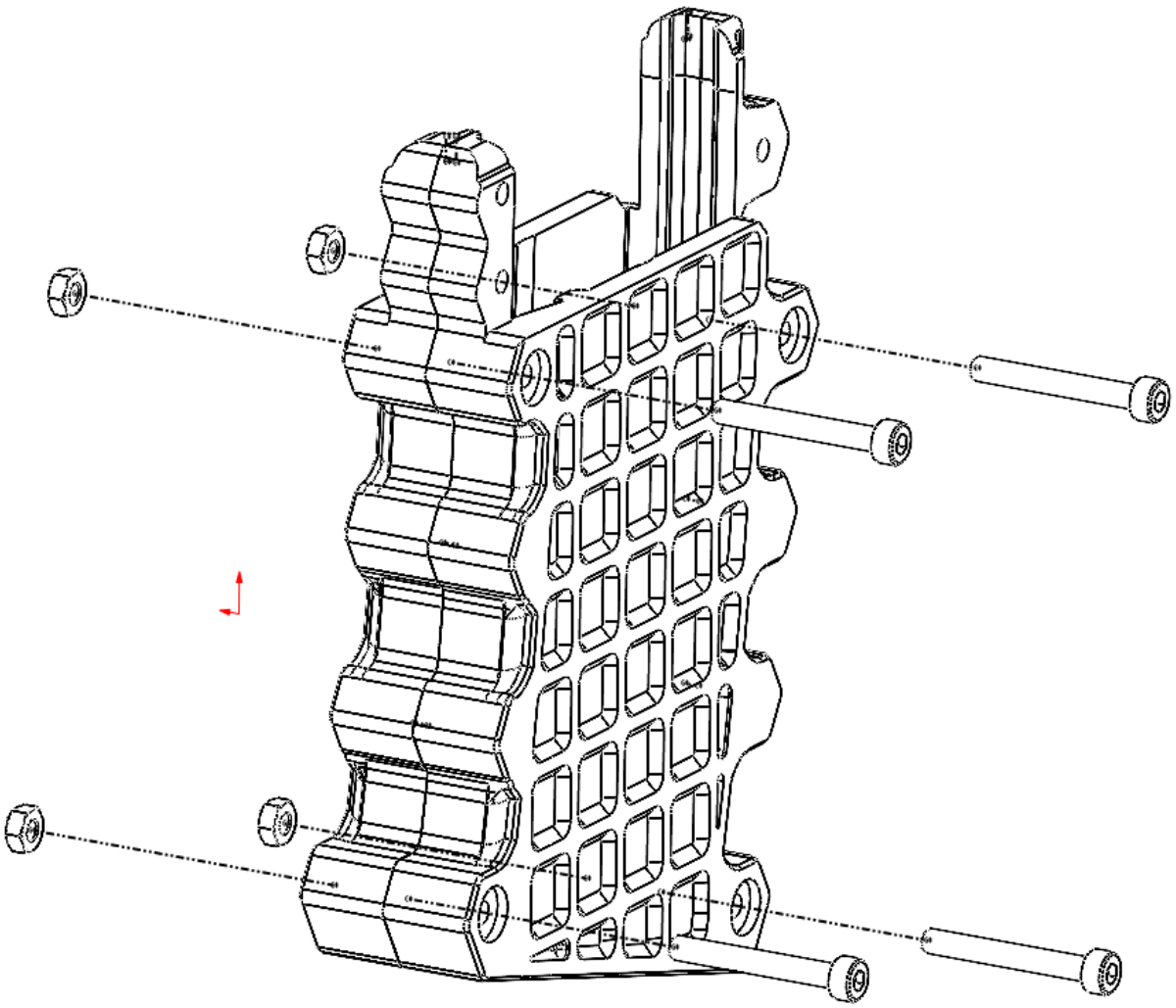


Figure 10

3. Connect the spring to the magazine follower, inserting the end of the spring into the printed locking hole.

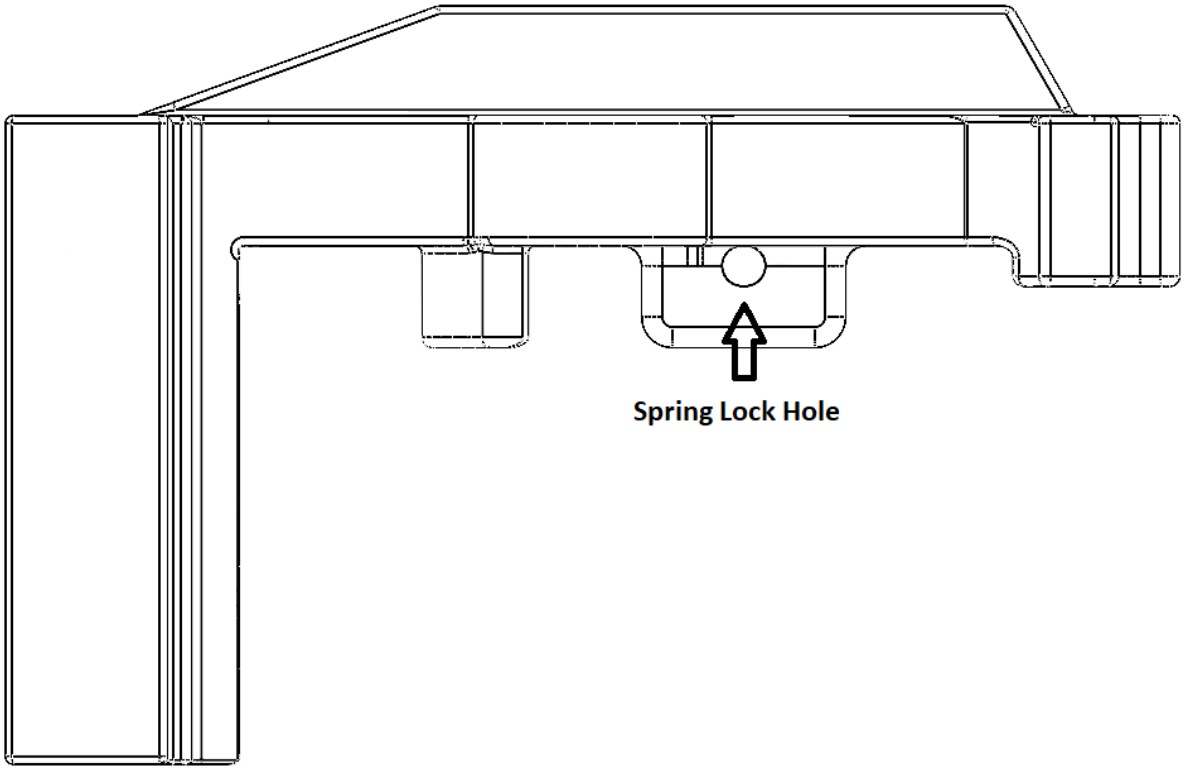


Figure 11: Magazine Spring Locking Hole

4. Insert the spring and follower into the bottom assembly. Ensure the spring is resting at the rear of the assembly.
5. Insert the follower into the top part and connect the top part to the bottom parts assembly.

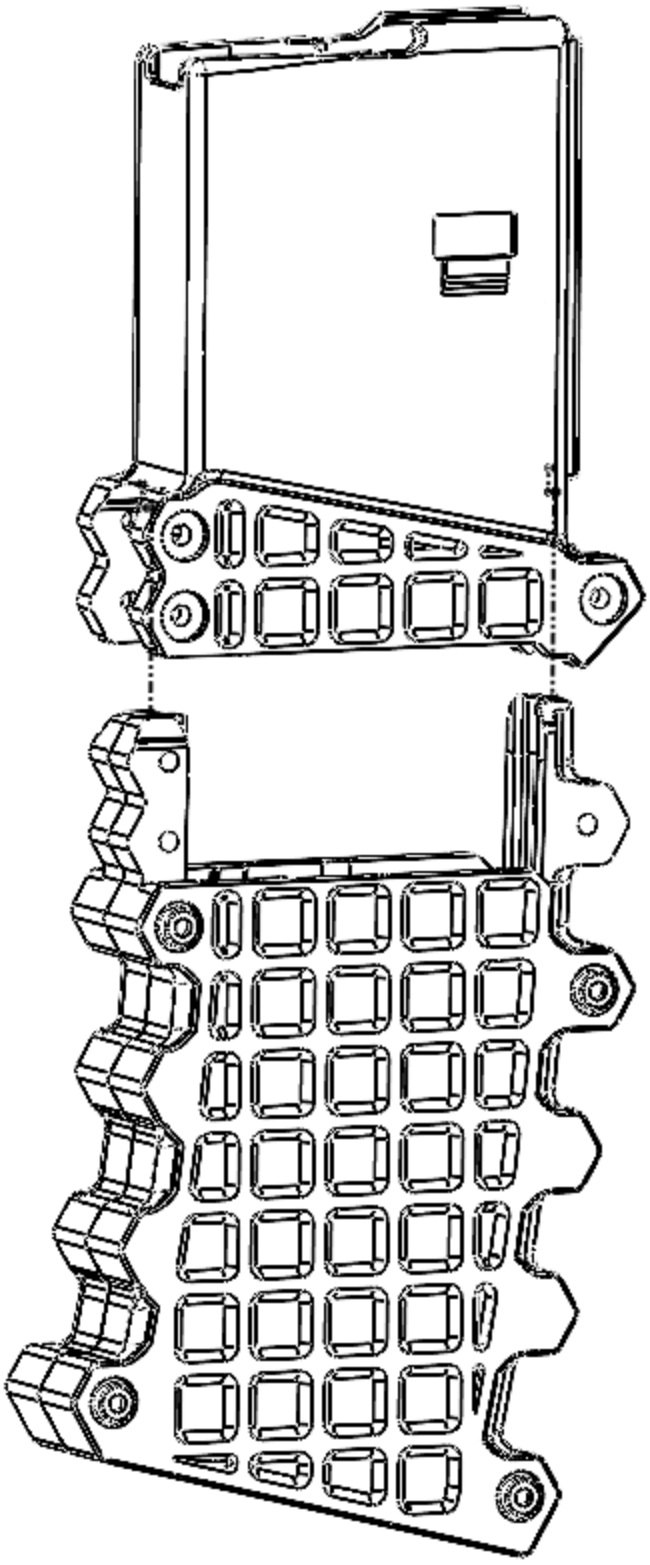


Figure 9: Magazine Bottom-to-Top Connection

6. Bolt the entire magazine together using three 25mm M3 screws and nuts.

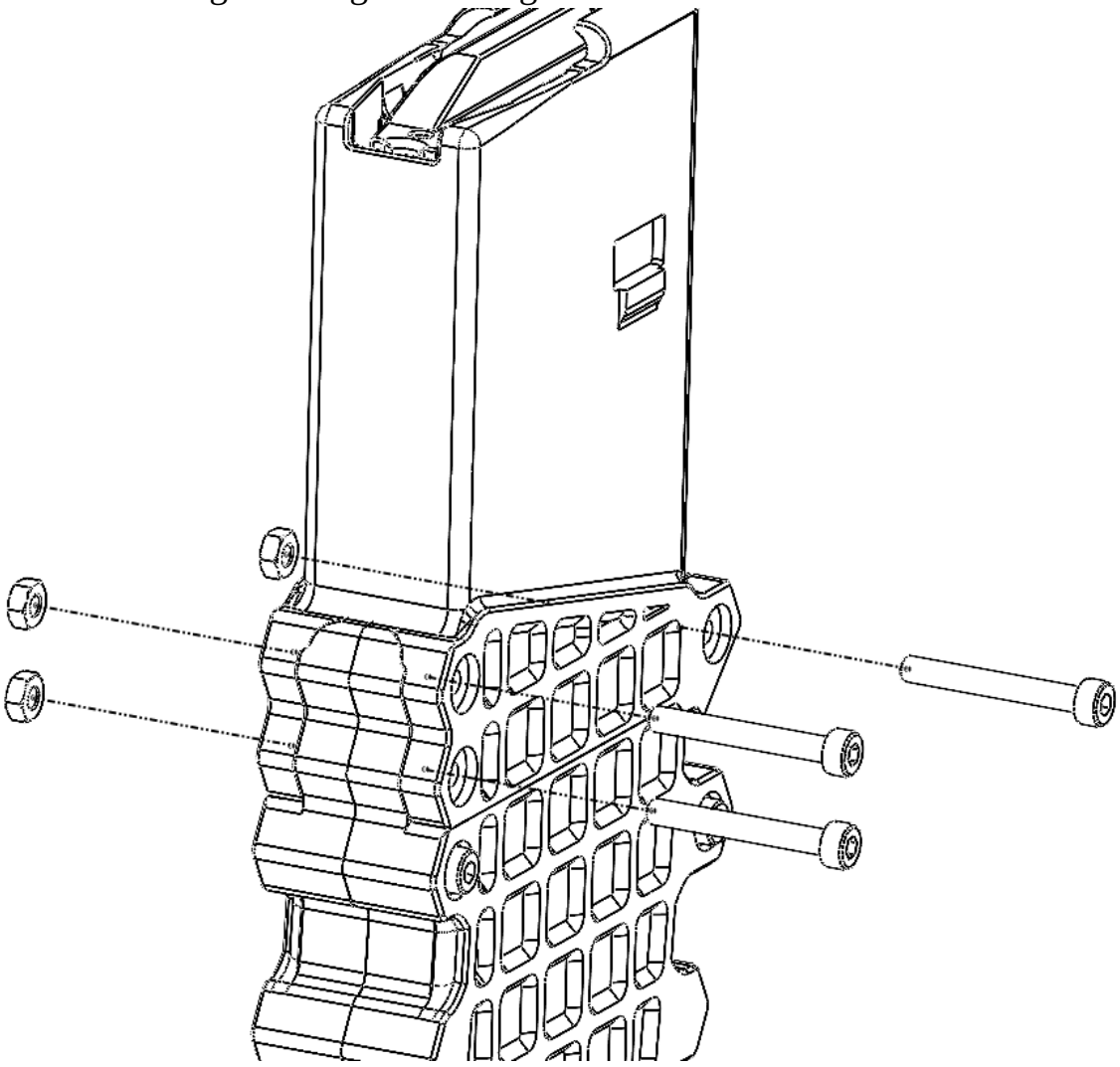


Figure 12: Magazine Bottom-to-Top Connection

7. If you printed the windowed version of the bottom parts, mark on your clear plastic sheet the shape seen in Figure 13. Score the shape using a sharp object then snap off the piece or use some sharp snips or scissors. Alternatively, you can use a cutting tool like a Dremel, as the window channel will hide any imperfections to your edges up to 1mm from the edge.

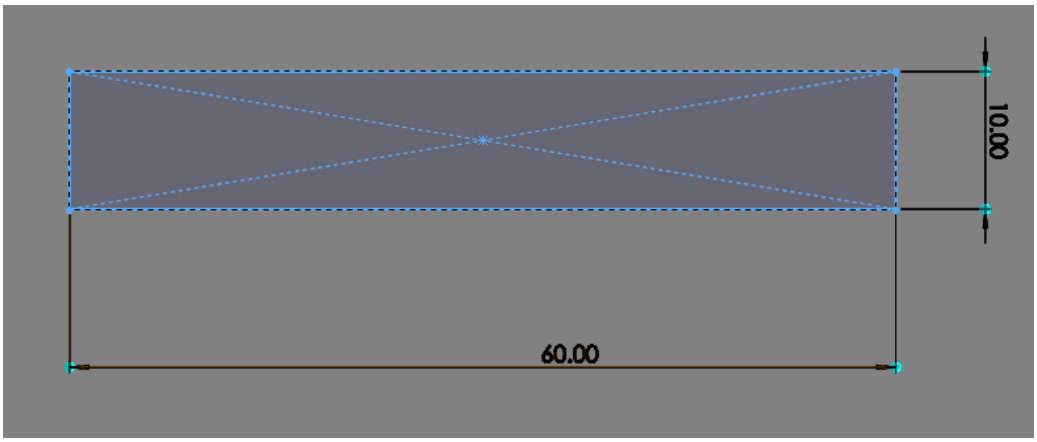


Figure 13: Window Plastic Cutout Dimension (in mm)

8. Slide the clear plastic strip into the channel. There should only be 1 mm poking above the channel entrance, as seen in Figure 14. The channels are shaped to allow for easier printing, so they might be tight on the strip. It may be prudent to sand the rear long edges of the strip.

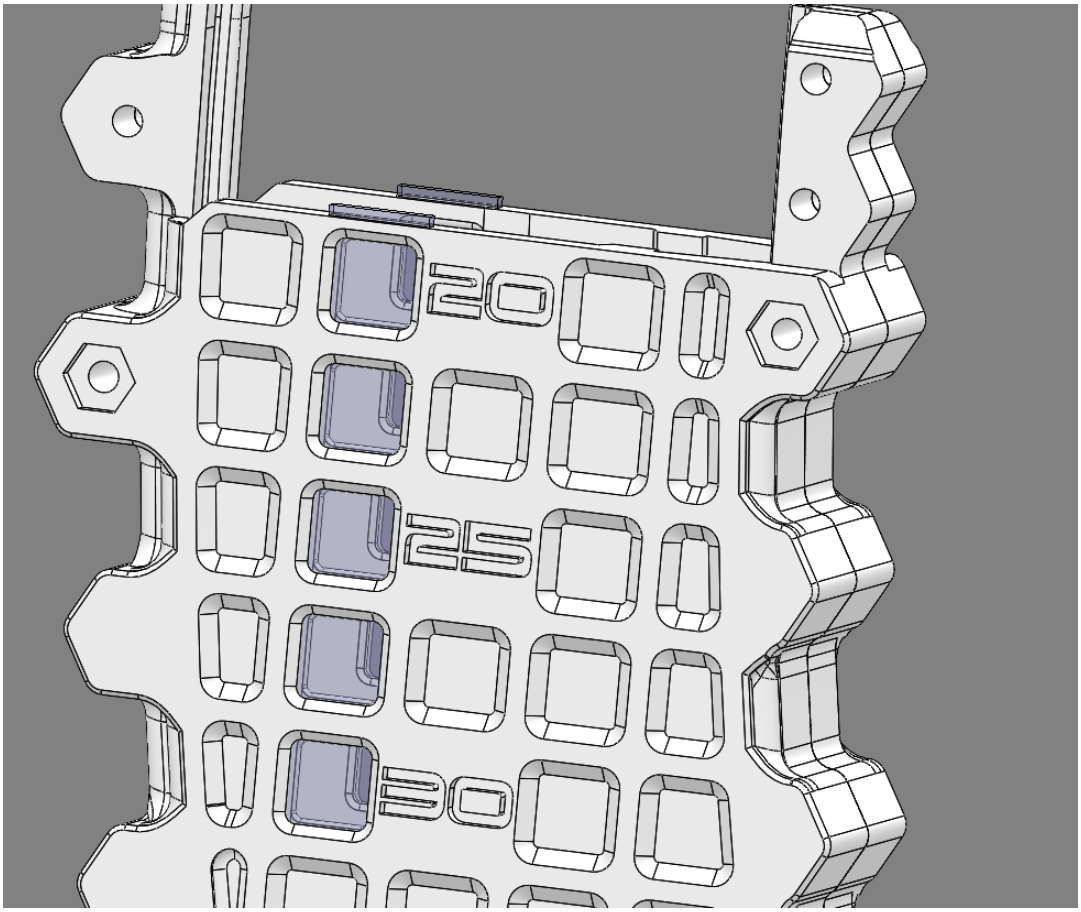


Figure 14: Installed Plastic Strip

Final Notes:

- The inside of the magazine needs to be as smooth as possible, thus printer calibration is crucial. It is highly recommended to calibrate both dimensional accuracy and flow of your printer.
- After assembly, you should perform multiple load/unloads of your magazine to wear it in.
- Though the feed lips can handle the pressure of 30-40 rounds pressing up into them, they can still crack during loading if the rounds jam inside of the magazine. It is **highly** recommended in the case of difficult loading that the magazine be loaded by pressing in the loaded rounds and sliding the next round in under the feed lips. This method will ensure greater longevity.
- Occasionally the rounds can jam inside the mag while loading; negate this by tapping the magazine's rear against a hard surface to seat the rounds properly while loading.
- Even if your feed lips crack, they can be quickly repaired with a solder iron.
- **UNLOADING TIP:** Pinch the very top of the magazine, then slide out each round.