Hose Clamp Cover

Printing and Installing the Hose Clamp Cover

1 Introduction

Worm drive hose clamps are used to reinforce and connect parts on 3D printed firearms. They provide several unique benefits that make them correct for the job. However, the worm drive mechanism protrudes from the band and its sharp edges can cause snags and injury to the operator.

This rubber cover is designed to cover the worm drive mechanism and prevent such unfortunate incidents.

Keep in mind that this cover is designed for the Breeze Power Seal half inch band hose clamps. The cover may not fit other brands or types.

2 Table of Contents

3 Required Resources

Filament and tools needed to complete the cover. Note that while this part was developed with FDM printing in mind, resin printing may be an acceptable alternative. This has not been tested.

3.1 Filament

A TPU or TPE filament is required. All testing was done with Ninjatek Ninjaflex 85A TPU. This filament or another of comparable durometer is recommended.

3.2 Tools

- 3D printer capable of printing flexible filaments.
- Side cutters or scissors to clean up the part
- Small flat head screwdriver to assist in installing the cover.

Generally speaking, a direct drive extruder is needed for printing flexible filaments, but this is not always true. If you have a Bowden printer like an Ender 3, do some research online to find tips for printing flexible filament.

4 Printing the Part

This section will walk you through the process of slicing and printing the cover. It is pretty basic, and there is little to go wrong.

4.1 General Print Settings

Mechanical settings:

- 0.4 MM nozzle
- 0.2 MM layer height
- 0.45 MM external perimeter line width. Other line widths are not applicable.
- Infill does not matter. None is used.
- Print at the filament manufacturers recommended print speed or less. 10 MM/s is a good starting place. Slower is better with flexibles. I use the max flow setting in Prusa Slicer set to 1 MM^3/s.
- Retraction distance depends on your extruder. Slowing down your retraction speeds is recommended. I use 25 MM/s.
- Use paint on seams to place the seam on the back inside wall of the cover, this results in a cleaner print. This is optional, but a big help if using Prusa Slicer.

Follow the manufacturer recommended bed and nozzle temperatures for the filament. 50 C / 240 C is a good starting place.

100% cooling should be used for the first print, if this results in layers splitting during installation drop it in half and try again.

Support material is optional and depends on your print orientation.

And remember, ***the most important thing when printing TPU is to ensure that the filament is dry!*** Dry at 50 C to 85 C for several hours if needed. Stringing and small holes in the perimeter are both caused by wet filament. It makes a huge difference.

4.2 Print Orientation

Two files are provided. One of them has built in support and prints vertically. The other has no support is intended to be printed at an angle.

The advantage of the file with support is it is easy to print. Simply place on the print bed and slice. The downside is the screw head side of the cover has a sharp edge.

The advantage of the file with out support is that all sides are rounded. The downside is that it is more difficult to support.

If you print the model without support it should be print at an angle, either on its side at forty degrees off vertical or on its front at forty degrees off vertical, both with the screw head side down. See Fig 1 for more information.

Your standard support settings should be used in conjunction with paint on supports or support blockers. Only add supports to the bottom of the part, and the inside edge when printing on the front. See Fig 2.

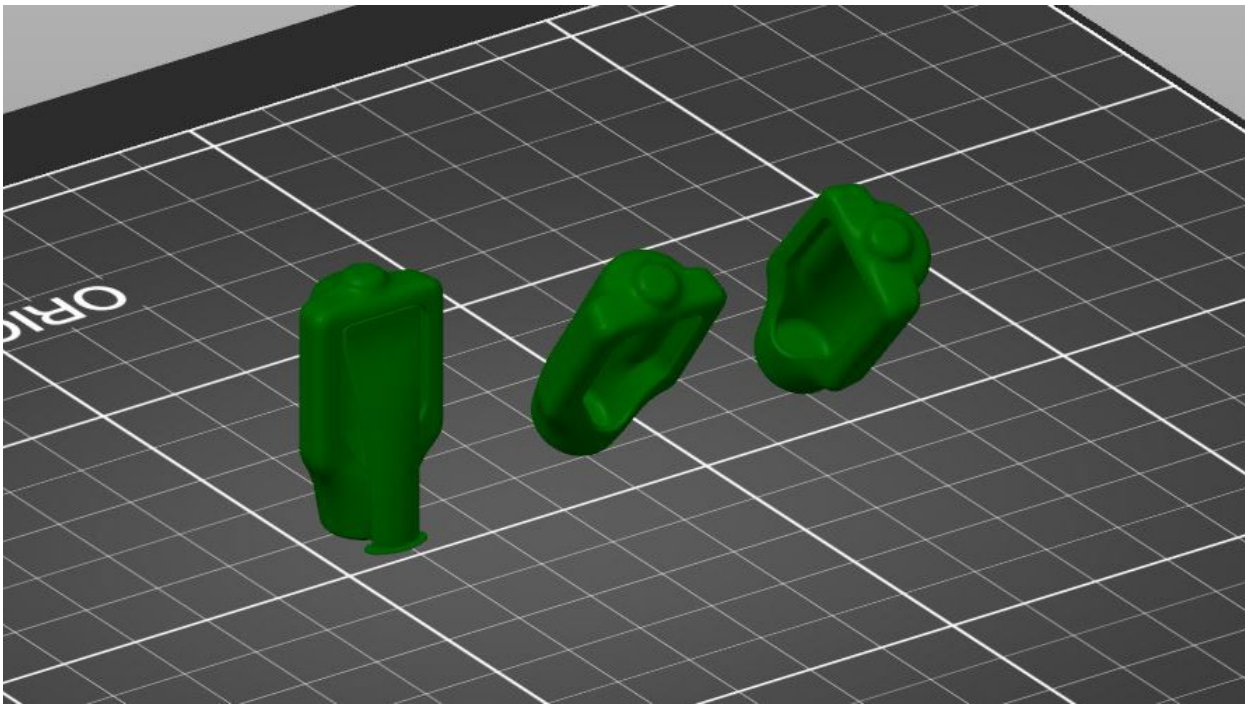

Figure 1 Three possible print orientations.

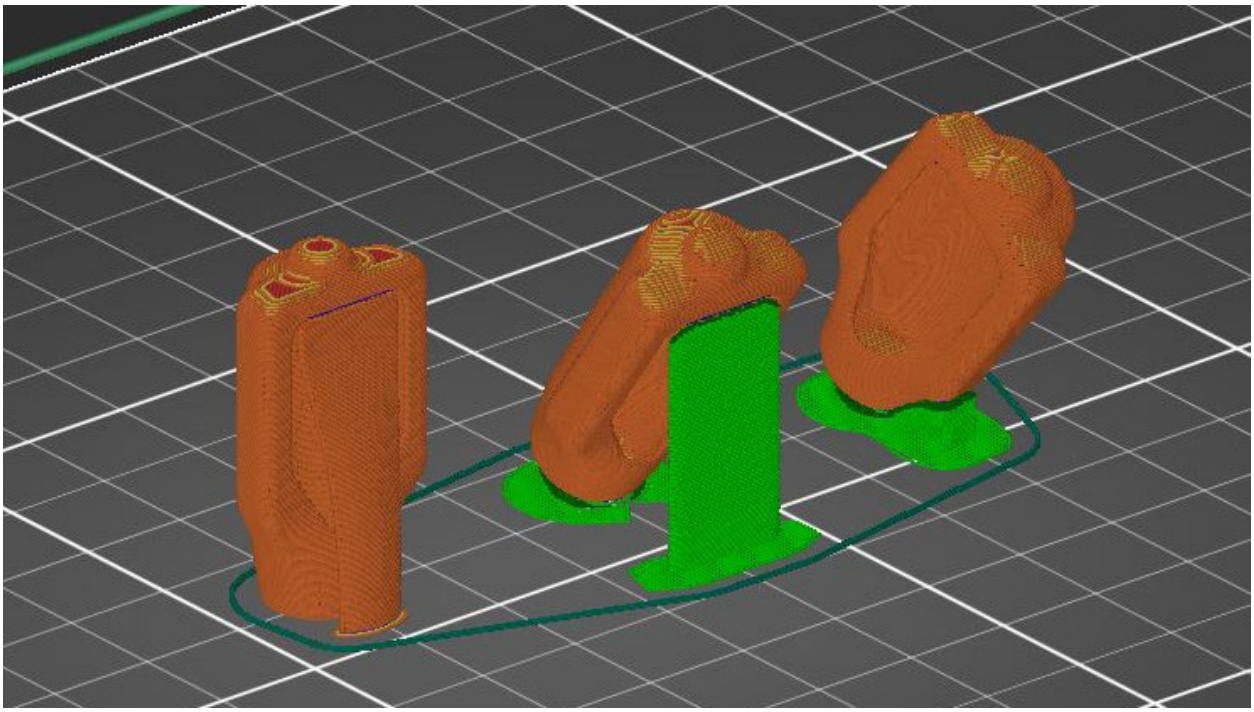

Figure 2 Support Material.

5 Installation

Quite simple, but first you need to clean the part up.

5.1 Post processing

The support can normally be torn off but be careful not to damage the thin walls of the part. Use the side cutter or a pair of scissors to cut it away.

Turning the part inside out and cleaning up the edges and inside will make it neater and easier to install.

5.2 Installing

- Slide the head side of the cover over the screw head on the hose clamp.
- Work one side of the cover under the edge of the worm drive housing.
- While holding one side on, work the other side on using the screwdriver.
- Use the screwdriver to pull the cover over the tail side of the worm drive housing. Be sure to work the cover all the way on around all the edges.

It can take a bit of working to get the cover fully seated. Just make sure that you do, it will not do much good if it pops off when you bump it!

Give it a test, the cover should stay in place. Now print one for all your lowers.