

## **Airsoft Sound Device V4**

**PLEASE READ THE INSTRUCTIONS THOROUGHLY  
AND WATCH THE VIDEO LINKED BELOW BEFORE  
ASKING QUESTIONS**

The timed fuse assembly is not detailed in this document but can be found in the video

Assembly video can be found here: <https://youtu.be/RjEWMc33Hto>

A video showing how to order the PCBs is located in the PCB files folder as well as the necessary files for the PCB

For further questions and resources join the discord server:

<https://discord.gg/FcNPHcn7kz>

These are strictly for training and airsoft purposes. I do not assume responsibility for your misuse.

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## **File Outline**

Files are organized into assigned folders and named with association to each other.

For the bodies. Files ending in P are primer bodies. Files ending with an 8 are 8 shot cap bodies. Files ending with an S are adult, thunder, super snap bodies.

For the 38 bodies an ending with F delineates the flash or hexagon version of the body

For the Impact Fuse you will need the fuse, spring plate, bolt guide, and corresponding spoon. The spoons are labeled in association with bodies size number and propellant. You can choose the heat insert version of the fuse for increased durability. The nylon nut spring plate also has increased durability.

For the Timed Fuse you will need the fuse, cam, spring plate, bolt guide, and corresponding cap. The recharge is for the lipo and the 2032 is for the button batteries. The nylon nut spring plate has increased durability.

## Print Settings and Materials

It is critical that your printer and filament are tuned correctly for good results. I recommend looking at this guide to ensure proper tuning. <https://ellis3dp.com/Print-Tuning-Guide/>

### Print Settings:

0.2 - 0.3 mm layer height for the bodies and fuses

0.2mm layer height or less for the Timer Cam

Smaller layers may yield more accurate dimensions.

1.2mm Wall Thickness

2mm Top Layer

1.2mm Bottom Layer

15% Gyroid Infill (More is always recommended)

For the TPU spoons 2mm wall, top and bottom layers with 100% infill. The wall thickness is important for the layer orientation.

### Material:

Use PLA+ For all components excluding the spoons

For the spoons use 95A TPU. It is critical that you use this variant of TPU. Other flexibilities will yield varying results. **It is highly recommended that you use TPU spoons.** They will yield drastically better performance and impact strength.

The bottoms of the snap bodies may be printed from TPU.

Nylon or any fiber reinforced variant will work as a replacement for PLA+. There has been no recorded physical benefit over pla+ other than temperature resistance.

PETG and fiber reinforced variants have yielded varying results.

ABS and ASA are not suitable because of their weaker layer adhesion.

**Print Orientation:**

For the fuse, print with the bottom on the build plate and with support for the hole in the bottom. The Timed fuse can be printed similarly with support also needed for the cam region. You may be able to get away without support for the hole in the bottom, but results will depend on your printers' capabilities.

All grenade bodies will be printed with their bottoms on the build plate. Support is not needed. The 55S body is the only exclusion and will need to be inverted and requires support.

The spoons can be printed sideways without the need for support.

## Impact Fuse Bill of Materials

Please **VERIFY** that you are ordering the same size components listed below. The links do not direct you to the exact size/spec you will need.

Item	Quantity	Link	Notes:
M5x40mm SHCS Half Thread	1	<a href="#">X</a>	
		<a href="#">X</a>	
M3x30mm SHCS	1	<a href="#">X</a>	See Comments Below Chart
12mm od x 45mm 1.2mm diameter spring. 8 coils	1	<a href="#">X</a>	
		<a href="#">X</a>	
25mm keyring	1	<a href="#">X</a>	
M2.5x35mm Cotter Pin	1	<a href="#">X</a>	
M3 Brass Insert 5mmODx4mmL	1	<a href="#">X</a>	Not necessary, only for increased durability
M5 Lock Nut	1	<a href="#">X</a>	
		<a href="#">X</a>	

Springs ordered from other locations may have differing coil counts. The recommended coil count is 8. In the case the spring is unable to compress enough, either cut and stretch the spring, or purchase a shorter length and stretch to fit. If you find your springs too weak, increase in length. The 40mm uxcell springs on amazon will need to be trimmed to work. I recommend purchasing a few varying lengths or further discuss with others on the discord to find a good spring.

I have noticed that springs will lose their strength over time and will need to be replaced. Avoid leaving the fuses cocked over long periods of time, this will rapidly decrease their lifespan.

## PCB TIMED Bill of Materials (Recommended)

Please **VERIFY** that you are ordering the same size components listed below. The links do not direct you to the exact size/spec you will need.

Item	Quantity	Link	Notes:
M5x40mm SHCS Half Thread	1	<a href="#"><u>X</u></a>	
12mm od x 40mm 1.2mm diameter spring	1	<a href="#"><u>X</u></a>	See comments below the Impact Fuse chart
M5 Lock Nut	1	<a href="#"><u>X</u></a>	Not necessary, only for increased durability
Motor 12V 30RPM	1	<a href="#"><u>X</u></a>	It is Very important that you purchase a 12V 30rpm motor. The gearbox is 12.5mm vs the standard 9mm. The gearbox has a 1:1000 ratio. Please be careful to order the correct motor others will not work
100mAh 3.7v LiPo with jst GH 1.25mm connector	2	<a href="#"><u>X</u></a>	Reminder you will need two per fuse
Male-to-Male jst XH 2.5mm 3pin connector	1		You can either crimp a custom connector or solder two male 2s balance leads together. This will be used to charge the fuse with a standard 2s lipo charger
M2x10mm self- tapping screw	3	<a href="#"><u>X</u></a>	
M2.5x3mm Set Screw	1	<a href="#"><u>X</u></a>	
PCB	1		PCB files are included in the files. A video showing how to order is linked above.
JST GH 1.25mm 2pin Female	2	<a href="#"><u>X</u></a>	For the batteries
JST XH 2.5mm 3pin Female	1	<a href="#"><u>X</u></a>	Charge connector
Switch	1	<a href="#"><u>X</u></a>	

## 1s LiPo TIMED Bill of Materials

Please **VERIFY** that you are ordering the same size components listed below. The links do not direct you to the exact size/spec you will need.

Item	Quantity	Link	Notes:
M5x40mm SHCS Half Thread	1	<a href="#"><u>X</u></a>	
12mm od x 45mm 1.2mm diameter spring. 8 coils	1	<a href="#"><u>X</u></a>	See comments below the Impact Fuse chart
M5x0.8mm Lock Nut	1	<a href="#"><u>X</u></a>	Not necessary, only for increased durability
Motor 12V 30RPM	1	<a href="#"><u>X</u></a>	It is Very important that you purchase a 12V 30rpm motor. The gearbox is 12.5mm vs the standard 9mm. The gearbox has a 1:1000 ratio. Please be careful to order the correct motor others will not work
160mAh 3.7v LiPo	1	<a href="#"><u>X</u></a>	It is possible to fit a 260mAh battery, however it will be a tight fit
Battery Charger	1	<a href="#"><u>X</u></a>	Any other 1s charger will work, you will just need to add a male JST connector to it
Connectors JST SYP 2.5mm 2pin	2	<a href="#"><u>X</u></a>	I strongly recommend against buying pre crimped connectors and soldering too them. It will take a large amount of space
Crimper JST	1	<a href="#"><u>X</u></a>	
On/Off Switch	1	<a href="#"><u>X</u></a>	
M2x10mm self- tapping screw	3	<a href="#"><u>X</u></a>	
M2.5x3mm Set Screw	1	<a href="#"><u>X</u></a>	
Wire			Any 26-28awg wire
Hot Glue			For securing the solder connections



## Cr2032 TIMED Bill of Materials

Please **VERIFY** that you are ordering the same size components listed below. The links do not direct you to the exact size/spec you will need.

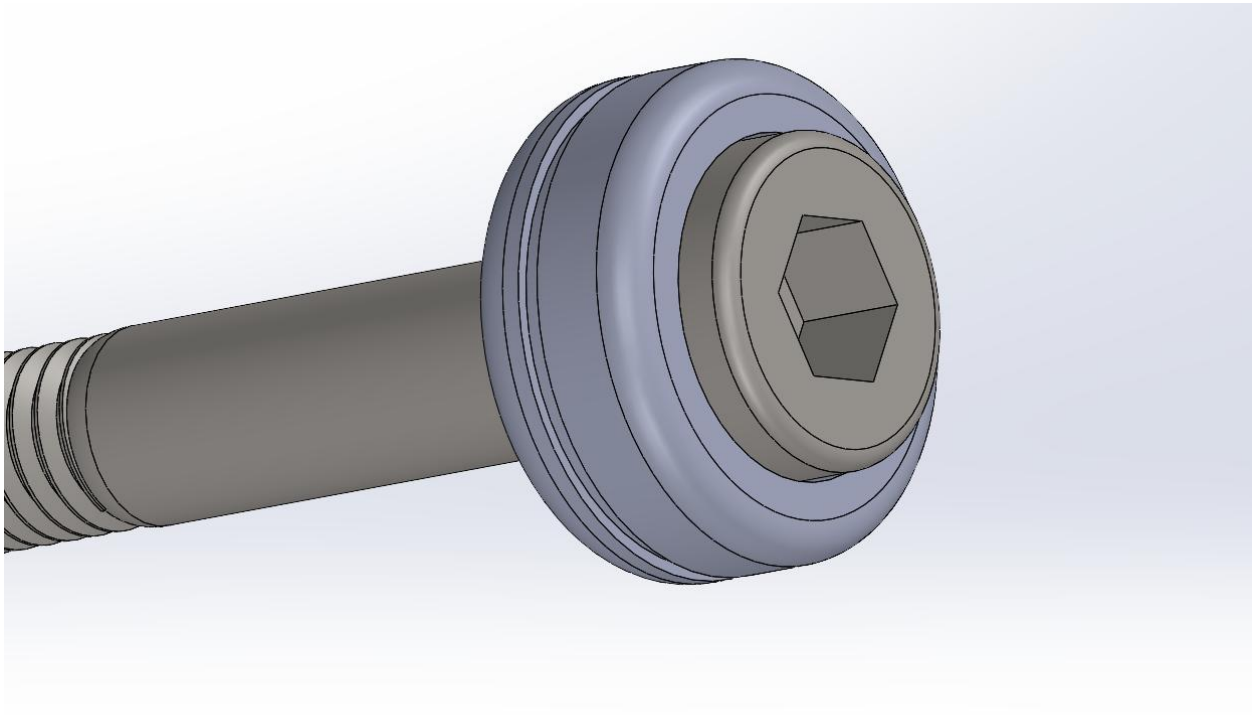
Item	Quantity	Link	Notes:
M5x40mm SHCS Half Thread	1	<a href="#"><u>X</u></a>	
12mm od x 40mm 1.2mm diameter spring	1	<a href="#"><u>X</u></a>	See comments below the Impact Fuse chart
M5 Lock Nut	1	<a href="#"><u>X</u></a>	Not necessary, only for increased durability
Motor 12V 30RPM	1	<a href="#"><u>X</u></a>	It is Very important that you purchase a 12V 30rpm motor. The gearbox is 12.5mm vs the standard 9mm. The gearbox has a 1:1000 ratio. Please be careful to order the correct motor others will not work
CR2032 Battery Holder	2	<a href="#"><u>X</u></a>	
M2x10mm self- tapping screw	3	<a href="#"><u>X</u></a>	
M2.5x3mm Set Screw	1	<a href="#"><u>X</u></a>	
Hot Glue			For securing the solder connections

## Impact Fuse Assembly

1. To start for the primer version only, grind the end of the fuse screw (m5x40mm) to a bevel as shown in the image below. This applies for the timed fuse as well.



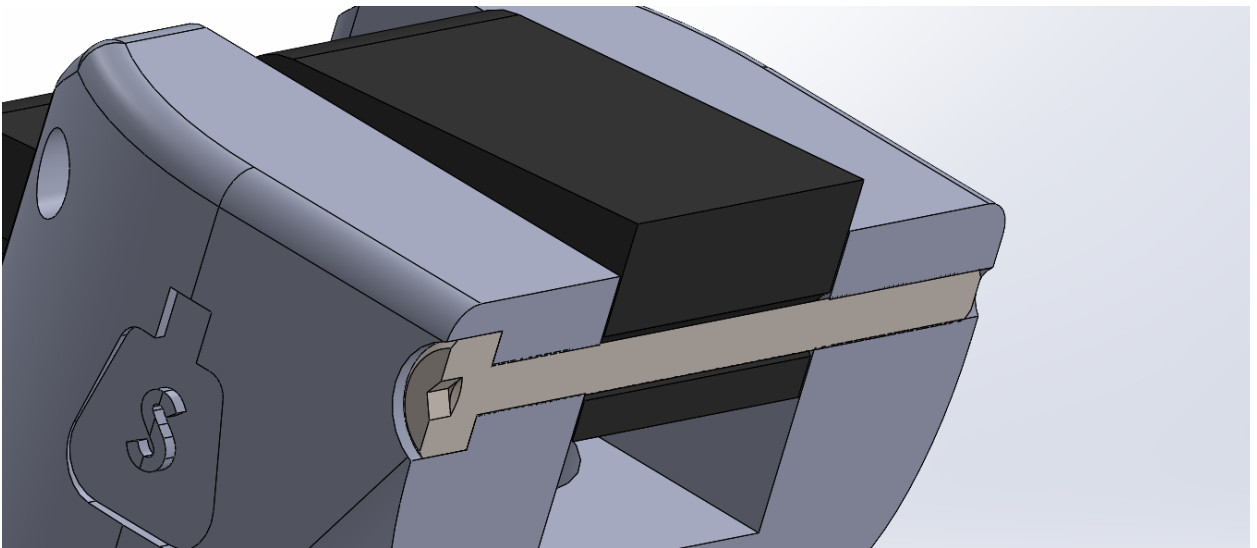
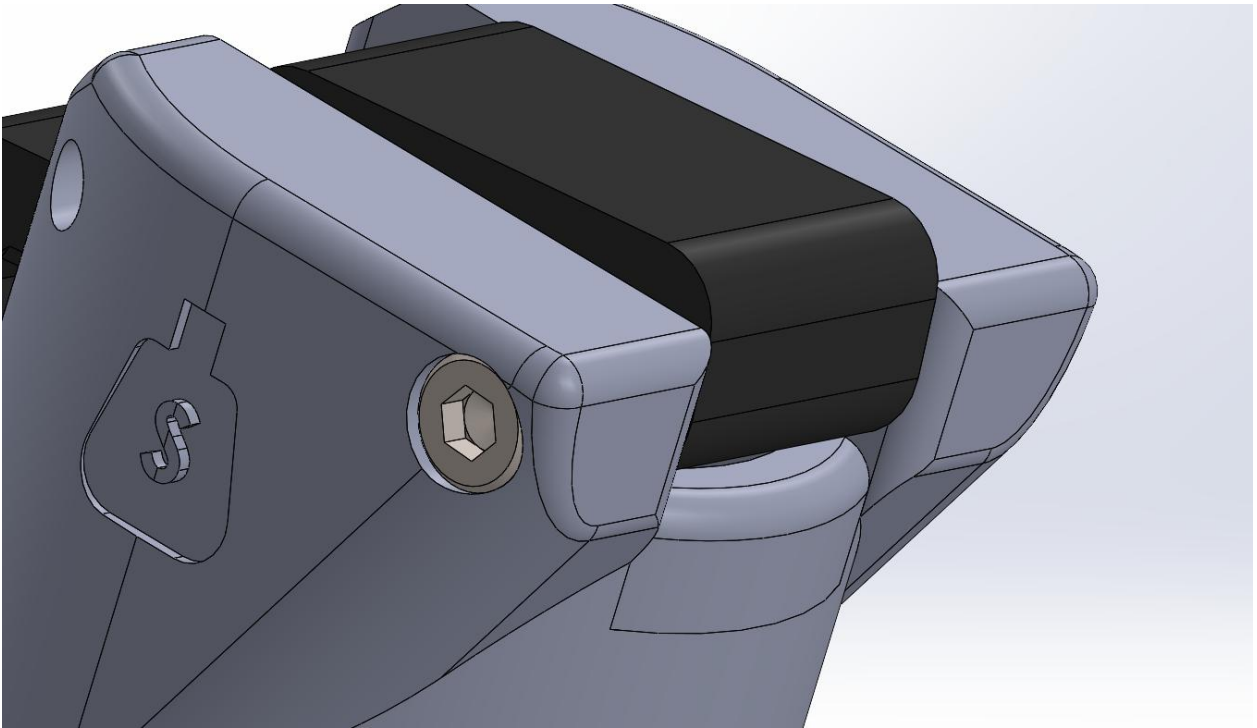
2. Press the bolt guide onto the M5x40mm bolt. This will likely take some force. A tool is included to help press the guide on. It is recommended to also use glue to ensure that it will not separate under prolonged use. It may be necessary to sand the guide to fit the hole in the fuse. Verify that the guide is also sitting relatively straight on the bolt. The fitment of the guide and bolt in the fuse is not critical to the reliability of the grenade like V3, however it will perform best with a good fitment. This applies for the timed fuse as well.



3. Secure the screw and spring in the fuse with the spring retainer. For use with primers ensure that the bolt sticks out ~2mm past the spring retainer as seen in the photo below. This applies for the timed fuse as well.



4. The spoon can now be secured by the m3x30mm screw. The screw will be used to adjust the tension of the spoon. The flexible TPU spoons will yield dramatically better results over normal pla+. If necessary, the width of the spoon can be increased or decreased in your slicer. The notch on the inside face of the spoon can also be timed/sanded for increased sensitivity.





5. In order to prime the fuse, the m5 screw needs to be pushed up and towards the rear as shown in the image below. The spoon will then be lowered in order to hold the screw from dropping. As stated before, you can tighten or loosen the spoon screw to adjust the tension.

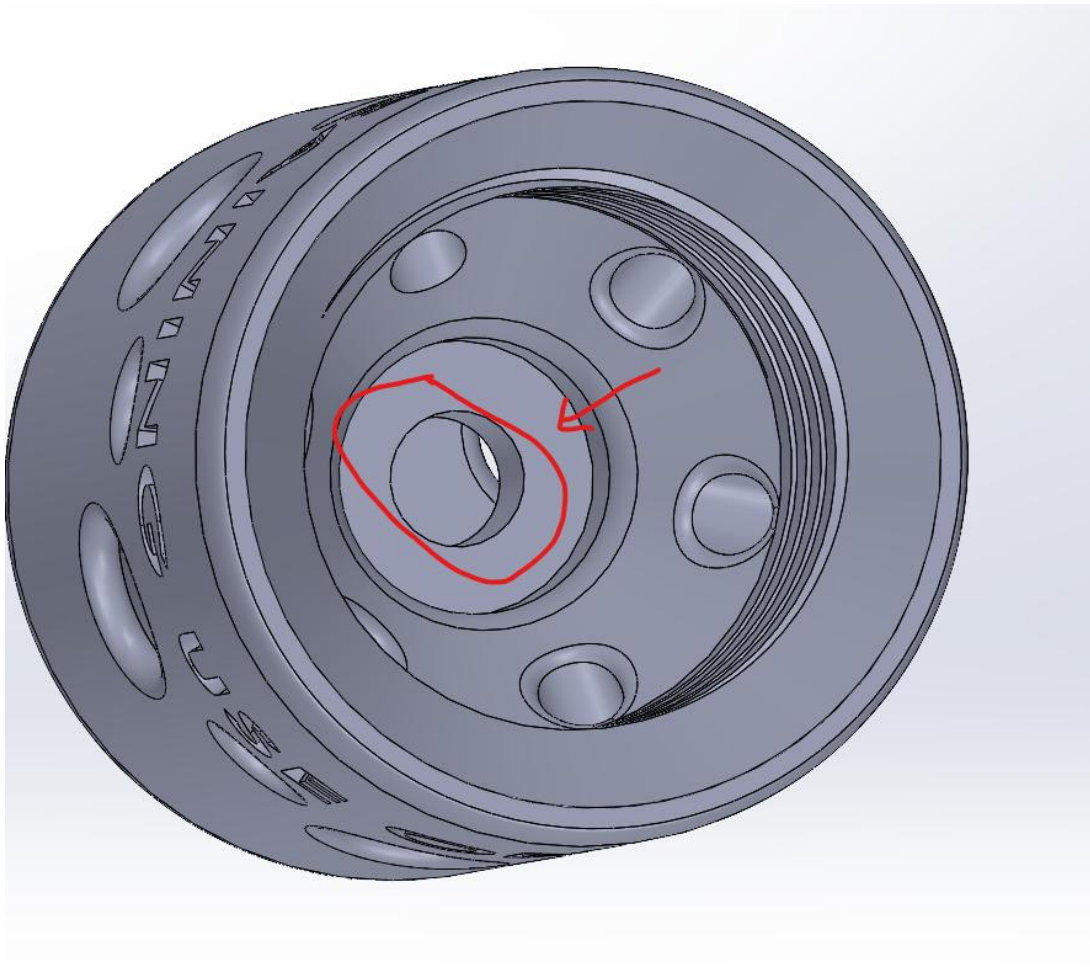


The screw is not supposed to latch on the top and should free fall unless something is blocking it. There is no spring on the spoon, that is counter intuitive to the design. The spoon is blocking the screw from falling into the hole. The fuse will trigger when the spoon moves away from the latch. This can be accomplished via a hard impact or simply moving the spoon. Again adjusting the friction on the spoon via the screw adjusts the force required for the spoon to move out of the way.

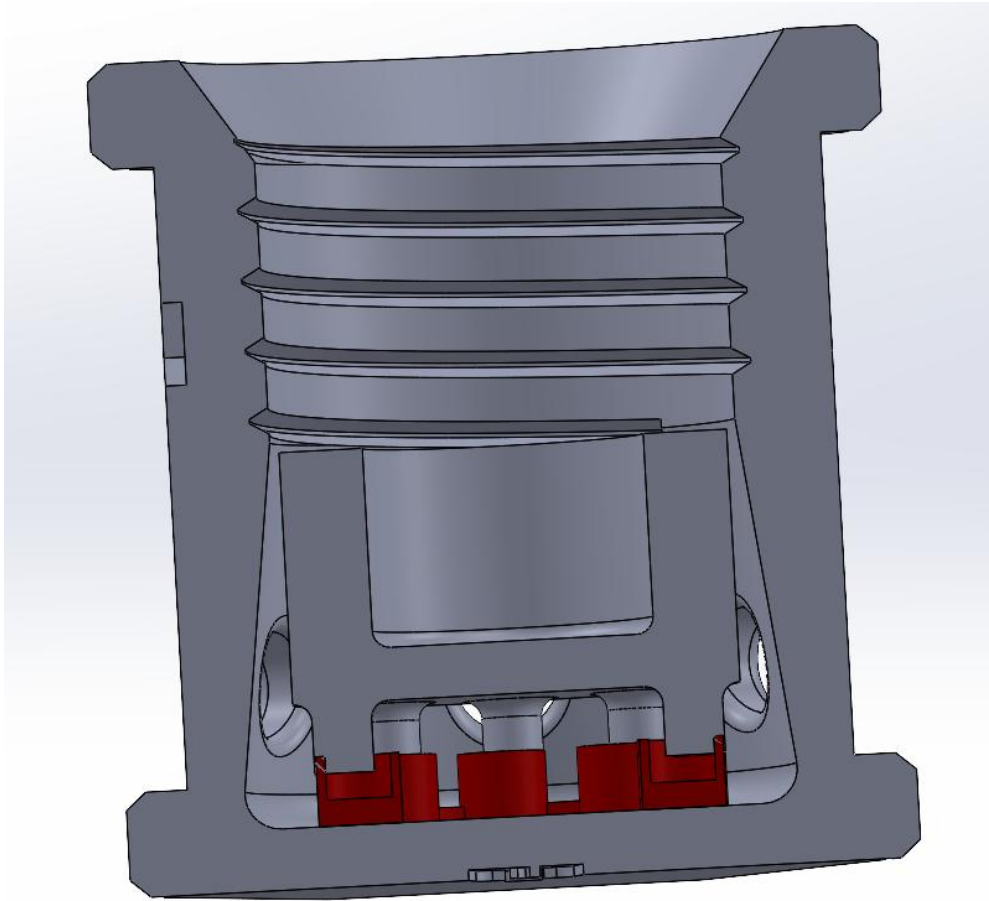
## Grenade Body Function

For all Bodies it may initially be difficult to thread the fuse onto the bodies. This is due to the way the threads are printed. Thread a small amount at a time and go back and forth to work them in.

For the Primer Bodies. The Primer will be loaded in the location outlined in the photo below. It can be pushed out after use from the bottom of the body. If the hole is not the right size I suggest adjusting your flow rate for scaling the body.

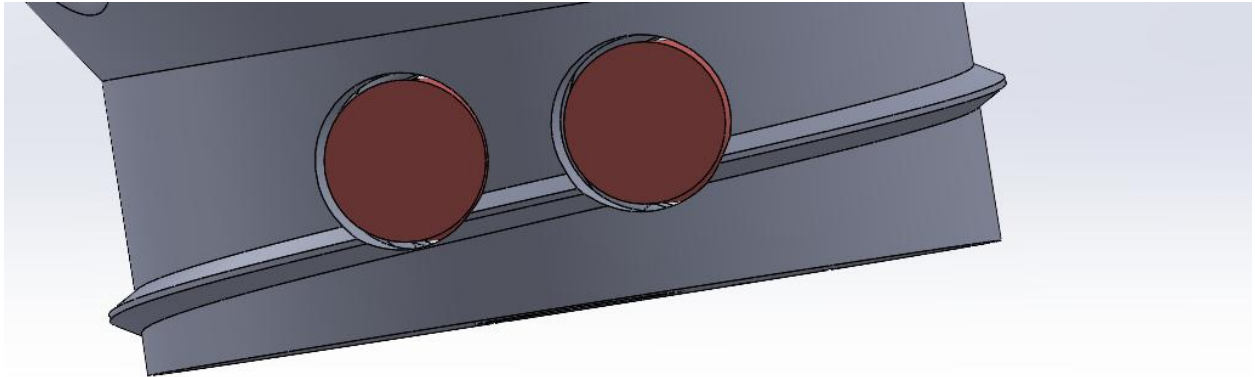


For the 8 shot cap bodies, the 8 shot cap can then be placed over the retainer then placed in the body as seen below.





For the Adult/Super Snap body, Insert the snaps into the body as shown. You can use 1 or 2 snaps, it is not necessary for both to be inserted.



The bottom can then be screwed on to secure the snaps from falling out.

