# Water Rocket – Sparkling Ice bottle

The Fusion CAD file includes a single un-cut bottle. A single bottle can be used, but it is common to splice multiple bottle sections together to achieve larger volumes and higher altitudes.

# Fins are secured by upper and lower rings using cable ties

1.8mm wide cable ties are used to secure the fins to the rings on the rocket body. Another option could be 4-40 nylon machine screws inserted after tapping the plastic holes. An important cosideration was not using metal screws that fall out and be left behind on a field.
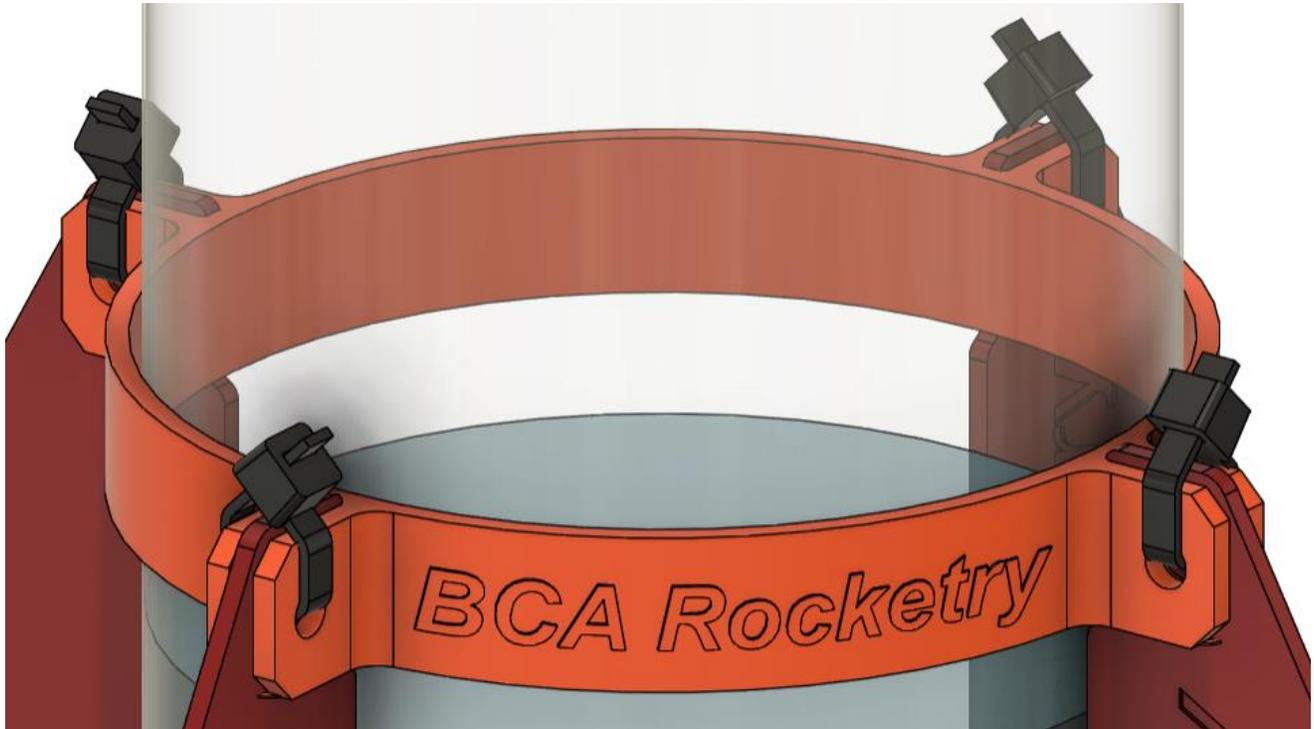
Side view showing locking tabs

Locking tab
Bottle neck ring
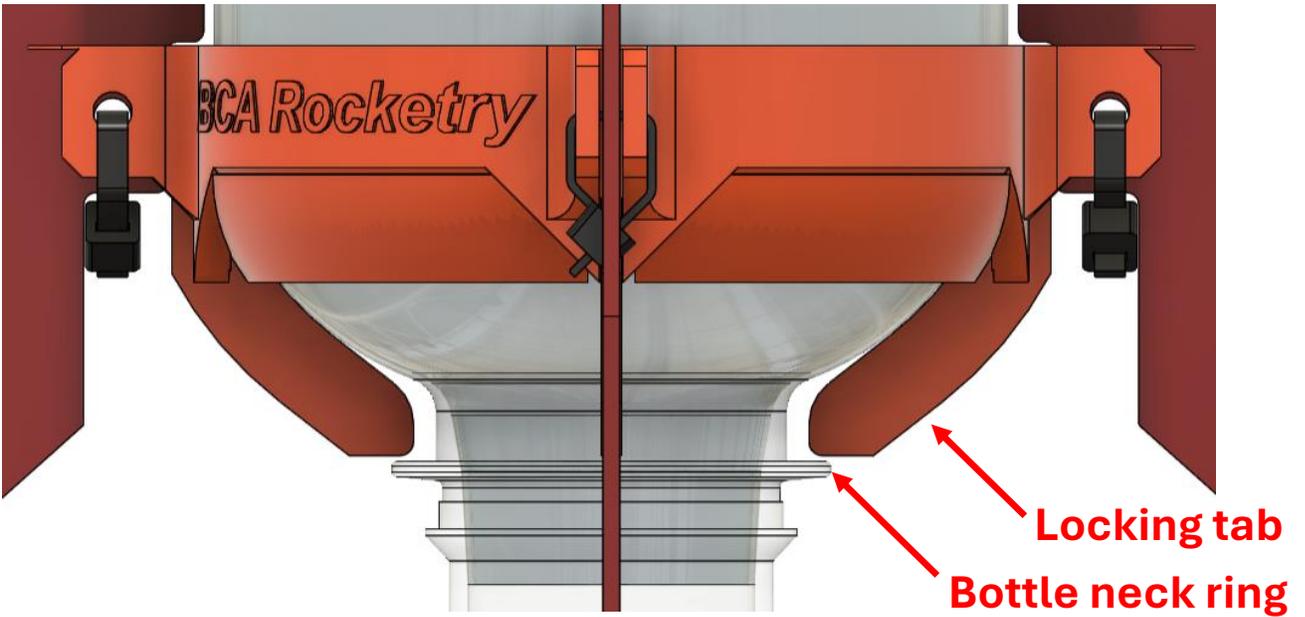
When the lower ring is inserted over the neck of the bottle the locking tabs will position themselves behind the bottle neck ring. This will ensure the fin assembly stays in place.

Cup section
Bottle wall
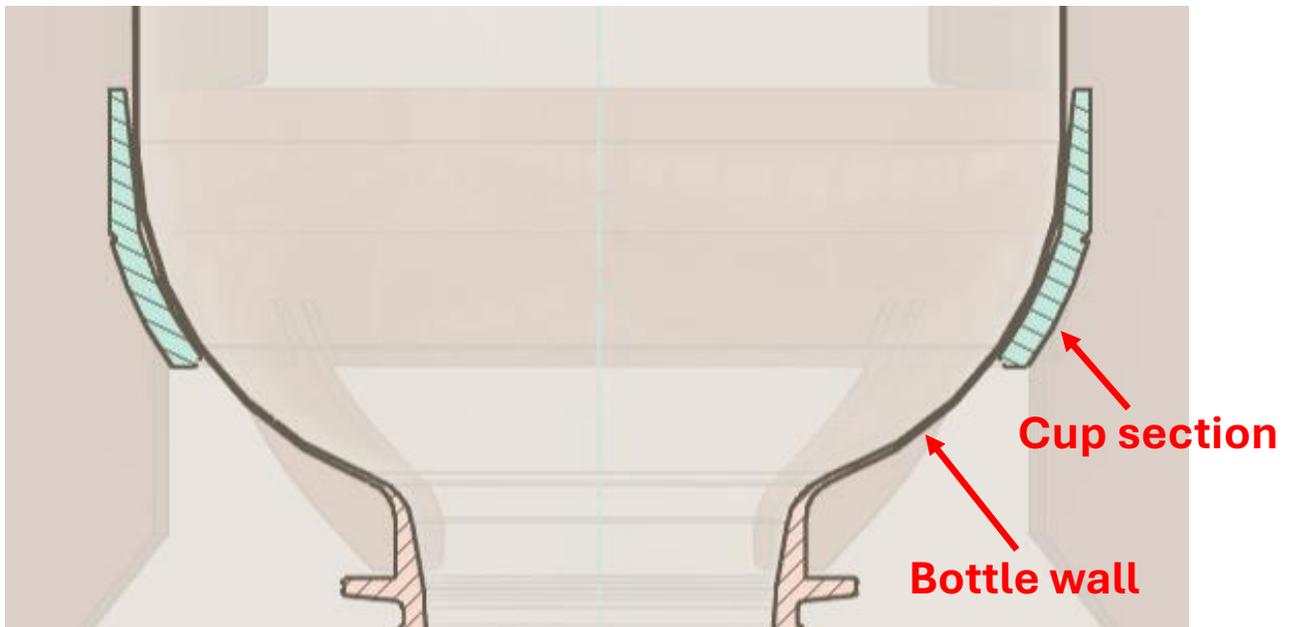
As the above cross-section shows, the lower fin support ring includes a "cup section". This prevents the fin assembly from moving forward when the rocket nose hits the ground.

This photo shows the fin assembly installed on a bottle and the cable ties that were used.

uxcell Cable Zip Ties 80mmx1.8mm Self-Locking Nylon Tie Wraps Black 300pcs
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5.0 ★★★★★ ✓ (11) | Search this page

$7²⁹ ($0.02 / count)
Price history

✓prime Tomorrow
FREE Returns ✓
Save up to 4% with business pricing. Sign up for a free Amazon Business account
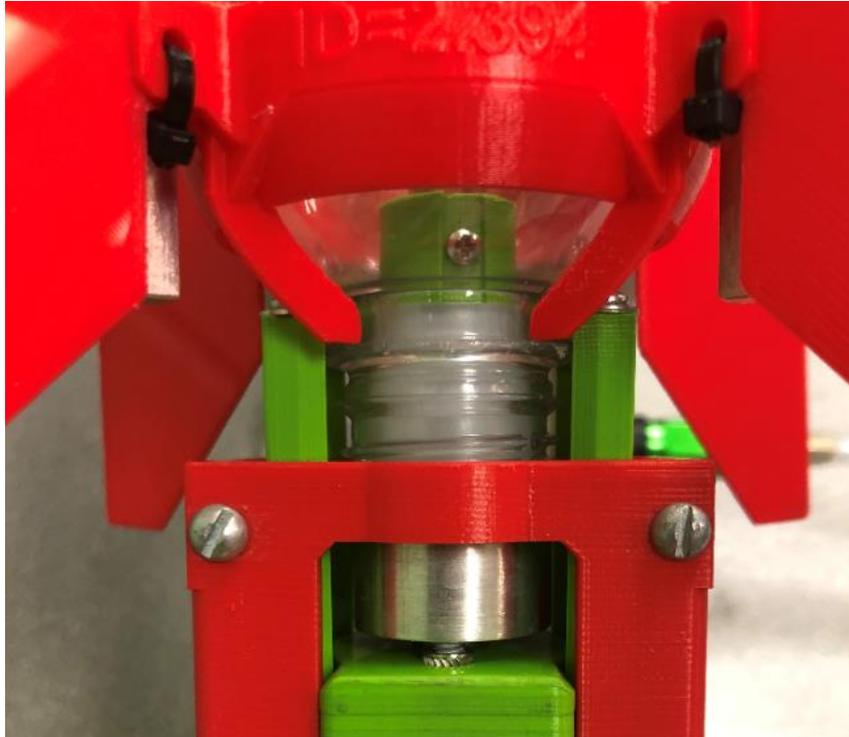Size: 80mm x 1.8mm

| 80mm x 1.8mm | 100mm x 1.8mm | 100mm x 2.5mm |

Color: Black

See 5 options

This photo shows the rocket secured in the launcher. The green latch arms are holding the neck ring. The locking tabs allow most of the neck ring to be available for the latch arms.

This photo shows laucher latch arms open. The bottle is not pressurized here and thus there is no bottle movement.

Printing

It is best to print all parts using a non-brittle plastic, such as tough PLA. Normal PLA can be brittle and cracked fins and nosecones can leave sharp plastic behind.

Printing should be done without supports. This is true for the nosecone as well. The arcs at the ends of the fin slots are Brim Blocks, which prevent the slicer from adding brim material inside the slots.