

Jig Design Guide

The locking system fixes the button-in-test on the system's 'bed' to prevent movement of the button-in-test that will contribute to errors during testing. Specifically, as a probe is lowered down over different points of the button-in-test, it is crucial to have the button-in-test fixed so that measurements would remain accurate.

Existing Design Justifications

Printbed Adapter

The adapters create a space in which the jig can be placed on. Its design must be able to align with the edges of the printbed to ensure that the jig is centered.

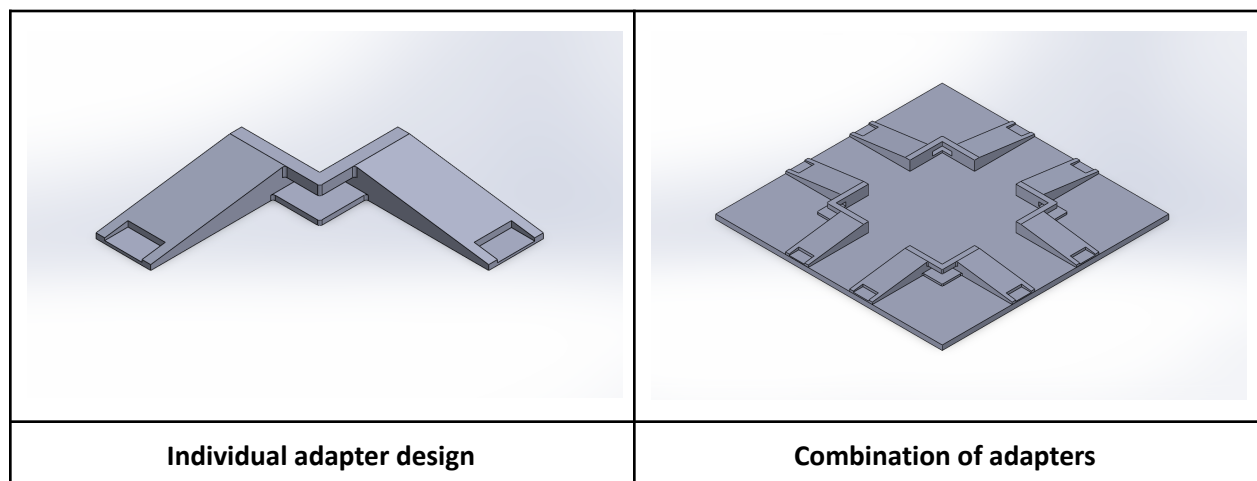
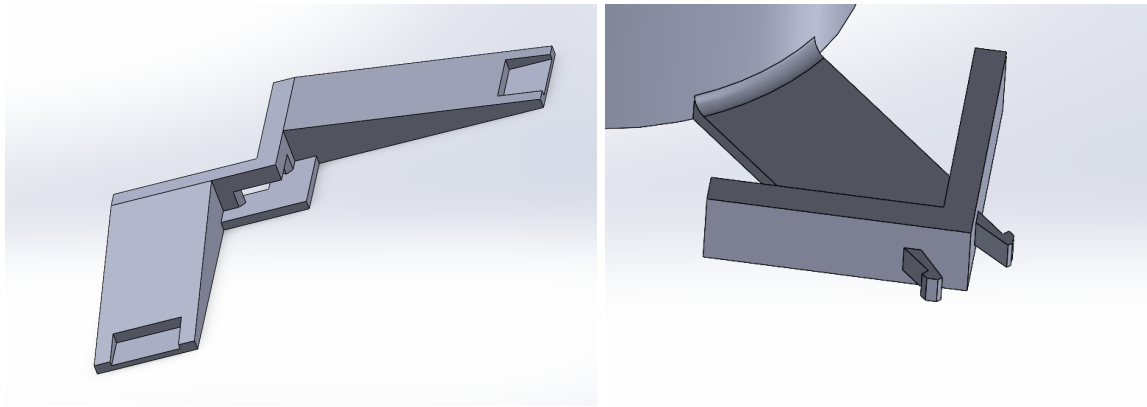
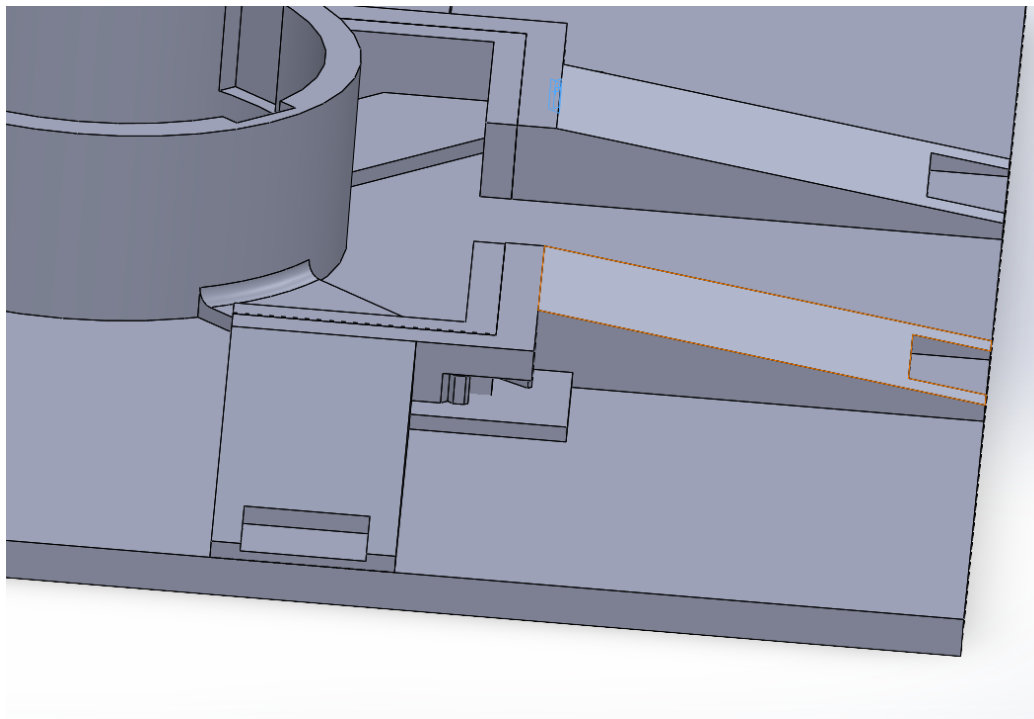


Figure: W design with reinforced structure

This design uses a snap fit mechanism to attach the jig to the adapters.



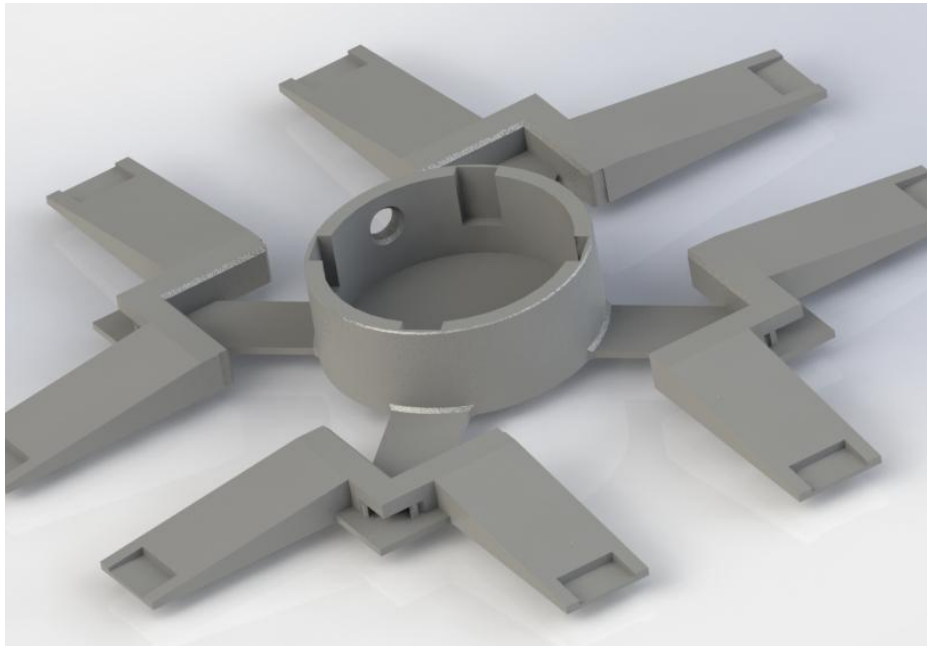
Latches



Example of use

MMC60 Switch Jig

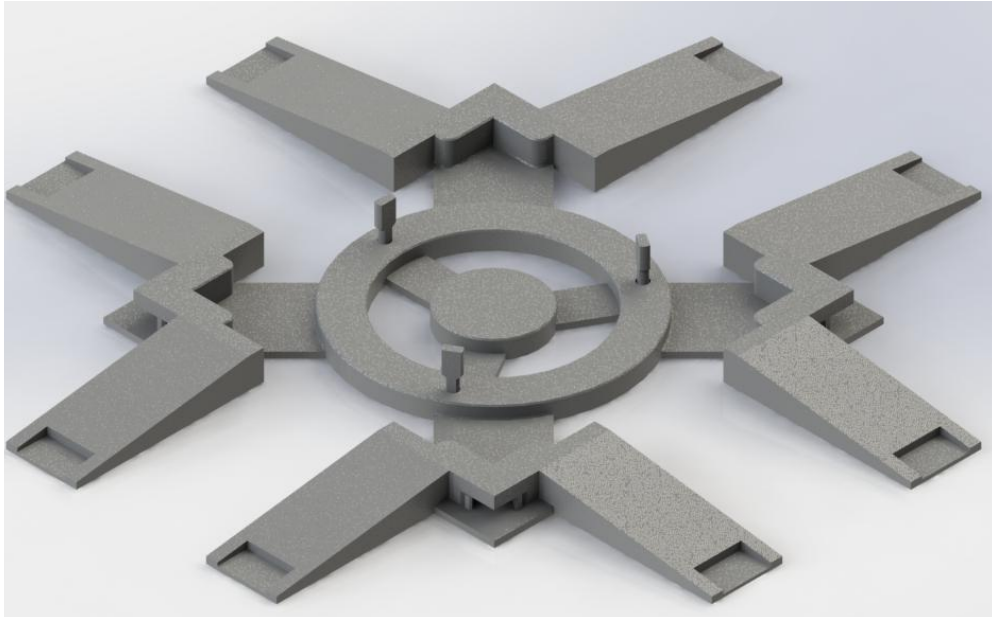
This design uses a cylindrical holder. A hole is added to ensure the 3.5mm jack can be inserted to the switch. Four rubber feet (D10x3mm) will be placed on the slots inside the holder to provide grip when inserting the button into the holder.



MMC60 Switch Jig Design

Interact Switch Jig

This design has two parts, the holder and the cylindrical snaps. The cylindrical snaps are inserted into the holes of the holder. These cylinders will snap to the Interact switch which already includes holes with the same radius



Interact Switch Jig Design

Design Approach & Considerations

Printbed Adapter

When designing the printbed adapter, we need to consider:

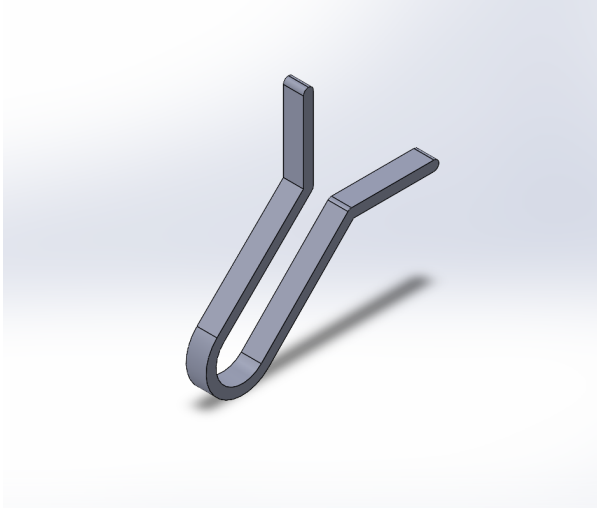
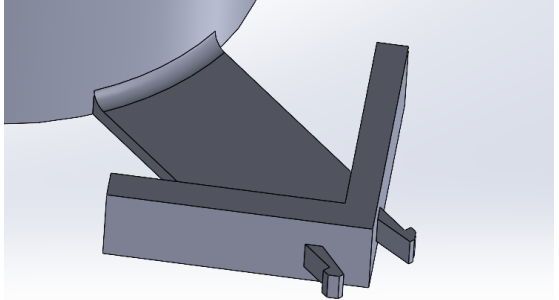
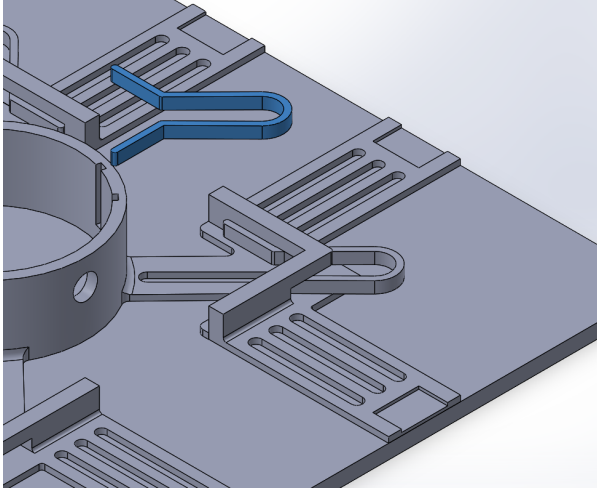
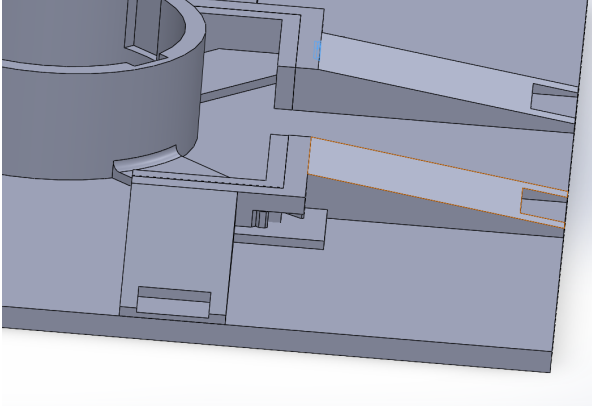
1. Edges are aligned to the edges of the printbed
2. Attaching the adapter to the printbed

Attaching the adapter to the printbed can be achieved in two ways:

1. Attaching magnets to the adapter. This requires the printbed to be magnetic, which usually is not
2. Using binder clips to hold the sides. This requires the binder clips to not obstruct the printbed's movement.

Attaching the adapter to the jigs can be achieved in a few ways, some examples are:

1. Using a lock key. However, this design is flimsy.
2. Using snap fits. This requires careful measurements to ensure a tight fit.

	
<p>Individual key design</p>	<p>Individual latch design</p>
	
<p>Example of use (Lock key)</p>	<p>Example of use (latch)</p>

Locking Jigs

When designing the printbed adapter, we need to consider **the shape of the switch** and the **mounting characteristics of the switch**. These two aspects will then deduce how we will design the attachments.

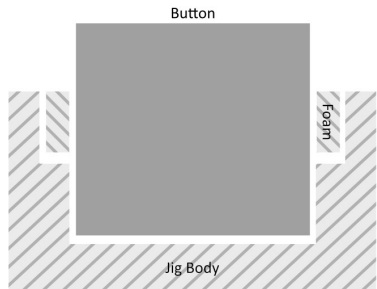
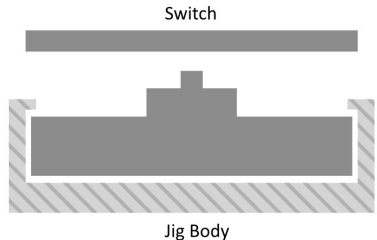

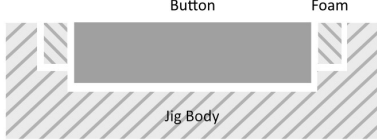
In case of the MMC60, the mounting hole at the bottom is at an off-center position and requires the switch to be screwed into the jig. This leaves us making use of the shape of the switch, which is cylindrical. Thus, we devised a grip option (rubber feet or foam etc.) that will hold the switch on the sides. The jig is also designed so that the jig's structure is rigid and able to support gripping the switch.

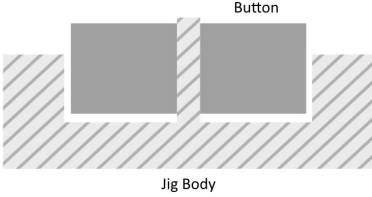
For the Interact switch, the switch already has holes that we can make use of. Thus we devised a design that has cylindrical keys that hold the switch through the switch and the jig's holes.

Since we also need to consider the printing orientation of the jigs, we need to ensure that the design is rigid and does not break.

Recommendations

These recommendations are based on judging the shape of the switch, following the design approach of MMC60. The example shows a cross section of the proposed jig design.

Switch	Approach	Example
Volksswitch Accessible Switch	<ul style="list-style-type: none"> Does not have a mounting feature Make use of the body of the switch 	
Solderless Unibody Switch	<ul style="list-style-type: none"> Does not have a mounting feature Simple design can be made to 'slot' into a jig 	
Light Touch Switch	<ul style="list-style-type: none"> Does not have a mounting feature Use foam to grip 	
Raindrop Switch	<ul style="list-style-type: none"> Does not have a mounting feature Use foam to grip 	

<p>Large Lever Switch</p>	<ul style="list-style-type: none"> • Have a mounting feature • The orientation of the lever should be positioned so that parts of the switch does not obstruct extruder/load cell adapter 	 <p>The diagram shows a cross-section of a mechanical assembly. A gray rectangular component, labeled 'Button', is mounted on a hatched base labeled 'Jig Body'. A vertical lever is positioned between the button and the base. The label 'Button' is placed above the gray rectangle.</p>
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