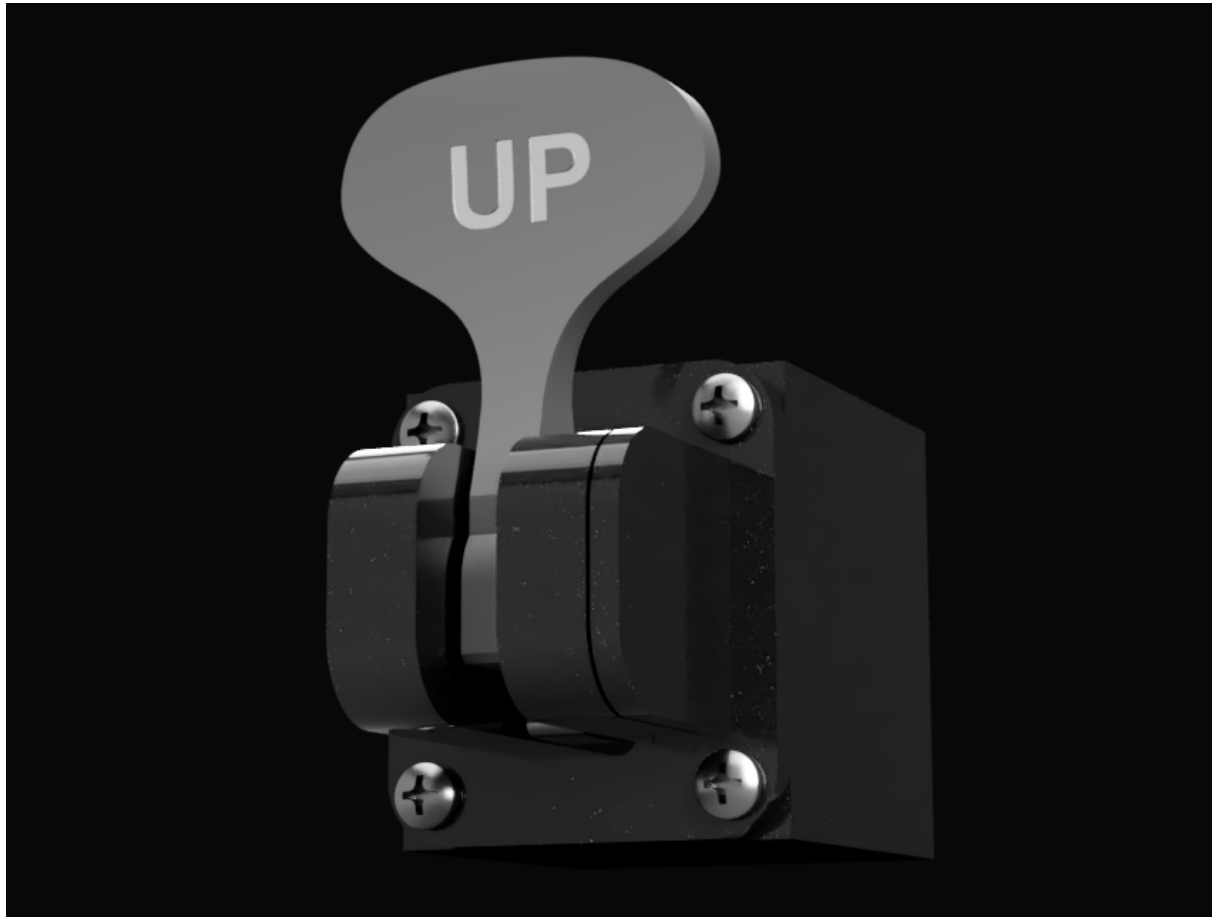# Spitfire Flaps Lever
Assembly Guide

1. Introduction
2. Calibration
3. Assembly steps
4. YouTube assembly videos
5. Screws & Wires
6. Index of all printed parts with printing advice
7. Printing advice and recommended slicer settings

The STL files and assembly instructions for these flight controls are released free for personal use on the basis of the Creative Commons Attribution Non Commercial Non Derivative licence. If you wish to use this product in any for-profit activity please contact Phil Hulme at phil@authentikit.org

For more information about this project and the aims and ambitions for the AuthentiKit system see **authentikit.org**

Introduction

This kit adds a flaps lever to the AuthentIkit Spitfire MkIX or Mk1A set of flight controls. In order to use this control you need two other units.

1. Universal Hub - Upgraded version with full set of inputs
2. Instrument Panel Mounting System

Sourcing

For a full list of parts see my document **Spitfire Flaps Lever - Bill of Materials.pdf**

The other sourcing option is simkitsupplies.com - see their website for more details. The price should be about ½ what you'd pay to get the components yourself.

Calibration

Caution - before you start printing check the printer settings at https://authentikit.org/printing-advice and print the very quick calibration test that you will find in the tools folder, then tweak horizontal expansion settings. **Do not print large parts until both the magnet and bearing are a snug fit but not tight.**

Spitfire YouTube Video Assembly Guide

You will find the flaps lever assembly guide in the Spitfire MkIX YouTube playlist: **authentikit.org/youtube**

Assembly Steps

1. Fit the cork disc to the mClick base
2. Press the micro bearing into the mClick upper lever
3. Start threading an M2 8mm screw into the mClick lower lever and fit the second micro bearing over it
4. Screw together the mClick upper and lower levers, making sure the outer bearing spins freely
5. With the mClick screw head down, fit the lever to the mClick base with an M2 12mm screw not too tightly as it is critical that the lever flips back and forth freely
6. Put the two micro switches in place
7. Prepare your wires - 2 black (10cm), one yellow (15cm) and one green (15cm) with short (4mm) lengths of exposed wire.
8. Slip a ferrule over each wire, slide the ferrule onto the microswitch pins as per the video and crush each ferrule in turn
9. Fit the mClick lever cap with 2xM2 12mm screws
10. Check the lever moves freely and ALWAYS returns to the centre. Adjust the middle screw a touch if needed
11. Push the mClick through the flap lever base and attach with M4 6mm screw - DO NOT USE anything longer or you will damage the mClick
12. Fit the flap lever peg to the larger bearing
13. Fit the peg/bearing into the mClick bearing cover
14. Fit the mClick cover to the mClick base with 4 x M4 14mm screws
15. Fit the rests with an M4 10mm screw
16. Fit the flap lever with an M4 10mm screw
17. Test flap lever friction and adjust the 4 x 14mm screws as needed
18. Fit the left post with 2 x M4 10mm screws
19. Join black wires with an extra black 10cm wire via M3 6mm flange screw
20. Fit the flap lever base to the box front with 4 x M4 round head 8mm screws
21. Wire up the RJ45 as per the diagram - black, yellow, green
22. Fit the RJ45 to the box back
23. Fit the box back to the box with 4 x M4 6mm screws
24. Fit the dovetail bracket to the box with 2 x M4 6mm screws
25. Fit the slide pillar to the slide grip with 2 x M4 14mm screws
26. Fit an M5 16mm allen head bolt and M5 nut to the slide grip

Screws

See this PDF for full details of screws used and where.

Spitfire Flaps Lever - Screws Inventory.pdf

You may find it a little fiddly to tell certain screw lengths apart, so to avoid using a 10mm in the back of the MagHall instead of the 8mm it should be, I have included the following test tool in the tools download. It is designed just for M4 screws of length 6,8,10,14 and 20mm.
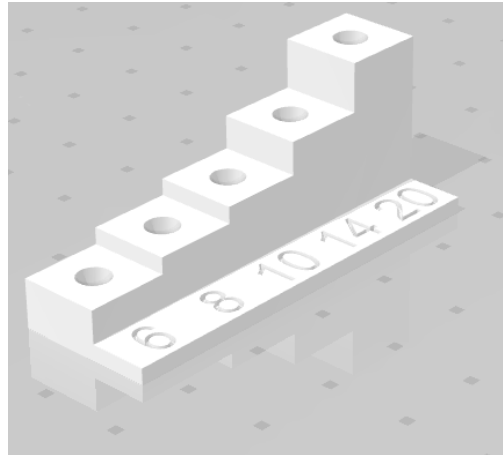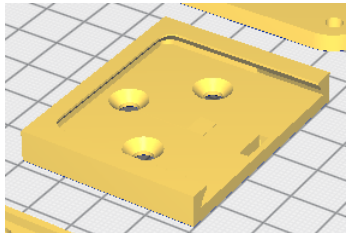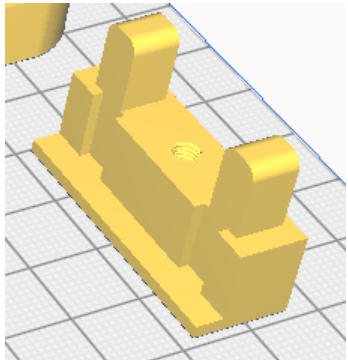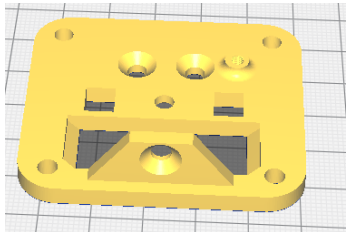

Wires

Wiring for this project is fairly simple. There is a full size version of this wiring diagram in the PDF that's part of this project. **Spitfire Flaps Lever - Wiring.pdf**
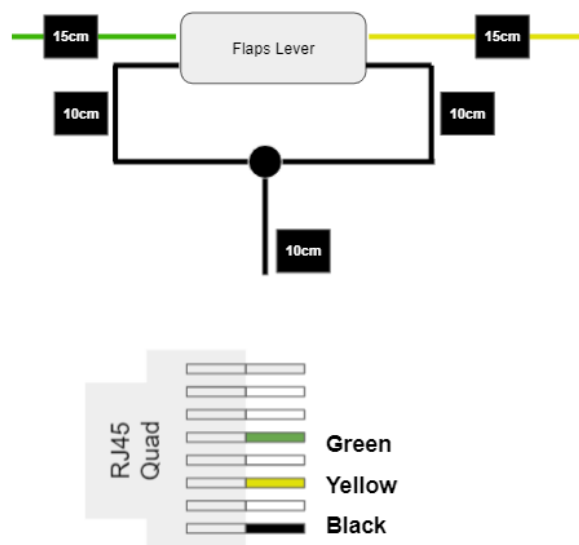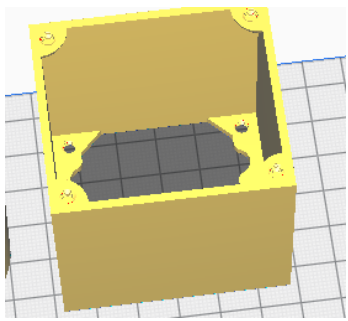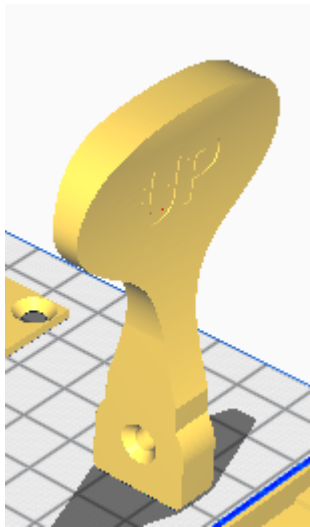
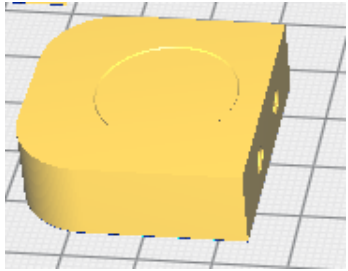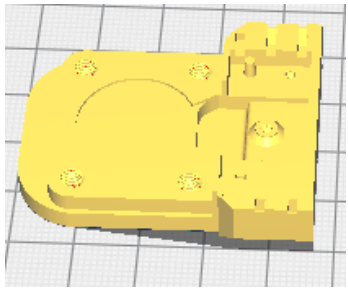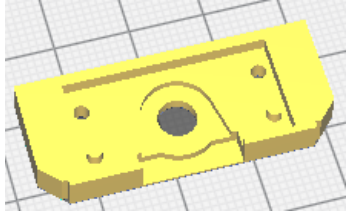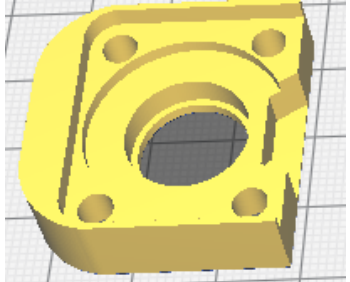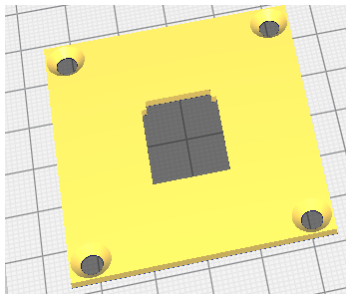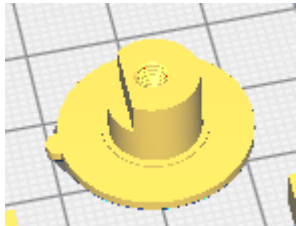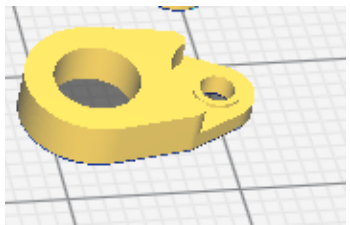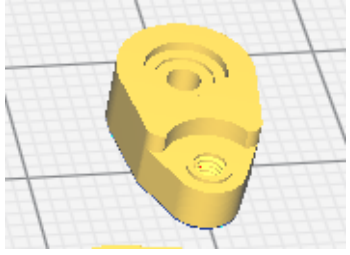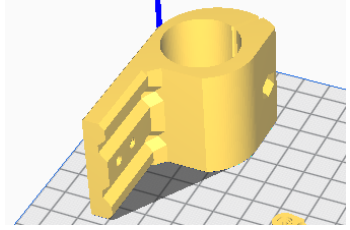## Index of all printed parts with printing advice
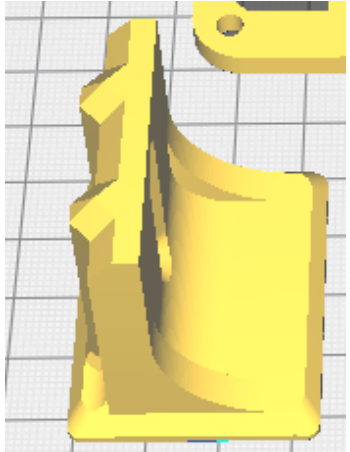
I'd suggest printing most parts at 25% infill and it should be fairly obvious which face should be down on the print bed. Exceptions to this are documented here.

**No brim and no support on anything by default.
Exceptions explained below.**

STL	Comment	Infill	Print Colour/orientation
Dovetail Mount			Black
Rests			Black
Bracket Main			Black

Box			Black
Flap Lever		You may well need a brim for this. Trim it off carefully to stop it catching the rests	Black
Left Post			Black
mClick Base			Black

Lever Cover			Black
Bearing Cover			Black
Back			Black
mClick Peg			Black
mClick Lever Bottom			Black

mClick lever top			Black
Slide grip 40			Black
Slide pillar 40			Black

Printing Advice & Slicer Settings

These sections have now been moved online.

https://authentikit.org/printing-advice