

Hydra for Ender 3\Ender 5 & CR10

Multi Head Direct & Bowden Drive Extruder with Easy Serviceability

Installation Guide for Ender 5 Base with 5015 Fans with Bowden Head

You will Need the following items in addition to the standard range of wrenches, side cutters, pliers etc. Please be careful when handling all cables. The soldering on most budget fans can be very weak and easily broken. Likewise be careful with the heater and thermistor cables.

Short length of Bowden Tube

Bowden Head : Full Length

BMG Head: Approximately 80mm

Dual Gear\Stock Extruder Head: Approximately 70mm

4 x M3 x 12 mm Pan Head hex bolts

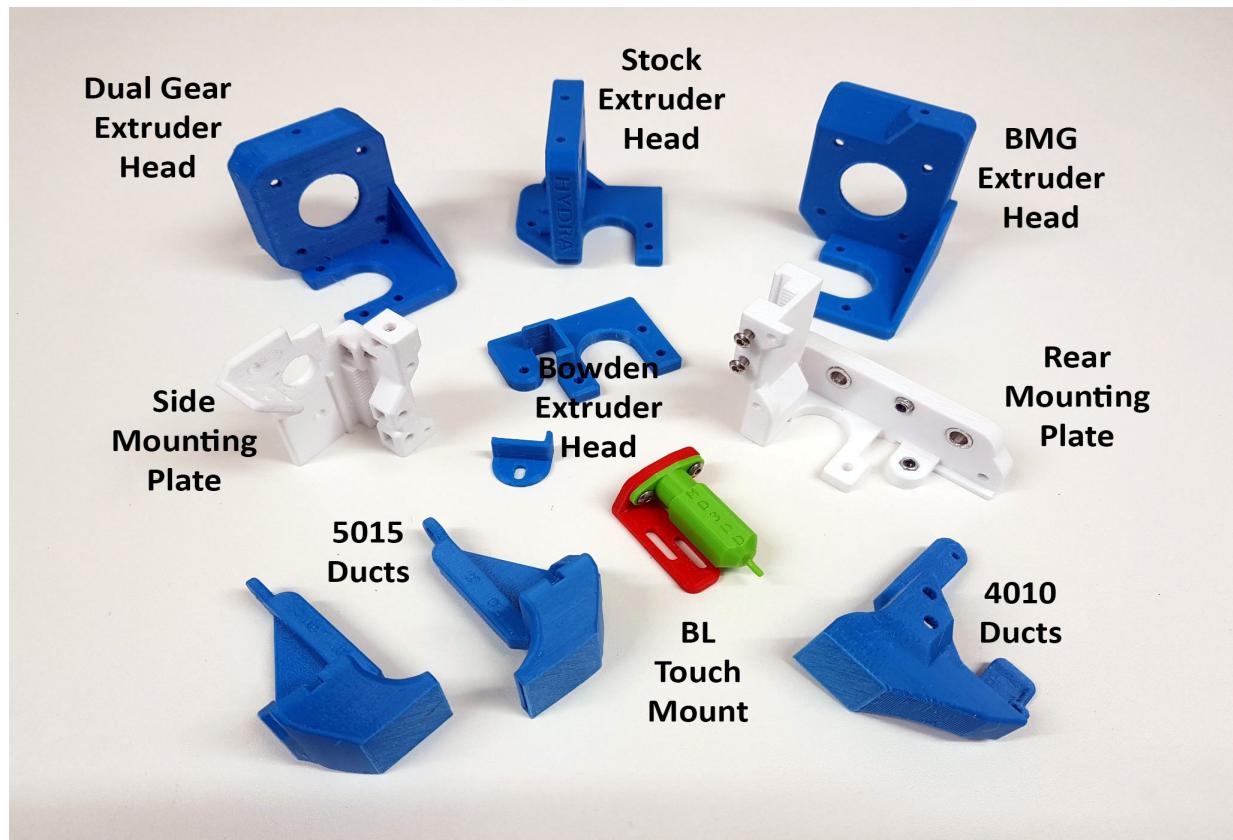
1 - 3 x M3 X 8mm Pan Head hex bolts

6 x M3 X 16mm Pan Head hex bolts

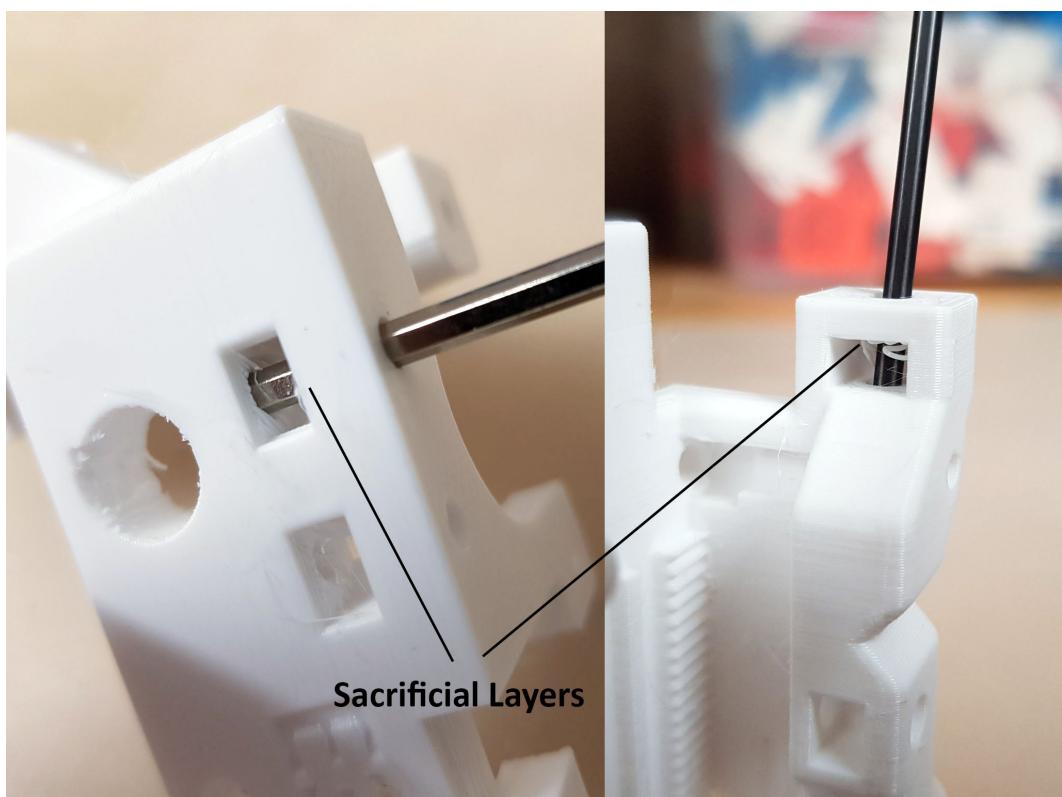
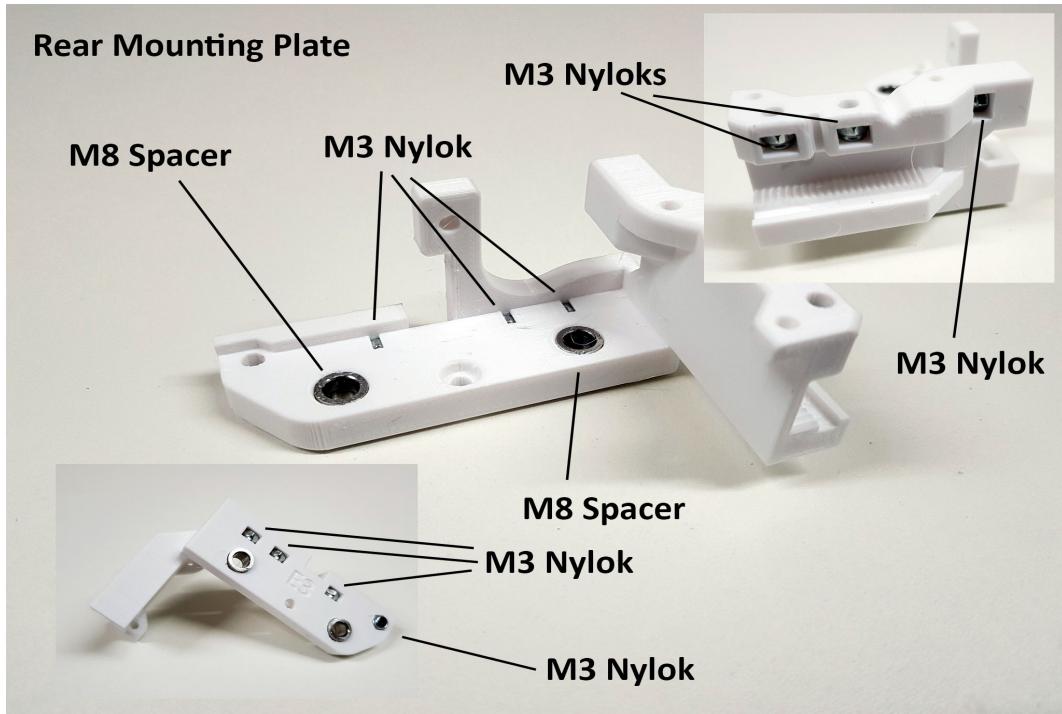
3 x M3 X 20mm Pan Head hex bolts

11- 12 x M3 X Nylok Nuts

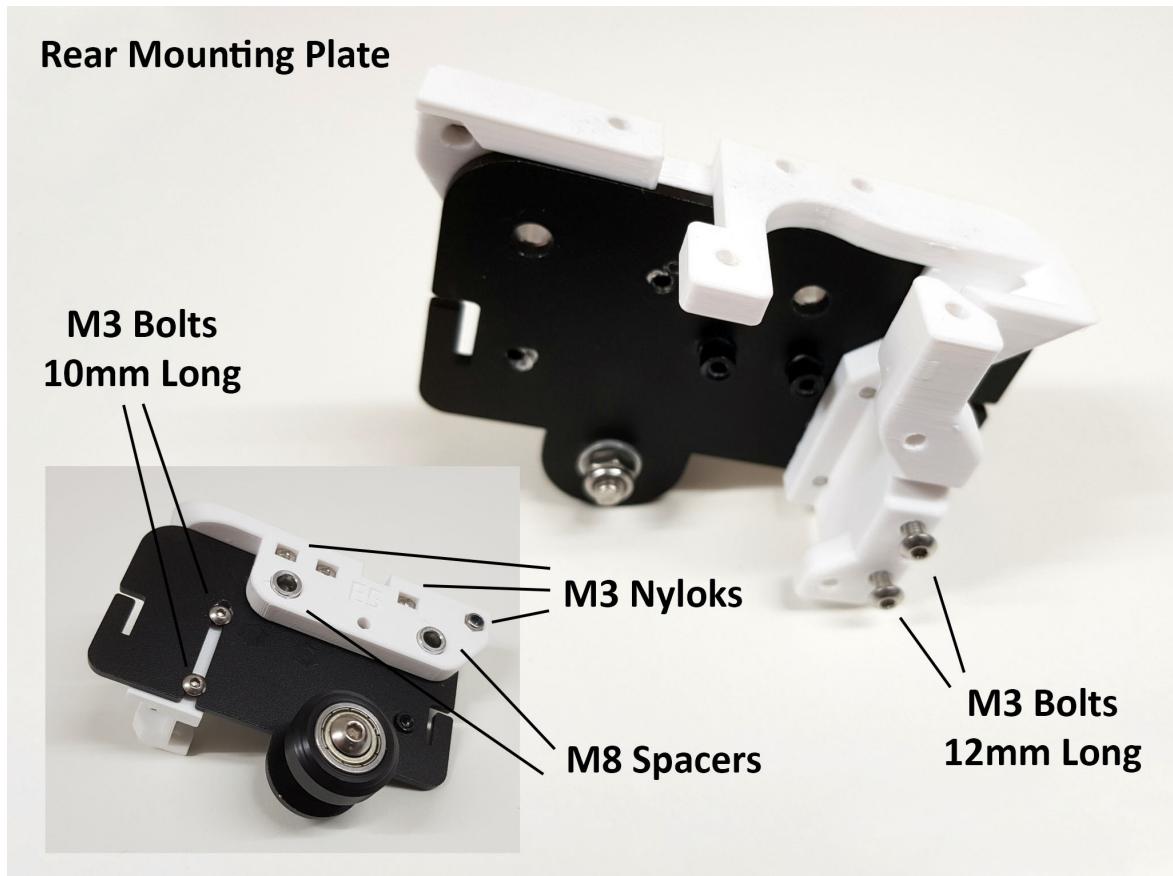
2 - 3 x M3 X Plain Nuts



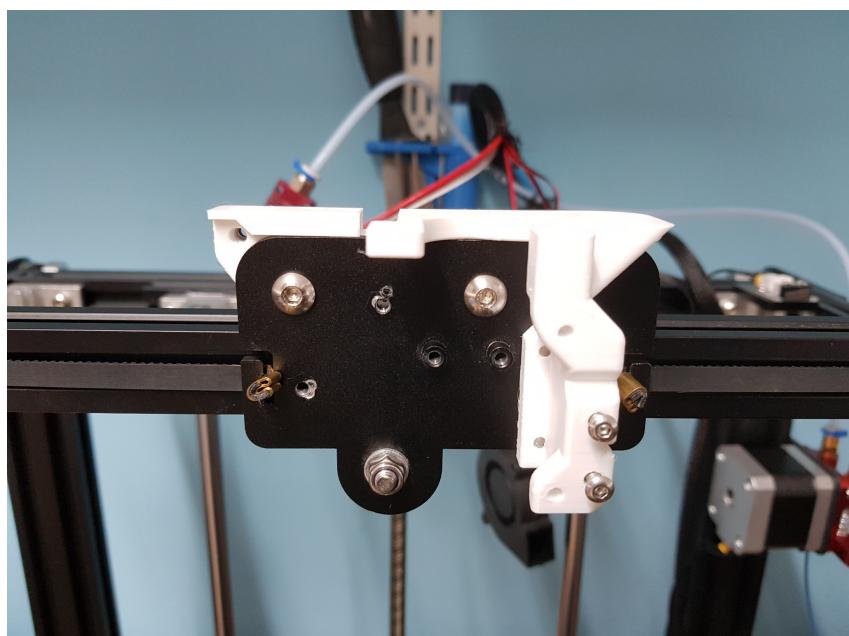
1. Disassemble the existing X Gantry assembly. Insert the 8mm diameter Spacers from the existing assembly into the rear mounting plate. Insert 6 x M3 Nylocs into the relevant nut sockets provided. Attached the rear mounting plate to the gantry with the stock M5 bolts, wheels & nuts. I have also included some sacrificial layers above nuts sockets in both mounting plates. These will require piercing and cleaning off before nut insertion.



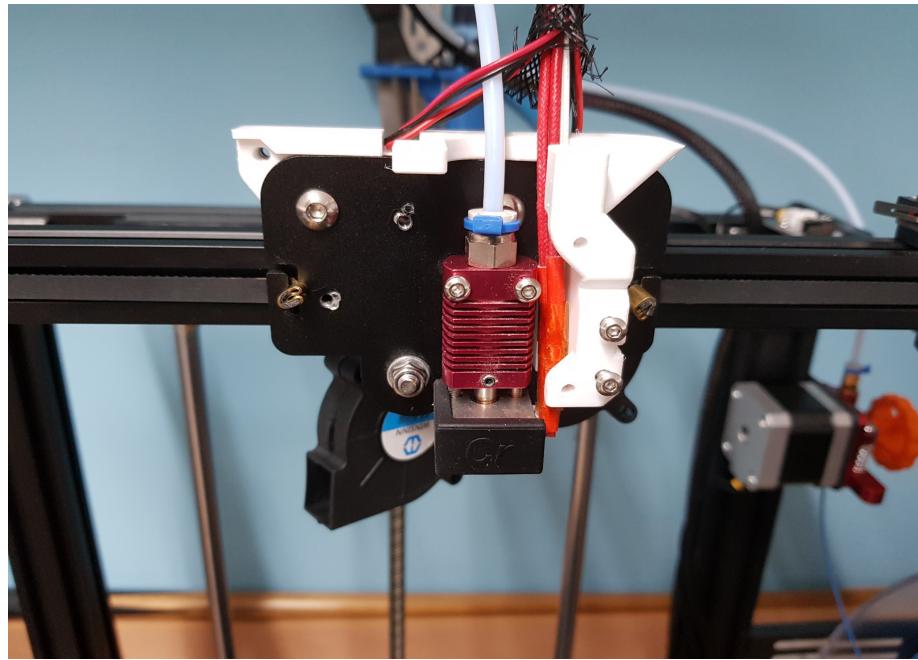
2. It is easier to remove the stock mounting plate completely to insert the fixings to the rear of the plate (see images below) and attach the Hydra Rear Mounting Plate to the existing stock plate.



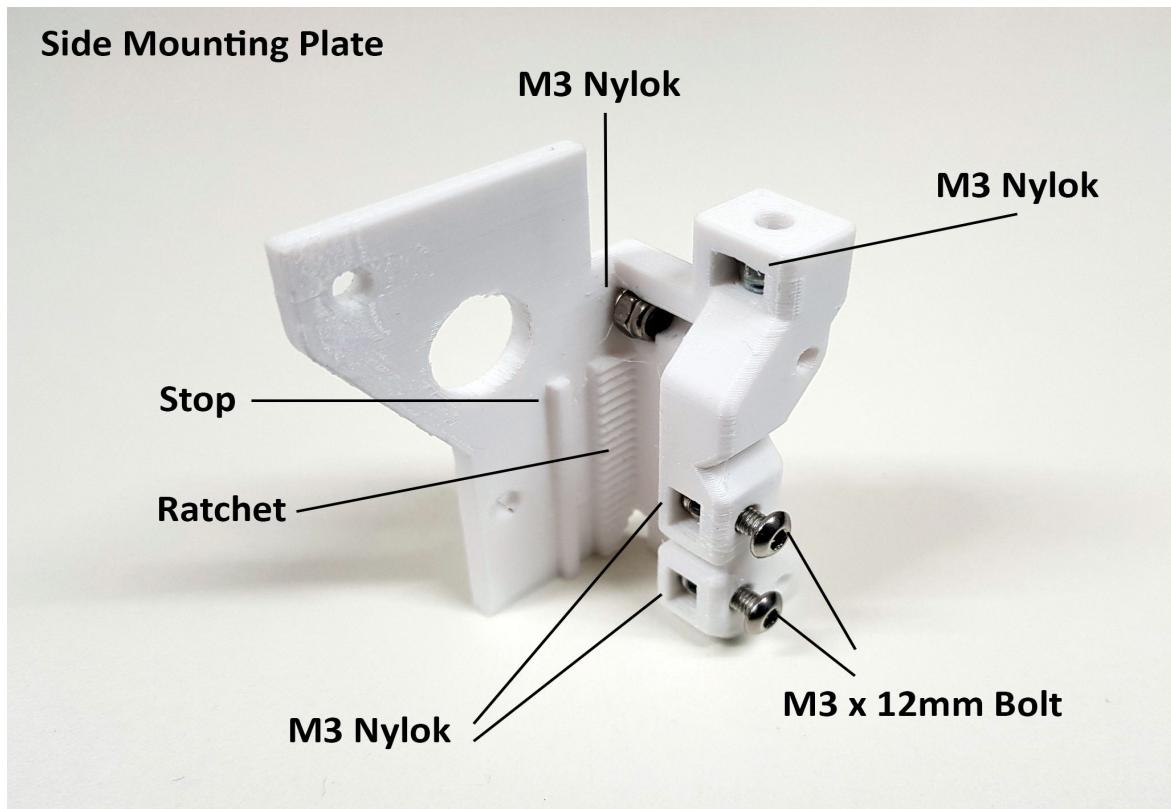
3. Re attach the mounting plate assembly to the gantry with the stock M5 nuts, bolts and pulleys. Do not tighten the belt until the RH Duct is in position. The RH Duct fits well but it is easier to have the belt tie loose for the duct to pass.



4. Re attach the hot end assembly to the mounting plate.

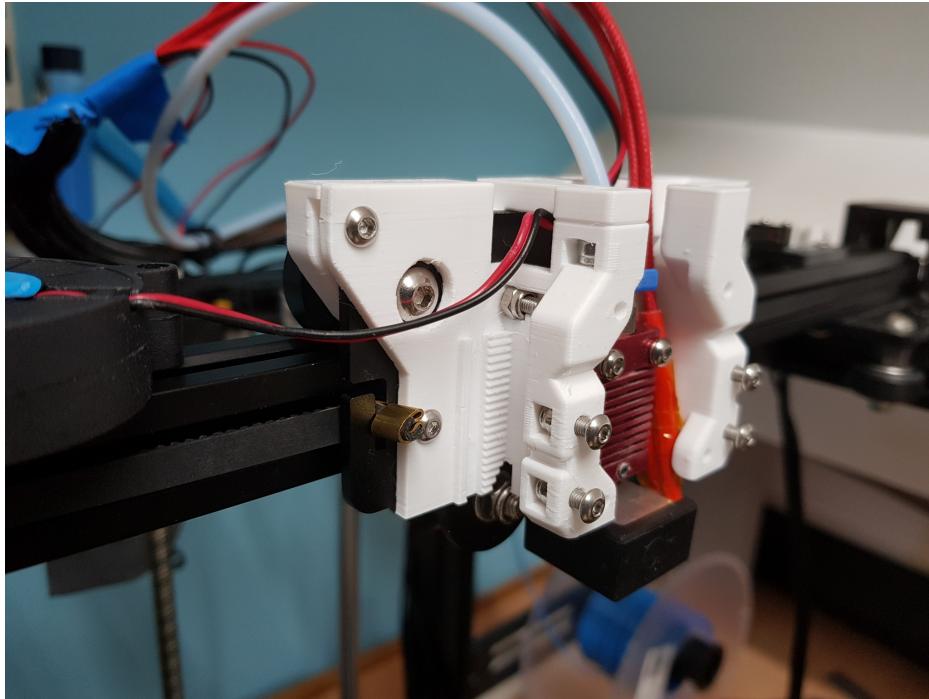


5. Prepare the Side Mounting Plate with 4 x M3 Nyloks and 2 x 12 mm M3 Hex Bolts.

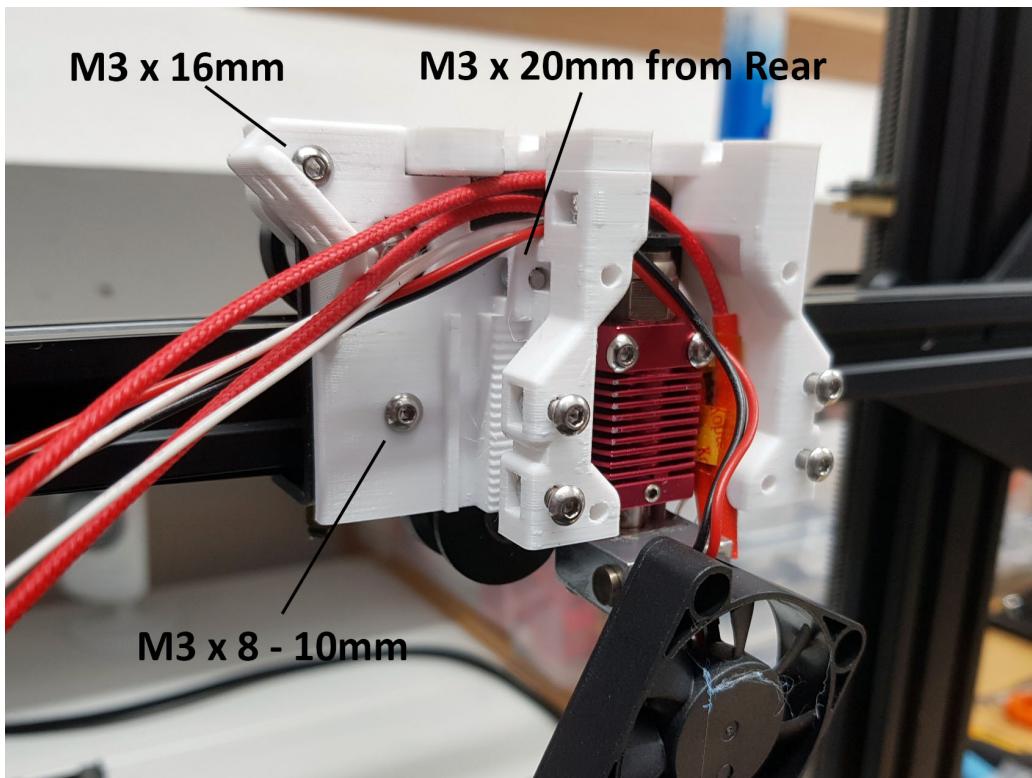


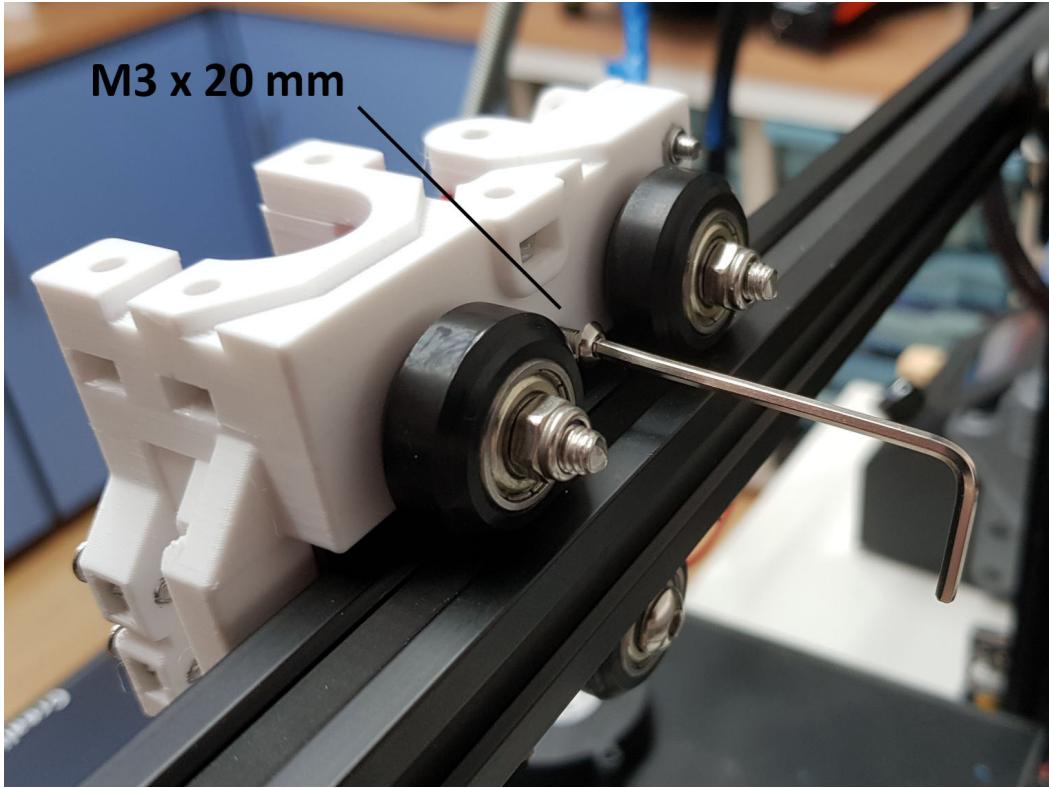
6. Before attaching the Side Mounting Plate, thread the left hand fan cables through the aperture in the duct rear mounting plate as per the image below. If using the Bowden Extruder Head you have the option of

either running the rest of the cables to the right for the various extruder heads or exiting from the top in a similar fashion to the stock set up.

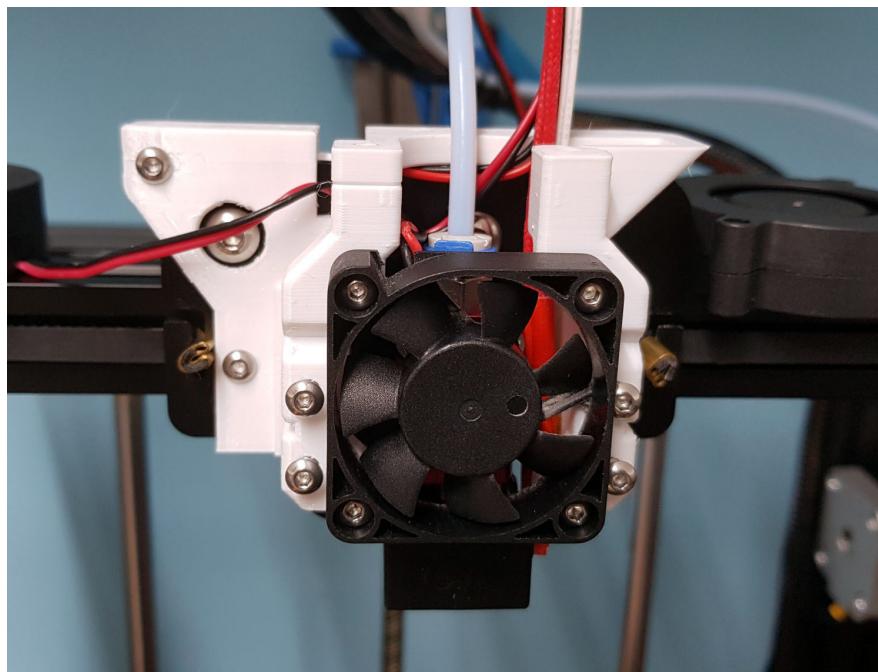


7. Attach the Side Mounting Plate to the Rear Plate with M3 bolts as per the images below.

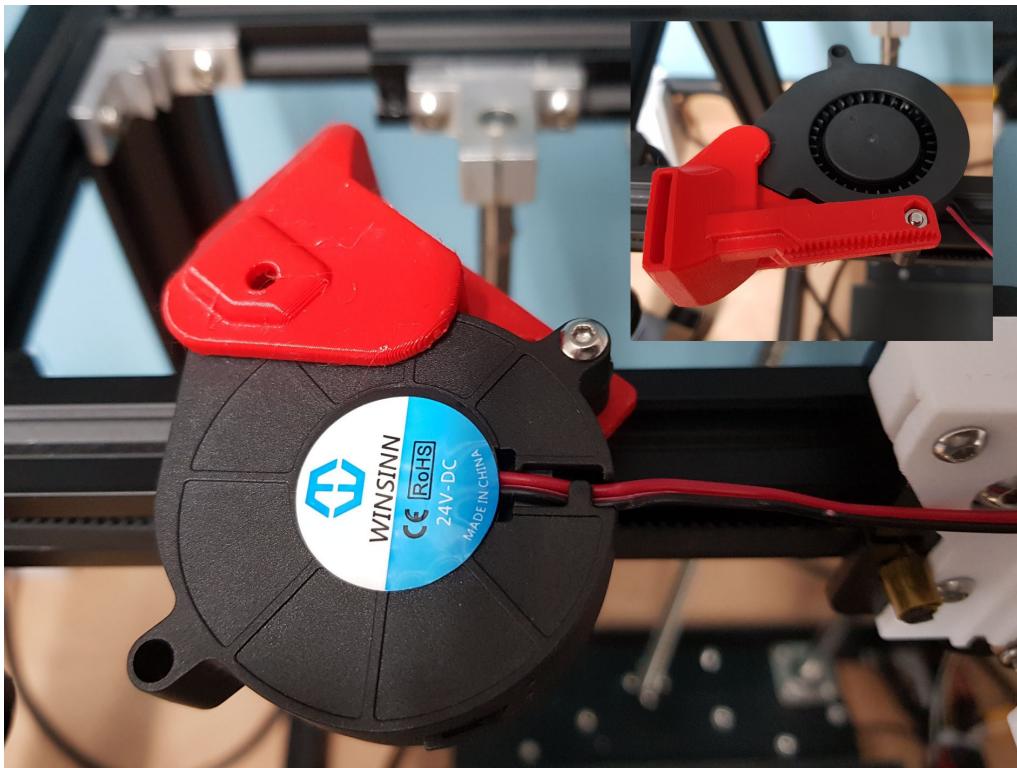




8. Attach the Hot End fan with 4 x M3 x 10 mm bolts into the 4 x 2.7mm pilot holes. The fan cable can be returned\tidied under the side mounting plate but I preferred to wrap it around the Bowden Tube to allow some play when removing for maintenance.



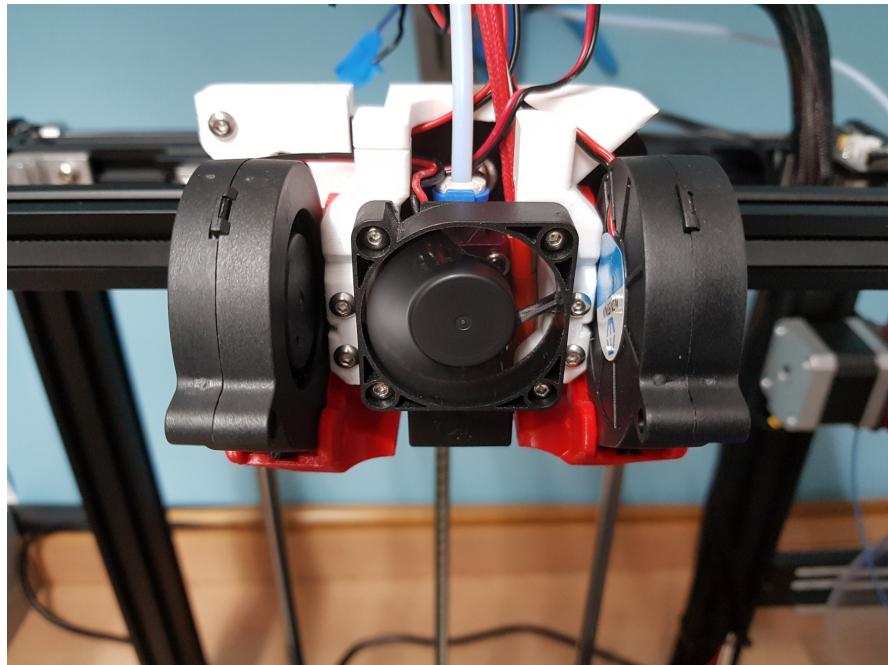
9. Insert the part cooling fans into the ducts and fix with 1 x M3 x 20mm and a plain M3 nut per fan duct.



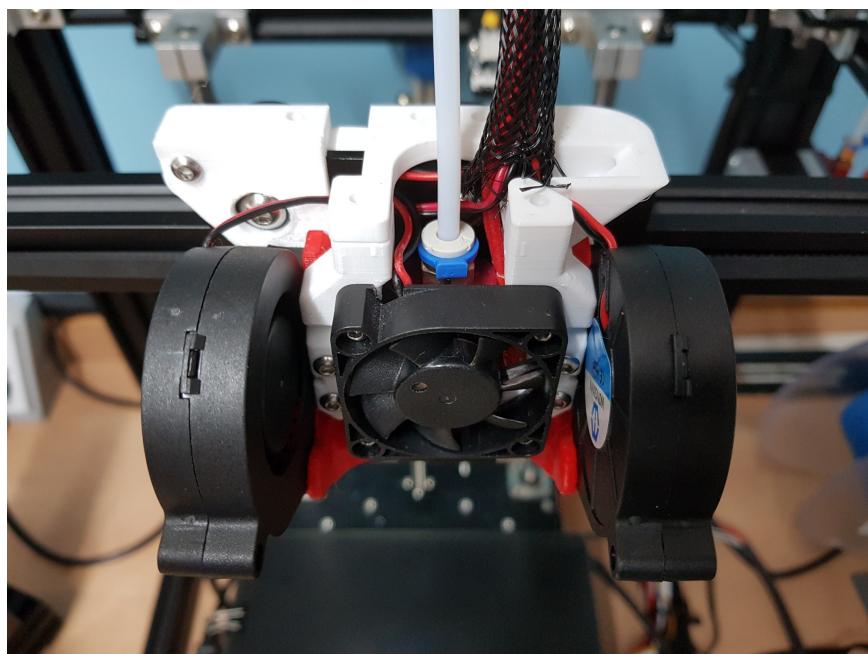
If using a BLTouch sensor insert a M3 plain nut into the duct prior to inserting the part cooling fan. Use 1 x M3 x 8 mm long bolts with 1 x standard nuts to locate the BLTouch Use 2 x M3 x 8 mm long bolts with 2 x standard nuts. To ease assembly push a longer M3 bolt through the holes first. Using the nut holder linked in the description connect the M3 Nut and pull back into the internal nut socket until firm in place. I do not use any levelling sensors so my MK1 design is based on previous requests and designs, please treat this has WIP.



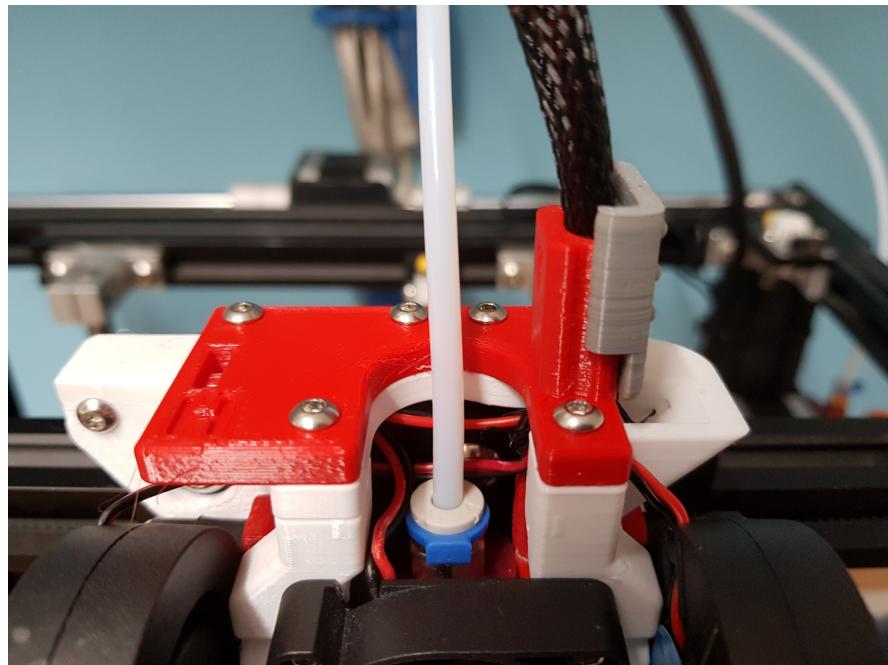
10. Insert the part cooling fan duct assembly into the base assembly from the side and tighten the front bolts. Do not over tighten the front bolts has this will result in deformation of the base. Rotate the bolt until both ratchets are located and firm. The bolt should stand proud by approximately 1mm. Home the printer when convenient and level ducts. I have provided links in the thing description to a 1&2 mm spacer\helper to make this easier.



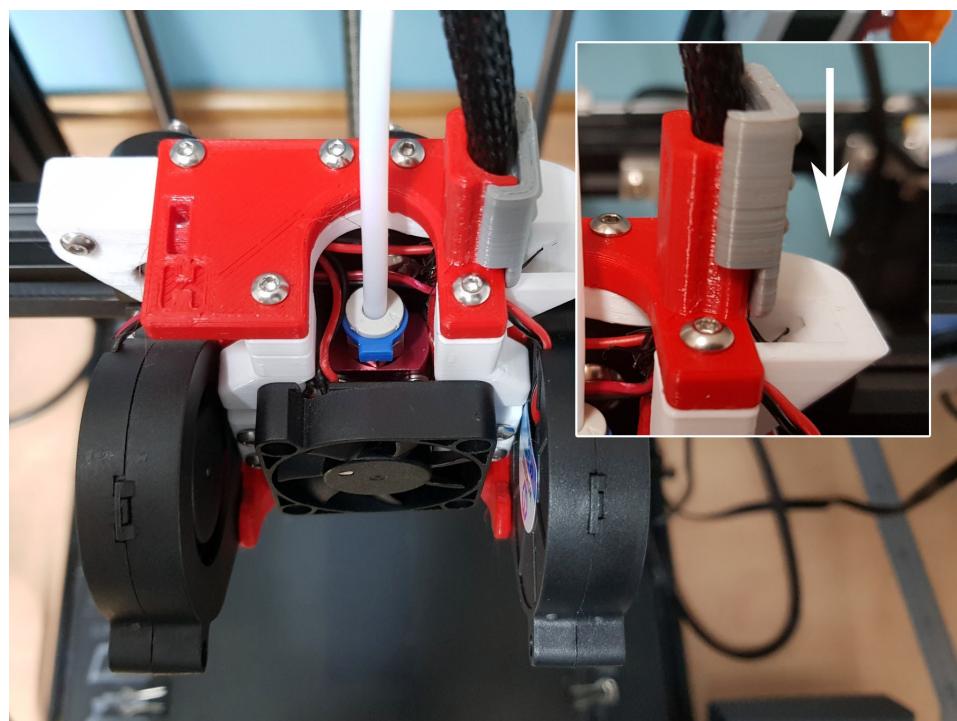
11. Generally tidy cables in preparation for the head assembly.

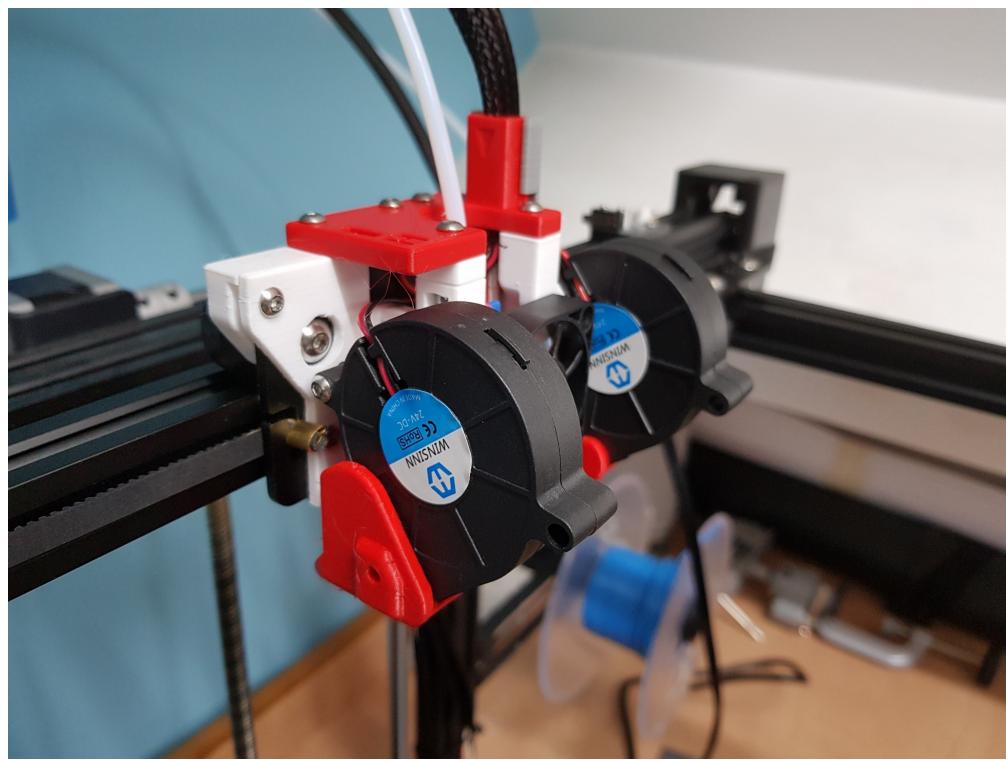


12. Attach the preferred Extruder Head with 5 x16mm M3 Bolts.

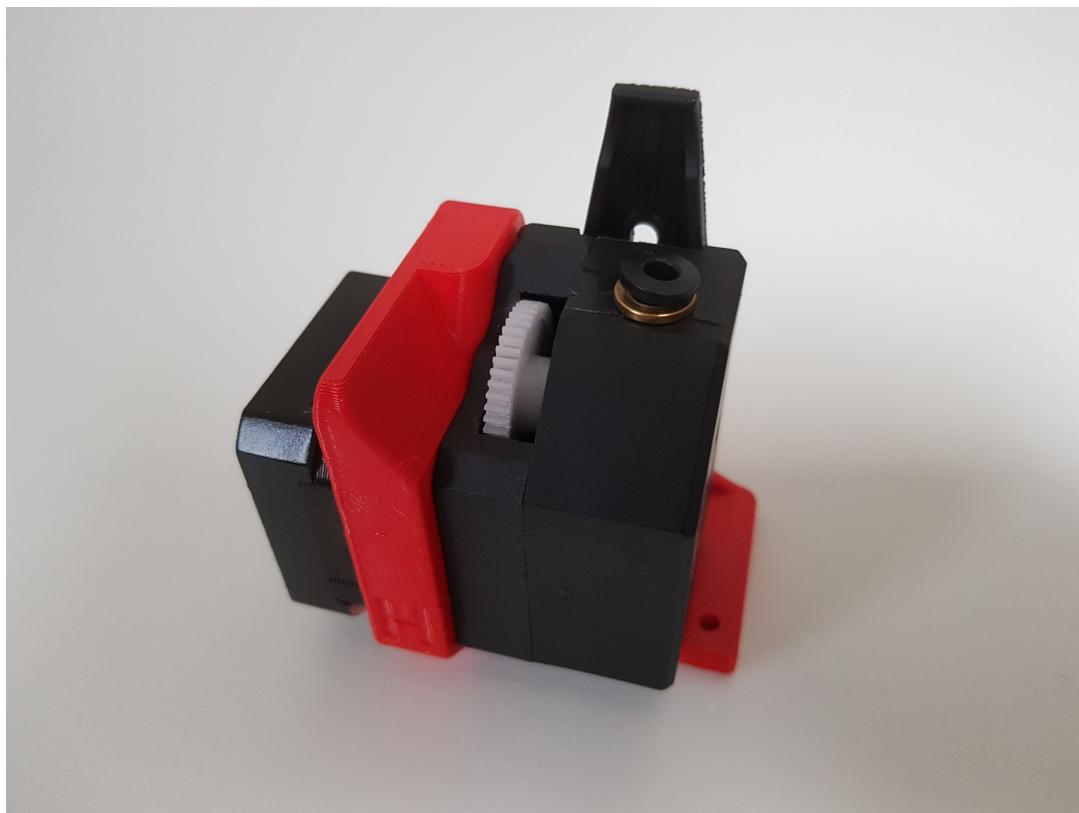


13. Place the Bowden Cable Clip over the cable tower and slide down to click home.

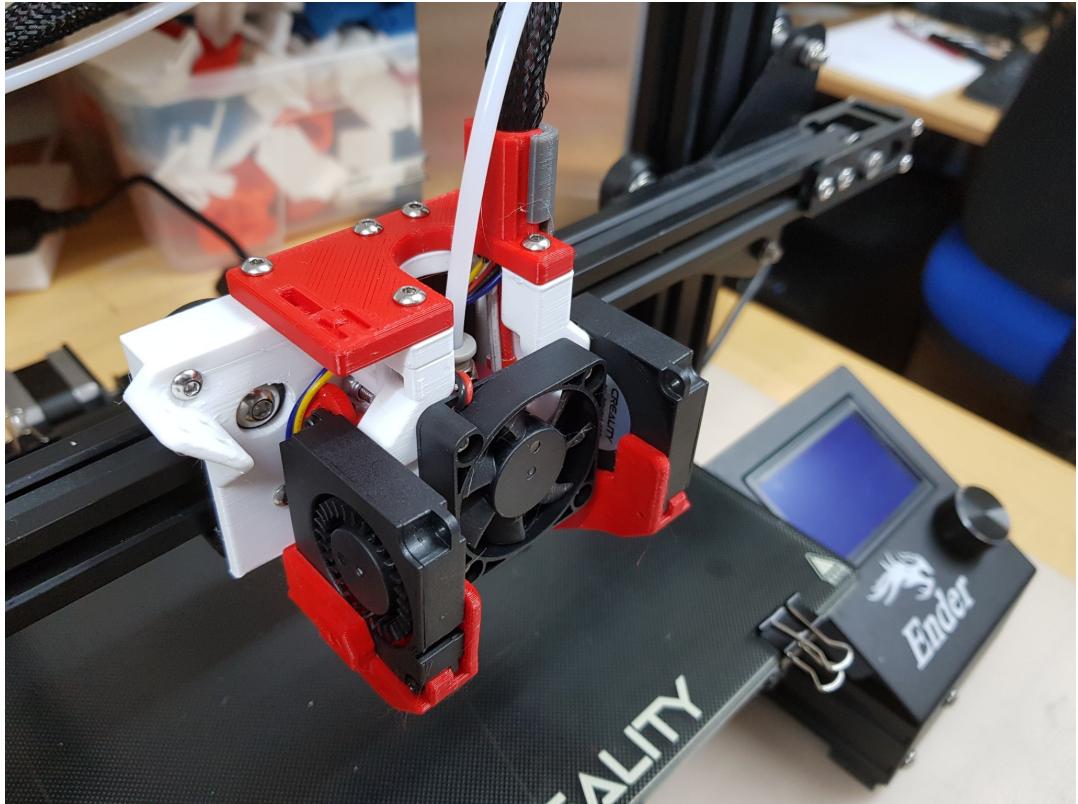




14. BMG Extruder Head



15. Bowden Head on an Ender 3 Pro with dual 4010 fans



Apologies in advance for any typos or errors in this document.

Boothy 22\12\2019