Title   Trident_1-9_complementary_3dPartsBuild_doco (Proposed future filename)
File name   Voron_1.9_3dprinting_guide.pdf (You put . In a filename?)
Date   2021-12-22 (Unofficial version number)
Copy-rite   None. Free domain. Be free. Fly my pretties. FLY!
Warranty   None. Use at own risk. For entertainment purposes only.
Authors   Stephen George, Claudermilk (Major proof read and error checking)

Introduction
Use this guide to print the parts as you need them, possibly the night before.

Latest version?
I tend to rush the first draft out. To get the latest V. Goto URL below and check the date.
https://github.com/LesserSpottedAustralianSquirel/voron_trident_pics/blob/main/
Voron_1.9_trident_3dprinting_guide.pdf

Print parameters (More details on page 4 of official Trident manual)
Material ABS, Infill gyroid, Infill 40% Layer_height 0.2mm, Wall_count 4, Top/bottom layers 5, Nossle/Nozzle 0.4mm

My prints: (for Prusa mini): Brim yes 5mm, Ironing yes, first layer 10 mm/s, infill grid
NB: Many of the Voron parts "mate" together. I found that a light sand papering helped allow these parts to mate. Another idea: enable "ironing" in your slicer. (update :"oh yeah").
NB: I used a Prusa mini (bed flinger) to print parts & had to use a plumbers deburring tool (from hardware shop) & sometimes a craft knife, to remove the elephants foot like effect and brim.

The Rules
The first time a picture of a part is shown in the official instructions it's added to the list. After that it's ignored as you should have already printed it.

The Machine the parts are for
Building Formbot kit, 250 x 250, Direct feed, Dragon High Flow, 3 hole cable chain.

Keeping track
The Printed ☐ tick box, under the picture, allows you to print out this pdf and tick off the parts as they come off the printer. Anyone know how to make them PDF tick able? So we don't have to print doco out, but can just tick and save the electronic PDF to keep track?

Future Improvements to this doc
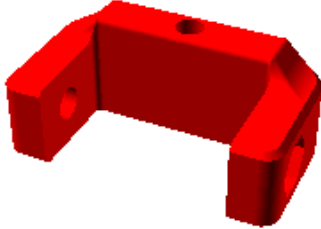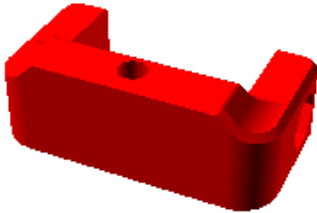3) Add time of print using a Prusa mini as a guide.
4) Add AA (anti-aliasing) to images using gimp and scripts

Thanks for all the great ideas. Even if I have not had time (yet) to implement them all.
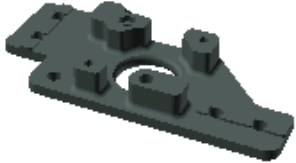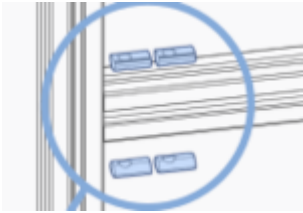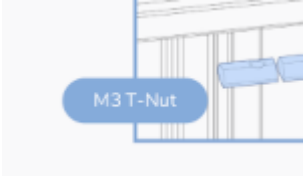
https://old.reddit.com/r/VORONDesign/comments/rc8wcb/voron_trident_printing_guide_very_very_draft_and/

Notes
This is fan base documentation. The official document take precedence in any conflict of information or technical detail.

Picture	Details	Comment
Printed? ☐	**Directory** STLs/Gantry/AB_Drive_Units **Filename** a_drive_frame_upper **Page Number** 26	And so it begins
Printed? ☐	**Directory** STLs/Gantry/ Front_Idlers **Filename** [a]_tensioner_left **Page number** 27	NB Page 27 "Look for asterix next to the part. It indicates that this is an accent part." Except * is not a good character in a file name, so they changed it to Files starting with [a]
Printed? ☐	**Directory** STLs/Gantry/ Front_Idlers **Filename** [a]_tensioner_right **Page number** 27	Joke alert Don't print part rm * If you have no idea what I am talking about please ignore this note

Printed? ☐	**Directory** STLs/Gantry/ Front_Idlers **Filename** front_idler_a_x2 **Page number** 28	x2
Printed? ☐	**Directory** STLs/Gantry/ Front_Idlers **Filename** front_idler_b_x2 **Page number** 28	x2
Printed? ☐	**Directory** STLs/Gantry/AB_Drive_Units **Filename** a_drive_frame_lower **Page number** 34	
Printed? ☐	**Directory** STLs/Tools **Filename** AB_pulley_jig **Page number** 35	Tool

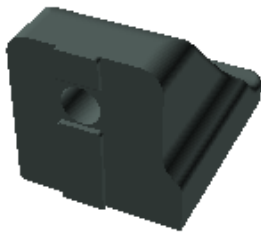|		
  Printed? ☐	**Directory** STLs/Gantry/AB_Drive_Units **Filename** b_drive_frame_lower **Page number** 37	
  Printed? ☐	**Directory** STLs/Gantry/AB_Drive_Units **Filename** b_drive_frame_upper **Page number** 38	
	T-Nuts M5 AKA "Roll in" T nuts **Page number** 44	They don't have to go into the end. They can be "rolled in". No need to disassemble frame.
	Warning Lone M3 on page. Pretending to be M5 **Page number** 44	Beware Of of the lone lone M3 T-nut. Which I read as an M5 and had to get it back out.
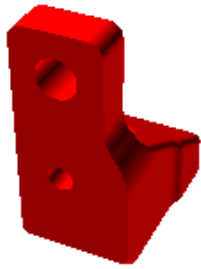
 Printed? ☐	**Directory** STLs/Gantry/AB_Drive_Units **Filename** [a]_y_endstop_bumper **Page number** 50	
 Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_rear_extrusionbracket_left **Page number** 53	
 Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_rear_extrusionbracket_right **Page number** 55	
 Printed? ☐	**Directory** STLs/Tools **Filename** MGN9_rail_guide_x2 **Page number** 58	x2
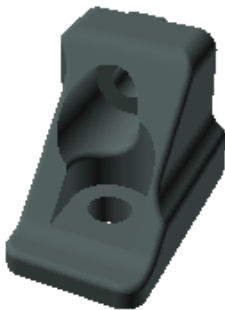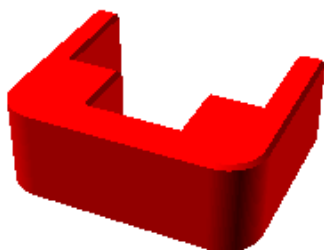
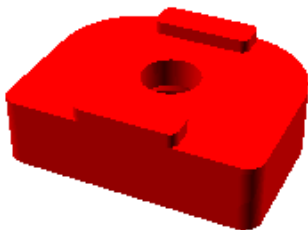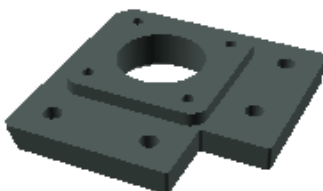|		
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_carriage_rear_3hole **Page number** 64	Check directory for 2 hole version if required on cable chain
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_stepper_rear **Page number** 65	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** [a]_z_rail_stop_x3 **Page number** 68	x3
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_stepper_left **Page number** 69	
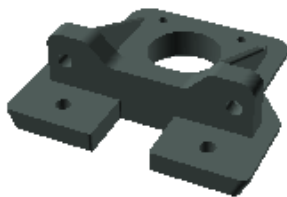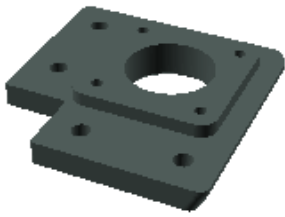
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_stepper_right **Page number** 73	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_carriage_left **Page number** 77	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** [a]_z_carriage_left **Page number** 77	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** [a]_z_carriage_right **Page number** 79	
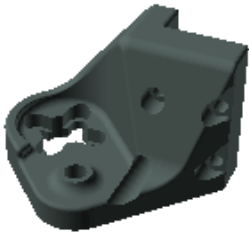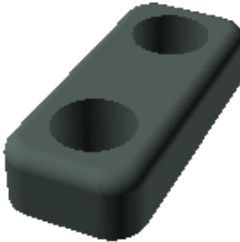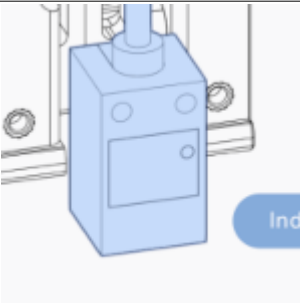
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_carriage_right **Page number** 79	
Printed? ☐	**Directory** STLs/Skirt **Filename** corner_a_x2 **Page number** 90	x2
Printed? ☐	**Directory** STLs/Skirt **Filename** corner_b_x2 **Page number** 90	x2
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_corner_baseplate_a_x2 **Page number** 90	x2

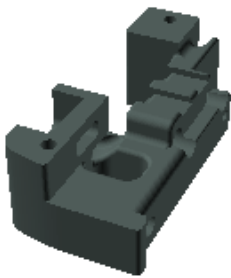|		
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_corner_baseplate_b_x2 **Page number** 90	x2
	Page 99 has been ignored for the purposes of this doco . It is an overview or copy of the pic on 98. Also it has way too many parts on it. Normal service to resume	Page ignored
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** probe_retainer_bracket **Page number** 100	Note: There are two similar shapes. The one displayed and the 9mm one. probe_retainer_bracket_9mm.st But which one? See below
	Which probe_retainer_bracket? This all depends on your probe see page 111 After putting my X carriage together on page 110, my probe was flush with the X carriage. I decided to go with the standard probe_retainer_bracket. It seem to work fine.	My probe from the formbot kit was a Omron TL-Q5MMC2-Z It was flush with the X carriage when it was assembled
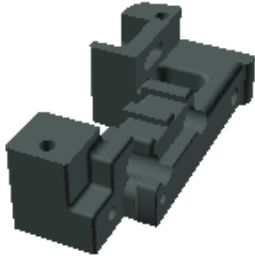
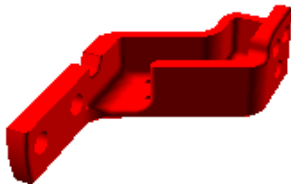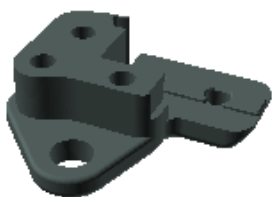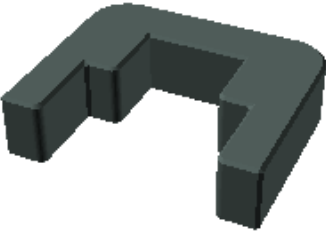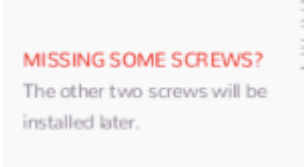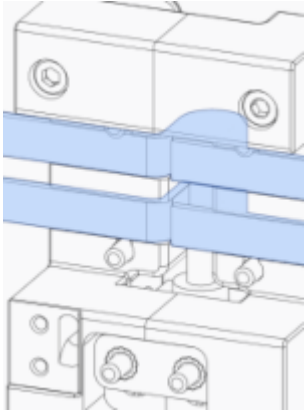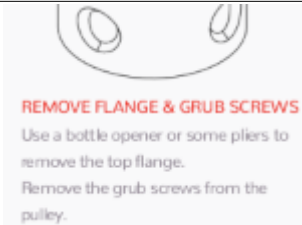|		
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** x_carriage_frame_left **Page number** 100	I had to gently sand the top of this part so it would mate properly
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** x_carriage_frame_right **Page number** 100	I had to gently sand the top of this part so it would mate properly
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** [a]_xy_joint_cable_bridge_ 3hole **Page number** 100	Note: Check directory for 2 hole version if required for cable chain Mine's a 3 hole
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** xy_joint_right_upper_MGN12 **Page number** 101	NB if you are using a brim to prevent ABS warping you may have to remove it round the crevice outlined below

	Notes Crevice outlined in blue on Right XY Joint. May need to be "cleaned out" with a craft knife if you have printed with a brim.	
  Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** xy_joint_right_lower_MGN12 **Page number** 102	
  Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** xy_joint_left_upper_MGN12 **Page number** 105	
  Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** xy_joint_left_lower_MGN12 **Page number** 106	

  Printed? ☐	**Directory** STLs/Tools **Filename** MGN12_rail_guide_x2 **Page number** 113	x2
MISSING SOME SCREWS? The other two screws will be installed later.	Page 116 Missing screws. To be installed later. They are installed on Page 204 when you put the XY end stops in.	Decided to install anyway after de-racking to keep it all secure. Will remove when I need to later.
	Installing the belt (page124) The manual has you putting the belt on a single x_carriage_frame (from page 100). The Youtube video however secured both belts with x_carriage_frame_left. The belts are then threaded through the machine and then secured with the x_carriage_frame_right. Only then are the x_carriage_frame_left and x_carriage_frame_right are then bolted together.	To my mind the Youtube way makes much more sense as you break the problem down into smaller tasks and you are not left holding 4 belt ends and screwing bolts in at the same time. I however did it the official way before stumbling onto the youtube method.
The side edges were easy to line up but I started with a lip ie too soon and only found out once I have put the rest of	**Installing magnetic sheet.** But which side? The aluminium sheet has V holes cut into it for the V head of the screws. The manual seems to suggest. That	Note: My magnetic sheet and aluminium sheet was a slight rectangle. If yours is to, make sure the

the magnet at the end. Just thought I would mention it so you don't make the same mistake.	side. Looks like I will have to drill from the other side to get the hole and then cut it out manually with a craft knife. I will update if this is wrong. **Page number** 127	long side of the magnetic sheet is matched to the long side of the aluminium sheet.
	Non printable part. Thermal fuse **Page number** 129	Please skip. Non printable part.
  Printed? ☐	**Directory** STLs/Z_Assembly **Filename** nozzle_probe **Page number** 130	
 REMOVE FLANGE & GRUB SCREWS Use a bottle opener or some pliers to remove the top flange. Remove the grub screws from the pulley.	**Page number** 130 I put the bottle opener in a vice and then used a long 3mm bolt in the in the GT2 for leverage and it just popped off.	"**Apply the required force to fully seat the pulley in the printed part**" Right okay. Obviously your related to he-man. In the end I used a vice to get it in parallel.
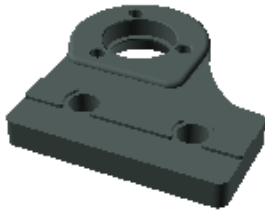
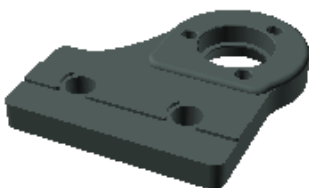|		
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_bed_left **Page number** 134	
GE5C Bearing	**Page number** 134 Snap fit for the GE5C bearing? I found a 8mm Roller skate bearing went nicely over the top of the GE5C bearing and protected the middle while I used a vice to push it in. Not recommending this, but it worked for me. Could an M8 bolt do the same job?	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_bed_rear **Page number** 136	
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_bed_right **Page number** 138	
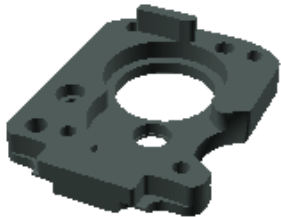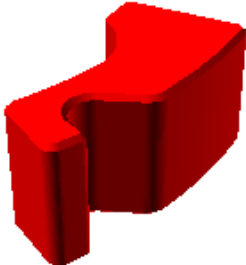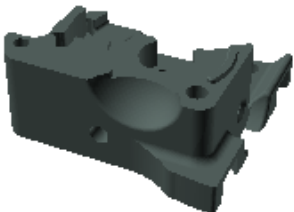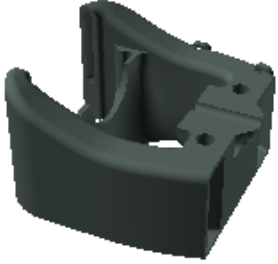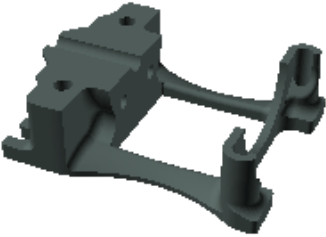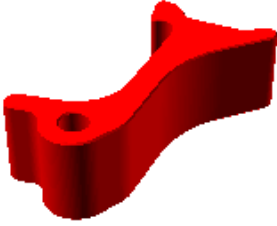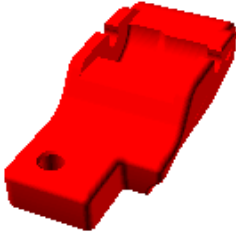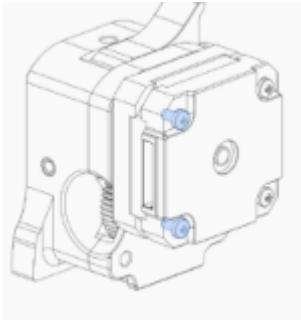
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/Direct Feed **Filename** extruder_motor_plate **Page number** 146	
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/ Direct Feed **Filename** chain_anchor_3hole **Page number** 146	Check directory for 2 hole version if required
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/ Direct Feed **Filename** [a]_latch_shuttle **Page number** 146	
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/ Direct Feed **Filename** extruder_body **Page number** 147	

Printed? ☐	**Directory** STLs/Gantry/X_Axis/X_Carriage/ Toolheads/Dragon **Filename** printhead_front_dragon **Page number** 148	DRAGON mount DO YOU HAVE A DRAGON hot end? The fixing screws for a dragon HF to a trident are 4x M2.5 length 10mm. Possibly 9mm.
	What are these highlighted marks on page 152 with regards to the tool head? They are holes that you can put zip ties through. Which in turn can be used to secure the heater and temperature wires from the extruder.	The zip tie holes might need to be cleaned out with a craft knife before use.
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/Toolheads/ Dragon **Filename** printhead_rear_dragon **Page number** 149	DRAGON mount DO YOU HAVE A DRAGON hot end?
	PTFE from formbot was marked 4x2	Marked 4x2 PTFE and was cut as per manual.
	Page 161 M3x30 SHCS in manual replaced with M3x25 SHCS as the 30s stick out the back of the extruder and seemed wrong. Will report if this causes problems down the line.	

 Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/Direct Feed **Filename** [a]_latch **Page number** 161	
 Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/Direct Feed **Filename** [a]_guidler **Page number** 161	
	Page 162 Carefully remove the screws from the left side of the motor. NB I suggest you start with taking a screw out of the **RIGHT side** and then put it straight back in. If it comes out fine cool. Now do the left as per instructions.	If however you stuff the screw head up completely because you have used the wrong screw driver. Eg Phillips vs Posix. Now you have a chance to go and get the right tool and can start again on a fresh screw head which you actually do need to take out.
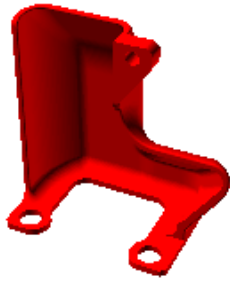
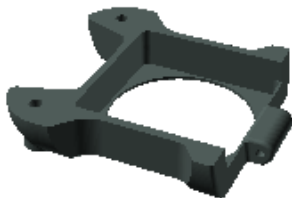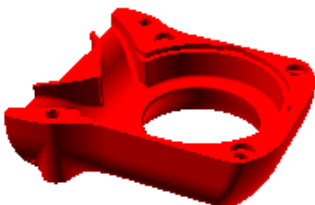|		
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage/Direct Feed **Filename** [a]_connector_cover **Page number** 163	
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** blower_housing_rear **Page number** 166	
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** hotend_fan_mount **Page number** 166	
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/X_Carriage **Filename** [a]_blower_housing_front **Page number** 167	
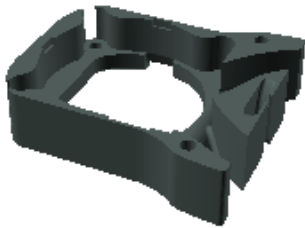
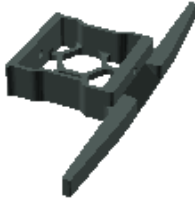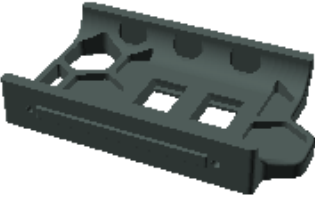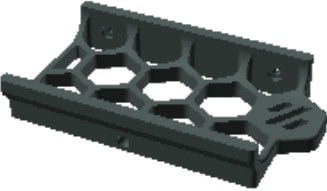|		
Printed? ☐	**Directory** STLs/Z_Assembly **Filename** z_cable_chain_mount_3hole **Page number** 173	Check directory for 2 hole version if required
Printed? ☐	**Directory** STLs/Panels **Filename** wire_corner_left **Page number** 175	
Printed? ☐	**Directory** STLs/Panels **Filename** wire_corner_right **Page number** 176	
Printed? ☐	**Directory** STLs/Panels **Filename** deck_support_3mm_x8 **Page number** 178	X 8 NB there are two variants 4mm and 3mm deck_support_4**mm**_x8
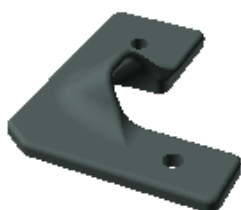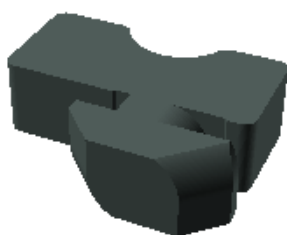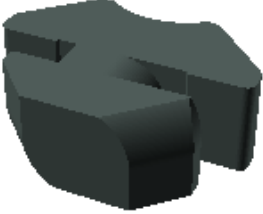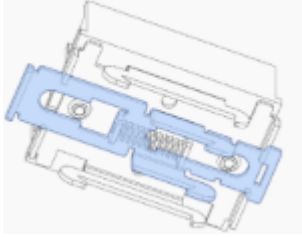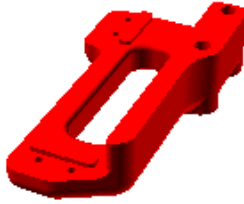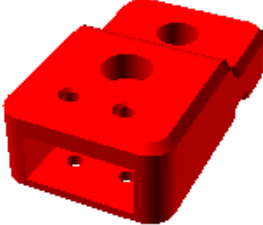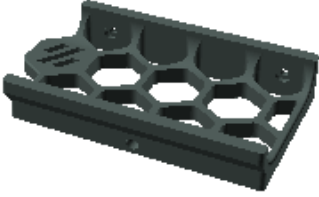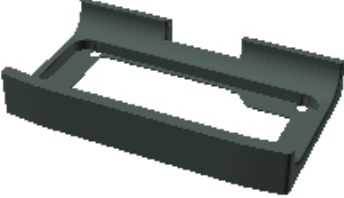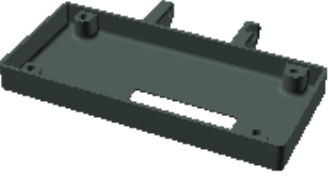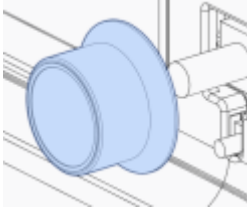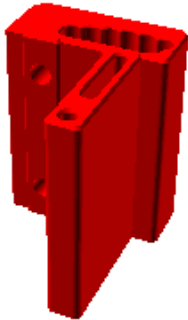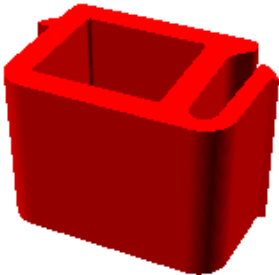
Printed? ☐	**Directory** **STLs/ElectronicsBay** **Filename** DIN_center_support_x2 **Page number** 181	x2
Printed? ☐	**Directory** **STLs/ElectronicsBay** **Filename** DIN_frame_mount_x4 **Page number** 181	x4
Printed? ☐	**Directory** STLs/ElectronicsBay **Filename** cable_frame_anchor_x6 **Page number** 185	X6
Printed? ☐	**Directory** STLs/ElectronicsBay **Filename** pcb_din_clip_v2_x5 **Page number** 189	x5

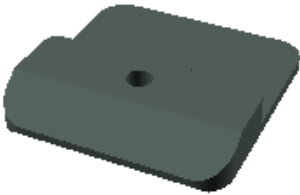|		
Printed? ☐	**Directory** STLs/ElectronicsBay **Filename** raspberrypi_bracket **Page number** 189	
Printed? ☐	**Directory** STLs/ElectronicsBay **Filename** rs25_psu_bracket **Page number** 191	
Printed? ☐	**Directory** STLs/ElectronicsBay/ Controller_Mounts **Filename** Octopus_bracket_2pc **Page number** 193	Note: do you have a Octopus? Other mounts in this directory include Duet, GTR,SKR,Spider etc
Printed? ☐	**Directory** STLs/Skirt **Filename** power_inlet_filtered **Page number** 195	
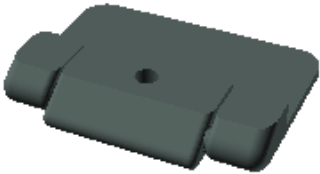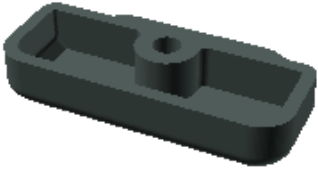
Printed? ☐	**Directory** STLs/ElectronicsBay **Filename** PSU_stabilizer_50mm **Page number** 198	
	Not a printed part. Skip **Page number** 199	Not printed part. Skip
Printed? ☐	**Directory** STLs/Gantry/ X_Axis/XY_Joints **Filename** [a]_endstop_pod_microswitch **Page number** 203	
Printed? ☐	**Directory** STLs/Gantry/ AB_Drive_Units **Filename** [a]_y_endstop_housing **Page number** Page not found	Warning We could not find this part in the official manual but it's in the STLs. Additionally, the Y endstop is held within the [a]_endstop_pod_microswitch part
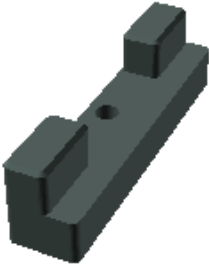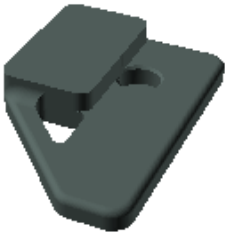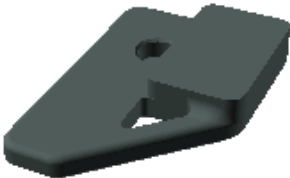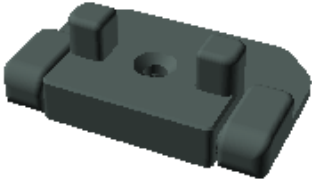
Printed? ☐	**Directory** STLs/Gantry/ AB_Drive_Units **Filename** [a]_wire_cover **Page number** 225	
Printed? ☐	**Directory** STLs/Skirt **Filename** side_fan_support_x2 **Page number** 233	x2
Printed? ☐	**Directory** STLs/Skirt **Filename** keystone_panel **Page number** 233	
Printed? ☐	**Directory** STLs/Skirt/250 **Filename** front_skirt_a_250 **Page number** 233	WARNING 250mm x 250mm do you have this bed size?
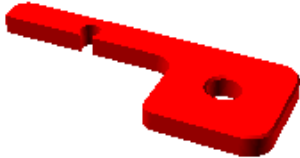
Printed? ☐	**Directory** STLs/Skirt/250 **Filename** front_skirt_b_250 **Page number** 233	WARNING 250mm x 250mm do you have this bed size?
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_mini12864_case_ front_insert **Page number** 234	
Printed? ☐	**Directory** STLs/Skirt **Filename** mini12864_case_front **Page number** 234	
Printed? ☐	**Directory** STLs/Skirt **Filename** mini12864_case_rear **Page number** 235	
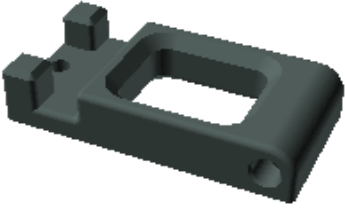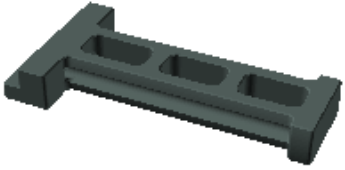
	Warning: Joke detected Can't find the round thing, You make my heart sing, Wild thing. You make everything groovie. ABS mainly. **Page number** 235	Not stl part Please skip.
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_mini12864_case_hinge **Page number** 236	
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_keystone_blank_insert_x2 **Page number** 237	x2
Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_skirt_logo_x2 **Page number** 237	X2

 Printed? ☐	**Directory** STLs/Skirt **Filename** rear_center_skirt_250 **Page number** 241	WARNING 250mm x 250mm do you have this bed size?
 Printed? ☐	**Directory** STLs/Skirt/250 **Filename** side_skirt_a_250_x2 **Page number** 242	WARNING 250mm x 250mm do you have this bed size? x2
 Printed? ☐	**Directory** STLs/Skirt/250 **Filename** side_skirt_b_250_x2 **Page number** 242	WARNING 250mm x 250mm do you have this bed size? x2
 Printed? ☐	**Directory** STLs/Skirt **Filename** [a]_60mm_fan_blank_insert_x2 **Page number** 244	x2

Printed? ☐	**Directory** STLs/Panels **Filename** bottom_panel_clip_x4 **Page number** 250	x4
Printed? ☐	**Directory** STLs/Panels **Filename** bottom_panel_hinge_x2 **Page number** 250	x2
Printed? ☐	**Directory** STLs/Panels **Filename** corner_panel_clip_4mm_x8 **Page number** 254	Warning 4mm or 6mm part? x8
Printed? ☐	**Directory** STLs/Panels **Filename** midspan_panel_clip_4mm_x7 **Page number** 254	Warning 4mm or 6mm part? x7

Printed? ☐	**Directory** STLs/Panels/ Front_Doors **Filename** latch_x2 **Page number** 263	x2
Printed? ☐	**Directory** STLs/Panels/ Front_Doors **Filename** handle_a_x2 **Page number** 263	x2
Printed? ☐	**Directory** STLs/Panels/ Front_Doors **Filename** handle_b_x2 **Page number** 263	x2
Printed? ☐	**Directory** STLs/Panels/ Front_Doors **Filename** door_hinge_x6 **Page number** 265	x6

Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** exhaust_filter_housing **Page number** 268	
Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** [a]_filter_access_cover **Page number** 270	
Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** [a]_exhaust_filter_mount_x2 **Page number** 272	x2
Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** exhaust_filter_grill **Page number** 272	

 Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** bowen_retainer **Page number** 275	
 Printed? ☐	**Directory** STLs/Exhaust_Filter **Filename** spool_holder **Page number** 276	
 Printed? ☐	Steve (Team member and person who "drove the bus home on the Trident project") **Page number** 280	Man in the red shirt. Well reddish. It's in that spectrum
 Printed? ☐	Eddie (Team member) **Page number** 280	This is not a red shirt.
 Printed?	Dunar (Team member) **Page number** 280	Support structure may be required for the beard.

☐		
 Printed? ☐	Maks Zolin AKA [a]_Russiancatfood Glorious and fearless leader **Page number** 281	May require multiple materials to print.
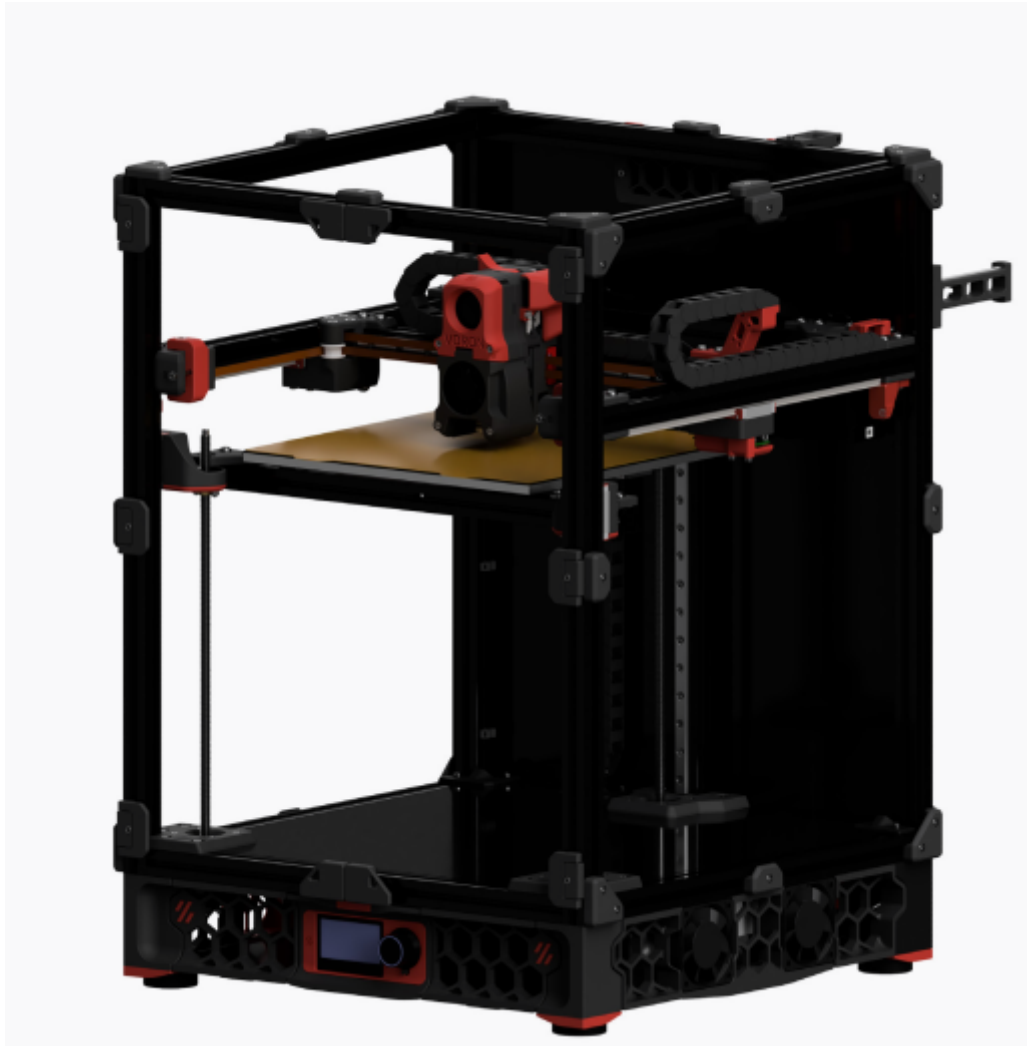
Done!

I have one question for you.

Did you print the tool on page 58 in the accent colour?

☐ Yes, because it's cool

☐ No, Mr George, Because I am on to you

Place ✓ above

Note: I spent far too much time on this doco. I can only imagine the hard work that the Voron team has put into actually making the printer itself. So from a personal point of view I would like to say thanks to the official team here.

Credits list

I suddenly realised that a lot of people had commented and given great suggestions to improve this doco and I had not given them their due credit. If I missed you, then opps. My bad. In my defence I fully expected this project to be ignored, So without further ado here is the list.

Credit	Condensed Request	Response
mapsedge	Bigger font please. I am getting older and the text is hard to read	I may have over compensated. Done as requested.
Claudermilk	Here are some things I would change	I think you have written more than me. Done as requested.
Appropriate_Rice3348	4mm nossil? That's a big nozzle. Should mounds" be "mounts"?	Updated to 0.4mm nossle. Updated spelling.
imawsm_	anti-aliasing	Added to things to do
jpgadbois	I initially thought this was a guide to setting up printing parameters on a Trident rather than how to print parts for a Trident	Good point. Will update file name in git when (and If) I do the upcoming 1.10 Super trident.
mvrckcompany	What about removing the background from each of the part pictures? Add in some shadows to make it pop.	Background gone. Unfortunately adding shadow is beyond my limited knowledge
Leang	Color the accent parts differently in the thumbnails for easy visual difference.	Done as requested
imoftendisgruntled	I also think the manual could use a page at the front of every section that has a "For this section you will need:" header followed by pictures and filenames of the STLs along with the hardware bits from the BOM.	Good point. However I am simply following the official manual. But good point.
Castorreddit	Best way of doing this is not on reddit, but on github.	Thanks and done.
TheSerialHobbyist	I'm *pretty* sure that it is the 3mm version (on that page). That is what I used	Changed from 4mm to the 3mm version on page 178.
Interesting-Tough640	Dragon bolts 9mm. I measured the gap and cut it down to 9mm and it worked perfectly.	Will try 10mm to see if they work. Updated from 12mm

And Cut.