**Title** Trident 1-9 complementary 3dPartsBuild doco (Proposed future filename)

**File name** Voron 1.9 3dprinting guide.pdf (You put . In a filename?)

**Date** 2021-12-17 (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

<u>Print parameters</u> (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  $\Box$  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<br>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<br>AKA<br>"Roll in" T nuts<br><b>Page number</b><br>44                   | They don't have to go into the end.  They can be "rolled in".  No need to disassemble frame. |
| M3 T-Nut | 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<br>2 hole version if<br>required<br>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   |
|--|---|--|
| ACTION COMMITTEE TO SERVICE AND ACTION COMMITTEE SE | 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   |
|  | <b>Directory</b><br>STLs/Gantry/<br>X_Axis/X_Carriage   | Note: There are two similar shapes. The one displayed and the 9mm one. |
|  | <b>Filename</b> probe_retainer_bracket  | probe_retainer_brac<br>ket_9mm.st                                      |
| Printed?   | Page number<br>100  | But which one?<br>See below  |
|  | Which probe_retainer_bracket?   |  |
|  | This all depends on your probe see page 111   | My probe from the formbot kit was a                                    |
| Ind  | After putting my X carriage together on page 110, my probe  | Omron TL-<br>Q5MMC2-Z  |
|  | was flush with the X carriage.  | It was flush with the  |
|  | I decided to go with the standard probe_retainer_bracket. It seem to work fine.   | 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<br>the top of this part<br>so it would mate<br>properly                                 |
|----------|---|--|
| Printed? | Directory STLs/Gantry/ X_Axis/X_Carriage  Filename x_carriage_frame_right  Page number 100          | I had to gently sand<br>the top of this part<br>so it would mate<br>properly                                 |
| Printed? | Directory STLs/Gantry/ X_Axis/XY_Joints  Filename [a]_xy_joint_cable_bridge_ 3hole  Page number 100 | Note: Check<br>directory for 2 hole<br>version if required<br>for cable chain<br>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 |







# **Filename** MGN12\_rail\_guide\_x2

Page number 113

x2

Page 116

Missing screws. To be installed later.

Which page would they be installed later?

Will update when I know the answer. But for now I personally will be adding them.

Because I am a rebel. (Without a 3d printer)

> I can always remove them.

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.

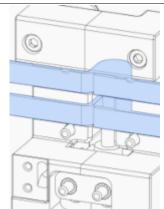
I did it the manual way successfully, but then I am good at holding things with my feet while simultaneously levitating. Fortunately my screw driver was teeth safe.

# <u>Installing the belt (page124)</u>

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.



|  | Installing magnetic sheet.  |   |
|--|---|---|
| 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 the magnet at the end. Just thought I would mention it so you don't make the same mistake. | 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 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 | Note: My magnetic sheet and aluminium sheet was a slight rectangle. If yours is to, make sure the 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<br>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. |  |
| 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<br>DO YOU HAVE A<br>DRAGON hot end? |
|----------|---|--|
| Printed? | Directory STLs/Gantry/ X_Axis/X_Carriage/Toolheads/ Dragon  Filename printhead_rear_dragon  Page number 149 | DRAGON mount<br>DO YOU HAVE A<br>DRAGON hot end? |
| 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                  |  |

| 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           |  |
| Printed? | 167  |  |

| Printed? | Directory STLs/Z_Assembly  Filename z_cable_chain_mount_3hole  Page number 173 | Check directory for<br>2 hole version if<br>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_4mm_x8  Page number 178           | X 8  NB there are two variants 4mm and 3mm  deck_support_3mm _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<br>Octopus? Other<br>mounts in this<br>directory include<br>Duet,<br>GTR,SKR,Spider<br>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.<br>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_m icroswitch 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<br>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<br>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  |

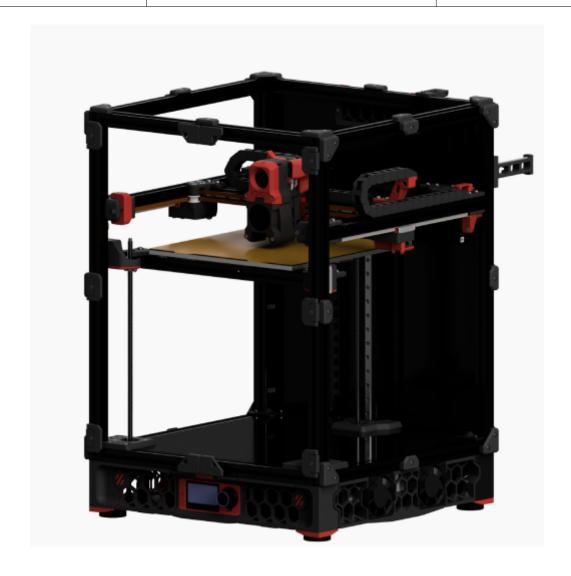
| Printed? | Directory STLs/Panels  Filename bottom_panel_clip_x4  Page number 250      | x4                                |
|----------|--|-----------------------------------|
| Printed? | Directory STLs/Panels  Filename bottom_panel_hinge_x2  Page number 250     | x2                                |
| Printed? | Directory STLs/Panels  Filename corner_panel_clip_4mm_x8  Page number 254  | Warning 4mm or<br>6mm part?<br>x8 |
| Printed? | Directory STLs/Panels  Filename midspan_panel_clip_4mm_x7  Page number 254 | Warning 4mm or<br>6mm part?<br>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 Trident project")  Page number 280 | Man in the red shirt.<br>Well reddish.<br>It's in that spectrum |
| Printed? | Eddie<br>(Team member)<br>Page number<br>280  | This is not a red<br>shirt.                                     |
| Printed? | Dunar<br>(Team member)<br><b>Page number</b><br>280   | Support structure may be required for the beard.                |

# Maks Zolin AKA [a]\_Russiancatfood Glorious and fearless leader Printed? 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   |
|----------------------|--|--|
| <u>mapsedge</u>      | 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.<br>Updated spelling.  |
| <u>imawsm_</u>       | anti-aliasing  | Added to things to do  |
| <u>jpgadbois</u>     | 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.   |

And Cut.