

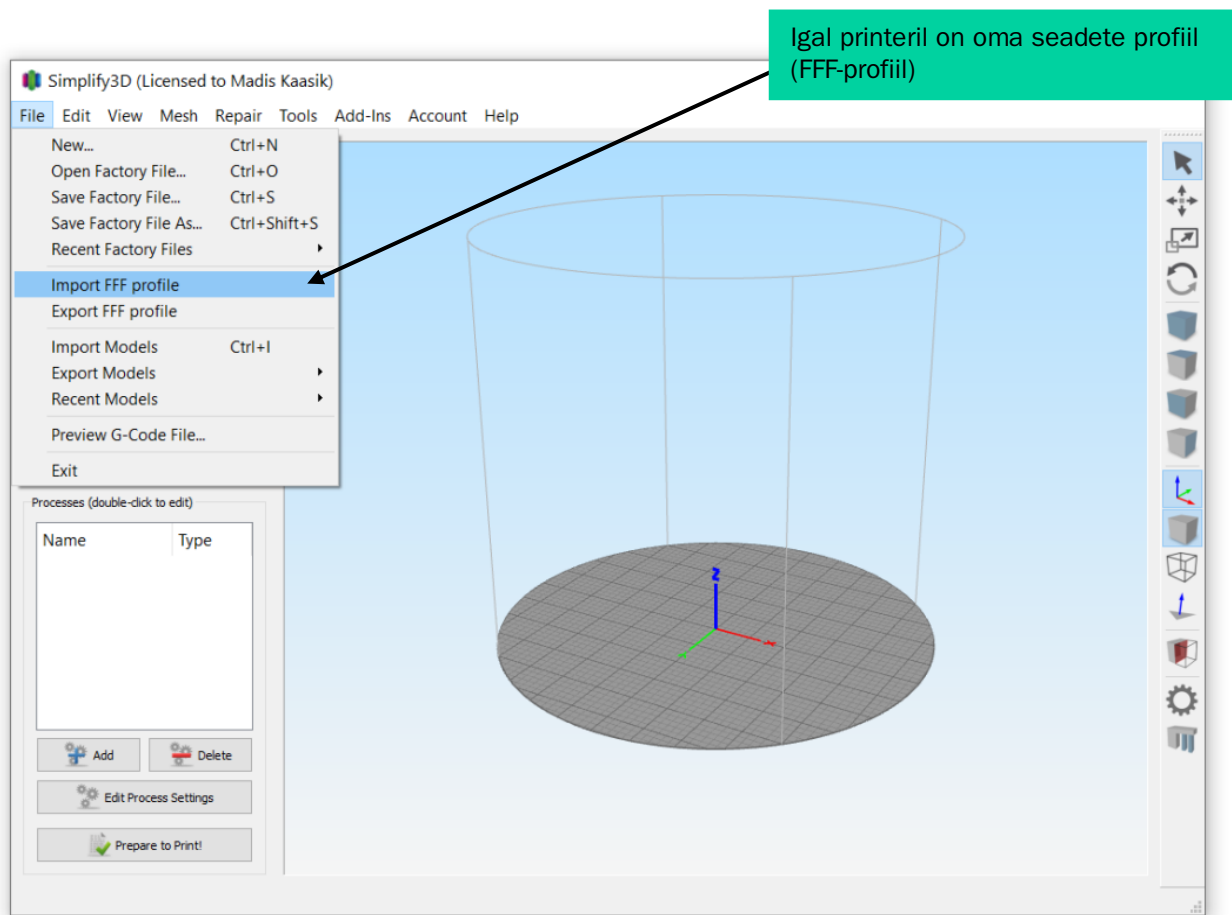
# EKA

**Delta 700 3D-printeri kasutusjuhend  
Simplify3D jaoks**

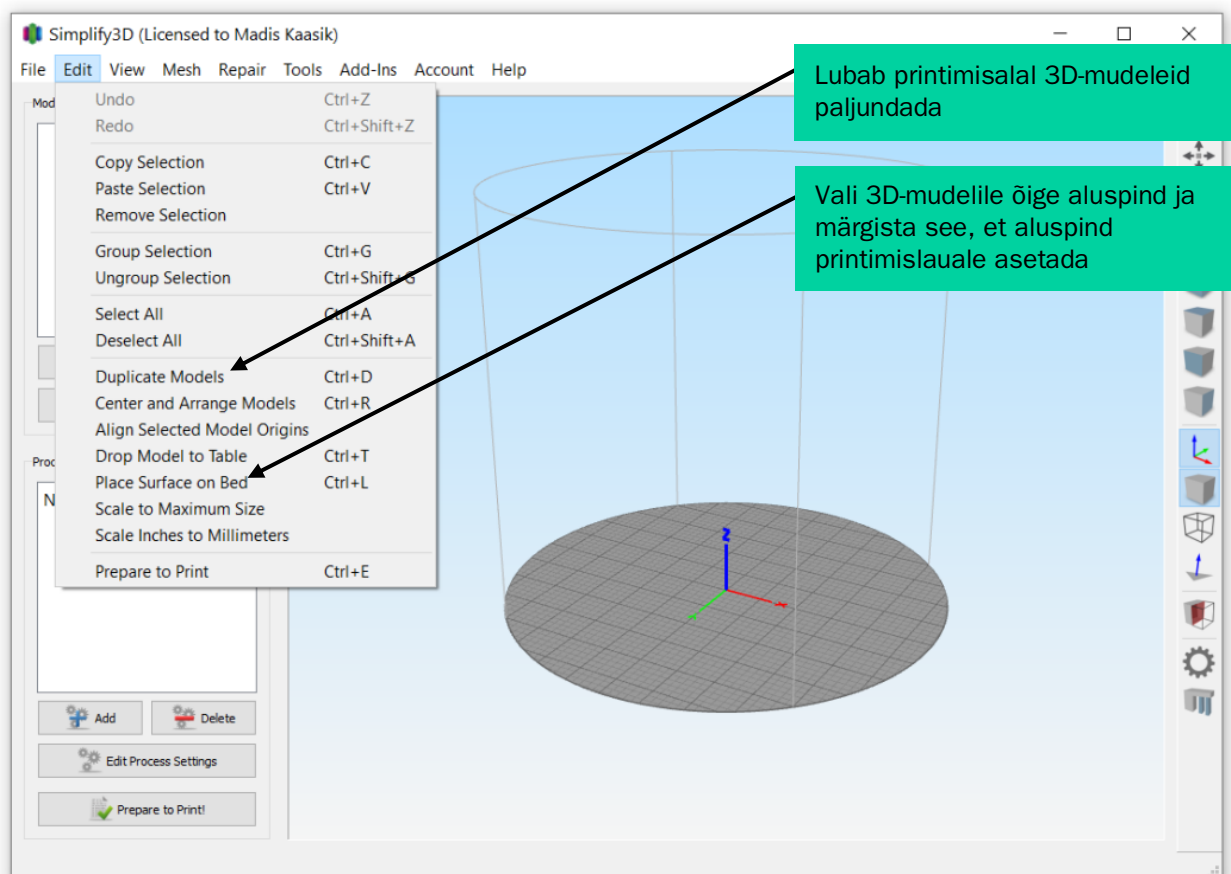
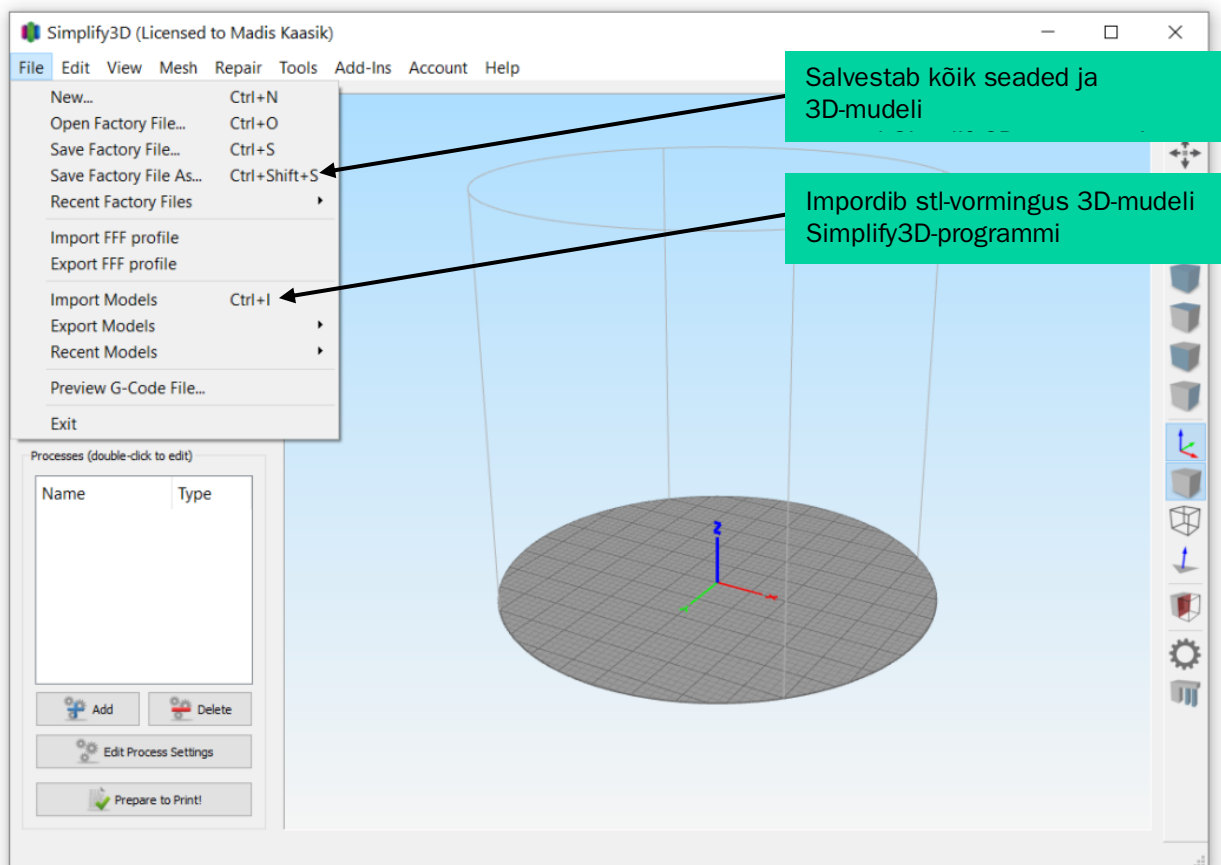
## **Dokumendis käsitletakse alljärgnevat:**

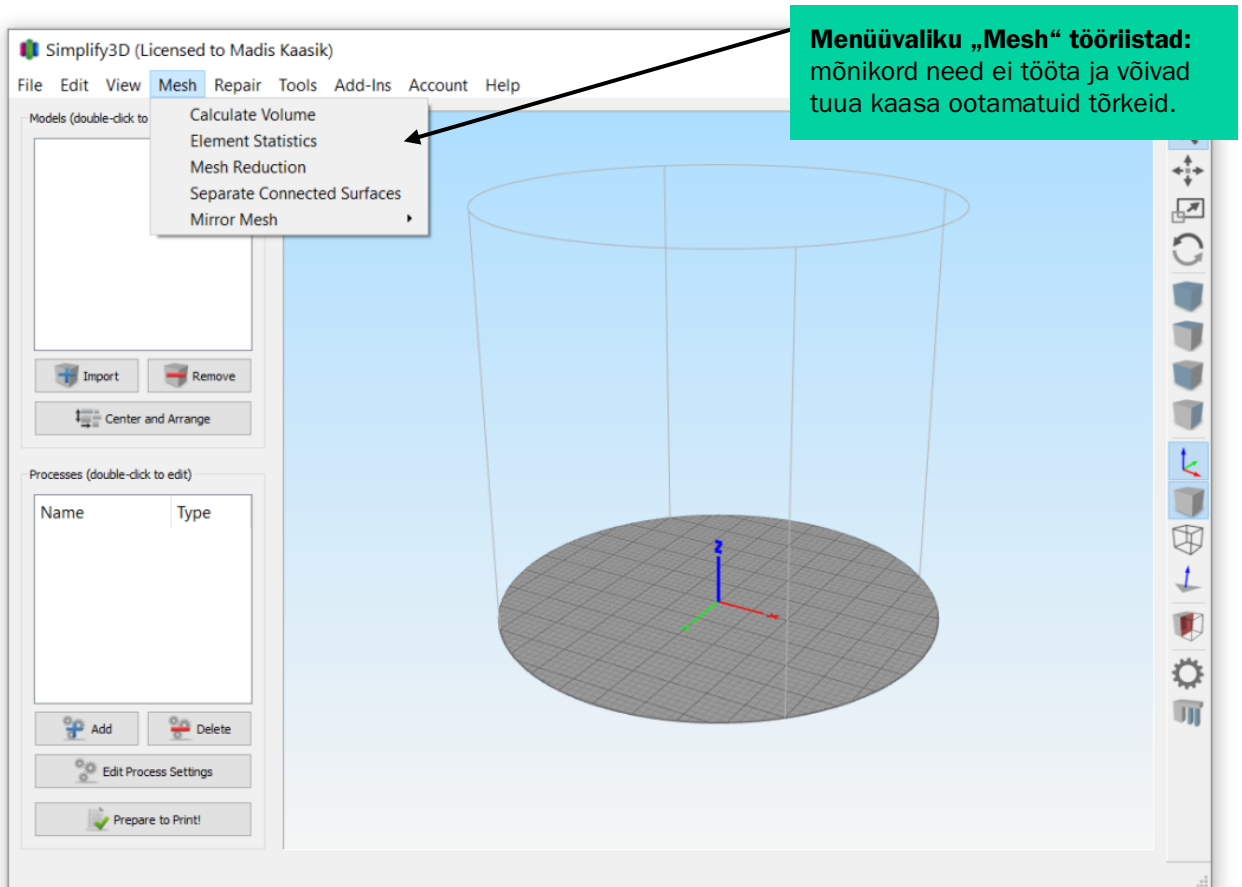
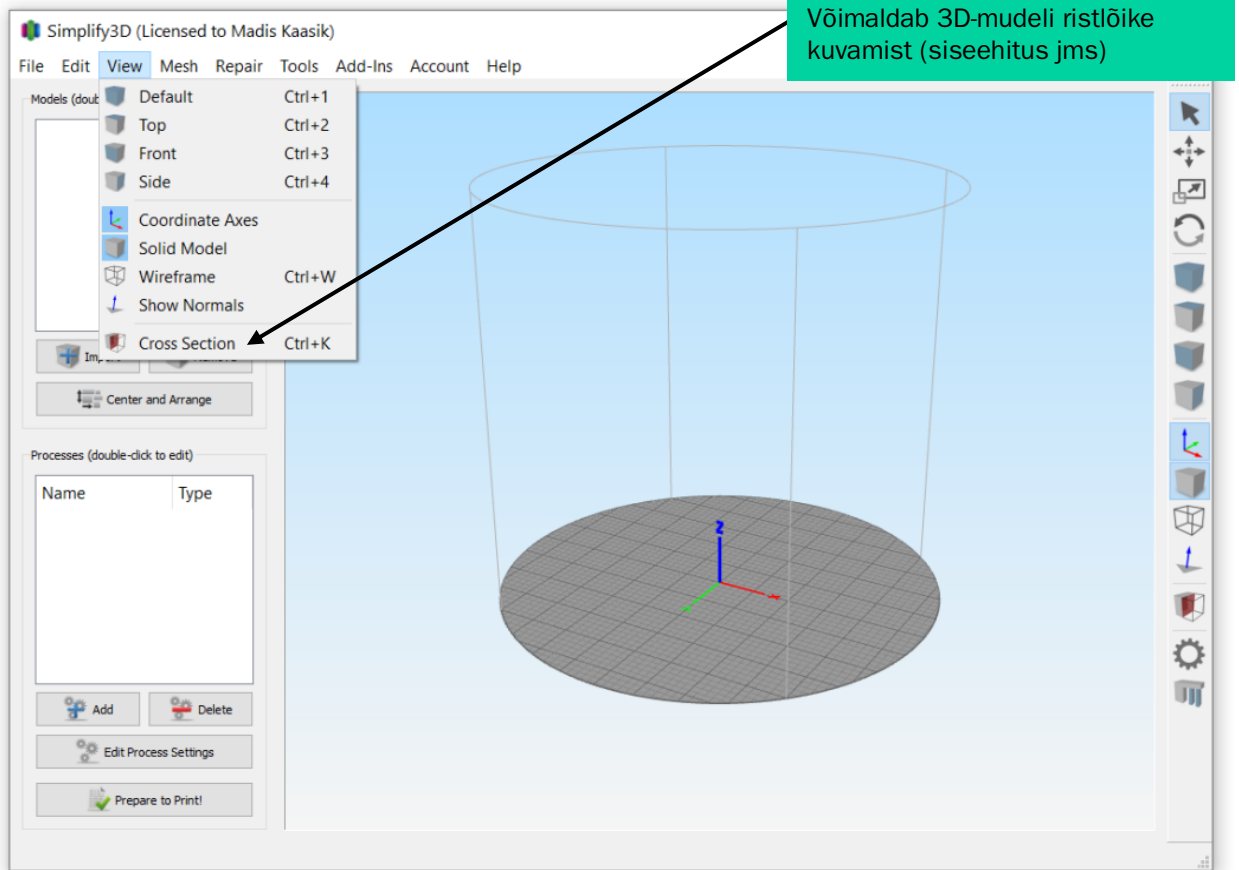
- 1.** Kuidas uut printerit esimest korda häälestada (lk 3)
- 2.** Simplify3D enim kasutatavad nupud ja sakid (lk 4–8)
- 3.** Punkthaaval printimisjuhiseid (lk 9–23);  
kui prindid G-koodide importimisega, mine kohe lk-le 23)
- 4.** Seadme juhtpaneeli juhiseid (lk 24–26)

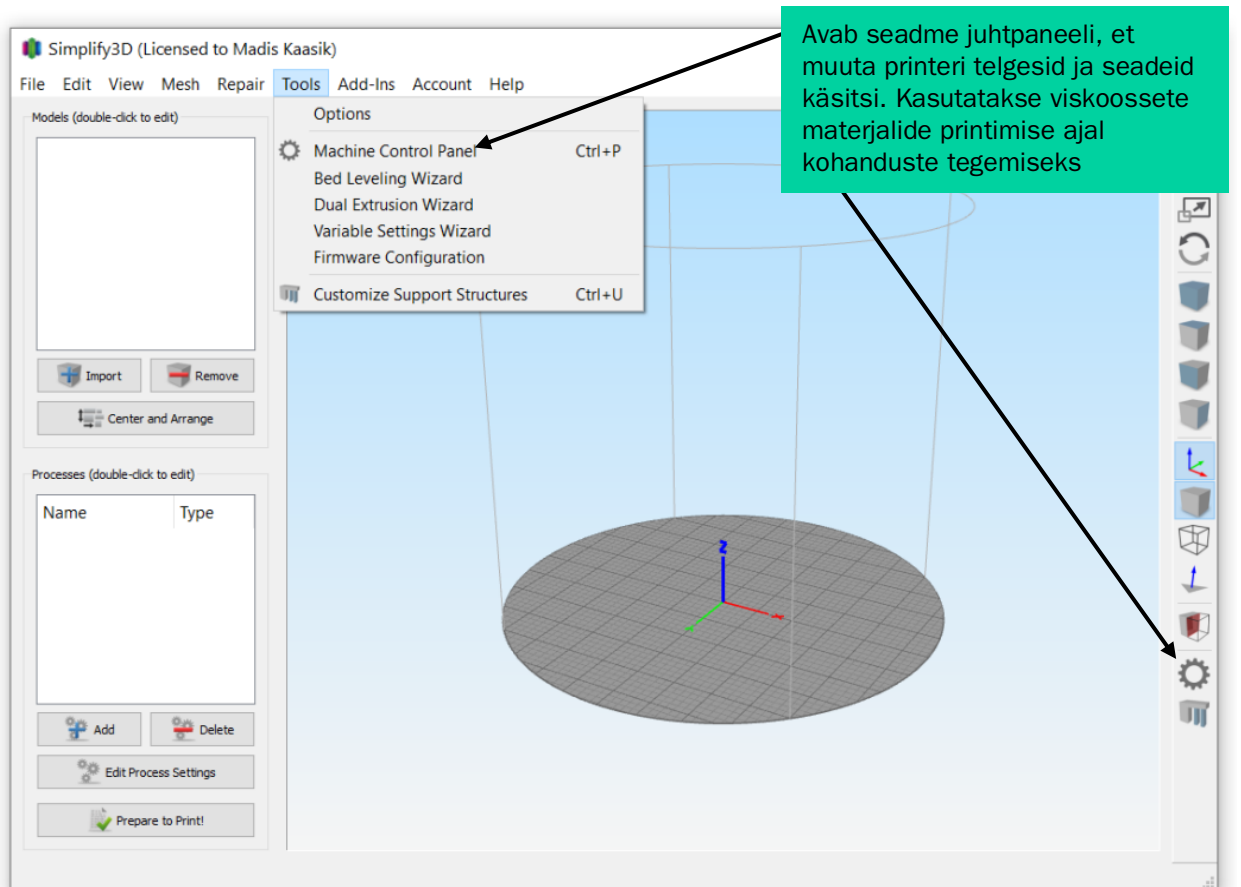
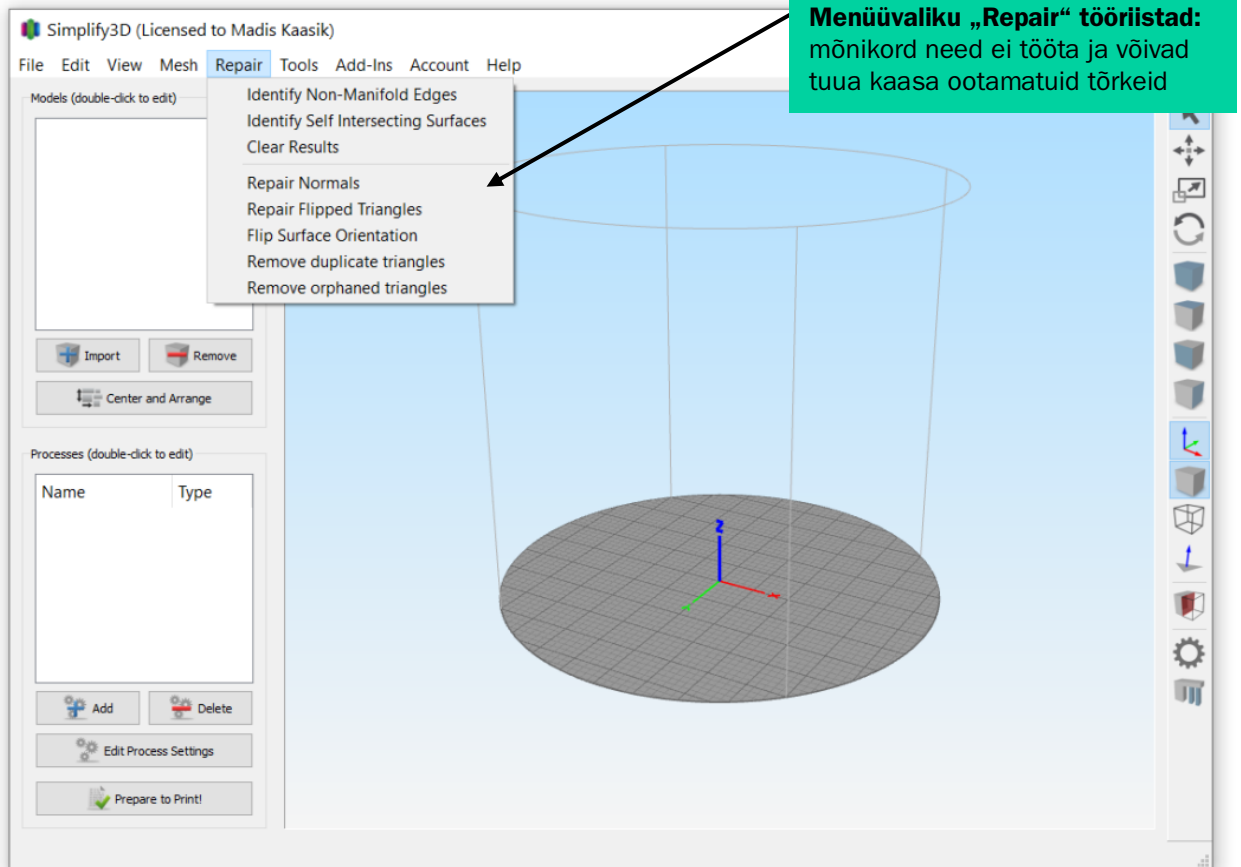
# 1. Kuidas uut printerit esimest korda häälestada

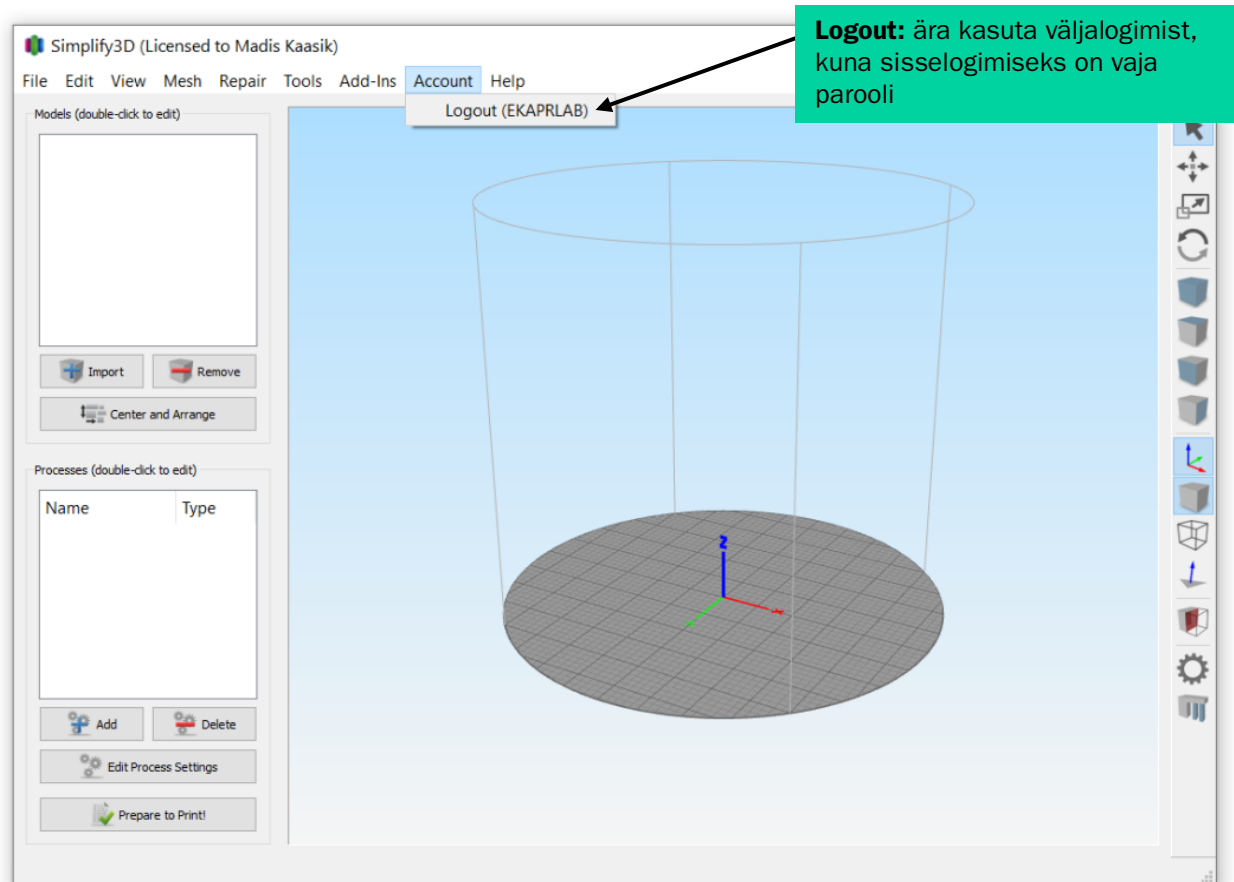
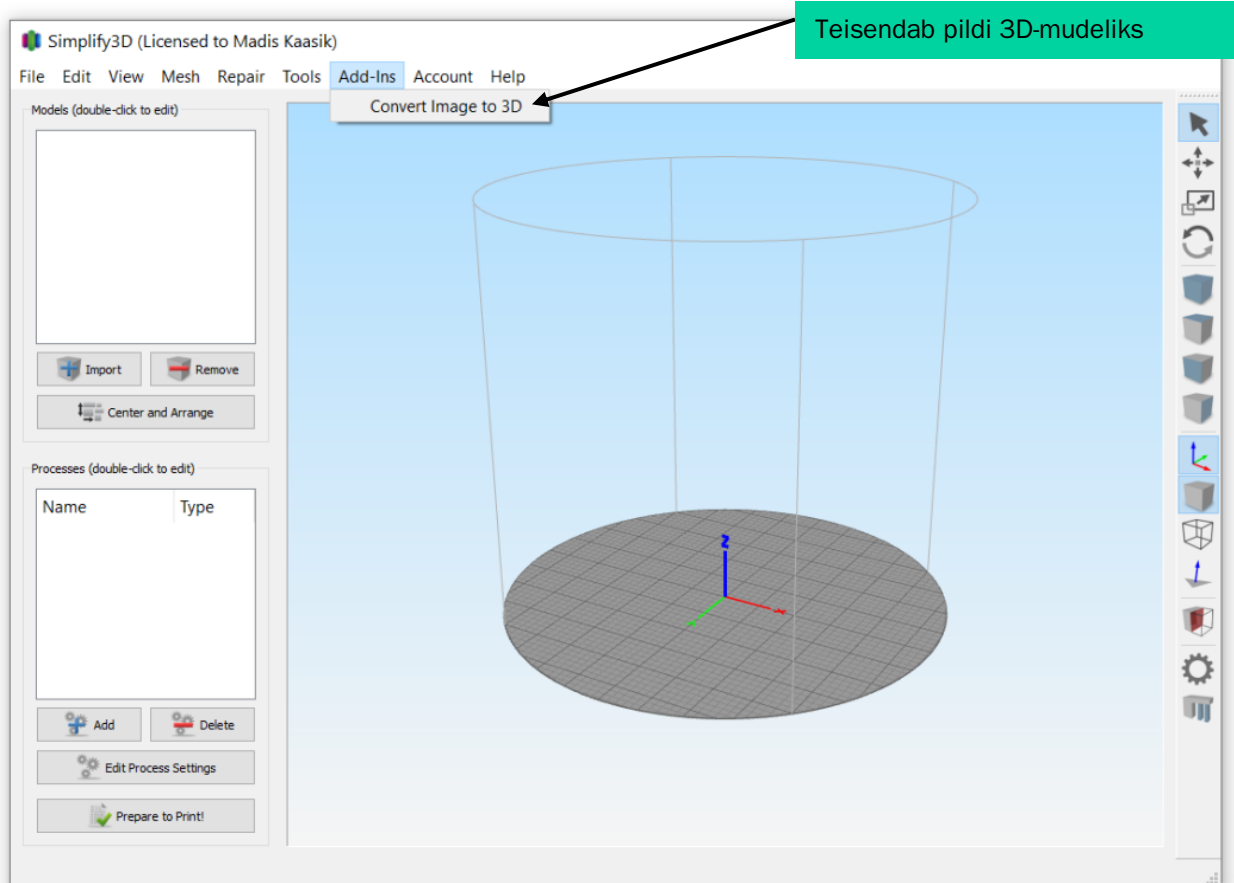


## 2. Simplify3D enim kasutatavad nupud ja sakid

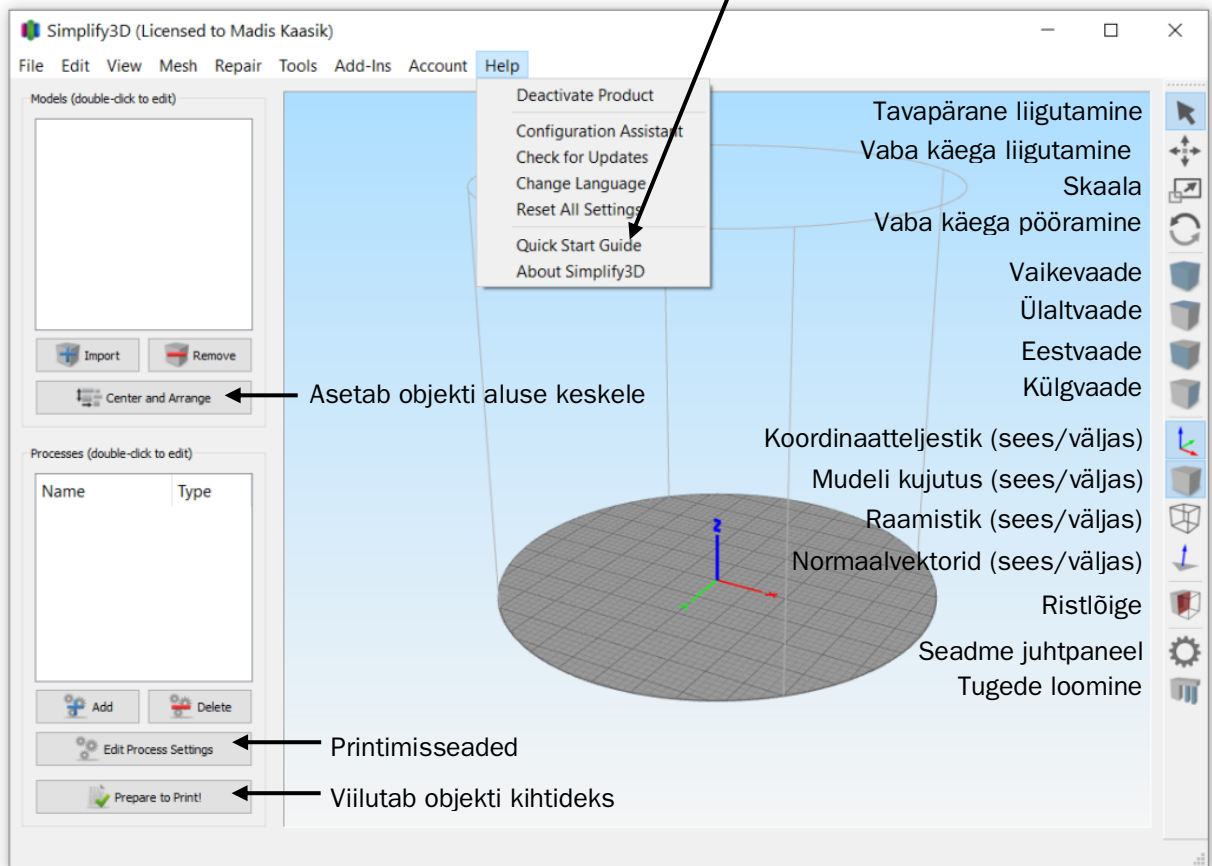








**Kiirjuhend**, kust leiab lisainfot





### 3. Punkthaaval printimisjuhised (kui prindid G-koodide importimisega, jäta vahele ja liigu kohe lk-le 24)

**Punkt 01:** impordi stl-vormingus fail

**Punkt 02:** tee mudeli peal topeltklõps, et avada seadete paneel (saad muuta orientatsiooni, skaalat ja asukohta)

**Punkt 03:** ava printimisseaded

The screenshot shows the Simplify3D software interface. The main window displays a 3D model of a yellow vase on a grey base, centered within a blue cylindrical bounding box. The interface includes a menu bar (File, Edit, View, Mesh, Repair, Tools, Add-Ins, Account, Help) and a toolbar on the right. On the left, there are panels for 'Models' and 'Processes'. The 'Models' panel shows a list with 'Sample - Vase - STL...' and buttons for 'Import', 'Remove', and 'Center and Arrange'. The 'Processes' panel has a table with 'Name' and 'Type' columns, and buttons for 'Add', 'Delete', 'Edit Process Settings', and 'Prepare to Print!'. On the right, a settings panel is open, showing options for 'Change Position', 'Change Scaling', and 'Change Rotation'. The 'Change Position' section includes X Offset (-5,44 mm), Y Offset (1,74 mm), and Z Offset (-0,30 mm). The 'Change Scaling' section includes Size (mm) and Scale (%) for X (71,96 mm, 100,00%), Y (73,59 mm, 100,00%), and Z (102,05 mm, 100,00%), with a checked 'Uniform Scaling' option. The 'Change Rotation' section includes X, Y, and Z Rotation (all 0,00 deg). A red dashed box highlights the settings panel, and arrows point from the callout boxes to the 'Import' button, the 'Change Position' section, and the 'Edit Process Settings' button.

**Punkt 04:** vali rippmenüüst õige printer

Algne (**original**) tähendab, et see printeriprofiil töötab printeriseadetega kõige paremini

**Punkt 05:** salvesta uus „algne“ printeriprofiil enda ja oma projekti nimega

FFF Settings

Process Name: Process 1

Select Profile: EKA delta 700 - original - 05082020

Auto-Configure: EKA delta 700 - original - 05082020

PLA Medium

General Settings

Infill Percentage: [Slider]

Extruder List (click item to edit settings)

Primary Extruder

Primary Extruder Toolhead

Overview

Extruder Toolhead Index: Tool 0

Nozzle Diameter: 6,00 mm

Extrusion Multiplier: 0,90

Extrusion Width: Auto Manual 0,40

Ooze Control

Retraction Retraction Distance: 1,00

Extra Restart Distance: 0,00

Retraction Vertical Lift: 0,00 mm

Retraction Speed: 1800,0 mm/min

Coast at End Coasting Distance: 0,20 mm

Wipe Nozzle Wipe Distance: 5,00 mm

Hide Advanced Select Models OK Cancel

Profile Name

Enter a name for the new profile.

EKA delta 700 - original - 05082020

OK Cancel

Kustuta see osa

Profile Name

Enter a name for the new profile.

EKA delta 700 Anna Aken - Vaas

OK Cancel

Lisa enda nimi ja projekti nimi

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas Update Profile Save as New Remove

Auto-Configure for Material: PLA + - Auto-Configure for Print Quality: Medium + -

General Settings: Infill Percentage: 10%  Include Raft  Generate Support

Extruder List (click item to edit settings): Primary Extruder

Add Extruder Remove Extruder

### Primary Extruder Toolhead

Overview

Extruder Toolhead Index: Tool 0

Nozzle Diameter: 2,00 mm **Punkt 07: määra düüsi diameeter**

Extrusion Multiplier: 0,90

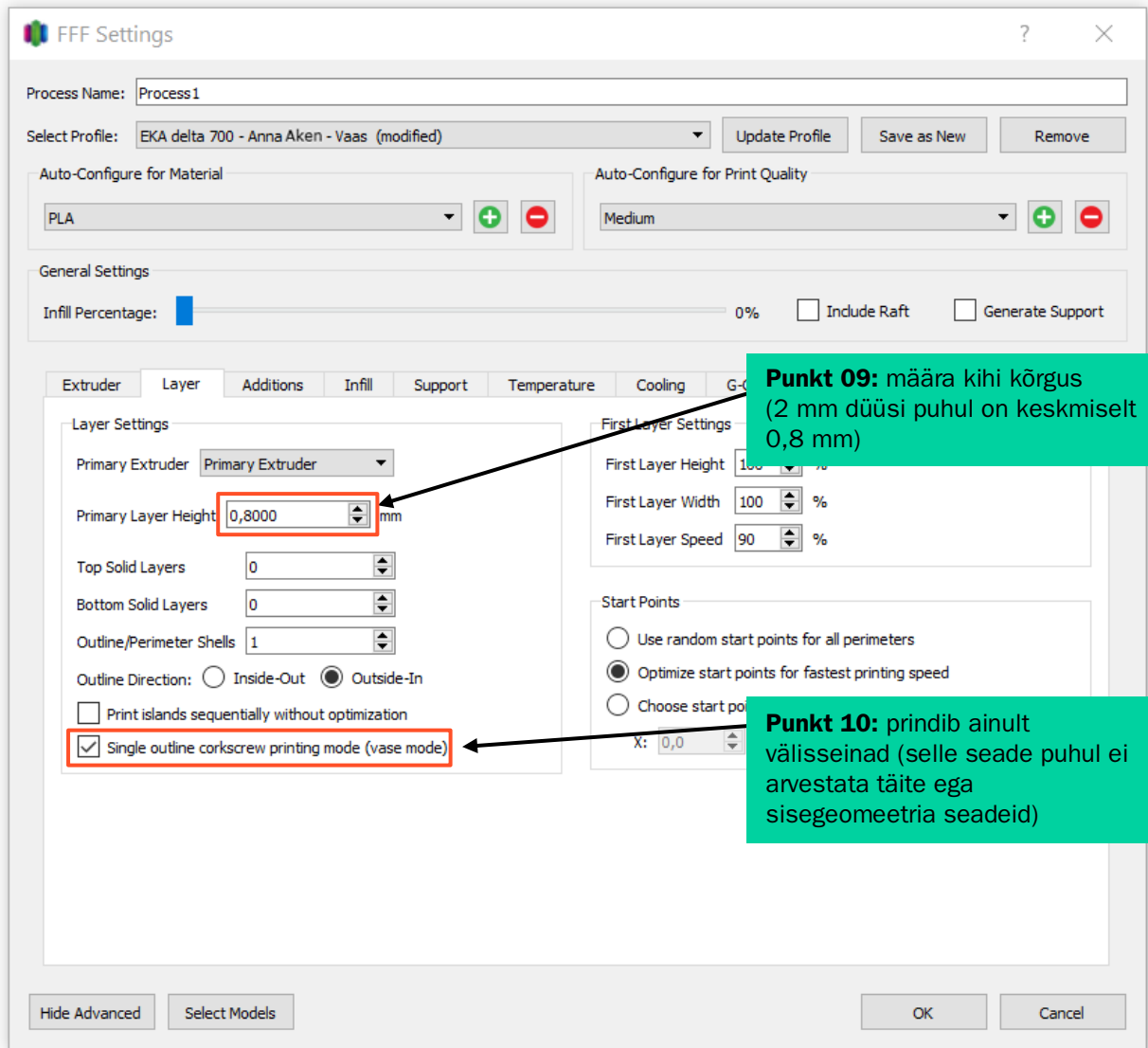
Extrusion Width:  Auto  Manual 2,40 mm **Punkt 08: automaatne laius ehk „Auto“ (käsitsi tuleb määrata puutuvate printimise joonte puhul)**

Ooze Control

<input type="checkbox"/> Retraction	Retraction Distance	1,00
	Extra Restart Distance	0,00
	Retraction Vertical Lift	0,00 mm
	Retraction Speed	1800,0 mm/min
<input type="checkbox"/> Coast at End	Coasting Distance	0,20 mm
<input type="checkbox"/> Wipe Nozzle	Wipe Distance	5,00 mm

Hide Advanced Select Models OK Cancel

**Punkt 06: vaata, et valitud oleks uus profiil, mille just salvestasid**



FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified)

Auto-Configure for Material: PLA

Auto-Configure for Print Quality: Medium

General Settings

Infill Percentage: 0%  Include Raft  Generate Support

Extruder Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds Other

Use Skirt/Brim

Skirt Extruder: Primary Extruder

Skirt Layers: 1

Skirt Offset from Part: 4,00 mm

Skirt Outlines: 2

Use Prime Pillar

Prime Pillar Extruder: All Extruders

Pillar Width: 12,00 mm

Pillar Location: North-West

Speed Multiplier: 100 %

Use Raft

Raft Extruder: Primary Extruder

Raft Top Layers: 3

Raft Base Layers: 2

Raft Offset from Part: 3,00 mm

Separation Distance: 0,14 mm

Raft Top Infill: 100 %

Above Raft Speed: 30 %

Use Ooze Shield

Ooze Shield Extruder: All Extruders

Offset from Part: 2,00 mm

Ooze Shield Outlines: 1

Sidewall Shape: Waterfall

Sidewall Angle Change: 30 deg

Speed Multiplier: 100 %

Hide Advanced Select Models OK Cancel

**Punkt 11: VALIKULINE:** printer teeb enne objekti printimist selle ümber ühe ringi. Kasulik valik, et materjal korralikult voolama saada

FFF Settings

Process Name:

Select Profile:

Auto-Configure for Material:

Auto-Configure for Print Quality:

General Settings

Infill Percentage:  0%  Include Raft  Generate Support

Extruder Layer Additions **Infill** Support Temperature Cooling G-Code Scripts Speeds Other

**General**

Infill Extruder:

Internal Fill Pattern:

External Fill Pattern:

Interior Fill Percentage:  %

Outline Overlap:  %

Infill Extrusion Width:  %

Minimum Infill Length:  mm

Combine Infill Every:  layers

Include solid diaphragm every  layers

**Internal Infill Angle Offsets**

deg

Print every infill angle on each layer

**External Infill Angle Offsets**

deg

**Punkt 12: VALIKULINE:**  
täitmisfunktsiooni ei kasutata tavaliselt.  
Seda võib kasutada objekti sisse  
tugistruktuuride printimiseks

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified) [Update Profile] [Save as New] [Remove]

Auto-Configure for Material: PLA [+] [-]

Auto-Configure for Print Quality: Medium [+] [-]

General Settings: Infill Percentage: 0% [Include Raft] [Generate Support]

Extruder | Layer | Additions | Infill | **Support** | Temperature | Cooling | G-Code | Scripts | Speeds | Other

**Support Material Generation**

- Generate Support Material
- Support Extruder: Primary Extruder
- Support Infill Percentage: 30 %
- Extra Inflation Distance: 0,00 mm
- Support Base Layers: 0
- Combine Support Every: 1 layers

**Dense Support**

- Dense Support Extruder: Primary Extruder
- Dense Support Layers: 0
- Dense Infill Percentage: 70 %

**Automatic Placement**

*Only used if manual support is not defined*

- Support Type: Normal
- Support Pillar Resolution: 4,00 mm
- Max Overhang Angle: 45 deg

**Separation From Part**

- Horizontal Offset From Part: 0,30 mm
- Upper Vertical Separation Layers: 1
- Lower Vertical Separation Layers: 1

**Support Infill Angles**

- 0 deg
- [Add Angle]
- [Remove Angle]

[Hide Advanced] [Select Models] [OK] [Cancel]

**Punkt 13: VALIKULINE:**  
toefunktsiooni ei kasutata  
tavaliselt

FFF Settings

Process Name:

Select Profile:

Auto-Configure for Material:

Auto-Configure for Print Quality:

General Settings

Infill Percentage:   Include Raft  Generate Support

Extruder Layer Additions Infill Support **Temperature** Cooling G-Code Scripts Speeds Other

Temperature Controller List (click item to edit settings)

Primary Extruder

### Primary Extruder Temperature

Overview

Temperature Identifier:

Temperature Controller Type:  Extruder  Heated build platform

Wait for temperature controller to stabilize before beginning build

Per-Layer Temperature Setpoints

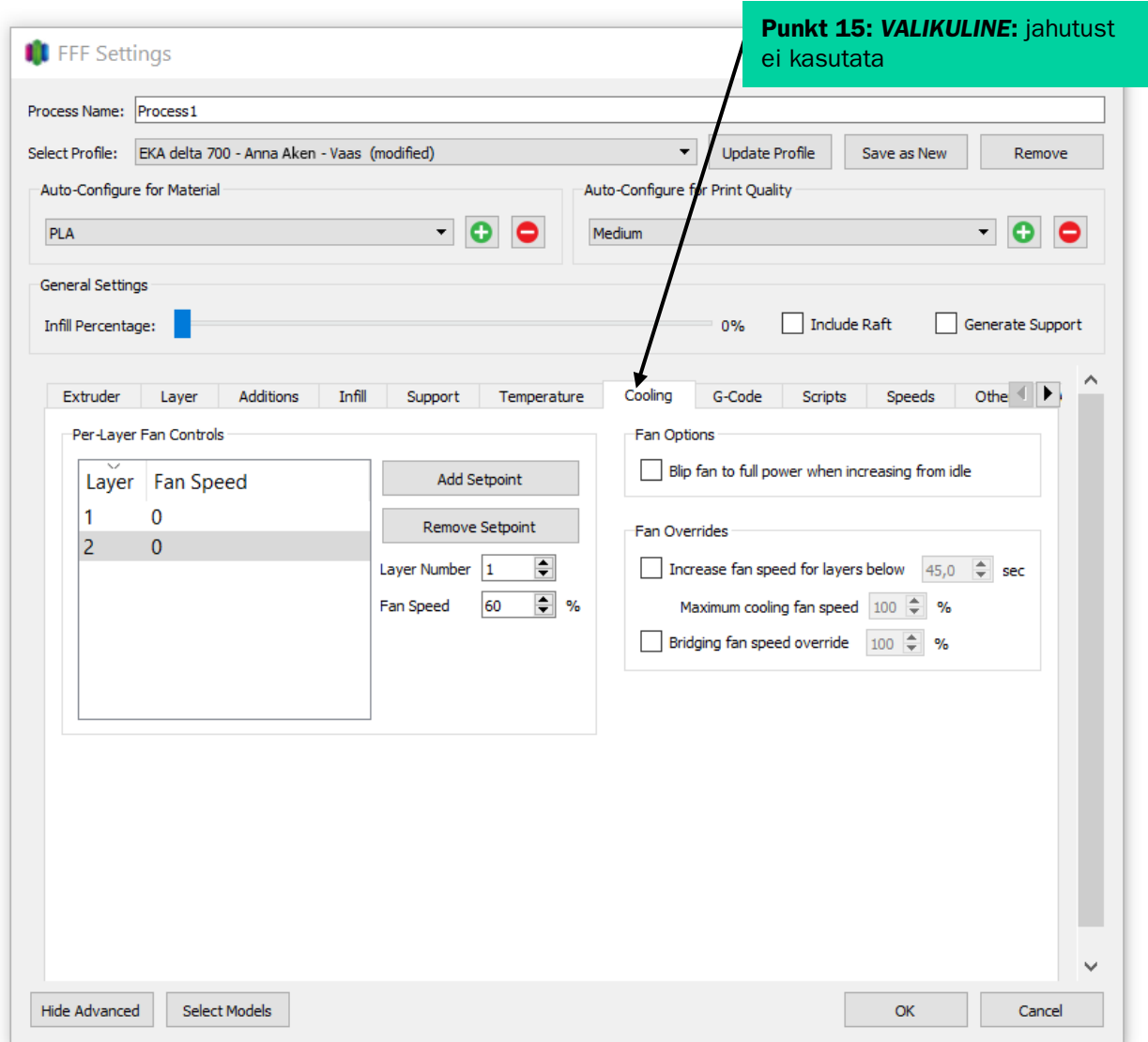
Layer	Temperature
1	20

Layer Number:

Temperature:  °C

**Punkt 14: VALIKULINE:**  
temperatuur tuleks seadistada  
20 °C peale





**Punkt 16: VALIKULINE: G-koodide seeded Delta 700 jaoks**

FFF Settings

Process Name:

Select Profile:  Update Profile Save as New Remove

Auto-Configure for Material:  + -

Auto-Configure for Print Quality:  + -

General Settings

Infill Percentage: %  Include Raft  Generate Support

Extruder Layer Additions Infill Support Temperature Cooling **G-Code** Scripts Speeds Other

**G-Code Options**

- SD firmware (include E-dimension)
- Relative extrusion distances
- Allow zeroing of extrusion distances (i.e. G92 E0)
- Use independent extruder axes
- Include M101/M102/M103 commands
- Firmware supports "sticky" parameters
- Apply toolhead offsets to G-Code coordinates

**Global G-Code Offsets**

	X-Axis	Y-Axis	Z-Axis
Offset	<input type="text" value="0,00"/>	<input type="text" value="0,00"/>	<input type="text" value="0,00"/>

**Update Machine Definition**

Machine type:

	X-Axis	Y-Axis	Z-Axis
Build volume	<input type="text" value="200,0"/>	<input type="text" value="200,0"/>	<input type="text" value="260,0"/>
Origin offset	<input type="text" value="100,0"/>	<input type="text" value="100,0"/>	<input type="text" value="0,0"/>
Homing dir	<input type="text" value="Max"/>	<input type="text" value="Max"/>	<input type="text" value="Max"/>

Flip build table axis  X  Y  Z

Toolhead offsets:  X  Y

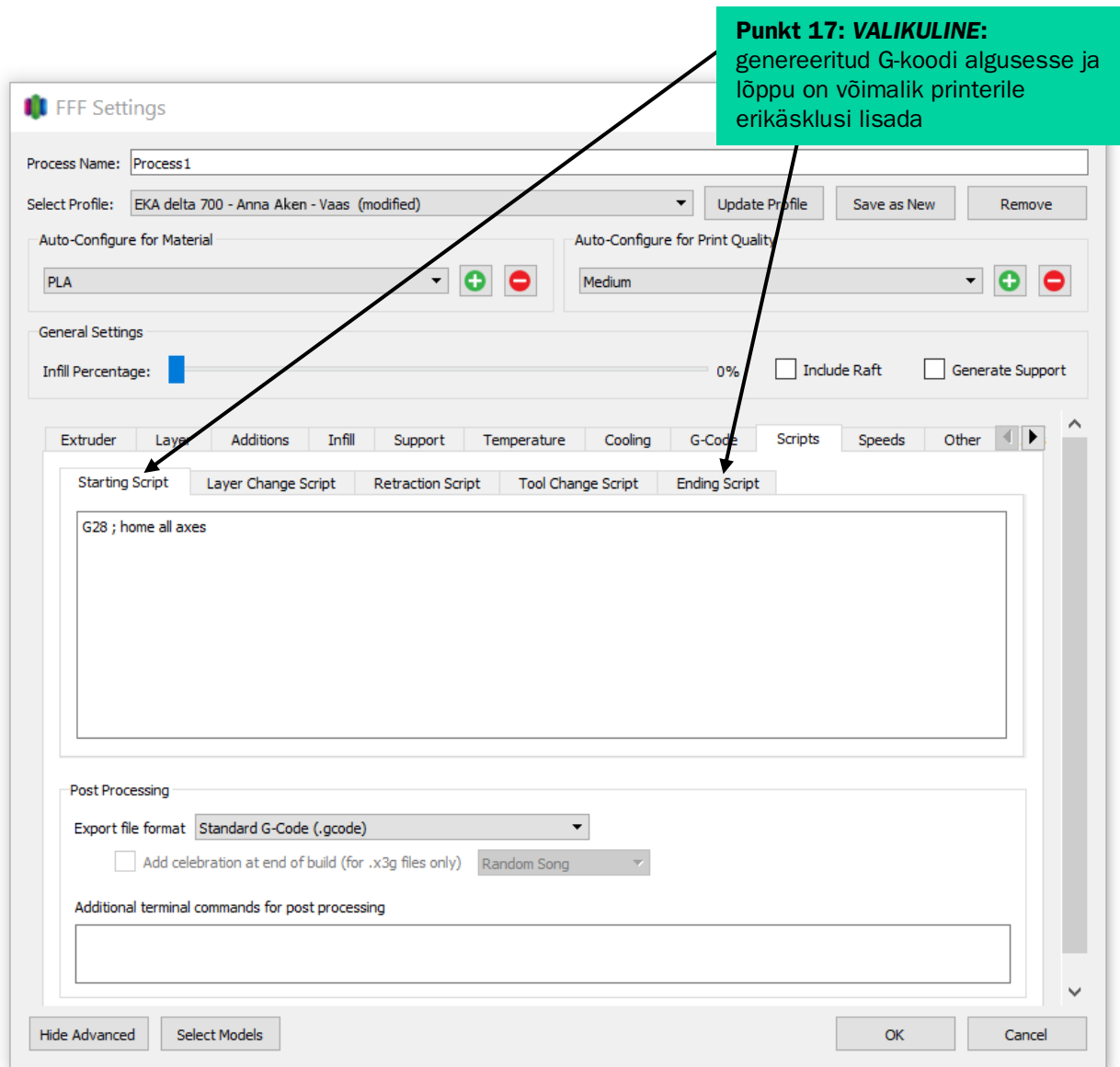
**Update Firmware Configuration**

Firmware type:

GPX profile:

Baud rate:  bits/sec

Hide Advanced Select Models OK Cancel



**Punkt 18 VALIKULINE:** kogu printimise ajal on soovitatav hoida ühtlast kiirust

FFF Settings

Process Name: Process 1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified) Update Profile Save as New Remove

Auto-Configure for Material: PLA + - Auto-Configure for Print Quality: Medium + -

General Settings

Infill Percentage: 0%  Include Raft  Generate Support

Extruder Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds Other

**Speeds**

Default Printing Speed 3000,0 mm/min

Outline Underspeed 100 %

Solid Infill Underspeed 100 %

Support Structure Underspeed 100 %

X/Y Axis Movement Speed 3000,0 mm/min

Z Axis Movement Speed 3000,0 mm/min

Speed Overrides

Adjust printing speed for layers below 15,0 sec

Allow speed reductions down to 20 %

Hide Advanced Select Models OK Cancel

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified)

Auto-Configure for Material: PLA

Auto-Configure: Medium

General Settings

Infill Percentage: 0%  Include Raft  Generate Support

Extruder Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds **Other**

**Bridging**

Unsupported area threshold 50,0 sq mm

Extra inflation distance 0,00 mm

Bridging extrusion multiplier 100 %

Bridging speed multiplier 100 %

Use fixed bridging infill angle 0 deg

Apply bridging settings to perimeters

**Dimensional Adjustments**

Horizontal size compensation 0,00 mm

**Filament Properties**

Filament Toolhead Index Tool 0

Filament diameter 2,0000 mm

Filament price 1,00 price/kg

Filament density 1,70 grams/cm<sup>3</sup>

**Tool Change Retraction**

Tool change retraction distance 12,00 mm

Tool change extra restart distance -0,50 mm

Tool change retraction speed 600,0 mm/min

Hide Advanced Select Models OK Cancel

**Punkt 19 VALIKULINE:**

1. Bridging: ei kasutata tavaliselt
2. Filament Properties: ei kohaldu
3. Tool Change Retraction: ei kasutata
4. Dimensional Adjustments: ei kasutata tavaliselt

**Punkt 20 VALIKULINE:**

1. Layer modifications: kiire võimalus lõpetada/alustada printimist kindlal kõrgusel
2. Thin wall behavior: eksperimentaalne seade, ei ole katsetatud
3. Single extrusion: ei kasutata
4. Ooze control: ei kasutata
5. Movement behavior: ristumise vältimise lahtrisse tuleb teha linnuke
6. Slicing behavior: eksperimentaalne seade, ei ole katsetatud

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Va

Auto-Configure for Material

PLA

General Settings

Infill Percentage: 0%  Include Raft  Generate Support

Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds Other **Advanced**

**Layer Modifications**

Start printing at height 0,00 mm

Stop printing at height 0,00 mm

**Thin Wall Behavior**

External Thin Wall Type: Perimeters only

Internal Thin Wall Type: Perimeters only

Allowed perimeter overlap: 10 %

**Single Extrusions**

Minimum Extrusion Length: 4,00 mm

Minimum Printing Width: 100 %

Maximum Printing Width: 100 %

Endpoint Extension Distance: 0,20 mm

**Ooze Control Behavior**

Only retract when crossing open spaces

Force retraction between layers

Minimum travel for retraction: 3,00 mm

Perform retraction during wipe movement

Only wipe extruder for outer-most perimeters

**Movement Behavior**

Avoid crossing outline for travel movements

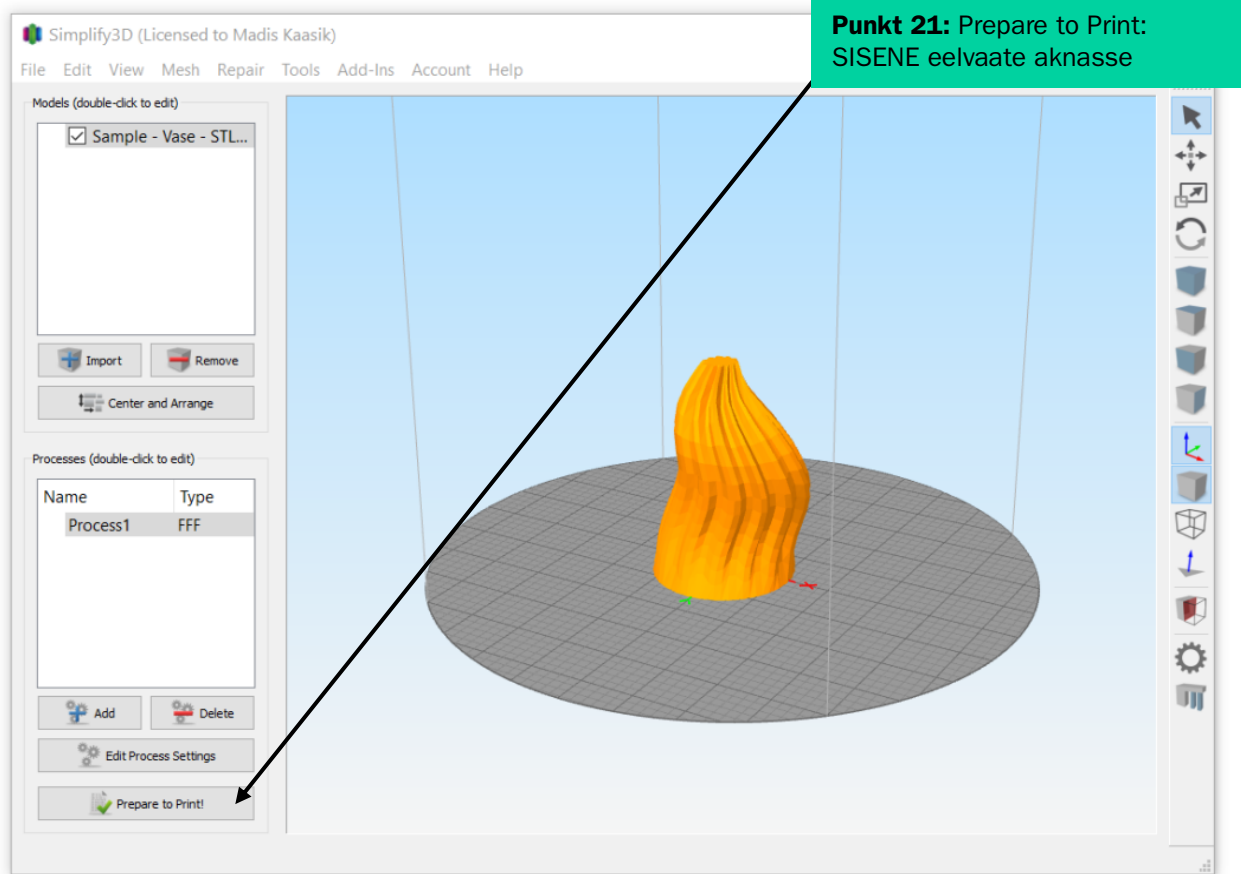
Maximum allowed detour factor: 1,0

**Slicing Behavior**

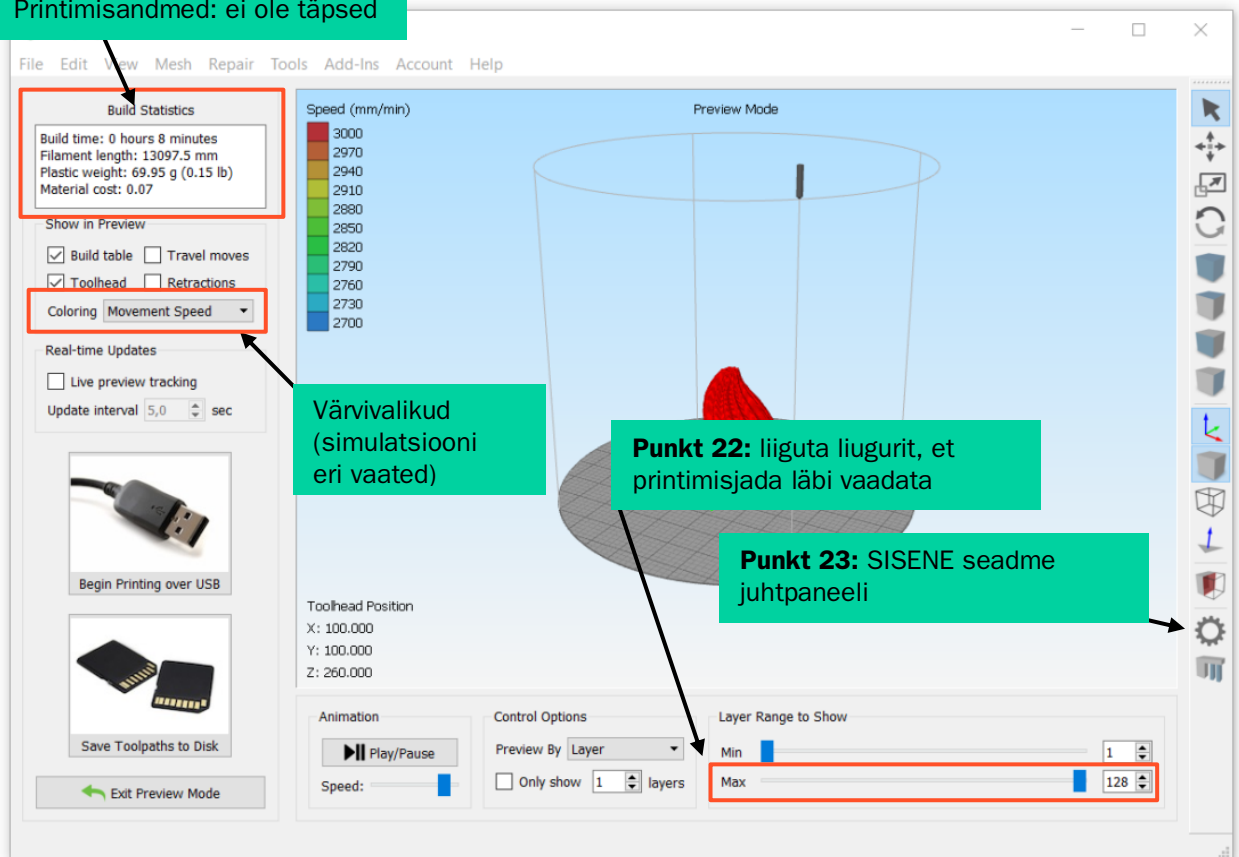
Non-manifold segments:  Discard  Heal

Merge all outlines into a single solid model

Hide Advanced Select Models OK Cancel



**Printimisandmed: ei ole täpsed**



## 4. Seadme juhtpaneeli juhised

The screenshot shows the Machine Control Panel interface. Three callout boxes provide instructions:

- Punkt 01:** vali port (port ilmub, kui oledprinteri USB-kaabliga ühendanud)
- Punkt 02:** Delta 700 baudikiirus on 250 000
- Punkt 03:** vajuta ühendamisnuppu „Connect“ (kui programm on ühendatud, muutub nupp roheliseks)

**Sakk G-code:**  
G-kood kuvatakse mudeli viilutamise järel või võite G-koodi ise importida



**Punkt 04:**  
PRINTIMISE  
ALUSTAMINE

PRINTIMISE  
PAUSILE PANEK

**TURVALÜLITI**

Kui printeril esineb tõrge, peab  
kindlasti vajutama seda nuppu

Machine Control Panel

Initialization

Disconnect Print Pause

Port: \\.\COM3 Refresh

Baud Rate: 250000 bits/sec Verbose

G-Code Library Communication Temperature Plot Jog Controls

SENT: M105  
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.8 /0.0 B:0.0 /0.0 T0:39.8 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.0 /0.0 B:0.0 /0.0 T0:39.0 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.1 /0.0 B:0.0 /0.0 T0:39.1 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.7 /0.0 B:0.0 /0.0 T0:39.7 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.9 /0.0 B:0.0 /0.0 T0:39.9 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.4 /0.0 B:0.0 /0.0 T0:39.4 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.5 /0.0 B:0.0 /0.0 T0:39.5 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0  
SENT: M105  
READ: ok T:39.4 /0.0 B:0.0 /0.0 T0:39.4 /0.0 @:0 B@:0

Position Readout

X 0.00 Zero X  
Y 0.00 Zero Y  
Z 0.00 Zero Z

Emergency Stop

Force Next

Accessory Control

Active Toolhead: Tool 0

Extruder 190 39 °C On Off  
Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors  
Print from SD Card Pause Current SD Print  
Upload to SD Card SD Card Status  
Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% Extrusion: 100%  
100 100

1% 200% 50% 150%

**Sakk Communication :**  
Kuvab teavet ja võimaldab  
printerile käsklusi saata

Machine Control Panel

Initialization

Disconnect Print Pause

Port: \\.\COM3 Refresh

Baud Rate: 250000 bits/sec Verbose

G-Code Library Communication Temperature Plot Jog Controls

Bed Setpoint Extruder Setpoint

Temperature (C)

200  
175  
150  
125  
100  
75  
50  
25  
0

0 5 10 15 20 25 30

Samples

Monitor Temperatures Clear Plot Data

Position Readout

X 0.00 Zero X  
Y 0.00 Zero Y  
Z 0.00 Zero Z

Emergency Stop

Force Next

Accessory Control

Active Toolhead: Tool 0

Extruder 190 39 °C On Off  
Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors  
Print from SD Card Pause Current SD Print  
Upload to SD Card SD Card Status  
Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% Extrusion: 100%  
100 100

1% 200% 50% 150%

**Custom Commands:**  
kasutatakse harva

**Sakk Temperature:**  
temperatuuri teave ei ole  
oluline

Machine Control Panel

Initialization

Disconnect Print Pause

Port \\.\COM3 Refresh

Baud Rate 250000 bits/sec Verbose

Position Readout

X 0.00 Zero X

Y 0.00 Zero Y

Z 0.00 Zero Z

EMERGENCY STOP

Force Next

Accessory Control

Active Toolhead Tool 0

Extruder 190 39 °C On Off

Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors

Print from SD Card Pause Current SD Print

Upload to SD Card SD Card Status

Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% 100

Extrusion: 100% 100

1% 200% 50% 150%

Jog Controls

Retract

+Z -100

100

+10

10

+1

1

+0.1

0.1

-0.1

-1

-10

-100

-Z

Extrude

0.1

1

10

100

Jog Speeds

X/Y-Axis Z-Axis Extruder

Speed (mm/min) 1800,0 1200,0 240,0

Home X Home Y Home Z Home All

**Sakk Jog:** kasutatakse printeri telgede ja ekstruuderi käsitsi liigutamiseks

**Override Settings:** ekstruuderi liikumise ja kiiruse muutmine enne printimist ja selle ajal

Valminud Hariduse Infotehnoloogia Sihtasutuse IT Akadeemia programmi toel.



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Koostanud **Madis Kaasik ja Lauri Kilusk, Eesti Kunstiakadeemia**, jaanuar 2021