Simplify3D Profiles Comparison

This document examines twelve Simplify3D (S3D) profiles available for the Prusa i3 Mk3 (Pi3Mk3) – four from Simplify3D, one from Josef Průša, and the rest from the Prusa user community. These profiles were acquired from various sources – the S3D Configuration Assistant as well as posted files on various newsgroups.

Note that I have not tested all these profiles! The purpose of this section is to look at the differences between the profiles to highlight what folks have tried and give ideas as to what settings have been tied and what might be useful to consider.

This document is available at http://www.BreathFlute.com/pdf/S3D_ProfilesCG.pdf. Use this link to access the most recent release of this PDF document. You may also be interested in the document at http://www.BreathFlute.com/pdf/S3D_SettingsCG.pdf, which provides a collection of documentation on the myriad of S3D parameters and settings.

I hope this is helpful!

— Clint Goss, Ph.D. [clint@goss.com], 4/26/2018

Background

Since I am primarily concerned with printing PLA at 100µm layer heights, the comparisons of the settings below focus on the Auto-Configure settings for PLA at 100µm. For other settings, you can edit the `_Core.fff` files in a text editor (Notepad, vi, etc) or load them into Simplify3D and examine a specific Auto-Configure variant.

Note that the names of the `.fff` files as well as the names of the profiles (contained in XML fields in the `.fff` files) have been altered to provide better identification and organization. These modified files all end in `*_Core.fff`. The updates are:

- Files with <LF> line terminators have been modified to <CR><LF> by opening and saving in Microsoft WordPad.
- The XML `<profile name=…>` and `<baseProfile>` have been *edited*, so that these files import into Simplify3D with a clear and distinct name.

Impetus

This work was done as part of my main 3D printing effort – to develop a new style of flute called the *Breath Flute*. The flute consists of a 3D-printed headjoint and four feet of 1¼″ tube. The OpenSCAD model currently runs about 7,000 lines of code (with comments). Here are some images from the current state of development:
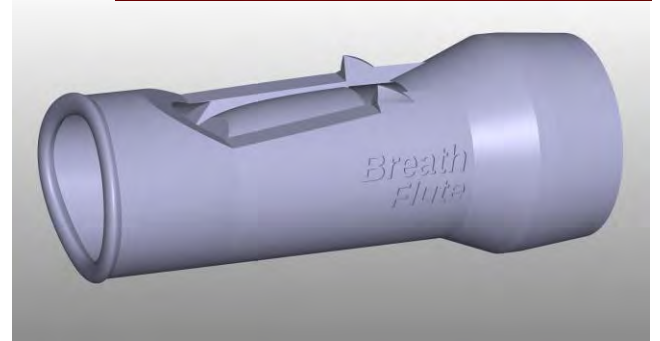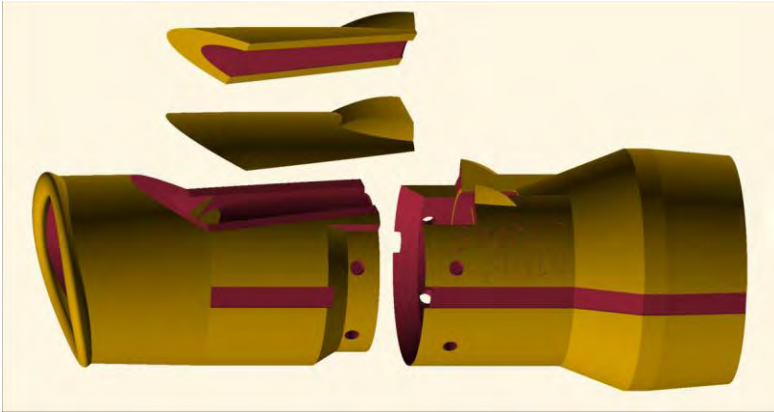
Simplify3D Pi3Mk3 Core Profile – 12/19/2017 through 4/12/2018

This is profile represents the Configuration Assistant profiles for the Pi3Mk3 published by Simply3D from 12/19/2017 through 4/12/2018. *All these profiles share identical settings.* Specifically, I have looked at these profiles / dates:

- `S3DProfile_Pi3Mk3_S3D_Pristine_20171219_Core.fff`
- `S3DProfile_Pi3Mk3_S3D_Pristine_20180119_Core.fff`
- `S3DProfile_Pi3Mk3_S3D_Pristine_20180323_Core.fff`
- `S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff`

The 12/9/2017 profile is the earliest one I have found (there may be earlier). The 4/12/2018 is the most recent profile – I know of no changes since that date. These profiles were downloaded from the Simplif3D Configuration Assistant for the printer `Prusa Research Original Prusa i3 MK3`.

Entries in red mark differences between this Core Profile and the one provided by Josef Průša (below). Note that I am primarily comparing the Auto-configure of **PLA / DETAIL 0.1mm** in this Josef Průša profile with the **PLA / High** auto-configure settings of the S3D profile

/ PLA / High

Extruder: PrimExtr, Index Tool 0: Noz 0.40, ExtMult 1.00, ExtWid Man 0.40,
Ooze Control: YES Retr, RetrDist 1.00, ExRestart 0.00, RVertLift 0.00, RSpeed 2400,
Yes Coast, CoastDist 0.20, Yes Wipe, WipeDist 2.00

Layer: PrimExtr, Ht 0.10, TSolid 4, BSolid 4, Shells 2, Dir: Inside-Out, No PI Seq, No Vase,
First Layer: FHt: 150%, FWid 100%, FSpeed 50%, StartPoints: OptFastPrint

Additions: Yes Skirt, PrimExtr, SkirtLayers 2, SkirtOffset 4.00, SkirtOutlines 2,
No Raft, PrimExtr, Top 3, Base 2, RaftOffset 3.00, SepDist 0.14, TopInfill 100%, AboveRaftSpeed 30%,
No Pillar, AllExtr, PPWidth 12.00, PPLoc North-West, PPSpMult 100%,
No Ooze AllExtr, OozeOffset 2.00, OozeOutlines 1, Shape Waterfall, AngleChg 30°, SpMult 100%

Infill: PrimExtr, IntPat Rect, ExtPat Rect, Interior 30%, OutOver 20%, Wid 100%, MinLen 5.00,
Combine 1, No IncSolid, DiaphEvery 20, IntAng: 45,-45, ExtAng: 45,-45

Support: No GenSupp, PrimExtr, SuppInfill 40%, ExInflDist 0.00, BaseLayers 0, CombEvery 1,
DenseSupp PrimExtr, DenseLayers 0, DenseInfill 70%,
AutoPlacement Type Normal, PillarRes 4.00, MaxAngle 45°,
SepFromPart Horiz 0.30, UpperLayers 1, LowerLayers 1, SuppInfillAng: 0 deg, 0

Temp: PrimExtr T0, Type Extruder, No Layer, No Loop, Yes WaitStabilize, ExTemps 1:200°C,
HBed T0, Type Heated build platform, No Layer, No Loop, Yes WaitStabilize, HBTemps 1:60°C

Cooling: FanSpeed 1:0, 2:100, No Blip, No Incr, ITime 45sec, MxFSp 100%, No Bridge, BrSpOvr 100%

G–Code: Yes 5D, No RelDist, Yes AllowZ, No Indep, No M101, Yes Sticky, No Offsets,
Offset X:0.00, Y:0.00, Z:0.00,
Yes UpMachDef, Type Cart, Build 250, 210, 210, Orig 0, 0, 0, Home Min, Min, Min,
Flip No X, Yes Y, No Z, Offset: Tool 0, X 0, Y 0,
Yes UpdFirmConfig, Type RepRap, GPX: Replicator 2, Baud 115200

Scripts: Starting Script and Ending Script (see below), others blank
ExpFmt: Standard G–Code, No AddCeleb, AddTermCmd: (none)

Speeds: Default 4800 mm/min (= 80mm/sec), Outline 50% (2400mm/m = 40mm/s),
Solid Infill 80% (3840mm/m = 64mm/s), Supp 80% (3840mm/m = 64mm/s),
X/Y Move 12000 (= 200mm/s), Z Move 1000 (= 16.67mm/s),
Yes Adjust below 15sec, DownTo 20% (Default: 960mm/m = 16mm/s, Outline: 480mm/m = 8mm/s)

Other: Area 50, ExInflat 0.00, BrExMult 100%, BrSpMult 100%, No FixedAngle 0°, No BrPerim,
HComp 0.00, Tool 0, FilDia 1.75, Price 46.00, Den 1.25,
ChgRetDist 12, ChResDist –0.50, ChRetSp 600

Advanced: No Start 0.00, No Stop 0.00, ExThinType PerimOnly, InThinType GapFill, Overlap 25%
MinExLen 1.00, MinPWid 50%, MaxPWid 200%, EndExtDist 0.20,
Yes Open, Yes ForceRet, No MinTRetr 3.00, Yes RetWipe, Yes WipeOuter,
No AvoidCross, MaxDetour 3.0, NonManSeg Heal, No Merge.

Here are variants of the */PLA/High* profile above. This information was extracted directly from the XML
`.fff` file:

Material Auto-Configurations

These are the option choices for the "Auto–Configuration for Material" selection, together with the
settings that are controlled by each option choice:

/PLA

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:200°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

/ABS

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:255°C, HBed 1:100°C
Cooling: FanSpeed 1:0

/ PET

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:240°C, HBed 1:90°C
Cooling: FanSpeed 1:0, 2:50

/ Nylon

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:220°C, HBed 1:80°C
Cooling: FanSpeed 1:0

Quality Auto-Configurations

These are the option choices for the "Auto-Configuration for Print Quality" selection, together with the settings that are controlled by each option choice:

/ Fast

Layer: Ht 0.30, TSolid 3, BSolid 3
Additions: SkirtLayers 1
Infill: Interior 15%
Support: 25%

/ Medium

Layer: Ht 0.20, TSolid 3, BSolid 3
Additions: SkirtLayers 1
Infill: Interior 20%
Support: 30%

/ High

Layer: Ht 0.10, TSolid 4, BSolid 4
Additions: SkirtLayers 2
Infill: Interior 30%
Support: 40%

Scripts

Starting Script

```
M115 U3.0.7 ; use the latest firmware version
G28 W ; home all axes without mesh bed leveling
G80 ; run mesh bed leveling routine
G1 Y-3.0 F1000.0 ; prepare to prime
G92 E0 ; reset extrusion distance
G1 X60.0 E9.0  F1000.0 ; priming
G1 X100.0 E12.5  F1000.0 ; priming
```

Ending Script

```
G4 ; wait
M106 S0 ; turn off cooling fan
M104 S0 ; turn off extruder
M140 S0 ; turn off bed
G1 X0 Y200 ; part removal
M84 ; disable motors
```

Details

Here are the details on the source for each of the four Simplify3D profiles:

S3DProfile_Pi3Mk3_S3D_Pristine_20171219_Core.fff

Earliest known Simplify3D profile. This was provided by Prusa Forum User Mac on 1/11/2018 as an attachment to a forum post.

```
File:          S3DProfile_Pi3Mk3_S3D_Pristine_20171219_Core.fff
Author:        Simplify3D
Created:       12/19/2017 (based on the XML Profile date. Posted by Prusa Forum User Mac on 1/11/2018)
Retrieved on:  4/20/2019
Retrieved from: https://shop.prusa3d.com/forum/general-discussion-announcements-and-releases-f61/simplify3d-
settings-for-mk3-t12950-s20.html
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_S3D_Pristine_20171219_fromPrusaForumMac
Download Pkg:  2018-01-09 Prusa_Research_Original_Prusa_i3_MK3_PLA_r1.zip
Src File:      /2018-01-09 Prusa_Research_Original_Prusa_i3_MK3_PLA_r1/
                         Prusa_Research_Original_Prusa_i3_MK3_PLA_r1.fff
Orig XML Prof: <profile name="Prusa Research Original Prusa i3 MK3" version="2017-12-19 09:34:18"
                         app="S3D-Software 4.0.1">
Orig XML Base: <baseProfile></baseProfile>
Core XML Prof: <profile name="Pi3Mk3_S3D_Pristine_20171219_Core" version="2017-12-19 09:34:18"
                         app="S3D-Software 4.0.1">
Core XML Base: <baseProfile>Pi3Mk3_S3D_Pristine_20171219_Core</baseProfile>
```

S3DProfile_Pi3Mk3_S3D_Pristine_20180119_Core.fff

Posted by Prusa Forum User BLACKY on 2/10/2018 on the Prusa Forum.

```
File:          S3DProfile_Pi3Mk3_S3D_Pristine_20180119_Core.fff
Author:        Simplify3D
Created:       1/19/2018 (based on the XML Profile date)
Retrieved on:  4/21/2018
Retrieved from: https://shop.prusa3d.com/forum/general-discussion-announcements-and-releases-f61/simplify3d-
settings-for-mk3-t12950-s100.html
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_S3D_Pristine_20180119_fromPrusaForumBlacky
Download Pkg:  Prusa Research Original Prusa i3 MK3.rar
Src File:      /Prusa Research Original Prusa i3 MK3/Prusa Research Original Prusa i3 MK3.fff
Orig XML Prof: <profile name="Prusa Research Original Prusa i3 MK3" version="2018-01-19 08:00:00"
                         app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile></baseProfile>
Core XML Prof: <profile name="Pi3Mk3_S3D_Pristine_20180119_Core" version="2018-01-19 08:00:00"
                         app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_S3D_Pristine_20180119_Core</baseProfile>
```

S3DProfile_Pi3Mk3_S3D_Pristine_20180323_Core.fff

Pristine profile loaded by Clint on 3/23/2018.

```
File:          S3DProfile_Pi3Mk3_S3D_Pristine_20180323_Core.fff
Author:        Simplify3D
Created:       3/23/2018
Retrieved on:  3/23/2018
Retrieved from: Simplify3D 4.0.0 / Help / Configuration Assistant
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfiles_CG_asOf20180412
Download Pkg:
Src File:      Prusa i3 Mk3 S3D Pristine 20180323.fff
Orig XML Prof: <profile name="Prusa i3 Mk3 S3D Pristine 20180323" version="2018-04-06 04:17:25"
                 app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK3(2)</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_S3D_Pristine_20180323_Core" version="2018-04-06 04:17:25"
                 app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_S3D_Pristine_20180323_Core</baseProfile>
```

S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff

Pristine profile loaded by Clint on 4/12/2018.

```
File:          S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff
Author:        Simplify3D
Created:       4/12/2018
Retrieved on:  4/12/2018
Retrieved from:    Simplify3D 4.0.1 / Help / Configuration Assistant
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfiles_CG_asOf20180412
Download Pkg:
Src File:      Pi3Mk3 Pristine S3D 20180412.fff
Orig XML Prof: <profile name="Pi3Mk3 Pristine S3D 20180412" version="2018-04-12 05:32:20" app="S3D-Software ">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK3</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_S3D_Pristine_20180412_Core" version="2018-04-12 05:32:20"
                 app="S3D-Software ">
Core XML Base: <baseProfile>Pi3Mk3_S3D_Pristine_20180412_Core</baseProfile>
```

Josef Průša v2 Pi3Mk3 Core Profile – 1/3/2018

An early version provided by Josef Průša in a post on www.Prusa3D.com on January 3, 2018. It was created after the earliest known profile from Simplify3D, but Josef may not have been aware of that Simplify3D profile (based on his user group comments).

This profile was provided by Josef Průša, along with this description:

> I did quick MK3 settings for Simplify3D.
>
> 100um, 150um and 200um presets with PLA, ABS, PET and ColorFabbXT presets.
>
> Feel free to test it out.
>
> What I were not able to figure myself out is how to force the first layer to print at set speed instead of percentage slow down. When you slow down 200mm/s infill and 35mm/s perimeter to 20% (so infill actually sticks to the bed) the perimeter gets painfully slow :-/ Any ideas?

Some users have reported problems (sometimes extreme) with this profile, but it does reflect ideas on many setting that differ significantly from many of the S3D profiles.

S3DProfile_Pi3Mk3_JosefPrusa_Pristine_20180103_v2_Core.fff
A profile by Josef Průša dated 1/3/2018 and downloaded from Prusa3D.com on 1/26/2018.

```
File:          S3DProfile_Pi3Mk3_JosefPrusa_Pristine_20180103_v2_Core.fff
Author:        Josef Průša
Created:       1/3/2018 (based on the XML Profile date and the post date on the Prusa forum)
Retrieved on:  1/26/2018
Retrieved from:        https://shop.prusa3d.com/forum/general-discussion-announcements-and-releases-
f61/simplify3d-settings-for-mk3-t12950.html
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_JosefPrusa_Pristine_20180103_fromPrusaCom
Download Pkg:  Original Prusa i3 MK3 v2.fff.zip
Src File:      Original Prusa i3 MK3 v2.fff
Orig XML Prof: <profile name="Original Prusa i3 MK3 v2" version="2018-01-03 19:13:25" app="S3D-Software ">
Orig XML Base: <baseProfile>Prusa Mendel (modified)</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_JosefPrusa_Pristine_20180103_v2_Core" version="2018-01-03 19:13:25"
                 app="S3D-Software ">
Core XML Base: <baseProfile>Pi3Mk3_JosefPrusa_Pristine_20180103_v2_Core</baseProfile>
```

This is a listing of the *full* settings for this profile. Entries in red indicate the differences between this Core Profile from Josef Průša and Simplify3D core profile (above). Note that I am primarily comparing the Auto-configure of **PLA / DETAIL 0.1mm** in this Josef Průša profile with the **PLA / High** auto-configure settings of the S3D profile.

/ PLA / DETAIL 0.1mm

Extruder: PrimExtr, Index Tool 0: Noz 0.40, ExtMult 1.00, ExtWid Man 0.45,
Ooze Control: YES Retr, RetrDist 0.80, ExRestart 0.00, RVertLift 0.60, RSpeed 2100,
Yes Coast, CoastDist 0.20, Yes Wipe, WipeDist 2.00

Layer: PrimExtr, Ht 0.10, TSolid 5, BSolid 4, Shells 2, Dir: Inside-Out, No PI Seq, No Vase,
First Layer: FHt: 200%, FWid 95%, FSpeed 20%, StartPoints: OptFastPrint

Additions: Yes Skirt, PrimExtr, SkirtLayers 3, SkirtOffset 3.00, SkirtOutlines 1,
No Raft, PrimExtr, Top 3, Base 2, RaftOffset 3.00, SepDist 0.14, TopInfill 100%, AboveRaftSpeed 30%,
No Pillar, AllExtr, PPWidth 12.00, PPLoc North-West, PPSpMult 100%,
No Ooze AllExtr, OozeOffset 2.00, OozeOutlines 1, Shape Waterfall, AngleChg 30°, OozeSpMult 100%

Infill: PrimExtr, IntPat Grid, ExtPat Rect, Interior 20%, OutOver 25%, Wid 100%, MinLen 2.00,
Combine 1, No IncSolid, DiaphEvery 20, IntAng: 45,-45, ExtAng: 45,-45

Support: No GenSupp, PrimExtr, SuppInfill 30%, ExInflDist 1.40, BaseLayers 0, CombEvery 1,
DenseSupp PrimExtr, DenseLayers 3, DenseInfill 70%,
AutoPlacement Type Normal, PillarRes 1.00, MaxAngle 55°,
SepFromPart Horiz 0.20, UpperLayers 1, LowerLayers 1, SuppInfillAng: 0 deg, 0

Temp: PrimExtr T0, Type Extruder, No Layer, No Loop, Yes WaitStabilize, 1:215°C,
HBed T0, Type Heated build platform, No Layer, No Loop, Yes WaitStabilize, 1:60°C

Cooling: FanSpeed 1:0, 2:100, Yes Blip, No Incr, 45sec, MaxFanSp 100%, Yes Bridge, BrSpOverride 80%

G-Code: Yes 5D, Yes RelDist, Yes AllowZ, No Indep, No M101, Yes Sticky, No Offsets,
Offset X:0.00, Y:0.00, Z:0.00,
Yes UpMachDef, Type Cart, Build 250, 210, 210, Orig 0, 0, 0, Home Min, Min, Min,
Flip No X, Yes Y, No Z, Offset: Tool 0, X 0, Y 0,
No UpdFirmConfig, Type RepRap, GPX: Replicator 2, Baud 250000

Scripts: Starting Script and Ending Script (see below), others blank
ExpFmt: Standard G-Code, No AddCeleb, AddTermCmd:

```
{REPLACE "; outer perimeter\n" "; outer perimeter\nM204 P800\n"}
{REPLACE "; inner perimeter\n" "; inner perimeter\nM204 P1000\n"}
{REPLACE "; solid layer\n" "; solid layer\nM204 P1000\n"}
{REPLACE "; infill\n" "; infill\nM204 P3500\n"}
```

Speeds: Default 12000 mm/min (= 200mm/sec), Outline 18% (2160mm/m = 36mm/s),
Solid Infill 100% (12000mm/m = 200mm/s), Supp 50% (6000mm/m = 100mm/s),
X/Y Move 12000 (= 200mm/s), Z Move 12000 (= 200mm/s),
Yes Adjust below 20sec, DownTo 10% (Default: 1200mm/m = 20mm/s, Outline: 216mm/m = 3.6mm/s)

Other: Area 50, ExInflat 1.00, BrExMult 80%, BrSpMult 120%, No FixedAngle 0°, No BrPerim,
HComp 0.00, Tool 0, FilDia 1.75, Price 600, Den 1.25,
ChgRetDist 12, ChResDist –0.50, ChRetSp 600

Advanced: No Start 0.00, No Stop 0.00, ExThinType PerimOnly, InThinType GapFill, Overlap 15%
MinExLen 1.00, MinPWid 50%, MaxPWid 200%, EndExtDist 0.20,
Yes Open, Yes ForceRet, Yes MinTRetr 3.00, Yes RetWipe, Yes WipeOuter,
Yes AvoidCross, MaxDetour 5.0, NonManSeg Heal, No Merge.

Here are variants of the */ PLA / DETAIL 0.1mm* profile above. This information was extracted directly from the XML `.fff` file:

Material Auto-Configurations

These are the option choices for the "Auto-Configuration for Material" selection, together with the settings that are controlled by each option choice:

/ PLA

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:215°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

/ ABS

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:255°C, HBed 1:100°C
Cooling: FanSpeed 1:0, 2:0

/ PET

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:240°C, HBed 1:90°C
Cooling: FanSpeed 1:0, 2:50

/ ColorFabb XT

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:250°C, HBed 1:85°C
Cooling: FanSpeed 1:0, 2:50

Quality Auto-Configurations

These are the option choices for the "Auto-Configuration for Print Quality" selection, together with the settings that are controlled by each option choice:

/ FAST 0.2mm

Extruder: PrimExtr, Index Tool 0: Noz 0.40, ExtMult 1.00, ExtWid Man 0.45,
Ooze Control: YES Retr, RetrDist 0.80, ExRestart 0.00, RVertLift 0.60, RSpeed 2100,
Yes Coast, CoastDist 0.20, Yes Wipe, WipeDist 2.00

Layer: Ht 0.20, TSolid 5, BSolid 4, Shells 2, First Layer: FHt: 75%, FWid 95%
Infill: Interior 20%
Support: 25%
Speeds: Outline 18%

/ OPTIMAL 0.15

Extruder: PrimExtr, Index Tool 0: Noz 0.40, ExtMult 1.00, ExtWid Man 0.45,
Ooze Control: YES Retr, RetrDist 0.80, ExRestart 0.00, RVertLift 0.60, RSpeed 2100,
Yes Coast, CoastDist 0.20, Yes Wipe, WipeDist 2.00

Layer: Ht 0.15, TSolid 5, BSolid 4, Shells 2, First Layer: FHt: 100%, FWid 95%
Infill: Interior 20%
Support: 25%
Speeds: Outline 18%

/ DETAIL 0.10mm

Extruder: PrimExtr, Index Tool 0: Noz 0.40, ExtMult 1.00, ExtWid Man 0.45,
Ooze Control: YES Retr, RetrDist 0.80, ExRestart 0.00, RVertLift 0.60, RSpeed 2100,
Yes Coast, CoastDist 0.20, Yes Wipe, WipeDist 2.00

Layer: Ht 0.10, TSolid 5, BSolid 4, Shells 2, First Layer: FHt: 200%, FWid 95%
Infill: Interior 20%
Support: 25%
Speeds: Outline 18%

Scripts

Starting Script

```
G28 W ; home all without mesh bed level
G80 ; mesh bed leveling
G1 Y–3.0 F1000.0 ; go outside print area
G92 E0.0
G1 X60.0 E9.0  F1000.0 ; intro line
G1 X100.0 E12.5  F1000.0 ; intro line
G92 E0.0
```

M900 K30 *Ending Script*

```
M104 S0 ; turn off temperature
M140 S0 ; turn off heatbed
M107 ; turn off fan
G1 X0 Y210; home X axis
M84 ; disable motors
```

Jerry.a2 Pi3Mk3 Core Profile – 1/4/2018

This profile is from Prusa Forum User Jerry.a2 in a forum post on 1/5/2018. Jerry's notes on this profile:

> I'm not having any issues using a modified version of the previous .fff from 12/27/2016. I am attaching the one I have been using with S3D here. It should be tweaked, just as you do for your other S3D projects. Particularly the speeds and fan speed which I have fiddled with a lot.

```
File:          S3DProfile_Pi3Mk3_Jerry.a2_Pristine_20180104_Core.fff
Author:        Prusa Forum User Jerry.a2
Created:       1/4/2018 (based on XML Profile date. Post date was one day later)
Retrieved on:  4/20/2018
Retrieved from: https://shop.prusa3d.com/forum/general-discussion-announcements-and-releases-f61/simplify3d-
settings-for-mk3-t12950-s10.html
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_Jerry.a2_Pristine_20180104/
Download Pkg:  Prusa I3 MK3-122717MOD.zip
Src File:      /Prusa I3 MK3-122717MOD/Prusa I3 MK3-122717MOD.fff
Orig XML Prof: <profile name="Prusa I3" version="2018-01-04 13:30:14" app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile>Prusa i3</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_Jerry.a2_Pristine_20180104_Core" version="2018-01-04 13:30:14"
               app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_Jerry.a2_Pristine_20180104_Core</baseProfile>
```

This section lists settings that vary from `S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff` (the standard S3D-supplied profile). Parameters that are different (and not "greyed out" by a checkbox) are shown in red. I am comparing the auto-configure of **PLA Standart / 0,1** in this profile with the **PLA / High** auto-configure settings of the S3D-supplied profile.

/ PLA Standart / 0,1

Extruder: ExtMult 1.01, ExtWid Auto 0.48, Ooze Control: RetrDist 0.40, RSpeed 1800, No Coast, CoastDist 0.05, No Wipe, WipeDist 2.40

Layer: TSolid 7, BSolid 7, Shells 1, Yes Vase,
First Layer: FHt: 100%, FSpeed 100%, StartPoints: Choose start point X:124.6, Y:210.0

Additions: SkirtLayers 3, SkirtOffset 5.00

Infill: Interior 10%, Wid 130%, MinLen 0.20

Support: Infill 30%, BaseLayers 1, DenseLayers 2, DenseInfill 80%, SepFromPart Horiz 0.20

Temp: PrimExtr 1:215°C, HBed T1, 1:65°C, 2:55°C

Cooling: FanSpeed 1:0, 2:60, Yes Blip, Yes Incr, 12 sec, Yes Bridge

G-Code: Yes RelDist, No UpdFirmConfig

Scripts: Starting Script and Ending Script (see below), others blank

ExpFmt: AddTermCmd:

```
;{REPLACE "; outer perimeter\n" "; outer perimeter\nM204 S600\n"}
;{REPLACE "; inner perimeter\n" "; inner perimeter\nM204 S1200\n"}
;{REPLACE "; solid layer\n" "; solid layer\nM204 S1500\n"}
;{REPLACE "; infill\n" "; infill\nM204 S2000\n"}

{REPLACE "M106 S21" "M106 S255 ; discard the remainder "}
{REPLACE "M106 S22" "M106 S255 ; discard the remainder "}
{REPLACE "M106 S23" "M106 S255 ; discard the remainder "}
{REPLACE "M106 S24" "M106 S255 ; discard the remainder "}
{REPLACE "M106 S25" "M106 S255 ; discard the remainder "}
```

Speeds: Default 1800 mm/min (= 30mm/sec), Outline 90% (1620mm/m = 27mm/s),
Solid Infill 100% (1800mm/m = 30mm/s), Supp 100% (1800mm/m = 30mm/s),
X/Y Move 6000 (= 100mm/s), Z Move 1200 (= 20mm/s),
Yes Adjust below 4.0sec, DownTo 40% (Default: 648mm/m = 12mm/s, Outline: 480mm/m = 10.8mm/s)

Other: Area 25, ExInflat 1.00, BrExMult 90%, BrSpMult 70%, Yes BrPerim, Price 32

Advanced: InThinType Allow Single Extrusion Fill, MinExLen 0.20, MinPWid 20%, EndExtDist 0.10, No Open, No ForceRet, Yes MinTRetr 2.00, No RetWipe, No WipeOuter.

Scripts

Starting Script

```
;M900 K30

;M115 U3.1.1 ; tell printer latest fw version
;M83 ; extruder relative mode
;M104 S215 ; set extruder temp
;M140 S65; set bed temp
;M190 S65 ; wait for bed temp
;M109 S215; wait for extruder temp
G28 W ; home all without mesh bed level
G80 ; mesh bed leveling
G1 X2 Y2 F1000.0 ; go outside print area
G1 X60.0 E9.0 F1000.0 ; intro line
G1 X100.0 E12.5 F1000.0 ; intro line
M117 Prusa Printing...
```

Ending Script

```
G4 ; wait
M104 S0 ; turn off temperature
M140 S0 ; turn off heatbed
M107 ; turn off fan
G91 ; use relative coordinates
G1 Z2 F5000 ; lift nozzle by 2mm
G90 ; use absolute coordinates
G1 X0 Y200; home X axis
M84 ; disable motors
```

Jeff Golden Pi3Mk3 Core Profile – 1/7/2018

These three profiles are from a GitHub repository developed by Jeff Golden (initials JCG). From his README.md file:

> These started with the default profile in S3D and I made changes for Linear advance and for speeds so far. I plan to keep these up to date as I continue to make changes to the profiles. I expect I will need to add a new profile for some filaments as I don't know of another way to alter K values for filament types, as will be needed.
>
> By no means am I claiming this is the best profile to use for S3D with these printers (or even a good one). I am just storing them on github so other's may make use of them if they like. If you find settings that work better and wish to submit a pull request with the changes I would welcome that!

S3DProfile_Pi3Mk3_JeffGolden_PLA_Pristine_20180107_Core.fff

```
File:          S3DProfile_Pi3Mk3_JeffGolden_PLA_Pristine_20180107_Core.fff
Author:        Jeff Golden
Created:       1/7/2018
Retrieved on:  4/21/2018
Retrieved from:       https://github.com/jeffgolden/PrusaS3DProfiles
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_JeffGolden_Pristine_20180107
Download Pkg:  PrusaS3DProfiles-master.zip
Src File:      JCG – Prusa MK3 (PLA).fff
Orig XML Prof: <profile name="JCG – Prusa MK3 (PLA)" version="2018-01-07 18:06:24" app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK2</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_JeffGolden_PLA_Pristine_20180107_Core" version="2018-01-07 18:06:24" app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_JeffGolden_PLA_Pristine_20180107_Core</baseProfile>
```

S3DProfile_Pi3Mk3_JeffGolden_ABS_Pristine_20180107_Core.fff

```
File:          S3DProfile_Pi3Mk3_JeffGolden_ABS_Pristine_20180107_Core.fff
Author:        Jeff Golden
Created:       1/7/2018
Retrieved on:  4/21/2018
Retrieved from:          https://github.com/jeffgolden/PrusaS3DProfiles
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_JeffGolden_Pristine_20180107
Download Pkg:  PrusaS3DProfiles-master.zip
Src File:      JCG - Prusa MK3 (ABS).fff
Orig XML Prof: <profile name="JCG - Prusa MK3 (ABS)" version="2018-01-07 18:17:22" app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK2</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_JeffGolden_ABS_Pristine_20180107_Core" version="2018-01-07 18:06:24"
app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_JeffGolden_ABS_Pristine_20180107_Core</baseProfile>
```

S3DProfile_Pi3Mk3_JeffGolden_PETG_Pristine_20180107_Core.fff

```
File:          S3DProfile_Pi3Mk3_JeffGolden_PETG_Pristine_20180107_Core.fff
Author:        Jeff Golden
Created:       1/7/2018
Retrieved on:  4/21/2018
Retrieved from:          https://github.com/jeffgolden/PrusaS3DProfiles
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_JeffGolden_Pristine_20180107
Download Pkg:  PrusaS3DProfiles-master.zip
Src File:      JCG - Prusa MK3 (PETG).fff
Orig XML Prof: <profile name="JCG - Prusa MK3 (PETG)" version="2018-01-07 18:06:45" app="S3D-Software 4.0.0">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK2</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_JeffGolden_PETG_Pristine_20180107_Core" version="2018-01-07 18:06:24"
app="S3D-Software 4.0.0">
Core XML Base: <baseProfile>Pi3Mk3_JeffGolden_PETG_Pristine_20180107_Core</baseProfile>
```

This section lists settings for the PLA profile that vary from the standard, S3D-supplied profile in `S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff`. Parameters that are different (and not "greyed out" by a checkbox) are shown in red. I am comparing the auto-configure of **PLA / High** in this profile with the **PLA / High** auto-configure settings of the S3D-supplied profile.

/ PLA / High

Extruder: ExtWid Man 0.50, RetrDist 0.80, RVertLift 0.50, RSpeed 1800, No Coast, No Wipe

Layer: First Layer: FHt: 200%, FSpeed 25%, StartPoints: Choose start point X:0.0, Y:400

Additions: *(no differences)*

Infill: IntPat FastHoney, Interior 20%, IntAng: 0

Support: *(no differences)*

Temp: *(no differences)*

Cooling: *(no differences)*

G-Code: Baud 250000

Scripts: Starting Script and Ending Script (see below), others blank

Speeds: Default 9000 mm/min (= 150mm/sec), Outline 40% (3600mm/m = 60mm/s), Solid Infill 40% (3600mm/m = 60mm/s), Supp 40% (3600mm/m = 60mm/s), X/Y Move 9000 (= 150mm/s), Z Move 1002 (= 16.7m/s), Yes Adjust below 15sec, DownTo 20% (Default: 1800mm/m = 30mm/s, Outline: 720mm/m = 12mm/s)

Other: *(no differences)*

Advanced: *(no differences)*

Scripts

Starting Script

```
M115 U3.1.0 ; use the latest firmware version
G28 W ; home all axes without mesh bed leveling
M140 S[bed0_temperature] ; start heating the bed
M190 S[bed0_temperature] ; wait until bed heated
M104 S[extruder0_temperature] ; start heating extruder
G80 ; run mesh bed leveling routine
M109 S[extruder0_temperature] ; wait for extruder temperature
G1 Y-3.0 F1000.0 ; prepare to prime
G92 E0 ; reset extrusion distance
G1 X60.0 E9.0  F1000.0 ; priming
G1 X100.0 E12.5  F1000.0 ; priming
M900 K30; PLA us K45 for PET K30 for PLA/ABS
```

Ending Script

```
M106 S0 ; turn off cooling fan
M104 S0 ; turn off extruder
M140 S0 ; turn off bed
G1 X0 Y200 ; part removal
M84 ; disable motors
M900 K0 ; reset linear advance to off by default
```

Here are variants of the */ PLA / High* profile above. This information was extracted directly from the XML `.fff` file:

Material Auto-Configurations

These are the option choices for the "Auto-Configuration for Material" selection, together with the settings that are controlled by each option choice:

/ PLA

Extruder: ExtMult 1.00
Temp: PrimExtr 1:200°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

/ Matterhackers PLA

Extruder: ExtMult 1.00
Temp: PrimExtr 1:215°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

/ Makergeeks PLA

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:235°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

/ Protopasta Glitter Flake

Extruder: PrimExtr ExtMult 1.00
Temp: PrimExtr 1:219°C, HBed 1:60°C
Cooling: FanSpeed 1:0, 2:100

Ario.a Pi3Mk3 Core Profile – 1/26/2018

This is the second of two profiles developed by Prusa Forum User Ario.a, dated 1/26/2018 and marked version 1.5. (I am presuming that this supersedes the prior version posted on 1/24/2018). Several users reported success with this profile.

Notes accompanying the first (1/24/2018) profile:

> But be aware, this is not my final profile, since I do have some issues left to perfect it completely.
>
> Oh, and what I forgot to say, I changed the outline underspeed to 45%, to get close to around 35mm/s for the most outer perimeters for the external finish.
>
> If you still need to improve the surface finish, slow it down even further.
>
> The issue at the end of the loops "missing" filament can be due to too much retraction, under-extrusion or both.
>
> That's what I still have to fix.
>
> Depending on the filament you use, you have to up or lower the extrusion and play with retraction settings.
>
> Except that, this profile should theoretically work well.
>
> Have fun!

… and Ario's notes from two posting that accompany the second (1/26/2018, v1.5) profile:

> This time without a horribly over-extruded first layer (which doesn't really show on small prints, but lets big prints fail) and less over-extrusion in general.
>
> Be aware, that your first layer must be perfectly calibrated for this to work right.
>
> For this step, you can consult this thread –f0/life-adjust-z-my-way-t2981.html
>
> Afterwards, dial in the extrusion rate and first layer height for your filament and mk3 till it works and looks right.
>
> Problems that still stand:
>
> Slightly rough top layers
>
> Beginning and end of loops are sometimes really visible (can be seen on the chimney of my benchy posted a side back)
>
> Otherwise im pretty close to a good profile.
>
> Stay tuned!

There is a reason why I disabled z-hop, coasting, wiping right from the get-go and got WAY better results than the standard S3D profiles.

Because all that results in the print head doing more movement and actions which will disrupt the overall quality of the print.

The more actions the printer has to take, the more room exists for issues in general.

I do doubt that z-lift is needed for all printers.

My MK2S S3D profile was able to print perfect without any z-lift.

That's why I was baffled that my MK3 isn't able to print perfectly without z-lift.

Im going to test a bit.

And I do think my rough surface layers are still due to over-extrusion, not scratching.

S3DProfile_Pi3Mk3_Ario.a_Pristine_20180126_v1.5_Core.fff

```
File:          S3DProfile_Pi3Mk3_Ario.a_Pristine_20180126_v1.5_Core.fff
Author:        Prusa Forum User Ario.a
Created:       1/26/2018 (based on XML Profile and post date)
Retrieved on:  4/20/2018
Retrieved from: https://shop.prusa3d.com/forum/general-discussion-announcements-and-releases-f61/simplify3d-
settings-for-mk3-t12950-s60.html
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_Ario.a_Pristine/
Download Pkg:  Prusa Research Original Prusa i3 MK3 V1.5 by Ario.A.rar
Src File:      /Prusa Research Original Prusa i3 MK3 V1.5 by Ario.A/
               Prusa Research Original Prusa i3 MK3 V1.5 by Ario.A.fff
Orig XML Prof: <profile name="Prusa Research Original Prusa i3 MK3 New" version="2018-01-26 23:09:45"
               app="S3D-Software 4.0.1">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK3 (modified)</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_Ario.a_Pristine_20180126_v1.5_Core" version="2018-01-24 20:14:59"
               app="S3D-Software 4.0.1">
Core XML Base: <baseProfile>Pi3Mk3_Ario.a_Pristine_20180126_v1.5_Core</baseProfile>
```

This section lists settings for this profile that vary from the standard, S3D-supplied profile in `S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff`. Parameters that are different (and not "greyed out" by a checkbox) are shown in red. I am comparing the auto-configure of **PLA / High** in this profile with the **PLA / High** auto-configure settings of the S3D-supplied profile.

/ PLA / High

Extruder: ExtMult 0.95, No Coast, No Wipe

Layer: First Layer: FHt: 105%, FSpeed 40%, StartPoints: Choose start point X:0.0, Y:0.0

Additions: *(no differences)*

Infill: *(no differences)*

Support: *(no differences)*

Temp: PrimExtr 1:220°C, 2: 215°C, HBed 1:55°C

Cooling: *(no differences)*

G–Code: *(no differences)*

Scripts: *(no differences)*

Speeds: Default 4800 mm/min (= 80mm/sec), Outline 45% (2160mm/m = 36mm/s), Z Move 1020 (= 17mm/s)

Other: Price 25.00

Advanced: No ForceRet

Hotrain Pi3Mk3 Core Profile – 2/21/2018

From a Reddit post by user Hotrain. The notes accompanying this post are:

> The base Mk3 profile in the latest Simplify3D works pretty great. Minor modifications from there are mostly on a per printer/filament basis, but I can certainly tell you what I've done to mine if you're interested.
>
> Simplify3D also offers a great guide on print quality (https://www.simplify3d.com/support/print-quality-troubleshooting/), that can help you identify issues and tune your printer accordingly, but first I would recommend you calibrate (https://mattshub.com/2017/04/19/extruder-calibration/amp/) your extruder (https://toms3d.org/2014/04/06/3d-printing-guides-calibrating-your-extruder/) and then dial in your Live Z (https://shop.prusa3d.com/forum/prusa-i3-kit-building-calibrating-first-print-main-f6/life-adjust-z-my-way-t2981.html).
>
> Here's my FFF (https://gist.github.com/Hotrian/a4886796bd41ba75c67057df24773759/archive/5bc7a0e8fcd5bd1b5df9400139f6981e9f649474.zip), though I warn you I've mostly only been messing with "Medium" settings and "Prusa PLA", so the other qualities and materials will require additional tuning. My bridging speed may also be a bit high for you, though I can bridge up to 100mm easily with only minor drooping and no stringing. I'm also using a Brim right now, as I found I had some warping in wider parts without it (thinking this (https://www.thingiverse.com/thing:2076234) might help, planning to try soon), though you can easily adjust it back into a Skirt or disable it under the "Additions" tab.
>
> You'll almost certainly have to tune your Ooze Control settings even if everything else works perfectly for you. The `5mm Retraction Distance`, `-0.17mm Extra Restart Distance`, and `0.25mm Coasting Distance` gave me perfect results with the Prusa PLA in Silver and Metallic Purple, but different filaments will respond differently, and you may find you're under/over extruding at the start or end of each loop, or that you're getting a lot of stringing. If you're not getting any stringing you could drop the retract distance a little bit until you start getting some stringing, then bump it back up a tiny bit until no more stringing results. Something like this stringing test (https://www.thingiverse.com/thing:2219103) can give you a quick result.
>
> **Warning:** My FFF contains the Start GCode
> `M92 E563.0 ; extruder calibration.`
> This calibrates the steps/mm for my Mk3. I chose to put it in my Start GCode and not to save this using an `M500` as I understand this risks overwriting certain other variables in the EINSY's config. You should remove or change this `M92` call for your printer

(recommended) by using one of the guides above to calibrate your extruder. The default value stored can be retrieved with a `M503` and mine returned `E560.0`, so it was very close already (a few mm off over 100mm "extruded"). With `E563.0` my Mk3 feeds 100mm exactly, or at least to within the limit of my ability to measure.

Finally, I have my default printing speed set to 60mm/s when I believe Simplify3D defaults it to 80mm/s. You can definitely print faster, though I have it turned down a bit for a delicate part I was printing earlier.

S3DProfile_Pi3Mk3_Hotrain_Pristine_20180221_Core.fff

```
File:          S3DProfile_Pi3Mk3_Hotrain_Pristine_20180221_Core.fff
Author:        Hotrain
Created:       2/21/2018
Retrieved on:  4/21/2018
Retrieved from:
https://www.reddit.com/r/prusa3d/comments/7z4dx2/profile_for_the_mk3_in_simpify3d/?st=jg9buxdw&sh=75579fdb
Src Dir:       /BreathFlute/S3D_Profiles/S3DProfile_Pi3Mk3_Hotrain_Pristine_20180221
Download Pkg:  a4886796bd41ba75c67057df24773759-5bc7a0e8fcd5bd1b5df9400139f6981e9f649474.zip
Src File:      Prusa Research Original Prusa i3 MK3 (modified).fff
Orig XML Prof: <profile name="Prusa Research Original Prusa i3 MK3 (modified)" version="2018-02-19 02:37:44"
                        app="S3D-Software 4.0.1">
Orig XML Base: <baseProfile>Prusa Research Original Prusa i3 MK3 (modified)</baseProfile>
Core XML Prof: <profile name="Pi3Mk3_Hotrain_Pristine_20180221_Core" version="2018-02-19 02:37:44"
                        app="S3D-Software 4.0.1">
Core XML Base: <baseProfile>Pi3Mk3_Hotrain_Pristine_20180221_Core</baseProfile>
```

This section lists settings for this profile that vary from the standard, S3D-supplied profile in `S3DProfile_Pi3Mk3_S3D_Pristine_20180412_Core.fff`. Parameters that are different (and not "greyed out" by a checkbox) are shown in red. I am comparing the auto-configure of **PLA / High** in this profile with the **PLA / High** auto-configure settings of the S3D-supplied profile.

/ PLA / High

Extruder: RetrDist 4.00, RVertLift 0.20, CoastDist 0.25

Layer: First Layer: FSpeed 45%

Additions: SkirtOffset 0.40, SkirtOutlines 3

Infill: IntPat FastHoney, IntAng: 0

Support: BaseLayers 1

Temp: PrimExtr 1:210°C, HBed 1:60°C

Cooling: *(no differences)*

G-Code: *(no differences)*

Scripts: One additional command at the *end* of the Starting Script:

```
M92 E563.0 ; extruder calibration
```

Speeds: Default 3600 mm/min (= 60mm/sec), Outline 50% (1800mm/m = 30mm/s),
Solid Infill 80% (2880mm/m = 48mm/s), Supp 80% (2880mm/m = 48mm/s),
X/Y Move 10200.0 (= 170mm/s), Z Move 1002.0 (= 16.7mm/s),
Yes Adjust below 15sec, DownTo 20% (Default: 720mm/m = 12mm/s, Outline: 360mm/m = 6mm/s)

Other: Area 5, ExInflat, No FixedAngle 90°, Price 20.99, Den 1.24

Advanced: MinExLen 5.00