

Kalibrace Linear Advance pro Marlin 1.1.9

- i. Pro Linear Advance je možné postupovat dle návodu zde: http://marlinfw.org/docs/features/lin_advance.html
 - i. Nejprve perfektně srovnat podložku (první vrstva by neměla být příliš připlačlá. Opravdu co nejmeně jen aby to jen tak tak drželo....)
 - a. Podložku si tedy srovnat – třeba na středu 150 x 150 mm čtverec s diagonálami přes střed, aby bylo jisté, že není sklo vybořené
 - ii. Vyzkoušet, zda tiskárna podporuje K-faktor pro Linear Advance
 - a. Zadat Gcode napřímou
M900 K750 nebo M117 K750 (pokud je odpověď alespoň na jeden OK, tak je to v pořádku. Test script generuje oba příkazy za sebou, takže pokud tiskárna nepodporuje)

```
Baud Rate 115200 bits/sec Verbose
```

G-Code Library Communication Temperature Plot Jog Controls

```
SENT: M105
READ: ok T:30.83 /0.00 B:60.56 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.83 /0.00 B:60.37 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.83 /0.00 B:60.27 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.81 /0.00 B:60.19 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.78 /0.00 B:60.01 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.81 /0.00 B:59.96 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.83 /0.00 B:59.79 /60.00 @:0 B@:127
SENT: M105
READ: ok T:30.83 /0.00 B:59.79 /60.00 @:0 B@:127
SENT: M105
READ: ok T:30.83 /0.00 B:59.80 /60.00 @:0 B@:127
SENT: M105
READ: ok T:30.83 /0.00 B:60.13 /60.00 @:0 B@:127
SENT: M105
READ: ok T:30.83 /0.00 B:60.37 /60.00 @:0 B@:127
SENT: M105
READ: ok T:30.83 /0.00 B:60.71 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.86 /0.00 B:60.90 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.89 /0.00 B:60.93 /60.00 @:0 B@:0
SENT: M117 K800
READ: ok
SENT: M105
READ: ok T:30.83 /0.00 B:60.93 /60.00 @:0 B@:0
SENT: M105
READ: ok T:30.83 /0.00 B:60.76 /60.00 @:0 B@:0

M117 K800 Send
```

```
SENT: M900 K750
READ: echo: Unknown command: "M900 K750"
Unknown command: "M900 K750"
READ: ok
SENT: M105
READ: ok T:31.02 /0.00 B:60.74 /60.00 @:0 B@:0

M900 K750 Send
```

- iii. Zde si připravit vložek http://marlinfw.org/tools/lin_advance/k-factor.html
 - a. Na testy ve verzi 1.1.9 (0-3) se mi klasický vzor linky zprava doleva a pak kontrolní zleva doprava ale s "rámečkem" (Print Anchor Frame zaškrtnuté). Následně ladit hodnotu cca 0-0.2 (pro extruder bez bowdenu a Marlin 1.1.9)
 - b. Před každým testem perfektně očistit a odmastit podložku
 - c. Nastavení

i.

Printer:		
Printer:	<input type="text" value="Rebel II"/>	
Filament:	<input type="text" value="PLA"/>	
Filament Diameter:	<input type="text" value="1.75"/>	Diameter of the used filament (mm)
Nozzle Diameter:	<input type="text" value="0.4"/>	Diameter of the nozzle (mm)
Nozzle Temperature:	<input type="text" value="200"/>	Nozzle Temperature (°C)
Bed Temperature:	<input type="text" value="60"/>	Bed Temperature (°C)
Retraction Distance:	<input type="text" value="0.6"/>	Retraction distance (mm)
Layer Height:	<input type="text" value="0.2"/>	Layer Height (mm)
Print Bed:		
Bed Shape:	<input type="text" value="Rectangular"/> ▾	Rectangular or round bed. Round beds will activate Origin Bed Center
Bed Size X:	<input type="text" value="180"/>	Size (mm) of the bed in X
Bed Size Y:	<input type="text" value="180"/>	Size (mm) of the bed in Y
Origin Bed Center:	<input type="checkbox"/>	Set the origin position (X0 Y0) to bed center instead of front-left corner

ii.

Speed:		
Use mm/s:	<input type="checkbox"/>	Use mm/s instead of mm/min
Slow Printing Speed:	<input type="text" value="1200"/>	Slow printing speed
Fast Printing Speed:	<input type="text" value="3000"/>	Fast printing speed. This should differ noticeably from Slow Speed
Movement Speed:	<input type="text" value="6000"/>	Movement speed
Retract Speed:	<input type="text" value="1800"/>	Retract Speed of the extruder
Acceleration:	<input type="text" value="800"/>	Set printing acceleration (mm/s^2)
Jerk X:	<input type="text" value="-1"/>	Set the Jerk for the X-axis. -1 to use firmware default
Jerk Y:	<input type="text" value="-1"/>	Set the Jerk for the Y-axis. -1 to use firmware default
Jerk Z:	<input type="text" value="-1"/>	Set the Jerk for the Z-axis. -1 to use firmware default
Jerk E:	<input type="text" value="-1"/>	Set the Jerk for the Extruder. -1 to use firmware default

iii.

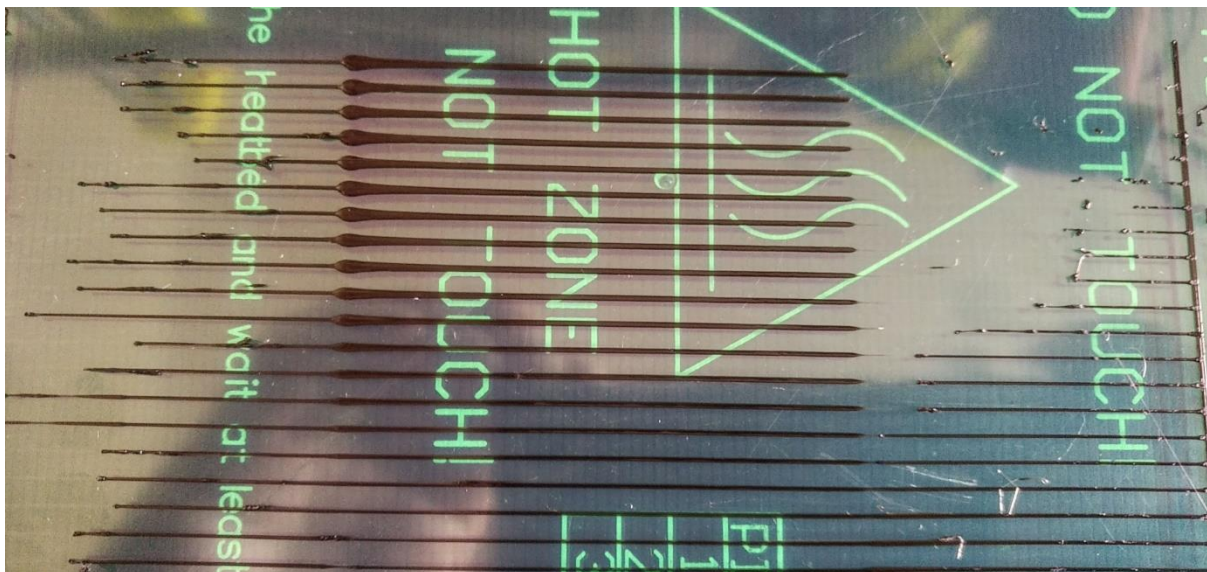
Pattern:		
Lin Advance Version:	1.5	Select version 1.0 for Marlin 1.1.8 and earlier. Select 1.5 for Marlin 1.1.9 / 2.0 and up
Pattern Type:	Standard	Select standard or alternate pattern
Starting Value for K:	0	Starting value for the K-factor. Usually 0 but for bowden setups you might want to start higher, e.g. 30
Ending Value for K:	2	Ending value of the K-factor. Bowden setups may be higher than 100
K-factor Stepping:	0.05	Stepping of the K-factor in the test pattern. Needs to be an exact divisor of the K-factor Range (End - Start)
Slow Speed Length:	40	Length of the Slow Speed test-line (mm)
Fast Speed Length:	60	Length of the Fast Speed test-line (mm)
Test Line Spacing:	3	Distance between the test lines. This will impact print size
Print Anchor Frame:	<input checked="" type="checkbox"/>	Adds a frame around the start and end points of the test lines. May improve adhesion
Printing Direction:	Right to Left (180°)	Rotates the print in 45° steps
Line Numbering:	<input checked="" type="checkbox"/>	Prints the K-value besides every second test line

iv.

Advanced:		
Nozzle Line Ratio:	1.15	Ratio between extruded line width and nozzle diameter. Should be between 1.05 and 1.2
Z-Offset:	0	Offset the Z-axis for manual Layer adjustment
Use Bed Leveling:	No	Level bed or load a saved mesh (i.e. for UBL) before printing. Bed leveling has to be activated in Configuration.h! Loading a mesh requires UBL to be activated!
Use FW Retract	<input type="checkbox"/>	Use Firmware Retract. Needs to be activated in Marlin
Extrusion Multiplier:	1.0	Usually 1.0
Prime Nozzle:	<input checked="" type="checkbox"/>	Prime the nozzle before starting the test pattern
Prime Extrusion Multiplier:	2.5	The default of 2.5 results in roughly 1mm of filament for 10mm line length
Prime Printing Speed:	1800	Speed of the prime move
Dwell Time:	0	Inserts a pause of x seconds before starting the test pattern to bleed off any residual nozzle pressure
Filename:	LINADvance_1.gcode	<input type="button" value="Generate G-code"/> <input type="button" value="Save as default"/>

e. Kalibrační vzorek K0-2 by měl vypadat nějak takto:

i.



- ii. Pokud jsou všechny linky stejné a podobají se lince s $K=0$, tak je pravděpodobně příliš nízká hodnota `DEFAULT_EJERK` (mě hodnota 5 Linear Advance blokovala). Lze překompilovat Marlin s vyšší hodnotu nebo ji nastavit na stránce namísto -1 třeba na 50

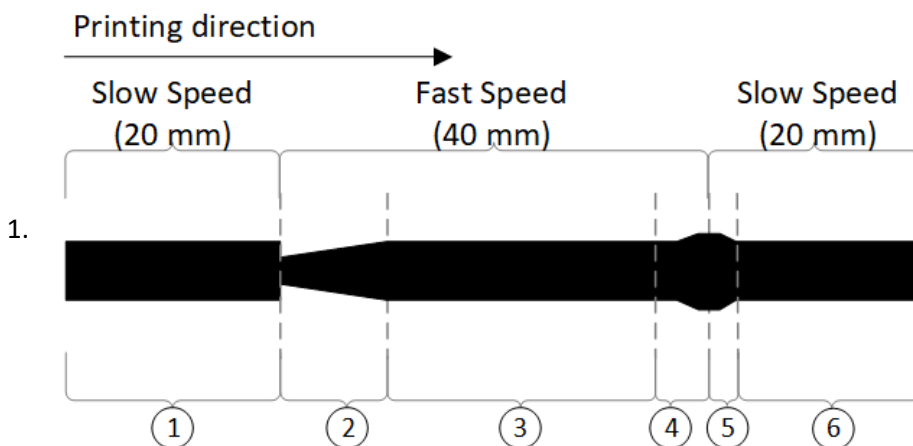
1.

Jerk E:	-1	Set the Jerk for the Extruder. -1 to use firmware default
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f.

g. Jak interpretovat vysledky

i. Příliš malé K



2.



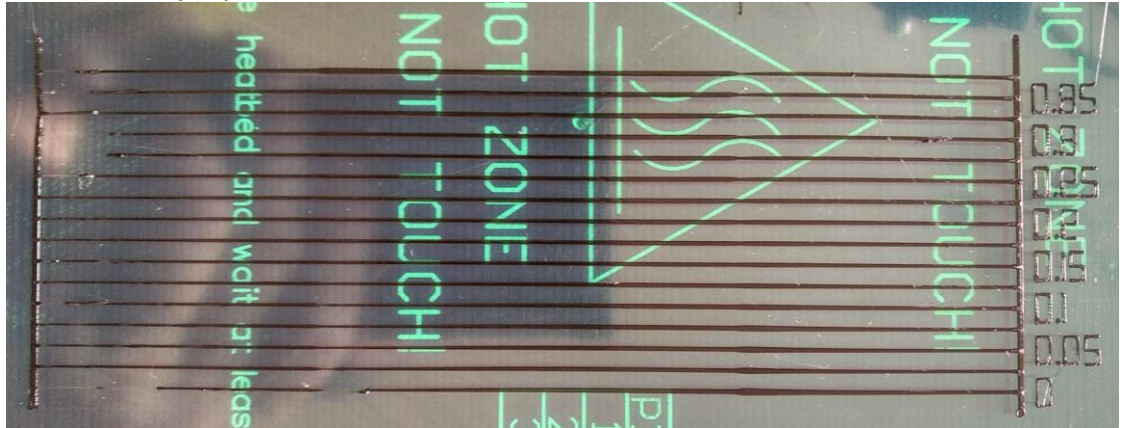
- ii. Opačně je Příliš velké K

1.



iii. Na obrázku níže je optimální $K = 0.15$

i.



h. Nastavím tedy do

```
#define LIN_ADVANCE
```

```
#if ENABLED(LIN_ADVANCE)
```

```
#define LIN_ADVANCE_K 0.15 //tj. zjištěná hodnota z předchozího kroku (kalibrace)
```