



# Orbiter v2.0

One of the most expected project of 2021, the **Orbiter v2.0** High precision direct drive extruder using custom manufactured by LDO Motors. This is our finest direct drive extruder system in which we have integrated all what we learned about extruders in the past years.

DESIGNED BY DR. R. LORINCZ  
MANUFACTURED BY LDO MOTORS  
DECEMBER OF 2021



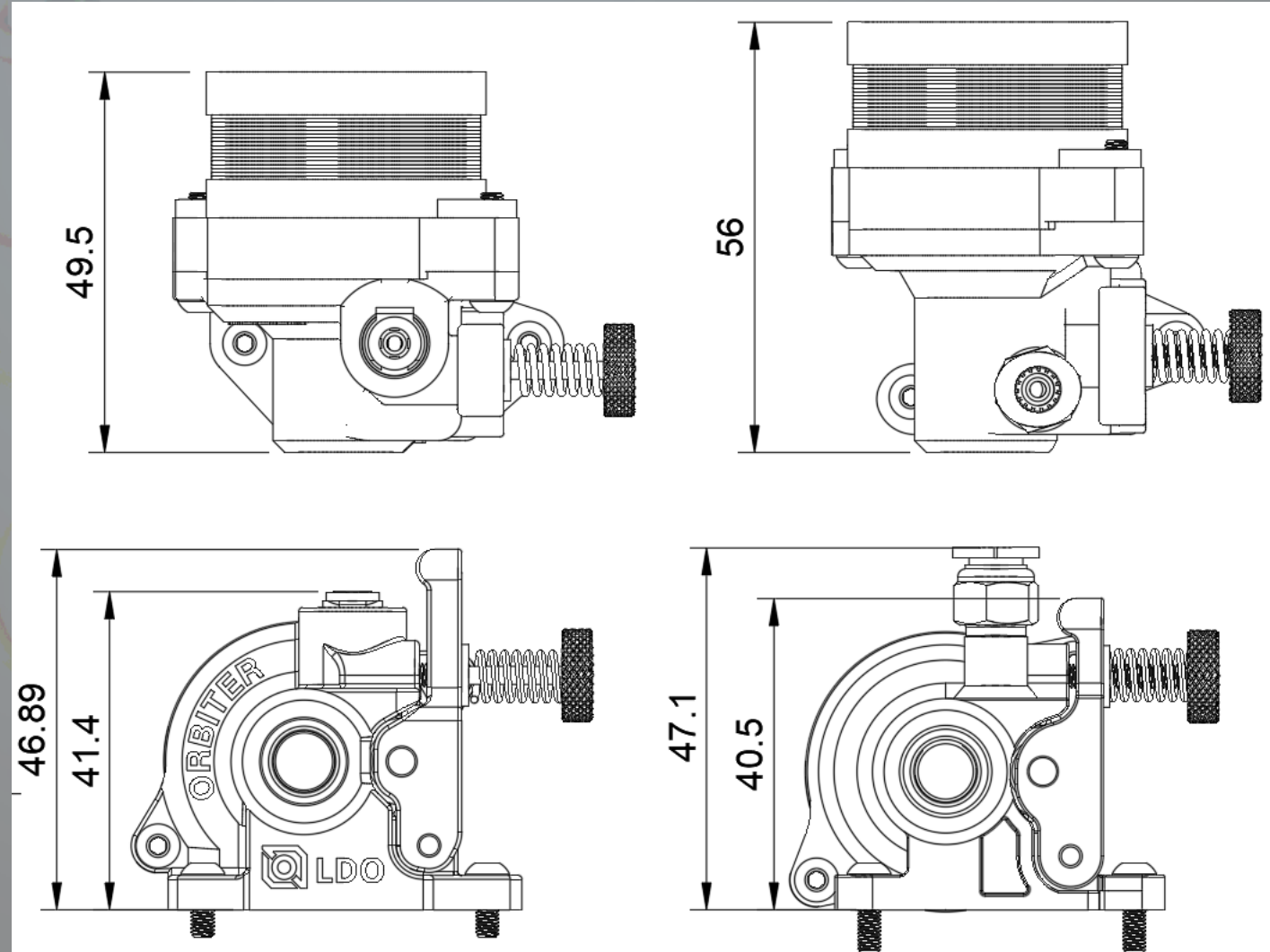
# SUMMARY

- ◆ Shorter drive gears **11mm vs 15mm**
- ◆ Hardened filament drive gears manufactured by Bondtech
- ◆ Weight reduced to **~135 grams**
- ◆ Smaller more compact dimensions (**11.6% shorter**)
- ◆ New motor design offers **~40% increase** in pushing force in real printing conditions and much improved acceleration performance
- ◆ Flipped drive gears – filament path closer to the extruder center for a more balanced design and perfect fit on delta printers as well
- ◆ Stainless steel filament exit guide with 0.2-0.3mm clearance to drive gears for best TPU printing experience and extreme wear resistance when using abrasive filaments.
- ◆ High temperature resistant injected housings, GPA12
- ◆ Machined PEEK secondary drive gear sleeve
- ◆ Tension mechanism with grab screw design (Captive Grab Screw)
- ◆ Mounting screws in line with filament exit path – improving housing stiffness and easier mounting
- ◆ Perfectly aligned filament path
- ◆ New smaller and better PTFE input coupler
- ◆ Motor position rotated by additional 10 degrees for easier maintenance and assembly
- ◆ Filament sensor add on with auto load and unload button add on feature
- ◆ And many more small changes to improve mechanical accuracy and design look



# SMALLER DIMENSIONS / MORE COMPACT

Reduced the overall size everywhere we could. This makes Orbiter v2.0 the most compact design version.



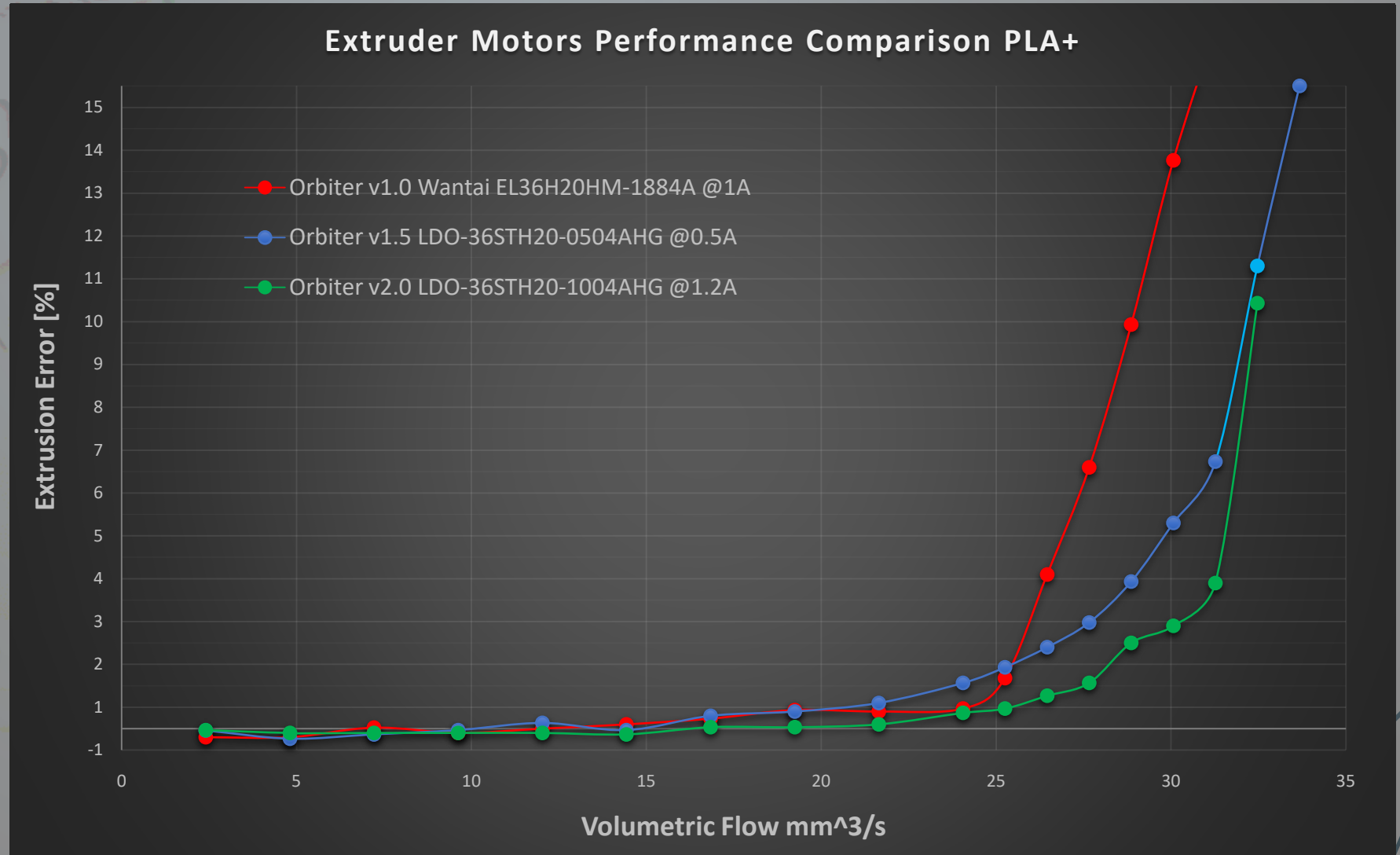
# FILAMENT PATH AND MOUNTING FEATURE

- Filament path closer to the center to facilitate mounting on delta printers and better mounting
- Inline mounting screws with the filament exit paths –
- Better housing stiffness and eliminate flexing during high force pushing
- Improved filament path



# EXTRUSION PERFORMANCE

Optimized the motor design to maximize its torque in the speed range the extruder needs it. The result is ~40% increase of the pushing force in real printing conditions. Retraction speed up to 120mm/s  
Acceleration up to 3000mm/s<sup>2</sup>



Orbiter & Phaetus Dragon HF, PLA+@220°C

# STAINLESS STEEL FILAMENT EXIT GUIDE

- Improves tremendously the extruder lifetime when used with abrasive filaments
- Gap between the filament guide and filament pushing gears is about 0.2-0.3mm
- Maximum TPU printing speed – the filament can go only into the hotend, no space to be tangled around the gears.



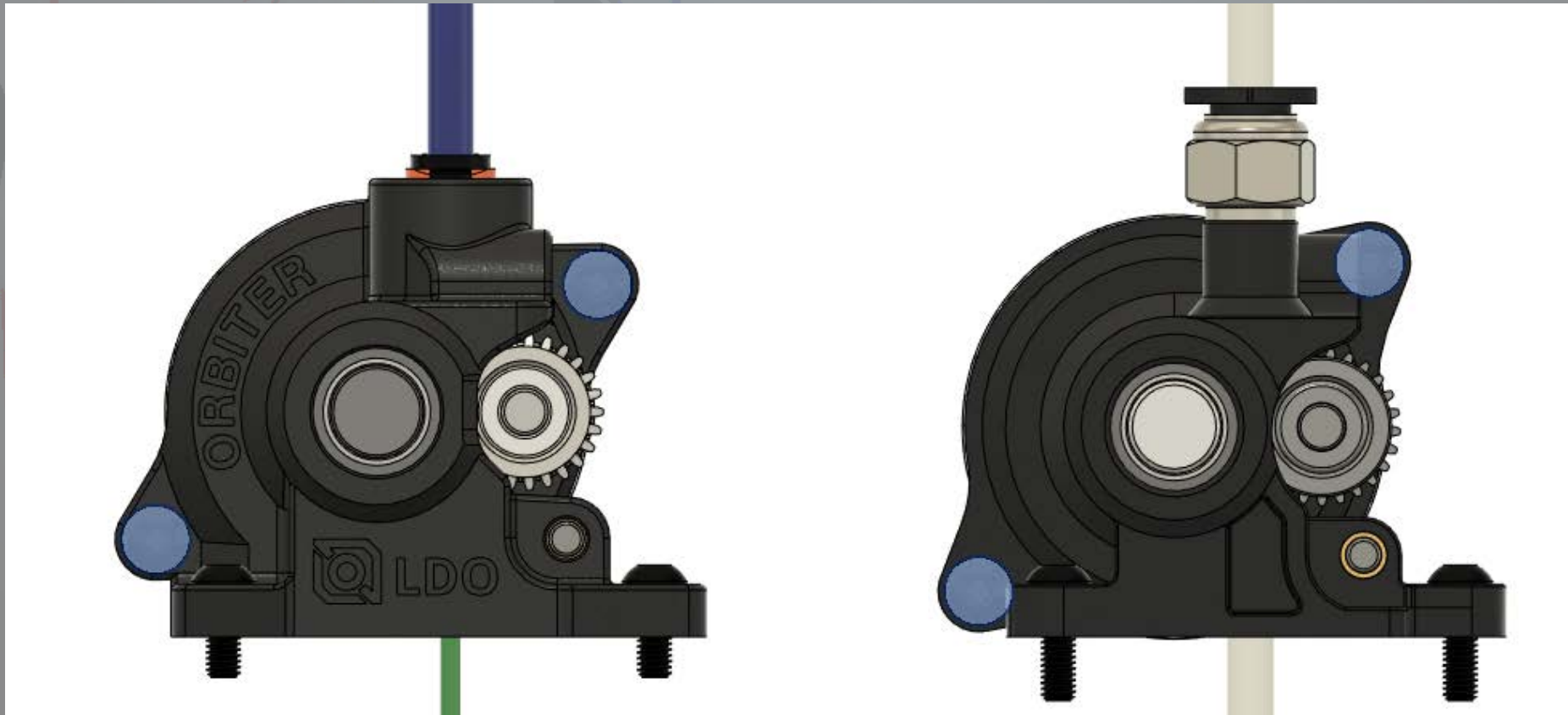
# GRAB SCREW DESIGN

- Grab screw based tension screw design
- POM washer and stainless steel spring are retained on the screw when the tensioner is removed.
- Reduces the possibility to lose the washer and spring.



# MAINTENANCE

- Motor position rotated by additional 10 degrees for easier maintenance and assembly





# FILAMENT SENSOR

(THE KIT IS EXPECTED TO RELEASE END OF DEC, AVAILABLE IN JANUARY)

- New filament sensor design with filament auto load and unload button
- Filament entry lit by colored LED
  - Green - filament present
  - Red – no filament
  - Yellow – unload button pressed

