

Gemstone ToolHead for Two Trees Sapphire



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Summary

The "GemStone ToolHead" is a precision tool designed for the Two Trees Sapphire Pro 3D printer. SP3 and SP5

[3D Printers](#) > [Other Printer Parts & Upgrades](#)

Tags: [extruder](#) [tool](#) [hotend](#) [toolhead](#) [sp5](#) [twotrees](#) [twotreessapphire](#) [twotrees3dprinter](#) [twotreessapphirepro](#) [sp3](#) [twotreessapphireplus](#)



After over a year of meticulous development, we are thrilled to introduce the **Gemstone Print Head**, a revolutionary addition designed exclusively for Two Tree Sapphire 3D printers. Engineered for optimum performance and versatility, the Gemstone Print Head is now ready for public release.

Here are the advantages that **Gemstone** print head, designed for the Two Tree Sapphire 3D printer:

Advantages:

Maximized Print Surface: The Gemstone Print Head is crafted to maximize the utilization of the

print bed surface, allowing for larger and more intricate prints.

Direct Drive: Featuring one of the most powerful extruders tested, enhanced with insights from @mihaidesign to minimize artifacts and ensure precise filament control.

High-Performance Hotend: Equipped with the most efficient hotend on the market in terms of price/performance ratio, capable of a flow rate of up to 55mm³, ensuring high-quality prints.

Dual 4010 Fans: Two 4010 turbo fans provide excellent airflow and nearly 360-degree coverage for sophisticated overhangs.

RGB/RGBW LEDs: Incorporates two RGB/RGBW LEDs for outstanding visibility, allowing for a customizable and vibrant printing environment.

Built-in BL-Touch: Features an integrated BL-Touch for automatic bed leveling, guaranteeing an impeccable first layer.

Support for Breakout Board/Piggyback and Strain Relief: Includes support for breakout board/piggyback and strain relief for cables, ensuring tidy and organized connections.

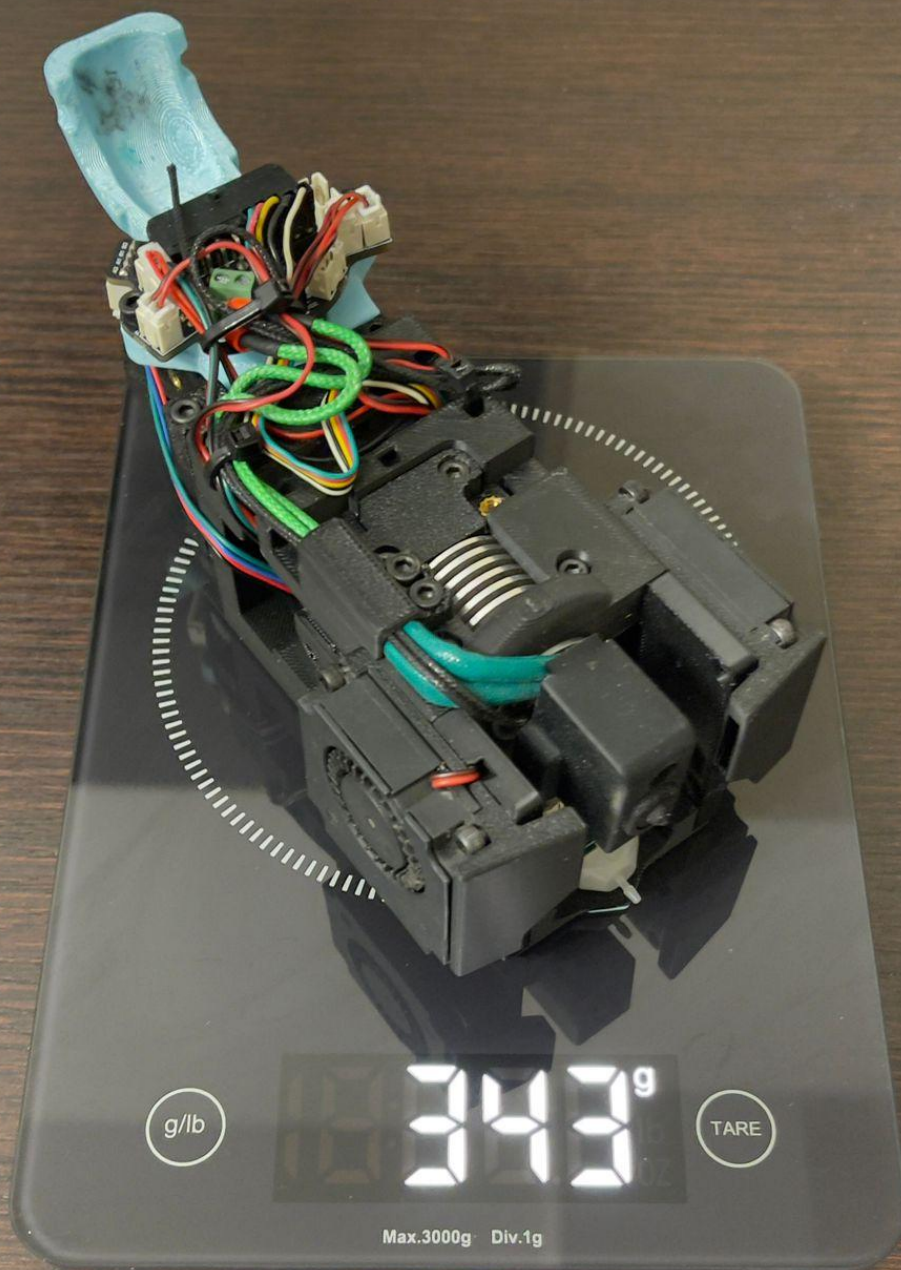
Accelerometer Support: Provides support for an accelerometer, offering flexibility in setup configurations.

Secure Fastening: All components are secured with heat inserts and screws, ensuring high rigidity and stability during printing.

Cable Management: Thoughtful design includes cable channels and zip tie locations for concealing and organizing all 16 cables associated with the hotend.

Integrated Belt Tensioners: Built-in belt tensioners facilitate easy belt adjustment, contributing to a hassle-free printing experience.

Packed into a lightweight design weighing just 340 grams, the Gemstone Print Head guarantees exceptional performance and reliability.





g/lb

34.3^g

TARE

Max.3000g Div.1g

Print Settings:

- Layer Height: 0.2 mm
- Top Layers: 5
- Bottom Layers: 5
- Walls: 4
- Infill: 20%
- Recommended Material: ABS, PC-ABS

Bill Of Materials:

- 2x 4010 GSD Time Turbo Fans (12,000 RPM, 24V, Dual Ball Bearing)
- 1x 3010 Fan for the Heatsink
- 1x BL-Touch
- 1x BTT PiggyBack Board
- 1x Thermistor
- 1x 65W Heater Cartridge
- 1x Volcano Heat Block
- 1x V6 Heatsink
- 1x CHT Volcano Nozzle
- 2x 1300 mm GT2 Belts
- 1x Nema14 Pancake Stepper Motor
- 1x BMG Gear Kit
- 2x RGBW round pcb

M3 SCHB Screws:

- 12x M3x4
- 12x M3x8
- 4x M3x12
- 8x M3x16
- 4x M3x20
- 4x M3x25

M3 HeatSet Inserts:

- 8x 5.7 mm long heat-set insert
- 10x 4 mm long heat-set insert
- 24x 3 mm long heat-set insert
- All 4.5 mm or 4.6 mm wide

Here are the list of the part we have used to build this ToolHead

This design was designed in mind with BTT EBB 36 Tool Head Can Board that you can find it here https://s.click.aliexpress.com/e/_EwmCDXB

The stepper motor used in this Tool Head https://s.click.aliexpress.com/e/_EQSBu0H

Hotend Fan https://s.click.aliexpress.com/e/_EjIMDUUp

Extruder gear kit https://s.click.aliexpress.com/e/_Ez1F7Od

Screws https://s.click.aliexpress.com/e/_Ej0yomZ

you will need 2x LED https://s.click.aliexpress.com/e/_Ejutsml

The nozzles we use https://s.click.aliexpress.com/e/_EvrlJVL

The nozzle for abraze materials https://s.click.aliexpress.com/e/_EwEoPD3

Heater Catrige https://s.click.aliexpress.com/e/_EGLTrW5

The Thermistors https://s.click.aliexpress.com/e/_EjuozwN

PT1000 Thermistor https://s.click.aliexpress.com/e/_EQmOWe1

Volcano pt100 heat block https://s.click.aliexpress.com/e/_EwmhkJT

BiMetal heatbrake https://s.click.aliexpress.com/e/_Eji3fBX

Part cooling Fans we use https://s.click.aliexpress.com/e/_EGebd2d

The heatsink we use https://s.click.aliexpress.com/e/_Ewr9OC9

We recommend this heatblock they are better for fast printing because they have 2 additional screws and this prevent bending the heatbrake

The HeatBlock we use https://s.click.aliexpress.com/e/_EHsFLhF

but for this stile you need some additional work to drill 2 m2 holes in to the heatsink and use diferent heatsink found here https://s.click.aliexpress.com/e/_EJR0Avr

<https://www.buymeacoffee.com/cn3dp>



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Model files

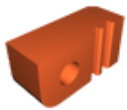


ToolHead

11 files



belt_tensioner.stl



right_belt_clamp.stl



fanled_holder_left.stl



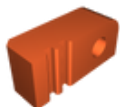
v6_heatsink_holder.stl



fanled_holder_right.stl



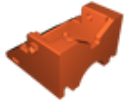
heaterthermistor-stran-relief.stl



left_belt_clamp.stl



toolhead_face_no_support.stl



tollhead_main_body_front.stl



tollhead_main_body_back.stl



pis_adxl_holder.stl



Extruder

6 files



extruder_motor_plate.stl



extruder_knob.stl



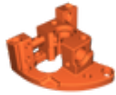
extruder_lever.stl



extruder_idler_dor.stl



strain_reliefpiggy_back_holder_v2.stl



extruder_main_body.stl

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