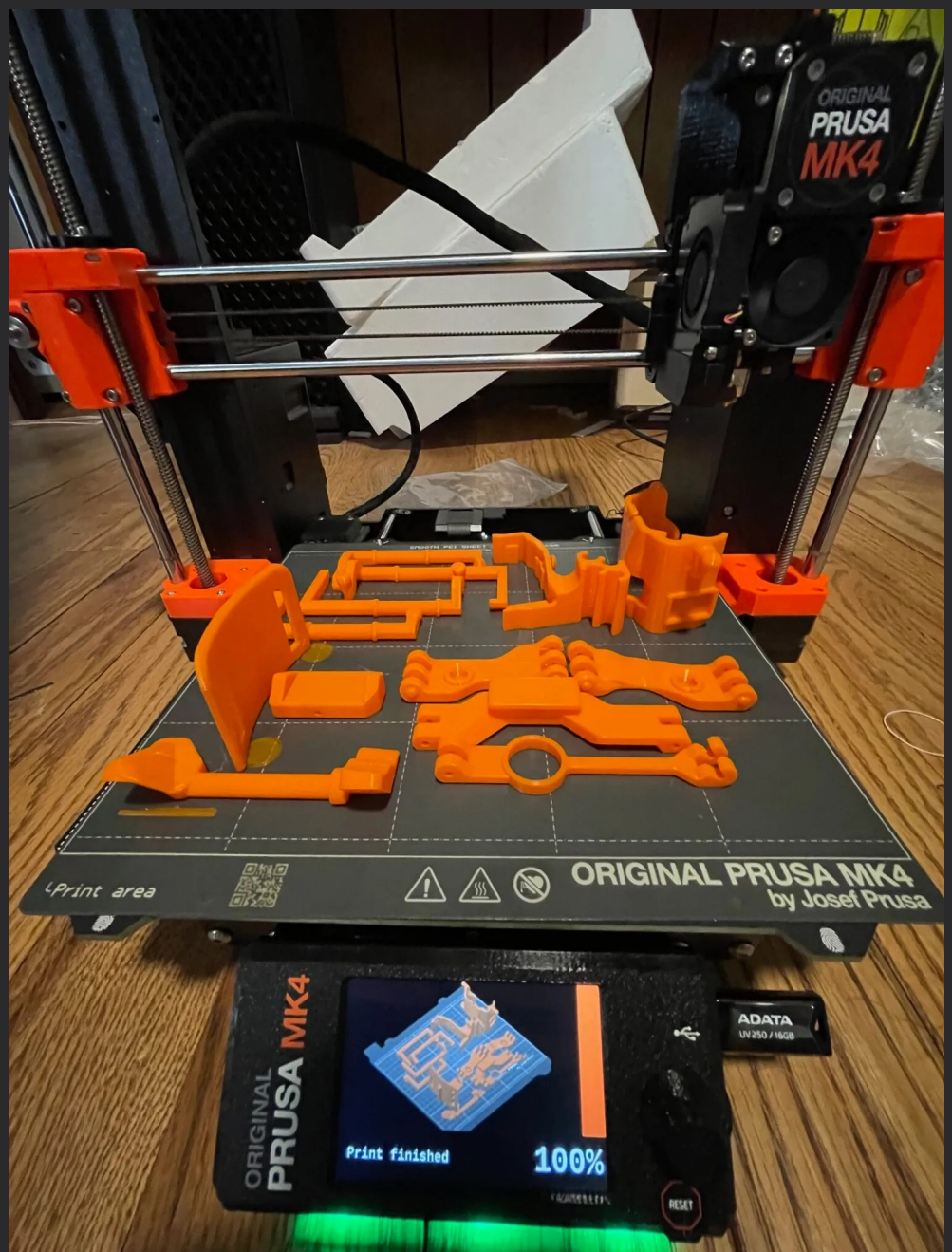




Additive Manufacturing Integration Proposal

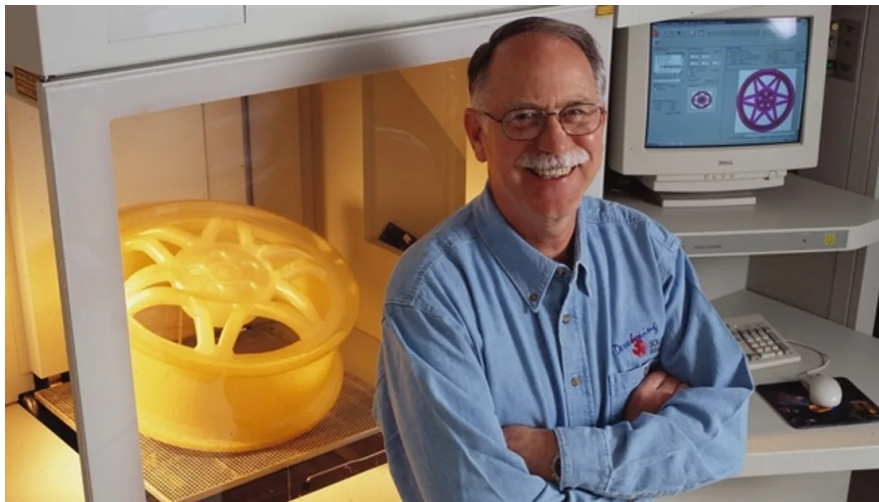


By John Eddy

3D Printers:

New-Old Technology

Although often seen as cutting-edge, 3D printing originated in the 1980s, with 3D Systems releasing the first printer in 1987.



*First 3D printer
Inventor
Chuck Hull
1983*

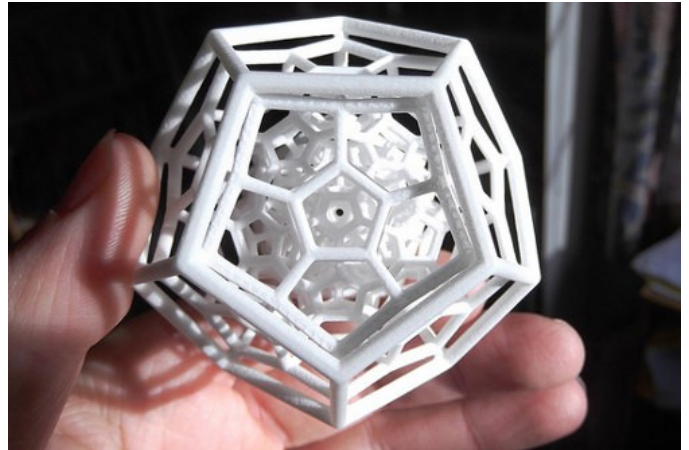
Today, thanks to expired patents and technological advances, it's more accessible and economical than ever.

While not a replacement for CNC machines, 3D printers are simpler and safer to operate, with skills that easily translate from CNC to 3D printing. Making them cheap & easy to integrate.

Strengths of 3D Printing

Design Freedom:

Ability to produce complex geometries that are difficult or impossible with CNC or Casting



Versatile:

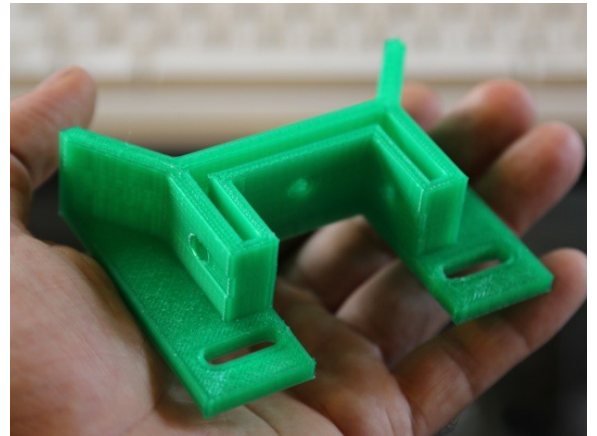
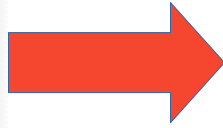
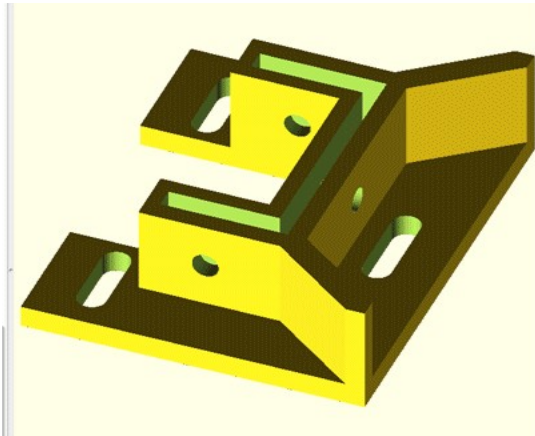
Easy to make a variety of objects from machine shop parts, to pistons, to marketing gifts, to office organizers

Customization:

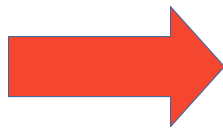
Easy to make custom objects like pistons. Simple modifications like sizes take less than a few minutes.



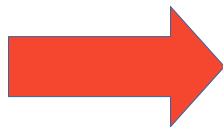
1. Print replica part for investment



2. Pour plaster to create mold



3. Burn out investment & pour aluminum



4. Collect & post process 😊



Machine Knobs

**Other uses for
3D Printers**

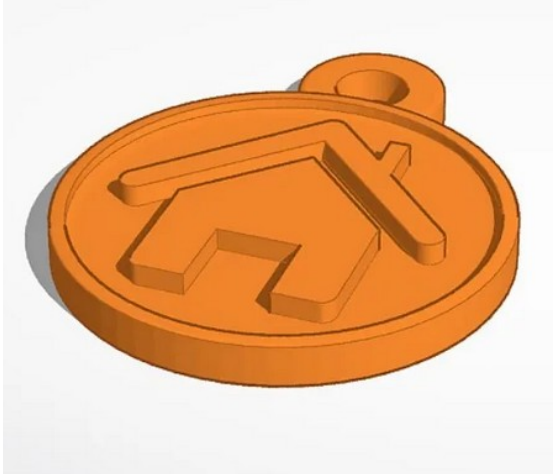


**Promotional
Keychains**



Office Organizers

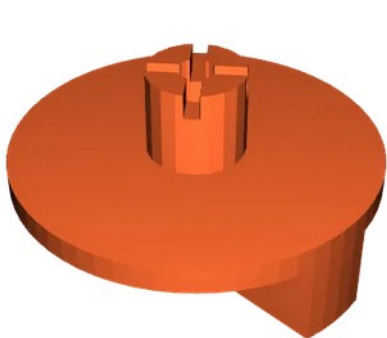
Keychain



Desk Organizer



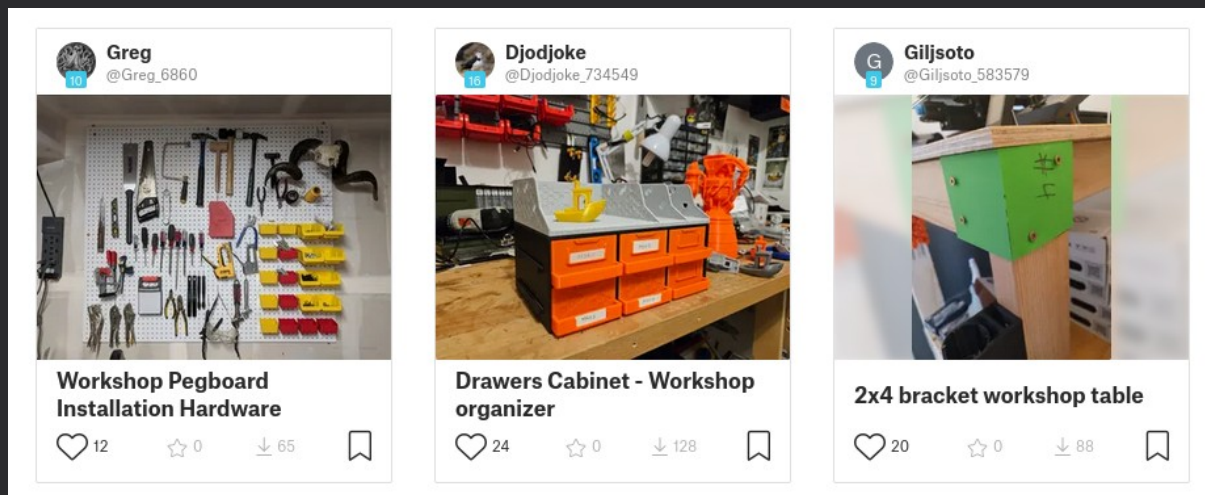
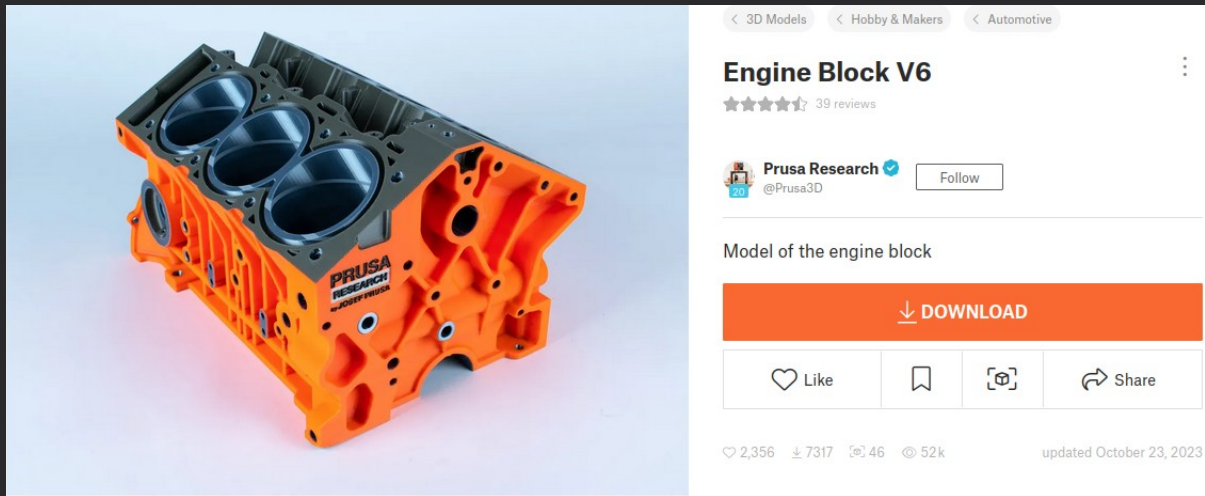
Make a large variety of objects



**Washing Machine
Knob**

**Honda Car
Emblem**

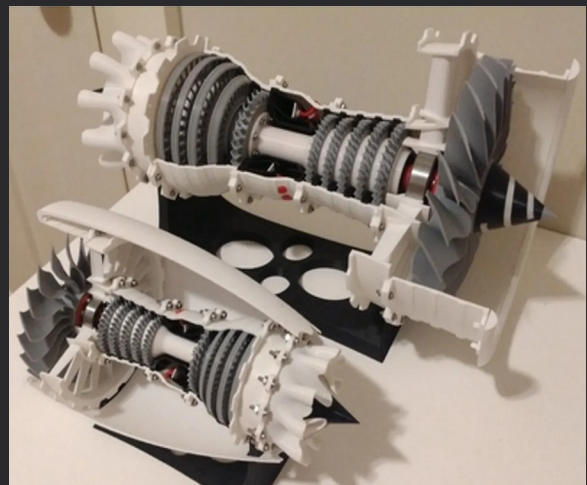
All commercially free to use Open-Source 3-D Digital Models



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GNU
General Public License v2.0

- ✗ | Sharing without ATTRIBUTION
- ✓ | Remix Culture allowed
- ✓ | Commercial Use
- ✓ | Meets Open Definition
- i | Share under the same license





3-D Printer Simple Guide

Search results: **piston**

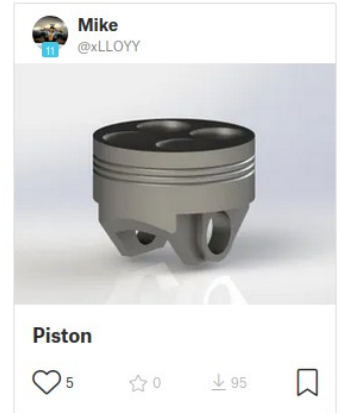
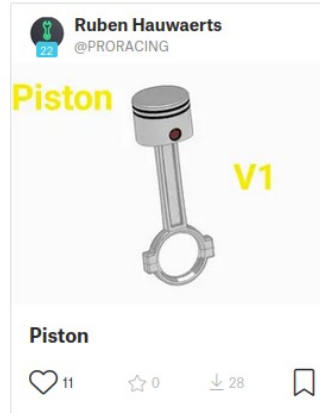
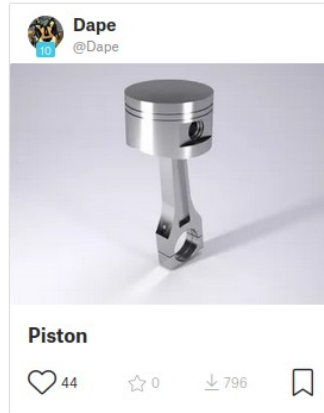
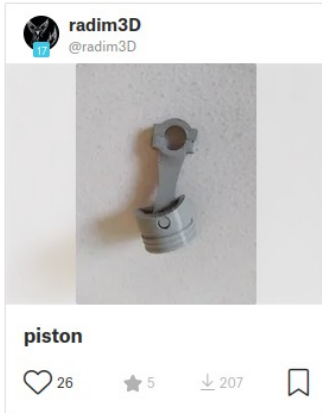


[How to use advanced search operators.](#)

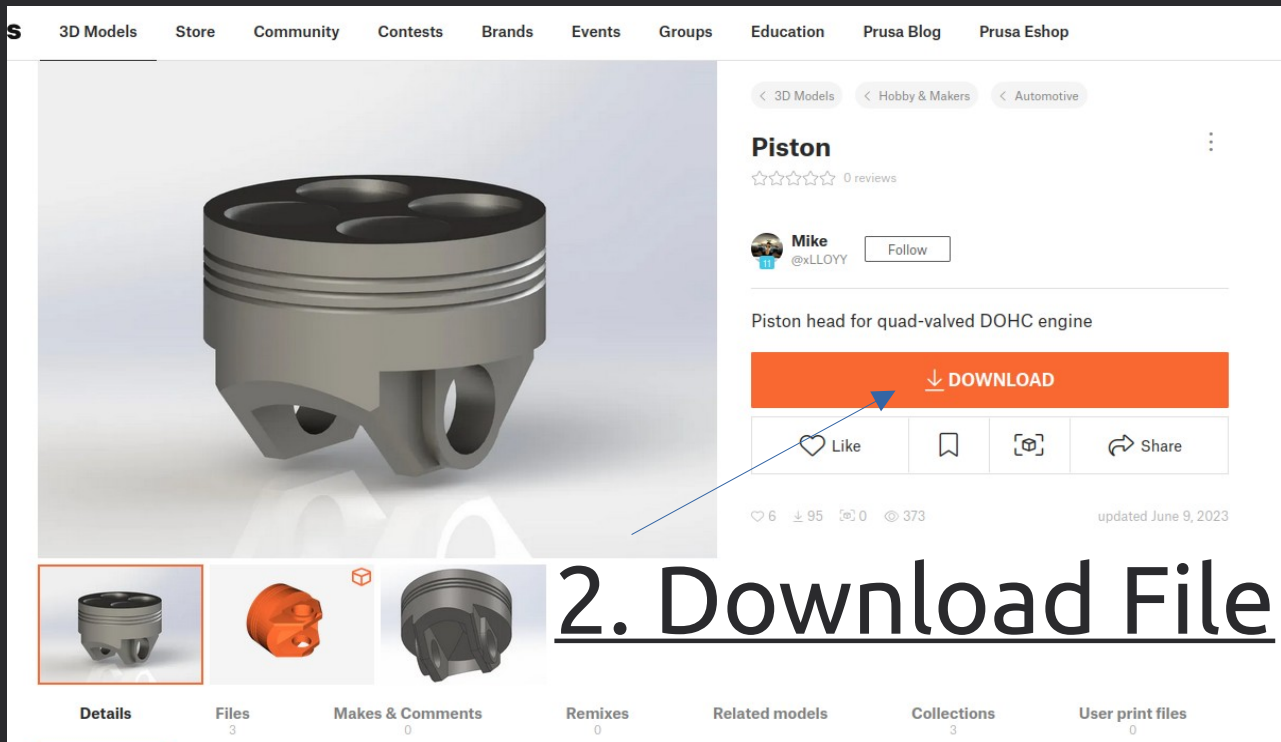
3D Models

1. Search for file & choose from list

Best match

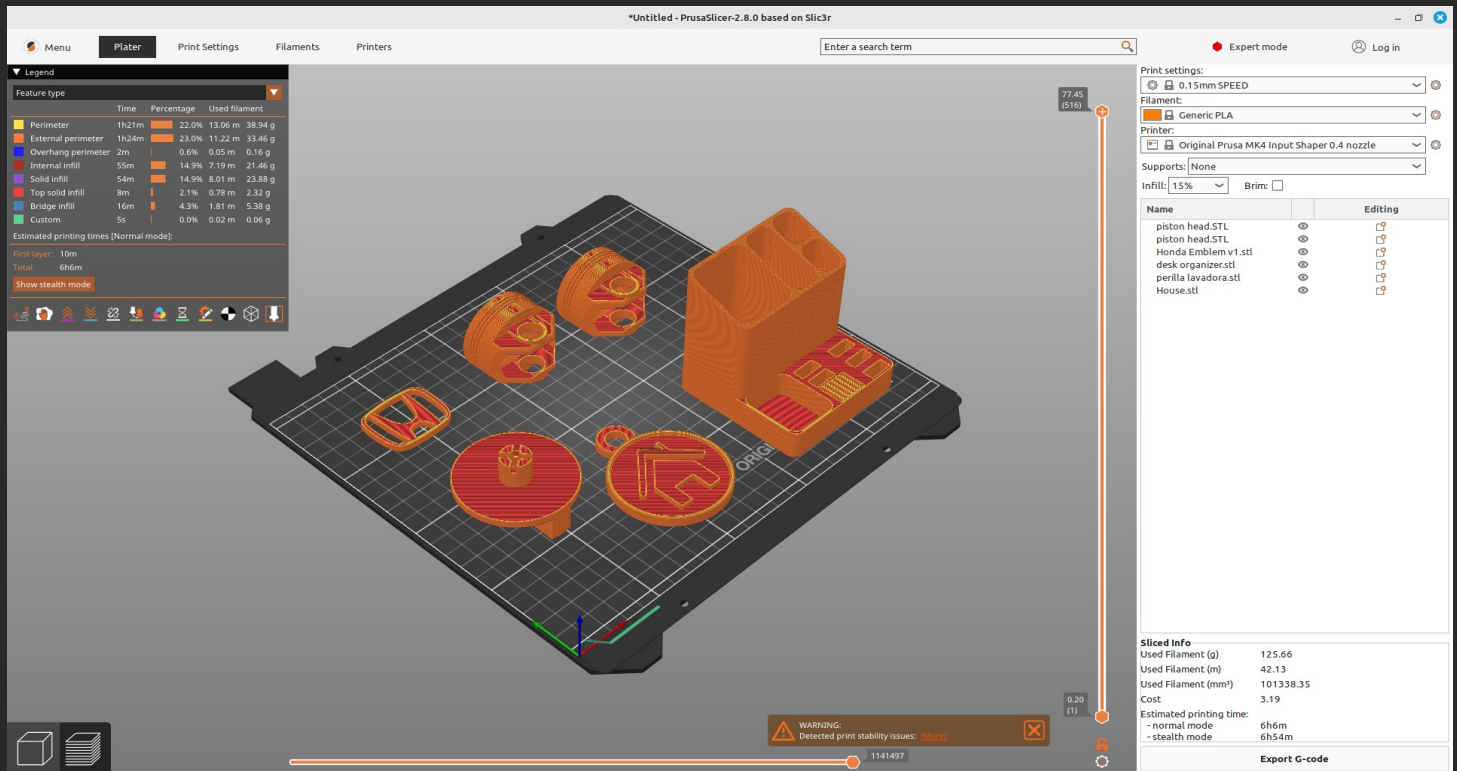


Visit: www.printables.com



2. Download File

Place files on printer plate. Mix and match.

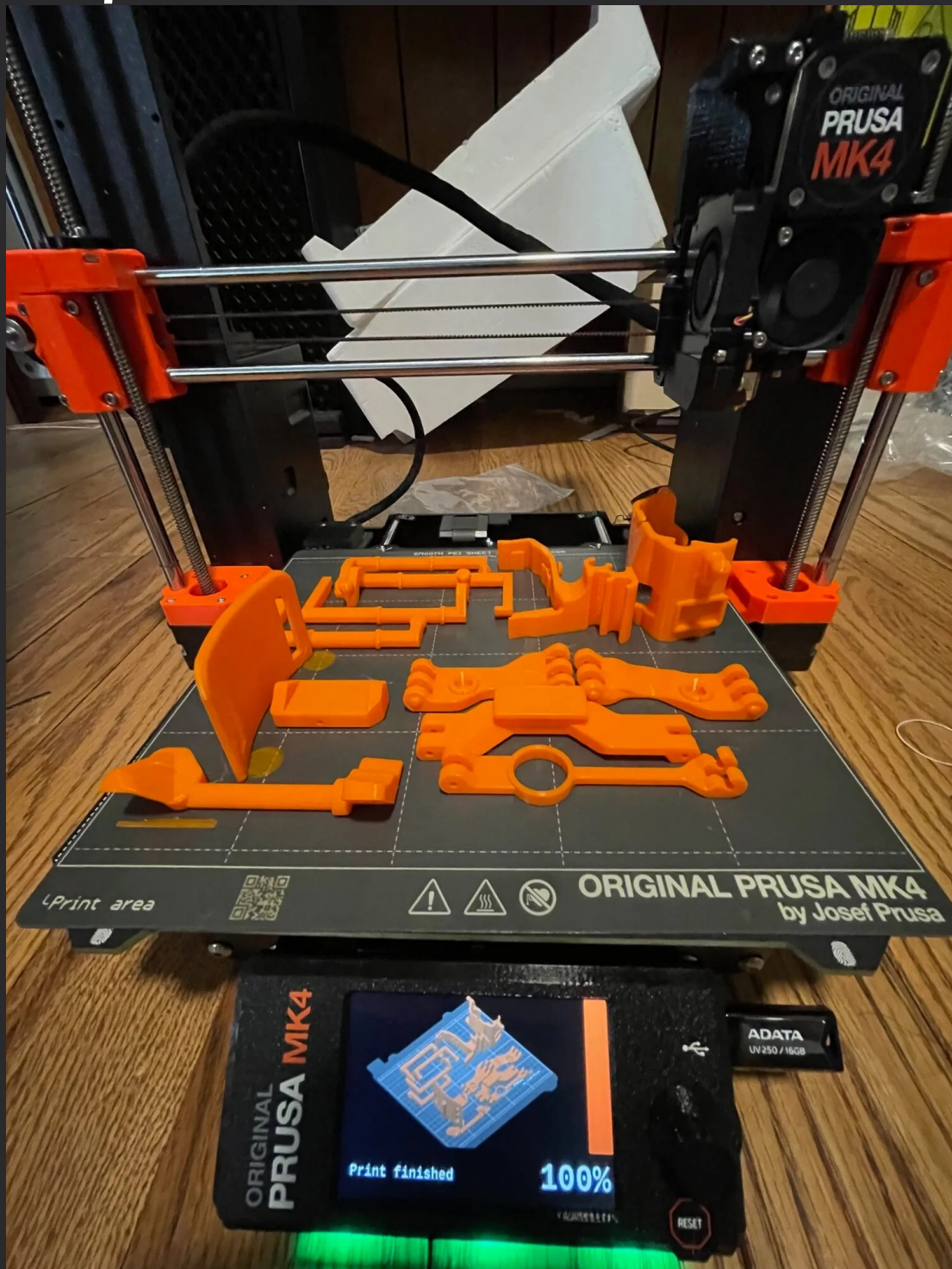


Sliced Info

| | |
|----------------------------------|-----------|
| Used Filament (g) | 125.66 |
| Used Filament (m) | 42.13 |
| Used Filament (mm ³) | 101338.35 |
| Cost | 3.19 |
| Estimated printing time: | |
| - normal mode | 6h6m |
| - stealth mode | 6h54m |

Export G-code

Upload, Print, & Finish!



Outsourcing the printing

www.jawstec.com

The screenshot shows the Jawstec website homepage. The navigation bar includes the Jawstec logo, 'How it Works', 'Capabilities', 'Industries', 'Materials', and 'Resources'. A '3D Print Quote' button is in the top right. The main content area features a large image of a person at a computer next to a 3D printer. Overlaid on this is a white box titled '3D Printing Service' with the tagline 'Helping Innovators and Creators'. Inside this box, it says 'Get an Instant 3D print Quote for your project' and lists file formats: '.stl | .obj | .stp | .3mf'. There is an upload icon and a button that says 'Upload a file to start'. Below this, it states 'All Uploads are secure and confidential' and 'Don't have a 3D Model? We can help.' A large black box with white text 'Drag & Drop files here' has an arrow pointing to the upload icon. In the bottom right corner, there is a 'Customer Support' chat bubble that says 'Welcome to Jawstec, your #1 online 3D Printing Service!'.

Upload files into website –
Immediately gives price & options

This screenshot shows the 'Get Your 3D Print Quote in Seconds' interface on the Jawstec website. The header includes the Jawstec logo and 'Realtime Online Quoting'. Navigation buttons for 'Injection Molding Quote', 'Sheet Metal Quote', 'CNC Machining Quote', and '3D Print Quote' are visible. The main section is titled 'Get Your 3D Print Quote in Seconds' with a subtext 'Order in the next 0 hours 56 minutes to start processing your 3D print quote today'. Below this is a form with 'Production Priority' (Economy, Standard, Expedite), 'Lead Time' (5 days), 'File Count' (1), 'Total Parts' (1), and 'Total Price' (\$15.97). A 'Proceed to Checkout' button is on the right. On the left, a dashed box contains the text 'Drop .stl, .obj, .3mf, .stp or .step files or click here to upload. (Files are uploaded to current project)'. Below this is a blue box for 'piston_head(1) - 0.1 b' with a small image of the part. In the center, a 3D model of the piston head is shown in a wireframe box, with the file name 'File: piston_head(1).STL' above it. Below the model is a button 'upload orientation pdf'. To the right of the model, technical specifications are listed: 'Volume: 26827.34mm³', 'Surface Area: 8640.53mm²', and 'Box: 43.73mm x 33.00mm x 43.75mm'. Below these is a quantity selector 'Qty: 1' with a 'Copy Qty to All' button. At the bottom right, the 'Price: \$15.97' is displayed. On the right side of the interface, there are settings for 'Drawing units' (mm, cm, in), 'Choose Process' (MJF, SLS, SLA, SLM), 'Material' (MJF Nylon 12), 'Color' (Default Grey), and 'Finish' (Raw). There are also checkboxes for 'Bag & Tag', 'ITAR', and 'Photo', and a text area for 'Special Instructions/Comments On Part'. A 'Messages' section is at the bottom right. A large black arrow points from the 'Price' text to the 'Price: \$15.97'.