Where can you get a part 3D printed?

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Abstract. Where to get a part printed in the US: libraries charging $0.10 per gram of PLA, makerspaces, and online services that quote on volume, material and machine time.

Keywords: replacement-parts, home-repair

Table 1. The options

Option	What you bring	Typical processes	How pricing works	Source
Public library	An STL file through an online form (Glendale wants it zipped; Portsmouth also takes OBJ)	FDM in PLA only	$0.10 per gram of material at both; Glendale sends an estimate before printing	Glendale and Portsmouth library pages
Makerspace or fab lab	Your own file; you usually run the machine yourself after the space's training	Whatever machines the space owns	Set by each space (membership, machine time or material)	fablabs.io directory
Online print service	An uploaded CAD file: STL, OBJ or STEP	FDM, SLA, SLS, MJF and metal, by service	Instant quote from part volume, material, process and machine time	Each service's page; Xometry cost guide
Local print shop or hobbyist	A file, or the broken part plus measurements if they will model it	Whatever printers they own	Set by the seller; ask whether it covers modeling, grams or print hours	None: terms vary by seller

1 Where can you get a part 3D printed?

Four places print parts for the public in the US: public libraries, which in Glendale, Arizona and Portsmouth, New Hampshire charge $0.10 per gram of polylactic acid (PLA); makerspaces and fab labs; online services such as Craftcloud, JLC3DP, Protolabs, Shapeways and Xometry, which quote an uploaded file and ship; and local print shops. Most start from a 3D file.

1.1 The options

Library figures from the Glendale and Portsmouth library pages, file formats from Craftcloud and Protolabs, pricing factors from Xometry's cost guide. Fused deposition modeling (FDM) extrudes plastic filament; stereolithography (SLA) cures liquid resin; selective laser sintering (SLS) and Multi Jet Fusion (MJF) fuse nylon powder; direct metal laser sintering (DMLS) and selective laser melting (SLM) fuse metal powder.

The online services, alphabetically, and what each states on its own site:

Service	Processes it lists	File note
Craftcloud	FDM, SLA, SLS, MJF, DMLS, SLM, through a network of manufacturing partners whose offers you compare	Over 35 formats, including STL, OBJ and STEP
JLC3DP	SLA, MJF, SLS, FDM (ABS, ASA, PLA, PA12-CF, TPU), full-color resin, metal binder jetting, SLM	Up to 10 files at once on the quote page
Protolabs	DMLS, MJF, SLA, PolyJet, SLS, FDM	Recommends STEP, SOLIDWORKS or IGES; converts everything to STL
Shapeways	SLS, MJF, SAF, SLA, material jetting, FDM	Upload through its quote tool
Xometry	SLS, MJF, FDM, PolyJet, SLA, Carbon DLS, DMLS, metal binder jetting	Upload a 3D CAD file for an instant quote and lead time

1.2 Why the price differs so much

Xometry's cost guide names machine time and material as "the two main cost drivers across all additive platforms." Material is what the part and its waste consume, so a smaller or hollowed part quotes lower. Machine time includes warm-up, layer changes and post-processing, which is why a tall part costs more than a flat one of the same weight. Process matters too: Xometry notes that each process has its own price point, so the same file quotes differently in FDM, SLA or MJF. In SLS several copies share one powder bed, so Xometry discounts extra copies of the same part.

A library charges only for the plastic, and both libraries print PLA only. Glendale accepts parts up to 280 x 280 x 270 mm

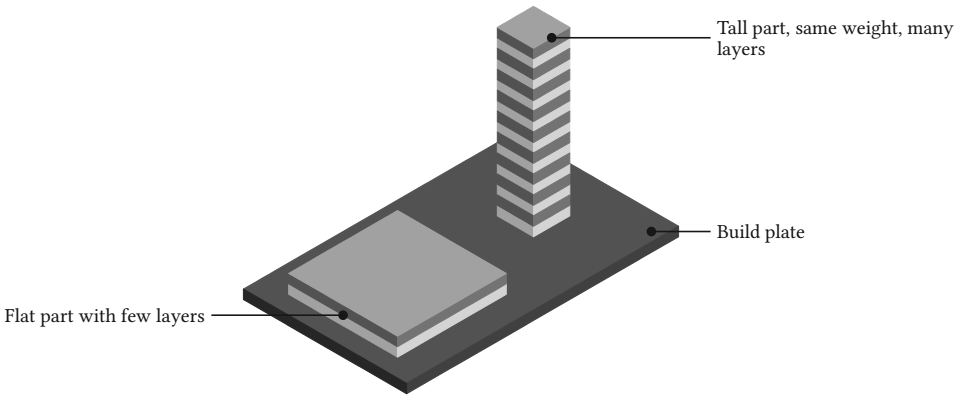


Figure 1. Machine time includes every layer change, so a tall part costs more than a flat one of the same weight.

(11 x 11 x 10.5 in) and quotes seven to ten business days. Portsmouth caps each piece at 10 hours of printing. Glendale reserves the right to refuse any request. The American Library Association advises libraries to bar illegal uses in their written policies.

1.3 How to order 3D printed parts

1. **Get a file.** Download one from a model library by brand and part number, or draw it from the broken part. The caliper method is on how to measure a broken part without a 3D scanner. Protolabs recommends STEP; the libraries want STL.
2. **Choose the material for the job.** Heat, load and water decide it. The per-material limits are on which filament to use for replacement parts.
3. **State the quantity.** Extra copies cost less per part on powder-bed processes.
4. **Flag what has to fit.** Name the holes, pins, threads and snap features that must mate, and their dimensions. A library or hobbyist chooses the print orientation, and a printed part is weakest across its layers. Ask for loaded features to lie along the layers. Matching holes and pins is covered on how to match tolerances on a replacement part.
5. **Read the quote, then order one.** Check the fit before ordering a batch.

1.4 3D print parts near me

Start with your public library: search its site for "3D printing." Then check a nearby fab lab on the fablabs.io directory, which filters by country. A university makerspace may limit access to students and staff, so check its page first. For a local print shop, ask before paying whether the price covers modeling or only printing.

1.5 3D print car parts: service, online or near me

The same services print car parts. Order by process and material:

- **Interior trim, clips, knobs, brackets and covers that see heat:** MJF or SLS nylon 12 (PA12). JLC3DP lists 175 °C (347 °F) heat deflection at 0.45 MPa for its PA12-HP, against 57 °C (135 °F) for Bambu Lab PLA Basic. PLA is the library default, and it softens in a hot cabin.
- **Exterior parts in sunlight:** FDM in acrylonitrile styrene acrylate (ASA). Prusament ASA deflects at 93 °C (199 °F) at 0.45 MPa. JLC3DP and Shapeways list ASA for FDM.

Never have a printed part made for brakes, steering, suspension, seat belts or other restraints, airbags, the fuel system or wheels. A failure there can cause a crash. Use the certified original or an approved replacement. Printing a manufacturer's part also raises copyright, patent and warranty questions; see is it legal to 3D print replacement parts.

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