Is it legal to 3D print replacement parts?

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Abstract. What utility patents, design patents, trademarks and copyright each cover on a replacement part, the term of each, and how the repair doctrine applies to printing one.

Keywords: replacement-parts, home-repair, warranty

Table 1. The conditions

Right	What it protects	Term	Printing one for yourself	Selling copies
Utility patent	A new and useful process, machine, manufacture or composition of matter	Up to 20 years from the first non-provisional filing date	Only if the part itself is claimed; replacing a worn unpatented component is repair	Same
Design patent	The ornamental design of an article of manufacture	15 years from grant if filed on or after 13 May 2015; 14 years before	Only if you copy the protected look	Same
Trademark	A word, phrase, symbol or design that identifies the source of goods	Indefinite while used and maintained	Leave the logo and name off	Reproducing a maker's mark on goods you sell
Copyright	Original expression such as a model file, not the utilitarian aspects of a useful article	Not the question for a functional shape	None from your own measurements; someone else's file follows its license	Same, plus separable artwork on the part

1 Is it legal to 3D print replacement parts?

Usually yes, in the United States. A part made for your own use is a problem only if a live patent covers it, and the Supreme Court's repair doctrine lets an owner replace a spent unpatented component of a patented product. Copyright does not cover a functional object. Selling copies or reproducing a logo raises the exposure.

1.1 The conditions

Terms from the U.S. Patent and Trademark Office (USPTO), 35 U.S.C. § 154 and the U.S. Copyright Office. None of these sources mentions 3D printing or says how a court would treat a given part. This page is information, not legal advice.

1.2 Why

A patent is a right to exclude. Under 35 U.S.C. § 154 the owner can stop others "making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States". Making is on the list, so personal use alone is no defense. What protects the home repairer is scope: the claims (the numbered sentences that define what the patent covers) usually cover the whole assembly, not the clip that broke.

That is the repair versus reconstruction doctrine. In Aro Manufacturing Co. v. Convertible Top Replacement Co., 365 U.S. 336 (1961), the Supreme Court held that "mere replacement of individual unpatented parts, one at a time, whether of the same part repeatedly or different parts successively, is no more than the lawful right of the owner to repair his property". The fabric of a patented convertible top wore out after about three years, and replacing it was repair, not reconstruction.

Copyright rarely reaches the object. The U.S. Copyright Office defines a useful article as one with "an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information" and says copyright "does not protect the mechanical or utilitarian aspects of such works of craftsmanship". Circular 33 adds that registering a technical drawing "does not apply to the underlying invention". Someone's computer-aided design (CAD) file is their expression; the functional shape is not theirs by copyright.

A trademark is "any word, phrase, symbol, design, or a combination of these things that identifies your goods or services", per the USPTO. A registration lasts indefinitely while the mark is used and maintained. The molded logo does not belong on your copy.

In the European Union, Directive (EU) 2024/1799 of 13 June 2024 applies from 31 July 2026. Article 5(6) says manufacturers shall not impede the use of "spare parts issued from 3D-printing" by independent repairers when those parts conform to the applicable requirements. That rule opens access to repair. It does not change patent rights.

Get it wrong and the failure is commercial, not domestic. The clip that is lawful repair in your own dishwasher becomes a trademark problem once it carries the maker's logo, and

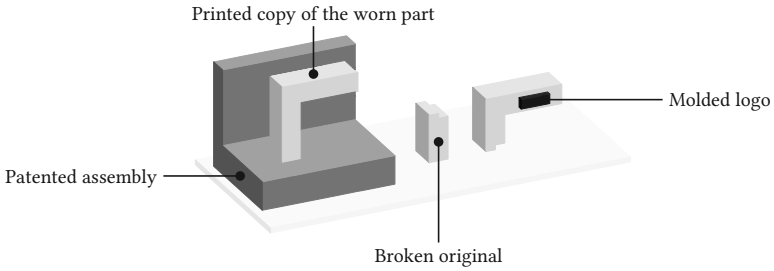


Figure 1. Under the US repair doctrine, replacing a worn, unpatented part of a patented product is repair, and the maker's logo stays off the printed copy.

a patent problem once it is the claimed invention sold in a batch.

1.3 How to check it on your own part

1. Look for a patent number or "Pat." marking on the part or product and search it on the USPTO site. Note the utility filing date or the design grant date.
2. Add 20 years to the utility filing date, or 15 to the design grant date (14 if filed before 13 May 2015). Past that, the patent has expired.
3. Read the claims, not the title. Is your part claimed on its own, or one unpatented element of a claimed combination?
4. Strip any name, logo or symbol from the model, and work from your own measurements unless someone else's file is licensed for your use.
5. If you intend to sell copies, treat every row above as live and get advice.

2 Is it legal to 3D print car parts?

Usually yes. A part you print for your own car falls under the same patent, trademark and copyright rules as any other replacement part. Cars add three limits: design patents on body panels and light housings, trademarks on badges, and federal safety standards for lamps, glass and restraints. Selling copies adds trademark, patent and product-liability exposure.

2.1 The rules by part

Standards from 49 CFR Part 571; certification from 49 U.S.C. § 30112. This section is information, not legal advice.

The repair doctrine does not cover a copied panel. In Automotive Body Parts Association v. Ford Global Technologies (Fed. Cir. 2019), the court held that an F-150 owner may repair the patented hood and headlamps the truck came with, but "the purchaser may not create new hoods and headlamps using Ford's designs." The SMART Act (H.R. 1707, 118th Congress) would have allowed look-alike exterior repair parts 30 months after a model goes on sale. It died in committee.

FMVSS No. 108 covers replacement lamps too, and a printed lens carries no certification. Under § 30122, a repair shop may not knowingly disable a required safety device.

2.2 Selling and the warranty

Brand-free clips and trim can be sold, but a seller answers for design patents, trademarks and any failure on the road. Describe the fit in plain words, with no logo or styling that suggests the carmaker made the part.

A printed part does not void your car's warranty by itself. The Federal Trade Commission (FTC) says "your warranty stays in effect if you use aftermarket or recycled parts." Under the Magnuson-Moss Warranty Act, a carmaker can still deny coverage for damage a defective or badly installed part causes, once it proves that link.

2.3 Before you print a car part

1. Find the part in the table. On a do-not-print row, buy the certified part.
2. For an exterior panel or lamp housing, search the carmaker's design patents on the USPTO site and apply the term rule above.

Table 2. The rules by part

Part	What applies	Printing one for your own car	Selling copies
Clips, trim fasteners, interior brackets, knobs	The general rules above	Usually fine from your own measurements	Brand-free, fit described in words
Hood, fender, quarter panel, side mirror, lamp housing	Design patent (term in the table above)	Copying a patented look infringes, even for a repair	Same
Badge, emblem, molded logo	Trademark	Leave it off	Same
Lamps, lenses, reflectors, window glass	Federal Motor Vehicle Safety Standards (FMVSS) No. 108 and No. 205	Do not print	Must meet the standard and carry certification
Seat belts, airbags, brakes, steering, suspension, fuel system, wheels	Safety-critical; FMVSS No. 208 and No. 209 cover restraints	Do not print	Do not print

3. Delete every badge, logo and model name from the file.
4. Before selling, get advice on the specific part.

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