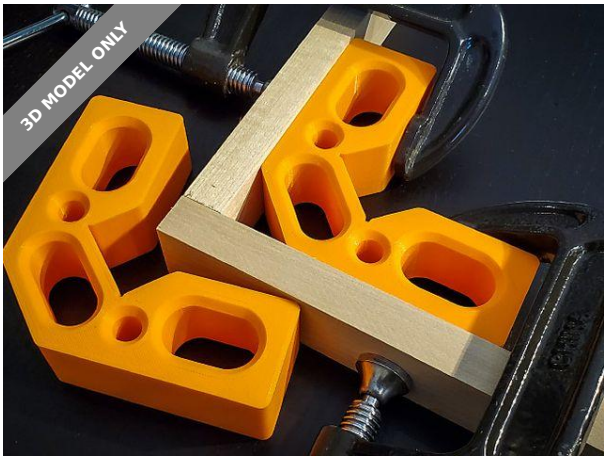

Corner Clamp (ClampItSquare)

The Redcoat

VIEW IN BROWSER

updated 18. 2. 2023 | published 18. 2. 2023

Summary

Corner square clamps in 30 variations for woodworking to hold two pieces 90 degrees square during glue-up.

Hobby & Makers > Tools

Tags: woodworking clamp

Remix of a design by J-Max from https://www.thingiverse.com/thing:1306832

These are corner square clamps in 30 variations used for woodworking to hold two pieces 90 degrees square during a glue-up or pocket-hole join. Regular clamps of many types can be used on this to provide pressure.

The original design had just 3 models and two reported issues (detailed below) and has since attracted many more suggestions & comments from Printables users on the v1 models, most of which are addressed in the v2 model set.

Aggh, it's just a square - why so many models?

Unlike many models where you can just scale them in slicer to fit your needs, this one works a lot better pre-scaled. For example, if you make a fat square thinner, the chamfer angles can change to be unprintable

without supports. If you make a thin square fatter, the enlarged chamfers waste a lot of good internal clamping surface.

So, there are now 5 main models: Mini, Medium, Large, LargeVR and Max. Most have 3 thicknesses, 2", 3", 4", and for each of those, you will find both flat and anti-elephant-foot versions (see below for why).

V2: 2023-02 Version (Latest)

- Mini, Medium & Large were re-mastered in FreeCAD, fixing minor geometry issues with the internal clamp hole, and producing much cleaner smaller models, about 15-20% the size of the OpenSCAD v1s.
- Addresses the suggestions raised by CaptAngry, adesir, zzet , and noted by w00h to add a small chamfer around the XY plane perimeter to eliminate the threat of elephants-foot impacting the clamping surface. I've never seen this myself, and it could be fixed with sandpaper, but everyone uses different printers and slicer configurations and a model should be as printable as it can be. These models end with "**AntiEF**", vs the other version "Flat" which will be very slightly easier to print.
- Addresses the issue demonstrated by vinz972 that taller versions of the squares would be useful when clamping wood beyond 2" tall. The original squares are 28mm or 35mm high (for **2inch** surfaced lumber per USDC PS 20-99 Softwood dimensions). New options are added for **3inch** (61mmm high) and **4inch** (86mm high), each being a consistent 3mm shorter than the lumber (for edge alignment reasons). Note, this is different from simply scaling the model along Z as it retains the maximum internal g-clamp surface by keeping the fillets unscaled.
- Addresses the suggestion by Knatterkopf for a lighter-weight square (offered in Large sizes only for this update, because the strength is currently unproven), and the request by itguru to make the internal clamp openings bigger. These are the "**LargeVR**"(Volume Reduced) models.
- Naming convention change: Midi became Medium, and version numbers were added.
- A new square size model, "**Max**" has been added, designed to use the full depth of a Prusa Mk2, Mk2.5 & Mk3 bed, and giving a square that is 24mm longer than the Large.

Approximate sizes and uses of the V2 models:

- CSquareV2_Large_2inch_AntiEF - Large 185mm x 35mm for 2" lumber with Anti Elephant Foot
- CSquareV2_Large_2inch_Flat - Large 185mm x 35mm for 2" lumber flat

- CSquareV2_Large_3inch_AntiEF - Large 185mm x 61mm for 3" lumber with Anti Elephant Foot
- CSquareV2_Large_3inch_Flat - Large 185mm x 61mm for 3" lumber flat
- CSquareV2_Large_4inch_AntiEF - Large 185mm x 86mm for 4" lumber with Anti Elephant Foot
- CSquareV2_Large_4inch_Flat - Large 185mm x 86mm for 4" lumber flat
- CSquareV2_LargeVR_2inch_AntiEF - Large Lightweight 185mm x 35mm for 2" lumber with Anti Elephant Foot
- CSquareV2_LargeVR_2inch_Flat - Large Volume-Reduced 185mm x 35mm for 2" lumber flat
- CSquareV2_LargeVR_3inch_AntiEF - Large Volume-Reduced 185mm x 61mm for 3" lumber with Anti Elephant Foot
- CSquareV2_LargeVR_3inch_Flat - Large Volume-Reduced 185mm x 61mm for 3" lumber flat
- CSquareV2_LargeVR_4inch_AntiEF - Large Volume-Reduced 185mm x 86mm for 4" lumber with Anti Elephant Foot
- CSquareV2_LargeVR_4inch_Flat - Large Volume-Reduced 185mm x 86mm for 4" lumber flat
- CSquareV2_Max_2inch_AntiEF - Maximum 209mm x 35mm for 2" lumber with Anti Elephant Foot
- CSquareV2_Max_2inch_Flat - Maximum 209mm x 35mm for 2" lumber flat
- CSquareV2_Max_3inch_AntiEF - Maximum 209mm x 61mm for 3" lumber with Anti Elephant Foot
- CSquareV2_Max_3inch_Flat - Maximum 209mm x 61mm for 3" lumber flat
- CSquareV2_Max_4inch_AntiEF - Maximum 209mm x 86mm for 4" lumber with Anti Elephant Foot
- CSquareV2_Max_4inch_Flat - Maximum 209mm x 61mm for 4" lumber flat
- CSquareV2_Medium_2inch_AntiEF - Medium 120mm x 35mm for 2" lumber with Anti Elephant Foot
- CSquareV2_Medium_2inch_Flat - Medium 120mm x 35mm for 2" lumber flat
- CSquareV2_Medium_3inch_AntiEF - Medium 120mm x 61mm for 3" lumber with Anti Elephant Foot
- CSquareV2_Medium_3inch_Flat - Medium 120mm x 61mm for 3" lumber flat
- CSquareV2_Mini_Thin_AntiEF - Mini 79mm x 28mm for smaller than 2" lumber with Anti Elephant Foot
- CSquareV2_Mini_Thin_Flat - Mini 79mm x 28mm for smaller than 2" lumber flat
- CSquareV2_Mini_2inch_AntiEF - Mini 79mm x 35mm for 2" lumber with Anti Elephant Foot

- CSquareV2_Mini_2inch_Flat - Mini 79mm x 35mm for 2" lumber flat
- CSquareV2_Mini_3inch_AntiEF - Mini 79mm x 61mm for 3" lumber with Anti Elephant Foot
- CSquareV2_Mini_3inch_Flat - Mini 79mm x 61mm for 3" lumber with Anti Elephant Foot

V1: 2020-09 Version

- Addresses the issue raised by psykmunky (on thingiverse) that the embossed lettering interferes with the function of the flat exterior clamping surface, potentially marking the workpiece. If you've ever printed a 20mm XYZ calibration cube you'll understand the problem. This affected the Mini, Midi and Large squares, all fixed in this remix.
- Addresses issue raised by timjamesbrennan (on thingiverse) and confirmed by melwell2002 (on thingiverse) that the Mini has a serious geometry issue where the inside corner support gets in the way of the workpiece making it kind of useless for external square clamping. J-Max claims this is a design feature, but it's remixed here to permit internal or external clamping use cases.

Approximate sizes and purposes of the V1 models:

- CSquareV1_Large-NonMarking - 185mm x 35mm non-marking
- CSquareV1_Midi-NonMarking - 120mm x 35mm non-marking
- CSquareV1_Mini-NonMarking - 79mm x 28mm non-marking, for internal or external clamping
- CSquareV1_Mini-Internal-NonMarking - 28mm non-marking, for internal clamping only, but stronger

Print instructions

Used Prusa i3 Mk2.5 with textured steel sheet.

- Printed at 0.3mm layer height in Inlaid Orange PLA with 40% infill, 8 perimeters, 4mm brim
- Turned off Elephant foot compensation when using brim, on otherwise.
- Perimeters 50mm/s, Infill 60mm/s Temps: 205/65
- Set z-seam somewhere sensible away from clamping surfaces (thanks neotgp)
- Max model is too big for a decent brim on my printer
- Print Time for Large 7hours and 47m of filament used

ABS or PETG is recommended for strength (and keep your perimeter count high), but if you have old filament you need to use up, whoever has enough clamps?

This remix is based on

Clamp It Square - Non-Embossing (Mini, Midi & Large sizes)

by The_Redcoat

Model files

csquarev2_large_2inch_flat.stl

csquarev2_large_3inch_flat.stl

csquarev2_mini_2inch_antief.stl

csquarev2_max_2inch_antief.stl

csquarev2_large_4inch_antief.stl

csquarev2_mini_thin_antief.stl

csquarev2_max_2inch_flat.stl

csquarev2_mini_3inch_antief.stl

csquarev2_medium_3inch_antief.stl

csquarev2_max_3inch_antief.stl

csquarev2_max_4inch_antief.stl

csquarev1-midi-nonmarking.stl

csquarev2_mini_2inch_flat.stl

csquarev2_medium_2inch_antief.stl

csquarev1-large-nonmarking.stl

csquarev2_medium_3inch_flat.stl

csquarev2_medium_2inch_flat.stl

csquarev2_large_4inch_flat.stl

csquarev2_max_3inch_flat.stl

csquarev1-mini-nonmarking.stl

csquarev2_large_3inch_antief.stl

csquarev2_mini_thin_flat.stl

csquarev2_large_2inch_antief.stl

csquarev2_max_4inch_flat.stl

csquarev2_mini_3inch_flat.stl

csquarev1-mini-internal-nonmarking.stl

csquarev2_largevr_4inch_flat.stl

csquarev2_largevr_2inch_flat.stl

csquarev2_largevr_3inch_flat.stl

csquarev2_largevr_2inch_antief.stl

csquarev2_largevr_3inch_antief.stl

csquarev2_largevr_4inch_antief.stl

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