Printables by JOSEF PRUSA

Bench Mountable 4-Jaw / 3-Jaw / 2-Jaw Vise with Swappable Jaws - 100% Printable!

Sneaks

VIEW IN BROWSER

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Summary

100% printable 4-Jaw / 3-Jaw / 2-Jaw work bench mountable vise with swappable jaws.

27.84 hrs	4 pcs	0.15 mm	0.40 mm	PLA PET	224 g	Prusa MK3/S/S+

Hobby & Makers > Tools

Tags: chuck bench vise jaws workbench workholding lathe

Video by Teaching Tech - Teaching Tech was kind enough to make a review of this Bench Mountable Vise. It has some great info on downloading and assembling this design.

ASSEMBLY ISSUES? PLEASE READ: The initial models I uploaded had a clearance of .05mm between the jaw gears and the scroll plate. I never

had an issue with all my test prints, so I never considered it an issue. However, to make this model work with a broader range of printers, I have updated the GCODE and MODEL SETS to use the .15mm clearance jaw gears. If you are still having issues, there is also a .20mm clearance set available. If you are using a highly calibrated printer, I suggest using the .05mm clearance set to experience the vise as originally designed.

ABOUT DESIGN: These 2-Jaw, 3-Jaw, and 4-Jaw bench-mount vises are 100% printable and do not require store-bought hardware! Simply print all the parts and assemble them! They make a great way to hold projects on your bench while working on them. The 2-Jaw is great for longer or rectangular items, 3-Jaw is perfect for holding round items, and the 4-Jaw is great for holding square items!

PARTS:

1. **BASE [PLA/PETG]:** There are two different bases. One has mounting holes inside, so you mount it before assembling it. The other base has mounting holes on the outside. Both bases work on all variations of this vise. The visible screw base requires a much larger footprint on your workbench.
2. **SCROLL PLATE [PLA/PETG]:** There is only one scroll plate that works on all variations of this vise.
3. **TOP PLATES [PLA/PETG]:** There are three different top plates; one for 2-jaw, one for 3-jaw, and one for 4-jaw. Both plates have a built-in Brim that needs to be removed after printing. This prevents that corner from coming off the plate while it's printing.
4. **JAW GEARS [PLA/PETG]:** There are three sets of jaw gears: one for the 2-Jaw Vise, one for the 3-Jaw Vise, and one for the 4-Jaw Vise. Every single Jaw Gear is different! The most complicated part of assembling this vise is getting the jaws orientated correctly.
5. **JAWS [PLA/PETG]:** I have had so much fun making different jaws for different projects. You can use the jaws I've included, or take the base STEP file and make your own! If you make your own, please share so that others can take advantage of your efforts!
6. **THUMBWHEEL [PLA/PETG]:** There is only one thumbwheel design. It works on the 2-Jaw, 3-Jaw, and 4-Jaw vises.
7. **SCREW SET [PETG]:** The screw set works for assembly on 2-Jaw, 3-Jaw, and 4-Jaw vises. The set includes 8 Screws. 3x screws connect the Top to the Base. 4x screws connect the Jaws to the Jaw Gears. 1x screw connects the thumbwheel to the base.

CLICK HERE TO WATCH THE ASSEMBLY VIDEO

JAW ASSEMBLY (THE HARDEST PART!):

1. **SLIDE JAWS GEARS IN TOP:** Each Jaw-Gear is numbered. The 2-Jaw set is numbered #1 and #3, the 4-Jaw set is numbered #1-#4, and the 3-Jaw set is numbered #1-#3 with a “3J” above. the “3J” indicates it is the 3-Jaw set. Insert Jaw Gears with the number facing OUT. You should be able to see the number after inserting it into the Top Plate. Numbers are installed Clockwise. That means on the 4-Jaw Vise (with the Top's Circles facing you), #1 would be installed at the 12 O'Clock position, #2 in the 3 O'Clock position, #3 at the 6 O'Clock Position, and #4 at the 9 O'Clock Position. (SEE IN VIDEO)
2. **MOUNT ALIGN TOOL:** This tool is designed to hold all the Jaw Gears in the perfect position while installing the Scroll Plate. The Jaw Gears need to be set in very specific positions when installing the scroll plate, or the vise will not operate correctly. Using the shortest screws, mount the Align Tool to the Jaw Gears using the Jaw Gears innermost holes. Make sure the number on the Jaw Gear matches the one on top of the Align Tool.
3. **LUBRICATE:** If you want your vise to really move smoothly, add a couple of drops of oil to the Jaw Gears Teeth before installing the scroll plate. I use singer All purpose Oil, but I'm sure many others will work.
4. **INSTALL SCROLL PLATE:** Install the scroll plate on the post below the Top Plate with the spiral portion of the Scroll Plate facing the Jaw Gears. Slowly turn the Scroll plate Counter-Clockwise while putting even pressure on it. The Scroll Plate will pop into place when it gets to the correct position. You can tell when the scroll plate is in position when it is completely flush with the bottom of the Top Plate. If the Scroll Plate gets cockeyed, tap the corner of the Top Plate on a table, and the Scroll Plate will pop off.

ASSEMBLE VISE:

1. **INSTALL BASE:** Once the scroll plate is installed, install the TOP PLATE on the BASE. One of the four posts on the base plate is larger than the other three. This is where the thumbwheel mounts and this post lines up with the TOP PLATES notched corner.
2. **INSTALL THUMBWHEEL:** Install the thumbwheel in the TOP PLATES notched corner. It should easily drop right in on the BASE POST.
3. **INSTALL SCREWS:** Install the shrouded (Medium Length) screw in the thumbwheel. Install the 3x longer screws in the 3 Holes on the TOP PLATE.
4. **REMOVE ALIGN TOOL:** We no longer need the align tool, so we can remove it from our Jaw Gears.
5. **INSTALL JAWS:** Pop all of your Jaws onto the Jaw Gears and install 4x Short Screws.

TEST IT OUT! If all goes well, the vise will close when the thumbwheel is turned clockwise and open when turned counterclockwise. It will typically take 20 open/closes until it starts moving smoothly.

PLEASE NOTE!

1. The alignment tool does not work with the 2-Jaw Vise. For the 2-Jaw Vise, move the gears into the center before installing the scroll plate.
2. There are no stops on the Jaw Gears. If you open too much, the gears will come out, and you must take the vise apart and reassemble it.
3. Print the screws with PETG! Save yourself the headache of breaking off screws in the base! Print all your screws out of PETG.

UPDATE 10/01/2022: ShadowOfKlon caught a missing chamfer on the 4-Jaw Top Plate - Sorry Guys! All updated now!

UPDATE 10/03/2022: Uploaded a specific 2-Jaw Gear Jaw set. The 4-Jaw #1/#3 or #2/#4 Jaw Gears will also work.

UPDATE 10/10/2022: Updated all GCODE and MODEL SETS to use .15mm clearance on the jaw gears (originally .05mm) to accommodate a broader range of printers. I also uploaded four variations of all jaw gears from .05-.20mm clearances.

UPDATE 10/22/2022: Added a STEP version of the Visible Screw Base for anyone wanting to make their own custom hole patterns.

UPDATE 11/26/2022: VK4IU commented on an issue with the screws that attach the top/bottom plate being slightly too long. I have reduced the overall length by 1mm to ensure no one else has this issue. IMPORTANT - The GCODE in the files still uses the older screws.

CHARITY: If you enjoy this model, please consider a donation. All donations for all of my designs are given to animal charities.

Model files

2-JAW VISE 4 files

c1_base_jaw_v01_hid-screw.stl

COLOR ONE: HIDDEN SCREW BASE

c2_scroll_gear_v01_2-jaw.stl

COLOR TWO: SCROLL PLATE, ALIGN TOOL, JAW GEARS [.15MM]

c3_top-plate_2-jaw.stl

COLOR THREE: TOP PLATE TWO RAIL

c4_-screw_set.stl

COLOR FOUR: SCREW SET [UPDATED 11/26/2022]

3-JAW VISE

4 files

c1_base_jaw_v01_hid-screw.stl

COLOR ONE: HIDDEN SCREW BASE

c2_scroll_gear_v01_3-jaw.stl

COLOR TWO: SCROLL PLATE, ALIGN TOOL, JAW GEARS [.15MM]

c3_top-plate_3-jaw.stl

COLOR THREE: TOP PLATE FOUR RAIL

c4_-screw_set.stl

COLOR FOUR: SCREW SET [UPDATED 11/26/2022]

4-JAW VISE

4 files

c1_base_jaw_v01_hid-screw.stl

COLOR ONE: HIDDEN SCREW BASE

c2_scroll_gear_v01_4-jaw.stl

COLOR TWO: SCROLL PLATE, ALIGN TOOL, JAW GEARS [.15mm]

c3_top-plate_4-jaw.stl

COLOR THREE: TOP PLATE FOUR RAIL

c4_-screw_set.stl

COLOR FOUR: SCREW SET [UPDATED 11/26/2022]

JAWS

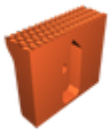
6 files

minivisejaws-sqr.stl

Four jaws with knurled square face

minivisejaws-pnt.stl

Four jaws with knurled pointed face



largevisejaw-knr.stl

Wide jaw with knurled face for making 2-Jaw vise

conventionaljaw.stl

This is the default "Lathe Chuck" Style Jaw

vblockjaw.stl

This jaw allows you to use a 2-Jaw Vise as a V-Block.

baseshoe.step

USE THIS TO MAKE YOUR OWN JAW DESIGNS

A LA CARTE

14 files

scrollplate.stl

c4_-screw_set.stl

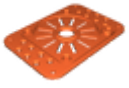
8x Screws for full vise assembly [UPDATED 11/26/2022]

thumbwheel.stl

Thumbwheel that opens and closes vise

hiddenscrewbase.stl

Bench mounting screws are hidden within vise. *Requires smaller footprint



visiblescrewbase.stl

Bench mounting screws are visible after assembly. *requires a larger footprint.

twojawvisetopplate.stl

Top plate for 2-Jaw Vise

threejawvisetopplate.stl

Top plate for 3-Jaw Vise

fourjawvisetopplate.stl

Top plate for 4-Jaw Vise

twojawfinal_100922_i15-fj15.stl

TWO JAW GEAR SET [.15MM]

threejawfinal_100922_i15-315.stl

THREE JAW GEAR SET [.15MM]

fourjawfinal_100922_i15-fj15.stl

FOUR JAW GEAR SET [.15MM]

basicjaws.stl

These jaws are similiar to what you would find on a lathe chuck

alignjig_001_3x.stl

Align Jig for 3-Jaw Chuck

alignjig_001_4x.stl

Align Jig for 4-Jaw Chuck

2-JAW GEARS 4 files

twojawfinal_100922_i15-fj05.stl

TWO JAW - CLEARANCE .05MM

twojawfinal_100922_i15-fj10.stl

TWO JAW - CLEARANCE .10MM

twojawfinal_100922_i15-fj15.stl

TWO JAW - CLEARANCE .15MM [DEFAULT]

twojawfinal_100922_i15-fj20.stl

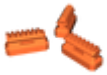
TWO JAW - CLEARANCE .20MM

3-JAW GEARS

4 files

threejawfinal_100922_i15-305.stl

THREE JAW - CLEARANCE .05MM

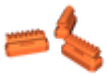


threejawfinal_100922_i15-310.stl

THREE JAW - CLEARANCE .10MM

threejawfinal_100922_i15-315.stl

THREE JAW - CLEARANCE .15MM [DEFAULT]



threejawfinal_100922_i15-320.stl

THREE JAW - CLEARANCE .20MM

4-JAW GEARS

4 files

fourjawfinal_100922_i15-fj05.stl

FOUR JAW - CLEARANCE .05MM

fourjawfinal_100922_i15-fj10.stl

FOUR JAW - CLEARANCE .10MM

fourjawfinal_100922_i15-fj15.stl

FOUR JAW - CLEARANCE .15MM [DEFAULT]

fourjawfinal_100922_i15-fj20.stl

FOUR JAW - CLEARANCE .20MM

STEP FILES

2 files

baseshoe.step

STEP File for making custom Jaw Chucks

visiblescrewbase_102222.step

STEP File for modifying Base Plate with Custom Hole Patterns

Print files

MK3S GCODE 3-JAW

4 files

topplate_2_04_ns_3rail-3j-v203_015mm_pla_mk3s_8h1m.gcode

PLA 0.40 mm 0.15 mm 8.02 hrs 71 g Prusa MK3/S/S+

c1_base_jaw_v01_hid-screw_015mm_pla_mk3s_8h23m.gcode

PLA 0.40 mm 0.15 mm 8.39 hrs 66 g Prusa MK3/S/S+

c2_scroll_gear_3-jaw-15_a_015mm_pla_mk3s_9h47m.gcode

PLA 0.40 mm 0.15 mm 9.78 hrs 79 g Prusa MK3/S/S+

screwsetsupport-default_015mm_petg_mk3s_1h39m.gcode

PET 0.40 mm 0.15 mm 1.65 hrs 8 g Prusa MK3/S/S+

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