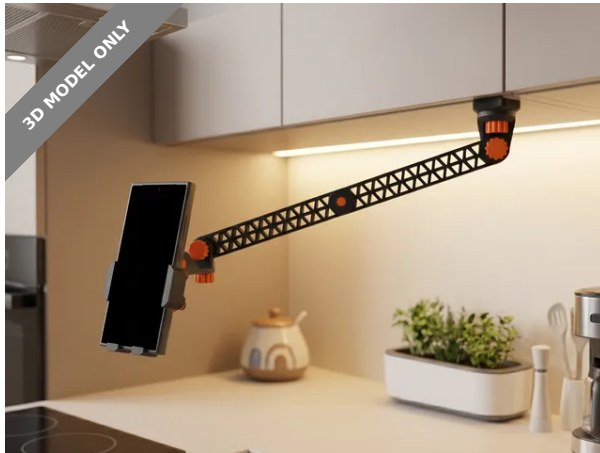




Gravity Phone Mount & Articulated Arm



bod_3d

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Summary

Heavy-duty 100% 3D-printable modular arm station securing flagship phones with absolute stability.

[Household](#) > [Office](#)

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Tired of flimsy phone mounts that sag, wobble, or require metal hardware? Meet the ultimate heavy-duty, 100% 3D-printable modular arm station. Combining a premium smart gravity-locking holder, an engineering-truss articulated arm, and a rock-solid reinforced C-clamp, this professional-grade system is built to secure heavy flagship smartphones with absolute stability.

Features

Designed for maximum practical stability, modularity, and convenience, this system includes the following key engineering features:

- **Smart Gravity Locking Upper Unit:**
 - **Automatic Drop-and-Lock:** Simply place your phone on the cradle. The phone's weight triggers the side clamps instantly via a synchronized 4-bar linkage system.
 - **Zero Tilt, Parallel Precision:** Dual arc links on each side ensure the jaws stay perfectly vertical, eliminating any unwanted tilting or misalignment.
 - **Elastic Band Return:** Uses a simple rubber band on the back to automatically snap open the clamps the moment you lift your device.
 - **Drop Safety Catch:** An integrated vertical limit pin ensures the slider mechanism never over-extends or slips out under extreme movement.
- **Truss-Core Modular Articulated Arm:**
 - **High-Rigidity Truss Profile:** Designed using structural engineering principles with integrated triangular cutouts. This maximizes bending and torsional resistance while keeping the weight minimal.
 - **Dead-Lock Hirth Joints:** Connections feature an 18-tooth radial gear mesh with a 20° adjustment index and 0.5 mm tooth height. Once tightened with the heavy-duty M10 knobs, it guarantees zero-slip mechanical locking under heavy load.
 - **L-Pivot Horizon Compensation:** The specialized L-shaped head isolates the tilt and rotation axes, allowing you to perfectly level your camera horizon or position the mount upside-down without dead zones.
- **Power-Grip Stiffened C-Clamp Base:**
 - **Reinforced Structural Frame:** The heavy C-shaped clamp features 4 external stiffening ribs to completely prevent plastic flexing under high static tension at maximum arm extension.
 - **15mm Power Screw & Swivel Pad:** Features a massive 15 mm primary screw with an ergonomic hand-turn knob and a rotating flat pressure foot that maximizes surface grip while protecting your desk from scratches.
 - **360° Free Pan & Multi-Screw Versatility:** The L-Base connector allows smooth 360° free horizontal rotation (yaw) without loosening, while the package includes three separate bolt lengths (20, 40, 60 mm) to perfectly fit any desk thickness.

Technical Specifications

Key dimensional, functional, and mechanical parameters for this model are detailed in the specification table below:

Parameter	Value / Metric	Mechanical Advantage
Clamping Range	70 mm – 118 mm	Fits 99% of modern smartphones with thick cases
Max Device Thickness	13 mm	Fully compatible with heavy armor/ rugged cases
Modular Arm Lengths	100 mm / 150 mm / 200 mm	Mix and match lengths to customize your total reach
Arm Joint Indexing	18 teeth (20° steps)	Mathematical precision for predictable angle settings
Max Desk Thickness	Up to 40 mm	Fits securely on thin glass shelves or thick workbenches
Hardware Standard	Custom M10 & M15 Threads	Heavy-duty printed threads optimized for tool-less hand tightening

What You'll Need

To fully assemble this model, you will need the following non-printed components:

- **Elastic Rubber Band:** 1x standard small elastic/rubber band (installed on the back of the phone holder to activate the automatic return mechanism).

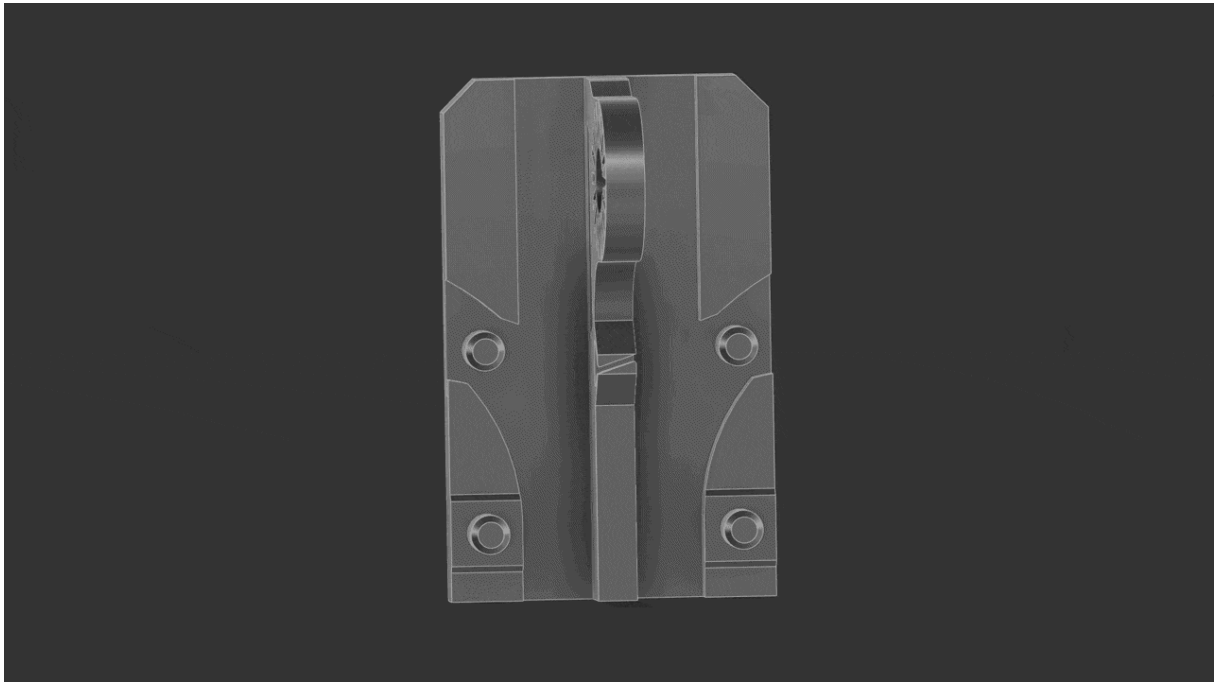
How to Assemble

Follow these detailed step-by-step assembly instructions to build the three main modules of the phone mount system:

Phone Holder

Follow these steps to assemble the gravity phone holder unit:

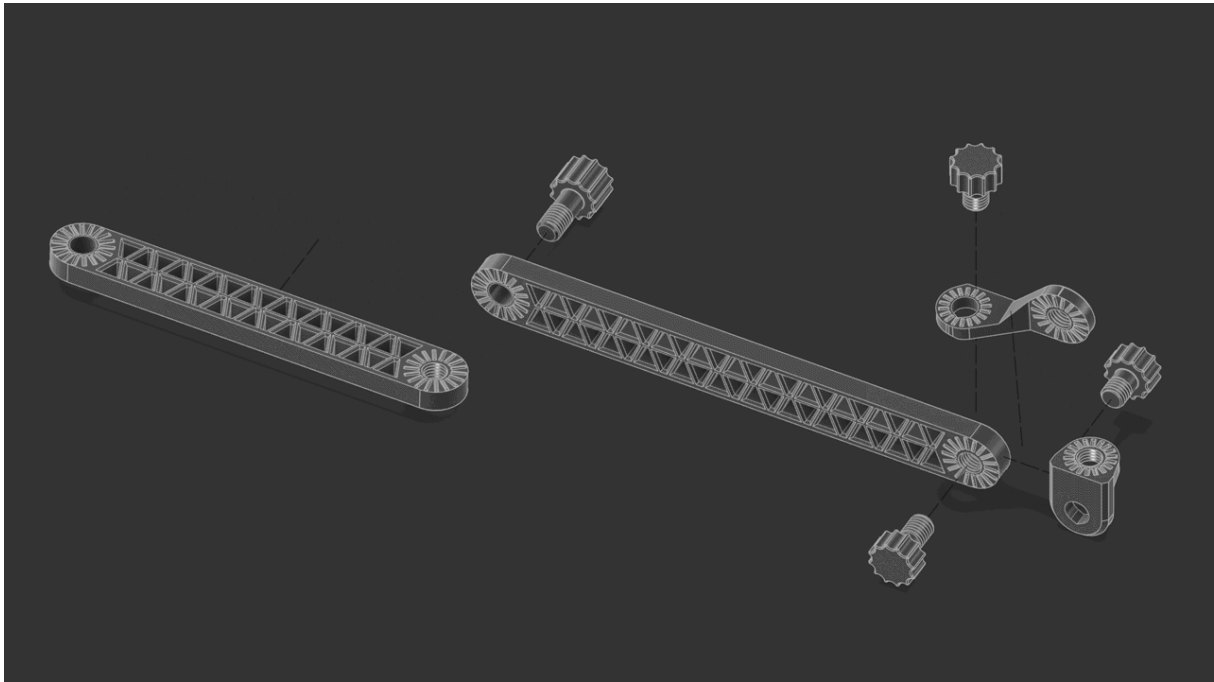
1. **Print List:** 1 HolderBase, 1 HolderBottom, 1 HolderBottomStopper, 1 HolderSideLeft, 1 HolderSideRight, 2 HolderArcLeft, 2 HolderArcRight, and 10 HolderShims.
 - You can use the provided **.3mf** file, where all of these objects are already arranged on the build plates.
 - Tip: Try printing HolderArcLeft, HolderArcRight, and HolderShim on a smooth, non-textured plate. This will help the holder slide more smoothly.
2. Take the **HolderBase** and place one **HolderArcLeft** and one **HolderArcRight** onto the middle pins, ensuring the arrows on the arcs are **pointing inward**.
 - Tip: For better sliding and a cleaner look, it is best to place the arcs with the build-plate side facing away from the base.
3. Secure the arcs using two **HolderShim** clips. Try to slide, it should be easy.
4. Slide the installed arcs **inward**, then position the **HolderBottom** part so that the middle pins fit into the holes on the arcs.
5. Place the **HolderBottomStopper** into the cutout on the **HolderBottom** part and into the hole in the **HolderBase**.
6. Place the second **HolderArcLeft** and **HolderArcRight** onto the bottom pins of the **HolderBase** and the outer pins of the **HolderBottomStopper**, ensuring the arrows point inward.
7. Lock the arcs in place with four more **HolderShim** clips.
 - Tip: Test the slider. It should move easily; if it is too stiff, check the pins for any remaining support material or try reducing the height of the clips.
8. Insert the **HolderSideLeft** part into the left side of the arcs so the pins fit into the holes, then secure it with two **HolderShim** clips.
9. Repeat this process for the **HolderSideRight** part on the right side.
10. Choose an elastic band size that allows the holder to compress the bottom part snugly, but without pushing the phone out of the mount when it was installed.



Holder Arm

Follow these steps to assemble the articulated arm module:

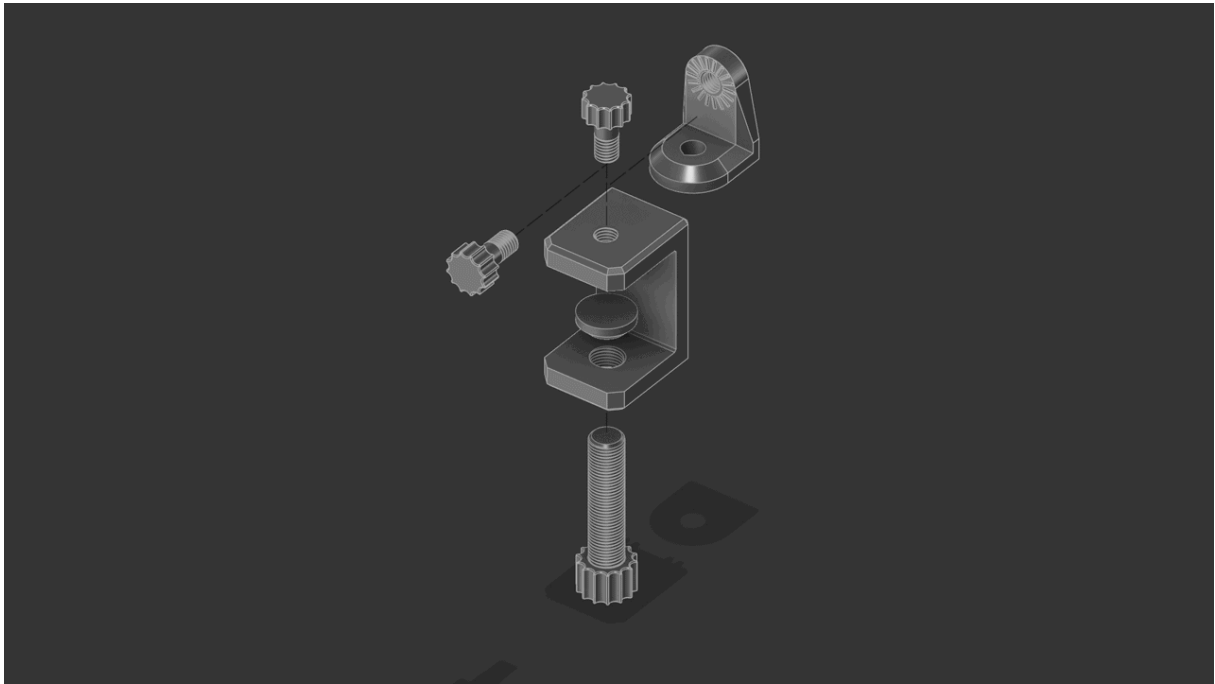
1. **Print List:** 2 ArmBig (either 2 ArmMiddle or 2 ArmSmall if you want another size), 1 ArmHingeFirstPart, 1 ArmHingeSecondPart, 1 ArmBoltBig (20 mm with big cap), 1 ArmBoltMiddleHinge (16 mm with small cap) and 2 ArmBoltSmallHingeConnect (12 mm with small cap).
 - You can use the provided **.3mf** file, where all of these objects are already arranged on the build plates.
2. Connect the two **ArmBig** parts together using an **ArmBoltBig**.
 - Align the **side of the first arm** (which features the **thread** and **small pins**) with the side of the **second arm** (which features the **unthreaded hole** and **small alignment holes**).
3. Connect the larger side of the **ArmHingeFirstPart** to the threaded hole of the **ArmBig** using the **ArmBoltMiddleHinge**.
 - Rotate the **ArmHingeFirstPart** 90 degrees, so that its shorter side is parallel with the arm.
 - A bolt with a low-profile cap is needed here to allow the **ArmHingeSecondPart** to rotate freely.
4. Connect the smaller side of the **ArmHingeSecondPart** to the smaller side of **ArmHingeFirstPart** using the **ArmBoltSmallHingeConnect**.
 - Align the small pins on the **ArmHingeSecondPart** with the small holes in the **ArmHingeFirstPart**.
5. You should now have an exposed, threaded side on the **ArmHingeSecondPart**, complete with alignment pins.
6. Connect the holder (assembled in the **Phone Holder** section) to the open hole using the final **ArmBoltSmallHingeConnect**.



Holder Clamp

Follow these steps to assemble the stiffened C-clamp base module:

1. **Print List:** 1 ClampBase50 (or 1 ClampBase30 depends on the table or shelf size), 1 ClampTopPart, 1 ClampBigBolt60 (either 1 ClampBigBolt40 or 1 ClampBigBolt20 depends on the table or shelf size), 1 ClampBigBoltCoverNut and 2 ClampBolt.
 - You can use the provided **.3mf** file, where all of these objects are already arranged on the build plates.
2. Screw the **ClampBigBolt60** (or an alternative size) into the large threaded hole of the **ClampBase** from the outside.
3. Thread the **ClampBigBoltCoverNut** onto the **ClampBigBolt60** from the inside of the **ClampBase** until it is secure.
4. Connect the unthreaded side of the **ClampTopPart** to the small threaded hole **on** the **ClampBase** from the outside using the **ClampBolt**.
5. You should now have an exposed, threaded side on the **ClampTopPart**, complete with alignment pins.
6. Connect the unthreaded hole of the arm assembly (built in the **Holder Arm** section) to the open hole of the **ClampTopPart** using the final **ClampBolt**.



Recommended Print Settings

For optimal mechanical strength, precise gear mesh alignment, and long-term durability, use the following slicer settings:

- **Material:** PETG, ABS, or ASA recommended for maximum mechanical durability; high-quality PLA is excellent for standard desk setups
- **Wall Loops:** 6–7 walls
- **Infill:** 20–25% (Gyroid or grid pattern recommended)
- **Layer Height:** 0.2 mm
- **Supports:** Required for Phone Holder (first part of set of models)
- **Print Orientation:** Print all joint pins, arms, and structural bolts horizontally to ensure layer lines run along the length of the parts, maximizing load-bearing capacity
- **Hardware Requirements:** 100% 3D printable structure (requires 1x small elastic band for return mechanism); assemblies using modular cylindrical pins and quick snap-fit C-clips with no metal screws or glue needed

Troubleshooting

If you experience mechanical friction or movement issues during operation, refer to the following tips:

- **C-Clip Friction:** For smoother articulation, avoid printing the C-clips on a textured build plate. Alternatively, adjust the C-clip scale in your slicer (Z-height to 95–98%, diameter to 103–105%) to reduce mechanical friction.

Support Block

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Similar Models

Model files



holderbottomstopper.stl



armbig.stl



armboltbig.stl



armboltmiddlehinge.stl



armboltsmallhingeconnect.stl



armhingesecondpart.stl



armmiddle.stl



armsmall.stl



clampbigbolt60.stl



clampbolt.stl



clampbigboltcovernut.stl



clampbigbolt40.stl



clampbigbolt20.stl



clamptoppart.stl



armhingefirstpart.stl



phonearm.3mf



clampbase50.stl



clampbase30.stl



phoneholder.3mf



holderarcleft.stl



holdersideright.stl



holderbase.stl



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holderarcright.stl



holdershim.stl



phoneclamp.3mf

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