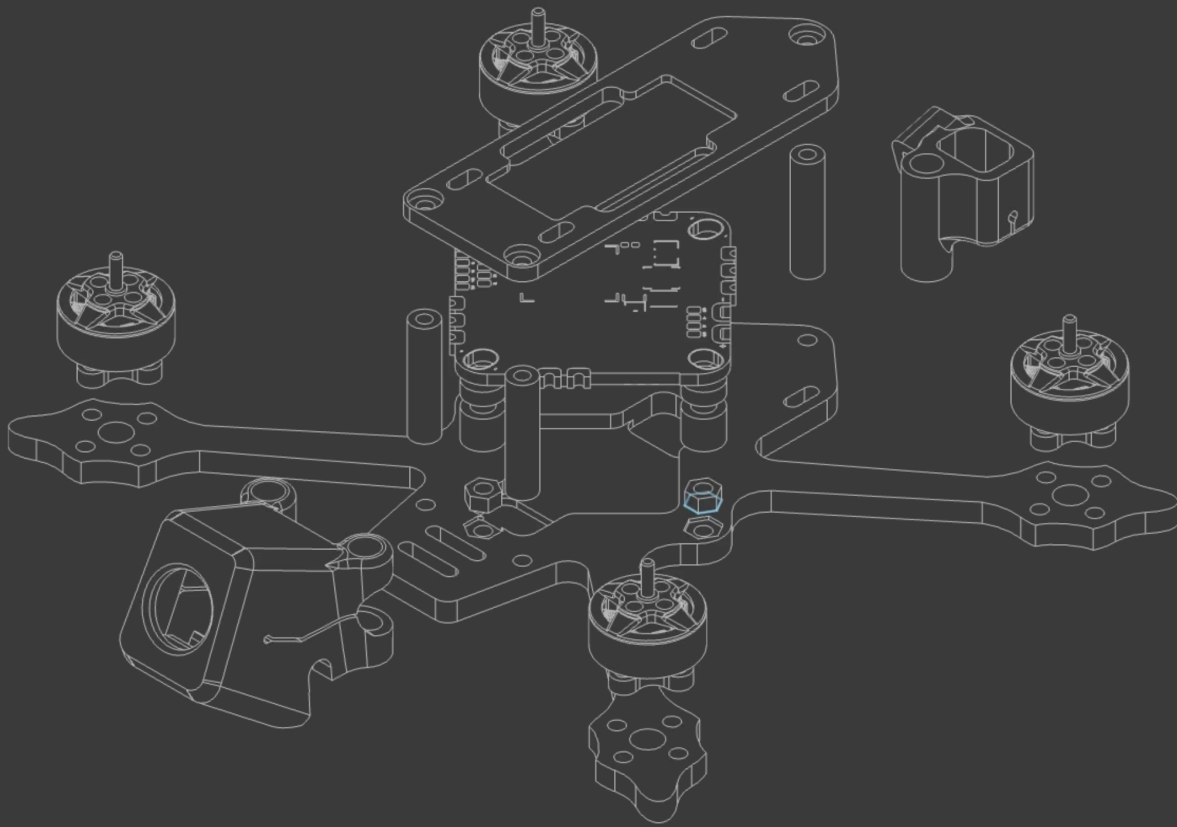


GHOST

PORTO FPV

Assembly Guide & Product Description



2.5" SQUISHED-X · 3mm/2mm CARBON FIBER · 2S/3S · DIGITAL / ANALOG
ASSEMBLY GUIDE

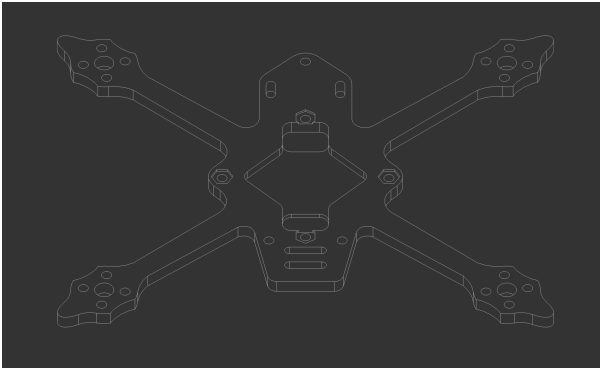
What Is It?

The GEPRC Phantom defined the 2.5" toothpick freestyle class. When it was discontinued, the Ghost was built to carry that spirit forward — taking what made that class so fun to fly and pushing it into a proper digital-era frame.

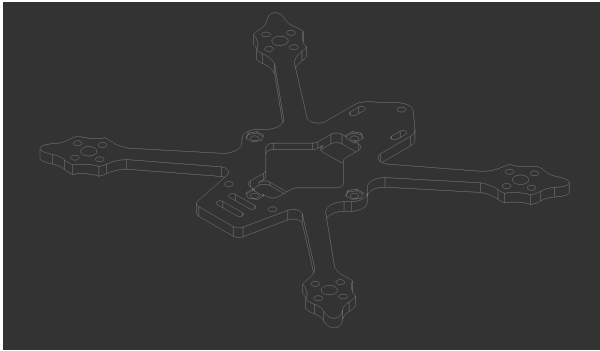
Designed digital-first, everything about it — the stack clearance, the canopy system, the standoff heights — was built around running a proper digital video system. Go analog and the quad just gets lighter and faster.

The layout is a very mild Squished-X — pulled back just enough from a true X to get the props out of the camera's field of view, without the exaggerated stance of a fully squashed design. The result is cleaner footage without giving up the sharp, responsive feel of a near-symmetrical X. How much of the props you see will still depend on your canopy and camera angle, but the geometry does most of the work.

Two top plate options are available: the Diamond plate for added protection, and the Standard plate for pilots who want to shave every gram. Both share the same 11.5mm × 30mm foam notch cutout so your battery pad sits flush and secure.



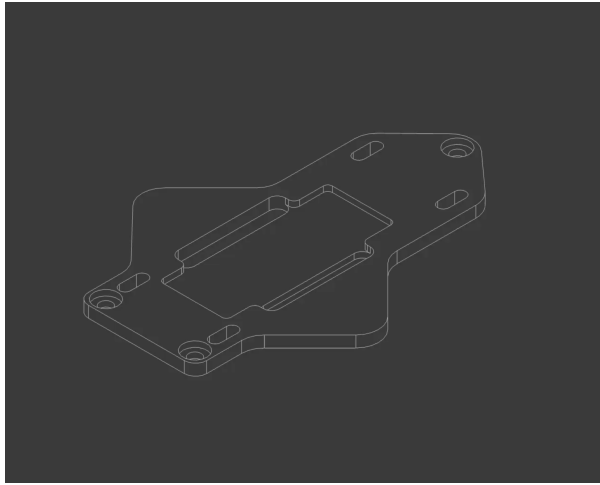
Front view



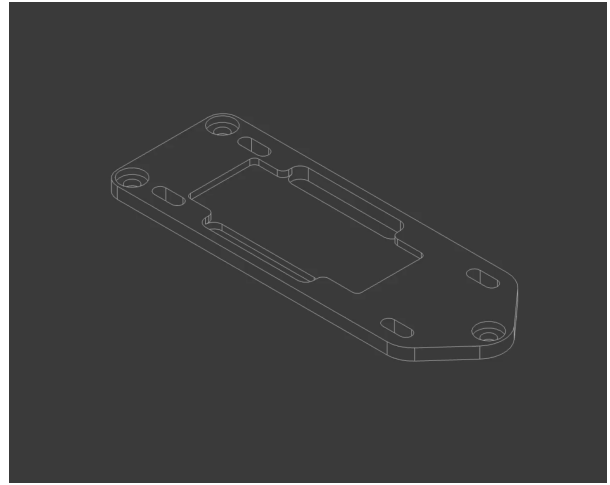
Isometric view

Specs

SPEC	DETAIL
Wheelbase	125mm diagonal
Prop Size	2.5" / 65mm
Configuration	Squished-X
Bottom Plate	3mm carbon fiber — Standard or Donut
Top Plate	2mm carbon fiber — Diamond or Standard
Motor Class	1103 / 1104
Power System	2S / 3S LiPo
FC Mounting	25.5×25.5mm
Standoffs	8mm recommended (analog) / 14mm recommended (digital)
Video Systems	Digital / Analog



Diamond top plate — more protection

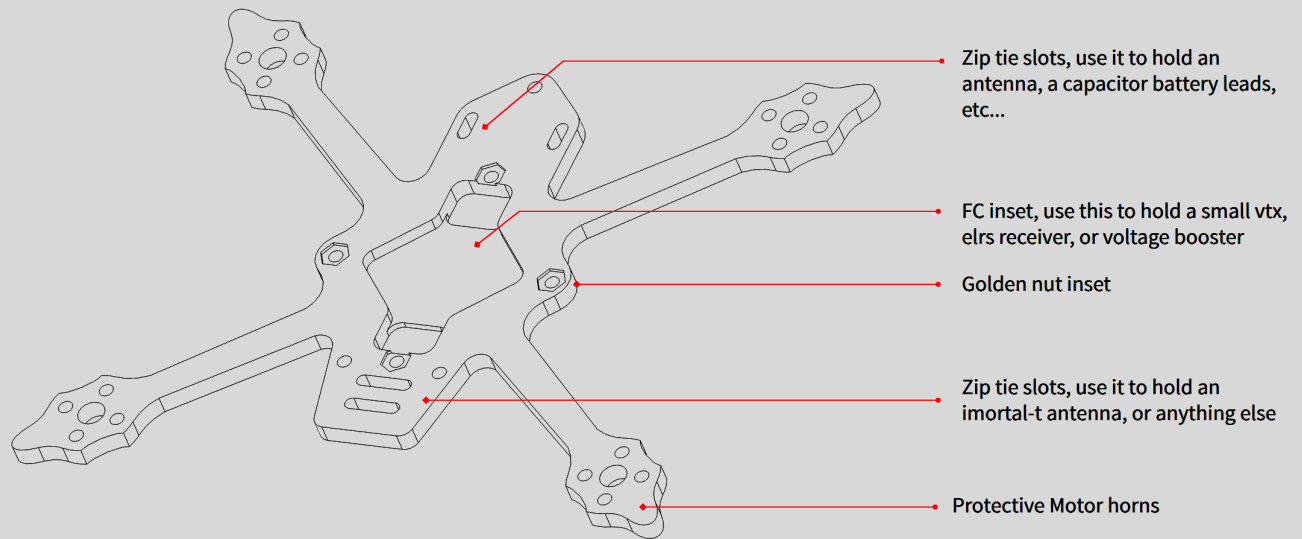


Standard top plate — lighter weight

What's Needed to Build

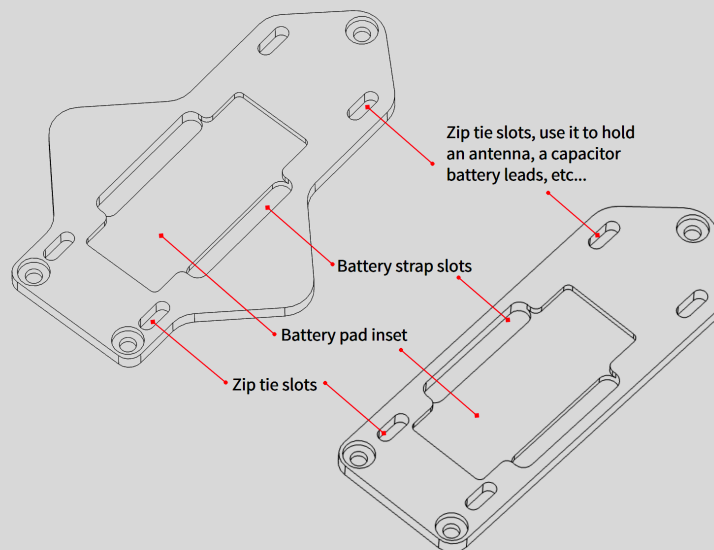
#	PART	NOTES
1	Bottom Plate	3mm CF
2	Top Plate	2mm CF — Diamond or Standard
3	Standoffs	8mm recommended (analog) / 14mm recommended (digital)
4	AIO Flight Controller	25.5×25.5mm
5	Motors ×4	1103 / 1104 — see motor section
6	Propellers ×4	65mm, 2× CW / 2× CCW
7	Camera	14mm body — digital or analog
8	Camera Canopy	TPU — slides onto standoffs
9	Arm Tip Boots (optional)	TPU — standard or claw variant
10	Power Plug Mount	TPU — XT30 or BT3, holds antenna
11	Battery	2S / 3S — see battery section
12	Battery Strap	15×250mm fiber rubber strap with metal buckle
13	Screws & Hardware	M2 standoff screws, motor screws

Frame Features



Zip tie slots, the FC inset for a small VTX/receiver/voltage booster, the golden nut inset, and the protective motor horns.

Top Plate Features



Battery strap slots, the battery pad inset, and zip tie slots on both the bottom and top plates.

How to Build It

STEP 1 Bottom Plate & Standoffs

Start with the 3mm bottom plate. The standoff holes have recessed notches cut into the carbon to accept a nut — thread one onto each stack screw before inserting so the screw has something solid to pull against. Nylon-insert lock nuts are a good choice here to keep things from vibrating loose; any M2 nut will do. 8mm standoffs work well for analog builds and 14mm for digital, but use whatever height suits your build. Finger tight for now.

STEP 2 Flight Controller

Install your soft grommets into the FC mounting holes first, then slide it down onto the stack screws. Orient the USB port where you can reach it without pulling the frame apart. Solder your motor wires before the top plate goes on — much easier with clear access.

STEP 3 Electronics Placement

The bottom plate has three areas for tucking in additional components. The center has a large cutout — enough room for a small ELRS receiver or compact VTX, with the opening also providing USB access to the FC below. The rear has a similar pocket, also well suited for a receiver or VTX. Toward the front near the camera mount area there's a tighter space — usable, but plan your component sizes carefully before committing.

STEP 4 Motors

Bolt all four motors to the arm tips. Direct solder the motor wires to the AIO — no connectors keeps the build compact and lowers resistance. Check motor spin directions against your Betaflight motor map before closing up.

STEP 5 Camera Canopy

Pick the TPU canopy for your camera and video system. It slides down over the front standoffs and is sandwiched between the bottom and top plates — locked in place once the frame is closed, no screws or zip ties needed. If you're running an ELRS receiver with a mini Immortal-T antenna, some canopy designs route the antenna underneath the camera, keeping it protected and away from the props.

STEP 6 Power Plug

Fit your TPU power plug mount onto the rear of the frame. It supports both XT30 and BT3 connectors and doubles as an antenna holder for your receiver.

STEP 7 Top Plate

Drop your chosen plate onto the standoffs and secure with M2 screws. Tighten evenly. Route any remaining antenna leads out through the rear and clear of the props.

STEP 8 Battery

Press a sticky foam pad into the 11.5mm × 30mm notch on the top plate. Loop your battery strap through the notches in the plate and fit your 2S or 3S pack.

STEP 9 Props

Press your 65mm props onto the motor shafts. Confirm CW and CCW orientation matches your motor layout before arming.

What Makes It Different

Golden nuts in the frame

The standoff holes have recessed notches cut into the carbon to seat a nut flush against the plate — what the FPV community calls golden nuts. Typically small brass or steel hex nuts that press into place, giving each standoff screw a solid, permanent seat. No screwing into raw carbon, no loose hardware to manage underneath.

Motor tip protection

Each arm tip has a built-in bumper shaped to take the hit before your motor bell ever contacts the ground. Crashes land on the frame, not your motors.

TPU arm boots

Slip-on TPU boots add an extra layer of protection over the arm tips for pilots who want more cushion on hard impacts. The boot claws variant adds grip and bite for a more aggressive look. Both are free to print and swap any time.

Two top plate options

Choose the Diamond plate for more protection around the stack area, or the Standard plate to strip back every gram. Both fit the same standoffs and share the same foam notch and strap routing.

3mm bottom plate

Thicker than most frames in this class. The arms and center section stay stiff under hard landings without needing repair after every rough session.

Built-in electronics pockets

Dedicated space on the bottom plate for a small ELRS receiver or compact VTX — center, rear, and front areas all offer usable real estate for keeping your build tidy without anything floating loose.

Zip tie points throughout

Dedicated holes at the front and rear of the bottom plate let you zip tie down antennas, receivers, or whatever your build calls for. The top plates have extra holes for the same — secure loose wires, mount accessories, or get creative with your layout.

Squished-X geometry

Pulled back just enough from a true X to push props out of the camera's sightline — cleaner footage without giving up the sharp, responsive feel of a near-symmetrical layout. Stable in rolls, snappy in yaw.

Digital-first, analog welcome

14mm standoffs give the clearance for DJI O4 Air Unit Lite, Walksnail, or HDZero without compromise. Drop to 8mm standoffs, strip the weight, and the Ghost becomes a proper lightweight analog ripper.

Donut bottom plate

The Standard bottom plate keeps a thin bridge of carbon through the center cutout. The Donut removes it entirely — one big open hole. Less material, less weight, and it's the lightest bottom plate option on the frame. Pairs well with the Standard top plate if you're chasing every gram.

Motor Recommendations

Pick a 1103 or 1104 stator — that's the sweet spot for this frame. Standard 9×9mm motor mount, 1.5mm shaft. Beyond that, KV is what you're tuning. Too low on 2S and the quad feels sluggish; too high on 3S and you're fighting the throttle. Use these ranges as your starting point and adjust from there.

KV by Setup

Analog 2S: 7500–9000KV

Digital 2S: 9000–11000KV

Analog 3S: 6000–7500KV

Digital 3S: 7500–9000KV

Tested Motors

These are motors we've put time on. There are other good options out there — this isn't an exhaustive list.

SparkHobby XSPEED 1103 8500KV — Punches well above its price point. Hard to fault.

VCI SPARK 1103 — Premium build quality. 7500KV and 11000KV variants cover both analog and heavy digital 2S setups.

BetaFPV LAVA 1104 7200KV — Solid construction, more stator for more punch. Order the 80mm cable version. Better suited to analog or 3S builds where the extra weight makes sense.

Prop Recommendations

All props are 65mm / 2.5". Match shaft size to your motors — 1.5mm is standard for 1103/1104.

Gemfan Hurricane 2520 (tri-blade) — The go-to for this class. Double check you're ordering the 2520 and not the 2512 — Gemfan lists both and they fly completely differently.

HQ Prop T65mm (bi-blade) — Shaves the most weight off your build. Efficient and smooth but takes more dialing in than a tri-blade.

Battery Recommendations

Bigger isn't better here — this frame rewards a light pack. Once you push past 450mAh the extra weight starts to work against you more than the capacity works for you.

2S 300mAh — As nimble as it gets. Built for indoor flying and technical lines where every gram matters.

2S 380mAh — The analog sweet spot. Enough runtime without slowing things down.

2S 420–450mAh — Where to land for digital builds — the additional electronics draw needs a bit more capacity behind it.

3S 300mAh — More snap, shorter sessions. Best when you want to push hard.

Worth noting: the Flywoo Explorer 420mAh HV 2S and GNB 380mAh 2S are widely suspected to be the same cell in different wrapping. Both work well — grab whichever is easier to source.

The frame hooks are sized for a 15mm strap. A fiber rubber strap with a metal buckle holds better than nylon through crashes and doesn't loosen over time.

Flight Controller Recommendations

Digital — Separate AIO + VTX (14mm standoffs recommended)

A 3-in-1 AIO handles FC, ESC, and RX. Pair it with your digital video system of choice.

DJI O4 Air Unit Lite — Best image quality at this scale.

Walksnail Avatar HD Mini 1S Lite — Compact and competitive.

HDZero AIO15 — Has the digital VTX built in — runs on 8mm standoffs and skips the separate VTX entirely.

Recommended 3-in-1 AIOs

JHEMCU G474 (no VTX) — Clean pick for 2S digital builds. No VTX onboard means no interference with your digital system.

Flywoo GOKU F405 HD V2 — ELRS, UFL antenna. Has an onboard digital VTX that can be switched off independently — useful if your setup changes down the line.

GEPRC TAKER F411-12A — ELRS, UFL antenna.

HappyModel SuperX HD — ELRS, ceramic cable antenna.

Analog — AIO 4-in-1 (8mm standoffs recommended)

Everything on one board. Keep it simple, keep it light.

JHEMCU G474ELVTX — Our pick for analog on this frame.

Flywoo GOKU F405 ERVT — 400mW VTX, ELRS serial.

TPU Files

Free to download at printables.com/model/1445428-ghost-25-fpv-frame-tpu-bits or theporto.com/downloads/#ghost. Print in TPU.



Scan for TPU files

PART	VARIANTS
Camera Canopy	14mm cameras — digital and analog
Arm Tip Boots	Standard / Claw variant
Power Plug Mount	XT30 / BT3 — includes antenna holder
Bottom Plate	Standard, Donut
Battery Pad	Standard — fits foam notch on both top plates