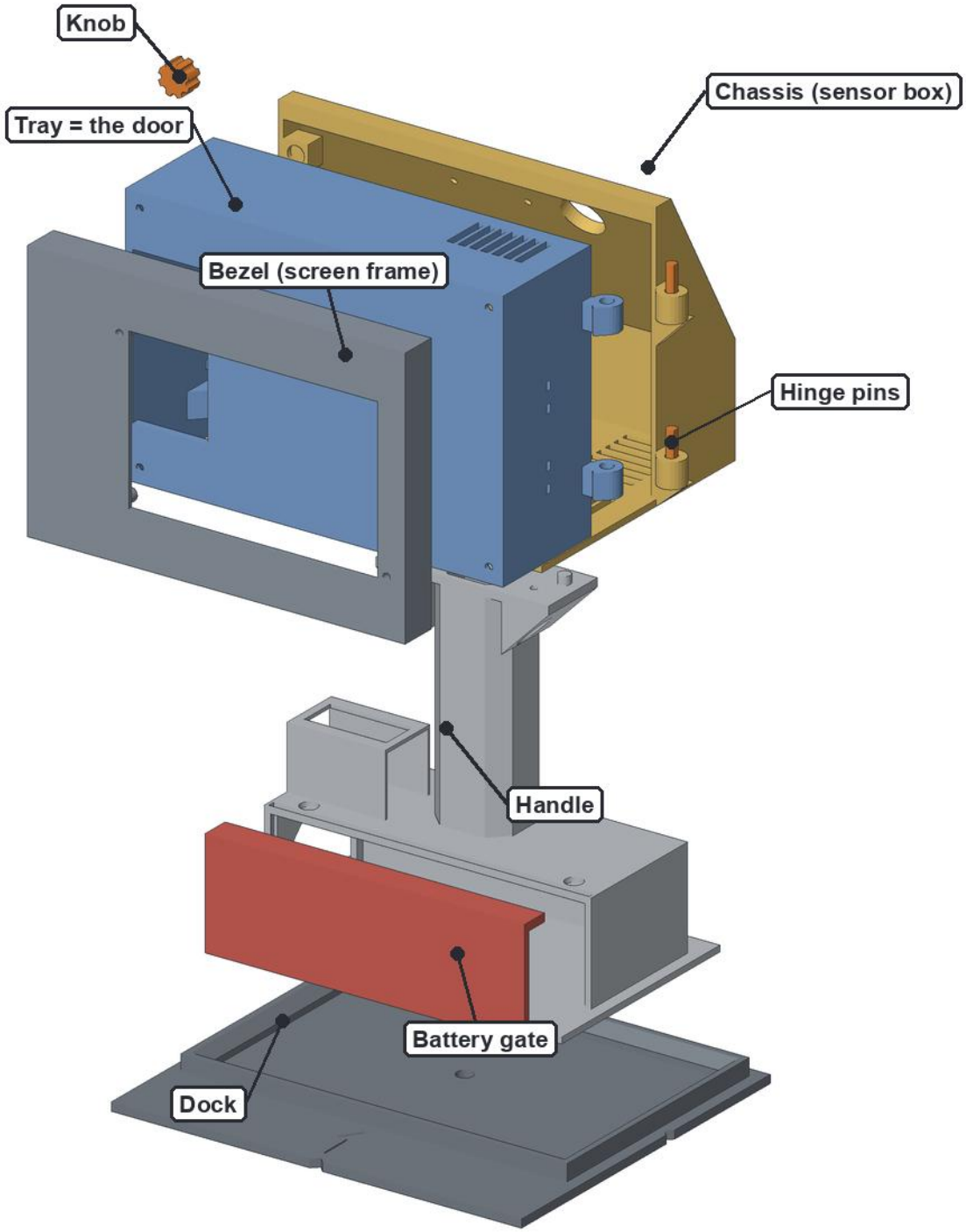
Assembly overview

The on-hand build (decision 0015): nine printed parts, exploded



The printed parts

- Chassis: the sensor box. The L2 on its sloped platform, the camera behind the front wall.
- Tray: the door. The Jetson stands on it turned 90 degrees, its ports toward your left.
- Bezel: the back of the head, the screen on it. It bolts to the tray.
- Handle: the hollow grip and the battery cradle. The two Okjew boxes sit in the sleeve on it.
- Battery gate, dock, two hinge pins, the door knob.

Tools

- Soldering iron with an insert tip, about 230 C. Press each insert in straight until flush.
- CA glue (magnets, hinge pins, the knob). Zip ties. Hex keys or drivers for M2, M2.5, M3.
- Remove the supports first: under the tray latch lug, the chassis knuckles, the handle deck.

Hardware for the whole build

Everything comes from your stock (decision 0015)

Heat-set inserts: 15

- M3 (4 long x 5 OD) x 7: chassis latch 1, chassis floor 2, bezel posts 4.
- M2.5 (4 x 3.5) x 4: the Jetson standoffs in the tray.
- M2 (4 x 3.2) x 4: the camera standoffs in the chassis.

Screws and nuts

- M3 x 12 x 9: L2 4, handle 2, screen 2, knob 1. (You have 10.)
- M3 x 6 x 4: bezel to tray. M3 nuts x 2: screen.
- M2.5 x 8 x 4: Jetson. M2 x 8 x 4: camera.

Magnets: TRYMAG 8 x 2 x 16

- Door 4, battery gate 4, foot 4. Every pair must attract: see the magnet pages. The capture dock has none (decision 0016).

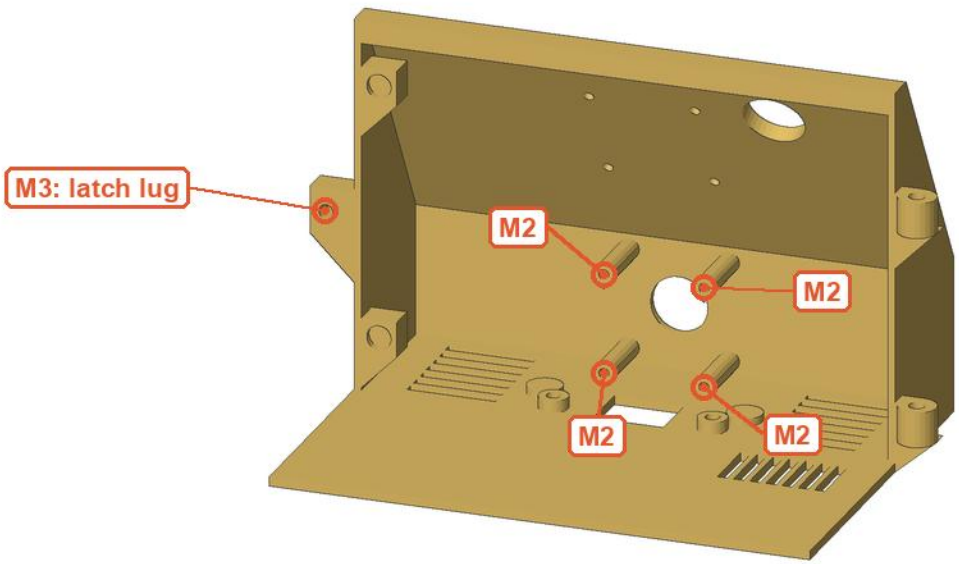
Printed small parts (shown)

- Two hinge pins (5 mm, glued into the chassis knuckles) and the knob (glued onto an M3 x 12).

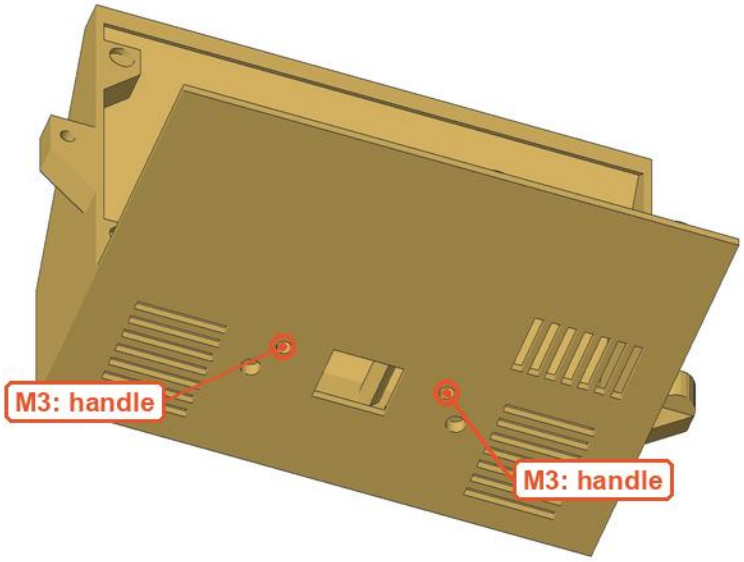
Heat-set inserts 1: the chassis (7)

Press each one in from the open side shown, until flush

Seen from behind (the open back of the box)



Seen from below



Camera standoffs: 4 x M2 (4 x 3.2)

- Inside the box, the four posts behind the front wall. Press in from behind, into the post tips.

Latch lug: 1 x M3

- The lug outside the left wall, mid-height. Press in from its back face (the mating side).

Under the floor: 2 x M3

- The two small holes under the box, either side of the square cable hole. Press in from below, flush with the underside (the bore runs up into a round boss inside).
- The bigger holes beside them are the handle peg sockets: no insert.

Not inserts

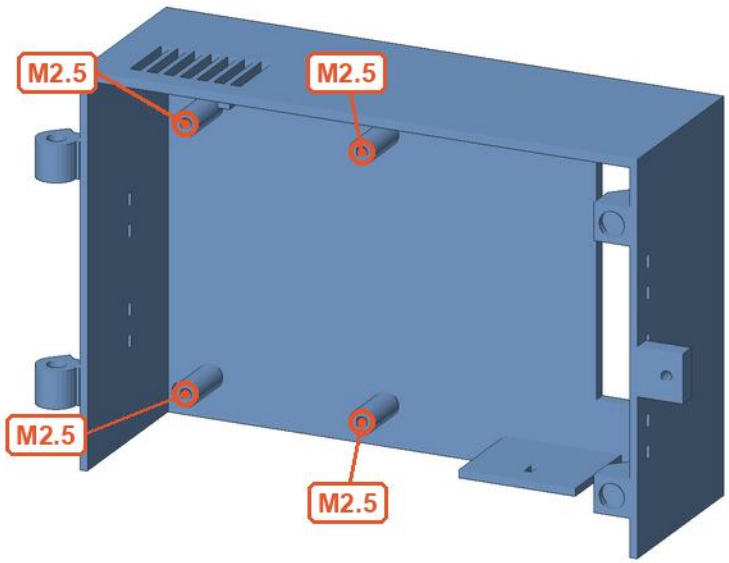
- The L2 has its own brass inserts. The four holes in the platform are clear holes for M3 x 12 from inside the box.

○ Heat-set insert

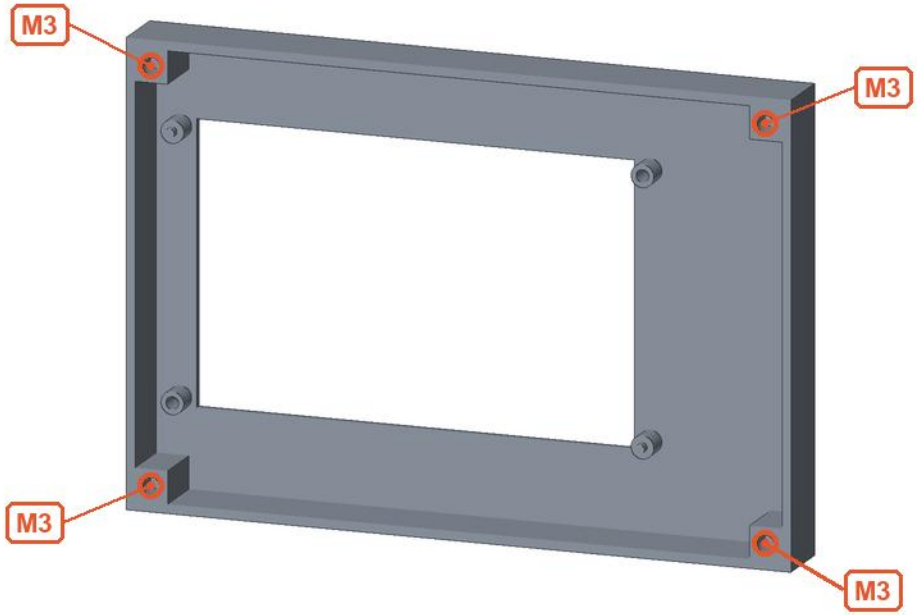
Heat-set inserts 2: tray (4) and bezel (4)

Press each one in from the open side shown, until flush

Tray, seen from the front (its open side)



Bezel, seen from the inside (the side that meets the tray)



Tray: 4 x M2.5 (4 x 3.5)

- The tips of the four tall standoffs on the bulkhead. They hold the Jetson.
- The bore is 6.5 deep: press the insert flush with the tip.

Bezel: 4 x M3 (4 x 5)

- The ends of the four square corner posts, on the side that meets the tray.
- The bezel then bolts on with 4 x M3 x 6 from inside the tray.

Total so far

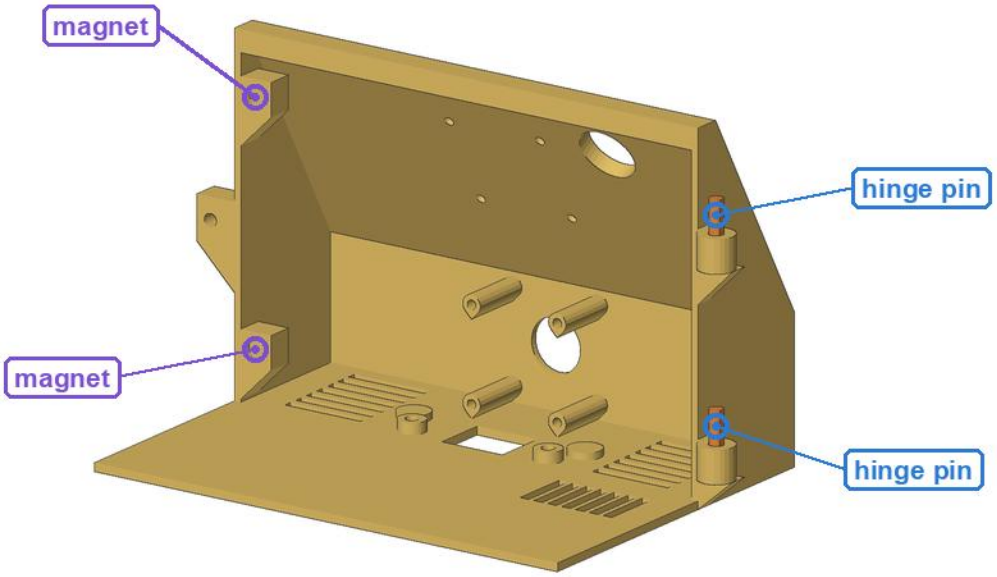
- All 15 inserts: chassis 7, tray 4, bezel 4.

○ Heat-set insert

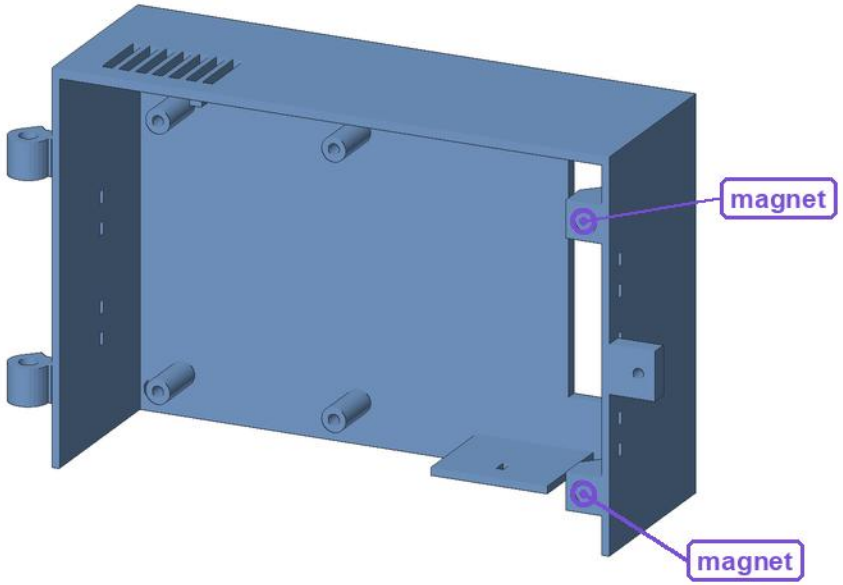
Door magnets (4) and hinge pins (2)

CA glue. Get the polarity right before the glue sets

Chassis from behind: 2 door magnets, 2 hinge pins



Tray from the front: its 2 door magnets



Hinge pins

- Glue each printed pin into a chassis knuckle: 8 mm in, 12 mm standing up.
- Do not glue the tray: its knuckles drop over the pins and turn on them.

Door magnets: 2 pairs

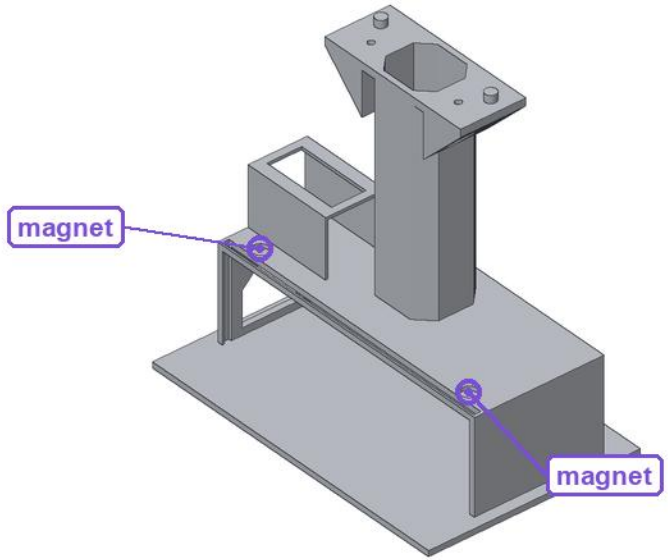
- Glue one magnet into each chassis pocket (at the back edge of the box, inside the left wall).
- Let a second magnet snap onto each glued one: the side that faces out is the side that goes into the tray pocket facing it. Mark it, then glue it into the tray.
- Each magnet sits 0.2 mm below the face.

Magnet
Hinge pin

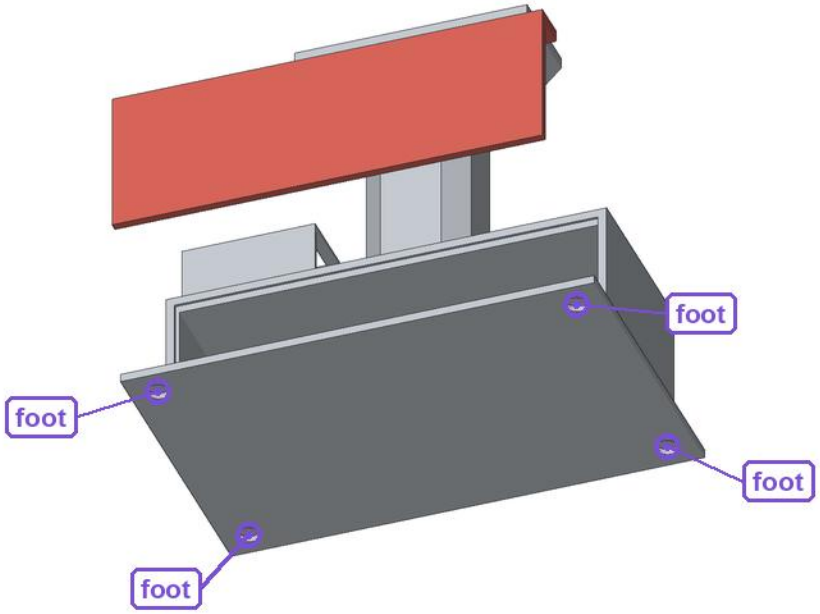
Magnets 2: handle (6) and gate (2)

Mark which way each pair attracts before gluing

Handle, deck top (behind the grip): 2 magnets



From below: the 4 foot pockets; the gate above



Deck: 2

- In the two pockets on the deck behind the grip. The battery gate tab lies on them.

Gate: 2

- In the underside of the gate tab, each one attracting the deck magnet under it.

Foot: 4 (no longer needed)

- The four pockets under the foot plate. The capture dock has no magnets now (decision 0016): leave them empty on a reprint.

Polarity trick

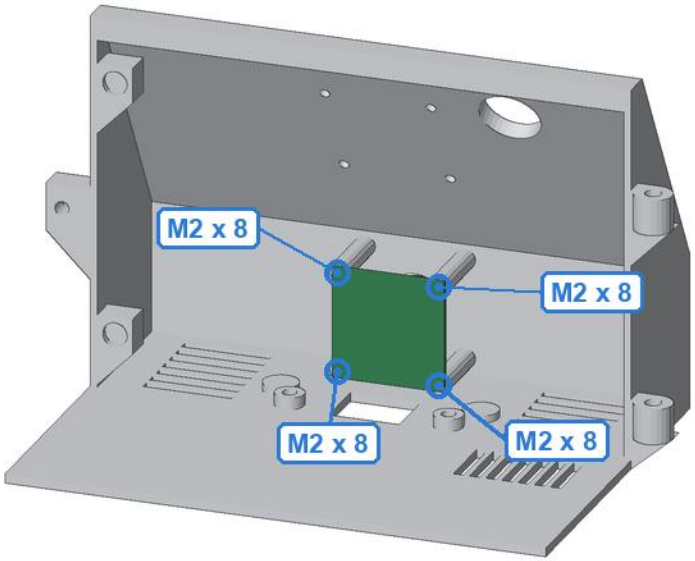
- Glue the first of each pair. Snap a loose magnet onto it, mark its top with a pen, and glue that marked face outward in the matching pocket.

○ Magnet

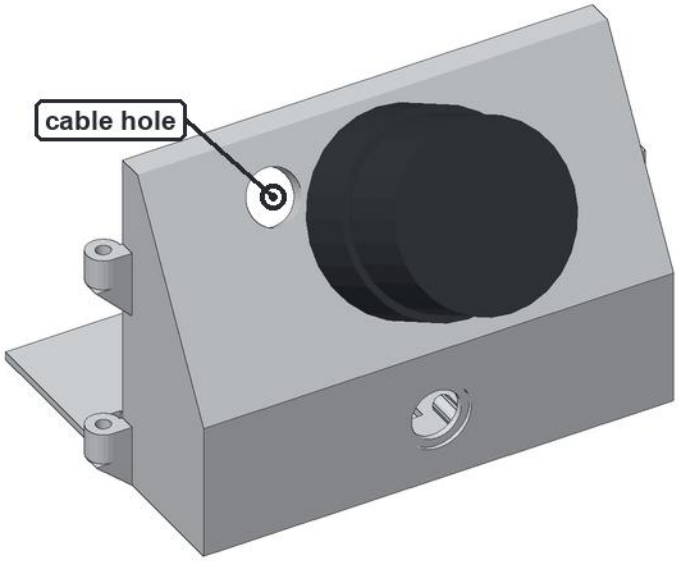
Step 1: camera and L2 into the chassis

Sensors first, while the box is open at the back

The camera board on its four standoffs (seen from behind)



The L2 on its sloped platform (seen from the front left)



Camera

- Plug the camera cable (the 4-pin JST end) into the back of the board first.
- Lens forward through the front wall. Screw the board to the four posts: 4 x M2 x 8 from behind.

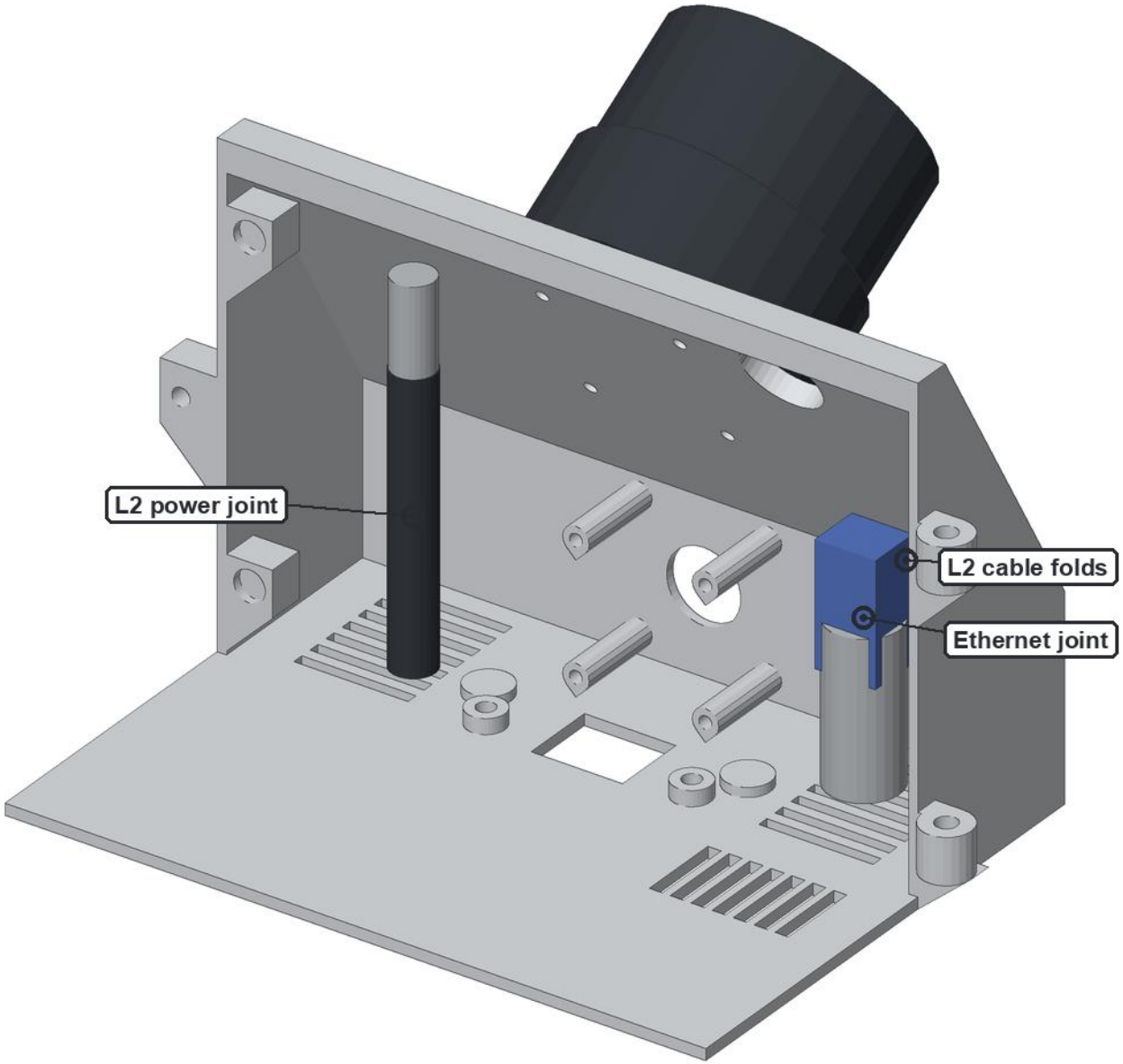
L2

- Thread its cable (RJ45 end first) down through the round hole in the platform, beside the L2 notch.
- Set the L2 on its four pads, the cable notch toward the hole.
- From inside the box, 4 x M3 x 12 up through the platform into the L2. Snug, not tight.

○ Screw

Step 2: the L2 cable inside the chassis

Fold the spare and stand the two joints up



The cable

- Fold the L2 cable back and forth along the right wall (your right, holding the scanner) and zip-tie it.
- The little USB-serial board on the third branch: leave it unplugged and tape it to its cable.

Ethernet joint (right side)

- Plug the Cat6 patch into the cable's round RJ45 socket. Stand it upright by the right wall, the patch cable leaving the top.

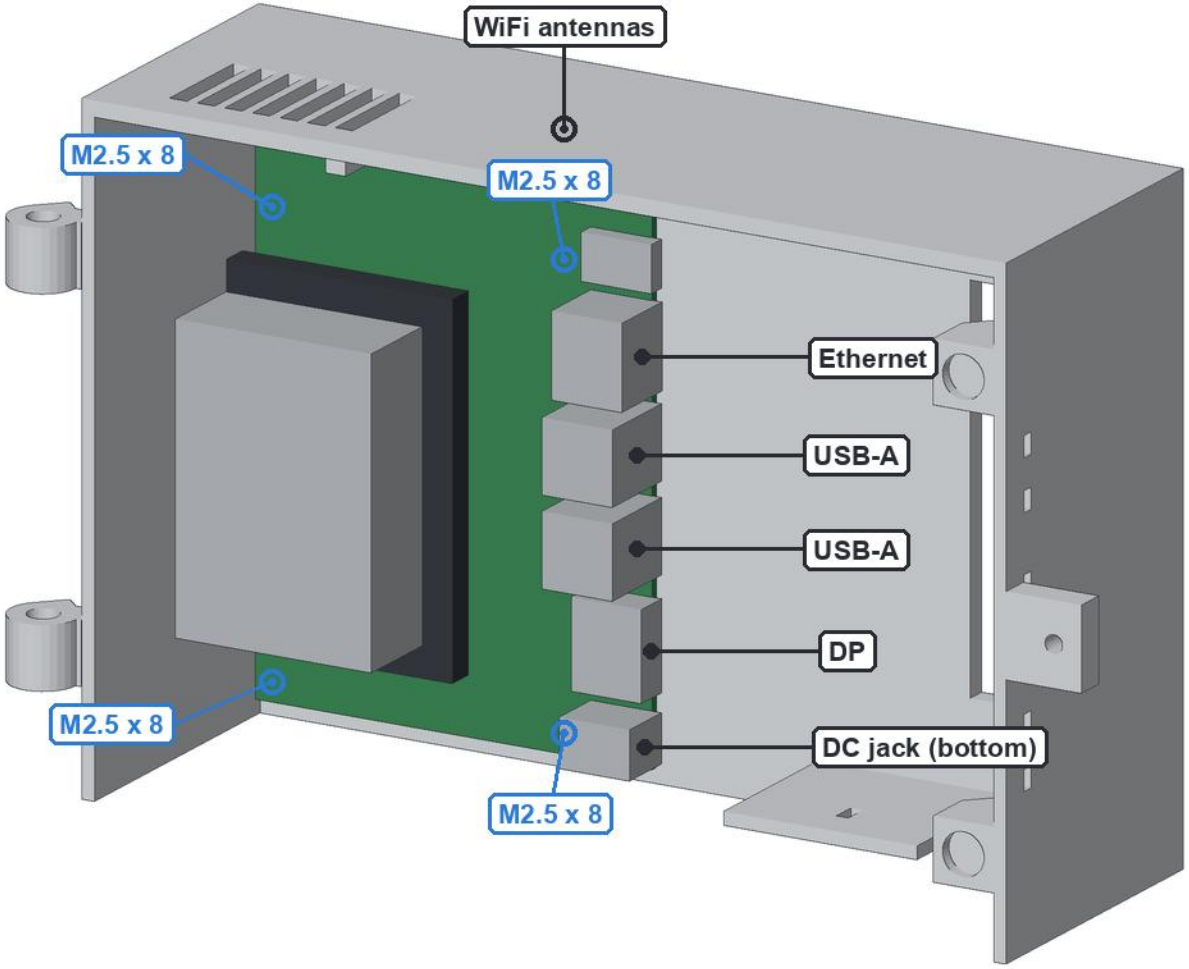
L2 power joint (left side)

- Push the L2 Okjew's barrel plug (12 V, with its thin adapter tip) into the cable's DC socket. Stand it upright on the left side, by the back edge. The Okjew lead comes in later, up through the floor hole.
- Both joints stand clear of the floor slots: they let the Jetson fan breathe.

○ **Cable joint**

Step 3: the Jetson and the antennas on the tray

The Jetson stands turned: ports toward your left, DC jack at the bottom



Jetson

- Turn it so its port edge faces the left wall (the side away from the hinge) and the DC jack is at the bottom.
- Fan side facing you (toward the front of the scanner). 4 x M2.5 x 8 into the standoff inserts.

WiFi antennas

- Two holes in the tab that hangs from the ceiling, above the Jetson top edge, by the WiFi card.
- Push each RP-SMA bulkhead through from the Jetson side, nut on the other side, then screw the stub antenna on.
- Connect the two pigtails to the card: Main and Aux (they need about 46 mm each).

Leave the port bay empty for now

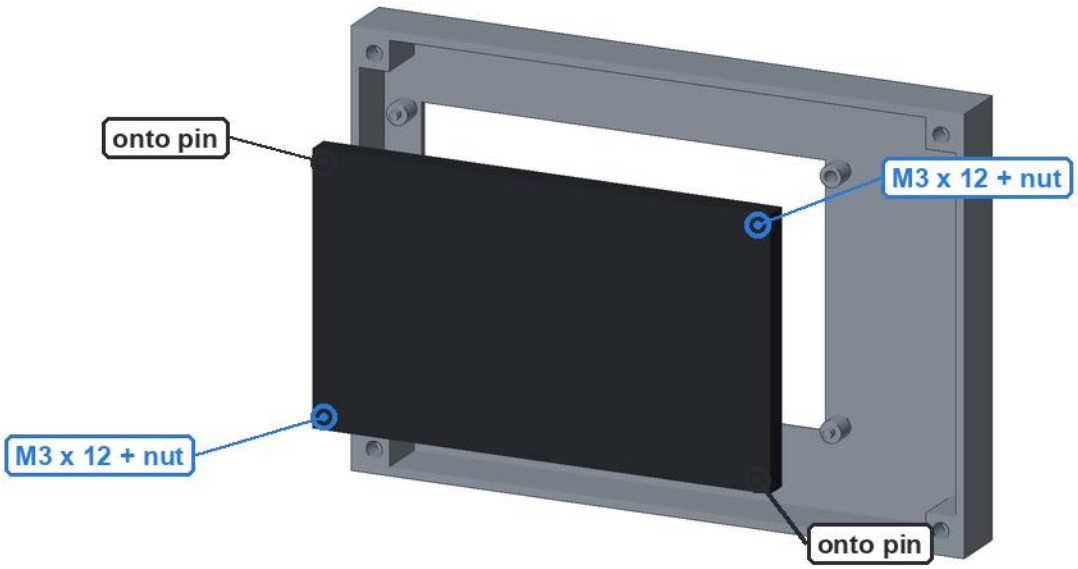
- The space to the left of the ports takes the plugs and the spare cable (step 5).

Screw
Port / part

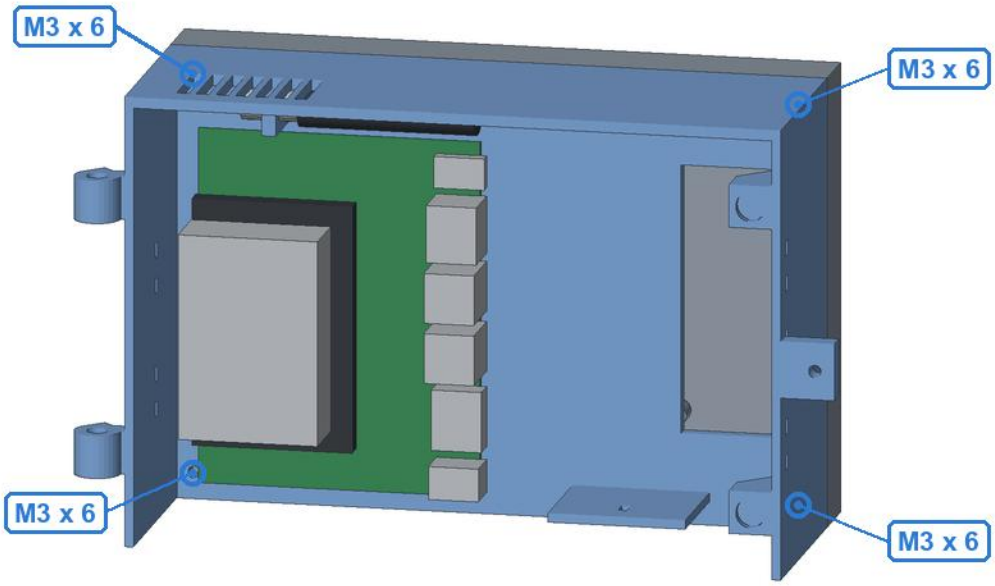
Step 4: the screen into the bezel, the bezel onto the tray

Both seen from the open front of the tray

The screen into the bezel (bezel seen from the inside)



The bezel onto the tray: 4 screws from inside the tray



Screen to bezel

- Lay the screen glass-down into the bezel. Two corners sit on the printed pins.
- The other two (diagonal) corners: M3 x 12 from the outside of the bezel, through the screen, nut on the back.
- Plug the HDMI cable and the USB-C cable into the screen edge now.

Bezel to tray

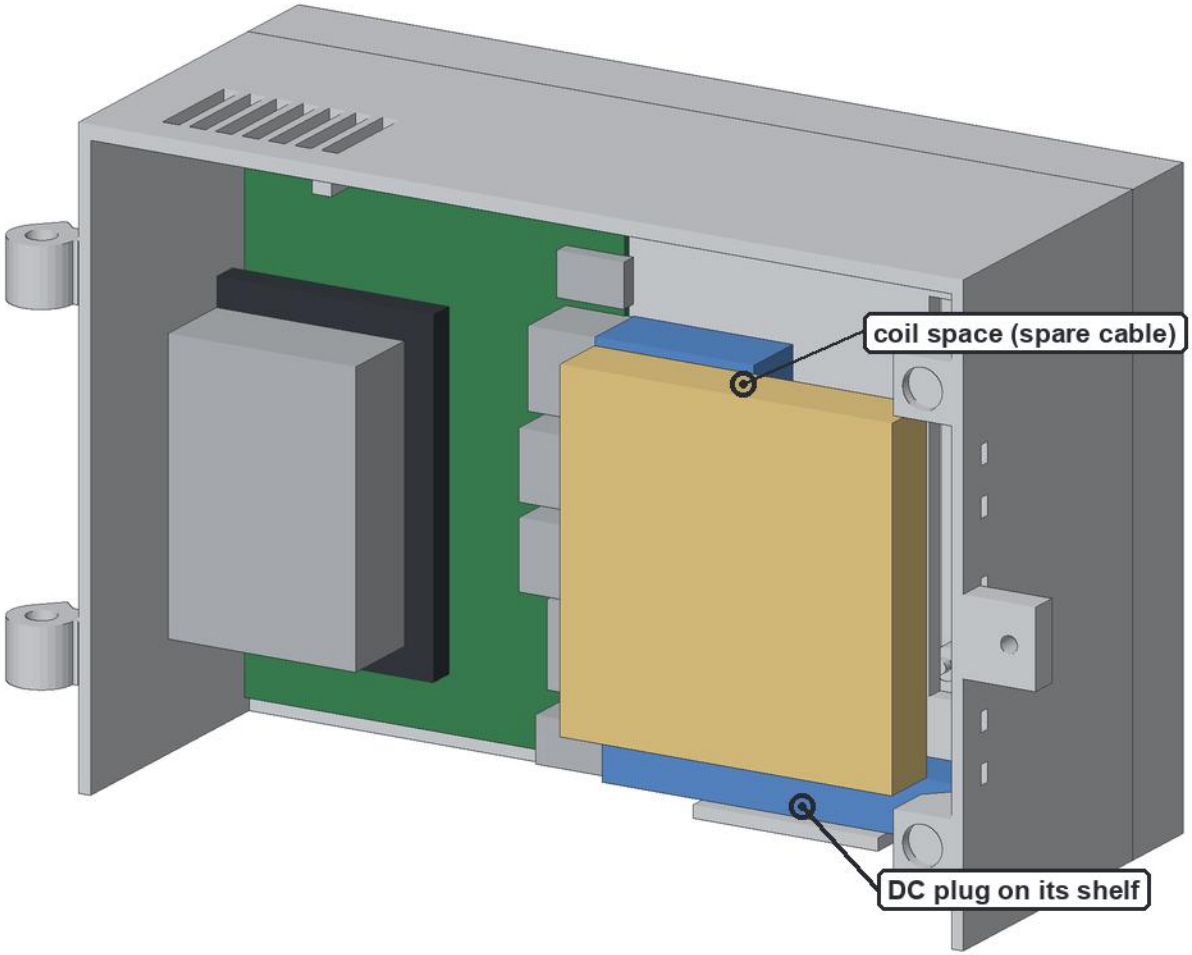
- Feed the screen's cables forward through the slot in the bulkhead (at the left, beside the Jetson ports).
- Hold the bezel against the back of the tray. From inside the tray, 4 x M3 x 6 through the bulkhead into the bezel post inserts.

Screw

Printed pin

Step 5: plug in the Jetson, coil the spare cable

Blue = where each plug and its bend go; yellow = the coil space



Plug in (all straight into the bay, left of the ports)

- DP: the IVANKY adapter. Its HDMI end takes the HDMI cable from the screen.
- USB-A: the screen USB cable (touch). Leave one USB-A free for the USB drive.
- Leave the DC jack, the camera USB-A and the Ethernet for step 6 (they come across the hinge).

Coil and tie

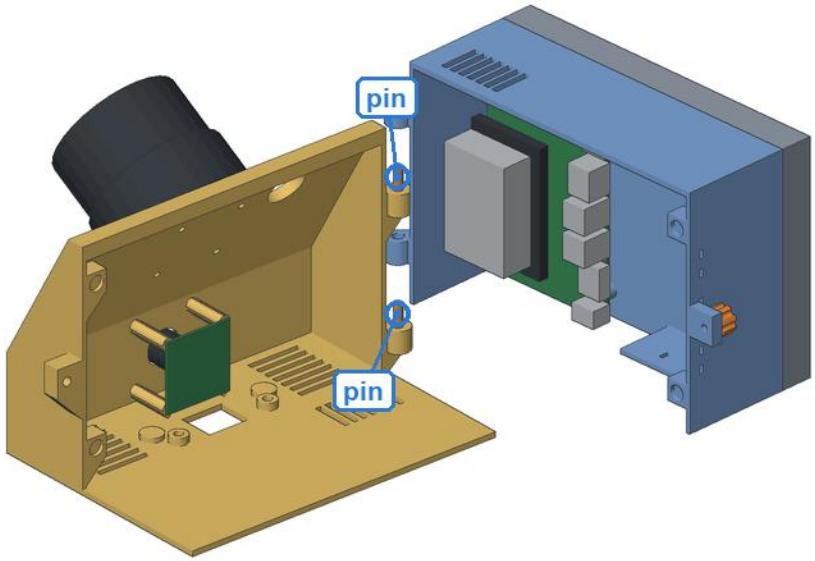
- Coil the spare HDMI and screen USB loosely (16 mm bend or more) in the front of the bay (yellow).
- Zip-tie them through the slot pairs in the left wall. Keep the bay floor and the vents clear.

○ Zone

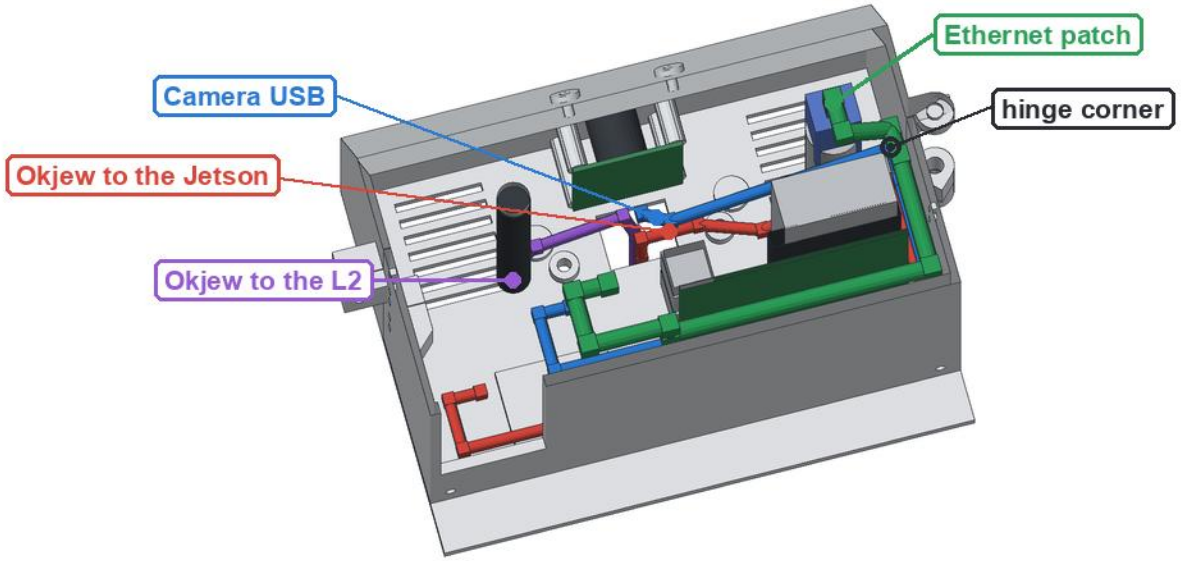
Step 6: hang the door, run the three hinge cables

Then the cables cross at the hinge corner

Door open, lifted: lower the tray knuckles onto the two pins



Cut away, door closed, seen from above: where the cables run



Hang the door

- Hold the tray open (about square to the chassis) and lower its two knuckles over the two pins.

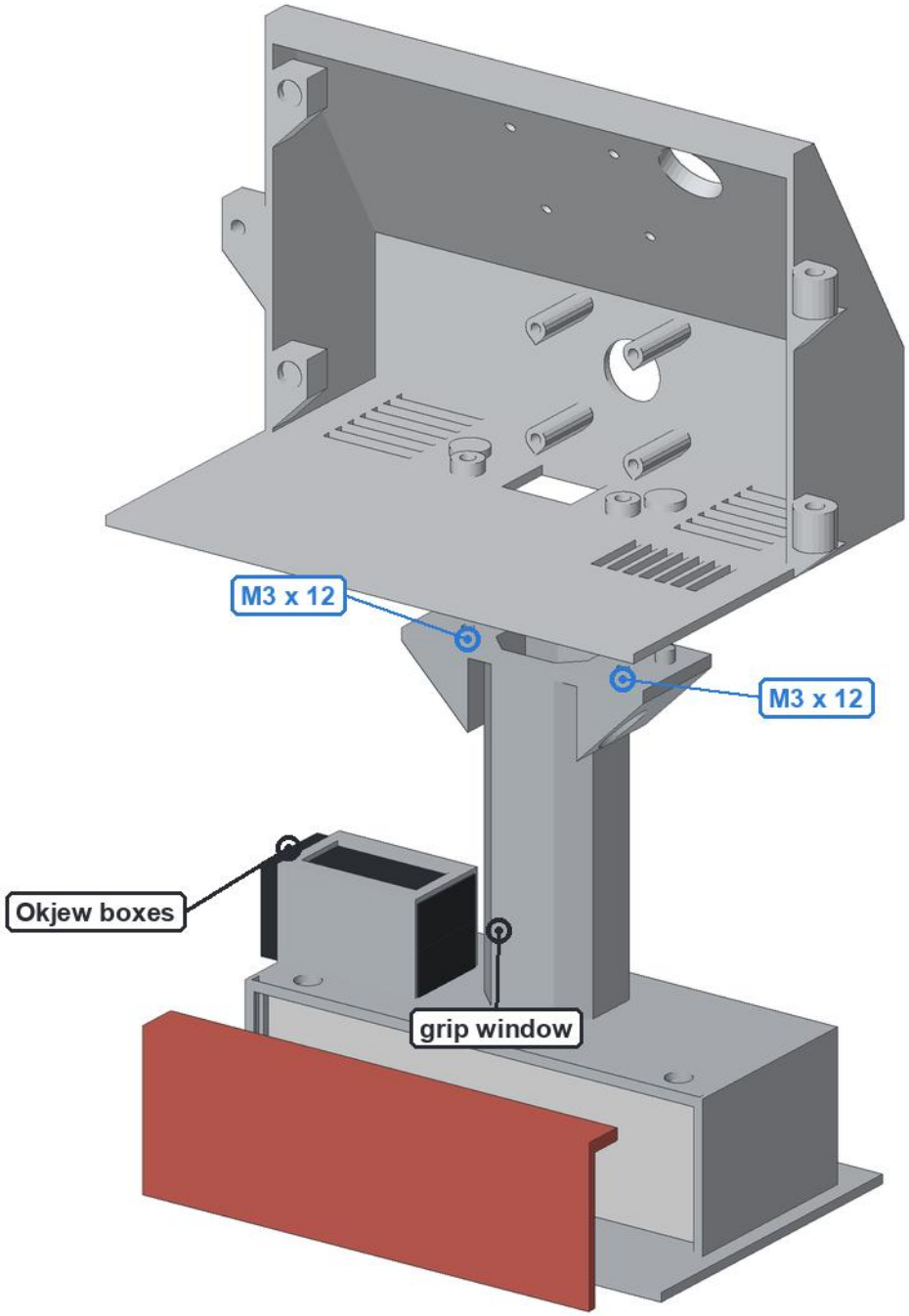
The three cables across the hinge

- Camera USB, Ethernet patch, the Jetson Okjew lead: each goes to the hinge corner inside the chassis, crosses there, then runs back along the right wall of the tray.
- Tie them through the slot pairs in the right wall. Then they go behind the Jetson board (between the board and the bulkhead) out into the port bay.
- Plug them in: camera to a USB-A, Ethernet to the RJ45, the Okjew barrel stack into the DC jack (it rests on the shelf; tie it).
- Leave about 30 mm of slack at the hinge: opening the door takes 20 mm.
- Coil the rest of the camera and Cat6 cable in the coil space. The Jetson Okjew lead comes up from the grip (step 7).

○ Hinge pin

Step 7: the handle, the Okjew boxes and the battery

Exploded: the handle under the chassis



Okjew leads

- Slide both boxes into the sleeve on the deck (stacked, the USB-C ends out toward the battery end).
- Feed both barrel ends in through the window low in the grip, up the grip, and out of its top.

Bolt the handle on

- Push the barrel ends up through the hole in the chassis floor. Seat the two pegs.
- 2 x M3 x 12 from below, through the flange into the floor inserts.
- Inside the chassis: the L2 lead goes to the L2 power joint (step 2), the Jetson lead to the hinge corner (step 6). Push the spare cable back down into the grip.

Battery

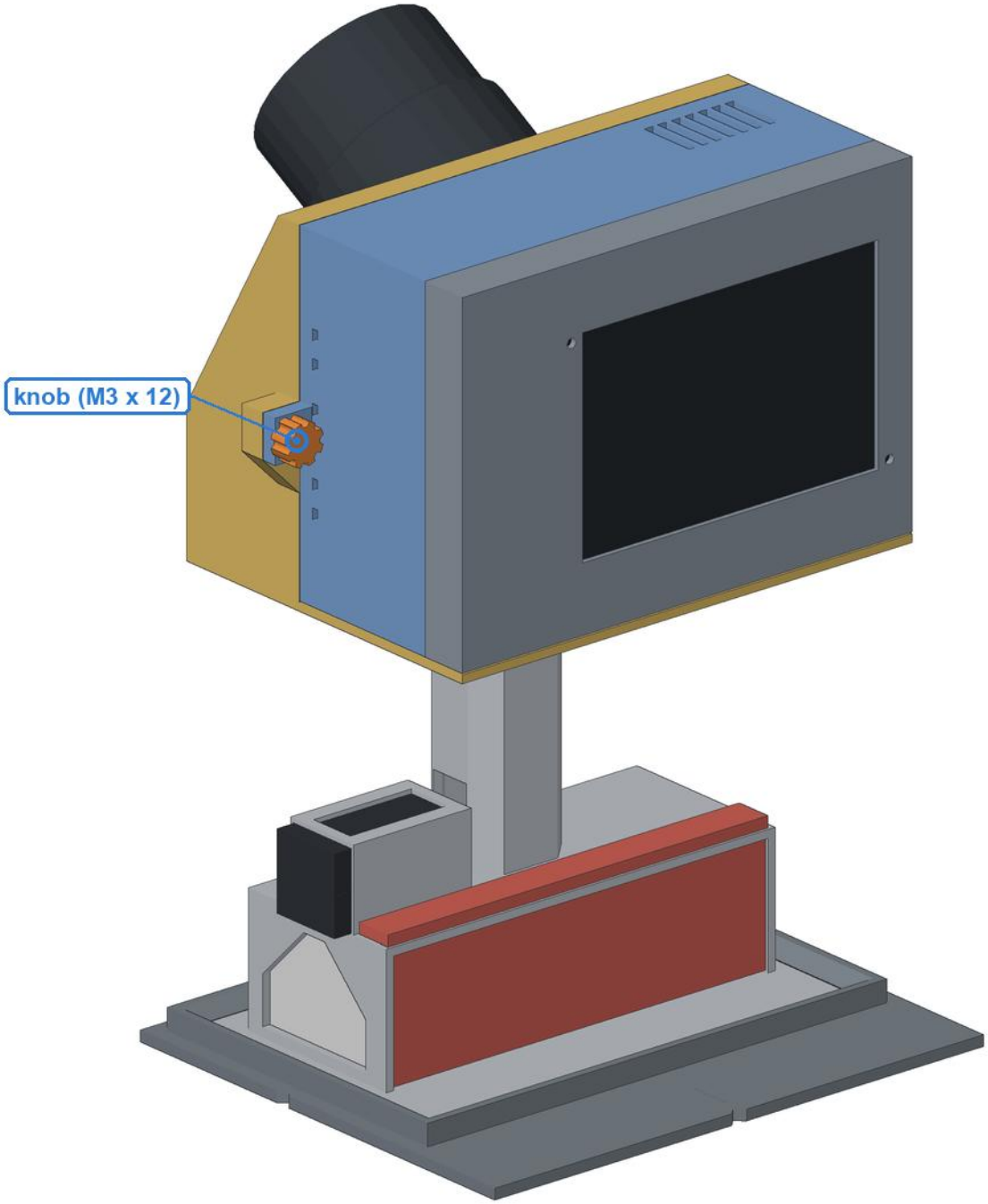
- Slide the battery in from the back, its ports toward the left end window. Plug in both USB-C plugs.
- Drop the gate into its grooves: the magnets hold its tab down.

Screw

Part

Step 8: close the door, fit the knob, first power-on

Seen from behind, on your left side



Knob

- CA the printed knob onto the head of an M3 x 12 (the head goes into its socket). Let it cure.
- Close the door (the magnets pull it in), then screw the knob through the tray lug into the chassis lug insert.

Capture dock

- Separate, on the floor: the foot drops into its pocket (page 15).

First power-on

- Check: the Jetson Okjew dial on 20 V, the L2 Okjew dial on 12 V.
- Plug both USB-C plugs into the battery. The Jetson boots to the screen, the L2 spins, the camera shows up.
- Off: shut down from the touchscreen, then unplug at the battery.

Scans off

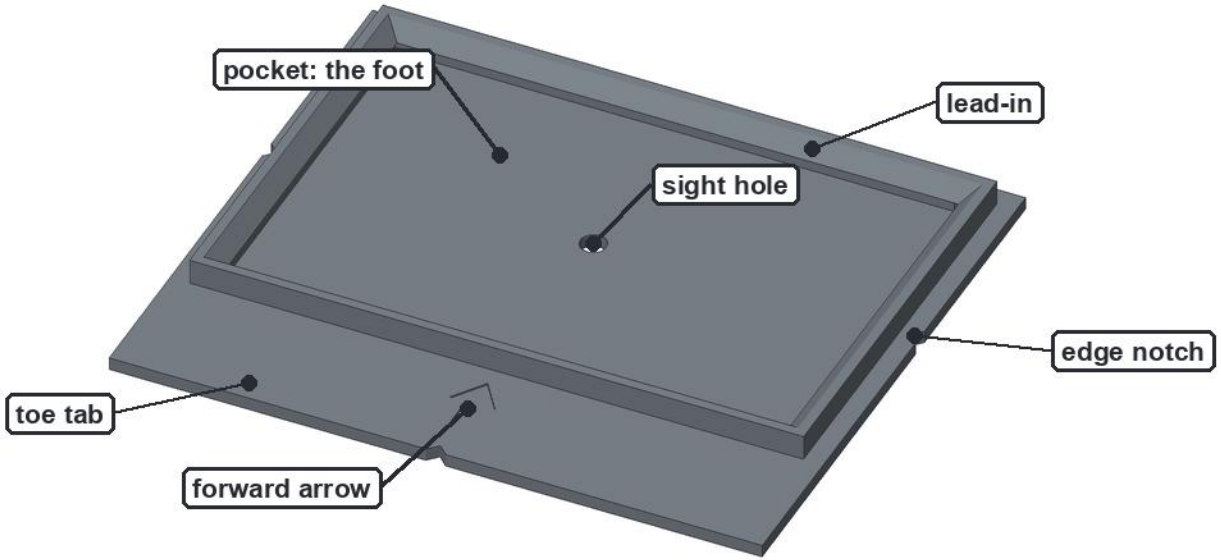
- Undo the knob, swing the door open, USB drive in the free USB-A port.

○ Knob screw

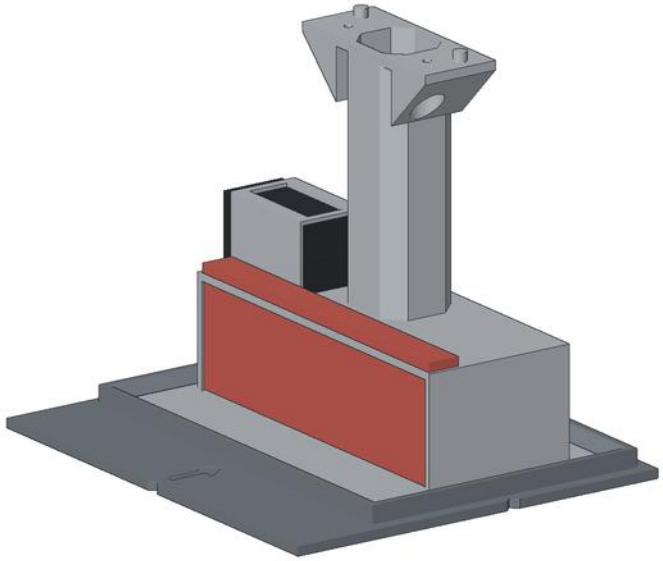
The capture dock: start and end on the same spot

Decision 0016: one print, flat, no supports, no magnets, no glue

The dock, seen from behind (where you stand)



The foot in the pocket (head left off)



Set it down

- On a flat, clean spot: press each corner, it should not rock. The arrow points forward, the way the L2 looks.
- Optional: chalk round it or through the notches and the sight hole, to see afterwards whether it moved.

Each capture

- Power on. Lower the scanner straight down into the pocket: the chamfer steers the foot in from 5 mm off. A toe on the tab stops the dock sliding.
- Start recording, then hands off for about 15 s.
- Lift it straight up and walk the route.
- Back straight down into the pocket, hands off for about 15 s, then stop recording.

Fit

- The pocket is 0.4 mm bigger than the foot each side: it comes back within about 0.4 mm and 0.15 deg. Brush grit out of the pocket first.