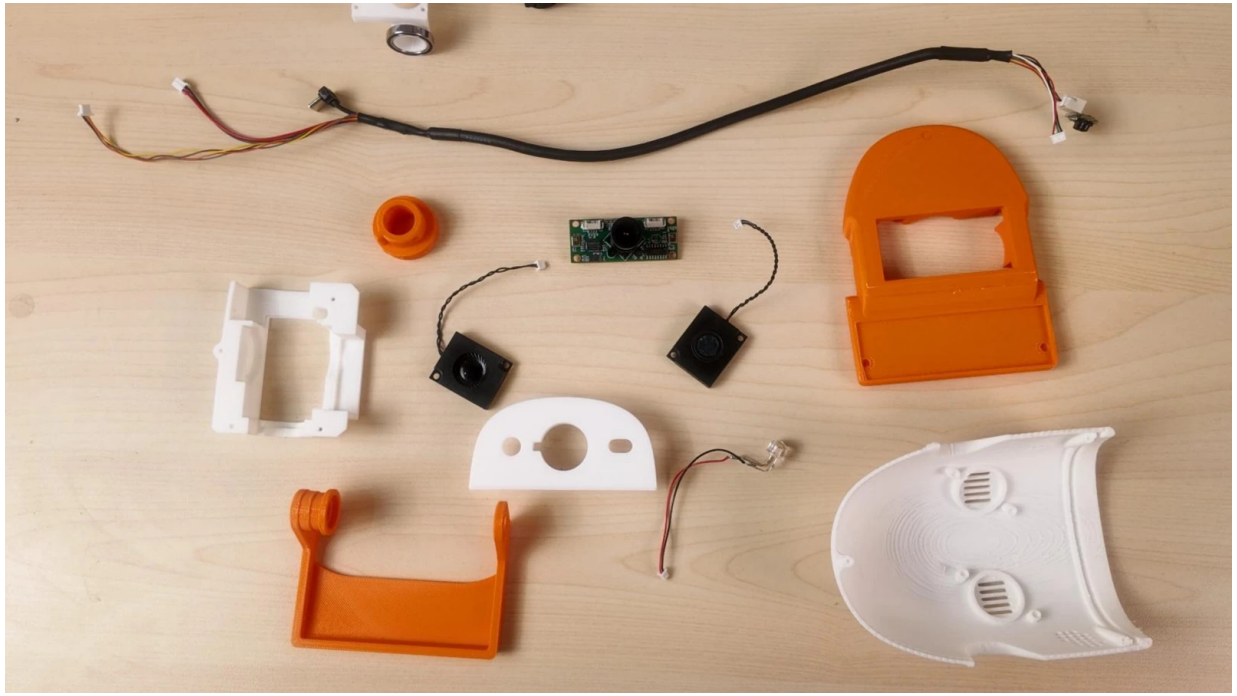
Audio & Video Installation Guide



Complete audio/video kit

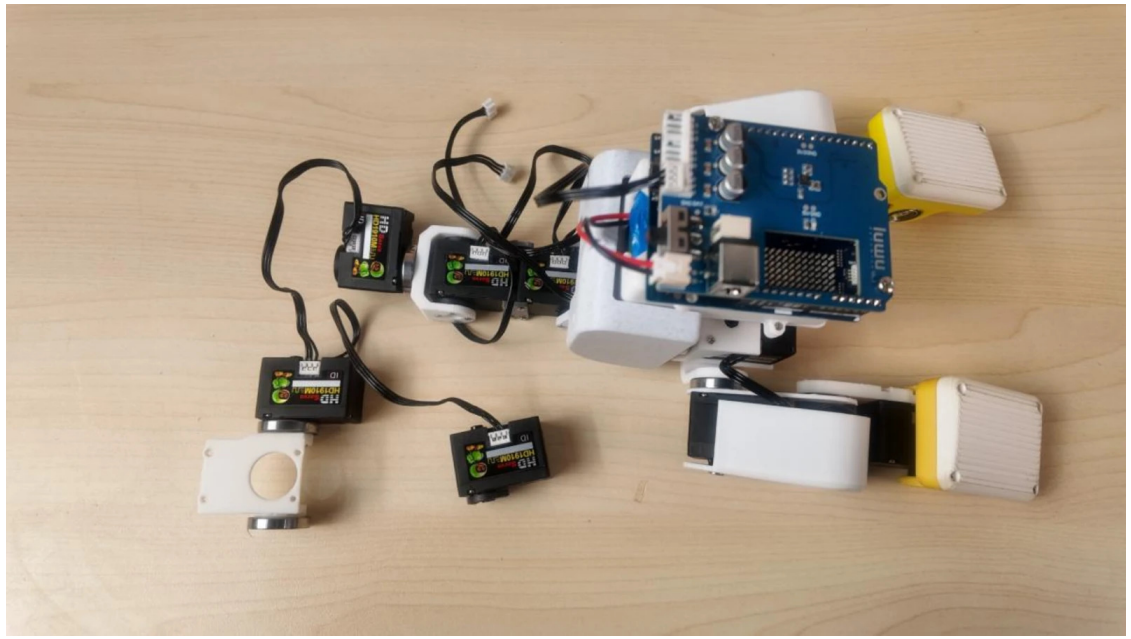
15 illustrated steps for the camera, speakers, fill light and ToF sensor.

Keep power disconnected during assembly and cable changes.

Updated 13 November 2026
English edition

01 Open the head

- Disconnect power, then open the head to expose the servos and bracket as shown.
- Organize the wires and keep every removed screw and part.



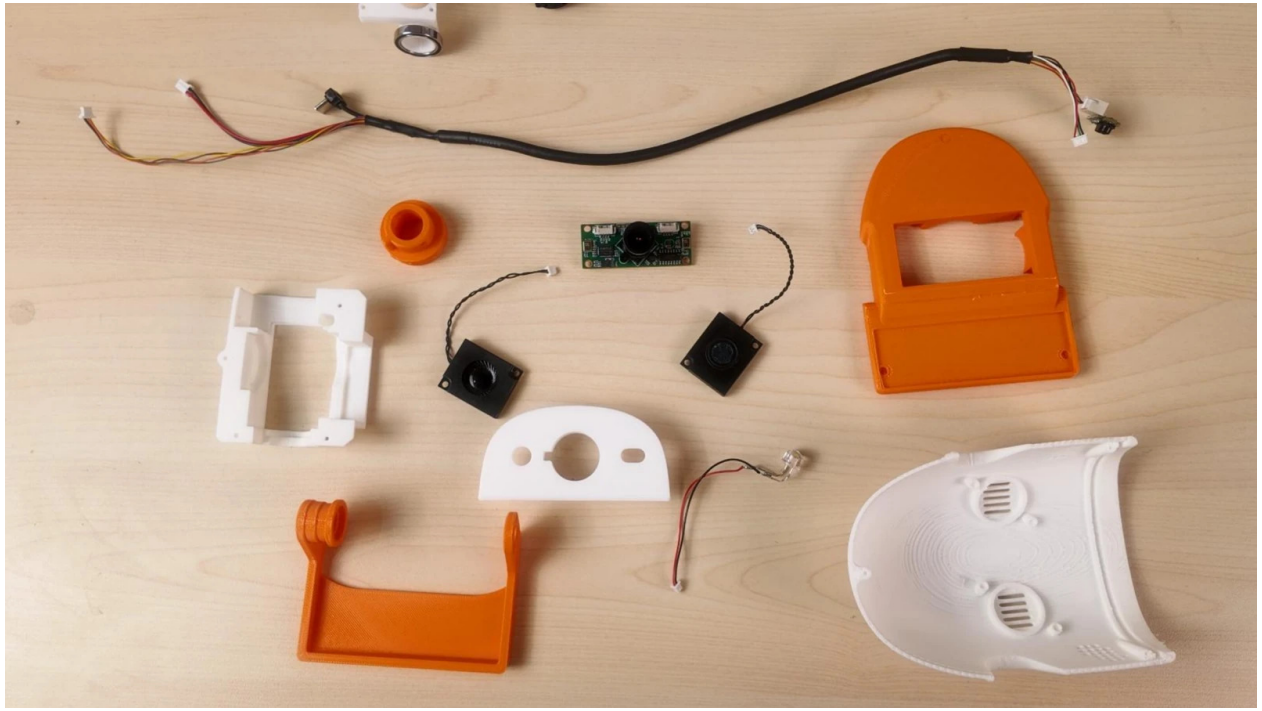
Body with the head opened



Head servos and bracket

02 Prepare the components

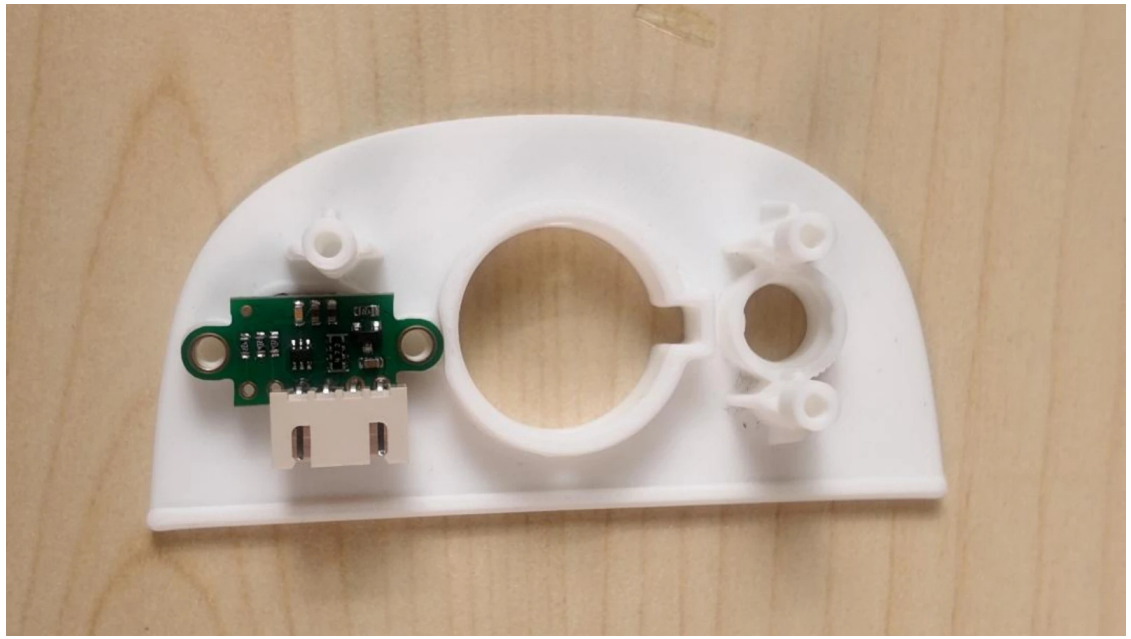
- Prepare the camera, ToF sensor, fill light, two speakers, head parts and wiring harness.
- Prepare M3 × 4 and M2 × 6 screws.



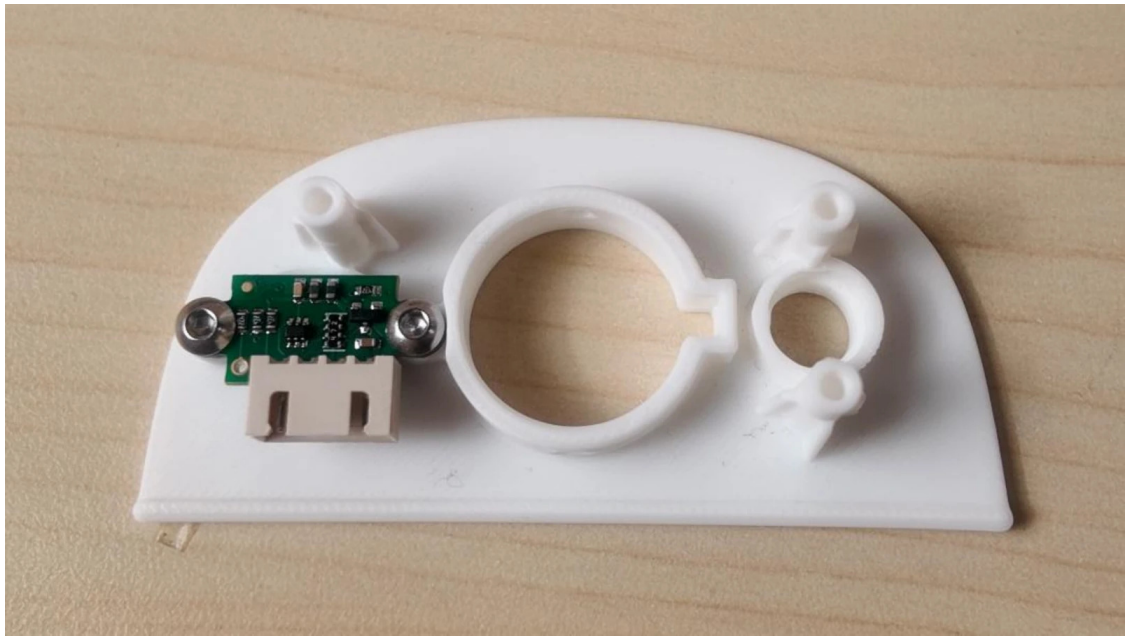
Audio/video components and fasteners

03 Mount the ToF sensor

- Position the ToF sensor at the side of its mounting plate and align the two holes.
- Fasten it with two M3 × 4 screws; match the connector orientation in the assembled photo.



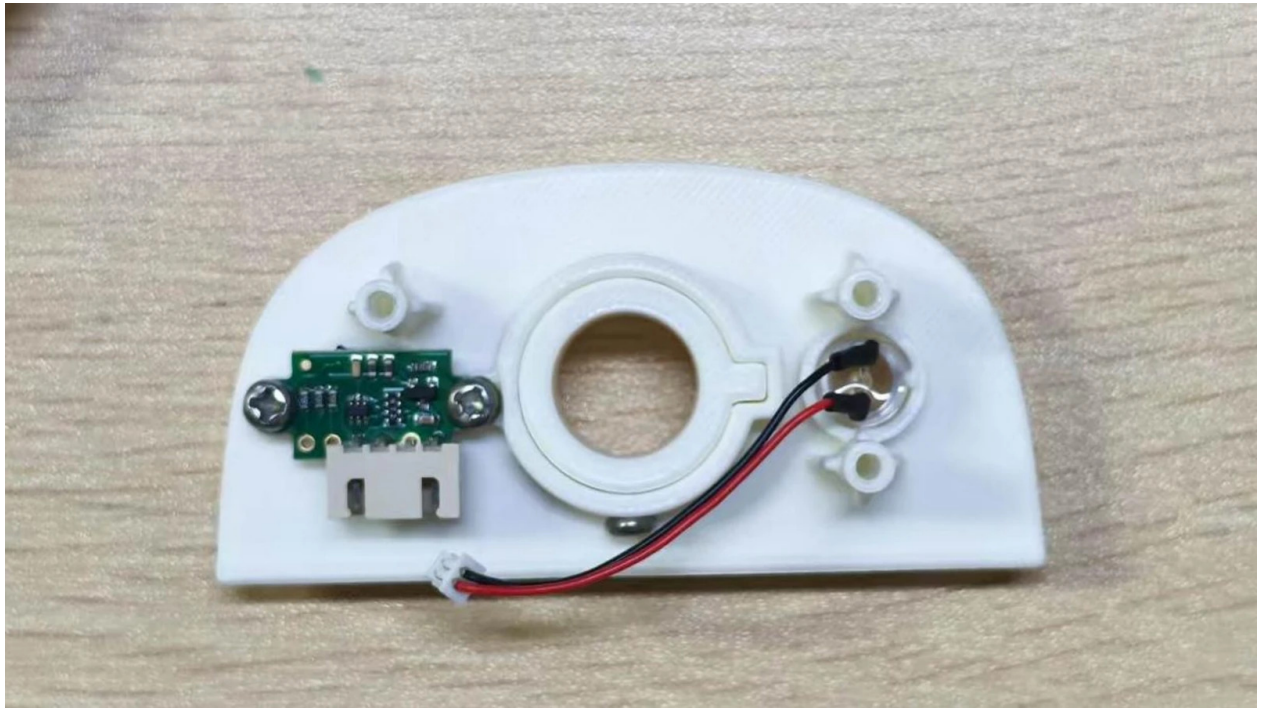
Align the ToF mounting holes



ToF sensor secured to its plate

04 Fit the fill light

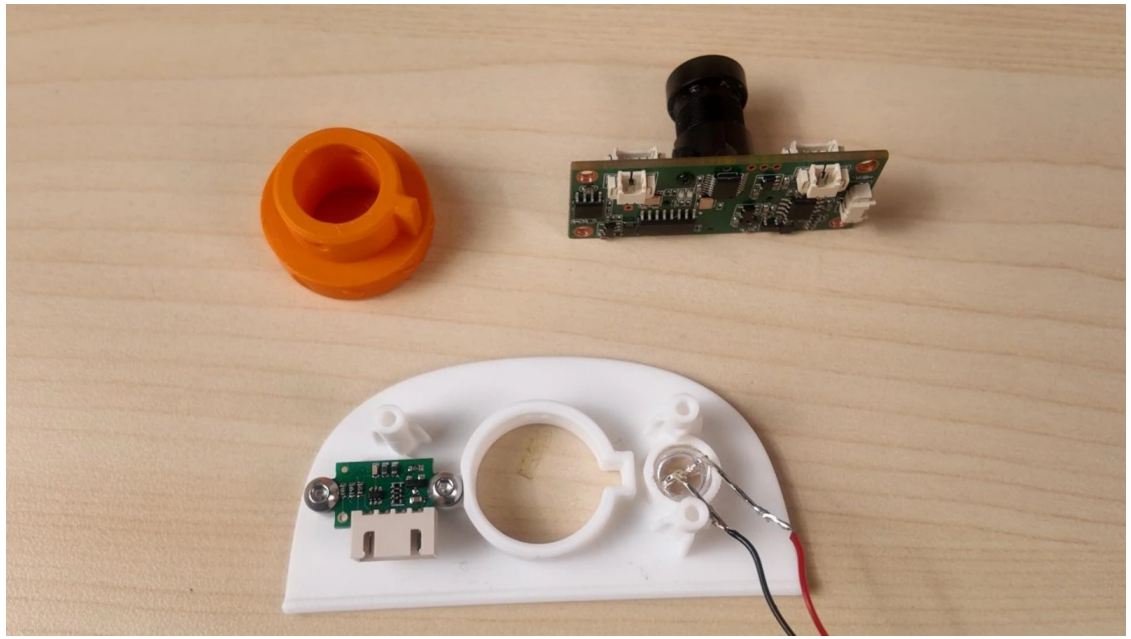
- Insert the fill light in the small round hole on the other side of the plate, facing outward.
- Route its wires behind the plate and keep the metal pins from touching each other.



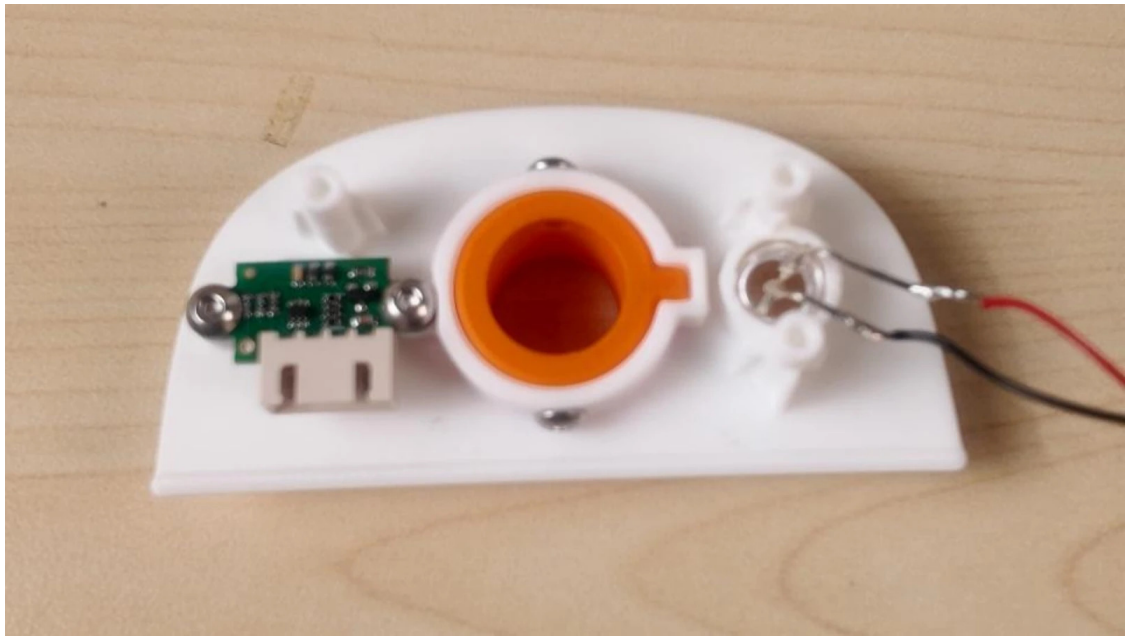
Fill light faces outward; wires leave from the rear

05 Fit the lens holder

- Align the orange lens holder with the central hole and notch in the plate.
- Use M3 × 4 screws at the lens-holder fixing positions.



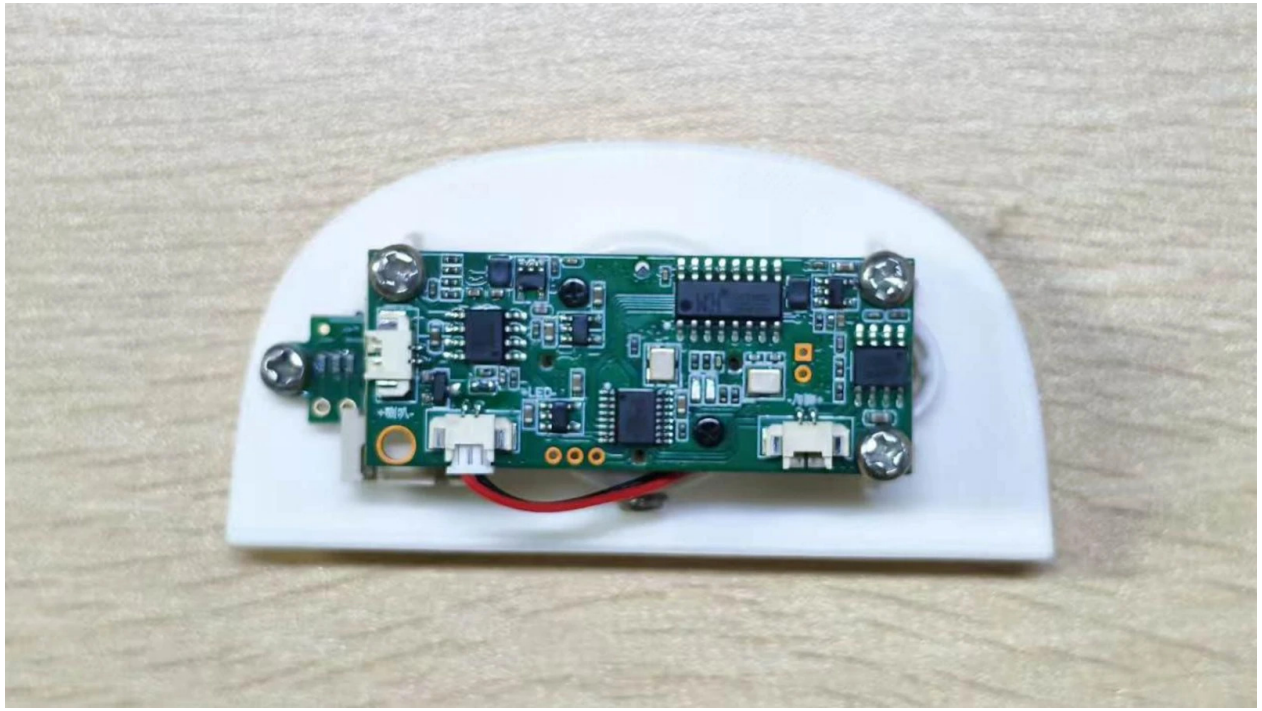
Lens holder and camera module



Lens holder fitted to the plate

06 Secure the camera module

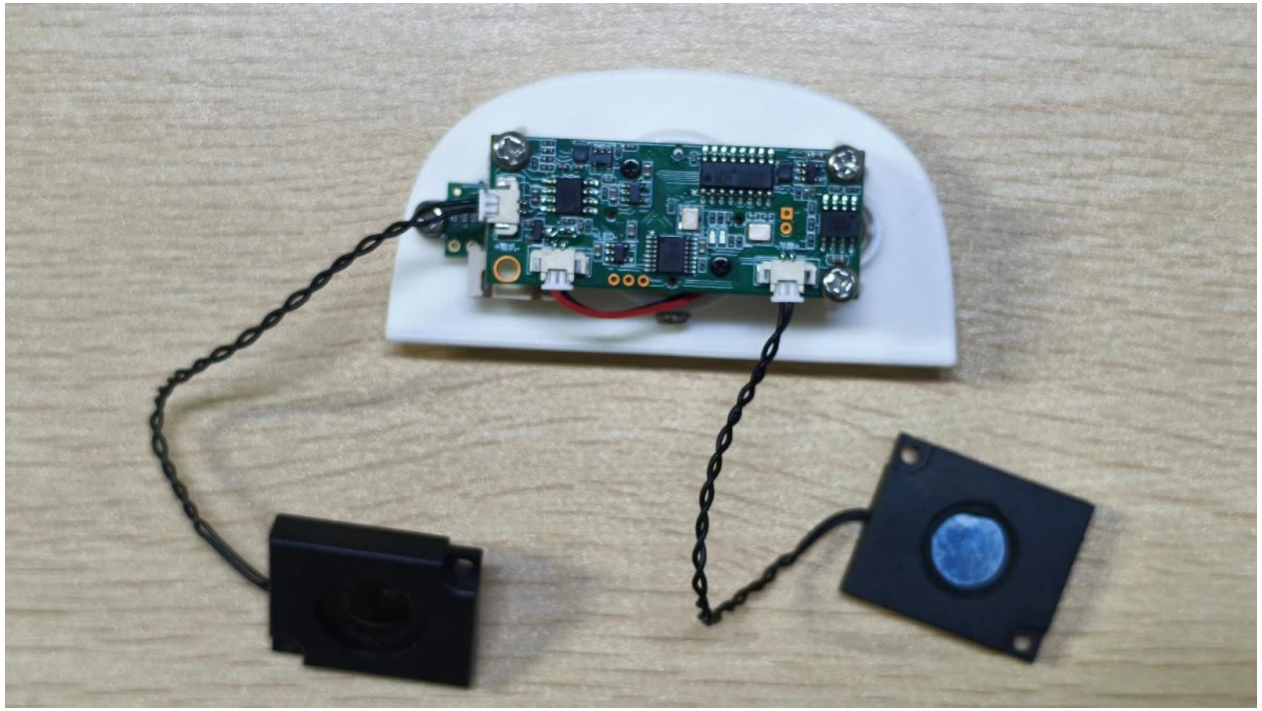
- Align the camera module and lens holder, then seat the module against the plate.
- Secure the camera board with M3 × 4 screws.



Rear view of the camera module and fixing screws

07 Connect the light and speakers

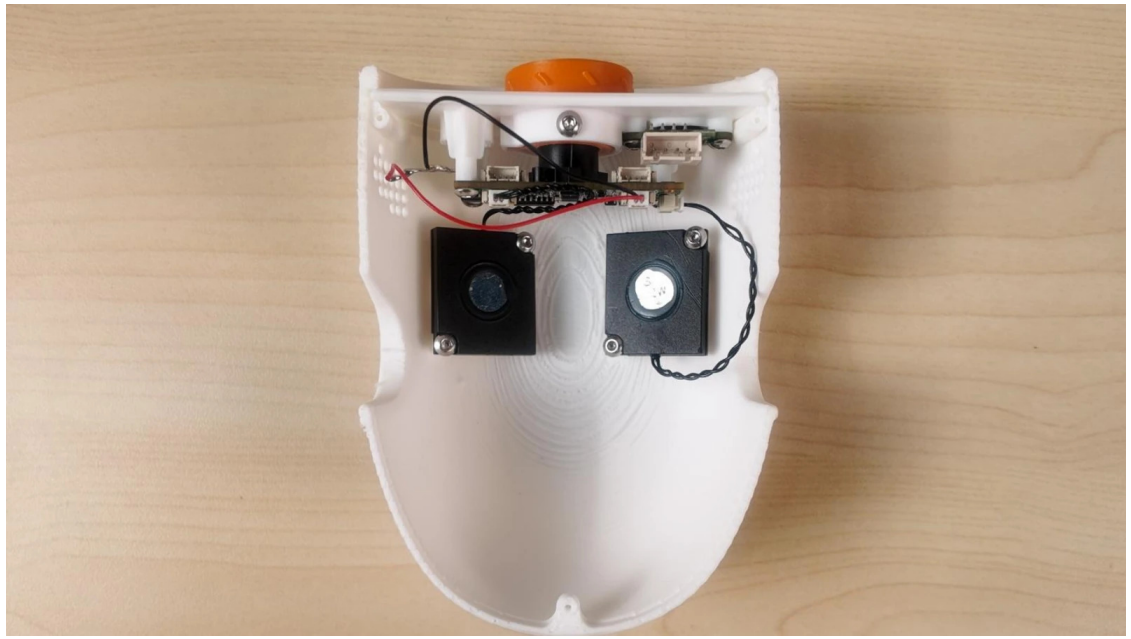
- Insert the fill-light plug into its connector on the camera/audio board.
- Connect the two speakers to their corresponding connectors. Check that every plug is fully seated.



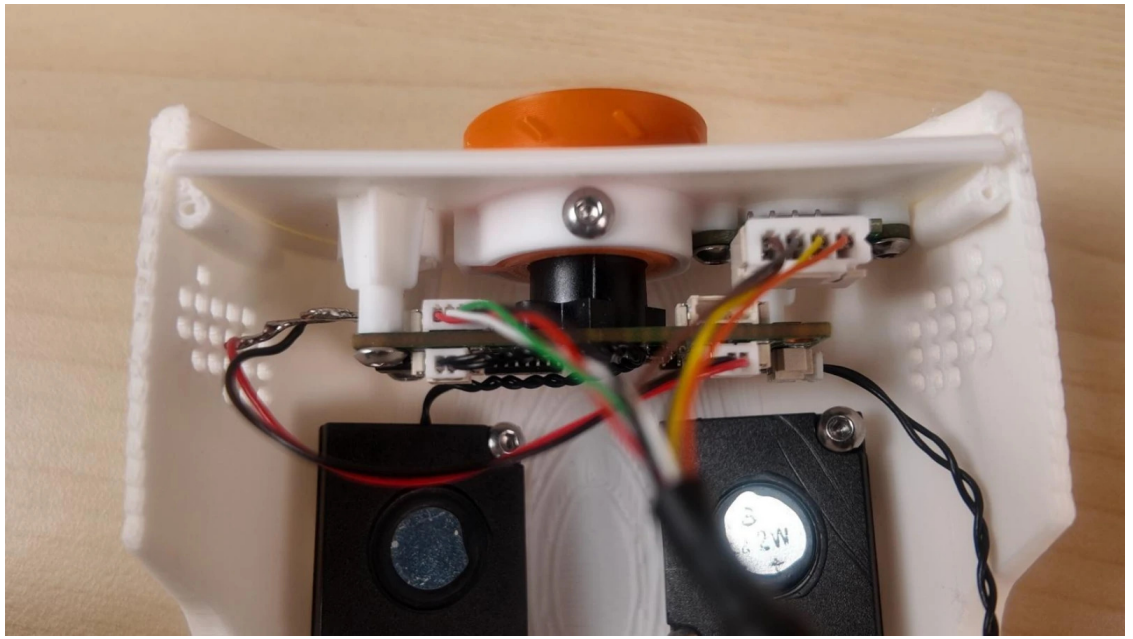
Connections for the fill light and both speakers

08 Fit the head shell and harness

- Place the speakers inside the head shell. Fit the camera assembly to the front panel.
- Arrange the harness inside the shell, checking connector direction and leaving the wires clear of fixing holes.



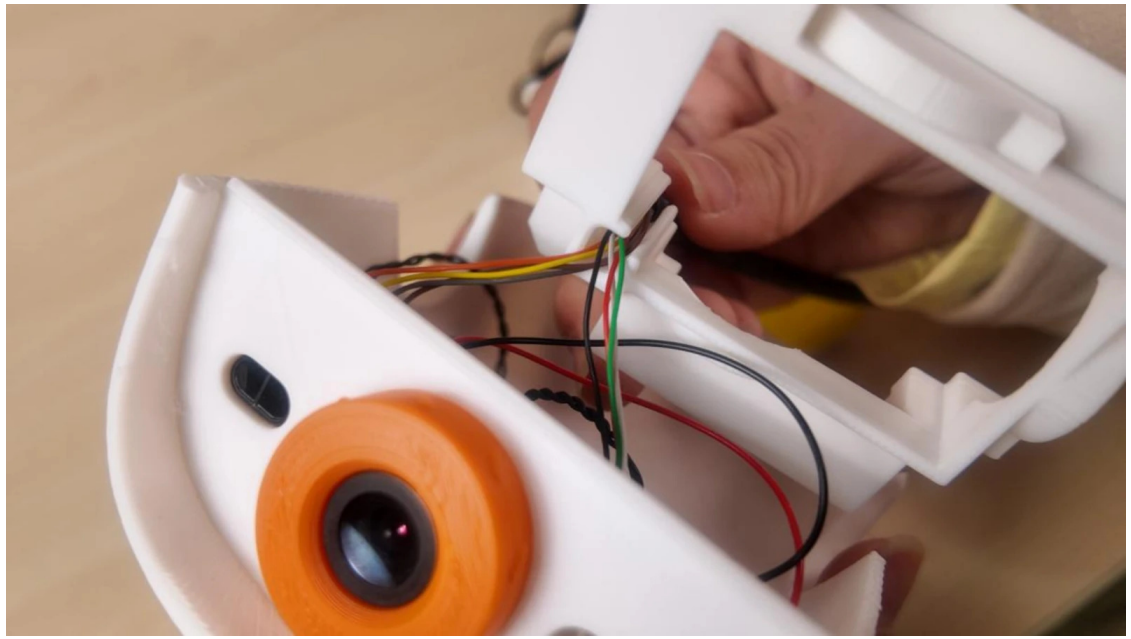
Speakers positioned inside the head shell



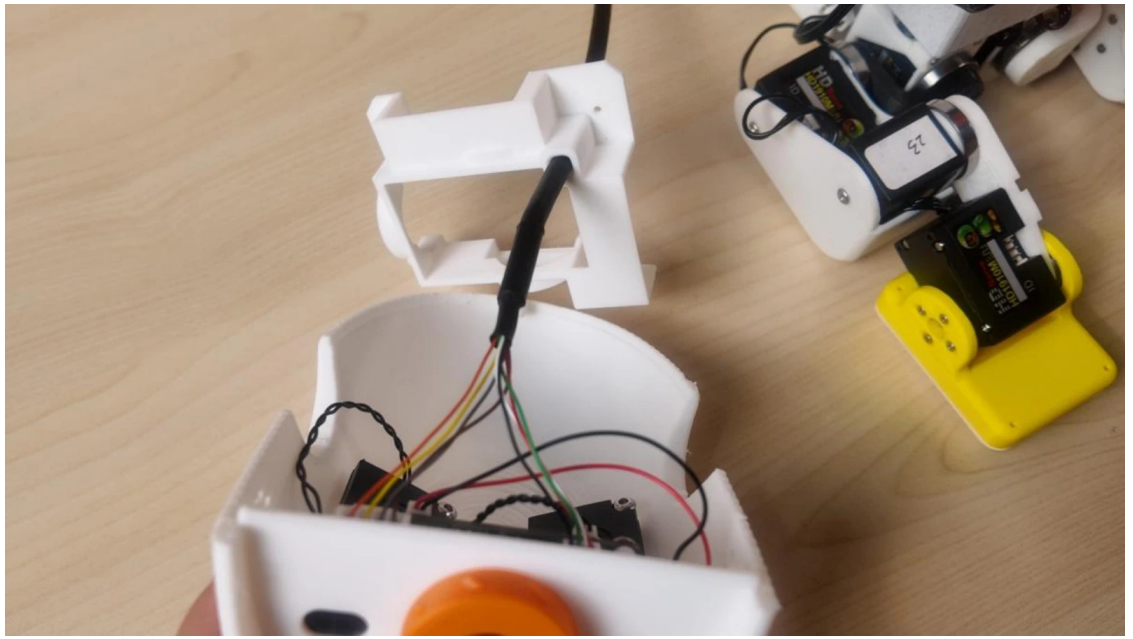
Harness connections inside the head

09 Route through the bracket

- Pass the main harness through the opening in the white bracket.
- Leave enough slack for head movement; route the harness clear of screw holes and moving joints.



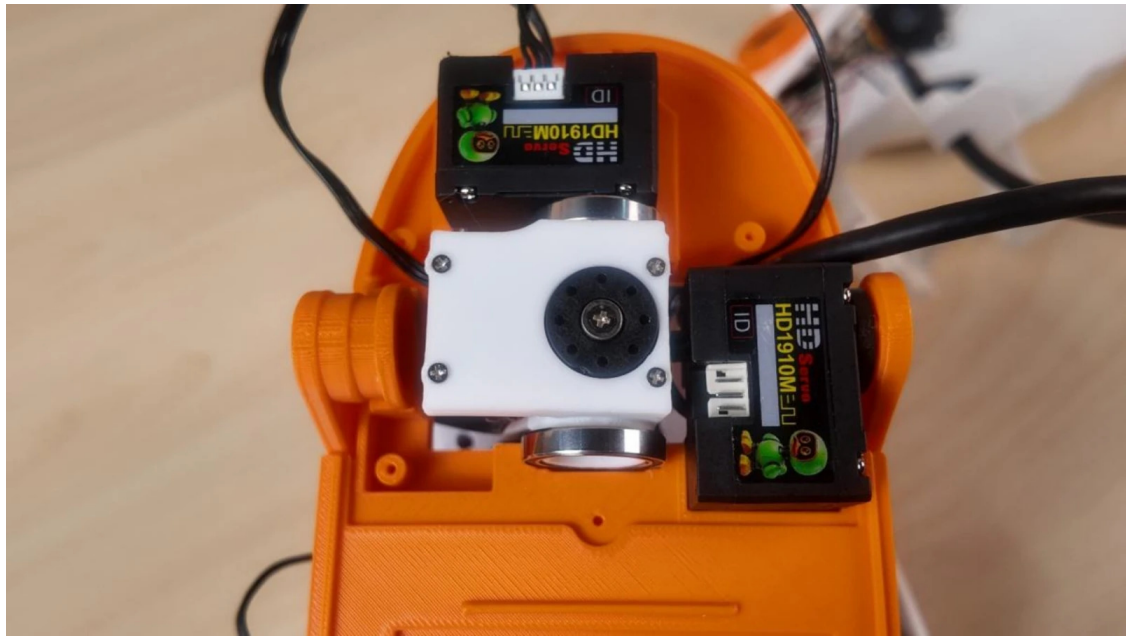
Harness through the bracket opening



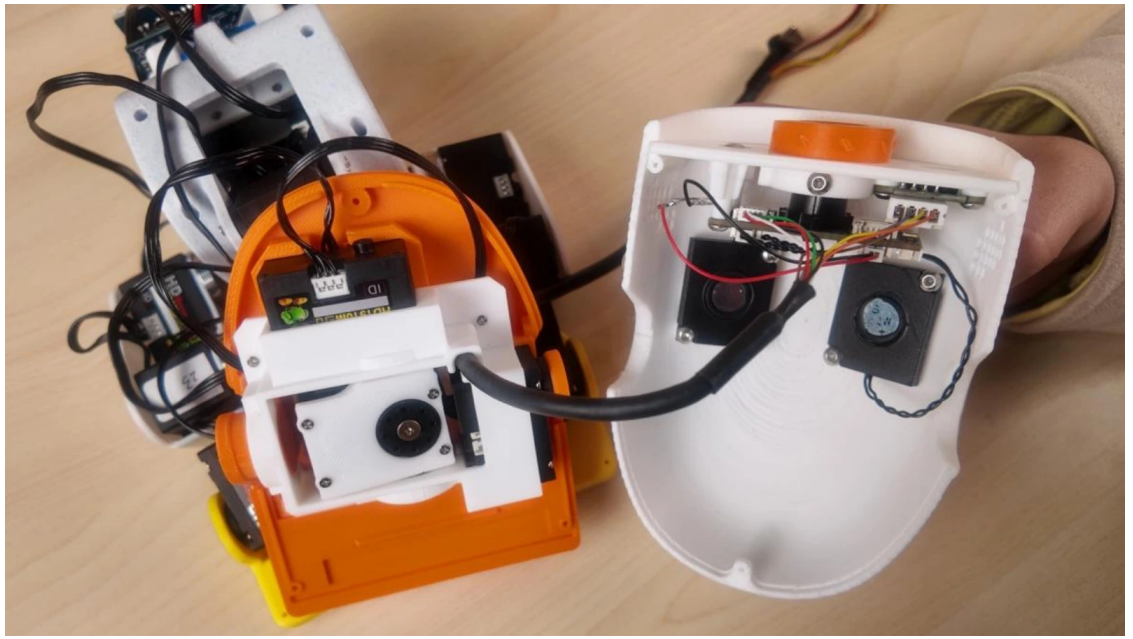
Harness route and slack

10 Install the servo assembly and bracket

- Place the servo assembly and white bracket into the orange head structure.
- Secure them with M2 × 6 screws and keep the harness outside the clamping surfaces.



Servo assembly positioned in the head



White bracket secured and harness routed

11 Close the head shell

- Align the shell and fixing holes without pinching any wires.
- Install two bottom screws and one top screw, using M2 × 6 screws.



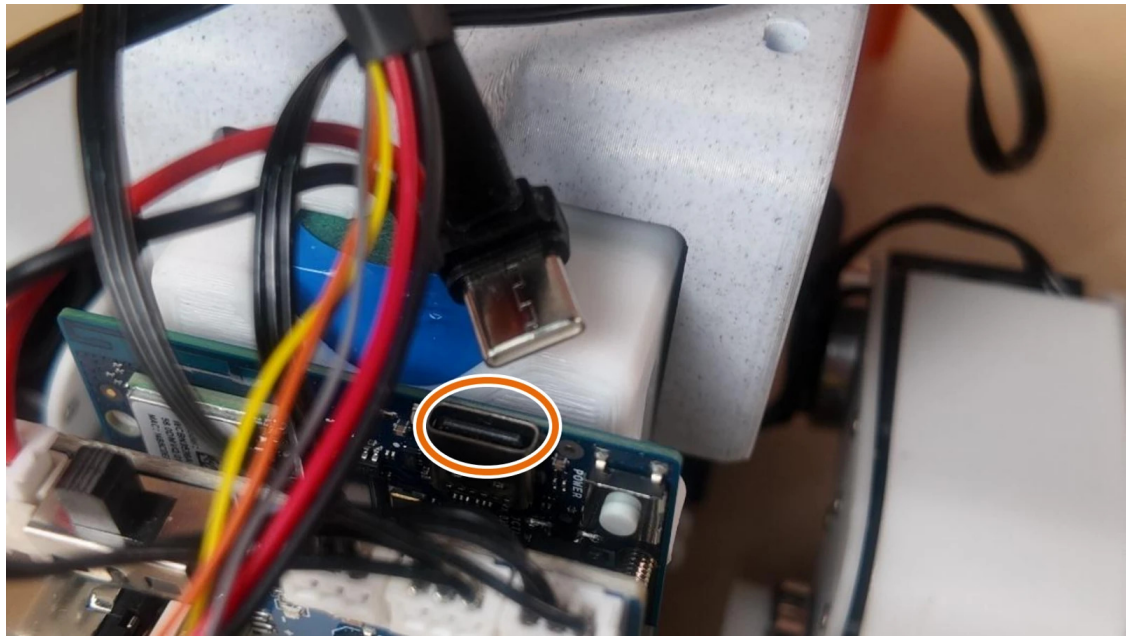
Two bottom fixing screws



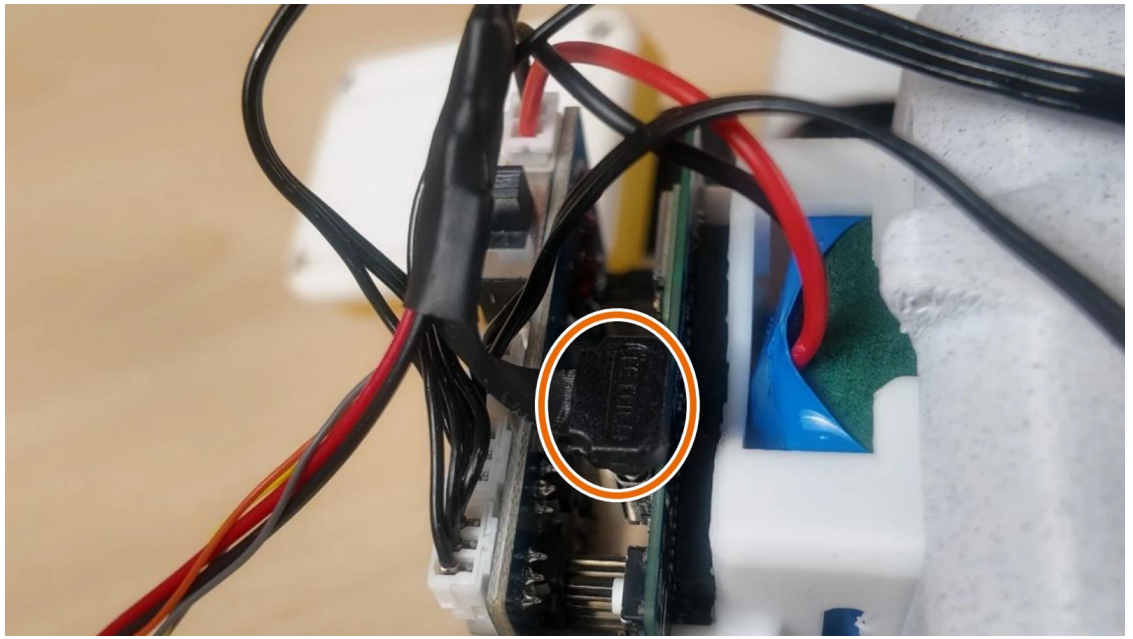
Top fixing screw

12 Connect the USB-C cable

- Connect the USB-C to USB-C cable to the controller as illustrated.
- Seat both ends securely and keep the cable clear of moving joints.



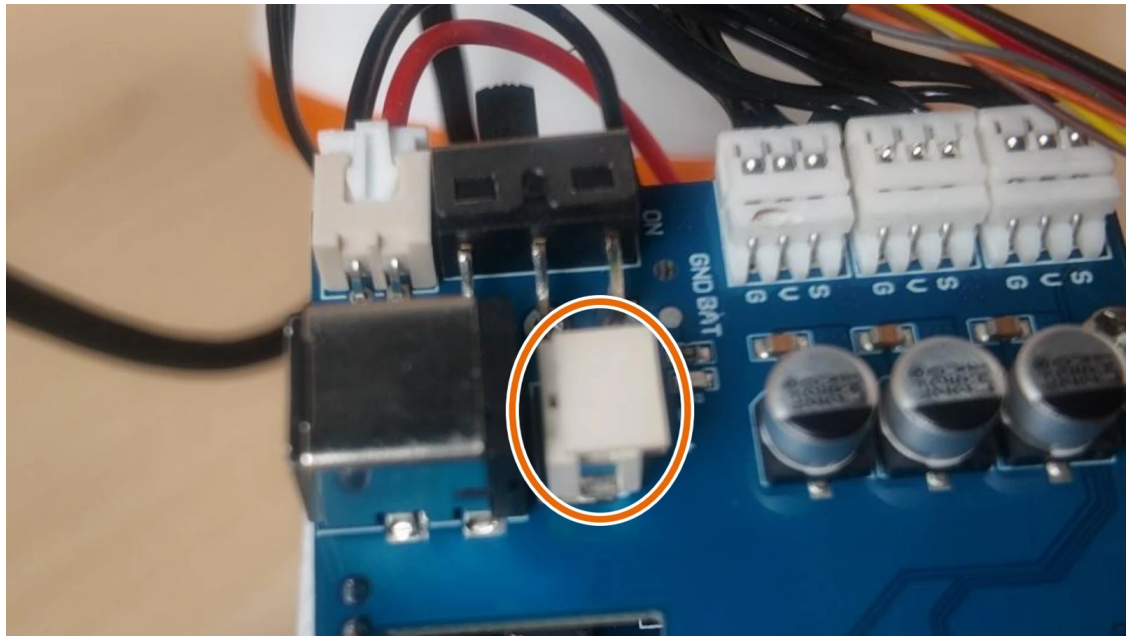
USB-C cable before connection



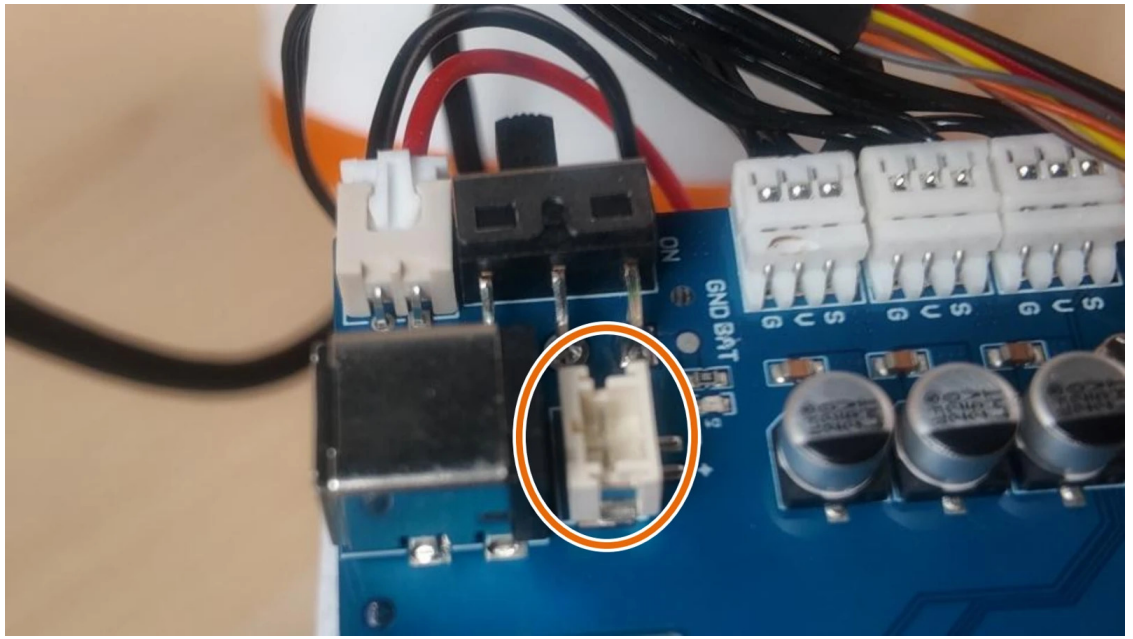
USB-C cable connected

13 Remove the connector cap

- With power still disconnected, remove the white protective cap from the connector shown.
- Keep the cap and expose the connector for the wiring harness.



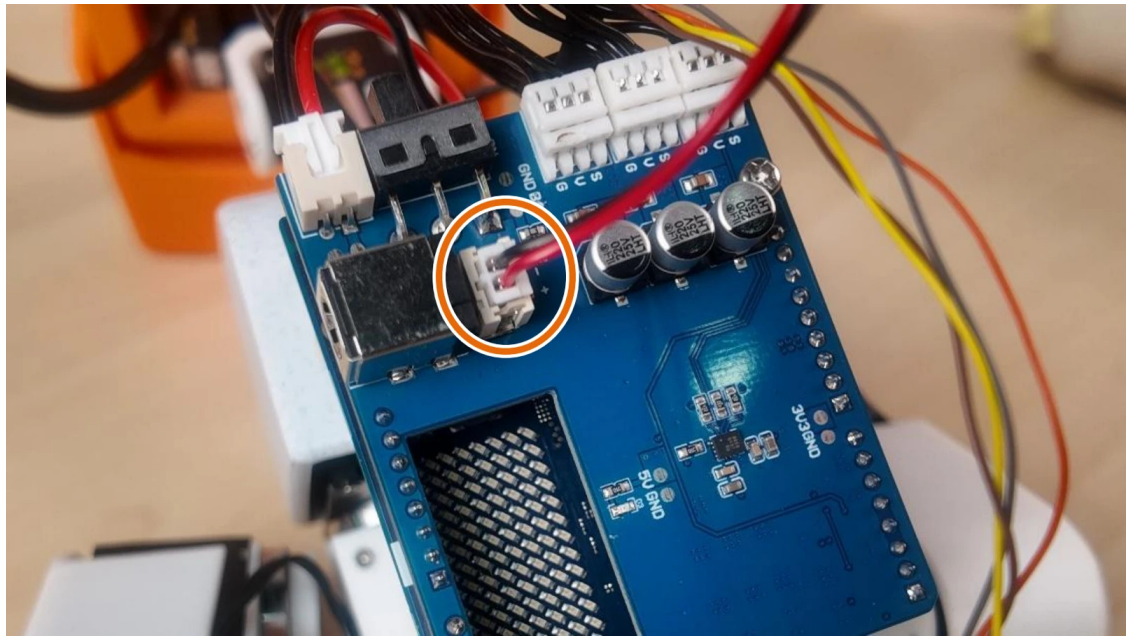
Connector with its protective cap



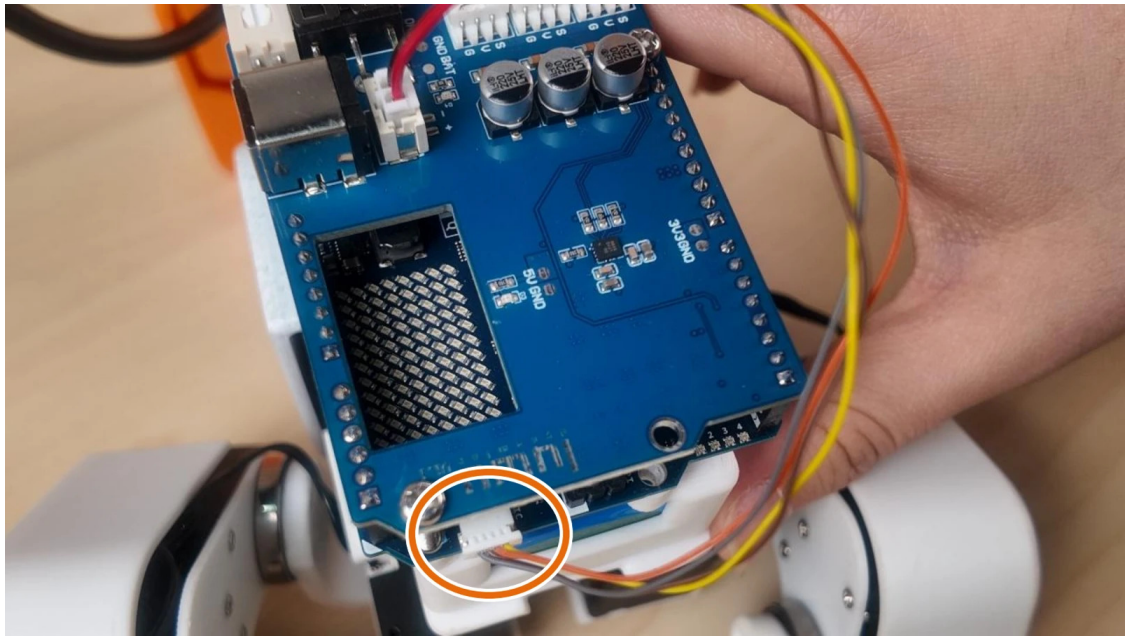
Connector after removing the cap

14 Connect the main-board harness

- Connect the red-and-black two-wire plug to the exposed two-pin power connector.
- Connect the multi-wire harness to the connector below it; check orientation against the photos.



Two-wire power plug connected



Multi-wire signal harness connected

15 Check the completed installation

☐ **Fasteners**	Check that all screws are secure and the head structure is stable.
☐ **Connections**	Confirm every plug is fully seated and no exposed metal pins touch each other.
☐ **Cable routing**	Check that no wire is trapped by the shell or obstructs servo movement. Leave enough slack.
☐ **Function check**	After checking wiring, support the robot and apply power. Check the camera image, fill light, speakers, microphone and live ToF ranging.

Complete calibration and the standing-pose check before testing movement.

Photos and assembly reference: www.xgorobot.com/duck-audio-video/