Concept 2.2

Silicone Monolith

R10 | Rapid Product Solutions | Supplier brief

WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
88	136	27

Body dimensions. Modeled controls/LED reach approximately 88.6 mm width and 27.2 mm depth.

Inspiration photo

CAD assembly / R10

Appearance intent; CAD shows the current engineering proposal. Views are not to scale.

CAD front

CAD rear

CAD exploded

02 Quote and materials / 03 Build and inspect / 04 Inputs and delivery

Quote and materials

R10 | Rapid Product Solutions | Continuous silicone wrap with calibrated controls and a short sealed microphone duct.

Please review manufacturability and quote a staged enclosure prototype for Walkie One, a handheld push-to-talk voice device. We need to evaluate grip, button operation, speaker/microphone openings, status light, charging access and serviceability.

What to quote first

One rigid fit set plus C01 silicone/registration, C02 microphone route, C03 front mechanism and C04 side mechanism samples. Resolve precision guides and silicone processing before a complete finished wrap.

Materials and processes

Structure and mechanisms	SLS nylon structure with machined seats. POM-C front carrier, machined PA12 side carriers, ground guide pins, matched sleeves and threaded PEEK followers follow the BOM.
Continuous silicone	Dragon Skin 30 platinum-cure silicone, 30 Shore A; no substitute is released. Rapid advertises silicone casting but must confirm this grade, wrap geometry, thin membranes and perforated mold. Finished STEP is not shrink-compensated tooling.
Small parts and backing	Custom springs require a springmaker-approved drawing and force curve. Use real porous black acoustic mesh; the 0.040 mm mesh / 0.040 mm adhesive stack is a selection target, not an approved stocked material.

Published capability is not acceptance of this specific geometry. Exact grades, fine tolerances, thin-section casting, specialty coatings/cutting and test services need Rapid confirmation. General website tolerances do not replace the finished drawing tolerances.

Build and inspect

Envelope	88 x 136 x 27 mm body; modeled controls/LED reach approximately 88.6 mm width and 27.2 mm depth. Keep the 33 mm dish, colored controls and artwork.
Precision guides	2.000 +/-0.002 mm pins with 0.006-0.010 mm diametral running clearance. Request explicit capability and inspection agreement; propose a controlled revision if this fit is impractical.
Control setting	Finished rest gap 0.10 +/-0.02 mm. Stop spacers are measured 0.20-0.75 mm selections, not the nominal CAD examples. Contact +0.10 mm is a provisional load-qualification target, not approved switch overtravel.
Casting and mic route	Retain 453 visible 1.30 mm holes and the 29.56 mm duct, 2.40 x 1.00 mm section. Prove hole registration, cure and seal continuity. Qualify local 0.50 mm tray floors; keep glue out of the duct and acoustic field.

Assembly order

1. Finish guides/stops and dry-fit keys before skins or electronics. Side carriers enter from the rear, lift 0.20 mm, move outward and lower before pins/followers are fitted. Follow D05 and original detail page 8; do not force flanges through exterior openings.

2. Fit springs and actual switches, cure the specified mounts, then set and record every follower and stop. Check front center/eight rim points and side center/end presses for contact and reliable return.

3. Fit mic/speaker and tray/cell before the PCB blocks access. Use approved harness/service loops. Complete the mic seal, then the wrap and removable rear-pad bond; recheck controls after bonding and closure.

Keep separate

C05 smaller USB-mouth candidate is excluded from the base build. The original recessed connector/opening stays; a clearance gauge is not proof that an actual cable seats.

Use the supplied artwork at its specified size and position. Approve physical color, texture and marking samples together; screen colors are visual intent. Keep finish and adhesive off guides, stops, acoustic openings, optical faces and service seams unless the drawing explicitly calls for them. Record any proposed substitution before using it.

Inputs and delivery

Rapid is asked to make, finish, inspect and optionally assemble agreed parts using Walkie One-supplied hardware. Walkie One owns electrical design, firmware, battery/charging, RF and acoustic validation. Rapid may quote specialist support separately; these services are not assumed from its website.

Before guide/casting samples	Rapid	Confirm matched-guide process, spring sourcing, thin silicone mold/vent/registration approach and actual mesh stock.
Before functional mechanism acceptance	Walkie One mechanical/electrical	Approve switch post-contact force/travel and spring/return evidence; provide the actual switch lot.
Before powered/full finished article	Walkie One electrical/design	Actual populated PCB, battery limits, harness and cable; acoustic comparison of the revised duct; signed silicone/marking samples.

Quote and return

Quote each concept separately: one unpowered fit set and the priority samples on page 2, followed by one finished appearance article after sample approval. This is a comparison basis, not an order for all concepts. Show any minimum quantity; confirm the selected concept, quantity, delivery date and ship-to with Walkie One before work starts.

Please itemize parts, fixtures/coupons, tooling, finishing, assembly, inspection and shipping; state lead time from receipt of approved inputs. Identify partner-made work, exclusions and tolerances you cannot hold. Quote a feasible alternative with its effect on fit/appearance rather than silently changing the design.

Return identified parts/samples, the material and finish selections, measured critical dimensions, assembly photos and the completed applicable inspection record. List hand fitting, deviations and unresolved items. Leave unperformed tests blank or NOT TESTED. Walkie One approves samples and engineering changes before repeat finished units.

Use these files

This brief controls supplier scope and responsibilities. The current per-part STEP, BOM and finished-interface drawings retain the technical requirements. Stop and return a marked question if they disagree. Millimetres throughout. Assembly STEP is a reference, not a single part to print. Purchased hardware, foam, cloth and adhesive solids are not rigid-print instructions.

BOM: docs/BOM.csv

Records: docs/Assembly_Acceptance_Record.csv; docs/Rapid_Open_Items.csv.

Original detail pages 5-13 and drawings D01-D05 contain exact settings, insertion sequence, silicone, duct and service requirements.

Supplier capabilities checked 06 Sep 2026. Source links and confirmation limits: docs/Rapid_Capabilities.md. https://www.rapid-products.com/

Build files: start here

Read the four-page supplier brief first. The remaining pages consolidate the required engineering detail and drawings; use the PDF bookmarks to jump to an appendix. Original engineering page numbers are retained inside those appendices.

The companion ZIP contains this same PDF. Parts_and_Process.csv maps every BOM entry to its exact delivered files. File_Manifest.csv maps original paths mentioned in retained drawings to their delivered locations.

01_Parts_to_Print: individual STEP and existing STL for the specified print process. 02_Other_Manufacturing: cast, machined, cut and artwork definitions. 03_Assembly_and_Drawings: assembly references and essential process / inspection records. 04_Required_Fit_Checks: staged coupon and fixture geometry.

STEP is the nominal geometry. STL is a mesh alternative for the same part, not an additional part or quantity. Millimetres throughout; import at 1:1. Quote quantities come from the brief and part schedule. Assembly, hardware, artwork and compliant installed envelopes are not rigid print instructions.

C05 smaller USB-mouth candidate is excluded from the base build. The original recessed connector/opening stays; a clearance gauge is not proof that an actual cable seats.

The original engineering package, source code and historical alternatives remain available under Supporting engineering and archive on the concept page. The supplier brief controls scope; technical values remain unchanged. Resolve any conflict before the affected operation.

Required stages: One rigid fit set plus C01 silicone/registration, C02 microphone route, C03 front mechanism and C04 side mechanism samples. Resolve precision guides and silicone processing before a complete finished wrap.

For exact tolerances, assembly order and inspection criteria, use the technical appendix and the corresponding records in 03_Assembly_and_Drawings.

Parts and processes

Fabrication parts with individual files are listed below. Parts_and_Process.csv also contains every purchased item, reference, consumable and complete source note. Quantities describe the source assembly; the quote quantity is agreed separately.

Part / quantity	Material / process	Delivered filenames
01_front_structural_tub / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS; critical seats/lands machined	01_front_structural_tub.step 01_front_structural_tub.stl
02_rear_structural_cover / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS	02_rear_structural_cover.step 02_rear_structural_cover.stl
03_continuous_silicone_skin / 1	Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A; RPS procurement/process confirmation required Cast from finished master	03_continuous_silicone_skin.step
04_rear_silicone_service_pad / 1	Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A; RPS procurement/process confirmation required Cast silicone with 0.15 mm molded deboss; color-fill markings after cure	04_rear_silicone_service_pad.step
07_speaker_edge_cradle / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS	07_speaker_edge_cradle.step 07_speaker_edge_cradle.stl
08_speaker_front_gasket / 1	Rogers BISCO HT-800 silicone foam, 0.79 mm free / 0.7 mm installed; thickness availability to confirm Die/laser cut	08_speaker_front_gasket.step
09_battery_tray / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS then finish-machine two underside reliefs	09_battery_tray.step 09_battery_tray.stl
10_ptt_key / 1	Unfilled PA12 stock; supplier grade to approve CNC, tapped M2x0.4; blind guide seats; satin sage visible rim	10_ptt_key.step
11_ptt_silicone_face / 1	Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A; RPS procurement/process confirmation required Cast silicone; bond to key carrier	11_ptt_silicone_face.step
12_ptt_switch_cradle / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS plus machined sleeve seats	12_ptt_switch_cradle.step 12_ptt_switch_cradle.stl
10_volume_plus_key / 1	Unfilled PA12 stock; supplier grade to approve CNC, tapped M2x0.4; blind guide seats; satin sage visible rim	10_volume_plus_key.step
11_volume_plus_silicone_face / 1	Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A; RPS procurement/process confirmation required Cast silicone; bond to key carrier	11_volume_plus_silicone_face.step
12_volume_plus_switch_cradle / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS plus machined sleeve seats	12_volume_plus_switch_cradle.step 12_volume_plus_switch_cradle.stl
10_volume_minus_key / 1	Unfilled PA12 stock; supplier grade to approve CNC, tapped M2x0.4; blind guide seats; satin sage visible rim	10_volume_minus_key.step
11_volume_minus_silicone_face / 1	Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A; RPS procurement/process confirmation required Cast silicone; bond to key carrier	11_volume_minus_silicone_face.step

Part / quantity	Material / process	Delivered filenames
12_volume_minus_switch_cradle / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS plus machined sleeve seats	12_volume_minus_switch_cradle.step 12_volume_minus_switch_cradle.stl
13_action_plunger_under_membrane / 1	POM-C natural, unfilled CNC; M2x0.4 actuator thread, blind guide seats	13_action_plunger_under_membrane.step
15_front_switch_holder / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS plus machined sleeve seats and datums	15_front_switch_holder.step 15_front_switch_holder.stl
16_rgb_led_support_ring / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS	16_rgb_led_support_ring.step 16_rgb_led_support_ring.stl
17_microphone_cradle / 1	RPS Nylon PA, SLS; exact powder designation to be confirmed by RPS SLS	17_microphone_cradle.step 17_microphone_cradle.stl
18_microphone_acoustic_gasket / 1	Rogers BISCO HT-800 silicone foam, 0.79 mm free / 0.70 mm installed; verify sheet availability Die/laser cut	18_microphone_acoustic_gasket.step
30_front_guide_pin_1 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond 2.0 mm into plunger blind seat	30_front_guide_pin_1.step
31_front_guide_bush_1 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	31_front_guide_bush_1.step
32_front_stop_spacer_1 / 1	Precision stainless shim stock Ground matched spacer; selectable 0.20-0.75 mm	32_front_stop_spacer_1.step
33_front_return_spring_1 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	33_front_return_spring_1.step
30_front_guide_pin_2 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond 2.0 mm into plunger blind seat	30_front_guide_pin_2.step
31_front_guide_bush_2 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	31_front_guide_bush_2.step
32_front_stop_spacer_2 / 1	Precision stainless shim stock Ground matched spacer; selectable 0.20-0.75 mm	32_front_stop_spacer_2.step
33_front_return_spring_2 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	33_front_return_spring_2.step
30_front_guide_pin_3 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond 2.0 mm into plunger blind seat	30_front_guide_pin_3.step
31_front_guide_bush_3 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	31_front_guide_bush_3.step
32_front_stop_spacer_3 / 1	Precision stainless shim stock Ground matched spacer; selectable 0.20-0.75 mm	32_front_stop_spacer_3.step
33_front_return_spring_3 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	33_front_return_spring_3.step
34_front_adjustable_actuator / 1	PEEK; custom threaded follower Turn M2x0.4; flat contact end; slot on outer end	34_front_adjustable_actuator.step
40_ptt_guide_pin_1 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_ptt_guide_pin_1.step
41_ptt_guide_bush_1 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_ptt_guide_bush_1.step

Part / quantity	Material / process	Delivered filenames
42_ptt_stop_spacer_1 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_ptt_stop_spacer_1.step
43_ptt_return_spring_1 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_ptt_return_spring_1.step
40_ptt_guide_pin_2 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_ptt_guide_pin_2.step
41_ptt_guide_bush_2 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_ptt_guide_bush_2.step
42_ptt_stop_spacer_2 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_ptt_stop_spacer_2.step
43_ptt_return_spring_2 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_ptt_return_spring_2.step
44_ptt_adjustable_actuator / 1	PEEK; custom M2x0.4 follower Turn thread, flat tip and slot	44_ptt_adjustable_actuator.step
40_volume_plus_guide_pin_1 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_volume_plus_guide_pin_1.step
41_volume_plus_guide_bush_1 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_volume_plus_guide_bush_1.step
42_volume_plus_stop_spacer_1 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_volume_plus_stop_spacer_1.step
43_volume_plus_return_spring_1 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_volume_plus_return_spring_1.step
40_volume_plus_guide_pin_2 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_volume_plus_guide_pin_2.step
41_volume_plus_guide_bush_2 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_volume_plus_guide_bush_2.step
42_volume_plus_stop_spacer_2 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_volume_plus_stop_spacer_2.step
43_volume_plus_return_spring_2 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_volume_plus_return_spring_2.step
44_volume_plus_adjustable_actuator / 1	PEEK; custom M2x0.4 follower Turn thread, flat tip and slot	44_volume_plus_adjustable_actuator.step
40_volume_minus_guide_pin_1 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_volume_minus_guide_pin_1.step
41_volume_minus_guide_bush_1 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_volume_minus_guide_bush_1.step
42_volume_minus_stop_spacer_1 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_volume_minus_stop_spacer_1.step
43_volume_minus_return_spring_1 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_volume_minus_return_spring_1.step
40_volume_minus_guide_pin_2 / 1	Ground stainless steel, matched 2.000 mm pin Turn/grind; bond into key	40_volume_minus_guide_pin_2.step
41_volume_minus_guide_bush_2 / 1	Bearing bronze, dry-running; custom sleeve Turn/ream matched pair	41_volume_minus_guide_bush_2.step
42_volume_minus_stop_spacer_2 / 1	Precision stainless shim stock Ground matched spacer; selectable0.20-0.75	42_volume_minus_stop_spacer_2.step

Part / quantity	Material / process	Delivered filenames
43_volume_minus_return_spring_2 / 1	302 stainless spring wire, custom WO022-SPR1 Wind; closed/ground ends per spring drawing	43_volume_minus_return_spring_2.step
44_volume_minus_adjustable_actuator / 1	PEEK; custom M2x0.4 follower Turn thread, flat tip and slot	44_volume_minus_adjustable_actuator.step
50_mic_seal_bondline / 1	Silicone-to-PA compatible adhesive system; supplier qualification Dispense/cure in recessed lands	50_mic_seal_bondline.step
51_rear_service_bondline / 1	Qualified removable silicone adhesive system Die-cut transfer or dispense in recessed boundary	51_rear_service_bondline.step
52_acoustic_mesh_cut_envelope / 1	Black acoustic polyester mesh; nominal0.040 installed; supplier select/qualify low-airflow-resistance grade Die cut ellipse52x60; WOVEN material, not a solid film	52_acoustic_mesh_cut_envelope.step
53_mesh_perimeter_bondline / 1	Qualified compatible transfer adhesive Cut1 mm elliptical perimeter ring; installed0.040	53_mesh_perimeter_bondline.step

ENGINEERING REVISION / SUPPLIER HANDOFF

Walkie One | Concept 2.2 / R10

Controlled actuation. Shorter microphone route. Preserved silicone exterior.

Release sheet

This package implements revised control guides, independent return springs, calibrated threaded actuators and selectable hard stops. It shortens the existing microphone route, introduces hidden grille registration relief and local PCB clearance pockets, and defines a rear-pad adhesive boundary. Body dimensions remain 88 x 136 x 27 mm. As in R9, side caps and LED extend the overall envelope to approximately 88.6 mm wide and 27.2 mm deep. The continuous cream silicone surface, 33 mm dish at X0 Y-43, colored side controls and branding retain their established positions.

Use this revision for supplier engineering review and controlled fit coupons. It is not a released production design. Geometric validation is distinct from measured force, acoustic response, silicone processing and endurance. Those tests have not been performed. Never interpret a selectable stop's maximum geometric travel as switch-approved overtravel.

Owner / required evidence before a finished complete article:

- Mechanical owner + switch supplier: qualify contact-to-stop loading and the complete guided return mechanism. Establish the force ceiling with the actual lot, supplier guidance and endurance samples.

- RPS / material supplier: accept guide accuracy, local 0.50 mm tray floors, spring and sleeve fabrication, silicone mold architecture and the coupon results.

- Electrical owner: identify the actual populated PCB revision, harness, cell revision and charging cable. Approve acoustic, battery, thermal and RF trials.

- Design owner: approve a physical cream/terracotta/sage sample, uniform acoustic backing, rear artwork and the USB appearance together with the mating cable.

File authority and build order

The current finished geometry is in step/parts and the named R10 assembly STEP files. code/build_revision.py is the editable CadQuery source; baseline holds a self-contained immutable R9 input snapshot. The source generator exposes the construction operations rather than a native Fusion feature timeline. An optional Fusion import script is supplied for editable direct BReps; no R10 .f3d reopening result is claimed.

CASE_ONLY includes fabricated components and explicitly classified adhesive volumes. WITH_PCB adds the original populated PCB. Other purchased parts remain original placed meshes in references; their exact meshes are included in the Blender CAD scene. Do not make REF hardware, adhesive-volume solids, or an installed spring helix with a printer. Threads are nominal cylinders: drawing thread specifications control manufacture. C03 and C04 are STEP assemblies; make their individual parts by the assigned material/process.

Stop spacers in the assembly are nominal examples: 0.50 mm front and 0.55 mm side. Per-unit spacer thickness is a measured setting and must be recorded. Rebuild with the final selected settings before repeat production. Do not substitute archived R9 validation for R10 records.

Authority	Use
Editable CAD	code/build_revision.py + baseline inputs. Direct editable BReps; optional Fusion import script.
Neutral assembly	step/Walkie_One_02_2_R10_CASE_ONLY.step and WITH_PCB.step. Purchased meshes remain in references.
Inspection	docs/BOM.csv, critical_parameters.json and blank Assembly_Acceptance_Record.csv.
Qualification	Coupons, action/geometry/motion/sequence records and physical-test gates.

Switch identity and manufacturer evidence

The source BOM, placed reference meshes and original input filenames agree on one B3F-4000 and three B3F-3150. This verifies the digital installation, not the contents of an unseen purchased lot. Record manufacturer, full suffix, lot and dimensional inspection on receipt.

The manufacturer-hosted current B3F datasheet was checked on 6 September 2026. For B3F-4000 it lists 0.20-0.50 mm pretravel, 1.27 +/-0.49 N operating force and 0.29 N minimum releasing force. B3F-3150 has 0.15-0.45 mm pretravel, 0.98 +/-0.29 N operating force and 0.20 N minimum releasing force. Both relevant actuator-height dimensions carry +/-0.20 mm tolerance. These values are not a permissible installed overtravel or side-load rating. Manufacturer guidance warns against off-axis pressing. The current components portal identifies Aratas, formerly Omron Components; retain exact part numbers and traceability.

Sources: https://components.omron.com/us-en/datasheet_pdf/A070-E1.pdf (pages 2, 3, 5, 6); https://components.omron.com/us-en/faq/switches/FAQE20070 ; https://components.omron.com/us-en/products/switches/B3F . The downloadable legacy PDF in sources is archival corroboration; the current URL above is the specification-check authority.

What changes in the control mechanism

The old front arithmetic was 0.55 - 0.20 = 0.35 mm available compression; the old side arithmetic was 0.50 - 0.20 = 0.30 mm. R10 separates the contact-gap setting from the hard-stop setting, so a long-travel switch does not require preload and a short-travel switch does not receive the maximum possible stroke.

Each key receives an M2 x 0.4 threaded PEEK actuator, set against its own actual switch. The fixed purchased switches retain their R9 nominal coordinates and scale. Two guided spring columns support each side key; the front uses three. Ground pins and matched dry-running sleeves control axial motion. Independent coil springs return the carrier all the way to its outward retaining datum, including the positive clearance region after the switch has released. Switch return alone cannot span a positive rest gap.

The concealed side flange pockets now start at |X|39.05; their original outer end41.20 is retained. This corrects an additional R9 early shell stop near0.20 mm. Cradle pockets also clear the full configured stroke. Each sleeve supports a precision spacer around the moving pin. After the key touches these spacers, external load transfers through the guide columns to the holder rather than continuing to drive the switch by unrestricted rigid motion. Elastic deflection of that load path still requires measurement. The front holder retains its attachment feet and gains support bridges. The hidden front carrier changes to machined unfilled POM-C; side carriers use machined unfilled PA12 and retain the satin sage exposed rim. These changes improve repeatability of guides and threads. They do not change the silicone grade; the feel change comes from the guided mechanism and return springs and must be approved on the physical sample.

Finished datums and adjustment range

Coordinate system: X width, Y height, Z outward front; all dimensions in mm. Datum A is the finished front tub deck at Z10.90. Datum B is the finished local side flange retaining seat. Datum C is the matched guide-axis pattern. Key rest positions are established by their retaining flanges, not by the switch. Pin alignment must be jigged with the moving key installed; three separately drilled front guides may otherwise bind.

Front: flange contact plane Z9.65 at rest; guide sleeve stop datum Z8.65. Spacer thickness t gives stroke S = 1.00 - t. Side: flange plane |X|40.00; sleeve datum |X|39.00; the same equation applies. Select t between 0.20 and 0.75, giving 0.25-0.80 mm nominal stroke. Use precision stock or ground custom rings in 0.01 mm settings; inspect the assembled stop, not just nominal shim labels. Match each set to within 0.01 mm. Stop faces are adhesive-free and uncoated.

Front actuator tip: nominal Z8.40; allowed Z8.05-8.85. Side: nominal |X|39.55; allowed |X|39.15-39.95. This supplies at least +/-0.35 mm correction without moving purchased hardware. Minimum engaged thread is 1.50 mm front (1.60 mm geometric minimum) and 1.80 mm side throughout the specified adjustment range. The M2 thread gives 0.10 mm per quarter turn; use a displacement gauge for final setting. Reject any assembly needing an out-of-range tip, insufficient thread engagement or a spacer outside its range.

Worst-case finished stack and limits

Pre-adjustment reach uncertainty budget, arithmetic worst case: switch height +/-0.20; switch locating fixture +/-0.05; finished key actuator datum +/-0.03; carrier/deck relationship +/-0.04; cured mounting/bond settling +/-0.02. Total +/-0.34 mm. Front correction range has 0.01 mm minimum reserve at its tighter end; side reserve is 0.06 mm. This is a proposed manufacturing allocation, not evidence that the current SLS supplier can hold it. Supplier acceptance and 100% assembled measurement are required; otherwise revise the setting hardware or machining allocation.

Finished rest gap g must measure 0.10 +/-0.02 mm after all relevant bonding and finishing. The guaranteed positive minimum under this acceptance rule is 0.08 mm. Coating allowance on guide, thread, stop and contact faces is zero: mask these areas. The color faces and their adhesive stay outside the rigid axial datum chain; measure the completed assembly again to detect bow or bond effects.

Measure first electrical contact C relative to the rigid key's outward rest, rather than assuming nominal pretravel. Set the axial stop to C + 0.10 mm, with a total setting/measurement allocation +/-0.02 mm. Include 0.005 mm additional settlement allowance. Specified guide diametral clearance is 0.006-0.010 mm; sleeve engagement and the finite pin/key stiffness must be checked at all positions. With5.50 mm minimum engagement, maximum permitted diametral clearance0.010 gives an angular play bound of0.00182 rad. At a29 mm PTT lever arm the differential is0.05273 mm; at16.5 mm on the front it is0.030 mm. Allocate another0.010 mm maximum elastic load-path deflection at the qualified test force; this limit must be measured, not assumed. Minimum contact-before-stop margins then become0.01227 mm PTT and0.035 mm front after the setting and settlement allocations. Physical return/friction and guide alignment remain acceptance tests.

At maximum manufacturer pretravel, an accepted front gap of 0.12 puts first contact no later than 0.62 mm; the side value is 0.57 mm. The stop setting range covers these values plus the controlled residual stroke. With short-travel switches the spacers become thicker; do not use the long-travel setting on every switch. Physical acceptance requires electrical closure before the earliest local stop at every specified press position.

The residual displacement and corresponding force after actuation are qualification targets, NOT manufacturer-approved overtravel. Neither datasheet pretravel nor its operating-force band establishes a safe post-contact load. Release requires a supplier-approved force/displacement envelope or a documented component/assembly qualification that covers the measured worst case. If this fails, change the load-limiting interface; do not preload the switch or arbitrarily remove a stop.

Control	Before-stop margin min	Worst local stop	Return margin incl. gravity
front	0.035 mm	0.785 mm	0.039 N
ptt	0.012 mm	0.758 mm	0.020 N
volume_plus	0.048 mm	0.722 mm	0.041 N
volume_minus	0.048 mm	0.722 mm	0.041 N

Conditional arithmetic using the specified manufacturing and measurement limits. Elastic deflection and drag allocations require physical proof.

Membrane, return and edge presses

The hidden front contact surface is lowered 0.10 mm to give 0.20 mm nominal membrane separation. The outer 33 mm dish, 1.10 mm sag, 0.80 mm normal silicone thickness and 0.25 mm glyph are retained. Finished gap allocation: profile +/-0.03, membrane thickness +/-0.05, plunger profile +/-0.02, bond/assembly distortion +/-0.02; worst-case minimum 0.08 mm. Verify at center and around the dish using a non-loading optical/feeler fixture. This gap adds finger motion before the rigid key moves; it adds zero rigid switch-driving travel.

The proposed custom spring has 0.30 mm wire, 4.60 mm mean coil diameter, five active turns, nominal seven total, 5.10 mm free length and 4.50 mm installed rest length. Estimated rate is 0.160 N/mm before end effects. Springmaker must approve actual closed/ground ends, tolerances, fatigue and force data. The CAD helix is a space reference. At 0.80 mm inward travel the axial space is 3.70 mm, above the proposed 2.10 mm nominal solid height. No rated spring life is claimed.

For initial sizing use rate +/-20%, free length +/-0.10 and installed length +/-0.05: minimum rest return is about 0.0576 N per spring, 0.1152 N per side key and 0.1728 N for the front. Require measured dry mechanism drag below 0.06 N side and 0.10 N front, then demonstrate return with the final silicone in all six orientations. Friction under an end press can be higher; the force/displacement trace must not stick or fail to reset.

Test PTT at center and Y10 +/-27 mm; volume keys at center and Ycenter +/-7 mm; front at center and eight positions on radius14 mm. Record load point, rest clearance, first contact, earliest stop, maximum force and released position. Require positive clearance after release and stable electrical opening; repeat after 100 conditioning operations, after temperature conditioning and after the endurance trial. Do not infer successful end presses from an axial translation-only clash screen.

Assembly and calibration procedure

1. Inspect the actual hardware against the source revision. Make rigid fit parts first. Finish bore pairs, stop faces and screw interfaces before fitting skin or electronics. Verify sleeve-axis alignment with the assembled pins/key in the fixture; no forced fit.

2. Fit front key from the rear, then its springs and removable holder from the rear. For each side, insert the bare carrier without guide pins or follower at canonical |X|21 in its normal orientation, from rear Z-28 to Z0. Lift to Z+0.20, translate outward to canonical |X|42, then lower to Z0. The hidden lower flange flat ends at Z-6.25; only the internal |X|39.995-40.705 flange band is trimmed. This clears the rails while retaining the upper outward-retaining flange and all stop/guide seats. The visible cap is unchanged. Fit and cure pins into the carrier from inside, and fit its threaded follower before bonding the silicone face. Insert the cradle 12 mm inboard of its installed pose, clear the rails, then translate outward. R10 removes obsolete lower cradle tabs below Z-5.45. Fit springs and slide sleeves onto the key pins during outward seating. Support all parts in a fixture. See D05 and the exact sampled sequence record; this is not a continuous collision proof or a physical wire-routing test.

3. Seat the switches in their fixtures at the recorded R9 nominal coordinates. Keep adhesive off plunger, contacts, terminals and datum faces. Side cradle-to-deck bond gap is nominal0.20 mm; measure it. Finish mounting adhesive cure before final actuator calibration. Provide service loops on the actual wires.

4. Fit sleeves, matched pins and springs. Establish the outward flange rest with no switch preload. Adjust each follower until 0.10 +/-0.02 mm clearance is measured to the unpressed switch. Use a low-force measurement method and electrically verify the switch remains open. Lock only the remote threaded zone; remeasure after full cure.

5. With an instrumented electrical contact fixture, find C at least five times. Select matched stop spacers so the rigid stop is C+0.10 within the stated setting allocation and within qualified load limits. Start with a conservative close stop and increase only under controlled force measurement. Remove/reinstall the holder to change captured spacers; do not force a ring through a pin or bond a loose shim into the gap.

6. Record tip position, engagement, spacer thickness for each column, actual gap, contact, stop and force. Check all edge/end positions. Reject inconsistent return, rubbing, stop-before-contact or qualification-limit exceedance.

7. Fit the microphone and speaker, then the battery tray/pad and non-loading battery retention before installing the PCB from the rear. The tray and cell occupy the front side of the PCB; do not try to pass them through the installed board. Route and connect their harness while rear access is open. Complete the mic seal. Bond the final silicone only at the specified recessed mic lands; the remaining wrap is dry-fitted unless another explicitly dimensioned bond rebate is approved. Install color faces and repeat the entire control acceptance check.

8. Connect and test USB, microphone, speaker and RF before closing. Route wires away from pins, springs, diaphragm, PCB high components and screws. Battery service reverses the sequence and may require PCB removal; provide releasable connections and service slack. Close the rear cover; fit fresh qualified rear perimeter adhesive. Recheck after closure.

Continuous silicone tooling and coupon

Keep Smooth-On Dragon Skin 30 platinum-cure silicone, 30 Shore A. No substitute is released. TPU prints are geometric surrogates only and have different drag, flex, damping and recovery. A different silicone hardness/chemistry or LSR process is a new material/feel qualification.

All supplied skin STEP is FINISHED geometry. Do not scale the finished parts for a guessed shrink factor. Smooth-On publishes shrinkage below0.001 in/in for this grade; that is material guidance rather than finished-part capability for this tool. Supplier must measure the complete pigment/mold/cure recipe, then put any compensation, draft, gate, pin taper or texture allowance in a separately named tooling revision.

The visible pattern retains453 holes of1.30 mm. Concealed rigid bores become1.70 mm. Proposed finished limits: silicone hole1.30 +/-0.04, rigid hole1.70 +/-0.04, minimum center pitch2.28, and local skin-to-core offset no more than0.10. Minimum silicone web is0.94 mm; rigid web0.54 mm. The minimum radial registration margin is (1.66-1.34)/2 -0.10 =0.06 mm. Check actual pins and cast holes, including ovality, flash and silicone deformation. These are supplier capability targets.

Two hidden locating pilots at X+/-27,Y30 are1.50 diameter x0.25 high. Skin recesses are0.30 deep: one round, one elongated in X to avoid locking in differential shrink. Remaining local skin is0.70 mm. Use a conformal support fixture during bonding and optical registration inspection; these shallow pilots are registration aids, not peel-load fasteners.

C01 contains real lower body curvature and skin edge, the complete recessed membrane/glyph, and multiple1.30 mm hole rows. It is a representative coupon, not a miniature whole skin. Mold and demold it in the intended material on the actual printed/machined tooling recipe. Inspect at least five casts before tooling the full wrap. Record thickness at flat wall, curve, rim, membrane center and glyph; inspect every hole for complete fill, tearing, blocked apertures, flash and pin witness marks.

Supplier decisions to return on the tooling drawing: segmented/removable inner core through the rear opening; front hole-pin plate withdrawal parallel to Z before peeling; separate side shutoffs/slides around keys and USB; no parting line or ejector witness on the visible face/dish; proposed gate on a hidden rear edge; vents at end-of-fill, grille rows and glyph tip; pin diameter/support, replacement and withdrawal sequence; measured shrink compensation by direction; texture master and gloss target. Trial undercuts at the rear return skirt and all pocket edges. The STEP is not a finished mold design.

Use a small cure-compatibility trial including actual PA/master resin, sealers, release, pigment, adhesive, primer and rear-fill ink. Smooth-On recommends compatibility checks and vacuum degassing; contaminants including latex and some uncured materials can inhibit platinum cure. Record batch, mix, room/cure temperature and cure time. Do not treat a tacky interface as merely a cosmetic defect.

Source: https://www.smooth-on.com/products/dragon-skin-30/ (checked6 September2026).

Microphone route and sealing

The exact Adafruit3421/SPH0645 breakout is translated +13.50 mm in Y without scale, rotation or component edits. Center becomes X-24,Y-24.50; inlet X-24,Y-25.262. The visible aperture remains1.80 diameter at X0,Y-8. Duct centerline length becomes29.56 mm, a24.2% reduction from39.02. The original side position avoided the battery; the new position remains beside it. A direct-under-aperture placement overlaps the battery's XY region and leaves an inadequate unqualified vertical stack, so it is not adopted.

The finished duct remains2.40 wide x1.00 deep with0.60 nominal floor. A0.30 mm dry shoulder outside its edge separates it from1.50 mm seal lands. Lands are recessed0.08 below the Z12.50 deck, creating a positive adhesive volume without increasing the outer envelope. Keep adhesive out of the port, channel, gasket bore and the dry shoulders. The cured skin remains the roof; its deflection is not simulated. Do not clamp across an unsupported roof.

The existing installed0.70 mm mic gasket and actual breakout are retained. Confirm the original port side and actual foam contact; inspect solder and strain-relieved leads. The specified HT-800 free thickness and0.70 installed compression remain procurement/measurement items. A source mesh cannot establish that an adhesive ring seals a real PCB port.

C02 contains the actual revised duct substrate, roof and adhesive pattern. Make a matched R9-length comparison coupon from the archived geometry and a direct-port reference using the same microphone. Fit the real gasket, membrane roof and adhesive recipe. Inspect for squeeze-out and photograph seal continuity before closing. A leak/flow fixture may use low differential pressure without the microphone fitted; establish a non-damaging level with the test owner first.

Acoustic procedure: use the same powered microphone, gain, firmware and audio interface; fixed1 m source distance and orientation in a quiet room. Compare swept300 Hz-8 kHz response, speech recording, noise floor and repeatability for direct port, old39 mm duct and new29.56 mm duct. Repeat with representative hand positions and with speaker playback at intended level. Record speaker-to-mic leakage/feedback and intelligibility. Proposed engineering screen: no new narrow loss/peak exceeding3 dB relative to the approved reference across the chosen speech band, and no audible buzz/leak or clipping. The electrical/acoustic owner must approve the reference and numerical limits before acceptance. Test multiple independently bonded coupons. No acoustic result is claimed here.

Electronics and battery

The original PCB STEP is60 x85.75 x9.50 and remains at the R9 transform. The measured nearest clearance is0.30 at two high features, not only the overall bounding box. R10 removes0.30 mm locally from the underside of the tray above those features. The battery-facing floor stays atZ1.30 and the battery base atZ1.50; the0.20 insulating pad and existing retention remain. Local residual floor is0.50 mm versus0.80 elsewhere.

Proposed local clearance allocation:0.60 nominal minus0.10 actual component excess,0.05 PCB seating,0.05 machined relief depth,0.05 tray flatness,0.02 retained contamination/finish,0.05 added insulation allowance =0.28 mm minimum. Confirm actual closest geometry and any other component that becomes limiting in clearance_validation.json. Do not stack unrecorded tape in that gap. The0.50 mm relief floor must pass handling/flex and deflection trials; no structural FEA or drop qualification is claimed.

Battery is the supplied nominal Adafruit2011 envelope,60 x36 x7 mm plus the modeled protection feature to8.4 mm. Preserve0.5 mm side allowance, non-loading PET retention and the1.0 mm front allowance. Missing information: exact shipped cell and protection revision, dimensional tolerances in all states of charge, maker's expansion/swelling and restraint guidance, permitted contact pressures, tab/lead/connector dimensions, insulation requirements, thermal limits and charging/abuse requirements. Do not label the empty1 mm as qualified swelling capacity. Inspect pouch against burrs, screws and tray relief edges; straps retain position without squeezing it.

USB and visible transitions

The R10 released digital baseline retains the R9 opening: outer well17 mm alongY x20 mm alongZ, R3, centeredY-32.1393,Z0; inner passage15 x10 on the fixed connector axisZ-4.7396. The actual connector in the original PCB remains about14.2 mm inside the side. No cable SKU or complete approved plug shape was present in the supplied package.

A separate C05 candidate reduces only the outer mouth to16 x11 on the connector axis, with a rounded transition into the existing15 x10 passage. This is a candidate for actual cable fit approval, not the baseline manufacture instruction. The legacy14 x9,R2.5 clearance block is a gauge only. An actual plug may have a wider strain relief, asymmetric overmold or limited narrow-neck length; this can defeat the candidate even if the gauge passes. Obtain cable SKU and dimensional drawing or3D scan, then sweep the entire plug along+/-X through full seating and removal, including finger access. Record engagement depth, retention, charge/data function and insertion force; check that cable leverage does not load unsupported PCB edges.

Matched front, rear and side CAD views are supplied. R10 retains the broad R5 perimeter edge and relatively flat front deck; it does not claim to reproduce the more pillowed photographic inspiration by shading. The spherical1.10 mm dish is shallower and more regular than the sculpted concept image, and volume controls remain the established elongated forms rather than the rounder inspiration. These are explicit retained R9 geometry choices. Do not change them by sanding the finished master or by an unapproved port relocation. Approve a full-size appearance article and cross-sections.

Grille appearance, rear service and trials

R10 adds a52 x60 mm elliptical seat,0.080 mm deep, in the rigid grille deck. A black breathable acoustic polyester mesh occupies0.040 mm nominal above a0.040 mm perimeter adhesive ring. Its upper surface is flush with the original deck, so the silicone exterior and speaker gasket stack stay in place. The rigid deck locally retains1.520 mm nominal thickness. The1 mm-wide adhesive ring sits outside a50 x58 ellipse; keep it out of the actual hole field. CAD part52 is a woven-material cut envelope, not a solid film; its pores are unresolved. Never fabricate it as a solid printed sheet.

Exact mesh grade, black finish, airflow resistance and installed thickness require supplier selection and an approved optical/acoustic sample. SAATI Acoustex low-resistance polyester meshes are a sourcing starting point; no specific grade is released. Source: https://www.saati.com/products/filtration/brands/saatifil-acoustex/ . Check the entire grille under diffuse and raking light at0,30 and60 degrees: require a uniform dark field without an obvious speaker or battery patch. Compare mesh samples acoustically and choose the least restrictive one that meets the appearance master. Do not paint a diaphragm or fill holes. The new CAD renders include this nominal mesh envelope; they cannot predict the weave's real opacity or acoustic loss.

The rear service pad retains42 mm wordmark,32 mm inscription atY-9 and0.15 mm deboss, leaving0.85 nominal locally. R10 creates four0.10-deep perimeter adhesive segments on the cover with4.25 mm radius dry zones around screw centers. No adhesive crosses the main cover seam, screw heads, antenna landing or guide interfaces. Use a qualified removable silicone adhesive/primer combination and replace it after service; exact product and peel force are sample decisions.

Service: power down and disconnect charging. Lift the rear pad from an unbonded corner near a screw access keepout with a blunt plastic tool. Peel slowly back over a generous radius, supporting the skin rather than pulling the artwork or perforated front. Expose and remove four rear screws. Ease the continuous rear skirt outward locally to clear the larger cover; do not drag it across screw threads. Disconnect antenna/other harness only as required, retaining service slack. Renew the specified adhesive segments and inspect pilot registration, artwork and screw access before reassembly. No permanent glue around the full continuous skirt.

Physical trial plan (unperformed): five silicone coupons for hole quality/cure/registration; instrumented membrane and all key press positions; at least ten complete rear opening/rebonding cycles as a first service screen; dry/damp grip, dust pickup and cleanability samples; rear ink/primer cure, flex and rub trial; final-backing acoustic comparison; tray handling and cable seating tests. A proposed10,000-operation assembled-control engineering screen follows initial100 conditioning cycles; the owner must set the eventual usage-life target. Neither number is a product rating. Log failures and geometry/material deviations before making repeat units.

Digital validation / limits of evidence

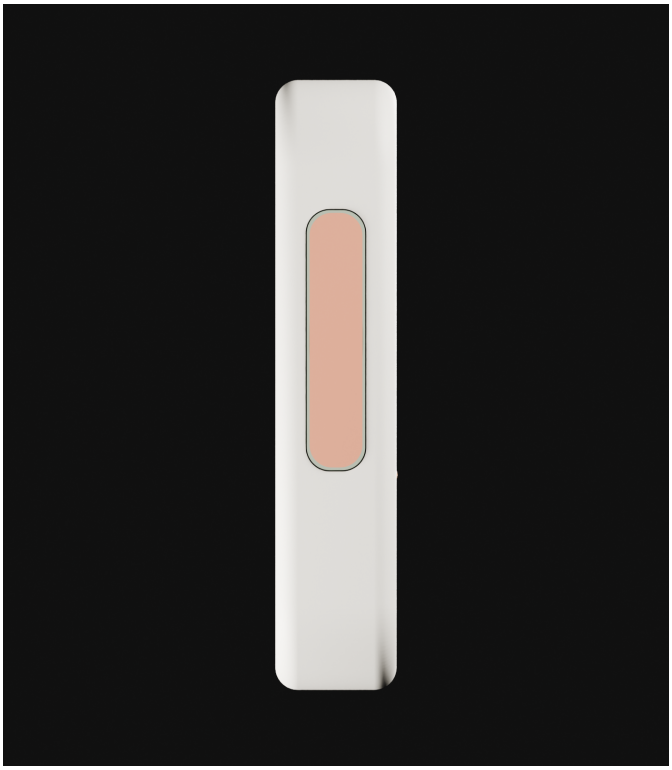
Check	Recorded result
Exported part records	65; 65 valid BReps
Tessellated part meshes	62; 62 watertight after duplicate/degenerate cleanup
Nominal fabricated/adhesive intersections	0 overlaps above0.005 mm3; local constructive check for front skin interface
Hardware versus case	0 conservative overlaps above0.02 mm3; exact PCB solids and per-piece mesh hulls
Rigid travel	48 sampled configurations; 0 unexpected outcomes
Sampled insertion	411 configurations; 0 tub clashes
Closest actual PCB / tray	0.600 mm
Physical tests	Silicone, loading/force, acoustic, thermal/RF, rear service and endurance UNPERFORMED

Mesh validity establishes file integrity. The final lower-flange change is a verified material removal from the three side keys; unchanged part hashes and exact zero added volume preserve the preceding full static interference result. The local front-skin check covers added locator material; enlarged bores and recesses remove material, and restored mic deck ends at the existing interface plane. The hardware hull screen is conservative and omits flexible leads. Finite travel/insertion samples are not a continuous collision proof. A rigid reference switch is not a force simulation. See the adjacent JSON records for exact states, methods and exceptions.

Matched exterior CAD / front and rear

Actual R10 geometry. Colors are appearance targets. The black grille layer is the nominal woven mesh envelope, with unresolved pores; real opacity and acoustic loss need a sample.

Matched CAD / both sides

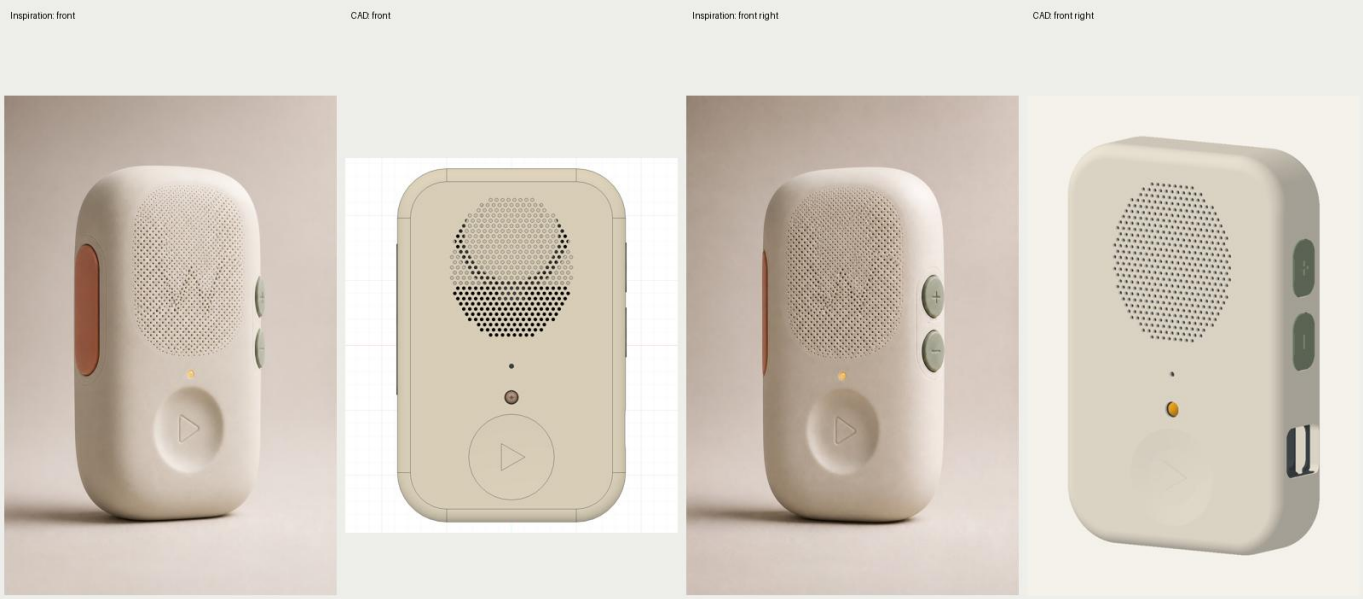


Visible control placement and original USB mouth retained. Internal pocket clearance changes do not alter the exterior mouth.

Assembly overview / source-derived CAD

Right: rear cover and skin hidden to inspect the actual hardware and revised guide columns. The STEP source and original hardware meshes control these views.

Inspiration / retained geometry decisions



Archived inspiration-versus-R9 comparison supplied with the expert review. R10 retains this exterior geometry family. The current R10 renders on the preceding pages are the revised CAD evidence; this board is explicitly the prior comparison.

Retained distinctions: the CAD front is flatter, the action dish is a regular shallow spherical recess, and the side volume controls are elongated. Preserved dimensions and current branding take priority over inferring measurements from the concept photograph. Approve a full-size appearance article before tooling.

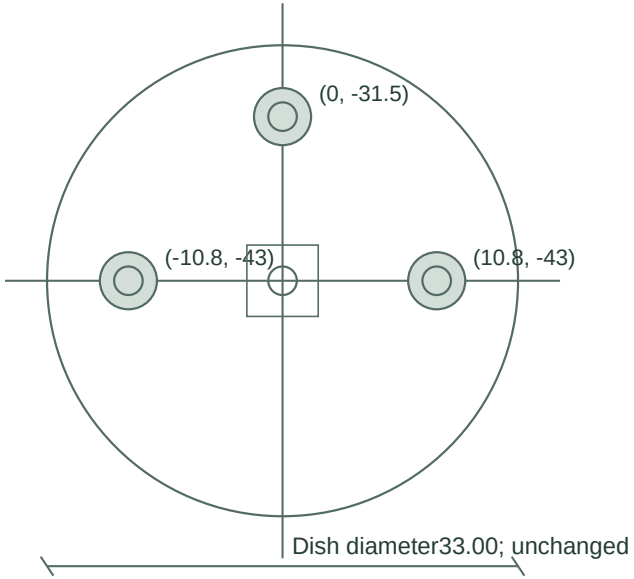
Mechanisms / electronics removed for inspection

Source-derived R10 CAD. Rear closure, skins, PCB, battery, tray and rear antenna hidden. Fixed microphone placement and guided control carriers are visible. This is a visibility configuration, not an assembly step.

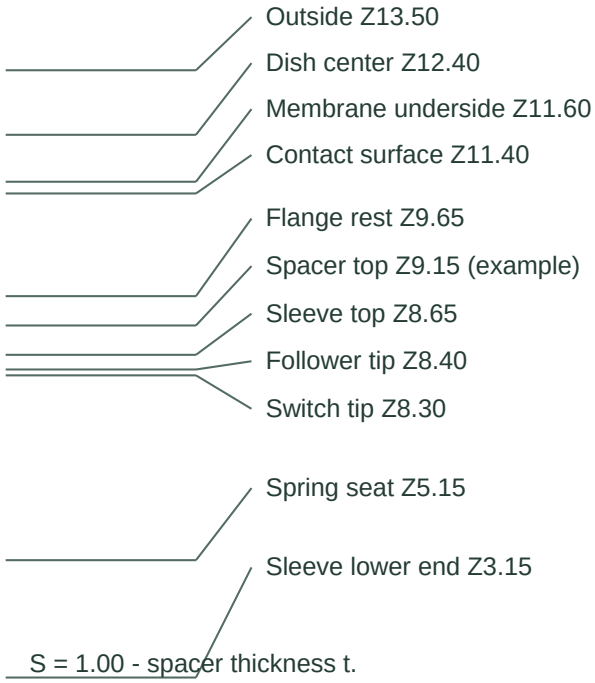
WALKIE ONE / CONCEPT 2.2 / R10

Front control / guide pattern and finished axial datums

Plan, looking toward front; key center X0,Y-43



Axial datum stack (schematic; nominal example)



Guide pins: OD2.000 +/-0.002 x8.50 long.

Sleeves: OD4.00 x5.50; bore matched to pins.

Finished diametral running clearance0.006-0.010.

Blind pin seats end atZ11.70; fit/adhesive must be qualified.

Jig all axes with assembled moving carrier; verify free return.

S = 1.00 - spacer thickness t.

t =0.20-0.75; S =0.25-0.80; set per actual contact.

Example: g0.10 + PT0.30 + margin0.10 = S0.50.

Front PEEK follower: M2x0.4 x2.50; tipZ8.05-8.85.

Minimum thread engagement1.50; no face preload.

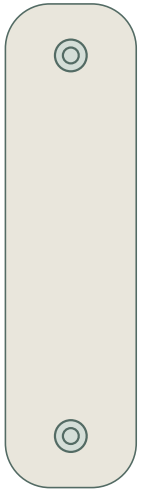
See qualified force requirement; margin is not a switch rating.

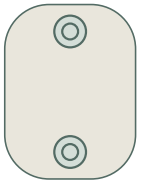
WO022-R10 / D01 / Finished condition / mm / 2026-09-06 / Prototype qualification required

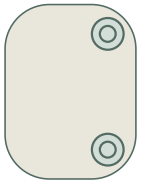
WALKIE ONE / CONCEPT 2.2 / R10

Side controls / guide columns, spring and stop details

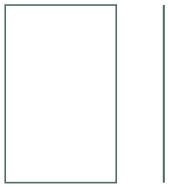
Side key plan in YZ; dimensions relative to key center







SPR1 installed space



4.50 rest / 3.70 at max stroke

PTT

Guide Y offsets +/-24; Z0

VOL+

Guide Y offsets +/-7.6; Z0

VOL-

Guide Y offsets +/-7.3; Z4.7

Supplier must approve spring end geometry and force curve.

PTT key centerY10; volume centersY30 andY5; all visible face placements unchanged.

Side flange rest |X|40.00; sleeve end |X|39.00; t0.20-0.75 gives S0.25-0.80.

Nominal example t0.55 -> S0.45. Final setting uses measured contact, not the example ring.

PEEK follower M2x0.4 x3.30; tip |X|39.15-39.95, nominal39.55. Engagement >=1.80.

Guide pin OD2 x9.15; sleeve OD4 x5.50. Spring surrounds sleeve; clear all adhesive/paint.

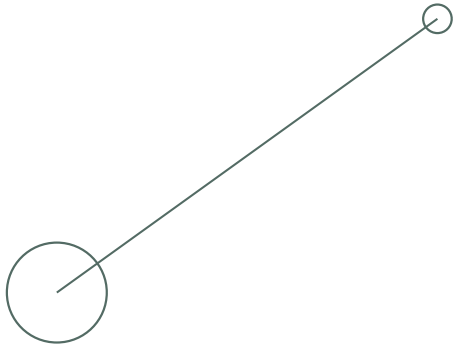
SPR1: wire0.30, mean coil diameter4.60, five active turns, nominal seven total, free length5.10.

WO022-R10 / D02 / Finished condition / mm / 2026-09-06 / Prototype qualification required

WALKIE ONE / CONCEPT 2.2 / R10

Silicone registration and revised microphone path

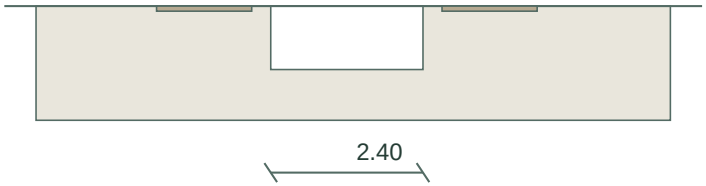
Duct in front deck; X/Y coordinates



Inlet (-24,-25.262) / visible port (0,-8)

Centerline29.56; width2.40; depth1.00

Duct section normal to centerline



Floor0.60 nominal; roof is the finished silicone.

0.30 dry shoulders; 1.50-wide seal lands.

Land rebate0.08 deep; no glue in passage.

Visible453 holes: diameter1.30 +/-0.04; concealed rigid bores1.70 +/-0.04.

Pitch X2.30 / Y2.00 staggered; minimum finished pitch2.28.

Minimum webs: silicone0.94; rigid0.54. Registration offset<=0.10; radial margin>=0.06.

Hidden pilots at X+/-27,Y30: diameter1.50 x0.25; skin recess0.30 deep.

Round recess1.58; second slot1.98 long x1.58 wide, length alongX. Minimum local skin0.70.

C01 finished silicone coupon uses real lower edge curvature, full membrane/glyph and30 test holes.

Finished dimensions control the parts. Tool shrink, pin taper, venting and texture allowances are separate.

Backing seat52x60 ellipse x0.080 deep;0.040 mesh +0.040 perimeter adhesive. Grade unqualified.

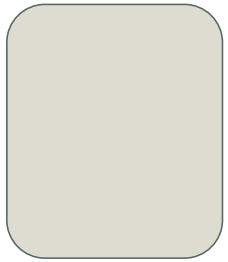
WO022-R10 / D03 / Finished condition / mm / 2026-09-06 / Prototype qualification required

WALKIE ONE / CONCEPT 2.2 / R10

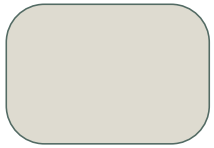
PCB relief, USB candidate and rear service boundary

PCB: exact supplied STEP; upper high features atZ+0.20. Battery base remainsZ1.50.
Tray floor topZ1.30; normal undersideZ0.50; local relieved undersideZ0.80.
Relief A: X-27.60,Y0.875; 6.60 x8.00; R0.80. Relief B: X26.60,Y-16.075; 6.50 x13.90; R0.80.
Both reliefs0.30 deep. Residual floor0.50; supplier must qualify handling, flatness and deflection.

Right-side mouth comparison; Y/Z plane

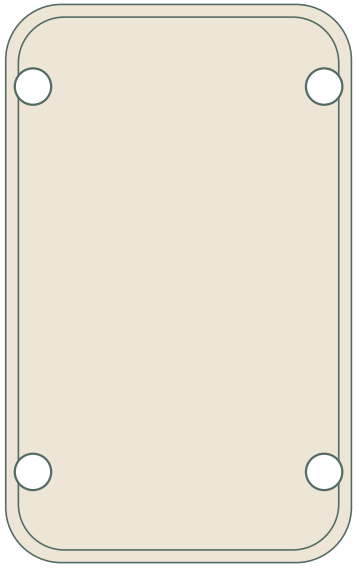


Baseline17Y x20Z, R3, Z0



Candidate16Y x11Z, R3, Z-4.7396

Candidate C05 is UNAPPROVED; baseline R10 keeps the original mouth.
Cable gauge14Y x9Z,R2.5 is not an approved cable.
Connector stays on original board, about14.2 mm inside the side.
Verify full plug/strain-relief sweep, seating, removal and cable loads.



Rear pad: four0.10-deep bond segments.
Dry zones: radius4.25 around screw centers.

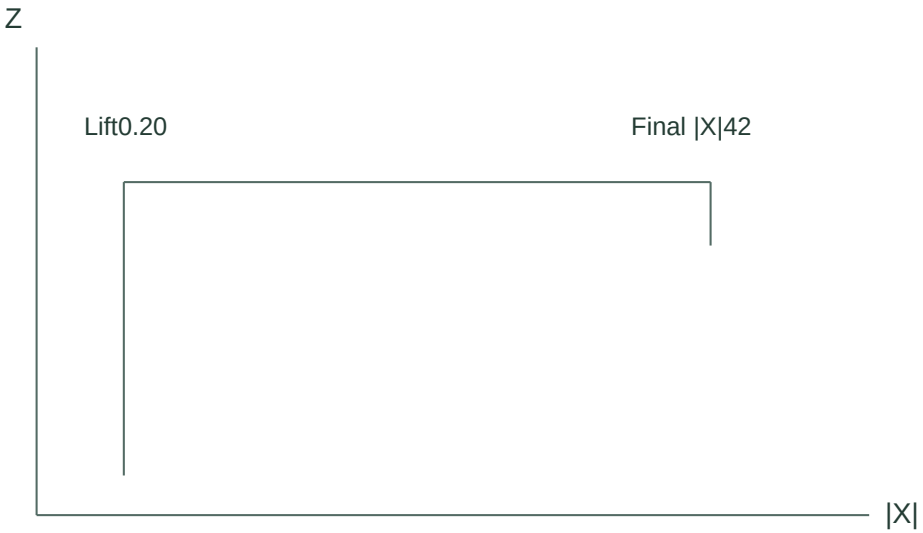
No coating/adhesive growth may reduce the controlled clearance. All numerical process limits require supplier acceptance.

WO022-R10 / D04 / Finished condition / mm / 2026-09-06 / Prototype qualification required

WALKIE ONE / CONCEPT 2.2 / R10

Side-key rear insertion / concealed flange clearance

Assembly section uses canonical positive |X| for either side; mirror X for the left PTT key.
Install controls before board, battery, speaker and harness obstruct the rear opening.
Carrier and face envelope checked together; fit pins/follower after seating. Bond faces after calibration.



Concealed lower flange flat:
Z-6.25 across |X|39.995-40.705.
Visible cap remains unchanged.
Upper retaining land stays intact.
Guide/stop contact seats unchanged.
Nominal rail top Z-6.55.
Flange-to-rail gap0.30 at Z0.
Carrier cap clears rail0.25 at lift0.20.
Old cradle tabs end at Z-5.45.
Use fixture; verify actual insertion.
Fit tray/cell before PCB rear entry.
No cable-routing simulation claimed.

1 / Rear entry: |X|21, Z-28 to0
2 / Lift Z+0.20 and translate to |X|42
3 / Lower Z0; fit pins and follower from inside
4 / Insert holder12 mm inboard, then slide outward

Schematic path; lift exaggerated. Exact finite BRep states and limitations are in assembly_sequence_validation.json.

WO022-R10 / D05 / Finished condition / mm / 2026-09-06 / Prototype qualification required