

Walkie One v30 Polished R1

Selective silicone enclosure | RPS prototype handoff

Status: Mechanically checked prototype candidate. Material/process approval, the final wiring definition and a physical first article remain required before production release.



Front: v30 controls and perforated grille



Rear: exposed rigid panel and screw access

Dimension	Nominal CAD size
Finished rigid + silicone body	73.5 x 143.25 x 19.4 mm
Overall, including original control/lens projections	74.3 x 143.25 x 21.4 mm

v30 stays the foundation. The exact supplied electronics and accepted mechanisms remain in place. The new 1.0 mm silicone perimeter, preserved rear/control lands, revised grille stack, wire guides and relieved USB liner refine that foundation. Assembly organization is informed by v31. Colours above are illustrative.

Fabrication and critical dimensions

Use the complete STEP to review the assembly, and the individual fabrication files to make parts. Reference electronics and hardware are included for fit; they are not printed parts.

Group	Quantity	Files / supply route
Rigid components	22 pieces / 21 definitions	exports/rigid/: individual STEP and STL; fresh orientation and slicing required.
Silicone surround	1 master	exports/elastomer/: nominal installed shape. RPS selects material, process, shrink compensation and attachment.
Grille and backing	1 each	exports/stock/: 46 x 46 x 0.50 mm R8 metal grille; 42 x 42 mm R6 backing with 0.18 mm allocation.
Adhesive / cut stock	See BOM	Two grille adhesive pieces; gaskets and foam; 12 USB liner starter pieces. SVG/DXF are in mm.
Hardware	20 screws / 20 inserts / 2 washers	M2 hardware schedule in docs/BOM.csv. Confirm actual kit and insert process.
Electronics	Complete v30 set	Client-supplied configuration retained. No earlier separate antenna or coax is added.

Measured section / feature	Nominal value
Rear at four constrained PCB locations	Original 1.210223 mm rigid wall retained; no rear silicone membrane.
Rear at connector leads	Original 1.315 mm rigid wall retained.
Sampled side allocation	1.60 mm rigid + 0.15 mm seat allowance + 1.00 mm silicone.
Volume control land	Original 1.37 mm rigid wall retained.

USB lower-film budget: 0.772688 mm nominal clearance - 0.340 mm allocated adverse variation = 0.432688 mm remaining. Proposed minimum as-built clearance: 0.25 mm. The 0.340 mm allocation comprises 0.127 mm fixture/process position, 0.100 mm receptacle position, 0.100 mm forming/trim and 0.013 mm film thickness. These are stated allocations, not supplier-approved tolerances.

The metal grille has 1,153 diameter-0.8 mm holes on 1.2 mm triangular pitch. RPS must confirm fabrication details. A 30A silicone hardness is a design target; the grade and bond are unselected. The backing thickness is an allocated space, not a verified product.

Assembly sequence

Use docs/ASSEMBLY_AND_FIT.md, the BOM and actual-size templates for the full procedure. The following sequence highlights the interfaces most likely to affect the first build.

- 1. Inspect and install inserts.** Use the recommended rigid parts. Remove print artifacts and install the source M2 inserts before adding electronics. Confirm the actual insert fit and material process; do not substitute countersunk screw heads.
- 2. Prepare the grille stack.** Deburr the metal insert. Fit the permeable backing in its 0.18 mm allocation with the separate outer structural and inner backing-retention adhesive rings. Keep the acoustic opening, rebate gap and vent reliefs clear.
- 3. Fit speaker and microphone.** Retain the speaker gasket: 0.5 mm stock, 0.3 mm compressed. Speaker stack: screw head, 0.7 mm printed spacer, speaker tab, 0.3 mm metal washer, short insert. Microphone gasket: 5.6 OD / 2.6 ID, 0.5 stock compressed to 0.4 mm.
- 4. Install Play, PTT and LED.** Keep the accepted Play C/0.40 geometry. Assemble PTT sleeves and links to the cap, enter from the open back, then install fixed pivots and the switch cassette. Screws bear on shoulders, leaving links free. Thread the upper-wire channel before closure. Install the LED assembly from the open back.
- 5. Install the volume module.** Use the supplied 6 x 6 x 4.3 mm switch geometry, caps and original reaction lands. The two 4 x 4 x 0.26 mm adhesive pads retain the switches; rigid lands carry press loads. Confirm full return and no preload.
- 6. Form the revised USB liner.** Omit the deleted floor-lift patch. Follow the controlled-trim starters: lower central free film at or below Z4.35, side-return lower ends at or above Z5.45. Keep the forward board-edge face single-layer. No loose edge or exposed adhesive may enter the mating path.
- 7. Seat the PCB and battery.** Use the unchanged v30 positions and supplied mechanical set. Confirm physical component revisions and lead exits. Do not force a component into its seat or add older antenna/coax parts.
- 8. Dress and restrain wiring.** The two guides have nominal 7.6 x 1.9 mm openings. Keep signal wire within the source 0.8 mm OD allowance and solder joints inside their keepouts. Keep slack clear of mechanisms, acoustic paths, battery edges and the seam. Conductor count, sizing and cut lengths require the approved pin map.
- 9. Close and test the rigid case.** The four case screws remain M2 x 12, with Z2.8 bearing planes and 0.5 mm nominal tip reserve. Close without using screw force to crush a wire or seat a misplaced part. Check all controls at their centres and ends before and after closure.
- 10. Fit the selective surround.** Fit the band last, registering its four keys and leaving the rear screws and rigid control/USB lands accessible. RPS must qualify any serviceable silicone bond, primer and shrink compensation. The installed master is not a shrink-compensated mold.

Verification and first-article record

The digital results below apply to the delivered selective revision. They establish nominal geometry and file consistency, not physical production qualification.

Digital evidence	Result / scope
Adam geometry ledger	2,775 cross-item pairs: 290 affected pairs rechecked; 2,485 SHA-identical pairs reused. No new unexplained positive-volume clashes. Inherited insert/thread/reference overlaps are classified.
Controls and access	84 control-motion samples pass. Sampled insertion/access checks pass within the documented source-path-preservation scope.
STEP and mesh exports	39 STEP round-trip checks and 23 STL integrity checks pass.
Independent local file review	22 rigid STEP parts and the silicone master valid; 23 meshes watertight. Complete assembly has 471 solids. Body bounds match the required nominal envelope to CAD precision.
Native/export consistency	Nine changed native output caches match the delivered BREPs. This local check does not execute a FreeCAD recompute; Adam records the native build/open/save.
Electronics preservation	All 306 PCB solids plus battery, microphone and speaker match source bounds, volumes and centroids in their original positions. Separate shell-to-component overlap checks are clear.

Record on the physical first article

Check	Acceptance to record
☐ Body and closure	Measure finished body and agreed tolerances. Confirm no forced closure, pinched wires or damaged inserts.
☐ Controls	PTT, Play and volume actuate and fully return at centre and ends. Confirm no preload, rubbing or trapped slack.
☐ USB	Measure at least 0.25 mm lower free-film clearance under the proposed criterion. Intended cables seat fully and remove without snagging or moving tape.
☐ Materials and acoustics	Record rigid process, silicone grade/bond and actual backing thickness. Check grille retention, rattles, speaker output and microphone performance.
☐ Wiring and powered build	Obtain the approved v30 pin map; confirm conductor sizing, terminations, polarity and continuity before powered tests.

Outstanding approval: supplier material/process and critical tolerances; final wiring definition; physical fit, function and durability. Original mechanism gaps can be as small as 0.025-0.075 mm. General SLA accuracy does not approve those features.

Records: verification/RELEASE_STATUS.json, the local review reports, docs/BOM.csv and docs/FIRST_ARTICLE_CHECKS.csv. RPS process reference: rapid-products.com/service/stereolithography-sla/. Full component/process sources are in ASSEMBLY_AND_FIT.md.