ORBO / FAMILY REFERENCE GUIDE

One idea. A family of possibilities.



ORBO is a seat-driven, fold-away urinal orb designed to adapt a toilet for standing use, then tuck beneath the seat for seated use.

The family

ORBO is the mechanical home platform. ORBO PRO adds a proposed tank-fed powered rinse. ORBO JR brings the idea to supervised potty training. ORBO GO explores compact travel and shared facilities.

A concept taking shape

V15 is the documented mechanical test rig. The family renders communicate appearance and intended use; PRO, JR and GO require their own engineering and testing. No pricing or release date is established.

01 / THE CORE IDEA

What is ORBO?



An accessory for an existing fixture

ORBO mounts beneath a toilet seat. Raising the seat opens a forward-facing, concave shell above the bowl; lowering the seat returns the panels beneath it. The purpose is to present a larger enclosed target and guide liquid downward into the bowl.

Exactly four curved panels

The current V15 architecture uses front-left panel 1, rear-left panel 2, rear-right panel 3 and front-right panel 4, viewed by the user facing the toilet. Panels nest through coordinated track and gear motion. The shell drains at its bottom pole; V15 has no separate fifth funnel.

Designed benefits

The design aims to reduce splash outside the target, work with familiar seat movement and preserve the opening for seated use. Splash reduction, hygiene performance and real-toilet compatibility remain test objectives.

02 / AT A GLANCE

Meet the family

Version	Setting	Distinction	Status
ORBO	Home bathroom	Mechanical, seat-driven orb	V15 test rig
ORBO PRO	Home bathroom	Tank-fed pump and upper rinse jets	Family concept
ORBO JR	Potty training	Child-scale target and collection	Family concept
ORBO GO	Travel facilities	Compact fixture-specific adaptation	Family concept

A common design language

Ocean Gloss turquoise (#46ABA5) and Fuchsia Gloss (#C8007A), a deep-teal wordmark, curved panel seams and an open-front orb connect the range. The supplied ORBO logo is the master identity; PRO, JR and GO appear as fuchsia suffixes.

What the versions share

Each concept brings a concave target closer to the user and directs fluid toward a collection or waste path. Each must also provide practical cleaning access. Final mountings, dimensions, materials and mechanisms may differ.

What changes

Standard prioritizes passive mechanics. PRO introduces a separate water and power circuit. JR prioritizes reach, stability and supervised use. GO prioritizes constrained space, secure stowage and service access.

Read the images correctly

The renders are design communication, not production drawings or evidence of certified fit. White toilets and seat shapes are reference fixtures. A travel case in a family render is an illustrative accessory, not a finalized supplied component.

03 / STANDARD

ORBO: the everyday home platform



Highlights

Seat-driven deployment without batteries, motors or sensors; four curved panels; an open front; direct drainage into the toilet bowl; and compact stowage beneath the seat. The prototype uses a cradle, front jack and rear sling to position the orb.

Everyday sequence

Raise the seat fully before use. The intended deployed pose tilts the orb 20 degrees back. Liquid follows the concave shell to the lower outlet. Lowering the seat reverses the mechanical sequence. Confirm free movement and drainage during prototype testing before any use.

Cleaning access

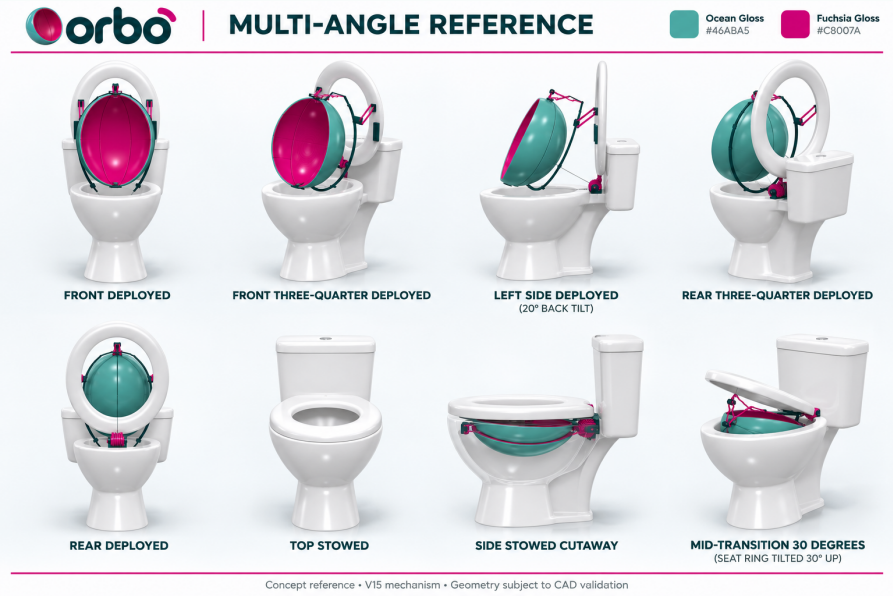
V15 removal involves releasing the front-jack bottom pins and slipping the sling loops from the rear-core ear pins. It is not yet a tool-free quick-release design. PETG parts should be washed with lukewarm water and mild non-abrasive cleaner.

Development focus

Real bowl fit, moving clearances, splash containment, drainage, mechanical effort, cable routing and repeatable return to stow. Universal fit and production durability have not been established.

04 / MOTION AND POSITIONS

How the V15 transformation works



01 | Stowed at 0 degrees

The orb rests below the seat and the seat opening stays clear. Only the inner walls of panels 2 and 3 may show. Rest pads support the mechanism below approximately 3 degrees.

02 | Open over 0-65 degrees

The hinge gear sector turns the cam drum through 1.125 times the seat angle. Cable 1 operates the front lazy-tong jack. Cable 2 operates the rear two-wire sling through an 8:1 tackle. As the orb drops, panels 1 and 4 move on the snap T-track and panels 2 and 3 counter-rotate through gears.

03 | Tilt over 65-90 degrees

Cable 3 pulls the four-bar linkage to tilt the cradle and orb 20 degrees back by full seat-up. The seat-frame drop is approximately 17 mm stowed, 143.3 mm at 65 degrees and 155 mm at 90 degrees.

04 | Return

Springs S1, S2 and S3 return the jack, rear tackle and tilt system. Three S4 springs maintain cable tension. Liquid drains from the shell bottom into the bowl throughout the intended deployed use.

05 / POWERED RINSE CONCEPT

ORBO PRO: rinse from the top down



The PRO difference

PRO builds on the core orb with an external powered pump and tubing to upper spray outlets. The current visual direction retrieves water from the toilet tank and delivers it to inward-facing jets at the top of the orb.

The proposed water path

Tank intake -> compact pump -> delivery line -> upper spray outlets -> inner shell -> bottom drain -> toilet bowl. Intake routing must avoid the flush valve and moving tank parts. The intake and housing shown are illustrative, not installation instructions.

Control and power

A manual rinse button provides a clear initial control concept. Periodic or seat-position-triggered rinse cycles could follow after containment and timing are tested. Rechargeable battery power and removable packs were proposed in ORBOv6; pack count, voltage, charging method and endurance are not finalized.

Rinsing is not disinfection

A water rinse aims to carry residue off the surface. It does not replace manual cleaning or establish sanitation performance. The earlier 100-cycle, low-noise, water-volume and certification claims are not verified specifications.

06 / POTTY-TRAINING CONCEPT

ORBO JR: a friendly first target



The JR difference

JR brings the open-front orb to child scale. A lower, wide target and contrasting interior are intended to make supervised standing practice approachable. The current render shows a freestanding white potty base, raised seat ring and turquoise/fuchsia orb.

Collection and formats

The freestanding concept uses a removable collection container, shown as a front-access drawer with a fuchsia grip. A separate add-on concept could guide liquid into a compatible child potty's existing bucket. These are distinct configurations; neither universal fit nor dimensions are set.

Parent-facing highlights

An accessible target, rounded surfaces, a stable base and straightforward emptying are the priorities. A future product should allow the collection unit and wetted surfaces to be cleaned thoroughly, with obvious refitting and secure retention.

Development focus

Evaluate tipping resistance, reach, load cases, small parts, finger clearances and pinch points, motion speed, cleaning chemicals and material suitability. Adult supervision is essential. No age rating, pinch-free claim or child-safety certification has been established.

07 / TRAVEL CONCEPT

ORBO GO: designed for life on the move



The GO difference

GO explores the same containment idea in compact facilities: aircraft, trains, buses and RVs. The references show fixture-mounted adaptations within each lavatory, rather than a proven one-size-fits-all portable retrofit.

Compact and serviceable

The design priorities are a small operating envelope, secure retention when stowed, access to cleaning surfaces, and compatibility with the fixture's normal seated use. Any carry case or removable mount remains a design proposal.

Different waste systems, different designs

Aircraft and some rail toilets use vacuum systems; RVs may use cassette or holding-tank systems. Mountings, available space, drain clearance and motion under vehicle acceleration require separate assessment for each installation.

Development focus

Operator acceptance, secure fasteners, vibration and retention, fire/material requirements where applicable, servicing procedures and waste-system compatibility. The images do not establish transport certification or approval for any aircraft, train, bus or RV.

08 / TECHNICAL REFERENCE

Inside the V15 mechanism

Component	Role
Panels 1 and 4	Front outer gores riding snap T-track
Panels 2 and 3	Rear inner gores, gear-coupled counter-rotation
Cradle ring	Four bolted quadrants supporting orb and linkages
Front jack	Four-stage lazy-tong, eight links
Rear sling	Two-wire support with 8:1 tackle
Four-bar tilt	Positions cradle 20 degrees back at deployment
Cam and cables	z18/z16 hinge drive; three Bowden channels

Reference dimensions (CAD)

Deployed envelope: approximately 285 W x 231 D x 376 H mm, tilted 20 degrees back. Assumed seat: 360 x 450 mm, 27 mm thick, opening 209 x 295 mm. Assumed inner bowl rim: 300 x 409.6 mm ellipse. These are assumed reference shapes, not real-toilet measurements.

Clearances and fit

Seat underside target: 21 +/- 1 mm above the rim using 9 mm riser shims and bumper spacers. Minimum CAD moving clearance: 0.30 mm. Front core to bowl: 0.65 mm. Drain keep-out radius: 44.45 mm, with no intrusion in the specified below-rim zone. Tight clearances need physical testing.

Prototype materials

V15 specifies PETG printed parts on a 220 x 220 x 250 mm FDM bed: 67 part files, 87 pieces. Stock hardware includes steel rods, metric fasteners, Bowden wires and housings, barrel adjusters, springs, VHB tape and epoxy. These are prototype choices, not final production materials.

09 / PRACTICAL REFERENCE

Fit, care and prototype readiness

Start with fit gauges

Print the plate00 test coupons and rim/bowl gauges before large parts. Check your bowl and seat, including bumpers, hinge lugs and lid clearances. The CAD does not model all of those real components. Tune pin and hole compensation using the kit gauges.

Assembly overview

Join eight gore halves into four panels; assemble the track, cores and gears; verify free panel motion; assemble the cradle ring, jack and four-bar; fit shims and spacers; mount the drum; route all three cable channels; fit the sling and tackle; then add the stow rest pads and complete the kit test plan.

Known V15 limits

Rest pads are needed near stow. The 6 mm lost-motion slot in crank A is filed by hand and is not in the STL. Sling housing routing is not modeled; the guide calls for at least a 220 mm slack loop on each sling housing. The assumed geometry does not establish compatibility with an actual toilet.

Care and removal

Release the jack bottom pins and rear sling loops to remove the orb as one assembly. Wash with lukewarm water and mild, non-abrasive cleaner. Avoid dishwasher heat and solvents. Before refitting, confirm both track arcs remain snapped into the cores and panels move freely by hand.

What needs evidence before release

Mechanical cycling, fit across selected fixtures, wet drainage and splash tests, cleanability, user effort and pinch-point assessment. PRO additionally needs water/electrical validation; JR needs dedicated child-safety assessment; GO needs fixture and transport review.

10 / EVOLUTION AND REFERENCE NOTES

From Petal and URI to ORBO

The development path

Petal explored seat-linked side wings and a rear shield. URI explored an oval enclosure with extension arms and split back panels. ORBO develops the four-panel curved shell. V15 documents the seat-driven cam, cables, jack, sling and tilt system. PRO, JR and GO extend the intended use cases.

What this edition updates

The current standard-model description follows the newer V15 guide. Earlier ORBOv6 descriptions of a fifth funnel, TPU or magnetic seals, a fixed two-inch bowl gap, universal fit, snap-latch removal and tested production life are not treated as current V15 facts.

Family features and targets

ORBOv6 supplies useful ideas for powered rinsing and child-focused use. Battery endurance, hot-swap pack configuration, rinse volume, coatings, noise, safety ratings and certifications remain proposals. The latest supplied imagery establishes tank-fed PRO styling, the freestanding JR potty and GO transport settings.

Reference materials

ORBO-Reference-Guide.docx, General Reference Guide, V15 kinetic prototype, Rev A, 14 November 2026. ORBOv6(1).docx, earlier product narrative and family feature proposals. Supplied ORBO master logo, standard bathroom render, PRO spa render, JR potty render, GO travel board and multi-angle reference sheet.

Edition

ORBO Family Reference Guide | 14 November 2026. Product concepts in development. Renders are illustrative; CAD dimensions describe the V15 reference geometry. Final specifications, availability and compatibility are not announced.