

Assembly manual

One chair. A traceable build.

Frame, collection system, cassette-mounted shutter, friction drive, ventilation and control integration. Includes a complete CAD part register.

Release status: development

These manuals explain the R7.12 model and intended procedure.

Purchased-part envelopes, supplier interfaces and protective controls remain subject to prototype verification. They do not certify a finished medical or sanitation product.



What R7.12 replaces

Earlier instruction	R7.12 instruction
Chair-mounted cable shutter	Fit the independent motorized shutter to the removable cassette lid. The motor, gate, seals and manual clutch travel with the lid.
Holes through the pail floor	Use the closed-bottom HDPE bin. Do not drill the old turntable bolt pattern through it. Complete the nonpenetrating bearing adapter before fabrication.
Bag rim used as odor seal	Separate the bag-retaining rim, rotary lid face seal and shutter lip seal. Keep the film fold out of both running seal tracks.
High side exhaust / old filter layout	Collect both headspaces, then fan, sealed filter and low rear 50.8 mm ID outlet. Connect the approximately 5 m outdoor duct.
Old cable motor, fixed shutter and return spring steps	Those steps in R7.10 are superseded. Retain applicable frame and shell joinery only after checking it against R7.12 geometry.

The R7.10 source guide contains legacy fabrication detail. This revision controls the changed interfaces; no legacy drawing silently overrides the current model.

Build the five frame modules

01 Identify W01 left/right side frames, W04 seat frame, W05 front base rail and W06 backrest U. Protect the fine-textured powder coat during assembly.

02 Fit the original M8 frame connection stacks and the W06 spigots in their modeled orientation. Align the frame before final tightening. The R7.10 frame target was 15 N.m; confirm the exact fastener, coating and joint before adopting it.

03 Insert W07 telescopic legs and B01 spring buttons. Select the same hole on all four legs; check that every button protrudes fully.

04 Fit B58 slide outer members with their opening to the rear. The R7.12 slide is a 450 mm development envelope; obtain the supplier load rating and hole pattern.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Frame square and stable on a level floor. Slides parallel. No rocking, partially engaged buttons or pinched coating at a joint.

Fit arms, backrest and lid drive

01 Fit W02 arms at B05 pivots: retained shoulder bolt, heavy washer and both PTFE thrust washers. Fit B38 retention plungers and P14 guards.

02 Install the brown backrest cushion, shell and lid hinge supports. Use the correct left/right B62 motor envelopes and retained B63 couplers; preserve access to the fasteners.

03 Fit the upholstered C02 lid onto its rear hinge. Its intended open position is 72 degrees. Confirm stops and all moving envelopes before powering it.

04 Keep the two B35 switches and X01 proximity sensor on the current front panel. The sensor is an envelope awaiting selection; do not invent pole controls.



Front controls from the Fusion-derived source; shown close-up is intentionally cropped.

CHECKPOINT

Arm retention and hinge/coupler retention checked. Motor synchronization, obstacle protection and soft closure require controlled bench verification.

Install the seat separator and urine vessel

01 Fit the fixed C01 seat deck, P08 solids funnel and P09 urine bowl. The funnel and bowl remain fixed when the upholstered lid opens.

02 Seal and retain the flange joints using compatible materials. Keep fastener heads and sealant beads away from the flow path.

03 Specify B14 as light-gray FLPE. The current 10 L vessel is a packaging envelope: confirm actual usable capacity, barrier treatment, cap fittings and chemical compatibility with its supplier.

04 Connect B15 from the front bowl to the urine inlet without kinks or low pockets. Connect a separate headspace vent above the maximum liquid level. Provide isolation/capping for service.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Clean-water drain test into the vessel. No liquid connection into the air branch. One-week capacity depends on user count and actual loading.

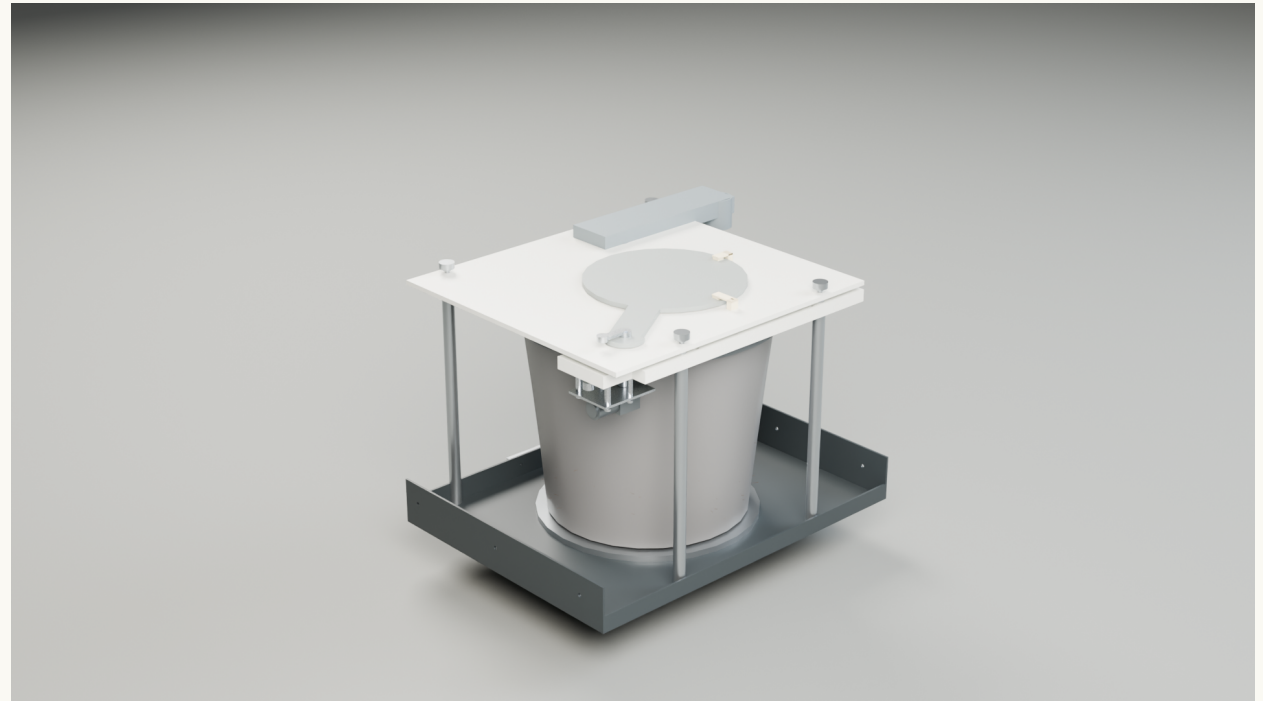
Build the tray, support and rotating bin

01 Assemble C04 tray, retained B06 turntable, four B08 posts and B29 pull handle. Check tool access before installing the bin.

02 Use the gray heavy-duty blow-molded HDPE bin with a closed bottom. Nominal 5 mm wall is a development choice, not a supplier-certified minimum.

03 Support the bin on a nonpenetrating, positively located bearing adapter. The current model shows the bearing envelope; finish adapter retention and axial capture before making the prototype.

04 Fit the split Y23 drive band below the bag fold. Confirm that it cannot slip, dent the bin or migrate into the tyre path. Do not clamp through or drive through the flexible film.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Turn the supported bin by hand. Establish retention, radial clearance and permitted preload using the real bin and bearing.

Keep the liner out of the mixer

01 Settle a compatible clean liner fully into the bin. Fold its edge evenly over the rim and fit the flexible X02 retaining ring.

02 Lower the open-bottom Y01 guard inside the bag. Smooth all film-contact edges. Its external Y24 straps locate on the split drive band, keeping torque out of the bag.

03 The guard rotates with the bin. The face seal Y02 runs against the guard flange beneath the stationary cassette lid. Keep folded film outside this running track.

04 Fit the solid 316 agitator and B30 internal hardware to the lid. Confirm paddle edge radii and continuous guard protection at adverse liner slack, not just at its nominal CAD surface.



Service display pose: guard lifted out, lid parked separately. The insert has an open bottom.

CHECKPOINT

Bag retention, rotary sealing and final bag closure are three separate jobs. Representative mixing/service tests must verify film protection.

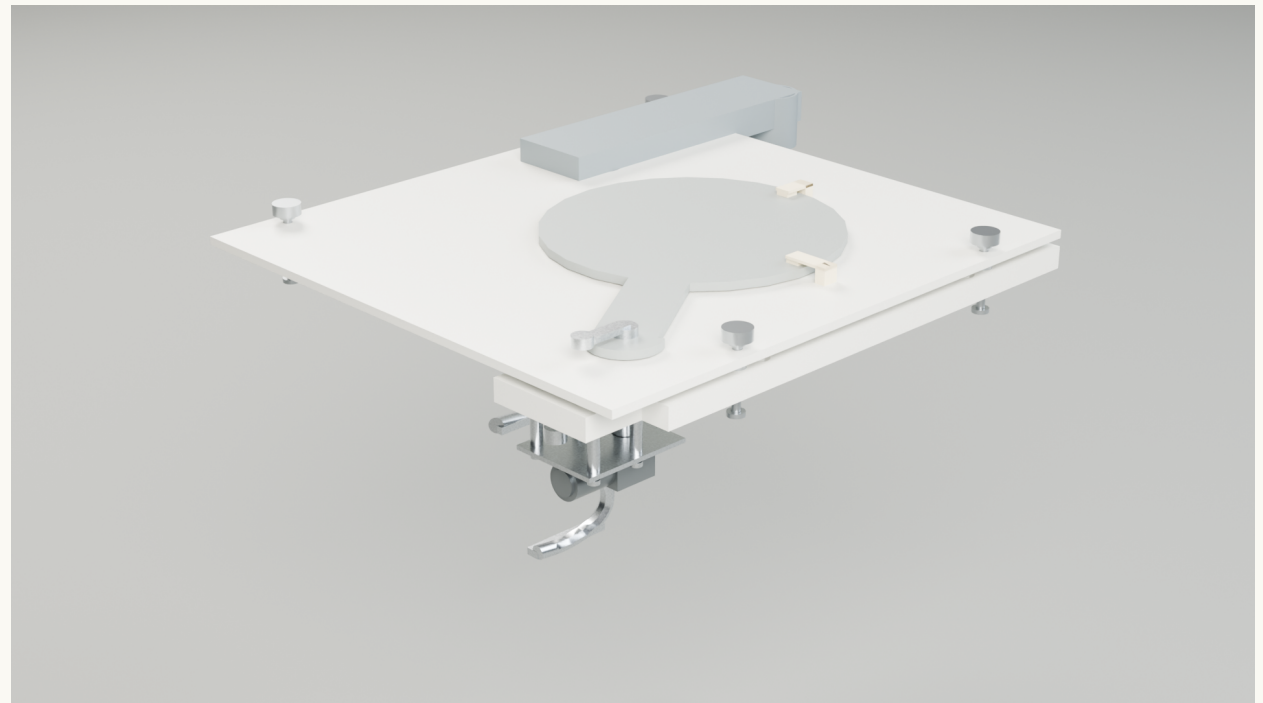
Build the lid-mounted motorized shutter

01 Fit C05 stationary lid, C06 shutter deck, Y03 compression supports and captive lid fixings. Fit Y15 solids headspace pickup beneath the gate.

02 Fit C12 swinging gate, Y04 replaceable lip seal/keeper pads and retained Y06 shaft. Its intended open angle is 66 degrees.

03 Mount B60 inverted worm gearmotor on Y05 through-bolted cradle below the deck. Support both the shaft and motor reaction load; verify the selected gearbox interface.

04 Fit Y07 manual-release sleeve. With power isolated, lift it 10 mm to disengage the self-locking drive before moving the manual lever. The modeled clutch is an envelope awaiting detailed release geometry.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Motor, gate, seals, shaft, pickup and agitator all travel with the removable lid. Gate must close and remain contained outside the chair.

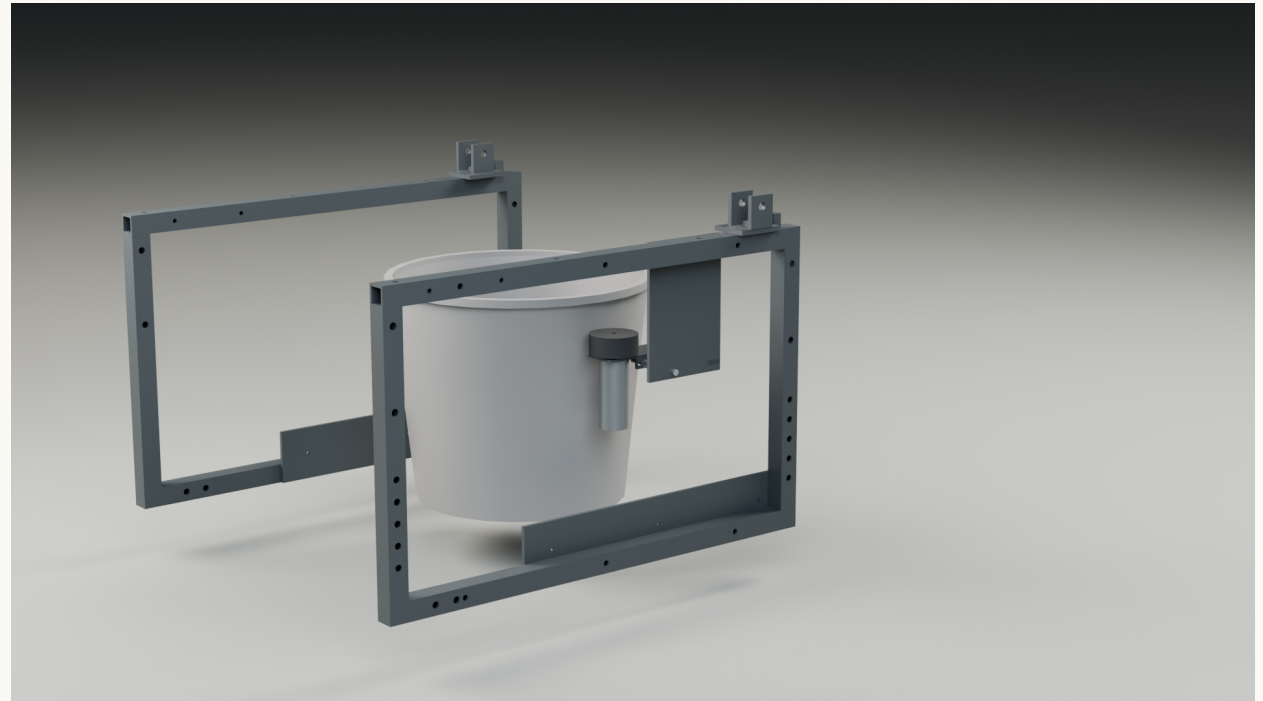
Mount the motor and rubber tyre on the frame

01 Install the C15 swing bracket on its vertical pivot. Fit Y08 bushing/axial retention and Y09 hanger stiffeners; do not suspend the motor from an unsupported plate.

02 Fit B09 motor using its actual flange drawing. The inherited envelope uses six M3 fixings on a 31 mm pitch circle; confirm engagement depth against the purchased motor.

03 Retain B10 rubber/PU tyre on its shaft. The modeled wheel is 60 mm diameter and 25 mm wide, with a vertical rotation axis.

04 Set the spring contact force by measured traction, not by appearance. Approximately 20 rpm at the 60 mm tyre corresponds to roughly 3.6 rpm at the local bin diameter; this is a provisional kinematic estimate.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Verify breakaway/running torque, slip under a jam, HDPE indentation, shaft retention and manual tyre retraction with representative wet coir.

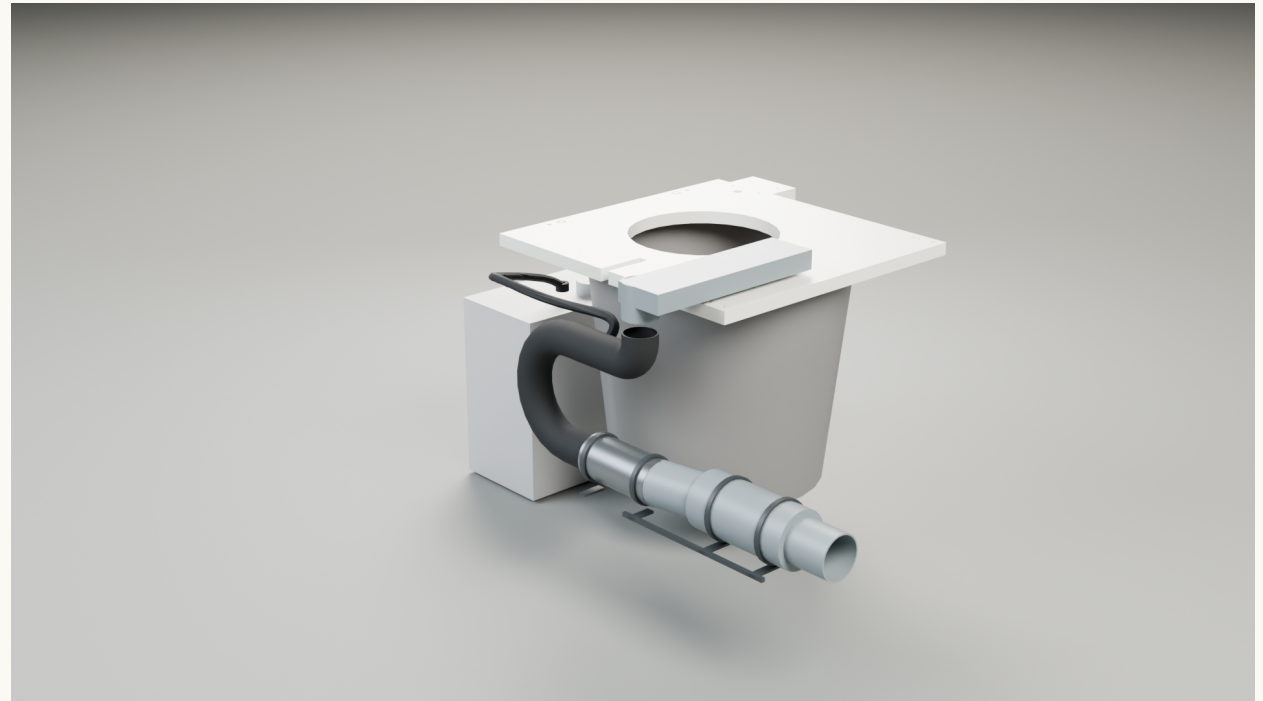
Connect both headspaces to the rear outlet

01 Connect the solids headspace Y15 pickup to fixed suction hose Y16 through the disconnectable Y22 collar. The collar retracts downward before cassette withdrawal.

02 Connect the separate Y17 urine headspace branch to the suction side, above liquid level. Provide a defined room-air makeup path; do not seal every intake opening.

03 Mount the fan and sealed filter on Y14 frame brackets with vibration isolation. Requested order: containers, fan, filter, 50.8 mm ID low rear outlet, outdoor duct.

04 Provide accessible condensate management, a weather-protected screened terminal and service access. The 5 m installation layout is illustrative; actual elbows, slope and supports need a site drawing.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Smoke/tracer leakage checks on suction joints and on the positive-pressure filter/discharge joints. Measure airflow with the actual filter and installed duct.

Implement the operating-state contract

State / trigger	Required behavior	Evidence before enabling
Idle / approach detected	Keep extraction running. Request top-lid open and motorized shutter open.	Selected proximity sensor; lid/gate position feedback.
Occupied	Hold the lid and shutter open. Inhibit mixing and automatic closure.	Occupancy sensing and obstruction response tested.
Person leaves	After an appropriate vacancy confirmation, close top lid softly and close shutter.	Tuned motion profile; no occupied close command.
Both closed / cassette home	Permit the specified mixing cycle; continue extraction.	Independent closed/home signals, current limits and jam response.
Front OPEN / CLOSE buttons	Manual commands retain protective interlocks.	Distinct labels and fault logging.
Service / power loss / fault	Stop/inhibit moving drives; allow controlled mechanical override.	Isolation, restart logic and fan supply behavior verified.

B22 is an ESP32/controller envelope in this model. These are required functions, not a claim that tested PLC firmware has been supplied.

Dock the cassette and finish the casing

01 Support the extended cassette on a stable rear platform. Keep the air collar clear, motor wiring disconnected and tyre retracted while moving it.

02 Slide it to the docking stops. Engage Y18 positive retention and confirm the B33 home signal. A click alone is not proof of full seating.

03 Reconnect the suction collar and keyed electrical connection, then restore tyre contact. Provide retained cable routing with enough service travel and no pinch points.

04 Fit the lift-off rear cover around the low rear exhaust notch and retain all other skins on their modeled spacers. Maintain access to the disconnects and filter.



CAD source geometry. Shown pose is illustrative; image is not to scale.

CHECKPOINT

Cover, fixed exhaust and drive stay on the chair; shutter stays on cassette lid. No hose, wire or tyre restrains withdrawal after the release steps.

Close the remaining engineering gates

Check	Test / observable result	Status
Structure and access	Instrumented, restrained unoccupied load/stability tests; loaded slide extension and service-platform stability.	Not physically tested
Human protection	Approach/occupied/departure sequence, obstruction, sensor failure, stalled motor and power restoration.	Control implementation/test required
Liner and mixing	Worst-case slack, wet coir, rest/adhesion, guard removal and tracer distribution; measure torque/current.	Not physically tested
Sealing	Gate, rotary face and headspace joints after repeated service and wear.	Leakage acceptance criteria to set
Ventilation	Installed duty point with clean/loaded filter, 5 m duct and all fittings; measure noise and power.	No verified fan curve/duty point
Purchased interfaces	Motor flanges, slide loads/holes, seal compression, bin retention and vessel fittings.	Supplier drawings required

The saved sampled interference review is a geometric check only. It does not validate tolerances, flexible film behavior, strength, airflow or mixing performance.

Build from a consistent revision

CAD source

Chair_R7_12_Development.f3d and the matching STEP export. Coordinates: front = -Y, rear = +Y, up = +Z; CAD dimensions are millimetres. The GLB website export uses metres and the standard glTF axis conversion.

Illustration source

CAD stills and prescribed STEP-mesh poses from this delivery. Shaded material appearances are illustrative. The separate Dreamina photographic image is an appearance study and is not used as dimensional evidence.

Inherited document

R7_10_ASSEMBLY_GUIDE.pdf, 86 pages, supplied by the owner. Frame/arm/shell joinery is inherited where consistent. The revision table in this manual identifies mechanisms that must not be built from the older instructions.

Fan evidence

Owner-supplied ex fan2.txt and Amazon listing B0F6NDNL41. Seller claims include 36 m³/h, 330 Pa and 6 W, but also 12 V at 2 A (24 W). The maxima are not an installed operating point. Obtain a manufacturer curve and confirm continuous duty, wet-air suitability and electrical protection.

Before fabrication release

Resolve the explicitly identified envelopes and retention details; issue dimensioned drawings, tolerances, hardware schedules and commissioning criteria. No drawing in this media package substitutes for that release.

Named source parts 1-10

ID	Source component / procurement note	Specified appearance
B01	B01 leg kit x4: V-spring snap button D7 for 20x20x2 tube + square rubber ferrule 20x20 (BUY)	Matte elastomer and NBR grip
B02	B02 seat cushion, vinyl over PU foam, R50 corners R15 edges (UPHOLSTER)	Embossed chocolate vinyl upholstery
B03	B03 SK12 shaft support x2, screwed under lid, clamps shaft flat (BUY)	Satin plated hardware
B04	B04 lid hinge shaft D12 x 500, 2 flats, E-clip grooves at x+-248 outside brackets, 303 stainless (BUY/CUT)	Solid 316 stainless / brushed passivated
B05	B05 arm pivot: ISO 7379 d10x40 (M8) + 4 mm heavy washer under head + 2 PTFE 0.5 washers + M8 nut + threadlocker x2 (BUY)	Satin plated hardware
B06	B06 lazy-susan bearing 300 mm, zinc/stainless (BUY)	Satin plated hardware
B07	B07 R7.12 heavy-duty blow-molded HDPE bin - nominal 5 mm wall, supplier TBD	Thick blow molded HDPE / medium neutral gray
B08	B08 cassette lid post D16 alu, M6 both ends x4 (BUY/CUT)	Satin plated hardware
B09	B09 12V gearmotor 37D, ~20 rpm, >=1 N.m continuous (BUY)	Satin motor housing
B10	B10 PU drive wheel D60 x 25, 85A, hub set-screw (BUY)	Matte elastomer and NBR grip

Named source parts 11-20

ID	Source component / procurement note	Specified appearance
B11	B11 EPDM closed-cell sponge 12 wide x 12 high (6 +-3 mm compression in the 6 mm gap) around drop hole + port (BUY)	Matte elastomer and NBR grip
B14	B14 FLPE urine vessel 10 L ENVELOPE - barrier treatment and usable capacity to verify	FLPE urine vessel / light neutral gray
B15	B15 urine hose PVC 16x22 x 0.2 m (cut to the seat setting) (BUY)	Matte elastomer and NBR grip
B21	B21 12V 7Ah AGM battery 151x65x94 + DC-UPS + fuse (BUY)	Technical polymer
B22	B22 controller: ESP32 + 2 motor drivers w/ current limit + blower PWM (BUY)	Technical polymer
B23	B23 backrest front cushion, upholstered ply board R30 = open-lid structural stop (UPHOLSTER)	Embossed chocolate vinyl upholstery
B24	B24 rubber lid-rest post D20 x 27 standing on the deck through cushion holes x4 (BUY)	Matte elastomer and NBR grip
B29	B29 stainless pull handle 128 c/c (BUY)	Solid 316 stainless / brushed passivated
B30	B30 316 stainless agitator clamp and internal fasteners - material specification	Solid 316 stainless / brushed passivated
B31	B31 compression spring 140 N at 48 mm + M5x80 guide bolt (fixed to web) + M6 shoulder pivot bolt (BUY)	Satin plated hardware

Named source parts 21-30

ID	Source component / procurement note	Specified appearance
B32	B32 alu spacer tube 10x20 + M5 through-bolt x4 (BUY/CUT)	Satin plated hardware
B33	B33 cassette-home microswitch IP67 (BUY)	Technical polymer
B35	B35 IP65 push buttons x2, recessed in front skin (BUY)	Technical polymer
B36	B36 rubber-lined P-clip for D25.4 tube x4 + M6x16 + M6 T-nut in board (back cushion to U legs; slide to set lid stop) (BUY)	Technical polymer
B38	B38 M8 ball spring-plunger x2, vertical in a weld nut on the saddle, presses the sleeve underside; 2 drilled D6x2 dimples in the sleeve at 0 and 92 deg = positive arm retention (BUY)	Satin plated hardware
B39	B39 rubber docking stop D20 x2 under C06 front tabs = cassette insertion stop (BUY)	Matte elastomer and NBR grip
B52	B52 nylon spacer 10 OD x 5.3 ID: 16 x 17 mm + 2 x 42 mm (front base rail) skin stand-offs at J26-J28 (BUY)	Technical polymer
B58	B58 R7.12 450 mm full-extension locking slides PAIR ENVELOPE - supplier load rating TBD	Satin plated hardware
B59	B59 rubber bumper D12 x 16, M4 stud, x2 on the rear skin inner face (rests on the W04 rear end plates; skin hangs on J28) (BUY)	Matte elastomer and NBR grip
B60	B60 R7.12 cassette-mounted inverted worm gearmotor ENVELOPE - shaft upward	Satin motor housing

Named source parts 31-40

ID	Source component / procurement note	Specified appearance
B61	B61 shutter shaft hub D16 x 6, M3 set screw on the D-flat + 2 x M3 into the shutter boss (BUY/CUT)	Solid 316 stainless / brushed passivated
B62	B62 lid hinge gearmotor SLD-6A-S5 L40K (left, white shaft): 12 V, 4 N.m rated, slip clutch 8.8-13.7 N.m, pot 0.5-4.5 V, D12 shaft (BUY)	Technical polymer
B62	B62 lid hinge gearmotor SLD-6A-S5 R40K (right, black shaft): 12 V, 4 N.m rated, slip clutch 8.8-13.7 N.m, pot 0.5-4.5 V, D12 shaft (BUY)	Technical polymer
B63	B63 shaft coupler D20 x 40, bore D12, 2 x M4 set screws on the flats (BUY/CUT) - left	Solid 316 stainless / brushed passivated
B63	B63 shaft coupler D20 x 40, bore D12, 2 x M4 set screws on the flats (BUY/CUT) - right	Solid 316 stainless / brushed passivated
C01	C01 seat deck HDPE 15 (CUT SHEET, edges R3 routed)	Machined sanitary HDPE
C02	C02 commode lid: 15 birch-ply core, upholstered both faces, R40 corners (CUT + UPHOLSTER)	Embossed chocolate vinyl upholstery
C04	C04 cassette tray, steel 3 laser cut + bent (side flanges carry the slides), powder coated (CUT + BEND)	Powder coated S355 / fine anthracite orange peel
C05	C05 cassette lid HDPE 16 (CUT SHEET) - fixed, does not rotate	Machined sanitary HDPE
C06	C06 R7.12 CASSETTE-mounted sealed shutter deck HDPE 6	Machined sanitary HDPE

Named source parts 41-50

ID	Source component / procurement note	Specified appearance
C07	C07 front skin, lift-off, recessed buttons (VACUUM-FORMED ABS 3, rolled edges)	Vacuum formed warm white ABS
C08	C08 rear skin, lift-off (VACUUM-FORMED ABS 3, rolled edges)	Vacuum formed warm white ABS
C09	C09 side wrap skin L, R50 corners (VACUUM-FORMED ABS 3, rolled edges)	Vacuum formed warm white ABS
C09	C09 side wrap skin R, R50 corners, pipe grommet (VACUUM-FORMED ABS 3, rolled edges)	Vacuum formed warm white ABS
C10	C10 backrest shell, R80 top corners, R15 edges (VACUUM-FORMED ABS 3)	Vacuum formed warm white ABS
C12	C12 shutter, HDPE 6 cut, D210 disc + arm + cable sector (CUT SHEET)	Grey HDPE shutter, consistent service contrast
C13	C13 left equipment tray, steel 1.5 bent, hangs from left seat rail (CUT)	Powder coated S355 / fine anthracite orange peel
C15	C15 pail-drive swing bracket, steel 3 laser cut (CUT) - pivots about Z at (194,185)	Powder coated S355 / fine anthracite orange peel
P08	P08 solids funnel, seat opening to the D190 drop hole (PRINT PETG, smoothed + coated)	Machined sanitary HDPE
P09	P09 urine bowl, deep tapered, cone floor to spout (PRINT PETG, smoothed + coated)	Machined sanitary HDPE

Named source parts 51-60

ID	Source component / procurement note	Specified appearance
P14	P14 arm pivot guard L, R8 rounded (PRINT PETG)	Technical polymer
P14	P14 arm pivot guard R, R8 rounded (PRINT PETG)	Technical polymer
W01	W01 side frame L - RHS 25x25x3 rails + 25x25x2 posts (leg sleeves) S355, powder coated (WELD)	Powder coated S355 / fine anthracite orange peel
W01	W01 side frame R - RHS 25x25x3 rails + 25x25x2 posts (leg sleeves) S355, powder coated (WELD)	Powder coated S355 / fine anthracite orange peel
W02	W02 flip-up arm L - bent CHS 25.4x2.5 E355 + pivot sleeve + end cap	Powder coated S355 / fine anthracite orange peel
W02	W02 flip-up arm R - bent CHS 25.4x2.5 E355 + pivot sleeve + end cap	Powder coated S355 / fine anthracite orange peel
W03	W03 R7.12 SOLID 316 stainless offset agitator - rear of vertical drop path	Solid 316 stainless / brushed passivated
W04	W04 seat frame - RHS 25x25x3 S355: 2 cross rails + 2 bearers + 4 end plates + 2 backrest spigots, powder coated (WELD)	Powder coated S355 / fine anthracite orange peel
W05	W05 front base rail - RHS 25x25x3 S355 + 2 end plates, powder coated (WELD)	Powder coated S355 / fine anthracite orange peel
W06	W06 backrest U - bent CHS 25.4x2.5 E355 + lid hinge brackets + lid-cable stop tab, powder coated (WELD)	Powder coated S355 / fine anthracite orange peel

Named source parts 61-70

ID	Source component / procurement note	Specified appearance
W07	W07 leg extension 20x20x2 S355 x 220, 1 button hole, powder coated x4 (CUT)	Powder coated S355 / fine anthracite orange peel
X01	X01 PROPOSED proximity sensor envelope - front panel, not a selected part	Technical polymer
X02	X02 PROPOSED continuous flexible rubber liner retaining rim	Matte elastomer and NBR grip
Y01	Y01 R7.12 OPEN-BOTTOM removable HDPE liner guard - rotates with bin	Machined sanitary HDPE
Y02	Y02 R7.12 stationary PTFE-faced elastomer rotary face seal	PTFE faced seal / section contrast
Y03	Y03 R7.12 shutter deck compression spacers and captive 316 knobs	Satin plated hardware
Y04	Y04 R7.12 replaceable shutter lip seal and low-friction keeper pads	PTFE faced seal / section contrast
Y05	Y05 R7.12 316 motor cradle with through-bolt compression supports	Solid 316 stainless / brushed passivated
Y06	Y06 R7.12 upper shutter shaft, bushings and retained manual lever	Solid 316 stainless / brushed passivated
Y07	Y07 R7.12 sliding dog clutch sleeve - lift 10 mm for manual operation	Solid 316 stainless / brushed passivated

Named source parts 71-80

ID	Source component / procurement note	Specified appearance
Y08	Y08 R7.12 pail drive pivot bush, axial retention and motor flange fixing	Solid 316 stainless / brushed passivated
Y09	Y09 R7.12 welded drive-hanger stiffeners and spring-retraction handle	Powder coated S355 / fine anthracite orange peel
Y11	Y11 R7.12 50 mm inline fan ENVELOPE 110 x 55 x 50	Satin motor housing
Y12	Y12 R7.12 sealed carbon filter housing ENVELOPE - after fan	Smooth grey exhaust PVC
Y13	Y13 R7.12 rear exhaust couplers, 50.8 mm ID pipe	Smooth grey exhaust PVC
Y14	Y14 R7.12 rubber-isolated fan and filter frame brackets	Powder coated S355 / fine anthracite orange peel
Y15	Y15 R7.12 cassette headspace pickup and self-closing service port	Smooth grey exhaust PVC
Y16	Y16 R7.12 fixed suction hose to fan intake	Matte elastomer and NBR grip
Y17	Y17 R7.12 urine headspace branch with isolating service union	Matte elastomer and NBR grip
Y18	Y18 R7.12 cassette home latch and microswitch actuator flag	Solid 316 stainless / brushed passivated

Named source parts 81-85

ID	Source component / procurement note	Specified appearance
Y20	Y20 R7.12 removable low-rear filter shroud ABS 3	Vacuum formed warm white ABS
Y21	Y21 R7.12 flexible intake transition ID38 to ID50.8	Technical polymer
Y22	Y22 R7.12 fixed-side disconnect collar - pull down 35 mm before withdrawal	Technical polymer
Y23	Y23 R7.12 split 316 bin drive band BELOW bag fold - no bin penetrations	Solid 316 stainless / brushed passivated
Y24	Y24 R7.12 removable guard drive straps and lifting hooks 316	Solid 316 stainless / brushed passivated