

HO'OMALU



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Design Pack

PREPARED FOR ERIK HANSEN · HO'OMALU SEAT CO.

AMERI ASIA WORKS · 2026

US PATENT 12,527,415 B2 — "MUSICAL BOOSTER SEAT DEVICE"

DOCUMENT REV B

01 THE PRODUCT LINE

Two versions.

The Musical Entertainment Seat is the flagship Ho'omalulu product: a child sits on it and plays it directly. Five of the eight front buttons are each wired to one specific instrument inside, drums, guitar, xylophone, the Ferris-wheel bell chime, saxophone, press it and that instrument lights up and plays. The remaining three trigger bonus sound and light effects. No app required to use it. Version two, the Photo-Frame Music Box, is a companion keepsake for the nursery and has its own section later in this document.

"It's not an accessory. It's the seat — and it puts on a show."

VERSION 1

Musical Entertainment Seat

Button-operated. Battery powered. Portable.



APPROVED REFERENCE RENDER — DIRECTION FOR MANUFACTURING, REFINED DURING PRODUCTION. FINAL COLORWAY TO BE CONFIRMED SEPARATELY AS PART OF BRAND AND MARKETING DIRECTION.

The child operates it directly.

A row of eight chunky press-buttons runs across the front, each cap textured and molded with a learning symbol (X, triangle, 1-2-3, A-B-C) a toddler can feel and see. Five are wired one-to-one to an instrument inside the case, not a shared effect. Press the drum-kit button, the drums light up and play. Press the Ferris-wheel button, it spins into light and chimes. Same for the xylophone, the guitar, the saxophone. The remaining three buttons trigger bonus sound and light effects, extra play value without adding more instruments to the case. Three more buttons on the side handle power, volume, and song selection. No pairing, no setup, no phone required to use the seat.

Bluetooth is a separate, optional feature for a parent, not the way the toy is operated. It simply turns the unit into a standard Bluetooth speaker, mom or dad pairs their own phone and plays whatever music they want through it, no custom app, no melody library to build or maintain. Keeping this secondary, instead of the primary control method, is a deliberate cost and reliability decision: it means the core toy works the moment it's powered on, and the electronics inside can be built two ways depending on budget (see Section 06).



Press & Play

Five of the eight front buttons each trigger one instrument's light and sound directly, drums, guitar, xylophone, the Ferris-wheel chime, saxophone, the rest trigger bonus effects.



Side Controls

Power, volume, and song-skip live on three side buttons, simple physical controls a toddler can also use.



Bluetooth Speaker Mode

Pair a phone and stream your own music through the built-in speaker, standard Bluetooth audio, nothing custom. Not required to play.

03 DESIGN RATIONALE

The decisions behind the design.

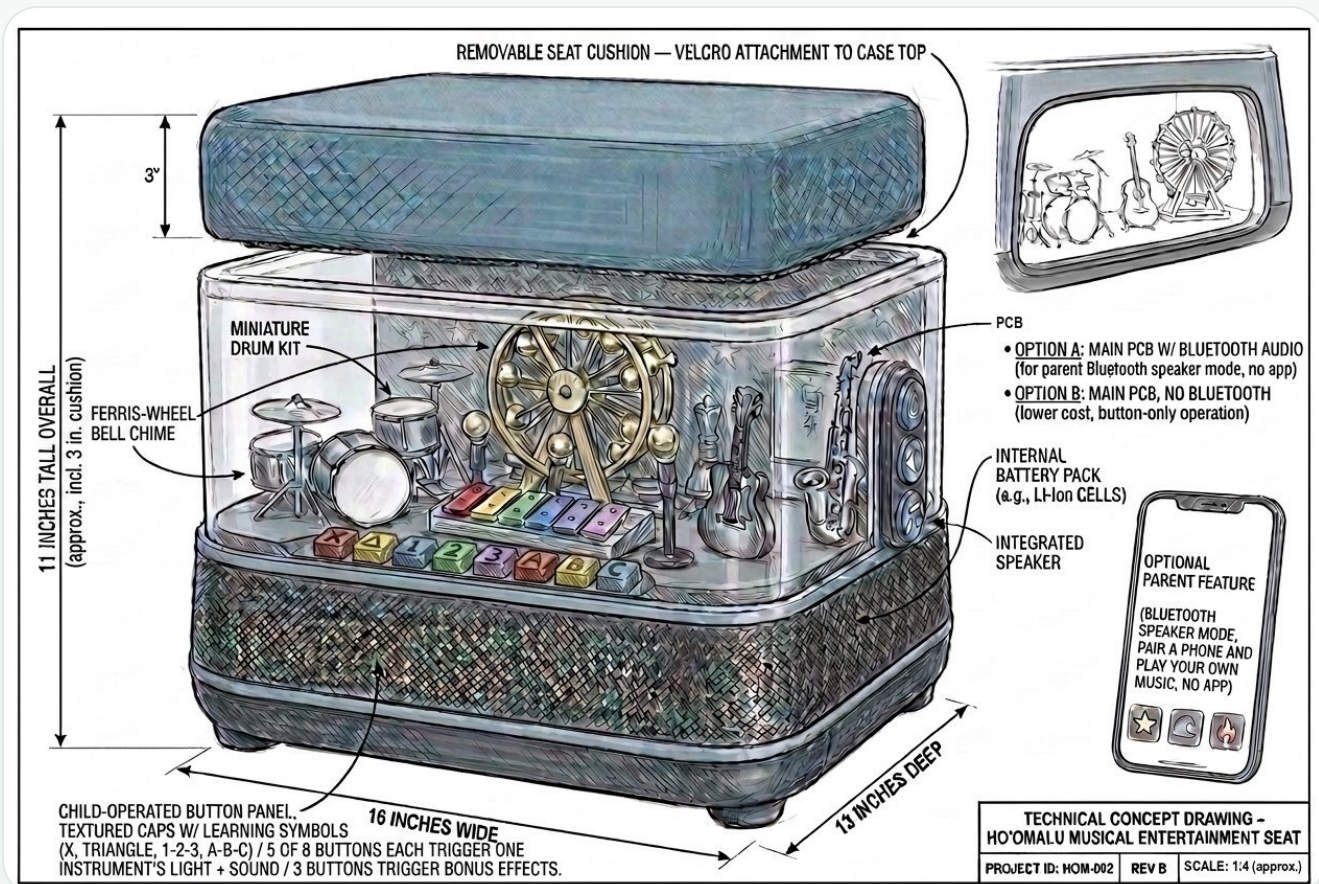
Every choice below was weighed against another way to build it. This is the short version of what we landed on, and why.

Physical button interface, primary	The core toy works instantly with no pairing and no phone, the single biggest reliability and cost win in this product.
Five buttons, five instruments	Five of the eight front buttons each wire to a single instrument's own light and sound circuit, drum kit, guitar, xylophone, Ferris-wheel chime, saxophone, each distinct and recognizable, not one shared, generic light show. The other three trigger bonus effects.
Removable flat seat cushion	A simple 3" cushion attached with a Velcro strip, no backrest, no harness, no armrests. Keeps tooling and BOM cost down versus a molded bucket seat.
Bluetooth as a standard speaker, not a custom app	No app to design, build, or maintain. Standard Bluetooth audio streaming lets a parent play their own music. Lets us offer a lower-cost, no-Bluetooth board as a second SKU tier (Section 06).
Wraparound clear window	The plexiglass window continues onto the side panel so the instrument scene is visible from more than one angle, not just head-on.

04 HOW IT'S BUILT

What's inside.

The exploded view below is the working reference for tooling and assembly, the callouts correspond to the parts list and the Bill of Materials in Section 05.



- 1 Removable seat cushion (Velcro attach)
- 2 Clear wraparound plexiglass window
- 3 Miniature instrument set (drum kit, Ferris-wheel chime, xylophone, guitar, saxophone)
- 4 Front child-operated button panel (8 buttons, textured caps w/ learning symbols)

5 Side control buttons (power / volume / song)

7 Integrated speaker

9 Internal battery pack

11 Injection-molded main housing

13 Non-slip rubber feet (x4)

6 Speaker grille vent

8 Main PCB (two options, Section 06)

10 USB-C charging port

12 Molded/printed branding on housing (no separate badge)

05 THE MANUFACTURING BRIEF

What it takes to build.

This section answers the two questions every factory rep asks before quoting a number: what does this actually cost to build, and what could go wrong.

The main housing is an injection-molded two-piece shell, upper and lower, that the wraparound plexiglass window seats into before final assembly. The instrument miniatures are molded or 3D-printed separately and set into the housing before the window goes in, each one wired to its corresponding front-panel button.

Electronics, speaker, battery, and the main control board, mount to a single internal bracket so the whole electronics package can be built and tested as one sub-unit before it's sealed inside the housing. A bad unit gets caught and swapped before assembly, not after.

Custom tooling is limited to the two shell halves and the button caps. Everything else, speaker module, battery pack, control board, is off-the-shelf. That keeps unit cost predictable and the tooling investment to a short list, not a dozen custom parts.

Bill of Materials

Upper/lower shell	Injection-molded ABS/PC blend, color TBD — custom tooled
Wraparound window	Clear acrylic/polycarbonate, custom cut — off-the-shelf material
Instrument miniatures	Molded or 3D-printed set (drum kit, Ferris-wheel chime, xylophone, guitar, saxophone) — glued/pinned in place
Front button panel	8x silicone/rubber press-buttons over a membrane switch array — custom tooled caps with tactile textures and learning symbols (X, triangle, numbers, letters), off-the-shelf switch film
Side control buttons	3x silicone/rubber buttons (power/volume/song) — off-the-shelf
Speaker grille	Perforated mesh vent, molded into lower shell
Seat cushion	High-density foam, removable fabric cover, Velcro strip attach — off-the-shelf
Speaker	Integrated speaker module — off-the-shelf
Battery	Rechargeable lithium pack, certified cell — off-the-shelf
Control board	Two options, see Section 06 — off-the-shelf hardware, custom firmware
Charging port	USB-C — off-the-shelf
Rubber feet	4x non-slip rounded feet — off-the-shelf

Branding	Molded or printed directly onto the housing, no separate badge or plate
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06

ELECTRONICS & COMPLIANCE

Two ways to build the board.

Because the buttons run the toy on their own, the control board can be built two ways depending on target price point. Both should be quoted.

OPTION A Main PCB w/ Bluetooth Audio Adds standard Bluetooth speaker mode: a parent pairs their own phone and streams their own music, no custom app. Higher BOM cost, positions the product at a premium price point.	OPTION B Main PCB, No Bluetooth Button-only operation, same lights and sounds per instrument. Lower cost, simpler compliance testing.
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Power & Connectivity Targets

Battery	3.7V lithium-polymer, ~2,000mAh rechargeable cell (~7.4Wh)
Charge time	~2 hours to full, via USB-C
Runtime	6–8 hours of typical intermittent play per charge (short button-triggered bursts, not continuous full-power playback)

Wireless (Option A only)

Bluetooth 5.0, A2DP audio streaming profile, ~30 ft / 10m range

Audio output

3W embedded driver

Targets, not final — factory to confirm against actual component sourcing. At a full 3W draw this cell gives roughly 2–2.5 hours of continuous playback, the 6–8 hour figure assumes normal intermittent button-press use, not nonstop full-volume streaming.

Certifications Required



FCC Part 15 — Option A wireless/Bluetooth (US)



CE marking — electronics (EU)



UL 2054 / IEC 62133 — battery safety



RoHS — restricted substances



CPSIA small-parts testing — children's product



ASTM F963 — general toy safety standard

07 THE DIMENSIONS

Front, top, side.

Approximate target footprint, factory to confirm final tolerances.

Footprint

16"W x 13"D

Height

~11" including the 3" seat cushion

Weight

~5–6 lbs, empty (rough estimate, shell wall thickness plus the wraparound acrylic window and electronics)

Full dimensioned front/top/side line drawings to follow as a separate plate. Weight is a rough estimate pending real tooling data, not a firm spec.

08 WHAT'S NEXT

From this document to a factory floor.

Three stages. This document is stage one.

01

Lock the Spec

This document, the design direction a factory can quote against. Complete now.

02

Move to Production

When you're ready, factory sourcing and a working prototype are scoped and quoted together, through Ameri Asia Works' overseas manufacturing partners.

03

Production

Final run, locked pricing, ready to ship.

Stages 2 and 3, the physical prototype and full production, are entirely optional and priced separately, only if and when you decide to go that direction. Licensing this design or selling the brand outright work just as well, and neither requires production at all.

09 TARGET SPECS

Direction, not final.

Shell	Two-tone ABS/PC, glossy finish, color TBD
Window	Clear acrylic/polycarbonate, wraparound
Cushion	High-density foam, removable, Velcro attach
Power	Rechargeable lithium battery, USB-C charging
Control	Buttons primary, Bluetooth speaker optional (2 board tiers)
Footprint	~16"W x 13"D

Every spec above is a starting point. Factory to advise on final approach.

10 WHAT WE NEED FROM YOU

The factory ask.

- Prototype cost and lead time
- Unit price at MOQ 100 / 500 / 1,000
- Tooling or setup fees, if any
- Cost delta: Option A (Bluetooth) vs. Option B (no Bluetooth) board
- Speaker / battery / control board sourcing options
- Certification needs (FCC / CE for Bluetooth + battery)
- Any construction concerns with the design

HO'OMALU



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Photo-Frame Music Box — Design Pack

PREPARED FOR ERIK HANSEN · HO'OMALU SEAT CO.

AMERI ASIA WORKS · 2026

COMPANION PRODUCT — VERSION 2

DOCUMENT REV B



APPROVED REFERENCE RENDER — DIRECTION FOR MANUFACTURING, REFINED DURING PRODUCTION.

A keepsake, not a toy.

No seat, no child-operated buttons. A hinged lid holds a printed sonogram photo behind a shatterproof acrylic cover, a simple, understated hinge, no ornate hardware.

Beneath the lid, a flat shatterproof acrylic mirror panel covers the electronics compartment, so opening the case never exposes raw components, just a mirror. The lit instrument window concept carries over from the Musical Entertainment Seat, here with a drum kit, guitar, and a small piano and keyboard, kept understated rather than bright, this is a bedside or shelf piece, not a plaything.

A parent runs it with three physical buttons and a volume dial on the top edge of the base: power, light, and music. The light button runs the soft glow inside the window on its own, so the same unit works as a bedside nightlight whether or not anything's playing. That's a real second function, not a side effect, for a product meant to sit on a nightstand. Bluetooth is optional, for streaming a phone through the speaker, never required to use it.

"A quiet keepsake that shares its DNA with the seat, doubles as a nightlight, without needing a child to operate it."

02 HOW IT WORKS

Three buttons, a dial, and a nightlight.

Parent controls three buttons on the top edge (power, light, music) plus a volume dial. Power button on/off. Light button cycles through soft colors (blue, white, red) with fade and twinkle effects; press and hold to step brightness. Music button scrolls through prerecorded lullabies. Optional Bluetooth pairs a phone for streaming audio, or the unit operates standalone with preloaded content.



Music Button

Press to scroll through prerecorded lullabies and sleepy music. Optional Bluetooth streams from a phone, or unit plays standalone content without connection.



Light Button

Cycles through soft LED colors (blue, white, red) with adjustable effects (fade, twinkle). Press and hold to step brightness. Works independent of music for true nightlight mode.



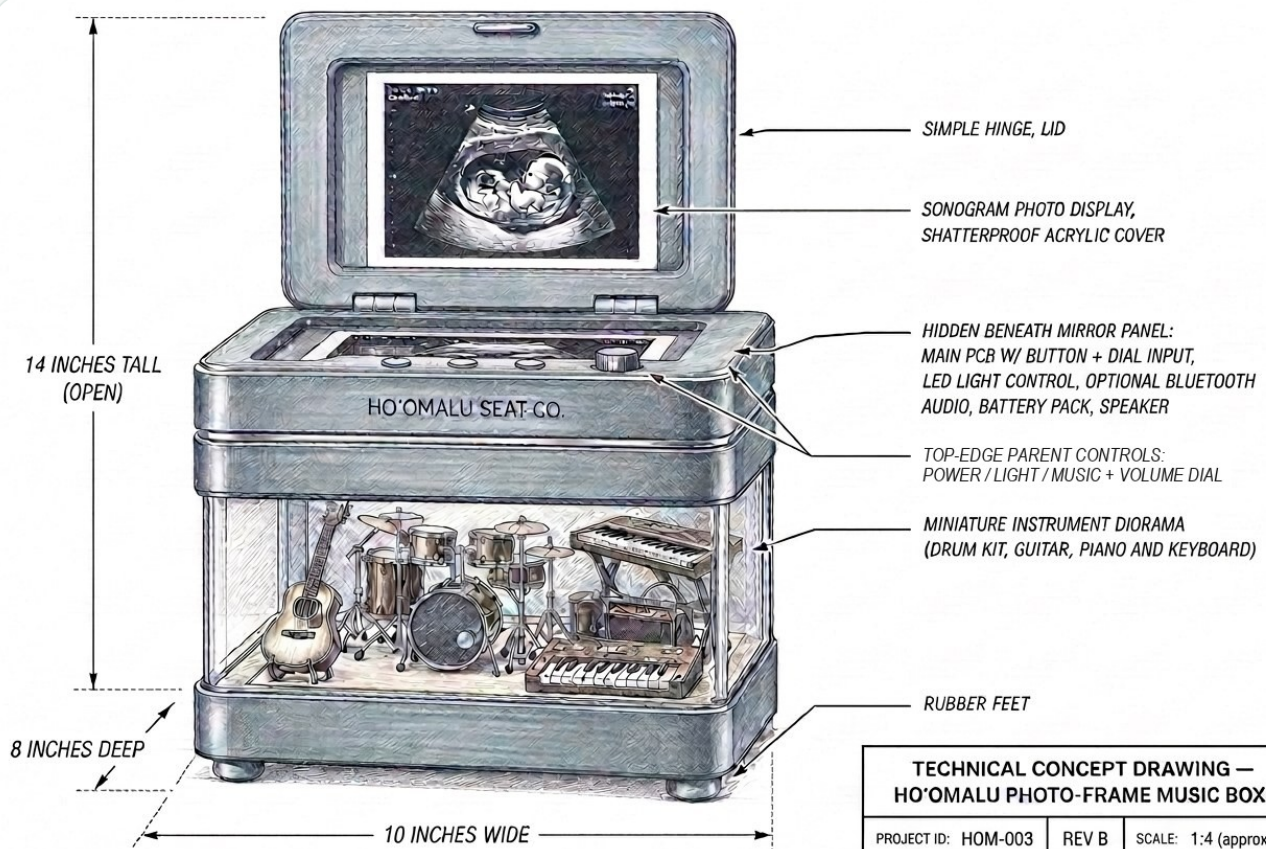
Safe by Design

No glass anywhere. The lid photo cover and the interior panel are both shatterproof acrylic. Buttons positioned on top edge, out of reach from crib/bed.

03 HOW IT'S BUILT

What's inside.

The exploded view below is the working reference for tooling and assembly, the callouts correspond to the parts list and the Bill of Materials in Section 04.



- 1 Hinged photo-frame lid, sonogram display
- 2 Shatterproof acrylic cover (no glass)
- 3 Shatterproof acrylic mirror panel, hides electronics
- 4 Clear front window
- 5 Main PCB: button/dial input, LED light control, optional Bluetooth audio
- 6 Internal battery pack
- 7 Integrated speaker unit
- 8 USB-C charging port
- 9 Miniature instrument diorama (drum kit, guitar, piano and keyboard)
- 10 Non-slip rubber feet
- 11 Top-edge parent controls: power / light / music buttons + volume dial

04 THE MANUFACTURING BRIEF

What it takes to build.

Custom tooling is limited to the case shell and the hinged lid. The mirror panel and acrylic photo cover are cut to size from off-the-shelf shatterproof acrylic stock, no custom mold needed there. Electronics, PCB, battery, speaker, mount to a single bracket hidden beneath the mirror panel and are tested as one sub-unit before final assembly.

Bill of Materials

Upper/lower shell	Injection-molded ABS/PC blend, navy — custom tooled
Hinged lid	Injection-molded shell + simple metal hinge — custom tooled
Photo cover	Shatterproof acrylic, custom cut — off-the-shelf material
Mirror panel	Shatterproof acrylic mirror, custom cut — off-the-shelf material
Instrument diorama	Molded or 3D-printed set (drum kit, guitar, piano and keyboard) — glued/pinned in place
Window	Clear acrylic/polycarbonate — off-the-shelf material
Speaker	Integrated speaker module — off-the-shelf
Battery	Rechargeable lithium pack, certified cell — off-the-shelf

Top-edge controls	3x tactile silicone buttons (power / light / music) + rotary volume potentiometer w/ knob — off-the-shelf
Control board	MCU w/ button and dial inputs, PWM channel for LED color and dimming; optional Bluetooth (A2DP) audio — off-the-shelf hardware, custom firmware
Charging port	USB-C — off-the-shelf
Rubber feet	4x non-slip rounded feet — off-the-shelf
Branding	Molded or printed directly onto the lid band, no separate badge or plate

Power & Connectivity Targets

Battery	3.7V lithium-polymer, ~2,500mAh rechargeable cell (~9.25Wh), larger than V1's cell since the nightlight can run unattended overnight
Charge time	~2.5 hours to full, via USB-C
Runtime, light only	~10–12 hours on a low-draw LED nightlight mode, enough for a full night
Runtime, audio playing	~2.5–3 hours of continuous audio playback at full volume
Wireless (optional)	Bluetooth 5.0, A2DP audio streaming profile, ~30 ft / 10m range
Audio output	3W embedded driver

Targets, not final — factory to confirm against actual component sourcing and real LED current draw.

Certifications Required

✓ FCC Part 15 — wireless/Bluetooth (US), only if the Bluetooth option is included

✓ CE marking — electronics (EU)

✓ UL 2054 / IEC 62133 — battery safety

✓ RoHS — restricted substances

✓ CPSIA small-parts testing — child-proximity product

05 THE DIMENSIONS

Front, top, side.

Approximate target footprint, factory to confirm final tolerances. Optimized for bedside nightlight and sonogram display.

Footprint	10"W x 8"D (compact nightlight profile, sonogram-sized)
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Height	~14" with the lid open
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Weight	~2–3 lbs, empty (rough estimate, reduced footprint with lighter case)
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Full dimensioned front/top/side line drawings to follow as a separate plate. Weight is a rough estimate pending real tooling data, not a firm spec.

06 TARGET SPECS

Direction, not final.

Shell Navy ABS/PC, glossy finish

Lid cover / mirror Shatterproof acrylic, rounded edges, no glass

Power Rechargeable lithium battery, USB-C charging

Control Three parent-control buttons (power, light, music) plus volume dial; Bluetooth optional

Footprint ~10"W x 8"D x 14"H (with lid open)

Every spec above is a starting point. Factory to advise on final approach.

07 WHAT WE NEED FROM YOU

The factory ask.

→ Prototype cost and lead time

→ Unit price at MOQ 100 / 500 / 1,000

→ Tooling or setup fees, if any

→ Hinge and mirror-panel sourcing options

→ Certification needs (FCC / CE for Bluetooth + battery)

→ Any construction concerns with the design

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