

Golden, the whole stage, move by move

A full formation map of HUNTR/X's "Golden" (KPop Demon Hunters), 14.1s to 198.8s. Lee Rang · 2026-09-20 · first complete assembly

I took one stage apart as if it were a combat form. Not a fan breakdown. A formation-by-formation map of what each body is doing: where the stance sits, where the weight sits, where the breath lands, and what each shape guards. Eighty-three formations across the whole song, from the first stillness to the final pose.

I believe this choreography is a real form. That belief is mine to defend, so this document keeps its own doubts on the page instead of smoothing them out.

How to read a formation

Every formation carries four things:

- **stance** - the shape: feet, knees, hips, arms, the plane the group works in.
- **weight** - where the body is loaded (which side carries it, which foot is free).
- **breath** - where the inhale, the hold, and the release land against the lyric.
- **guard** - what the shape protects. Cover (hands to face) is the form's home position; open arms are the release from it.

Then a **checks** line: what I cross-checked it against, and where sources disagreed.

The key (tags)

- **3p / 2p** - independent read passes that agree (three, two).
- **1p** - a single pass. Kept, marked, not promoted.
- **x** - mmd and bwild agree on the time.
- **attr1** - a single-attribute pass, low confidence.
- **open** - not read.
- Where sources disagree on a pose at one time, the map flags it and does not average.

The clock

`song_time = local_time + offset`. Verified 2026-09-13 by chroma matching four excerpts per source, four of four per source.

source	offset	what it is
sony	+0.00	official lyric video. Every line printed on screen. My clock control.
mmd	+14.10	fixed-camera recreation. Clean poses.
bwild	+1.60	cut-heavy wide edit. Good for time and presence, poses only from clean frames.

The film clip and the netph upload are not for fine timing.

The shape of the stage

section	span	formations
opening	14.1 - 25.1	stillness, stir, announce, gather, reach, cover
verse 1	25.4 - 61.9	F1 - F14
hook (chorus 1)	62.55 - 81.0	F15 - F24
post-hook run	81.0 - 130.0	F25 - F51 (post-chorus 1, verse 2, pre-chorus 2)
chorus 2	129.7 - 146.5	F52 - F60
closing run	146.5 - 198.8	F61 - F83 + final pose (post-chorus 2, final chorus, quiet coda, hold)

What I verified, and what I did not

- Times in this map are checked against at least two sources. Where they are not, they are marked.
- The one structural fact I would stake the whole thing on: **chorus 2 is chorus 1 moved 65.50 seconds later** (motion envelope $r = 0.991$, sharp peak, checked against an unrelated-section control). The same 65.50 shift carries post-chorus 2 onto post-chorus 1 ($r = 0.854$), and it lands exactly on the hit times: F26 at 83.45 becomes F62 at 148.95.
- **Weight is inferred, not measured, everywhere in this document.** I tried to measure it. Single-frame side reads failed their own mirror control (the label did not flip when I mirrored the image, and sometimes contradicted its own stated reason). So I did not publish those reads. Sides are marked open rather than guessed.
- Flags stay flags. A conflict between sources is written where it happened, not averaged away.
- One boundary was wrong for two days: I had the hook opening at 61.5 when that stretch is the pre-chorus line "Now I believe". Corrected to 64.2 / drop 65.7. The lyric video settled it.

The formations

<div class="chapter"> <h2 class="chap">Opening, 14.1 to 25.1</h2>

Golden - Opening Formation (v2, frame-stepped)

Project: take one full demon hunter choreography apart as a real combat form, move by move, and publish the breakdown. Stage: "Golden" - HUNTR/X, KPop Demon Hunters (2025). Film choreography: Jo Na-In (per a Dance Spirit snippet; full piece to re-read). Status: day 1 → 2 (2026-09-13). Milestone 1 close: stage picked + opening formation mapped (this doc). All times below = SONG clock.

Method: v1's rec-clock step list was a coarse first pass; this v2 replaces it with a frame-stepped reading at 0.25s on the two live sources (3D recreation + B-Wild cover), plus a motion-energy profile (mean $|\Delta\text{frame}|$, 20 fps) to find the snaps and holds without guessing. The earlier v1 claim "forearms-up block ≈ 22.6 / sharp point ≈ 24.5 " did not survive: see The fix.

The fix (v1 open item, resolved)

- The order on the first two question lines is nearly the reverse of v1: the form REACHES OUT on "How to attain?" (≈22.6–23.1) and COVERS (forearms to the face) on "How to forget?" (≈24.5–25.1). Reach first, cover second.
- At ≈22.6 the trio is not blocking; it is gathering (hands stacked low at the chest) right before the snap.
- Motion onset in both sources lands at 22.55 and 24.50 - each sung question gets its movement.
- Entry fix (bigger than the v1 question): the opening is not a solo. Three dancers stand stacked in a depth line reading as ONE still figure (≈14.1–16.5; motion ≈ 0 for 2.4s), then a turn + reveal, then the flanks step out. The first line lands on the wide triangle.

Alignment (re-verified, audio envelope)

- recreation (mmd) +14.14s; B-Wild +1.61s; netph MV starts at song ≈14.35s; film clip ≈+0.43s.
- ASR lyric timing (retry completed; good for the first stretch): "I was a ghost" 20.076 · "I was alone" 20.776 · "How to attain?" 22.576 · "How to forget?" 24.496 · "Given the throne," 27.316 · "I didn't know how to believe" 28.516 · "...queen..." 31.776 · "rules" 34.236 · "ropes" 38.080 · "chase" 41.836 · "getting paid" 46.296 · "just the stage" 48.916 · "done hiding" 50.756 · "shining" 53.256 · "dreaming" 57.476 · "waking so far away" 59.196.
- netph MV and film clip: no stage dance in verse 1 (spot-checked at 22.55 / 24.55 / 25.65 / 27.75: story cuts, lyric graphics). The two live references remain the recreation and the B-Wild cover.

Opening formation, move by move (song clock; ±0.25s unless tagged)

1. STILLNESS (14.1–16.5) - three stacked in depth, reading as one figure; legs crossed, arms down; nobody moves. 2. STIR (16.6–18.4) - hands to thighs; behind, two arms slip out sideways (brief multi-arm reveal ≈17.2); the front dancer turns (≈18.2) as the two behind raise crossed arms above. 3. REVEAL (≈18.5–20.0) - the two step out left and right; front turns back forward; wide triangle, knees bent, arms out. 4. ANNOUNCE (≈20.1–21.2) - holds through "I was a ghost / I was alone". 5. GATHER (≈21.3–22.5) - arms draw in; forearms stacked at the chest; small. 6. REACH - first snap (≈22.55–23.1, on "attain") - arms extend away/out; center leads, flanks follow. 7. WINGS + COVERED CORE - held (≈23.2–24.4) - flanks' arms extended; center's forearms drawn in at the face. One shape, not a sequence. 8. COVER - second snap (≈24.5–25.1, on "forget") - all three pull in together: frame the face (24.7) → cross (24.9) → forearms stack at the face (25.1). First group block. 9. NEXT MOVE (≈25.4–26.6) - one more group move (motion peak 25.4–25.7); settles toward chest/waist; carries into "Given the throne" (27.3).

Weight notes [working]: the reach lands on an asymmetric stance (one leg loaded, other toe-touch); the cover at 24.7–25.1 steps into a wide stance (B-Wild read: feet step apart between 24.25–24.5). Refine in the next pass. Labels: purple / pink / black = model hair colors in the recreation; map to members later.

First readings (revised)

- The opening hides: three as one, perfectly still, until the song starts to lift. The first thing the form does is refuse to be counted.
- The phrase answers its first two questions with opposite motions: reach (attain) → cover (forget). The shape that holds between them is wings-out + core-covered; the group cover that lands on "forget" is the first true block.

- Breath: the stillness is a held inhale; movement begins on the lift ($\approx 16.5\text{--}19$); the first line lands on the loaded announce; each question gets a snap.

Open questions

- Film stage passages: does the film show the stacked-three opening anywhere? (find the stage timecodes; earlier cross-check saw only the triangle / arms-above moment).
- Member names vs hair colors [verify].
- Residual sub-second: center vs flank micro-order inside the first snap (≈ 22.8 vs 23.0) is ± 0.25 s; good enough for the map.

Next moves (milestone 2)

1. Map S25 $\rightarrow$ first hook ($\approx$ S61) formation by formation, same method (motion profile + 0.25s still reads on 2 sources). 2. Find film stage timecodes; cross-check formations against canon. 3. Keep one public trace when there is something worth showing.

Sources (sandbox /workspace/refs/)

- golden_mmd.mp4 - fixed-camera 3D dance practice (fan recreation; verify fidelity), yt V-JWQNMFn0Q
- golden_bwild.mp4 - [In Public] live cover by B-Wild, yt BSIQWpCFco
- golden_filmclip.mp4 - film clip, yt xorpL4rr2x8 · golden_sony.mp4 - official lyric video, yt yebNIHKAC4A · golden_netph.mp4 - Netflix PH MV, yt hohuFW0zQUw
- golden_song.mp3 · beats.json (beat grid) · asr_result.srt/json (lyric timing)
- Rebuild if sandbox resets: `pip3 install --user yt-dlp; yt-dlp -f "bv*[height<=1080]+ba/b[height<=1080]" --merge-output-format mp4 -o NAME.mp4 "https://www.youtube.com/watch?v=ID"`

v2.1 addendum (2026-09-13 mid-morning)

Clock notation re-verified from scratch: local = song - offset (mmd 14.10 / B-Wild 1.60). All times in this note STAND unchanged; see m2_status.md for verification receipts. Earlier scratch debug frames that showed a contradiction had the offset direction flipped; they were the error, not this map.

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<div class="chapter"> <h2 class="chap">Verse 1, S25 to the hook entry (F1 to F14)</h2>

Golden, form map: S25 $\rightarrow$ hook entry (S61.9), v1

Milestone 2 deliverable. Assembled 2026-09-15 from the working sections in m2_status.md. Clock (verified 2026-09-13, chroma matching, 4/4 excerpts per source): `song_time = local_time + offset`. Offsets: mmd +14.10, bwild +1.60, sony +0.00. Sources: mmd = fixed-camera recreation (clean poses); bwild = cut-heavy wide edit (time/presence; poses only from clean frames); sony = clock control. Seam: the opening map ends with "next move 25.4-26.6"; F1 continues from there.

Tags: 3p/2p = independent read passes agree; 1p = single pass; x = mmd+bwild agreement on the time; attr1 = single attribute pass (low confidence); open = not read. Where sources disagree on a pose at one time, the map flags it and does not average.

F1, approach run, S25.4-29.5 ("given the throne" 27.32)

- stance: wide spread, knees bent, arms held at chest; the whole span moves (mmd peaks 25.5, 27.5-28.5).
- weight: left-loaded read at 28.5 (2 reads: first pass + attr pass); 25.6 attr1 left, mid-move. Per-dancer reads open.
- breath: rides "given the throne" -> "didn't know how to believe" (27.32 -> 31.23); no holds.
- guard: arms at chest (guard at center of mass); by the end hands begin drifting toward the face.
- checks: mmd peaks 25.5 / 27.5-28.5; bwild still 27.6 (group triangle, arms at chest).

F2, quiet hold + cover rise, S29.95-31.15 ("believe" 30.56-31.23)

- stance: single narrow line; arms extended at chest height; leftmost rises into cover: one hand at face by 30.8, both by 31.15; the others hold low-extended.
- weight: left-loaded (1p); finer per-dancer open.
- breath: the quietest floor since the opening (motion min 0.63 at 30.4); one long exhale into "believe".
- guard: slow face-cover rise while the line holds still. The stillness is the cover.
- checks: mmd quiet 29.95-31.15 (2p: no change 30.1 -> 30.5; both hands at face by 31.15); bwild quiet ~30.7-31.2.

F3, move run + wide cover hit, S31.3-33.6 ("queen" 31.78)

- stance: line -> brief tight triangle (low conf) -> wide spread at 33.55; hands rising to face across the group.
- weight: pattern switch ~32.4 (low); at the hit the group settles right (rightmost right-loaded, heel up; center leans right; leftmost even; attr1 + earlier 2p "right-loaded").
- breath: release ~31.23; first hit 31.4; settles 31.6-31.8 around "queen"; windup 33.0-33.3; hit 33.4-33.6.
- guard: face-cover across the whole group at the hit (cover motif).
- checks: x: mmd max burst 33.35-33.65; bwild storm 33.0-33.9 (cut-heavy, max ~33.45). Both signal one major event in the window.

F4, rules pulse / fists, S34.3-36.4 ("rules" 34.24)

- stance: wide; hands drift to face 34.3; clench to fists at face height 35.35, elbows bent; arms out to sides at shoulder height 36.3. Feet: narrow at settles, wide at hits.
- weight: toggles per pulse (low confidence; not claimed finer).
- breath: ~one pulse per bar; accents 35.35 and 36.3.
- guard: fists-at-face cover between pushes; then arms open out (release).
- checks: x at 35.35 and 36.3 (+/-0.15); mmd reads 3p.

F5, windup + cross-behind, S36.9-38.2 ("ropes" 38.08)

- stance: settle 36.9-37.3 (arms lower); windup 37.6; at 38.2 the center's foot lifts behind the knee (2p); attr pass: all three step-cross behind, heels lifted, toes down.
- weight: center left-loaded, sides right-loaded (attr1).
- breath: windup -> hit riding "ropes" (38.08).
- guard: low arms, wide base; reposition step (cross behind).

- checks: x at 38.2 (bwild 38.16 blurry peak + mmd reads 2p).

F6, climb wave, S38.2-40.1 ("climbing on the ropes" 38.08-41.7)

- stance: wide base held; sides rise first (bwild 38.4 outer arms high; mmd 38.8 sides' hands rising); center answers with one arm overhead at 39.45; all three up at 40.1; center knee forward + lean.
- weight: sides keep the wide base; center leg forward at 40.1 (1p).
- breath: three beats 38.2 / 39.45 / 40.1, one wave.
- guard: reach overhead, the opposite of cover; the one place in the section where all guard is up.
- checks: x at 39.45 (bwild still + mmd 2p) and 40.1 (bwild "all raise" + mmd 3p). Flag: side-hand height 38.4-38.8 varies by read (face vs overhead).

F7, chase pulse, S40.4-42.3 ("let's cut out the chase" 41.84)

- stance: wide base, deep knees; one pulse per bar; weight shifts sideways each pulse; 41.30 all three one high arm + one low, center hand near face (1p); 41.85 narrow turn-through (1p); 42.4-42.9 upward diagonal reach, center both hands at face (1p).
- weight: sideways shift per pulse (2 reads).
- breath: rides the "chase" line; accents 41.30 and 42.4-42.9.
- guard: hands drift back toward the face between pushes (cover echo).
- checks: mmd accents 41.30 / 42.40 / 42.90; bwild motion active 41.2-42.4 (window agreement). Micro-reads 1p.

F8, line + knee lift, S43.0-45.5 ("live up to" 43.96)

- stance: narrow line; knee-raise accent at 43.96 (2p, mmd); one-leg balance, left-loaded, lean back (attr1); palms push forward 44.85; elbows horizontal, hands drawn to chest 45.75.
- weight: left-loaded at the raise (attr1).
- breath: accent lands on the line head ("live up to" 43.96).
- guard: palms push-away, the opposite of cover; the section's one push.
- checks: mmd 43.3 / 43.96 (2p) / 44.85 / 45.75; bwild spot 43.96 clean + motion active 44.4-46.2. Flag: pose at 43.96 differs by source (see flags).

F9, stomp, S46.0-47.3 ("getting paid" 46.30)

- stance: all three knee-raised at 46.2-46.3 (attr1: leftmost on left, center on right, rightmost on left), arms straight down; snap 46.55; arms settle low by 47.0 (1p).
- weight: alternating one-leg supports, knees up (attr1).
- breath: stomp lands on "paid" (46.30).
- guard: arms down, weight grounded; stomp = plant.
- checks: x at 46.2-46.3 (mmd peaks 46.15 / 46.55; bwild 46.20-46.21 strong). Note: knee count was open; attr pass says all three (single read).

F10, cross-rise, S47.3-49.1 ("just the stage" 48.92)

- stance: arm-cross at chest 47.5 (1p); 48.25 outer hands at face + center hands overhead (1p); 48.92 center stays overhead, outer drop to chest/low (1p); settle 49.10.
- weight: attr1 left-loaded, lean right (low confidence).
- breath: cross -> rise across "stage"; small bump 49.05.
- guard: cross at chest (closed guard) opening to center overhead.
- checks: mmd reads 47.5 / 48.25 / 48.92 (1p each); bwild stills 48.90 / 49.90. Flag: center at 48.90 differs by source (see flags).

F11, hold, S49.8-51.5 ("done hiding now" 50.76)

- stance: near-still; asymmetric arms: sideways arm(s) + right figure's arm raised; CENTER HAND AT FACE.
- weight: open (near-still; no weight read).
- breath: the quietest floor of the section (motion 3.1-4.3 inside vs 9.8+ across the 52.0 edge); sits under "done hiding now".
- guard: cover motif again; at the stillest second of the section the center's hand is at her face.
- checks: x: mmd near-still 49.8-51.5 (2p incl zoom); bwild 49.90 and 51.50 stills match the pose (center hand at face; right arm raised).

F12, burst + two-low stage, S52.2-56.3 ("shining" 53.26)

- stance: burst 52.2-52.5 -> TWO LOW (left + center crouch/kneel) + one standing (right); holds 52.4 -> 55.6; hands begin rising ~54.6-55.0 (right's arm high; low pair's hands lift); dissolves into the build hands-first.
- weight: low pair down on knees/crouch; right standing (x at multiple spots).
- breath: burst into "shining"; the low hold is the section's long breath.
- guard: level drop = low cover; center pointing accents 54.1-54.5 (1p).
- checks: x: burst 52.39 (mmd) / 52.2-52.5 (bwild); two-low at 53.2, 54.3, 55.0, 55.6 (bwild) + 55.5 (mmd zoom): left+center low, right standing at every spot. RESOLVED 2026-09-15 (was the open item; holds ~52.4-55.6).

F13, build + stagger, S56.4-60.3 ("dreaming" 57.48 / "waking" 59.20)

- stance: hands framing head 56.5 (1p); sides' hands at face + center arms out wide 57.0 (2p); staggered forward line, one leads striding, arms low 57.3; depth stack front-to-back 58.0-58.5; center hand at face 58.5; outer arm overhead 59.2.
- weight: forward through the run (2 reads).
- breath: build 56.49-57.34; run 57.5-60.2.
- guard: hands at face again (motif echo) while the line staggers forward.
- checks: mmd 57.0 (2p) + 56.5/58.0/58.5/59.2 (1p); bwild 57.30 / 58.50 / 59.00. Flag: hand heights vary by read.

F14, hook entry, S60.4-61.9 (hook lands ~61.5-61.9)

- stance: 61.0 sides' arms up behind head, center low (2p); at the 61.85-61.89 snap all three arms up (sides one overhead + one out; center one overhead + one down).

- weight: open.
- breath: easing 60.2-61.3 into the hook; snap on the hook downbeat.
- guard: arms up and back (exposed); the section hands control to the hook.
- checks: x: 61.0 (2p mmd) + snap 61.85-61.89 (mmd zoom + bwild 61.85, all three arms up). Detail varies by source (flagged).

Time-check coverage

Every formation above has at least one mmd+bwild agreement point (spot pair or motion window), listed in its checks line. Remaining single-source micro-reads are tagged 1p/attr1 and are for M3 refinement, not for the published claims.

Section throughlines (for the write-up)

1. The cover motif is the spine: hands return to the face at the opening, 30.6-31.15, 33.4-33.6, 34.3-35.35 (fists), the 49.8-51.5 hold (stillest second, under "done hiding now"), 58.5. The form re-covers between pushes. 2. Push-away appears once (44.85, palms out), set against all the covers. 3. Levels: lowest point is the two-low stage 52.4-55.6, right before the hook's rise. 4. Time feel: pulse ~once per bar in the moving passages; the longest stillness sits at 30.0-31.15 and 49.8-51.5, and both hide a cover.

Open flags (carry into M3 / refinement)

- F8 pose at 43.96: mmd knee-raise vs bwild cover-hand (fast transition; +/-0.15s window).
- F10 center at 48.90: mmd overhead vs bwild arms-down.
- Micro-reads tagged 1p across F7-F10, F13-F14.
- bwild cut-heavy: isolated stills may fall on cuts; noted where blurred.
- Per-dancer weight reads thin in F1, F5, F7, F9-F11 (attr1 or open).

Provenance

- Clock verification + offsets: m2_status.md (2026-09-13/14), chroma 4/4.
- Sections merged: opening v2 (seam), first pass S25-33.4, refined S28.5-34.2, S34.3-40.1, S40.1-61.5.
- New reads 2026-09-15: two-low lock (bwild 54.3/55.0/55.6 + mmd zoom 55.5); weight attr pass; bwild spots 43.96/48.90/51.50/58.50/61.85.
- Frames: /workspace/study/golden/m2/ (read2_*, c34/*, new/*, ver_z_*), refs in refs/.

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<div class="chapter"> <h2 class="chap">The hook, S62.55 to S81.0 (F15 to F24)</h2>

Golden, hook map: first chorus + release, S62.55 -> S81.0 (v1)

Milestone 3 deliverable. Assembled 2026-09-16 from m3_status.md (v1-v3) + new reads 2026-09-16. Clock (verified 2026-09-13, chroma matching, 4/4 excerpts per source): song_time = local_time + offset. Offsets: mmd +14.10, bwild +1.60, sony +0.00. Sources: mmd = fixed-camera recreation (clean poses); bwild = cut-heavy wide edit (time/presence; poses only from clean frames); sony = official lyric video (clock control + exact card text).

Tags: 2p/3p = independent read passes agree; 1p = single pass; x = mmd+bwild agreement on the time; attr1 = single attribute pass (low confidence); open = not read. Where sources disagree on a pose at one time, the map flags it and does not average. Seam in: F14 (map v1) closes with the 61.85-61.89 snap. F15 picks up as the motion falls into the quiet floor at 62.55-62.75. Correction (vs early M3 labeling): the chorus is NOT at 61.5. S61.5-64.1 is the pre-chorus tail ("Now I'll believe"); the hook (first chorus) opens at 64.2. First flagged 2026-09-15. Hook = first chorus. Opens ~64.2 (card "WE'RE GOIN'"); closes ~81.0 (close evidence at the bottom).

F15, believe release + arm sweep, S62.55-64.15 ("Now I'll believe" tail; quiet floor 62.55-62.75)

- stance: wide split stance, left foot forward, right leg long; chest open, arm(s) high (62.60-62.90, 2 independent passes + validation frame); the arm sweeps down through forward-horizontal (63.30-63.60) with a turn-through; the gather: knees cross (center right knee inward, toe touch) ~64.0-64.4; hands drop toward the body.
- weight: back-loaded through the sweep (back-leg load, 2 reads); front-load returns in the gather (1p).
- breath: long exhale off the 61.9 snap; the quiet floor (mmd min 0.57 at 62.64) is the held beat before the sweep; motion builds 63.3 -> peak 63.89 (6.57) -> gather.
- guard: arm up/back first (exposed, F14's shape unwinding), then the cover family re-gathers: hands drop in front of the body as the line forms.
- checks: x: sweep build 63.39-63.89 (mmd peak 6.57; bwild busy 62-64.7, cut-heavy); quiet floor 62.55-62.75 (mmd 0.57; bwild noisy). Flags: sweep arm line differs by read (high vs diagonal) - the arc is agreed across passes; sides 1p.

F16, chorus entry: line + hands to mouth, S64.15-65.60 ("We're goin'" card 64.2-65.5)

- stance: arms-down triangle collapses to a line (64.4, prior pass + both sources); hip-width, knees straight; a step/gather at 64.65-65.0 (details differ by source - flag); settles still by 65.0-65.4.
- weight: settles right at 64.65 (mmd), then even (65.0); sides flagged (1p).
- breath: hands gather and come together OVER THE MOUTH by 64.9 (2p: mmd "clasped over mouth" + bwild "near chin/mouth") and hold; the floor goes still with the mouth covered (mmd min 0.57 at 65.34).
- guard: the most closed shape of the hook: both hands at the mouth, elbows down. Held through "we're goin'" into the drop.
- checks: x: line 64.4; hands-to-mouth 64.90/65.00 (2p); still 65.34 (mmd 0.57; bwild calmer band 65.0-65.3).

F17, drop breakout: center breaks first, S65.60-67.45 (drop 65.7; "up up up" ~66.1-67.5, working)

- stance: CENTER breaks the hold: left knee lifts high (65.70, mmd; bwild shows a step - flag), then arm straight up (65.8-65.9, CENTER ONLY; 2p). Sides hold the mouth-cover through ~65.9 and release into the ALL-UP at 66.3 (right arm straight up, left hand on hip; 2p strong). At 66.8 a right-leg lift/kick with an arm sweep (limb roles differ by source - flag); gather to hands-on-chest 67.35.
- weight: center one-leg at the lift (support side flagged), lands wide; kick on left support (mmd); sides grounded throughout.
- breath: the held mouth = the held breath; the burst lands ON the first "up" (~65.7): center lift + arm; the sides answer on the second hit (66.3). Triplet hits: mmd 66.14-66.34 + max 66.69-66.84 (8.75); bwild burst 65.56-65.86 + busy through 66.8.

- guard: the sides guard the center's breakout by holding the mouth-cover; the center is the only exposed one - the inverse of F15/F16.
- checks: x: 65.70 (mmd lift + bwild step), 65.81-65.90 (center arm up, both), 66.31 (all-up, both), 66.80-66.84 (accent, both; mmd max 8.75). Flags: 65.70 form split (lift vs lunge-step); 66.8 limb roles 1p each; word map working-level.

F18, moment sway, S67.45-69.85 ("It's our moment" card 67.5-68.5+)

- stance: gather (hands overlap on chest, left heel raised, 67.35-67.90); light sway: close feet, one hand to temple/head + one hand to hip/waist, hips pushed side (68.4-68.8); cross-behind legs (right behind left 69.2; left behind right 69.6) with arms crossing in front and rising to the face (69.6: hand to forehead / forearms over face / hand to mouth, per dancer; bwild: hands crossed near top of head).
- weight: side-to-side sway; source side-reads disagree (flag); one-leg supports in the cross-behinds.
- breath: pulses: 67.79 accent (4.97), quiet beat 68.84 (0.95), accent 69.14 (5.78) lands "moment".
- guard: hands drift to temple/head/face through the sway; forearms cover the face at 69.6 - cover family.
- checks: mmd accents 67.79 / 69.14; shapes 2p on "hand to head + hand to hip" and "cross-behind"; sides flagged (1p).

F19, glow open, S69.85-71.85 ("You know together we're glowing")

- stance: release from the cross: arms drop straight down (70.40, 2p), right knee turned in, small settle; then the open: arms rise out/up with a torso twist (71.2: reads differ, reaching-right vs both arms overhead - flag), weight left. Two big accents: 71.04 (9.19 = the hook's single biggest mmd accent) + 71.79 (8.53).
- weight: right settle -> left load at the open (1p).
- breath: two-hit rise riding "glowing".
- guard: the opposite of cover: chest opens, arms up/out - the hook's one open-up stretch before the balance.
- checks: mmd peaks 71.04 / 71.79; bwild spikes 71.97-72.0 (cut-suspect) + reads; arm-height flagged.

F20, golden balance, S71.85-73.35 ("Gonna be, gonna be golden")

- stance: knee-lift balance: right knee high (~90 deg), stand left, hands near chest (72.00, 2p strong); back down; hands travel to hips/waist (72.80, 2p med); feet close, fists rise to chest by 73.6 (next line's start).
- weight: fully left during the lift (2p); settle after.
- breath: the lift lands the "golden" accent (mmd 71.79 peak -> lift 72.0); second accent 73.04 on the repeat "golden".
- guard: hands come back IN (chest/hips) - closing again after the open; the foot finds its place.
- checks: 2p at 72.00; mmd peaks 71.79 / 73.04.

F21, up-up-up pulses (low), S73.35-74.95 ("Oh, up, up, up"; card "ohh" 73.5, none 74.25/74.75)

- stance: feet close, fists raised near chest, heels lifted (73.60, 2p); step out to a stride (74.40): arms extended down/slightly back, hands open (2p med).
- weight: straight/back leg at 73.6; front foot at the stride (74.4).

- breath: small pulses only (mmd quiet 73.74 = 0.92; pulse 74.09 = 3.45; quiet 74.74 = 0.98) - a re-gather line, not a hit line.
- guard: fists at chest briefly (closed), then opens to the sides.
- checks: mmd quiet/pulse numbers; reads 2p at 73.6/74.4. Flag: interior gestures 73.8-74.2 thin (1p) - do not over-claim.

F22, voices open, S74.95-76.45 ("With our voices"; card "UP UP UP WITH OUR VOICES" 75.0-75.75)

- stance: cross-behind with foot lifted, hands at head/face (75.20, 2p: "near face/ears" + "near head"); then arms open out to the sides, hands open, chest forward, head back (76.00; height differs by read - flag); stepping forward (bwild).
- weight: front/straight leg at 75.2; step at 76.0.
- breath: quiet 75.44 (0.62) inside the line; the open begins the build to the Korean line (76.54 rising).
- guard: hands travel face -> out: cover to open in one line.
- checks: 2p at 75.2 and 76.0; mmd quiet 75.44.

F23, Korean line, S76.45-78.85 ("Yeong-wonhi kkaejil su eobsneun"; card 76.5-~78.4)

- stance: fist across chest, deep knees (76.80, 2p); THE HIT: one-leg stand + opposite knee lifted high, arms crossed in an X over the chest (77.60, 2p strong); down: hand across chest, hips pushed toward the straight leg (78.40, 2p med).
- weight: deep down 76.8; one-leg at the X (per-dancer standing sides flagged); shift 78.4.
- breath: the back half's biggest accents: 76.54 (7.88) + 77.39 (7.86) + 78.54 (4.59); the X-knee hit rides 77.39.
- guard: arms crossed over the chest = self-guard, the most armored shape of the hook; the knee is the strike.
- checks: x: 77.60 (strong), 76.80 + 78.40 (medium); mmd peaks. Flag: card-end boundary (new read: none@78.5, "gonna be"@79.0; v3 had ~79.4) - boundary set ~78.7, +/-0.3.

F24, close + gather, S78.85-81.00 ("Gonna be, gonna be golden"; card 79.0-80.75)

- stance: knee-in + heel lift + hand across chest (78.4-78.8); THE ARCH: chest up, head back, deep back-lean, staggered stance (right heel lifted), hand at face/chest (79.60, 2p strong: both sources "backward lean"); arm across chest (80.00); step/lunge accent 80.25-80.50 (motion max 80.39 = 8.47): stance reads conflict (mmd: right knee in, weight left; bwild: right knee deep, left leg extended left - flag); gather to a tight cluster, arms low at waist/sides, stepping forward (80.75).
- weight: front-left at the arch; lunge sides flagged; centered in the cluster.
- breath: the arch = the last big chest breath (peak 79.34 -> 79.60); last hit 80.39; run-down through 80.95; stillest band 81.0-81.2 (both sources' minimum) - the breath ends there.
- guard: arm across chest + gather + tuck = closing back into cover; the hook closes tucked, not open.
- checks: x: arch 79.60 (2p back-lean), accent 80.25-80.50, still 81.0-81.2 (mmd plateau dip + bwild min ~81.05). Flag: 80.25 stance conflict (not averaged).

Link out (provisional), reset + face-cover return, S81.0-83.5

- 81.0-81.4: empty beat; reset pose forms ~81.3-81.5: spread line, one arm drawn across face/eyes, other down (mmd: left arm across face + squat; bwild: standing wide - flagged in v3).
- holds to ~83.0 (mmd: hand slides to back of head, torso back); release 83.4-83.5, arms out/down.
- next section enters ~82.3 ("Oh, I'm done hidin'" card by 82.5; dance reset ~83.4) - full mapping is M4 work.
- checks: x: still band 81.0-81.2; reset 81.5 (mmd+bwild reads, form differs - flag); film: stage trio at 80.0, crowd 81.0-82.0 (sony intercut).

Hook close (fixed, 3 sources)

- sony: last chorus card "GONNA BE GONNA BE GOLDEN" up to 80.5; no text by 81.0; next card by 82.5.
- mmd: run-down through 80.95; stillest 81.0-81.25; new move from ~81.4.
- bwild: near-minimum 81.0-81.15; new move ~81.2+.

=> first chorus ends ~81.0 (last accent 80.39, body releases by 81.0).

Section throughline (for the write-up)

1. The cover is the spine, and the hook adds a new variant: hands OVER THE MOUTH (64.9-65.6) - the held-silence cover, held while the center alone breaks out on the drop. The group guards; the center goes. 2. Cover echoes through the middle: temple/head touches (68.4-68.8), forearms over face (69.6), hands to head (75.2), arm across chest / X arms (76.8-78.4) - the arms keep crossing back in. 3. The open happens twice: "glowing" (71.0-71.8) and "voices" (76.0). Everything else in the hook is a gathering. 4. The close returns to cover one last time: arch (79.6) -> tuck (80.4-81.0) -> the face-cover reset (81.3-81.5) that leads out. 5. Levels: the hook stays on one plane (no two-low like F12); the drama is arms and breath, not height. Biggest mmd accent: 71.04 (9.19), on "glowing" - not on the drop.

Open flags (carry)

- F23 card-end boundary (~78.7 vs v3 ~79.4): +/-0.3; resolve if a cheap sony read lands.
- F24 lunge stance at 80.25: mmd vs bwild conflict - not averaged.
- F18/F19/F24 sides: source side-reads disagree (possible mirror in bwild edit, or read noise) - sides 1p in this stretch.
- F21 interior 1p; F17 66.8 limb roles 1p; F15 sweep line 1p.
- Triplet word map ("up up up" ~66.1-67.5) still working-level; ASR has no cues 60-83.
- bwild cut spikes (62-64.7, 65.5-65.8, 71.97, 79.4, 83.4) inflate its motion - used as texture/agreement only.

Provenance

- m3_status.md v1-v3 (09-15): hook boundary correction, punch set, hook close, cards.
- New reads 2026-09-16: pre-tail (incl. validation frame S33.40), drop window, moment/glow/golden, Korean/close - mmd + bwild.
- Motion: motion_song_mmd.npy (14.15-91.69); bwild recomputed for the full hook window (56.4-85.4) -> hook/motion_bwild_hook.npy.
- Frames: m3/ (61.5-67.9, 80.25-84) + hook/ (64.9-81 at 0.4s).

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<div class="chapter"> <h2 class="chap">Post-hook run, S81.0 to 130.0 (F25 to F51)</h2>

Golden - M4 map v1: post-hook run, S81.0 → second chorus entry (≈130.0)

(2026-09-17. Clock: song = local + offset; mmd +14.10, bwild +1.60, sony +0.00; local = song - offset.) Sources per formation: mmd = fixed-camera recreation (primary dance), bwild = second live stage (cut-heavy; accents/shape only), sony = official lyric video (cards), song.wav = audio RMS (breath/phrase). Tags: 2p/3p = confirmed in N sources · attr = single-source attribution · x = source conflict · inf = inferred, not measured · open = unresolved.

Section boundaries (from m4_status v1; unchanged)

- 81.0–82.3 link/interlude · 82.3–96.2 post-chorus 1 · 96.2–115.3 verse 2 · 115.3–130.0 pre-chorus 2 · second chorus entry ≈130.0 (3p: mmd formation, sony card switch, music block Δ 65.5).
- Note: verse-2 "still" shapes actually start ~98.0; 96.2–97.0 is the landing out of the post-chorus climb.

Post-chorus 1 - F25–F33 (S81.0–96.2)

Full text in m4_postchorus_81_96.md. Summary lines:

- F25 81.0–82.7 link reset: point → cover climb; stillest floor 82.0–82.7 (2p).
- F26 83.45 uncover hit: arms collapse off the head; biggest mmd accent of the section (2p; bwild same frame, cut-suspect).
- F27 84.5 carried overhead cross + one side-facing turn (attr).
- F28 87.0 hands to face, feet close/crossed at the calves, no lift, no deep bend (2p with the 09-17 control read).
- F29 87.9–88.9 one-arm-up hold → knee-lift hit 88.9 (3p; control frame - one foot clearly lifted).
- F30 89.2–91.0 arms down, fully open (attr).
- F31 91.15+91.40 chest cross hit (2p).
- F32 92.3 open → 93.0 face (attr).
- F33 94.0–96.3 climb, peaks 95.05 and 95.85–96.30, closing into cover (2p).

Verse 2 - F34–F43 (S96.2–115.3)

mmd primary; bwild cut-heavy here (accents only); audio RMS = independent time cross-check; sony cards for line sync.

- **F34 · 96.2–97.0 · landing out of the climb** - 3p-ish shape (mmd+audio break; bwild cut).

Stance: staggered group, feet apart; center dancer's right foot still lifted at 96.2 (attr; the lift lands by 97.0).

Weight: inf - settling out of the climb, load arriving under the body. Breath: exhale, RMS falls 0.096 → 0.033 across 96.0–96.5 (2p timing). Guard: none yet; bodies reset from the wide open F33 into a closed line.

- **F35 · 97.0–99.5 · the connected hold** - 3p (mmd 2 passes + bwild).

Stance: horizontal line; outer dancers feet apart, center dancer feet crossed/together (both passes agree). Arms: center holds both neighbours' hands; outer dancers face backwards with the connecting arm raised, forming two

arches. This is the held connected pose noted in m4_status. Weight: inf - balanced, both feet down, knees soft (no deep bend, 2p). Breath: sustained shallow, RMS flat 0.043–0.060 (1p audio). Guard: linked line, no reach; arms guard the channel between the three.

- **F36 • 100.5–101.5 • same hold, hands break** - 2p shape, 1p detail.

Stance unchanged (same line, outer apart / center crossed-together). Arms: at 100.5 outer dancers flex one arm up, center arms down; at 101.5 outer extend one arm inward for a fist bump, center fists near face. Weight: inf - still balanced. Breath: continues. Guard: micro-shifts inside the hold, no break of the line.

- **F37 • 102.5–104.0 • active phrase (turn to camera)** - 2p (mmd motion peak 102.75–103.10 ↔ audio peak 103.0).

Stance: line, feet apart (outer) / center crossed-together; no lift; no deep bend (2p). Arms: hands near face / waist / neck, one on hip, one arm extended; at 104.0 asymmetric (hand on shoulder, arm out, arms crossed). Torso: upright, twisted. Weight: inf - weight shifts through the twist, both feet planted. Breath: RMS lifts into 103.0 (song: "to wake up and feel like me", sony card 103.0). Guard: face and neck covered at the top of the phrase.

- **F38 • 105.0–107.3 • active phrase into a low bend** - 2p (mmd peak 107.15 ↔ audio peak 107.0–108.0; sony card 107.0).

Stance: line; 106.5 tight cluster with a deep knee bend, 107.2 loose line, feet apart, deep bend (2p). Arms: hands near face or crossed over chest, then various bent/extended. Torso: upright, then facing left. Weight: inf - load drops into both knees on the bend. Breath: audible exhale (RMS 0.086–0.067 across 107.0–108.0). Guard: crossed arms in front of the chest.

- **F39 • 108.0–109.5 • staggered diagonal, low** - 3p (mmd + bwild + audio 109.0).

Stance: staggered diagonal; feet apart in staggered stances; deep knee bend; back dancer kneeling (mmd and bwild agree). Arms: reaching one arm forward, in sequence (bwild: reaching/pointing sideways in sequence). Torso: in profile, facing left. Weight: inf - weight low over the bent leg; the kneel takes the back line. Breath: mmd quiet (0.5–0.8) = a held low shape while the line keeps sounding (RMS peak 109.0, 1p audio). Guard: a forward reach that keeps the low line.

- **F40 • 110.0–112.5 • build, one arm up** - 2p (mmd peak 111.15 ↔ audio peak 111.0).

Stance: line, feet apart, deep knee bend, one dancer kneeling through the run (2p). Arms: left dancer one arm raised high, others lower (110.7); hands near waist/hips or pointed down (111.2); hands on hips/thighs (112.0). Torso: leaning forward/side. Weight: inf - drives down into the bend. Breath: RMS pulses 110.5–112.0. Guard: an arm held high over the line while the body stays low.

- **F41 • 113.0–113.5 • accent (strongest of the section)** - 2p (mmd 6.95, the section's max; bwild spike same window, cut-suspect).

Stance: line, feet apart, knees moderately bent (1p). Arms: one arm bent up near the head, other lower on the body (mmd+bwild agree on the up-arm). Torso: upright, forward. Weight: inf. Breath: RMS dips 113.5–114.5 after the accent. Guard: single raised arm beside the head.

- **F42 • 114.0–114.5 • eclipse / face cover** - 1p (mmd; bwild unclear).

Stance: single-file, dancers eclipsed; feet together; no bend. Arms: front dancer's arms crossed over the face. Torso: upright, forward. Weight: inf. Breath: quiet (RMS 0.010–0.014). Guard: covered face - the same cover motif that closes M2 and F28/F33.

- **F43 • 114.75–115.35 • lift into pre-chorus 2** - 2p (mmd 6.3–6.8 ↔ audio lift 115.0–115.5).

Stance: V/triangle, feet apart, no deep bend. Arms: one arm raised, others varied/down. Torso: leaning outward/back. Weight: inf - push up out of the low verse. Breath: rise (RMS 0.055 → 0.066). Guard: opens outward as the pre-chorus arrives.

Pre-chorus 2 - F44–F51 (S115.3–130.0)

mmd primary; bwild cross-checked on 5 frames; audio RMS build.

- **F44 • 115.5–116.5 • settle after the lift** - 2p (mmd quiet 0.4–0.5 ↔ audio 116.25 peak).

Stance: line, feet apart, no lift, no deep bend (2p). Arms: one dancer's right arm extended high, others lower. Torso: mixed facings, side dancers lean back. Weight: inf. Breath: shallow. Guard: arms open, line reset.

- **F45 • 117.0–117.4 • small kick accent** - 1p (mmd peak 117.15; no matching audio peak → offbeat accent).

Stance: line; middle dancer's foot clearly lifted; no deep bend (2p with control frame). Arms: bent at various angles. Torso: mixed facings. Weight: inf - stand leg only. Guard: none.

- **F46 • 118.5–120.5 • double accent, arm high** - 2p (mmd peaks 118.95/119.2 ↔ audio peaks 118.25/120.25; sony card 120.0 "like I'm born to be").

Stance: line, feet apart, deep knee bend on the side dancers (2p). Arms: outer one arm raised high, middle arms low; at 120.3 the right dancer's arm high. Torso: right dancer leaning forward. Weight: inf - weight sinks on the bend. Guard: one arm up over the sinking line.

- **F47 • 122.8–123.3 • accent** - 3p (mmd 123.10 ↔ audio 122.75/123.0; bwild shape agrees).

Stance: line, feet apart, deep knee bend (mmd+bwild agree). Arms: bent near the torso/head; bwild: hands near hips/chest. Torso: all forward, left dancer leaning forward. Weight: inf. Guard: arms close to the body.

- **F48 • 124.8–125.3 • softer bar** - 1p (mmd peak 125.10).

Stance: line, feet apart, no deep bend. Arms: bent near torso/head; upright. Weight: inf. Breath: RMS steady. Guard: none, a breath bar in the build.

- **F49 • 126.8–127.5 • accent, arms forward** - 2p times (mmd 127.15 ↔ audio 127.25); bend CONFLICT.

Stance: line, feet apart; mmd says no deep bend, bwild says deep bend - flag x. Arms: middle dancer arms extended forward/side, others bent; bwild: hands out to the sides. Torso: forward, upright. Weight: inf - the conflict is exactly about how low the weight sits here. Guard: arms out in front of the line.

- **F50 • 128.5–129.8 • the rise and hold ("I know I'll believe")** - 3p shape (mmd 7.9 max at 129.4 ↔ audio loudest 129.25; bwild cluster).

Stance: cluster, two dancers overlapping on the left; feet apart; mmd says deep knee bend on the left dancer, bwild says no bend and a foot clearly lifted - flag x on the bend. Arms: mostly low/bent; bwild: arms down at the sides while stepping forward. Torso: left dancer facing right and leaning forward. Weight: inf - the strongest motion of the section lands here, at the hold, not on the entry. Breath: RMS loudest at 129.25 (2p). Guard: the line compresses into a cluster and holds.

- **F51 • 130.0–130.5 • second chorus entry (canon crouch)** - 3p (mmd formation + sony card switch 130.0–130.25 + music block Δ 65.5).

Stance: cluster, two dancers overlapping on the right, feet apart, deep knee bend, back right dancer leaning forward (mmd); bwild close-up, front dancer arms down. Arms: low/bent near the torso. Weight: inf. Breath: entry lift. Guard: the cluster is the start of the staggered canon - it unfolds into the hands-at-face line by 131.0 (c1 opened that line in unison at 64.9). Real structural find: chorus 2 opens on a canon variation, not the unison triangle of chorus 1.

Cross-checks and confidence

- Times cross-checked mmd ↔ audio RMS on: 96.2/96.5 break, 103.0, 107.0–108.0, 109.0, 111.0, 115.0–115.5, 118.25/120.25, 122.75/123.0, 127.25, 129.25 (2p each).
- Shape cross-checked mmd ↔ bwild on 98.0, 108.5, 123.1, 127.2, 129.4, 130.1 (wide vs close views): agreement on the connected hold, the diagonal low run, the build line, and the entry cluster.
- Entry ≈130.0 fixed in 3 sources. Section boundaries ±0.3.
- **Weight entries are all inferred (inf).** Measured weight-side reads failed their own mirror control on 09-17 and are not published. Sides stay open.
- Conflicts left open: F49 knee bend (mmd vs bwild), F50 knee bend/foot lift (mmd vs bwild), F36 arm detail at 100.5–101.5 (1p).

Frame sets

- m4/v2/ (verse 2 mmd, 20 frames) · m4/pre/ (pre-chorus mmd, 13) · m4/pre/bw/ (bwild cross-check, 6) · frames/m4/read/ (post-chorus, from pass 1).
- Read method: per-frame questions in batches of 6–10 with a control frame of known content in the same call; the first coarse pass produced a uniform "foot lifted" answer on 9/10 frames and was discarded as read bias. Weight/side fields are not asked.

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<div class="chapter"> <h2 class="chap">Chorus 2, S129.7 to 146.5 (F52 to F60)</h2>

Golden, chorus 2 block map: S129.7 -> S146.5 (v1)

Milestone 5 deliverable. Assembled 2026-09-18 from the M3 hook map (F15-F24) + the c1+65.5 correspondence check run today. Clock: song_time = local_time + offset. mmd +14.10, bwild +1.60, sony +0.00. Chorus 2 = chorus 1 (hook block) displaced by +65.50 s. The formation list below is the hook map transposed; each entry carries the same stance/weight/breath/guard, and every carried entry is tagged so.

What was actually checked today (the point of this milestone)

Three independent checks that $c2 = c1 + 65.50$:

1. Motion envelope: mmd motion correlation $r=0.991$ at lag 65.46 over the chorus block (M4, 09-16); the hit/dip pairs land exactly 65.50 apart. 2. Frame pixel match: 69 mmd frames at 0.25 s steps across S64.0-81.0 matched against S129.5-146.75. Best-match lag = 65.50 for every anchor from 65.5 to 80.0; median lag exactly 65.50. Sharp-peak test at three anchors (67.50, 72.00, 77.50): best lag 65.50 (corr 0.90 / 0.88 / 0.89), neighbors at ±0.25 s lower (0.89 / 0.85 / 0.88), unrelated-section control (c1 vs S100-116) tops out at 0.835. So the match is unique, not

a floor effect. 3. Entry anchor: chorus 2 entry fixed at 130.0 in 3 sources (M4). $64.2 + 65.5 = 129.7$, so the entry sits ~ 0.3 s later than a pure transposition of the card boundary. Flagged below, not averaged.

Rejected evidence: a frame-pair visual read (left c1 | right c2) returned "mirrored, dancers swapped" on all 6 anchors. Its own controls killed it: it also returned "mirrored" when I fed the identical frame twice (it said same) vs when I fed a real horizontal flip (it said mirrored, correctly), and it returned "mirrored" on the unflipped pairs too. Uniform answer across every pair = bias signature. Not used. The pixel check above (which would collapse if c2 were mirrored) says c2 is NOT mirrored.

F52, entry (canon), S129.7-131.10

- stance: arms-down triangle collapses to a line into hip-width, knees straight; settles still by 130.7-131.1. carried from F16.
- weight: settles to one side ~ 130.15 , then even. carried from F16; sides inferred (see standing rule).
- breath: hands gather and come together OVER THE MOUTH by 130.4 and hold; floor goes still with the mouth covered (mmd min at $65.34 + 65.5 = 130.84$). carried from F16.
- guard: the most closed shape of the block, both hands at the mouth, elbows down, held into the drop. carried from F16.
- REAL DIFFERENCE (flagged, from M4): c2 opens in a staggered CANON into the hands-at-face line; c1 opened unison. The line itself is the same; the arrival is not. Read-level, not frame-verified.
- checks: correspondence at 130.0-131.1 confirmed by pixel lag 65.50; entry 130.0 in 3 sources. Entry-vs-transpose tension $+0.3$ s (flag).

F53, drop breakout: center breaks first, S131.10-132.95 (drop 131.2)

- stance: CENTER breaks the hold first (left knee lift ~ 131.2), then arm straight up (131.3-131.4, center only). Sides hold the mouth-cover to ~ 131.4 , release into the ALL-UP at 131.8 (right arm up, left hand on hip). 132.3 right-leg lift/kick with an arm sweep (limb roles flagged); gather to hands-on-chest 132.85. carried from F17.
- weight: center one-leg at the lift, lands wide; kick on left support; sides grounded. carried from F17; support side flagged.
- breath: held mouth = held breath; burst on the first "up" (131.2): center lift + arm; sides answer on the second hit (131.8). Triplet hits carried at 131.64-131.84 + max 132.19-132.34.
- guard: sides guard the center's breakout by holding the mouth-cover; center is the only exposed one. carried from F17.
- checks: correspondence confirmed (pixel lag 65.50 over 131-133). Flags: 131.2 form split (lift vs lunge-step) carried; 132.3 limb roles 1p carried; word map working-level.

F54, moment sway, S132.95-135.35

- stance: gather (hands overlap on chest, heel raised, 132.85-133.40); light sway (close feet, hand to temple/head + hand to hip, 133.9-134.3); cross-behind legs (134.7, 135.1) with arms crossing in front and rising to the face (135.1: hand to forehead / forearms over face / hand to mouth). carried from F18.
- weight: side-to-side sway; one-leg supports in the cross-behinds. carried from F18; side-reads disagree (flag).
- breath: pulses at 133.29 (accent), quiet 134.34, accent 134.64 landing "moment". carried from F18.
- guard: hands drift to temple/head/face through the sway; forearms cover the face at 135.1. carried from F18.
- checks: correspondence confirmed (pixel lag 65.50). Sides flagged (carried 1p).

F55, glow open, S135.35-137.35

- stance: release from the cross: arms drop straight down (135.90), knee turned in, small settle; then the open: arms rise out/up with a torso twist (136.7; reads differ, reaching-right vs both overhead - flag), weight to one side. Two big accents: 136.54 (the block's single biggest mmd accent) + 137.29. carried from F19.
- weight: settle -> load at the open. carried from F19; 1p.
- breath: two-hit rise riding "glowing".
- guard: the opposite of cover: chest opens, arms up/out - the block's one open-up stretch before the balance. carried from F19.
- checks: correspondence confirmed at the biggest accent (136.54 best-match lag 65.50, corr 0.90). Arm-height flagged (carried).

F56, golden balance, S137.35-138.85

- stance: knee-lift balance: knee high (~90 deg), stand one-leg, hands near chest (137.50); back down; hands travel to hips/waist (138.30); feet close, fists rise to chest by 139.1. carried from F20.
- weight: fully on one leg during the lift (2p in c1); settle after. carried from F20.
- breath: the lift lands the "golden" accent; second accent on the repeat.
- guard: hands come back IN (chest/hips) - closing again after the open. carried from F20.
- checks: correspondence confirmed (pixel lag 65.50 at 137.50).

F57, up-up-up pulses (low), S138.85-140.45

- stance: feet close, fists raised near chest, heels lifted (139.10); step out to a stride (139.90): arms extended down/slightly back, hands open. carried from F21.
- weight: straight/back leg at 139.1; front foot at the stride. carried from F21.
- breath: small pulses only - a re-gather line, not a hit line. carried from F21.
- guard: fists at chest briefly (closed), then opens to the sides. carried from F21.
- checks: correspondence confirmed (pixel lag 65.50). Interior 138.9-139.7 thin (carried 1p) - do not over-claim.

F58, voices open, S140.45-141.95

- stance: cross-behind with foot lifted, hands at head/face (140.70); then arms open out to the sides, hands open, chest forward, head back (141.50; height differs by read - flag); stepping forward. carried from F22.
- weight: front/straight leg at 140.7; step at 141.5. carried from F22.
- breath: quiet inside the line; the open begins the build to the Korean line (142.04 rising). carried from F22.
- guard: hands travel face -> out: cover to open in one line. carried from F22.
- checks: correspondence confirmed (pixel lag 65.50).

F59, Korean line, S141.95-144.35

- stance: fist across chest, deep knees (142.30); THE HIT: one-leg stand + opposite knee lifted high, arms crossed in an X over the chest (143.10); down: hand across chest, hips pushed toward the straight leg (143.90). carried from F23.
- weight: deep down 142.3; one-leg at the X (standing sides flagged); shift 143.9. carried from F23.

- breath: biggest accents of the back half: 142.04 + 142.89 + 144.04; the X-knee hit rides 142.89. carried from F23.
- guard: arms crossed over the chest = self-guard, the most armored shape of the block; the knee is the strike. carried from F23.
- checks: correspondence confirmed at the X hit (143.10 best-match lag 65.50, corr 0.89). Card-end boundary flag carried (+/-0.3).

F60, close + gather, S144.35-146.50

- stance: knee-in + heel lift + hand across chest (143.9-144.3); THE ARCH: chest up, head back, deep back-lean, staggered stance, hand at face/chest (145.10); arm across chest (145.50); step/lunge accent 145.75-146.00 (motion max); stance reads conflict (flag); gather to a tight cluster, arms low at waist/sides, stepping forward (146.25). carried from F24.
- weight: front-left at the arch; lunge sides flagged; centered in the cluster. carried from F24.
- breath: the arch = the last big chest breath; last hit 145.89; run-down through 146.45; stillest band 146.5-146.7 - the breath ends there. carried from F24.
- guard: arm across chest + gather + tuck = closing back into cover; the block closes tucked, not open. carried from F24.
- checks: correspondence confirmed (pixel lag 65.50 at 145.10, 145.89). Flag: lunge stance conflict carried (not averaged).

Link out (provisional), reset + face-cover return, S146.5-149.0

- 146.5-146.9: empty beat; reset pose forms ~146.8-147.0: spread line, one arm drawn across face/eyes, other down. holds to ~148.5; release 148.9-149.0. carried from the hook link-out (+65.5).
- next section enters ~147.8 (verse 3 / bridge) - not mapped.

Block throughline

Same as the hook, read as one arc: the cover is the spine (mouth-cover hold -> temple/face touches -> X arms -> arch -> tuck), the open happens twice (glow, voices), levels stay on one plane. The only structural difference found so far is the entry: c2 arrives at the hands-at-face line in a staggered canon where c1 arrived unison.

Open flags (carry)

- Entry tension: transposition says 129.7, 3-source entry anchor says 130.0. +0.3 s, not averaged.
- Canon entry (F52): read-level claim from M4, not frame-verified here.
- ALL c2 stance/weight/breath/guard entries are CARRIED from F15-F24 via the verified correspondence, not independently re-read in c2. c1's own flags (weight sides inferred; F18/F19/F24 sides 1p; F21 interior 1p; F17 66.8 limb roles 1p; F23 card boundary; F24 lunge stance conflict) carry forward unchanged.
- Weight sides remain inferred everywhere (standing rule 2026-09-17: single-frame weight-side reads fail their mirror control on mmd frames).
- Frame-pair visual comparison on mmd fails its own control (uniform "mirrored" answer regardless of actual flip). Do not use it as evidence.

Provenance

- hook_map_v1.md (2026-09-16): F15-F24, the source of the transposed entries.
- m4_status_v1/v2 + m4_map_v1 (09-16/09-18): chorus2=c1+65.5 (motion r=0.991), entry 130.0 in 3 sources, canon-vs-unison entry.
- New today (09-18): pixel-lag match across S64.0-81.0 vs S129.5-146.75 (median lag 65.50, sharp peak at 3 anchors, unrelated-section control 0.835); frame-pair read + its failed controls.
- Frames: frames/m5/ (c1,c2 sets) + frames/m5pix/ + frames/m5chk/.

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<div class="chapter"> <h2 class="chap">Closing run, 146.5 to 198.8 (F61 to F83 + final pose)</h2>

Golden - M6 closing-run map v1

Date: 2026-09-19 · Song clock (song = local + offset; mmd +14.10 · bwild +1.60 · sony 0.00) Range: chorus-2 close 146.5 → end of stage 198.8.

Method this pass: sony lyric-card TEXT reads (control frame 66.00 read "UP UP UP" = known answer, so the card reads are trusted); 20fps gray motion envelope (mmd/bwild); 0.5s audio RMS; single-frame pose reads on labeled frames (literal questions, one line per frame); pixel-diff between extracted frames to separate real holds from read bias. Weight/sides stay inferred (standing rule: single-frame side reads do not pass their own mirror control).

Section boundaries (multi-source)

time	evidence	meaning
146.5	sony card "I'M DONE"; = c2 close	post-chorus 2 begins
~162.0	card change to "GONNA BE" at 162.5; post-chorus1 end 96.2 +65.5 = 161.7	A ends / B begins (boundary ±0.5)
178.0	audio RMS 0.145 → 0.023; card text STOPS (178.25 = no text); mmd motion → near-zero	end of full-level music + lyric; quiet coda begins
191.75	mmd last accent (5.24); audio swell 191.5-192.0; card 191.75 = no text	last accent of coda
192.05	mmd near-still begins	final pose
194.05	mmd video ENDS	last 4.75s exists only in bwild + sony
198.8	song end	

Section A - post-chorus 2 (146.5 → ~162.0) = post-chorus 1 + 65.50

Verified by transposition: mmd motion envelope A(146.5,15s) vs pc1(81.0,15s) at lag 65.50 → r=0.854; song audio envelope pc1 → pc2 at lag 65.50 → r=0.897 (control chorus c1 → c2 r=0.867). mmd peak 148.95 = F26 hit 83.45 + 65.50 exactly; peak 161.00 = F33 climb 95.5 + 65.5. Formations carried from the M4 post-chorus map (F25-F33), +65.50:

id	time	formation (stance / weight / breath / guard)
F61	146.5-147.8	link reset: point → cover climb; floor 147.5-148.2. Stance open → narrow. Weight inferred centered. Breath out. Guard: hands rising toward face.
F62	148.95	uncover HIT: arms come off the head / down. Biggest mmd accent of the section. Weight inferred. Breath sharp out. Guard: opening.
F63	~150.0	carried overhead cross, one side-facing turn.
F64	~152.5	hands to face (cover).
F65	153.4-154.0	one-arm-up hold (mmd floor) → knee-lift hit 154.4.
F66	154.7-156.5	arms down, fully open.
F67	156.65 + 156.90	chest cross, two-hit.
F68	157.8 → face 158.5	open → cover.
F69	159.5-161.8	climb (peaks 160.55/161.35) closing into cover at the hand-off.

One plane throughout, no two-low. Weight inferred, sides open.

Section B - final chorus block (162.5 → 178.0), own material

Not a repeat: mmd motion B(162.5) vs verse2(97.0)+65.5 $r=0.136$, vs c1(64.2)+98.3 $r=0.123$. Music matches c1 weakly (audio $r=0.60$ at ~97.2 lag), so it is a reworked final chorus, not a transposition. Lyric cards: "GONNA BE" 162.5 · "BORN TO BE" 166.5 · "IT'S" 170.5 · "THAT'S WHO WE'RE" 174.5 · (no text from ~178).

id	time	formation (stance / weight / breath / guard)
B1	162.5-164.0	entry, arms at chest, standing; mmd peak 9.13 @163.40. Weight inferred. Breath in. Guard: closed at chest.
B2	164.0-166.0	arms bent rising (both), standing.
B3	166.0-168.5	one arm up (166.5) → hands near face (168.0); card "BORN TO BE".
B4	168.5-171.0	arms crossing body → down at sides; mmd peak 6.48 @169.85.
B5	171.0-174.0	both arms overhead (171.5) → hands held low in front (173.5): a down-up.
B6	174.0-178.0	both arms overhead (175.5) → arms down / one extended (177.5), settling into the 178.0 hold.

bwild peaks here (164.7-165.95, 172.25-173.25, 176.5-177.55) NOT yet cut-checked - not used for dance claims.

Section C - quiet coda (178.0 → 192.0)

Audio drops hard at 178.0 (RMS 0.145 → 0.023). No lyric text anywhere in C.

id	time	formation (stance / weight / breath / guard)
C1	178.0-180.4	FROZEN HOLD: outer figures' arms extended toward center, middle figure's hands joined at chest; standing, tight. Verified by pixel-diff: consecutive extracted frames differ 0.26-2.58 (near-frozen), not a read artifact. Breath held. Guard: sealing the center.
C2	180.4-181.5	SLOW RISE: arms lift from center to high overhead; pixel-diff only 0.87-1.47 (deliberate slow motion, reads as "still" in the 20fps envelope). Breath drawn in.
C3	181.5-182.5	crouch RE-ENTRY hit ~181.95 (pixel-diff spike 8.16/11.75). Breath out.
C4	182.5-184.5	arms raised/extended (left right-arm raised + left extended; middle right-arm raised; right hands chest+hip); standing.
C5	184.5-187.0	movement 184.0-186.0 (mmd peaks ~5.9); middle arms extended back, right crouched (186.5).
C6	187.0-189.0	left kneeling reaching forward, middle right-arm raised + left on hip, right crouched reaching (188.0). bwild 189.0 crouched, hands clasped, motion-blurred.
C7	189.0-191.0	arms extended forward toward center (189.5); 190.5 facing away, middle+right holding hands.
C8	191.0-192.0	last accent 191.75: hands on hips, standing; bwild 191.0 arms extending downward, standing. Audio swell 191.5-192.0.

Section D - final pose + tail (192.0 → 198.8)

id	time	formation
D1	192.05-198.8	FINAL POSE held: three figures standing, spread, hands on hips (one hand touching head at 198.0). mmd near-still 192.05-193.95 (video ends 194.05); bwild still/sharp at 196.5 and 198.0. sony shows no dancers here (0 figures at 194.5/196.5/198.0) - final pose is visible only in mmd (to 194.05) and bwild.

Flags / open

1. B section: bwild peaks uncut-checked; B boundaries within 162.5-178.0 are coarse (0.5s reads, no c1 transposition available). 2. A/B boundary: card says 162.5, transposition says 161.7 - keep ± 0.5 , do not over-fix. 3. Weight and L/R sides: inferred throughout, not measured (single-frame side reads fail their mirror control). 4. Final 4.75s (194.05-198.8): mmd absent; only bwild + sony, and sony has no dancers there. bwild is cut-heavy. 5. mmd "still floor 178.0-181.55" from v1 is refined here: true freeze 178.0-180.4, then a slow deliberate rise 180.4-181.5.

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Training log

The running notes behind the map. One entry per working session.

- **09-13, day 1.** Picked the stage: "Golden" (HUNTR/X). Downloaded the sources, aligned every one to a single song clock, mapped the opening formation. First pass had the opening order inverted; a frame-step fixed it (reach on "attain" comes before the cover on "forget").

- **09-13, alignment scare.** Two of my own numbers disagreed. I re-derived the whole clock from raw audio with a self-test, then checked it against a frame I already trusted. The map held; the error was a flipped offset direction in my scratch files. New rule: verify a fresh pipeline against a known artifact before building on it, and write the offset direction next to every alignment number.
- **09-13 to 09-14, verse 1.** Mapped S25 to S61 formation by formation. Found the quiet hold is not empty: it hides a slow hand-to-face cover rise. Cover keeps coming back as the home position.
- **09-15, hook.** Corrected the hook boundary from 61.5 to 64.2. Punched out the drop set. The biggest single accent of the hook is at 71.04, on "glowing".
- **09-16, post-hook run.** Found chorus 2 equals chorus 1 plus 65.5 seconds. This is the fact that turned the second half of the stage from a re-mapping job into a check.
- **09-17, weight reads fail.** Tried to measure which side is loaded. The reads came back mirrored against two frames whose answer I already knew. Mirrored one flipped the label, but the label contradicted its own stated reason. Unusable. From here on, weight is inferred and sides stay open.
- **09-18, verse 2 and pre-chorus 2.** Mapped S96 to S130. Caught a read bias: a coarse batch said "foot lifted" on nine of ten frames. Discarded it and re-ran in small batches with a known-answer control frame inside the same call.
- **09-18, chorus 2.** Checked the block against its chorus-1 counterpart at minus 65.50. Pixel-match across 69 frames, median lag 65.50, sharp peak at three anchors against an 0.835 control. Real difference: chorus 2 enters the hands-at-face line in a staggered canon; chorus 1 hit it unison.
- **09-19, closing run.** Bounded 146.5 to 198.8. Major hard boundary at 178.0: the music drops to almost nothing and the three of them stop. Pixel-verified a frozen hold from 178.0 to 180.4, then a slow arm rise. The final pose is held from 192.05; the mmd video ends at 194.05, so the last four and three-quarter seconds exist only in two sources.

Standing rules I work by

- When two passes disagree, go back to the raw material, not to my own write-ups.
- A uniform answer across every frame is a bias signature, not agreement. Put a known-answer frame in the same call.
- Never promote a single-pass read into a claim.
- Flag a source conflict instead of averaging it.
- Trust only cross-source agreement on a time.