RUBISCO2 Feeder — Q22: Chute Extension into Drum

Conceptual drawings of five options for the feeder chute → drum cone interface. Q17 (2026-04-26) already locked the baseline (25 mm telescope + EPDM skirt). Andi flagged 2026-05-08 that wet sargasso could still fall through the 15 mm radial gap. Pablo (voice note 2026-05-08) wants a small extension into the drum so material is delivered inside the cone, not at the lip.

Our recommendation — Option C (flexible neoprene boot)

Option C is the cleanest solution to Pablo's concern without introducing the rigid-contact risk of Option B:

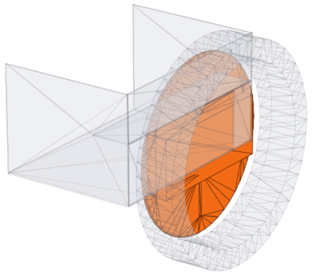
- Solves the gap — material is delivered fully inside the cone, not at the lip.
- Fail-safe on contact — neoprene deflects when the feeder drifts into the cone, no metal grinding.
- Standard part on industrial trommels; replaceable consumable like the Q17 skirt.
- Cleanest sound profile (no metal-on-metal contact ever).

Options B (rigid trompa) is a stronger structural solution but carries a real grinding-failure mode — pick B only if the frame torsional stiffness is verified to keep drift under ±2 mm. Options D (bigger skirt) and E (step-down lip) are partial mitigations — neither actually closes the path Pablo described. Option A is the status quo for reference.

Generated 2026-05-08 from *feeder_q22_chute_concepts.py* + *feeder_q22_q23_render_png.py*. STEP + STL available per variant.

Option A — Q17 baseline (25 mm telescope + EPDM bristle skirt)

The interface as currently locked in Q17. Feeder chute mouth telescopes 25 mm into the drum cone (Ø900 ID); 15 mm radial gap closed by an EPDM bristle skirt fanning radially against the cone inner wall.



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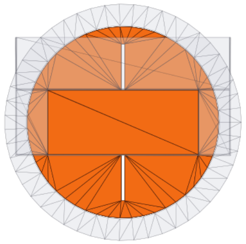

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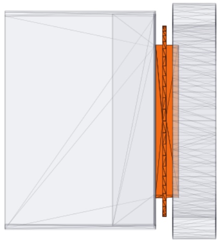
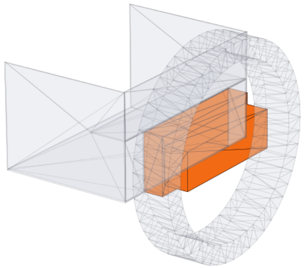


Plan

Pros	*Cons*
• Already decided and documented (Q17, 2026-04-26). • Vibration decouples — 15 mm radial gap absorbs all relative motion. • Self-tolerant: ±10 mm misalignment doesn't matter, gravity feed re-centres. • Skirt is field-replaceable (lives in K01 spares kit, ~6-12 mo cycle).	• The 15 mm gap is the exact path Andi flagged: a wet sargasso strand could fall through before the skirt deflects it. • Skirt is the only barrier between the gap and the floor — if it fails, leakage is immediate.

Option B — Trompa rígida fija

A rigid 130 mm extension snout welded to the chute mouth, with reduced wall height (200 mm vs 300 mm baseline). The snout protrudes physically into the drum cone, so material is delivered *inside* the cone — no gap in the path.



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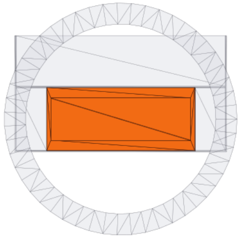

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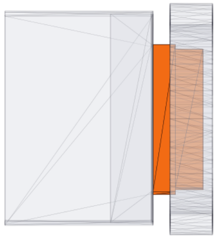
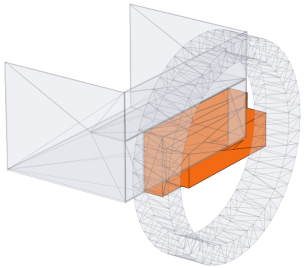


Plan

Pros	***Cons***
• Eliminates the gap problem entirely — material is delivered inside the cone. • Cheap and simple to fab (sheet metal extension welded to existing chute). • Lower walls keep the throat geometry that Plan-D was designed around.	• Rigid contact risk — feeder vibrates ±5-10 mm, drum is fixed; if frame drifts under load or thermal expansion the snout grinds against the cone. • Repair if it grinds is expensive — cone wall + chute mouth both damaged. • Adds a second flexible decoupling requirement (skirt + snout clearance).

Option C — Trompa flexible (neoprene boot) — RECOMMENDED

Same 130 mm extension geometry as B, but fabricated in flexible neoprene (Shore 60-70 A). On any feeder-cone contact the boot deflects rather than grinds. Replaceable consumable, like the Q17 skirt.



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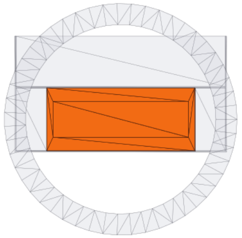

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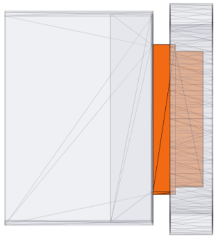
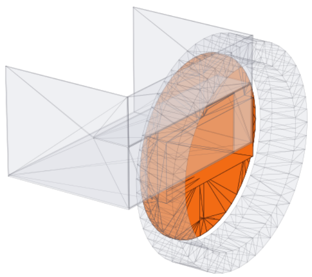


Plan

Pros	***Cons***
• Eliminates the gap (same as B) AND fail-safe on contact (key advantage over B). • Material delivered fully inside the cone, no edge gap. • Standard part on industrial trommels; supply chain is mature in MX. • Cleaner sound profile than rigid metal-on-metal contact.	• Neoprene degrades in UV + saline air — replacement cycle ~6-12 mo. • More expensive than B (custom-fabbed boot vs sheet-metal extension). • Sand can pack into the boot folds if dimensions are wrong — needs validation pass.

Option D — Faldón EPDM agrandado

No rigid extension. Q17's EPDM bristle skirt is enlarged from 40 mm to 60 mm bristle reach so it fans further into the cone interior, narrowing the effective gap and intercepting falling strands earlier.



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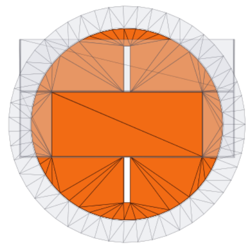

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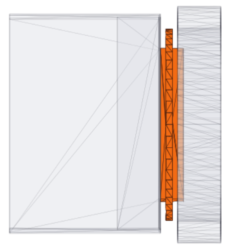
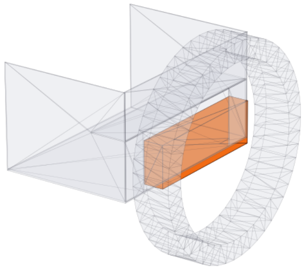


Plan

Pros	***Cons***
• Smallest change to current design — Q17 stays largely intact. • No rigid-contact risk. • Skirt is already a consumable; bigger skirt is a one-line spec change.	• Doesn't fully solve the gap — bristles compress under impact and a strand can still get through if the skirt is degraded. • Bigger bristle = more drag on material flow; might slow transport at the chute mouth. • Higher consumable cost (more EPDM volume per skirt).

Option E — Bajada escalonada del muro de salida

No rigid extension. The bin walls drop 80 mm in their last 250 mm of length, so the chute exit lip approaches the cone more closely from above. Reduces the effective gap from the vertical dimension rather than the axial one.



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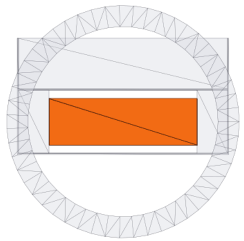

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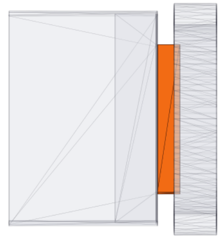

Plan

Pros	***Cons***
• Pure sheet-metal change — no new parts, no consumables added. • Low fab risk; just a kink line in the existing wall. • Doesn't introduce contact risk.	• Doesn't actually close the gap — only narrows the throat. • Lower walls at the exit may let some material spill upward over the lip if vibration is aggressive. • Doesn't address the underlying issue Pablo raised — strand falls vertically.