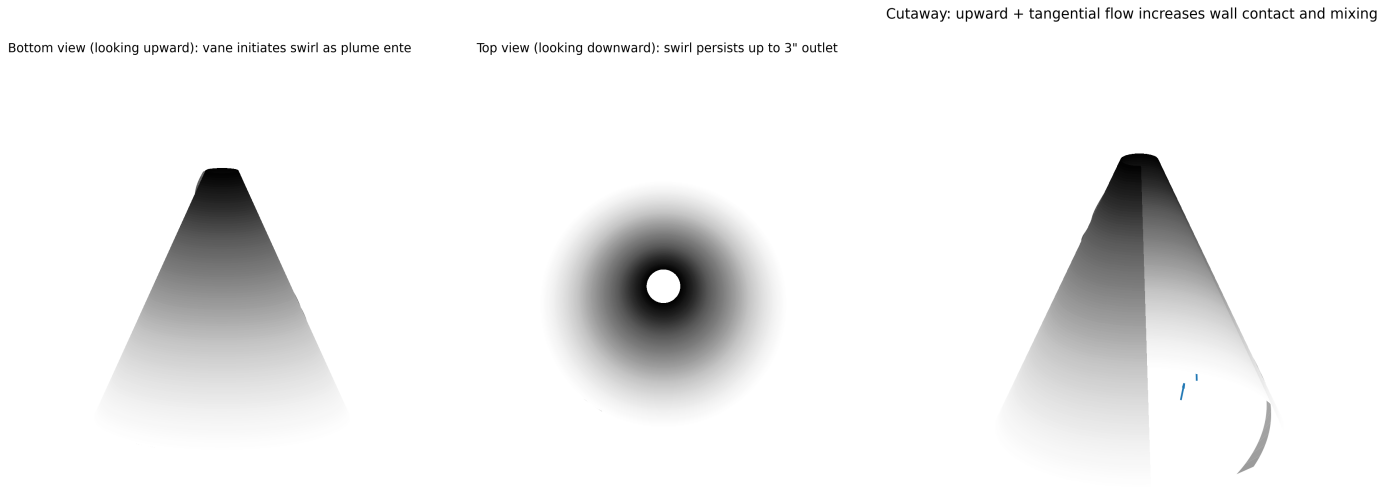
12-inch Funnel Emitter with Internal Helical Ramp

24" inlet → 3" outlet; helical ramp ~0.8 turns; concept renders + flat patterns

Bottom view, top view, and cutaway (flow arrows show upward + swirl motion)



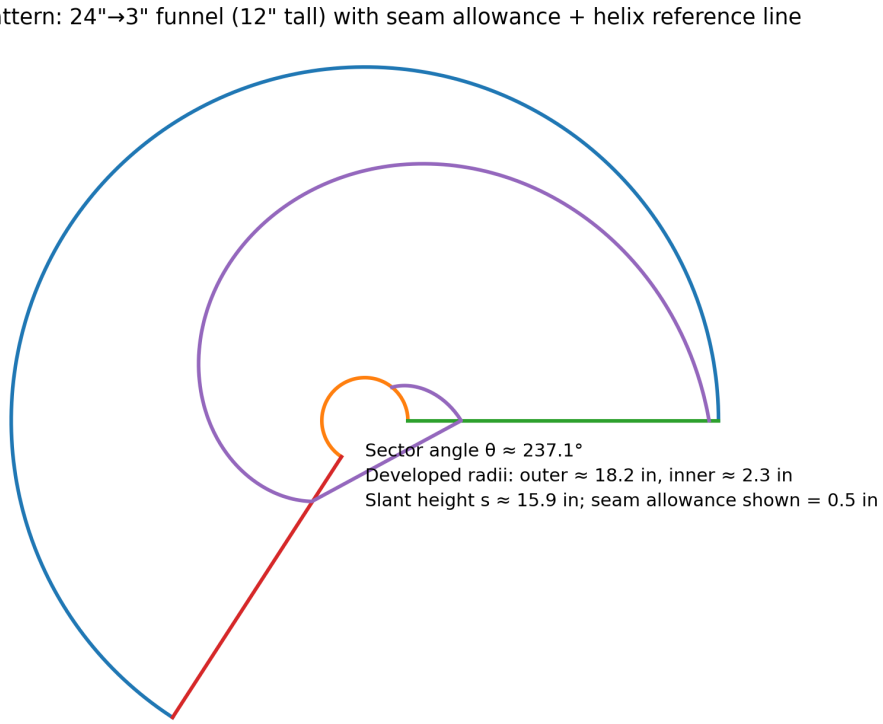
What creates the swirl (intuitively):
- The ramp is a ‘guide vane’ that gives the rising plume a tangential component.
- Once rotating, the hot core is pushed outward toward the wall (centrifugal pressure gradient).
- That increases wall contact and turbulence → higher internal heat transfer coefficient (h_in).
- Unlike a maze, the core stays open so buoyant flow is not choked.

Note: renders are concept-visual; dimensions and patterns on following page are the authoritative geometry.

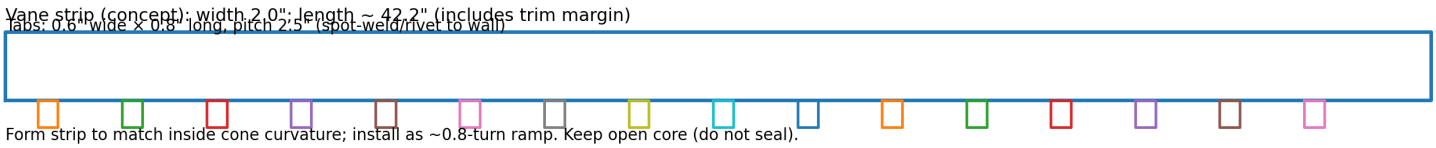
Flat Patterns for Sheet Fabrication

These are starting-point patterns; adjust seam/tab geometry to your fabrication method (TIG seam vs rivet+seal).

1) Funnel shell flat pattern (annular sector)



2) Helical ramp strip with tabs (forms to inside wall)



Helix path length on cone (12" tall, 0.8 turns) ≈ 38.2"; vane strip shown with ~4" trim margin (≈ 42.2").

Practical install: start the ramp just inside the inlet lip; end near the outlet collar, leaving an open core and an adjustable dampe