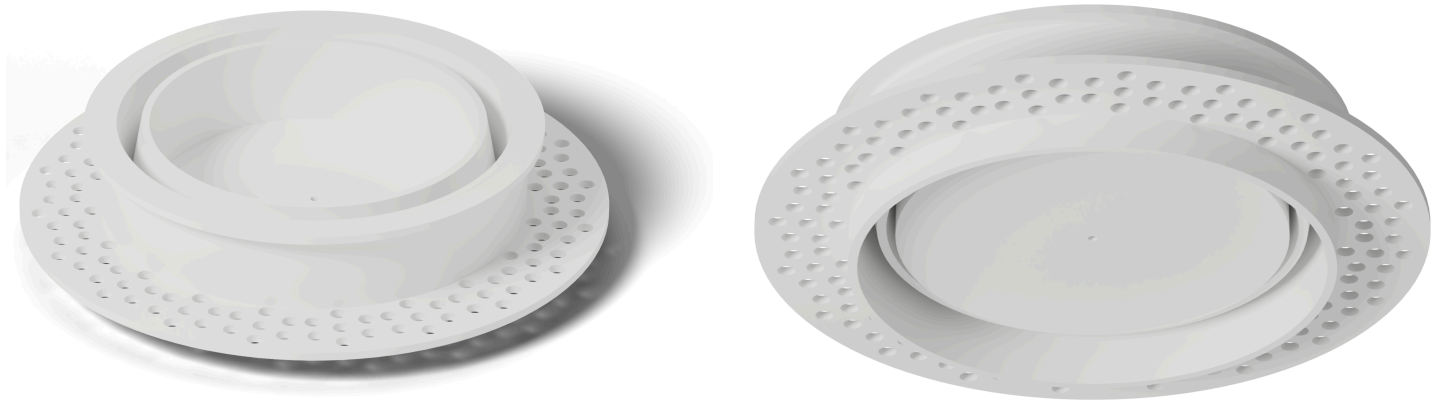


STUCCO EXPANSION JOINT RING

Patent-Pending Innovation for Penetrations in Stucco, Panel & Lap Siding Walls
Renewable Technology Products
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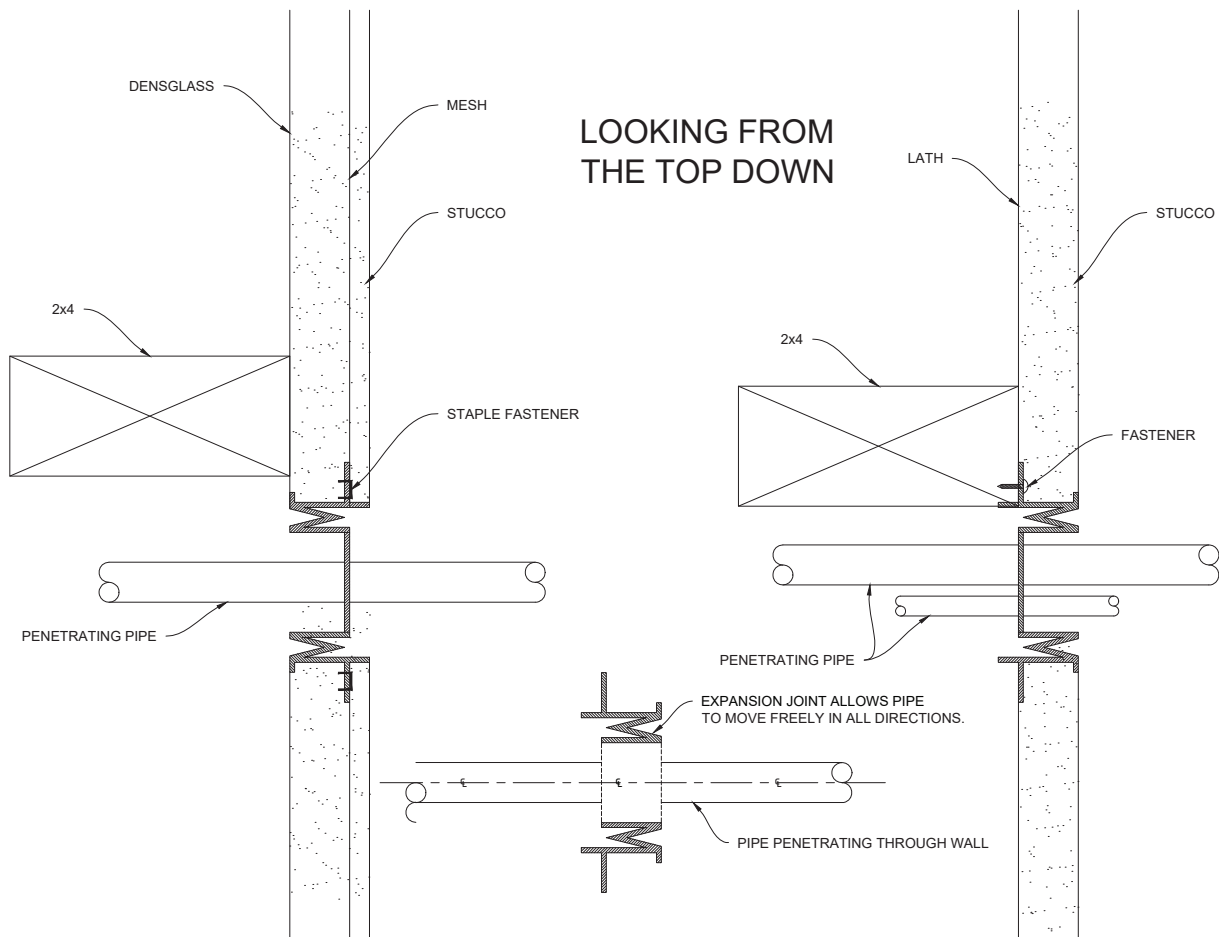
Patent Pending U.S. Application No. 19/675,826

KEY FEATURES & BENEFITS

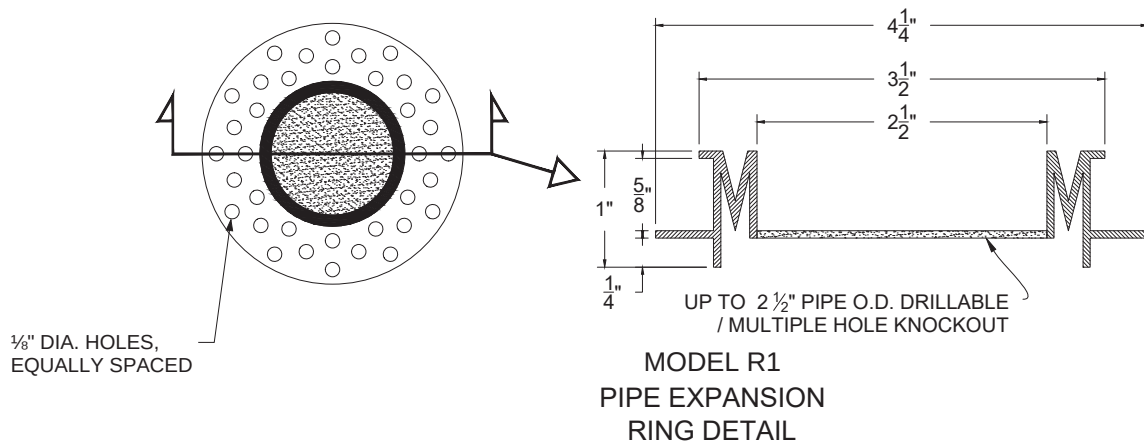
- Reversible design for traditional stucco or elastomeric finishes
- Multiple concentric flexible rings for expansion/contraction
- Integrated perforated flange for secure attachment
- Pest Protection — Seals penetrations to help reduce insect and rodent infestations/nesting
- Corrosion/electrolysis resistance
- Protects pipe insulation
- Centers and stabilizes pipes in framed, concrete, or CMU walls
- Protects pipes and insulation from damage, compression, & vibration

Ideal Applications

- Stucco wall assemblies
- Panel and lap siding systems
- Concrete penetrations
- Metal framing and penetrations
- Pipe, vent, and conduit openings



PIPE EXPANSION RING
INSTALLATION DETAIL



Product Overview

The Stucco Expansion Joint Ring is a high-performance, polymer-based circular lathing and expansion accessory engineered for exterior Portland cement-based plaster (stucco), panel, and lap siding wall assemblies. It accommodates differential movement at pipe penetrations, vents, conduit, and other round openings while providing enhanced performance benefits over traditional field detailing.

Key Features

- Reversible dual-sided design (optimized for traditional stucco on one side and elastomeric finishes/coatings on the reverse).
- Multiple concentric flexible rings for superior expansion and contraction movement capacity.
- Integrated perforated flange for mechanical keying and secure attachment to lath or substrate.
- Pre-formed circular geometry for consistent, high-quality installation around penetrations.
- Built-in protection against pests, corrosion/electrolysis, and damage to pipe insulation.
- Supports proper pipe centering and stabilization in framed, concrete, or CMU assemblies.

Materials & Compliance

- Designed as a polymer lathing/expansion accessory meeting ASTM C1861 material and performance requirements.
- Supports installation per ASTM C1063 (Sections 3.2.3, 6.2, 7.4.9, 7.4.10, 7.11).
- Compatible with galvanized lath, DensGlass, concrete, and CMU substrates.

Material Specifications

- Base Material: High-performance exterior-grade polymer (e.g., UV-stabilized rigid or impact-modified PVC, polypropylene copolymer, or engineered thermoplastic blend). Selected for long-term exterior durability, flexibility, and compatibility with stucco chemistry.
- Key Performance Properties (design targets — final values confirmed via ASTM C1861-aligned testing):
 - Tensile Strength: $\geq$ [TBD – typically 4,000–7,000 psi per ASTM D638].
 - Flexural Modulus: Balanced for flange rigidity and ring flexibility (e.g., 200,000–400,000 psi range).
 - Impact Resistance: Sufficient Izod/Charpy impact strength for handling, installation, and service (no brittle failure at low temperatures).
 - Dimensional Stability: Low shrinkage ($<0.5\text{--}1\%$) and excellent tolerance holding for circular geometry and perforations.
 - Heat Deflection / Service Temperature: Suitable for exterior exposure (deflection temperature $>$ [TBD] at 264 psi per ASTM D648); withstands stucco application temperatures and long-term service up to 140°F (60°C) or higher.
 - UV & Weather Resistance: Stabilized with UV inhibitors and HALS (or equivalent) for minimal degradation after accelerated weathering (e.g., 5,000+ hours QUV/xenon arc).
 - Corrosion / Chemical Resistance: Resistant to alkalis in cement plaster, salt spray (ASTM B117), and electrolysis between dissimilar metals.

- Water Absorption: Low (<0.5–1% by weight) for dimensional stability.
- Density: [TBD – typically 1.2–1.5 g/cm³ for PVC-type materials].
- Flammability: Low flame spread/smoke development (specific classification per ASTM E84 or relevant code; fire rating is assembly-dependent).
- **Design-Specific Requirements:**
 - Concentric Rings: Elastic recovery and fatigue resistance for repeated movement cycles without permanent deformation.
 - Perforated Flange: Material must support strong mechanical keying and fastener pull-out forces.
 - Reversible Surfaces: One side optimized for stucco adhesion/keying; reverse side compatible with elastomeric coatings.
 - Wall Thickness: Strategically varied (typical 0.060"–0.125" / 1.5–3.2 mm) for strength at the flange and flexibility at rings.
 - Surface Finish: Smooth, mold-release compatible; no sharp edges.

Available Models & Sizes

The Stucco Expansion Joint Ring is offered in two models that together cover penetrations from 3/8" up to 4-1/2".

Model	Penetration Range	Field Sizing	Concentric Ring Movement Capacity	Perforated Flange Details
R1	3/8" – 2-1/2"	Drill-out center	± 1/8"	Hole pattern 1/8" equal distance apart
R2	2-3/4" – 4-1/2"	Drill-out center	± 1/8"	Hole pattern 1/8" equal distance apart

Field Sizing (Drill-Out Center)

- Each ring is supplied with a solid center so one model fits a range of pipe sizes.
- Drill out the center to the size you need to match the outside diameter of the pipe, conduit, or insulated line being penetrated.
- **R1:** Drill out to fit pipe from 3/8" up to 2-1/2", including 2-1/2" expansion joint pipe.
- **R2:** Drill out to fit pipe from 2-3/4" up to 4-1/2".
- Drill a single hole for one pipe, or multiple holes (multiple-hole knockout) for line sets such as HVAC suction and discharge lines, all within the drillable center (up to 2-1/2" O.D. for R1).
- Use a hole saw or step bit centered on the ring's center. Size the hole for a snug fit that still allows the concentric rings to move.
- Deburr the cut edge to protect pipe insulation.

Common to Both Models

- Concentric ring movement capacity: ±1/8" nominal.
- Perforated flange: 1/8" holes, equal distance apart, for mechanical keying.
- Reversible: stucco-compatible side or elastomeric side outward.

- Movement capacity: $\pm 1/8$ " nominal, accommodated by the multiple concentric flexible rings.
- Attachment: integrated perforated flange with $1/8$ " holes, equal distance apart, embedded and keyed into the base coat.
- Environmental resistance: UV-stabilized polymer; resists alkalis in cement plaster, corrosion, and electrolysis.
- Watertight performance: when installed with weather-resistive barrier, flashing, backer rod, and compatible sealant per the Installation Guide.
- Additional benefits: pest protection, pipe centering and stabilization, and protection of pipe insulation.

Packaging, Storage & Handling

- Packaged 25 per bag with protective wrapping.
- Store in Boxes of 200
- Indefinite shelf life under proper storage.

Limitations

- Verify compatibility with specific pipe materials, insulation types, and overall wall assembly.
- Fire resistance is achieved through the complete wall assembly (consult tested systems per applicable codes).

Stucco Expansion Joint Ring Installation Guide

Important References

- ASTM C1063 (Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster) – Sections 3.2.3, 6.2, 7.4.9, 7.4.10, 7.11.
- ASTM C1861 (Lathing and Furring Accessories and Fasteners).

This guide provides general instructions for stucco, panel, lap siding, and concrete penetration applications. Always follow local building codes, architect/engineer specifications, and best practices for the specific wall assembly. Tools & Materials Needed

- Approved fasteners (per ASTM C1063).
- Weather-resistive barrier and flashing (especially important for concrete penetrations and lap siding transitions).
- Backer rod and compatible exterior sealant.
- Standard stucco/plaster tools, plus a hole saw or step bit for drilling out the ring center.
- Lath and base/finish coat materials.
- Safety equipment.

Step-by-Step Installation

1. Preparation

- Ensure the substrate (framing, sheathing, concrete, or CMU) is properly prepared, level, and compliant with codes.
- For concrete penetrations: Verify the opening is clean, properly sized, and flashed as needed/apply adhesive.
- For lap siding applications: Ensure proper overlap and weather barrier integration around the penetration.
- Install weather-resistive barrier and flashing per manufacturer and code requirements.
- Locate and prepare the penetration (pipe, vent, conduit, etc.). Center the pipe in the opening.

2. Select Ring Size and Orientation

- Choose R1 (3/8" to 2-1/2") or R2 (2-3/4" to 4-1/2") based on the outside diameter of the pipe, then drill out the center: a single hole for one pipe, or multiple holes (multiple-hole knockout) for line sets such as HVAC suction and discharge lines, all within the drillable center (up to 2-1/2" O.D. for R1).
- Select orientation: Stucco-compatible side outward for traditional three-coat plaster, or reverse side for elastomeric finishes/coatings (common with lap siding).

3. Position the Ring

- Slide the ring over the penetration so the drilled-out center fits snugly around the pipe but allows for movement.

- Align the concentric rings and ensure the perforated flange lies flat against the lath or substrate (including direct-to-concrete applications where appropriate).
- Verify the pipe is centered and stabilized by the ring.

4. Secure the Flange

- Fasten the perforated flange to the lath/substrate (or directly to concrete where code allows) using approved fasteners at spacing recommended by ASTM C1063.
- Ensure fasteners do not restrict the flexibility of the concentric rings.

5. Integrate with Lath, Siding & Flashing

- Tie or install lath around the ring so it terminates properly at the joint (per ASTM C1063).
- For lap siding: Integrate the ring with siding transitions and ensure proper overlap and sealing.
- For concrete penetrations: Apply additional flashing or sealant as needed around the ring and concrete interface.
- Apply additional flashing or weather barrier for watertight performance.

6. Apply Stucco / Finish Coats

- Apply the base coat(s) to embed the perforated flange fully. Work the material into the perforations for strong mechanical keying.
- For lap siding applications: Coordinate with siding installation for clean transitions.
- Apply brown coat (if three-coat system) and finish coat or elastomeric coating according to the chosen orientation.
- Tool the area smoothly while maintaining the ability of the concentric rings to accommodate movement.

7. Sealing & Final Details

- Install backer rod and compatible sealant at the inner penetration interface (critical for concrete penetrations).
- Inspect for full embedment, proper alignment, and freedom of movement in the concentric rings.

Quality Control Checks

- Pipe is centered and stabilized.
- Flange is fully embedded and keyed into the base coat (or properly sealed on concrete).
- Reversible orientation matches the specified finish type (including lap siding compatibility).
- No binding that restricts ring movement.

- Joint allows for designed expansion/contraction ($\pm 1/8$ " nominal per model).
- All flashing, seals, and lap siding transitions are properly integrated.

Safety & Best Practices

- Follow all OSHA and local safety requirements.
- Wear appropriate PPE when cutting or handling materials.
- Protect the ring from damage during stucco or siding application.

Packaging & Storage Reminder

- Units are packaged 25 per protective bag; 200 per box.
- Store in a cool, dry place prior to installation.

Limitations & Notes

- Verify compatibility with specific pipe materials, insulation types, concrete penetrations, lap siding transitions, and overall wall assembly.
- Fire resistance is achieved through the complete wall assembly (consult tested systems per applicable codes).
- For direct concrete applications, additional sealing and engineering review may be required.