

Heli-Tie™

Helical Wall and Stitching Ties



Efficiently
Stabilize and
Repair Masonry
Structures



(800) 999-5099
strongtie.com

The Heli-Tie helical wall tie is a stainless-steel helical tie used to anchor building façades to structural members or to stabilize multiple-wythe brick walls.

The helical design allows the tie to be driven quickly and easily into a predrilled pilot hole (or embedded into mortar joints in new construction) to provide a mechanical connection between a masonry façade and its backup material or between multiple wythes of brick. As it is driven, the fins of the tie undercut the masonry to provide an expansion-free anchorage that will withstand tension and compression loads.

The Heli-Tie wall tie is installed into a predrilled hole using a proprietary setting tool with an SDS-plus® shank rotary hammer to drive and countersink the tie. Heli-Tie wall ties perform in concrete and masonry as well as wood and steel studs.



Heli-Tie Helical Wall Tie
US Patent 7,269,987

Features

- Installs quickly and easily — with the rotary hammer in hammer mode, the tie installs faster than competitive products.
- Provides an inconspicuous repair that preserves the appearance of the building. After installation, the tie is countersunk up to ½" below the surface, allowing the tie location to be patched.
- Larger core diameter provides higher torsional capacity, resulting in less deflection due to “uncoiling” under load.
- Fractionally sized anchor — no metric drill bits required.
- Patented manufacturing process results in a more uniform helix along the entire tie, allowing easier driving and better interlock with the substrate.



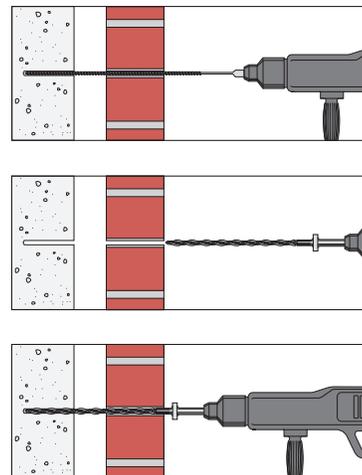
Material: Type 304 stainless steel (Type 316 available by special order — contact Simpson Strong-Tie for details)

Test Criteria: CSA A370

Installation

- Drill pilot hole through the façade material and into the backup material to the specified embedment depth + 1" using appropriate drill bit(s) in the chart below. Drill should be in rotation-only mode when drilling into soft masonry or into hollow backing material.
- Position blue end of the Heli-Tie™ fastener in the installation tool and insert the tie into the pilot hole.
- With the SDS-plus rotary hammer in hammer mode, drive the tie until the tip of the installation tool enters the exterior surface of the masonry and countersinks the tie below the surface. Patch the hole in the façade with a matching masonry mortar.

Installation Sequence



Heli-Tie Helical Wall Tie Product Data

Size (in.)	Model No.	Drill Bit Dia. (in.)	Quantity	
			Box	Carton
¾ x 7	HELI37700A	7/32 or ¼	50	400
¾ x 8	HELI37800A		50	400
¾ x 9	HELI37900A		50	400
¾ x 10	HELI371000A		50	200
¾ x 11	HELI371100A		50	200
¾ x 12	HELI371200A		50	200
¾ x 14	HELI371400A		50	200
¾ x 16	HELI371600A		50	200
¾ x 18	HELI371800A		50	200
¾ x 20	HELI372000A		50	200

Special-order lengths are also available; contact Simpson Strong-Tie for details.



Heli-Tie Fastener Installation Tool — Model HELITOOL37A

Required for correct installation of Heli-Tie wall ties. Speeds up installation and automatically countersinks the tie into the façade material.

Guide Tension Loads in Various Base Materials

Size in. (mm)	Base Material	Anchor Location	Drill Bit Dia. in.	Min. Embed. Depth in. (mm)	Tension Load ¹			
					Ultimate ² lb. (kN)	Load at Max. Permitted Displ. ³ lb. (kN)	Standard Deviation lb. (kN)	
3/8 (9.0)	Solid Brick ⁴	Mortar Bed Joint	7/32	3 (76)	570 (2.5)	240 (1.1)	79 (0.4)	
			1/4		365 (1.6)	130 (0.6)	46 (0.2)	
		Brick Face	7/32		1,310 (5.8)	565 (2.5)	84 (0.4)	
			1/4		815 (3.6)	350 (1.6)	60 (0.3)	
	Hollow Brick ⁵	Mortar Bed Joint	7/32		530 (2.4)	285 (1.3)	79 (0.4)	
			1/4		775 (3.4)	405 (1.8)	47 (0.2)	
		Brick Face	7/32		510 (2.3)	185 (0.8)	20 (0.1)	
			1/4		1,170 (5.2)	405 (1.8)	79 (0.4)	
	Grout-Filled CMU ⁶	Center of Face Shell	7/32	2 3/4 (70)	830 (3.7)	350 (1.6)	60 (0.3)	
			1/4		1,160 (5.2)	440 (2.0)	56 (0.2)	
		Web	7/32		810 (3.6)	330 (1.5)	100 (0.4)	
			1/4		720 (3.2)	320 (1.4)	71 (0.3)	
		Mortar Bed Joint	7/32		530 (2.4)	205 (0.9)	58 (0.3)	
			1/4		790 (3.5)	305 (1.4)	56 (0.2)	
		Hollow CMU ⁷	Center of Face Shell		7/32	505 (2.2)	255 (1.1)	46 (0.2)
					1/4	1,200 (5.3)	445 (2.0)	50 (0.2)
	Web		7/32	675 (3.0)	385 (1.7)	96 (0.4)		
			1/4	880 (3.9)	410 (1.8)	76 (0.3)		
	Normal-Weight Concrete ⁸	-	7/32	2 3/4 (70)	990 (4.4)	380 (1.7)	96 (0.4)	
			1/4	590 (2.6)	370 (1.6)	24 (0.1)		
	2x4 Wood Stud ^{9,11}	Center of Thin Edge	7/32	2 3/4 (70)	450 (2.0)	260 (1.2)	6 (0.0)	
			1/4		200 (0.9)	120 (0.5)	8 (0.0)	
	Metal Stud ^{10,11}	Center of Flange	7/32	1 (25)	155 (0.7)	95 (0.4)	2 (0.0)	
			1/4		200 (0.9)	120 (0.5)	8 (0.0)	

⚠ Caution: Loads are guide values based on laboratory testing. Onsite testing shall be performed for verification of capacity since base material quality can vary widely.

1. Tabulated loads are guide values based on laboratory testing. Onsite testing shall be performed for verification of capacity since base material quality can vary widely.
2. Ultimate load is average load at failure of the base material. Heli-Tie fastener average ultimate steel strength is 3,885 lb. and does not govern.
3. Load at maximum permitted displacement is average load at displacement of 0.157" (4 mm). The designer shall apply a suitable factor of safety to these numbers to derive allowable service loads.
4. Solid brick values for nominal 4"-wide solid brick conforming to ASTM C62/C216, Grade SW. Type N mortar is prepared in accordance with IBC Section 2103.2.
5. Hollow brick values for nominal 4"-wide hollow brick conforming to ASTM C216/C652, Grade SW, Type HBS, Class H40V. Mortar is prepared in accordance with IBC Section 2103.2.
6. Grout-filled CMU values for normal 8"-wide lightweight, medium-weight and normal-weight concrete masonry units. The masonry units must be fully grouted. Values for normal 8"-wide concrete masonry units (CMU) with a minimum specified compressive strength of masonry, f'_m , at 28 days is 1,500 psi.
7. Hollow CMU values for 8"-wide lightweight, medium-weight and normal-weight concrete masonry units.
8. Normal-weight concrete values for concrete with minimum specified compressive strength of 2,500 psi.
9. 2x4 wood stud values for nominal 2x4 spruce-pine-fir.
10. Metal stud values for 20-gauge C-shape metal stud.
11. For retrofits, due to difficulty of locating center of 2x4 or metal stud flange, install Heli-Tie from interior of building.
12. For new construction, anchor one end of tie into backup material. Embed other end into veneer mortar joint.

Compression (Buckling) Loads¹

Size in. (mm)	Unsupported Length in. (mm)	Ultimate Compression Load ¹ lb. (kN)
3/8 (9.0)	1 (25)	1,905 (8.5)
	2 (50)	1,310 (5.8)
	4 (100)	980 (4.4)
	6 (150)	785 (3.5)

1. The designer shall apply a suitable factor of safety to these numbers to derive allowable service loads.



HELITEST37A

HELIKEY37A

Heli-Tie Wall Tie Tension Tester – Model HELITEST37A

Recommended equipment for onsite testing to accurately determine load values in any specific structure, the Heli-Tie wall tie tension tester features a key specifically designed to grip the Heli-Tie fastener and provide accurate results. Replacement test keys sold separately (Model HELIKEY37A).

Contact Simpson Strong-Tie for Heli-Tie onsite testing procedures.

The Simpson Strong-Tie® Heli-Tie helical stitching tie provides a unique solution to the preservation and repair of damaged brick and concrete masonry units (CMU). Ties are grouted into existing masonry joints to repair cracks and increase strength with minimum disturbance. Made of Type 304 stainless steel, the Heli-Tie stitching tie features radial fins formed on the steel wire via cold rolling process, increasing the tensile strength of the tie.



HELIST254000

Features

- Helical design distributes loads uniformly over a large surface area.
- Installs into the mortar joint to provide an inconspicuous repair and preserve the appearance of the structure.
- Type 304 stainless steel offers superior corrosion resistance to mild steel reinforcement.
- Patented manufacturing process results in consistent, uniform helix configuration (US Patent 7,269,987).
- Batch number printed on each tie for easy identification and inspection.

HELIST254000: ¼" x 40" stitching tie
(special lengths are available upon request)

Material: Type 304 stainless steel

Ordering Information: Sold in tubes of 10

Installation

- Chase bed joint 20" on either side of the affected area to a depth of approximately 1 ¼" with a rotary grinding wheel. Vertical spacing of installation sites should be 12" for brick or "every other course" for concrete masonry units.
- Clear bed joint of all loose debris.
- Mix non-shrink repair grout or mortar per product instructions and place into the prepared bed joint, filling the void to approximately two-thirds of its depth. Simpson Strong-Tie FX-263 repair mortar should be used.
- Embed the tie at one-half the depth of the void. Trowel displaced grout to fully encapsulate the tie.
- Fill any remaining voids and vertical cracks with non-shrink repair grout or other repair mortar to conceal repair site.

Installation Sequence

