

Heli-Tie™ Helical Wall Tie

The Heli-Tie helical wall tie is a stainless-steel tie used to anchor building façades to structural members or to stabilize 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. 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 rotohammer to drive and countersink the tie. Heli-Tie wall ties perform in concrete and masonry as well as wood and steel studs.

Features

- Installs quickly and easily — with the rotohammer 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 rotohammer 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.

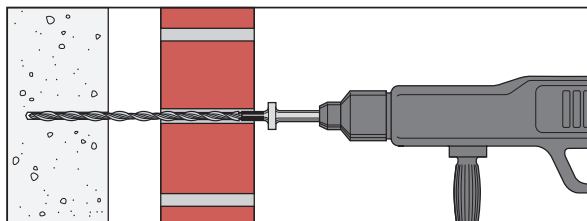
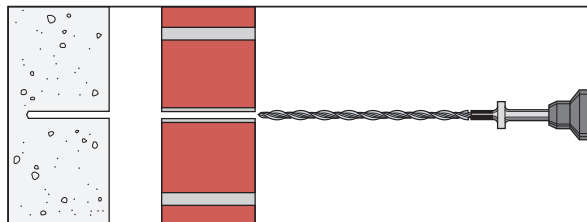
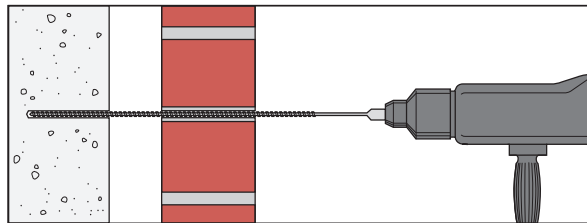


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Watch how to install Heli-Tie helical wall tie at strongtie.com/helitie.

Installation Sequence



Heli-Tie Helical Wall Tie Product Data

Size (in.)	Model No.	Drill Bit Diameter (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™ Design Information

Guide Tension Loads in Various Base Materials

Size in. (mm)	Base Material	Anchor Location	Drill Bit Diameter 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)
			7/32		775 (3.4)	405 (1.8)	47 (0.2)
		Brick face	1/4		510 (2.3)	185 (0.8)	20 (0.1)
	Grout-filled CMU ⁶	Center of face shell	7/32		2 3/4 (70)	1,170 (5.2)	405 (1.8)
			1/4	830 (3.7)		350 (1.6)	60 (0.3)
		Web	7/32	1,160 (5.2)		440 (2.0)	56 (0.2)
			1/4	810 (3.6)		330 (1.5)	100 (0.4)
		Mortar bed joint	7/32	720 (3.2)		320 (1.4)	71 (0.3)
			1/4	530 (2.4)		205 (0.9)	58 (0.3)
	Hollow CMU ⁷	Center of face shell	7/32	790 (3.5)	305 (1.4)	56 (0.2)	
			1/4	505 (2.2)	255 (1.1)	46 (0.2)	
		Web	7/32	1,200 (5.3)	445 (2.0)	50 (0.2)	
			1/4	675 (3.0)	385 (1.7)	96 (0.4)	
	Normal-weight concrete ⁸	—	7/32	1 3/4 (44)	880 (3.9)	410 (1.8)	76 (0.3)
			1/4	2 3/4 (70)	990 (4.4)	380 (1.7)	96 (0.4)
	2x4 wood stud ^{9,11}	Center of thin edge	7/32	2 3/4 (70)	590 (2.6)	370 (1.6)	24 (0.1)
1/4			450 (2.0)		260 (1.2)	6 (0.0)	
Metal stud ^{10,11}	Center of flange	7/32	1 (25)	200 (0.9)	120 (0.5)	8 (0.0)	
		1/4		155 (0.7)	95 (0.4)	2 (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 inches (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-inch-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-inch-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 nominal 8-inch-wide lightweight, medium-weight and normal-weight concrete masonry units. The masonry units must be fully grouted. Values for nominal 8-inch-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-inch-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.

Heli-Tie™ Design Information

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.

Restoration Solutions

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.



HELITool37A

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.



HELITEST37A



HELIKEY37A

For more information see strongtie.com/helitie.