



The following excerpt are pages from the North American Product Technical Guide, Volume 2: Anchor Fastening, Edition 17.

Please refer to the publication in its entirety for complete details on this product including data development, product specifications, general suitability, installation, corrosion and spacing and edge distance guidelines.

US: <http://submittals.us.hilti.com/PTGVol2/>

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To consult directly with a team member regarding our anchor fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am – 6:00pm CST.

US: 877-749-6337 or HNATechnicalServices@hilti.com

CA: 1-800-363-4458, ext. 6 or CATechnicalServices@hilti.com

3.3.15 KWIK-CON II+ Concrete and Masonry Screw

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3.3.15.1 Product description

The KWIK-CON II+ fastening system for concrete and masonry consists of the KWIK-CON II+ fastener, the KWIK-CON II+ drive tool, and a Hilti matched tolerance carbide-tipped drill bit.

Improved silver KWIK Cote finish

- Exceeds 1000 hours of protection from red rust in ASTM B117
- Salt spray testing
- More durable than zinc plating
- Zinc electroplating and passivation with chromate require toxic chemicals. The KWIK Cote zinc rich organic finish is easy on the environment

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Product features

- Applicable specific carbide tipped bits optimize performance in concrete or masonry
- Torx Hex washer head for fast secure driving
- Torx or Phillips flat head for countersunk

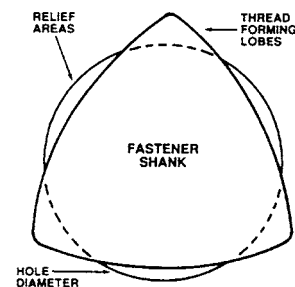
Guide specifications

Concrete screw anchors

Concrete or masonry screw anchors shall be manufactured from cold rolled steel case hardened to a minimum Rockwell Hardness C 45 or stainless steel conforming to AISI Type 410. The concrete or masonry screw anchors shall have a trilobular, cold formed thread design and 8 threads per inch. Screw anchors shall have one of the following head designs: Tapered flat head with T-25 TORX recess, Tapered flat head with T-27 TORX recess or 5/16-inch hex washer with internal T-25 TORX recess. Carbon steel anchors are finished with corrosion resistant silver KWIK Cote coating. Anchors shall be Hilti KWIK-CON II+ anchors as supplied by Hilti.

Installation

Concrete or masonry screw anchors shall be installed in holes drilled with matched tolerance Hilti carbide-tipped drill bits. Installation shall be in accordance with manufacturer's installation instructions.



Listings/Approvals

Metro-Dade County
NOA 12-0625.05

KWIK-CON II+ Concrete and Masonry Screw 3.3.15

3.3.15.2 Material specifications

Carbon Steel with KWIK Cote¹

Screws manufactured from 1018 to 1022 cold rolled steel case hardened to HRC 45 minimum

Minimum tensile strength and yield strength for the 1/4-in. is 138 ksi and 137 ksi, respectively. Minimum tensile strength and yield strength for the 3/16-in. is 138 ksi and 137 ksi, respectively.

KWIK Cote corrosion resistant coating

KWIK Cote is a zinc-rich basecoat with an aluminum-rich topcoat.

AISI Type 410 stainless steel¹

Screws manufactured from AISI Type 410 stainless steel. Minimum tensile strength and yield strength for the 1/4-in. is 184ksi and 157 ksi, respectively. Minimum tensile strength and yield strength for the 3/16-in. is 194 ksi and 170 ksi, respectively.

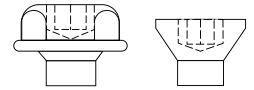
Head Styles

Tapered flat head with #3 Phillips recess for 3/16- and 1/4-in. anchors.

Tapered flat head with T-25 TORX recess for 3/16-in. anchor.

Tapered flat head with T-27 TORX recess for 1/4-in. anchor.

5/16-in. hex washer with internal T-25 TORX recess for 3/16- and 1/4-in. anchors.



Head diameter

Maximum 0.507 in. for 3/16- and 1/4-in. tapered Phillips flat head and 1/4-in. tapered T-27 TORX flat head anchors.

Maximum 0.385 in. for 3/16-in. tapered T-25 TORX flat head anchor.

Maximum 0.432 in. maximum for 3/16- and 1/4-in. T-25 TORX hex washer head anchors.

Thread diameter

Nominal 3/16-in., Major dia. is 0.217 inches, Minor² is 0.145 inches.

Shank diameter

Nominal 3/16-in. is 0.170 inches.

Nominal 1/4-in. is 0.224 inches.

Lengths (in.)

1-1/4, 1-3/4, 2-1/4, 2-3/4, 3-1/4, 3-3/4, 4 (See ordering information section).

Thread design

Trilobular, cold formed.

Threads per inch

Nominal 3/16-in. have 8 tpi.

Nominal 1/4-in. have 8 tpi.

Inches of thread per fastener

1.875 inches maximum.

Bending capacity

Ductility at 10° minimum.

1 Minimum tensile and yield strength are the average of strength measurement of (30) tested samples. These are not minimum steel properties or minimum manufacturing specifications.

2 Minor diameter is the average measurement taken from (30) samples. This is not a controlled dimension.

3.3.15 KWIK-CON II+ Concrete and Masonry Screw

3.3.15.3 Technical data

Table 1 - Tension and shear allowable loads in concrete ^{1,2}

Nominal anchor diameter	Nominal embedment in. (mm)	$f'_c = 2,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi	
		Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
3/16	1 (25)	100 (0.44)	260 (1.16)	125 (0.56)	260 (1.16)	185 (0.82)	280 (1.25)
3/16	1-3/4 (44)	275 (1.22)	260 (1.16)	295 (1.31)	265 (1.18)	325 (1.45)	300 (1.33)
1/4	1 (25)	190 (0.85)	325 (1.45)	240 (1.07)	390 (1.73)	275 (1.22)	540 (2.40)
1/4	1-3/4 (44)	425 (1.89)	560 (2.49)	625 (2.78)	600 (2.82)	650 (2.89)	600 (2.67)

1 Screws installed in holes drilled with Hilti TKC carbide bits.

2 Allowable loads are based on a safety factor of 4.

Table 2 - Tension and shear ultimate loads in concrete¹

Nominal anchor diameter	Nominal embedment in. (mm)	$f'_c = 2,000$ psi		$f'_c = 4,000$ psi		$f'_c = 6,000$ psi	
		Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
3/16	1 (25)	400 (1.78)	1,050 (4.67)	500 (2.22)	1,050 (4.67)	750 (3.34)	1,150 (5.12)
3/16	1-3/4 (44)	1,100 (4.89)	1,050 (4.67)	1,180 (5.25)	1,070 (4.76)	1,300 (5.78)	1,200 (5.34)
1/4	1 (25)	760 (3.38)	1,300 (5.78)	970 (4.31)	1,575 (7.01)	1,100 (4.89)	2,175 (9.68)
1/4	1-3/4 (44)	1,700 (7.56)	2,250 (10.0)	2,500 (11.1)	2,400 (11.3)	2,600 (11.6)	2,400 (10.7)

1 Screws installed in holes drilled with TKC bits.

Table 3 - Tension and shear allowable loads in hollow block^{1,2,3,4}

Nominal anchor diameter	Nominal embedment in. (mm)	Tension lb (kN)	Shear lb (kN)
3/16	1 (25)	150 (0.67)	225 (1.00)
3/16	1-3/4 (44)	290 (1.29)	300 (1.33)
1/4	1 (25)	165 (0.73)	275 (1.22)
1/4	1-3/4 (44)	310 (1.38)	400 (1.78)

1 All values for anchors installed in hollow concrete masonry with a minimum prism strength of 1,500 psi. Concrete block may be lightweight, medium-weight or normal-weight conforming to ASTM C90.

2 Screws installed in holes drilled with TKC bits.

3 Allowable loads calculated using a factor of safety of 4.

4 Installation in the mortar joints is outside the scope of the published data.

Table 4 - Tension and shear allowable loads in red brick^{1,2,3}

Nominal anchor diameter	Nominal embedment in. (mm)	Tension lb (kN)	Shear lb (kN)
3/16	1 (25)	125 (0.56)	235 (1.05)
3/16	1-3/4 (44)	350 (1.56)	300 (1.33)
1/4	1 (25)	205 (0.91)	415 (1.85)
1/4	1-3/4 (44)	350 (1.56)	500 (2.22)

1 This test was performed on individual specimens of ASTM C62 common red brick. Due to the wide variations encountered in the compressive strength of brick, these values should be considered guide values.

2 Allowable loads are based on a safety factor of 4.

3 Installation in the mortar joints is outside the scope of the published data.

The anchors are installed a minimum of 12 diameters on center with a minimum edge distance of six diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to six diameter spacing and three diameter edge distance providing values are reduced 50 percent. Linear interpolation may be used for intermediate spacing and edge margins.

Combined shear and tension loading

$$\left(\frac{N_d}{N_{rec}} \right) + \left(\frac{V_d}{V_{rec}} \right) \leq 1.0$$

3.3.15.4 Installation instructions

Installation Instructions For Use (IFU) are included with each product package. They can also be viewed or downloaded online at www.hilti.com. Because of the possibility of changes, always verify that downloaded IFU are current when used. Proper installation is critical to achieve full performance. Training is available on request. Contact Hilti Technical Services for applications and conditions not addressed in the IFU.

KWIK-CON II+ Concrete and Masonry Screw 3.3.15

3.3.15.5 Ordering information¹

KWIK-CON II+ fasteners



5/16 - in. Magnetic nut setter or T-25 TORX bit

Description	Diameter	Total length	Thread length	Shank length
KWIK-CON II+ 316-114 THWH	3/16	1-1/4	1-1/4	0
KWIK-CON II+ 316-114 THWH Bulk	3/16	1-1/4	1-1/4	0
KWIK-CON II+ 316-134 THWH	3/16	1-3/4	1-3/4	0
KWIK-CON II+ 316-134 THWH Bulk	3/16	1-3/4	1-3/4	0
KWIK-CON II+ 316-214 THWH	3/16	2-1/4	1-3/4	1/2
KWIK-CON II+ 316-234 THWH	3/16	2-3/4	1-3/4	1
KWIK-CON II+ 316-234 THWH Bulk	3/16	2-3/4	1-3/4	1
KWIK-CON II+ 316-314 THWH	3/16	3-1/4	1-3/4	1-1/2
KWIK-CON II+ 316-334 THWH	3/16	3-3/4	1-3/4	2
KWIK-CON II+ 316-4 THWH	3/16	4	1-3/4	2-1/4



5/16 - in. Magnetic nut setter or T-25 bit

Description	Diameter	Total length	Thread length	Shank length
KWIK-CON II+ 14-114 THWH	1/4	1-1/4	1-1/4	0
KWIK-CON II+ 14-114 THWH Bulk	1/4	1-1/4	1-1/4	0
KWIK-CON II+ 14-134 THWH	1/4	1-3/4	1-3/4	0
KWIK-CON II+ 14-134 THWH Bulk	1/4	1-3/4	1-3/4	0
KWIK-CON II+ 14-214 THWH	1/4	2-1/4	1-3/4	1/2
KWIK-CON II+ 14-234 THWH	1/4	2-3/4	1-3/4	1
KWIK-CON II+ 14-234 THWH Bulk	1/4	2-3/4	1-3/4	1
KWIK-CON II+ 14-314 THWH	1/4	3-1/4	1-3/4	1-1/2
KWIK-CON II+ 14-334 THWH	1/4	3-3/4	1-3/4	2
KWIK-CON II+ 14-334 THWH Bulk	1/4	3-3/4	1-3/4	2
KWIK-CON II+ 14-4 THWH	1/4	4	1-3/4	2-1/4
KWIK-CON II+ 14-114 THWH Stainless Steel	1/4	1-1/4	1-1/4	0
KWIK-CON II+ 14-234 THWH Stainless Steel	1/4	2-3/4	1-3/4	1



T-25 TORX bit

Description	Diameter	Total length	Thread length	Shank length
KWIK-CON II+ 316-114 TFH	3/16	1-1/4	1-1/8	0
KWIK-CON II+ 316-134 TFH	3/16	1-3/4	1-5/8	0
KWIK-CON II+ 316-134 TFH Bulk	3/16	1-3/4	1-5/8	0
KWIK-CON II+ 316-214 TFH	3/16	2-1/4	1-3/4	3/8
KWIK-CON II+ 316-234 TFH	3/16	2-3/4	1-3/4	7/8
KWIK-CON II+ 316-234 TFH Bulk	3/16	2-3/4	1-3/4	7/8
KWIK-CON II+ 316-314 TFH	3/16	3-1/4	1-3/4	1-3/8
KWIK-CON II+ 316-334 TFH	3/16	3-3/4	1-3/4	1-7/8
KWIK-CON II+ 316-334 TFH Bulk	3/16	3-3/4	1-3/4	1-7/8
KWIK-CON II+ 316-4 TFH	3/16	4	1-3/4	2-1/8

3.3.15



T-27 TORX bit

Description	Diameter	Total length	Thread length	Shank length
KWIK-CON II+ 14-114 TFH	1/4	1-1/4	1-1/16	0
KWIK-CON II+ 14-134 TFH	1/4	1-3/4	1-9/16	0
KWIK-CON II+ 14-134 TFH Bulk	1/4	1-3/4	1-9/16	0
KWIK-CON II+ 14-214 TFH	1/4	2-1/4	1-3/4	5/16
KWIK-CON II+ 14-234 TFH	1/4	2-3/4	1-3/4	13/16
KWIK-CON II+ 14-314 TFH	1/4	3-1/4	1-3/4	1-5/16
KWIK-CON II+ 14-314 TFH Bulk	1/4	3-1/4	1-3/4	1-5/16
KWIK-CON II+ 14-334 TFH	1/4	3-3/4	1-3/4	1-13/16
KWIK-CON II+ 14-4 TFH	1/4	4	1-3/4	2-1/16

1 All dimensions in inches.

