The following excerpt are pages from the North American Masonry Anchor Strength Design Guide 2024.

Please refer to the publication in its entirety for complete details on this product including data development, product specifications, general suitability, installation, and spacing and edge distance guidelines.
US&CA: Hilti North American Product Technical Guides

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 – 5:00pm CST.
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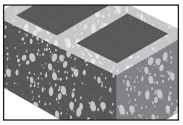
7.6 KWIK HUS-EZ SS316 SCREW ANCHOR FOR MASONRY

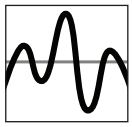
PRODUCT DESCRIPTION

KWIK HUS-EZ SS316 Stainless Steel Screw Anchors

Anchor System		Features and Benefits
	KH-EZ SS316 1/4” & 1/2”	• OSHA Table 1926.1153 Table 1 compliant when installed with Hilti vacuum and DRS system or Hilti SafeSetTM hollow drill bit technology. • Easy installation using impact tool or torque wrench. • Product and length identification marks helps facilitate quality control after installation. • Through fixture installation improves productivity and more accurate installation. • Full stainless steel 316 screw with carbide cutting elements to help enable quality setting and exceptional load values. • Anchor is fully removable. • Anchor diameter is the same as drill bit diameter. No special diameter bit required. • Corrosion resistant coating allows for use in outdoor corrosive environments. • Installation process allows for adjustability.
	KH-EZ C SS316 1/4“ - 3/8“	



Grout-filled concrete masonry



Seismic Design Categories A-F

Hollow drill bit

Profis Engineering design software

Approvals/Listings	
ICC-ES (International Code Council) • 2021 International Building Code / International Residential Code (IBC/IRC)	ESR-3056 in grout-filled CMU per ICC-ES AC01
City of Los Angeles	2023 LABC Supplement (within ESR-3056)
Florida Building Code	2023 FBC Supplement with HVHZ (within ESR-3056)

INSTALLATION PARAMETERS

Table 1 — Hilti KH-EZ SS316 and KH-EZ C SS316 installation information

Design Information		Symbol	Units	Nominal Anchor Diameter (in.)					
				1/4		3/8		1/2	
Head Style		-	-	Hex and C		Hex and C		Hex	
Nominal bit diameter		d_o	in.	1/4		3/8		1/2	
Effective minimum embedment		h_{ef}	in. (mm)	1.19 (30)	1.93 (49)	1.49 (38)	2.55 (65)	1.56 (40)	3.26 (83)
Nominal embedment		h_{nom}	in. (mm)	1 5/8 (41)	2 1/2 (64)	2 (51)	3 1/4 (83)	2 1/4 (57)	4 1/4 (108)
Minimum hole depth		h_o	in. (mm)	2 (51)	2 7/8 (73)	2 1/4 (57)	3 1/2 (89)	2 5/8 (67)	4 5/8 (117)
Maximum Installation Torque[1]		$T_{inst,max}$	ft-lb (Nm)	2 (2.7)	-	-		-	
Maximum Impact Wrench Torque Rating[2]		$T_{impact,max}$	ft-lb (Nm)	-	66 (89)	100 (136)		157 (213)	
Minimum Fixture Diameter		d_h	in. (mm)	3/8 (9.5)		1/2 (12.7)		5/8 (15.9)	
Minimum Masonry Thickness		h_{min}	in. (mm)	7 5/8 (194)					
Minimum Distance to Hollow Head Joint[3]		$c_{min,HJ}$	in. (mm)	2 1/2 (64)		2 1/2 (64)		2 1/2 (64)	
Face of Wall	Minimum Edge Distance	c_{min}	in. (mm)	4 (102)		4 (102)		4 (102)	
	Minimum Anchor Spacing	s_{min}	in. (mm)	6 (152)		4 (102)		6 (152)	
Top of Wall	Minimum Edge Distance[2]	$c_{min,top}$	in. (mm)	-		-		-	1 3/4 (44)
	Minimum Anchor Spacing	$s_{min,top}$	in. (mm)	-		-		-	8 (203)

1 Maximum Installation Torque applies to installations using a calibrated torque wrench.
2 Because of the variability in measurement procedures, the published torque of an impact tool may not correlate properly with the above setting torques. Over-torquing can damage the base material, anchor and/or reduce its holding capacity.
3 The minimum distance to hollow head joint is measured from the center of an anchor to the centerline of a hollow head joint (vertical mortar joint).

Figure 1 — Hilti KWIK HUS-EZ specifications

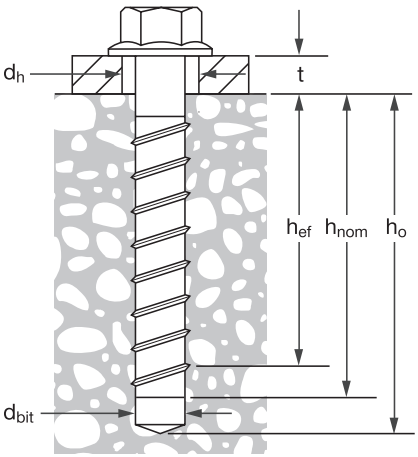


Table 2 — Hilti KH-EZ SS316 and KH-EZ C SS316 design strength with masonry failure modes in the face of uncracked fully grouted CMU walls [1,2,3,4]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout / pullout) - ΦN_n				Shear (lesser of pryout or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/4	1.19 (30)	195 (0.9)	195 (0.9)	195 (0.9)	195 (0.9)	600 (2.7)	690 (3.1)	770 (3.4)	845 (3.8)
	1.93 (49)	420 (1.9)	420 (1.9)	420 (1.9)	420 (1.9)	1,235 (5.5)	1,425 (6.3)	1,595 (7.1)	1,750 (7.8)
3/8	1.49 (38)	515 (2.3)	515 (2.3)	515 (2.3)	515 (2.3)	840 (3.7)	970 (4.3)	1,080 (4.8)	1,185 (5.3)
	2.55 (65)	1,475 (6.6)	1,705 (7.6)	1,875 (8.3)	1,875 (8.3)	3,015 (13.4)	3,240 (14.4)	3,425 (15.2)	3,585 (15.9)
1/2	1.56 (40)	705 (3.1)	815 (3.6)	875 (3.9)	875 (3.9)	900 (4.0)	1,035 (4.6)	1,160 (5.2)	1,270 (5.6)
	3.26 (83)	2,130 (9.5)	2,460 (10.9)	2,635 (11.7)	2,635 (11.7)	3,505 (15.6)	3,770 (16.8)	3,985 (17.7)	4,170 (18.5)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor with no influence from nearby edges, hollow head joints, or additional anchors. For designs with the influence of nearby edges, hollow head joints, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.

Table 3 — Hilti KH-EZ SS316 and KH-EZ C SS316 design strength with masonry failure modes in the face of cracked fully grouted CMU walls [1,2,3,4]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout / pullout) - ΦN_n				Shear (lesser of pryout or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/4	1.19 (30)	90 (0.4)	90 (0.4)	90 (0.4)	90 (0.4)	420 (1.9)	490 (2.2)	545 (2.4)	595 (2.6)
	1.93 (49)	185 (0.8)	185 (0.8)	185 (0.8)	185 (0.8)	870 (3.9)	1,005 (4.5)	1,125 (5.0)	1,235 (5.5)
3/8	1.49 (38)	210 (0.9)	210 (0.9)	210 (0.9)	210 (0.9)	590 (2.6)	685 (3.0)	765 (3.4)	835 (3.7)
	2.55 (65)	770 (3.4)	770 (3.4)	770 (3.4)	770 (3.4)	2,650 (11.8)	3,060 (13.6)	3,420 (15.2)	3,585 (15.9)
1/2	1.56 (40)	500 (2.2)	575 (2.6)	645 (2.9)	690 (3.1)	635 (2.8)	730 (3.2)	820 (3.6)	895 (4.0)
	3.26 (83)	1,505 (6.7)	1,735 (7.7)	1,940 (8.6)	2,085 (9.3)	3,505 (15.6)	3,770 (16.8)	3,985 (17.7)	4,170 (18.5)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor with no influence from nearby edges, hollow head joints, or additional anchors. For designs with the influence of nearby edges, hollow head joints, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factors:
1/4-in diameter = 0.70
3/8-in and 1/2-in diameters = 0.75

Table 4 — Hilti KH-EZ SS316 and KH-EZ C SS316 design strength with masonry failure modes in the face of uncracked fully grouted CMU walls and installed at minimum distance from centerline of hollow head joint [1,2,3,4]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or pullout) - ΦN_n				Shear (lesser of breakout, pryout, or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/4	1.19 (30)	195 (0.9)	195 (0.9)	195 (0.9)	195 (0.9)	600 (2.7)	690 (3.1)	770 (3.4)	845 (3.8)
	1.93 (49)	420 (1.9)	420 (1.9)	420 (1.9)	420 (1.9)	1,045 (4.6)	1,205 (5.4)	1,350 (6.0)	1,475 (6.6)
3/8	1.49 (38)	515 (2.3)	515 (2.3)	515 (2.3)	515 (2.3)	840 (3.7)	970 (4.3)	1,080 (4.8)	1,185 (5.3)
	2.55 (65)	1,045 (4.6)	1,205 (5.4)	1,345 (6.0)	1,475 (6.6)	1,680 (7.5)	1,940 (8.6)	2,170 (9.7)	2,375 (10.6)
1/2	1.56 (40)	700 (3.1)	805 (3.6)	875 (3.9)	875 (3.9)	890 (4.0)	1,025 (4.6)	1,150 (5.1)	1,260 (5.6)
	3.26 (83)	1,320 (5.9)	1,525 (6.8)	1,705 (7.6)	1,870 (8.3)	1,920 (8.5)	2,220 (9.9)	2,480 (11.0)	2,720 (12.1)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located 2.5-in from centerline of a hollow head joint with no additional influence from nearby edges or additional anchors. For designs with the influence of nearby edges, different distances to a hollow head joint, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.

Table 5 — Hilti KH-EZ SS316 and KH-EZ C SS316 design strength with masonry failure modes in the face of cracked fully grouted CMU walls and installed at minimum distance from centerline of hollow head joint [1,2,3,4]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension (lesser of breakout or pullout) - ΦN_n				Shear (lesser of breakout, pryout, or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/4	1.19 (30)	90 (0.4)	90 (0.4)	90 (0.4)	90 (0.4)	420 (1.9)	490 (2.2)	545 (2.4)	595 (2.6)
	1.93 (49)	185 (0.8)	185 (0.8)	185 (0.8)	185 (0.8)	735 (3.3)	850 (3.8)	950 (4.2)	1,045 (4.6)
3/8	1.49 (38)	210 (0.9)	210 (0.9)	210 (0.9)	210 (0.9)	590 (2.6)	685 (3.0)	765 (3.4)	835 (3.7)
	2.55 (65)	735 (3.3)	770 (3.4)	770 (3.4)	770 (3.4)	1,200 (5.3)	1,385 (6.2)	1,550 (6.9)	1,695 (7.5)
1/2	1.56 (40)	495 (2.2)	570 (2.5)	635 (2.8)	690 (3.1)	630 (2.8)	725 (3.2)	810 (3.6)	890 (4.0)
	3.26 (83)	935 (4.2)	1,075 (4.8)	1,205 (5.4)	1,320 (5.9)	1,375 (6.1)	1,585 (7.1)	1,775 (7.9)	1,940 (8.6)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located 2.5-in from centerline of a hollow head joint with no additional influence from nearby edges or additional anchors. For designs with the influence of nearby edges, different distances to a hollow head joint, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factors:
1/4-in diameter = 0.70
3/8-in and 1/2-in diameters = 0.75

Table 6 — Hilti KH-EZ SS316 design strength with masonry failure modes in the top of uncracked fully grouted CMU walls and installed at minimum edge distance parallel with masonry course [1,2,3,4,5]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension ((lesser of breakout or pullout) - ΦN_n				Shear (lesser of breakout, pryout, or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/2	3.22 (82)	1,130 (5.0)	1,130 (5.0)	1,130 (5.0)	1,130 (5.0)	1,260 (5.6)	1,460 (6.5)	1,630 (7.3)	1,785 (7.9)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located at minimum edge of 1-3/4-in from edge parallel with masonry course with no additional influence from nearby edges or additional anchors. For designs with the additional influence of nearby edges, a different edge distance, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. Seismic design is not permitted for uncracked masonry.
5 Tabular shear values are for shear force parallel to the edge parallel with the masonry course. For shear force perpendicular to the edge parallel with the masonry course, multiply design strength values in shear by the following reduction factor: 0.50.

Table 7 — Hilti KH-EZ SS316 design strength with masonry failure modes in the top of cracked fully grouted CMU walls and installed at minimum edge distance parallel with masonry course [1,2,3,4,5]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension ((lesser of breakout or pullout) - ΦN_n				Shear (lesser of breakout, pryout, or crushing) - ΦV_n			
		f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)	f'_m = 1500 psi (10.3 MPa) lb (kN)	f'_m = 2000 psi (13.8 MPa) lb (kN)	f'_m = 2500 psi (17.2 MPa) lb (kN)	f'_m = 3000 psi (20.7 MPa) lb (kN)
1/2	3.22 (82)	815 (3.6)	890 (4.0)	890 (4.0)	890 (4.0)	900 (4.0)	1,040 (4.6)	1,165 (5.2)	1,275 (5.7)

1 Linear interpolation between embedment depths and masonry compressive strengths is not permitted.
2 Tabular values are for a single anchor located at minimum edge of 1-3/4-in from edge parallel with masonry course with no additional influence from nearby edges or additional anchors. For designs with the additional influence of nearby edges, a different edge distance, or additional anchors, use Hilti PROFIS Engineering Design software or perform anchor calculation using design equations from AC01.
3 Compare masonry tabular values to the steel values in Table 8. The lesser of the values is to be used for the design.
4 Tabular values are for static loads only. For seismic loads, multiply design strength values in tension and shear by the following reduction factor: 0.75.
5 Tabular shear values are for shear force parallel to the edge parallel with the masonry course. For shear force perpendicular to the edge parallel with the masonry course, multiply design strength values in shear by the following reduction factor: 0.50.

Table 8 — Hilti KH-EZ SS316 and KH-EZ C SS316 design strength based on steel failure per ACI 318 Ch. 17

Nominal anchor diameter in.	Effective embedment in. (mm)	Stainless Steel[1]		
		Tensile[2] ϕN_{sa} lb (kN)	Shear[3] ϕV_{sa} lb (kN)	Seismic Shear[4] $\phi V_{sa,eq}$ lb (kN)
1/4	1.19 (30)	3,750 (16.7)	915 (4.1)	915 (4.1)
	1.93 (49)	3,750 (16.7)	1,325 (5.9)	915 (4.1)
3/8	1.49 (38)	8,815 (39.2)	2,485 (11.1)	2,365 (10.5)
	2.55 (65)	8,815 (39.2)	3,055 (13.6)	2,365 (10.5)
1/2	1.56 (40)	15,490 (68.9)	2,450 (10.9)	2,450 (10.9)
	3.26 (83)	15,490 (68.9)	5,320 (23.7)	2,450 (10.9)

1 Hilti KH-EZ SS316 carbon steel anchors are to be considered ductile steel elements.
2 Tensile = $\phi A_{se,N} f_{uta}$ as noted in ACI 318-19 17.6.1.2.
3 Shear values determined by static shear tests with $\phi V_{sa} \le \phi\ 0.60\ A_{se,V} f_{uta}$ as noted in ACI 318-19 17.7.1.2b.
4 Seismic shear values determined by seismic shear tests with $\phi V_{sa,eq} \le \phi V_{sa} \le \phi\ 0.60\ A_{se,V} f_{uta}$ as noted in ACI 318-19 17.7.1.2b.

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.

ORDERING INFORMATION

Description	Hole Diameter	Total Length	Minimum Embedment Depth	Qty (pcs) / Box
KH-EZ SS316 1/4''x2''	1/4''	2	1 5/8	100
KH-EZ SS316 1/4''x2 1/2''	1/4''	2 1/2	1 5/8	100
KH-EZ SS316 1/4''x3''	1/4''	3	1 5/8	100
KH-EZ C SS316 1/4''x2''	1/4''	2	1 5/8	100
KH-EZ C SS316 1/4''x2 1/2''	1/4''	2 1/2	1 5/8	100
KH-EZ C SS316 1/4''x3''	1/4''	3	1 5/8	100
KH-EZ SS316 3/8''x2 1/2''	3/8''	2 1/2	2	50
KH-EZ SS316 3/8''x3''	3/8''	3	2	50
KH-EZ SS316 3/8''x4''	3/8''	4	2 1/2	50
KH-EZ SS316 3/8''x5''	3/8''	5	2 1/2	50
KH-EZ C SS316 3/8''x2 1/2''	3/8''	2 1/2	2	50
KH-EZ C SS316 3/8''x3''	3/8''	3	2 1/2	50
KH-EZ C SS316 3/8''x4''	3/8''	4	2 1/2	50
KH-EZ SS316 1/2''x3''	1/2''	3	2 1/4	25
KH-EZ SS316 1/2''x4''	1/2''	4	3	25
KH-EZ SS316 1/2''x5''	1/2''	5	3	25

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