Attached are page(s) from the 2006 Hilti North American Product Technical Guide. For complete details on this product, including data development, product specifications, general suitability, installation, corrosion, and spacing & edge distance guidelines, please refer to the Technical Guide, or contact Hilti.

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8.1 Approvals & Listings

8.1.1 ICC-ES (International Code Council) Evaluation Reports

Report No.	Title
ER-1290	Exterior or Perimeter Sill and Interior Plate Anchorages
ESR-1291	3/8-Inch HDI-P Concrete Anchor
ESR-1355	Kwik Bolt II and Post Nut Kwik Bolt 3 Concrete Anchors
ESR-1385	Kwik Bolt 3 Concrete and Masonry Anchors
ESR-1423	HUS-H Concrete Screw Anchor
ESR-1545	Hilti HSL-3 Carbon Steel Metric Heavy Duty Concrete Anchors in Concrete
ESR-1546	Hilti HDA Carbon Steel and Stainless Steel Metric Undercut Anchors in Concrete
ESR-1562	Hilti HIT-TZ and HIT-RTZ Adhesive Anchor Systems
ESR-1682	Hilti HIT RE 500 Adhesive Anchor Systems
ESR-1752	Low-Velocity Gas-Power-Driven Track Fasteners
ESR-1917	Hilti Kwik Bolt TZ Carbon and Stainless Steel Anchors in Concrete
ESR-1663	Hilti Low-velocity Powder Actuated Fasteners
ER-2895	HDI Concrete Expansion Anchors
ER-3987	Hilti HSL Carbon Steel and Stainless Steel Metric Heavy Duty Concrete Anchors
ER-4373	Steel Deck and Concrete Filled Diaphragms Attached with Hilti Fasteners
ER-4815	HIT HY-20 Adhesive Anchor Systems for Un-reinforced Masonry
ER-5071	Hilti-Firestop Systems for Through Penetrations
ER-5193	Hilti HIT HY-150 Adhesive Anchor Systems
ER-5259	Kwik Con II Concrete and Masonry Screw Anchors
ER-5369	HVA (HVU) Adhesive Anchor System
ER-5457	Hilti Low-Velocity Powder-Actuated Ceiling Clip Assemblies
ER-5614	Hilti Fire-stop Systems for Fire-resistive Joints
ER-6033	Steel Deck Diaphragms with Verco Sheartranz II® Restraining Elements

8.1.2 COLA (City of Los Angeles) Approvals

Report No.	Title
02582	Hilti Powder Driven Fasteners
23709	Hilti HDI Expansion Anchors
24564	HIT Adhesive Anchor and HIT Combination Anchor for use in unreinforced brick walls
25095	Dril-Flex® Self-Drilling Screws
25257	Hilti Hit HY-150 Adhesive Anchor Systems
25290	HSL Metric Heavy Duty Concrete Anchors
25296	Hilti Fasteners and Self-Drilling Screws for Steel Diaphragm Attachment
25350	Hilti HDI-P Concrete Anchors
25363	Hilti HVA (HVU) Adhesive Anchor System For Normal Weight Concrete
25422	Hilti HDA Metric Self-undercutting Concrete Anchors
25514	Hilti HIT RE-500 Adhesive Anchoring System
25515	Hilti HIT-TZ and HIT-RTZ Adhesive Anchoring Systems
25577	Kwik Bolt 3 Concrete and Masonry Anchors
pending	HUS-H Concrete Screw Anchor

8.1.3 Metro Dade County Approvals

Report No.	Title
03-0709.01	Powder Driven Fastener (X-ZF 72 P8S36)
01-0727.01	Hilti KWIK-CON II Concrete Screw Anchor
01-1119.03	HIT HY 150
pending	Hilti Kwik Bolt 3 Concrete and Masonry Anchors

8.1.4 UL/cUL Underwriters Laboratories) Listings

File No.	Title
EX2258	Pipe Hangers Powder Actuated Fasteners EW10-30-15P10, W10-30-32P10 and W10-30-42P10
EX2709	Pipe Hangers Hilti Kwik Bolt 3 Anchors 3/8" to 3/4" Hilti Kwik Bolt TZ Anchors 3/8” to 3/4” Hilti HDI Anchors 3/8” to 3/4” Diameters Hilti HDI-L Anchors 3/8” and 1/2” Diameters Hilti HCI-WF Anchors 3/8” and 1/2” Diameters Hilti HCI-MD Anchors 3/8” and 1/2” Diameters Hilti SLC-EG 2” to 8”
R13203	Roof Deck Construction Nos 58, 87, 156, and 157 Powder Actuated and Pneumatic Driven Fasteners
E217969	Power Driven Hangers Hilti X-HSW6 and X-HSW10
E201485	Wire Positioning Devices Hilti X-ECH/FR-L, X-ECH/FR-M, X-ECH/FR-S

8.1.5 FMRC (Factory Mutual Research Corporation) Approvals

File No.	Application / Product
3021719	Steel Deck Roof Construction (class 1-90) Powder-Actuated Steel Deck Fasteners: X-ENP-19 L15, ENPH2-21 L15, X-EDN19 THQ12, X-EDNK22 THQ12
3011115	Steel Deck Roof Construction (class 1-90) Extended Spans for Selected Hilti Steel Deck Fasteners and Hilti S-MD 12-14x1 Stitch and S-MD 10-16x7/8 Pilot Fasteners for Securing Steel Deck Side Laps
3019100	Pipe Hanger Components HDI 3/8” to 3/4”; HDI-L 3/8” and 1/2”; HDI-P 3/8”
3021265	Pipe Hanger Components Kwik Bolt 3 Anchors 3/8” to 3/4”
3024488	Pipe Hanger Components Kwik Bolt TZ Anchors 3/8” to 3/4”
3019101	Pipe Hanger Components HCI-WF 3/8” to 1/2”; HCI-MD 3/8” to 1/2”;
3021617	Pipe Hanger Components HCI-WF 5/8” to 3/4”; HCI-MD 5/8” to 3/4”

8.2 Reference Standards

8.2.1 ASTM Standards for Materials

Standard	Title
A 36	Specification for Structural Steel
A 108	Specification for Steel Bars, Carbon, Cold-finished, Standard Quality
A 109	Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
A 193	Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
A 240	Specification for Heat-resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
A 276	Specification for Stainless and Heat-resisting Steel Bars and Shapes
A 307	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
A 420	Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service
A 446	Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality (Withdrawn 1994)
A 493	Specification for Stainless and Heat-resisting Steel for Cold Heading and Cold Forging Bar and Wire
A 510	Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
A 563	Specification for Carbon and Alloy Steel Nuts
A 570	Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled (Withdrawn 2000)
A 572	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
A 611	Standard Specification for Structural Steel (SS), Sheet, Carbon, Cold-Rolled (Withdrawn 2000)
A 615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
A 616	Specification for Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
A 617	Specification for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
A 653	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
A 682	Standard Specification for Steel, Strip, High-Carbon, Cold-Rolled, General Requirements For
A 992	Standard Specification for Steel for Structural Shapes For Use in Building Framing
B 117	Standard Practice for Operating Salt Spray (Fog) Apparatus
C 33	Specification for Concrete Aggregates
C 34	Standard Specification for Structural Clay Load-Bearing Wall Tile
C 36	Standard Specification for Gypsum Wallboard
C 62	Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
C 90	Specification for Load-Bearing Concrete Masonry Units
C 109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
C 150	Standard Specification for Portland Cement
C 157	Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete
C 191	Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
C 230	Standard Specification for Flow Table for Use in Tests of Hydraulic Cement
C 266	Standard Test Method for Time of Setting of Hydraulic-Cement Paste by Gillmore Needles
C 270	Standard Specification for Mortar for Unit Masonry
C 330	Specification for Lightweight Aggregates for Structural Concrete
C 332	Specification for Lightweight Aggregates for Insulating Concrete
C 474	Standard Test Methods for Joint Treatment Materials for Gypsum Board Construction
C 476	Specification for Grout for Masonry
C 580	Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concrete
C 642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
C 652	Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)
C 666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
C 672	Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
C 827	Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
C 881	Specification for Epoxy-Resin-Base Bonding Systems for Concrete
C 882	Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete
C 928	Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs

continued on following page…

8.2.1 ASTM Standards for Materials (cont'd)

Standard	Title
C 939	Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
C 942	Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory
C 954	Standard Specifiction for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
C 1002	Standard Specifiction for Steel Drill Screws for the Application of Gypsum Board of Metal Plaster Bases to Wood or Steel Studs
C 1090	Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout
C 1107	Standard Specification for packaged Dry, Hydraulic-Cement Grout (Nonshrink)
D 256	Standard Test Method for Determining the Izod Pendulm Impact Resistance of Plastics
D 635	Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
D 638	Test Method for Tensile Properties of Plastics
D 648	Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
D 695	Test Method for Compressive Properties of Rigid Plastics
D 790	Standard Test Method Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
E 380	Standard Practice for Use of the International System of Units, SI (The Modernized Metric System)
E 488	Test Method for Strength of Anchors in Concrete and Masonry Elements
E 1190	Test Methods for Strength of Powder-Actuated Fasteners Installed in Structural Members
E 1512	Standard Test Methods for Testing Bond Performance of Bonded Anchors
F 436	Specification for Hardened Steel Washers
F 593	Specification for Stainless Steel Bolts, Hex Cap Screws and Studs
F 594	Specification for Stainless Steel Nuts
F 844	Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
G 15	Standard Terminology Relating to Corrosion and Corrosion Testing
G 85	Standard Practice for Modified Salt Spray (Fog) Testing
G 87	Standard Practice for Conducting Moist SO_2 Tests

8.2.2 ASTM Plating Standards

Standard	Title
A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
B 633	Electrodeposited Coatings of Zinc on Iron and Steel
B 695	Coatings of Zinc Mechanically Deposited on Iron and Steel
F 1941	Standard Specification for Electrodeposited Coatings on Threaded Fasteners (Unified Screw Threads, UN/UNR)

8.2.3 Federal Specifications

Standard	Title
A-A-1922A	Shield, Expansion (Caulking Anchors, Single Lead)
A-A-1923A	Shield, Expansion (Lag, Machine and Externally Threaded Wedge Bolt Anchor)
A-A-1924A	Shield, Expansion (Self Drilling Tubular Expansion Shell Bolt Anchors)
A-A-55615	Shield, Expansion (Wood Screw and Lag Bolt Self-Threading Anchors)
A-A-55614	Shield, Expansion, Non-drilling (Wood Screw and Lag Bolt Self-Threading Anchors)

8.2.4 ANSI Standards

Standard	Title
A10.3	Powder-Actuated Fastening Systems – Safety Requirements
B18.2.2	Square and Hex Nuts (Inch Series)
B18.22.1	Plain Washers (Inch Series)
B212.15	Carbide-Tipped Masonry Drills and Blanks for Carbide – Tipped Masonry Drills
Standard 61	Drinking Water System Components – Health Effects

8.3 Technical References

8.3.1 Metric Conversions and Equivalents

The Metric Conversion Act of 1975, as amended by the Omnibus Trade and Competitiveness Act of 1988, establishes the SI (System International) metric system as the preferred system of measurement in the United States.
Many products are currently manufactured and supplied in SI or "hard" metric sizes such as anchor bolts of 10 mm, 12 mm, 26 mm, etc. diameter. Where the inch-pound system is given or used, "soft" metric conversion can sometimes be used (but specifically not when selecting a drill bit for installing mechanical anchors, where it is critical to only use the specified Imperial or Metric diameter bit). The soft conversion diameters for anchor bolts is given by Table 1. Standard metric conversion factors commonly used for fastening products are given in Tables 2 & 3.

Table 1 : Diameters

Inch-Pound System Inch	*Hard Metric Conversion mm*	*Use for Soft Metric Conversion mm*
1/4	6.35	6
5/16	7.94	8
3/8	9.52	10
1/2	12.70	12
5/8	15.88	16
3/4	19.05	20
1	25.40	25
1-1/4	31.75	32

Table 2 : Imperial Units to SI Units

To Convert	*Into*	*Multiply By*
Length		
inch (in.)	millimeter (mm)	25.4000
foot (ft)	meter (m)	0.3048
Area		
square inch (in.^{2})	square millimeter (mm^2)	645.1600
square inch (in.^{2})	square centimeter (cm^2)	6.4516
square foot (ft^2)	square meter (m^2)	0.0929
Volume		
cubic inch (in.^{3})	cubic centimeter (cm^3)	16.3871
cubic foot (ft^3)	cubic meter (m^3)	0.0283
gallon (US gal)	liter (L)	3.7854
Force		
pound force (lbf)	newton (N)	4.4482
pound force (lbf)	kilonewton (kN)	0.0044
Pressure		
pound/square inch (psi)	newton/square millimeter (N/mm^2)	0.0069
pound/square inch (psi)	mega pascal (MPa)	0.0069
KIP/square inch (ksi)	mega pascal (MPa)	6.8946
pounds/square foot (psf)	newton/square meter (N/m^2)	47.8801
Torque or Bending Moment		
foot pound (ft-lb)	newton meter (N·m)	1.3558
inch pound (in-lb)	newton meter (N·m)	0.1130
Diaphragm Shear		
pounds/foot (plf)	newton/meter (N/m)	14.5939

Table 3 : SI Units to Imperial Units

To Convert	*Into*	*Multiply By*
Length		
millimeter (mm)	inch (in.)	0.0394
meter (m)	foot (ft)	3.2808
Area		
square millimeter (mm^2)	square inch (in^2)	0.0016
square centimeter (cm^2)	square inch (in^2)	0.1550
square meter (m^2)	square foot (ft^2)	10.7639
Volume		
cubic centimeter (cm^3)	cubic inch (in^3)	0.0610
cubic meter (m^3)	cubic foot (ft^3)	35.3147
liter (L)	gallon (US gal)	0.2642
Force		
newton (N)	pound force (lbf)	0.2248
kilonewton (kN)	pound force (lbf)	224.8089
Pressure		
newton/square millimeter (N/mm^2)	pound/square inch (psi)	145.0400
mega pascal (MPa)	pound/square inch (psi)	145.0400
mega pascal (MPa)	KIP/square inch (ksi)	0.1450
newton/square meter (N/m^2)	pounds/square foot (psf)	0.0209
Torque or Bending Moment		
newton meter (N·m)	foot pound (ft-lb)	0.7376
newton meter (N·m)	inch pound (in-lb)	8.8496
Diaphragm Shear		
newton/meter (N/m)	pounds/lineal foot (plf)	0.0685

8.3.2 Mechanical Properties of Materials

Carbon Steel

Grade Designation	Nominal Size (in.)	Min. Yield Strength ksi	(MPa)	Min. Ultimate Strength ksi	(MPa)
ASTM A 36	All	**36**	(248)	**58**	(400)
ASTM A 193, B 7	1/4 thru 2-1/2	**105**	(724)	**125**	(862)
AISI 1038 (As Rec'd)	1/4 to 1-1/4	**41**	(282)	**75**	(517)
AISI 11L41	over 5/8 thru 1	**75**	(517)	**90**	(620)
AISI 1110 M (As Rec'd)	1/4 to 5/8	**44**	(303)	**53**	(365)
AISI 12L14	5/8 thru 1-1/2	**60**	(414)	**78**	(538)
AISI 1010 (As Rec'd)	1/4 thru 3/4	**44**	(303)	**53**	(365)
ASTM A 307	1/4 to 4	**–**	**–**	**60**	(414)
ASTM A 325	1/2 thru 1 over 1 thru 1-1/2	**92** **81**	(634) (558)	**120** **105**	(827) (724)
ASTM A 449	1/4 thru 1 over 1 thru 1-1/2	**92** **81**	(634) (558)	**120** **105**	(827) (724)
ASTM A 510	3/8 thru 3/4	**70**	(480)	**87**	(600)
SAE Grade 2	1/4 thru 3/4 over 3/4 to 1-1/2	**57** **36**	(393) (248)	**74** **60**	(510) (414)
SAE Grade 5	1/4 thru 1 over 1 to 1-1/2	**92** **81**	(634) (558)	**120** **105**	(827) (724)
SAE Grade 8	1/4 thru 1-1/2	**130**	(896)	**150**	(1034)
ISO 898-1 Class 5.8	All	**58**	(400)	**72.5**	(500)
ISO 898-1 Class 8.8	All	**92.8**	(640)	**116**	(800)

Stainless Steel

Grade ASTM/AISI	Nominal Size (in.)	Yield Strength ksi	(MPa)	Ultimate Strength ksi	(MPa)
F 593 / 304 / 316	1/4 thru 5/8 3/4 thru 1-1/2	**65** **45**	(448) (310)	**100** **85**	(689) (586)
A 193, B8/304/316	1/4 thru 1-1/2	**30**	(205)	**74.6**	(515)
A 276 / 304	1/4 thru 9/16 over 9/16	**76** **64**	(524) (441)	**90** **76**	(620) (524)
A 276 / 316	1/4 thru 9/16 over 9/16	**76** **64**	(524) (441)	**90** **76**	(620) (524)
A 493 / 304	All	**60**	(414)	**90**	(627)
A 582 / 303	All	**60**	(414)	**100**	(689)
DIN 267 Part 11, A4-70	All	**65.3**	(450)	**101.5**	(700)

8.3 Technical References

8.3.3 Bolt Thread Data

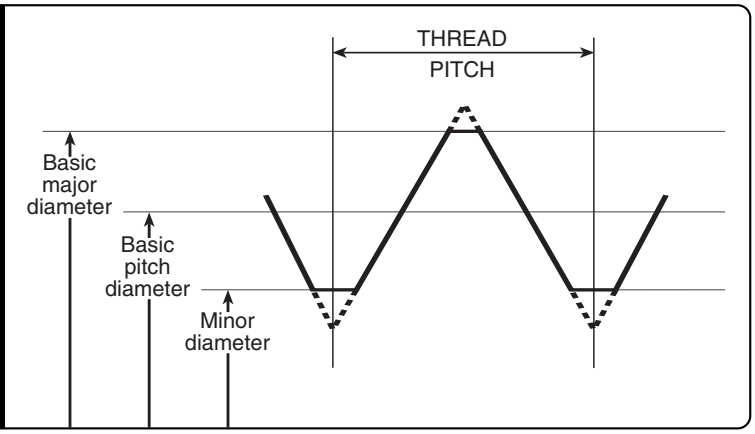
Basic Dimensions for UNC Coarse Thread Series—ANSI B1.1-1982

Nominal Size	Basic Diameter		Threads per Inch (n)	Area*		
	Major in. (D)	Minor in.		Nominal in^2	Minor in^2	Tensile Stress in^2
No. 10	0.1900	0.1449	24	0.0284	0.0145	0.0175
No. 12	0.2160	0.1709	24	0.0366	0.0206	0.0242
1/4	0.2500	0.1959	20	0.0491	0.0269	0.0318
5/16	0.3125	0.2524	18	0.0767	0.0454	0.0524
3/8	0.3750	0.3073	16	0.1104	0.0678	0.0775
7/16	0.4375	0.3602	14	0.1503	0.0933	0.1063
1/2	0.5000	0.4167	13	0.1963	0.1257	0.1419
9/16	0.5625	0.4723	12	0.2485	0.1620	0.1819
5/8	0.6250	0.5266	11	0.3068	0.2017	0.2260
3/4	0.7500	0.6417	10	0.4418	0.3019	0.3345
7/8	0.8750	0.7547	9	0.6013	0.4192	0.4617
1	1.0000	0.8647	8	0.7854	0.5509	0.6057
1-1/8	1.1250	0.9704	7	0.9940	0.6929	0.7633
1-1/4	1.2500	1.0954	7	1.2272	0.8896	0.9691

* Minor Area $= 0.7854 \left(D - \frac{1.3}{n}\right)^2$

Tensile Stress Area $= 0.7854 \left(D - \frac{0.9743}{n}\right)^2$

Basic Profile for UN, UNR & Metric M Screw Threads



Basic Dimensions for M Profile Metric Thread Series – ANSI B1.13M-1979

Nominal Size	Basic Diameter		Thread Pitch mm (P)	Area*	
	Major mm (D)	Minor mm		Nominal mm^2	Tensile Stress mm^2
M8	8	6.62	1.25	50.3	36.6
M10	10	8.34	1.50	78.5	58.0
M12	12	10.07	1.75	113.1	84.3
M16	16	13.80	2.00	201.1	157.0
M20	20	17.25	2.50	314.2	245.0
M24	24	20.70	3.00	452.4	353.0

* Tensile Stress Area $= 0.7854 (D - 0.9382 P)^2$

8.3.4 Concrete Reinforcing Bar Data

ASTM Basic Dimensions for Deformed Steel Bars for Concrete Reinforcement, Inch-Pound Units

Bar Designation No.[A]	Nominal Weight lb/ft	Nominal Dimensions[B]		
		Diameter in.	Area in^2	Perimeter in.
3	0.376	0.375	0.11	1.178
4	0.668	0.500	0.20	1.571
5	1.043	0.625	0.31	1.963
6	1.502	0.750	0.44	2.356
7	2.044	0.875	0.60	2.749
8	2.670	1.000	0.79	3.142
9	3.400	1.128	1.00	3.544
10	4.303	1.270	1.27	3.990
11	5.313	1.410	1.56	4.430
14	7.65	1.693	2.25	5.32
18	13.60	2.257	4.00	7.09

A. Bar designation numbers are based on the number of eighths of an inch included in the nominal diameter.

B. The nominal dimensions of a deformed bar are approximate, being shown as equivalent to those of a plain round bar having the same weight per foot as the deformed bar.

ASTM Basic Dimensions for Deformed Steel Bars for Concrete Reinforcement, SI Units

Bar Designation No.[A]	Nominal Mass kg/m	Nominal Dimensions[B]		
		Diameter mm	Area mm^2	Perimeter mm
10	0.560	9.5	71	29.9
13	0.994	12.7	129	39.9
16	1.552	15.9	199	49.9
19	2.235	19.1	284	59.8
22	3.042	22.2	387	69.8
25	3.973	25.4	510	79.8
29	5.060	28.7	645	90.0
32	6.404	32.3	819	101.3
36	7.907	35.8	1006	112.5
43	11.38	43.0	1452	135.1
57	20.24	57.3	2581	180.0

A. Bar designation numbers approximate the number of millimeters of the nominal diameter of the bar.

B. The nominal dimensions of a deformed bar are approximate, being shown as equivalent to those of a plain round bar having the same mass per meter as the deformed bar.

CSA G30.12 & G30.16 Basic Dimensions for Deformed Steel Bars for Concrete Reinforcement, SI Units (Canada Only)

Bar Number[A]	Nominal Mass kg/m	Nominal Dimensions[B]		
		Diameter mm	Area mm^2	Perimeter mm
10M	0.785	11.3	100	36
15M	1.570	16.0	200	50
20M	2.355	19.5	300	61
25M	3.925	25.2	500	79
30M	5.495	29.9	700	94
35M	7.850	35.7	1000	112
45M	11.775	43.7	1500	137
55M	19.625	56.4	2500	177

A. Bar numbers are based on the rounded off nominal diameter of the bars.

B. Nominal dimensions are equivalent to those of a plain round bar having the same mass per meter as the deformed bar

8.4 Drilling

8.4.1 Hilti Carbide-Tipped Drill Bits

TE-C

TE-CX Carbide Tipped & Helical SDS Drill Bits

Item No.	Description Dia.-Length (in.)	Effective Drilling Depth
256099	TE-CX 3/16-4	2”
205299	TE-CX 3/16-6	4”
256100	TE-CX 3/16-8	5-1/2”
256101	TE-CX 3/16-12	9-1/2”
256102	TE-CX 3/16-16	13-1/4”
205309	TE-CX 1/4-4	2”
205310	TE-CX 1/4-6	4”
205311	TE-CX 1/4-8	5-1/2”
256106	TE-CX 1/4-12	9-1/2”
205316	TE-CX 5/16-6	4”
205320	TE-CX 5/16-12	9-1/2”
256107	TE-CX 5/16-18	15-1/4”
205324	TE-CX 3/8-6	4”
205326	TE-CX 3/8-12	9-1/2”
205327	TE-CX 3/8-18	15-1/4”
205328	TE-CX 3/8-24	21-1/4”
205339	TE-CX 7/16-6	4”
205340	TE-CX 7/16-18	15-1/4”
205352	TE-CX 1/2-6	4”
205354	TE-CX 1/2-12	9-1/2”
205355	TE-CX 1/2-18	15-1/4”
378357	TE-CX 9/16-6	4”
378358	TE-CX 9/16-12	9-1/2”
378359	TE-CX 9/16-18	15-1/4”
378360	TE-CX 5/8-8	5-1/2”
378361	TE-CX 5/8-12	9-1/2”
378362	TE-CX 5/8-18	15-1/4”
375844	TE-CX 11/16-12	9-1/2”
375845	TE-CX 11/16-18	15-1/4”
375846	TE-CX 3/4-8	5-1/2”
375847	TE-CX 3/4-12	9-1/2”
375848	TE-CX 3/4-18	15-1/4”
375849	TE-CX 13/16-18	15-1/4”
375850	TE-CX 27/32-10	7-1/2”
375851	TE-CX 27/32-18	15-1/4”
375852	TE-CX 7/8-10	7-1/2”
375853	TE-CX 7/8-18	15-1/4”
375854	TE-CX 1-10	7-1/2”
375855	TE-CX 1-18	15-1/4”
305849	TE-CX 1-27	24-1/4”

TE-CX/TE-C+ Metric Carbide Tipped & Helical Bits

Item No.	Description Dia. (mm)/Length (cm)	Effective Drilling Depth
0077833	TE-C+ 4.5/11	2”
205342	TE-CX 12/17	4”
205343	TE-CX 12/22	6”
205344	TE-CX 12/27	7-1/2”
205357	TE-CX 14/22	6”
205358	TE-CX 14/27	7-1/2”
205360	TE-CX 14/47	15-3/4”
205364	TE-CX 15/17	4”
205366	TE-CX 15/27	7-1/2”
205368	TE-CX 15/47	15-3/4”
375827	TE-CX 18/22	6”
375829	TE-CX 18/47	15-3/4”

TE-C+ URM

Item No.	Description Dia.-Length (in.)	Effective Drilling Depth
28063	TE-C+ 1-11 URM	9-7/16”
28065	TE-C+ 1-20 URM	18-3/8”
28064	TE-C+ 1-25 URM	23-3/8”

	This inspection mark indicates that Hilti metric rotary hammer drill bits comply with the requirements for carbide-tipped drill bits used to drill anchor holes for metric anchors.

For additional drill bit diameters and lengths, please consult the Hilti Product Catalog or call Hilti Customer Service.

TC-C Carbide Tipped and Helical Drill Bits

Item No.	Description Dia.-Length (in.)	Effective Drilling Depth
283895	TC-C 3/16-4	1-3/4”
283896	TC-C 3/16-6	3-3/4”
283897	TC-C 1/4-4	1-3/4”
283898	TC-C 1/4-6	3-3/4”
283899	TC-C 5/16-6	3-3/4”
283900	TC-C 5/16-12	9”
283901	TC-C 3/8-6	3-3/4”
283902	TC-C 3/8-12	9”
283903	TC-C 7/16-6	3-3/4”
283904	TC-C 1/2-6	3-3/4”
283905	TC-C 1/2-12	9”
286860	TC-C 1/2-18	14-1/2”
283906	TC-C 9/16-6	3-3/4”
283907	TC-C 9/16-12	9”
283908	TC-C 5/8-8	4-1/2”
283909	TC-C 5/8-12	9”
284333	TC-C 3/4-8	4-1/2”
284334	TC-C 3/4-12	9”
283910	TC-C 7/8-10	6-1/2”
283911	TC-C 1-10	6-1/2”

8.4.1 Hilti Carbide-Tipped Drill Bits

TE-TX

For use with Hilti TE 35, TE 46 and combihammers with SDS-top chuck

TE-YX

For use with Hilti TE 54, 55, 56, 56-ATC, 72, 74, 75, 76, 76-ATC, 76P, 76P-ATC and combihammers with SDS-max chuck

TE-TX Carbide Tipped & Helical Drill Bits

Item No.	Description Dia.-Length (in.)	Effective Drilling Depth
338410	TE-TX 1/4-9	4”
338411	TE-TX 5/16-15	10”
335915	TE-TX 3/8-9	4”
335916	TE-TX 3/8-15	10”
335917	TE-TX 3/8-21	16”
338412	TE-TX 7/16-9	4”
378363	TE-TX 1/2-9	4”
378364	TE-TX 1/2-13	7-3/4”
378365	TE-TX 1/2-21	15-3/4”
378366	TE-TX 9/16-13	7-3/4”
378367	TE-TX 9/16-21	16-3/4”
378368	TE-TX 5/8-9	4”
378369	TE-TX 5/8-13	7-3/4”
378370	TE-TX 5/8-21	16-3/4”
372095	TE-TX 11/16-13	7-3/4”
340720	TE-TX 11/16-21	15-3/4”
340721	TE-TX 3/4-13	7-3/4”
340722	TE-TX 3/4-21	15-3/4”
340723	TE-TX 13/16-21	15-3/4”
340724	TE-TX 27/32-13	7-3/4”
340725	TE-TX 7/8-13	7-3/4”
340726	TE-TX 7/8-21	15-3/4”
340727	TE-TX 1-13	7-3/4”
340728	TE-TX 1-21	15-3/4”
340729	TE-TX 1 1/8-15	9-1/2”
340730	TE-TX 1 1/8-23	17-1/4”
340731	TE-TX 1 1/4-15	9-1/2”
340732	TE-TX 1 1/4-23	17-1/4”

TE-TX Metric Carbide Tipped & Helical Drill Bits

Item No.	Description Dia. (mm)/Length (cm)	Effective Drilling Depth
333740	TE-TX 12/23	6”
333741	TE-TX 12/33	7-7/8”
333743	TE-TX 12/65	21-5/8”
333744	TE-TX 14/23	6”
333745	TE-TX 14/33	7-7/8”
333747	TE-TX 15/23	6”
333748	TE-TX 15/33	7-7/8”
338996	TE-TX 18/32	7-3/8”
338997	TE-TX 18/52	15-3/4”
339005	TE-TX 24/32	7-3/8”
339009	TE-TX 28/32	7-3/8”
339010	TE-TX 28/52	15-3/4”
339013	TE-TX 32/37	9-3/4”
339014	TE-TX 32/57	17-5/8”

TE-YX Carbide Tipped Drill Bits

Item No.	Description Dia.-Length (in.)	Effective Drilling Depth
378371	TE-YX 1/2-13	7”
378372	TE-YX 1/2-21	16”
378373	TE-YX 9/16-13	7”
378374	TE-YX 9/16-21	16”
378375	TE-YX 5/8-13	7”
378376	TE-YX 5/8-21	16”
305852	TE-YX 5/8-36	30-1/2”
372094	TE-YX 11/16-13	7”
340694	TE-YX 11/16-21	16”
340695	TE-YX 3/4-13	7”
340696	TE-YX 3/4-21	16”
340697	TE-YX 3/4-36	30-1/2”
340698	TE-YX 13/16-21	16”
340699	TE-YX 27/32-13	7”
340700	TE-YX 27/32-21	16”
340701	TE-YX 7/8-13	7”
340702	TE-YX 7/8-21	16”
340703	TE-YX 7/8-36	30-1/2”
340704	TE-YX 1-13	7”
340705	TE-YX 1-21	16”
340706	TE-YX 1-36	30-1/2”
340707	TE-YX 1 1/16-21	16”
340708	TE-YX 1 1/8-15	8-3/4”
340709	TE-YX 1 1/8-23	17-5/8”
340710	TE-YX 1 1/8-36	30-1/2”
340711	TE-YX 1 1/4-15	8-3/4”
340712	TE-YX 1 1/4-23	17-5/8”
340713	TE-YX 1 1/4-36	30-1/2”
340715	TE-YX 1 3/8-23	17-5/8”
340716	TE-YX 1 3/8-36	30-1/2”
340717	TE-YX 1 1/2-15	8-3/4”
340718	TE-YX 1 1/2-23	17-5/8”
339040	TE-YX 1 9/16-23	17-5/8”

TE-YX Metric Carbide Tipped Drill Bits

Item No.	Description Dia.(mm)/Length (cm)	Effective Drilling Depth
333753	TE-YX 12/35	7-7/8”
333754	TE-YX 12/55	15-3/4”
333755	TE-YX 12/67	21-5/8”
333756	TE-YX 14/35	7-7/8”
333757	TE-YX 14/55	15-3/4”
333758	TE-YX 15/35	7-7/8”
333759	TE-YX 15/55	15-3/4”
339015	TE-YX 18/32	6-1/2”
339016	TE-YX 18/52	14-1/2”
339024	TE-YX 24/32	6-1/2”
339025	TE-YX 24/52	14-1/2”
339030	TE-YX 28/32	6-1/2”
339031	TE-YX 28/52	14-1/2”
339034	TE-YX 32/37	9-1/2”
339035	TE-YX 32/57	17-1/4”
339038	TE-YX 37/57	17-1/4”
339039	TE-YX 37/92	30-1/2”

This inspection mark indicates that Hilti metric rotary hammer drill bits comply with the requirements for carbide-tipped drill bits used to drill anchor holes for metric anchors.

For additional drill bit diameters and lengths, please consult the Hilti Product Catalog or call Hilti Customer Service.

PROFIS:
The World's Most Powerful Anchor Design Software

- Easy to Learn – Start working in just minutes
- Fast and Powerful – Produce detailed designs quickly
- Specify with Confidence – The largest number of approvals and latest design codes

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Firestop Systems

When it comes to Life Safety and building code compliance, Hilti provides complete solutions with a wide range of products and unmatched technical support.

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  - Through Penetrations
  - Joint Penetrations
- FACT Program
- FS 411
- BASIC Training
- Engineering Judgements
- Firestop Design Center online @ **www.us.hilti.com**

Hilti Diaphragm Deck Design

The Hilti Diaphragm Deck Design Program allows designers to quickly and accurately design roof deck and composite floor deck diaphragms.

- Ability to design with innovative Hilti fasteners for frame and sidelap connection
- Creates easy to use load tables with span ranges based on user input
- Allows for different safety factors depending on load type, building code and field quality control
- Direct link to Hilti website

Hilti Online

- Technical Library
- Design Centers
- Interactive Product Advisors
- Full-line Product Catalog
- Online Ordering
- Maps to Hilti locations
- "Contact Us" program to answer your questions

MI – Industrial Pipe Support Technical Guide

A guide to specifying the Hilti modular pipe support system for medium to heavy loads without welding.

- MI System is the ideal solution for pipes up to 24 in. diameter
- Reliable fastenings without welds
- Easily installed

Steel Decking Technical Guide

For complete information on Hilti fastening systems for the attachment of steel roof and floor deck, refer to the Hilti Steel Decking Technical Manual.

In The United Sates

PAYMENT TERMS: Net 30 days from date of invoice. Customer agrees to pay all costs incurred by Hilti in collecting delinquent amounts, if any, including reasonable attorney's fees.

FREIGHT: All sales are F.O.B. Destination with transportation allowed via Hilti designated mode. Additional charges may apply for expedited shipments, special handling requirements, and orders below certain dollar amounts. A fuel surcharge may apply depending on market conditions.

CREDIT: All orders sold on credit are subject to Credit Department approval

RETURN POLICY: Products must be in saleable condition to qualify for return. Saleable condition is defined as those unused items in original packaging and in unbroken quantities. All returns are subject to Hilti inspection and acceptance, and a 15% restocking charge. Proof of purchase is required for all returned materials. Special orders and discontinued items are not eligible for return credit. Dated materials are not returnable 30 days beyond date of invoice.

WARRANTY: Hilti warrants that for a period of 12 months from the date it sells a product it will, at its sole option and discretion, refund the purchase price of , repair, or replace such product if it contains a defect in material or workmanship. Absence of Hilti's receipt of a written notification of such a defect within this 12-month period shall constitute a waiver of all claims with regard to such product. The warranty time periods for certain products are limited by the warranty period in the literature that accompanies these products.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hilti shall in no event be liable for, and Customer hereby agrees to indemnify Hilti against all claims related to, special, direct, indirect, consequential, or any damages arising out of or related to the sale, use, or inability to use the product.

ACCEPTANCE OF ORDER: Acceptance is limited to the express terms contained herein, and terms are subject to change by Hilti with reasonable notice to Customer. Additional or different terms proposed by Customer are deemed material and are objected to and rejected, but such rejections shall not operate as a rejection of the offer unless it contains variances in the terms of the description, quantity, price or delivery schedule of the goods.

DOMESTIC ORIGIN: Any non-domestic Hilti product will be so identified on shipping documents and invoices for federal government customers. All other customers may obtain such information by written request for Hilti, Inc., Contract Compliance. P.O. Box 21148, Tulsa, Oklahoma 74121. Hilti sales personnel are not authorized to warrant the country of origin of Hilti products.

BUSINESS SIZE: Hilti is a large business.

PRICES: Prices are those stated on the order. Hilti does not maintain most favored customer records, makes no representation with respect to same, and rejects any price warranty terms proposed by Customer. Hilti's published net price list is subject to change without notice.

CONSENT TO JURISDICTION: All transactions made pursuant hereto shall be deemed to have been made and entered into in Tulsa, Oklahoma. Any and all disputes arising directly or indirectly from such transactions shall be resolved in the courts of the County of Tulsa, State of Oklahoma, to the exclusion of any other court, and any resulting judgment may be enforced by any court having jurisdiction of such an action. All transactions shall be governed by and construed in accordance with the laws of the State of Oklahoma.

INDEMNIFICATION: Customer hereby agrees to indemnify Hilti for any costs, including attorney's fees, incurred by Hilti as a result, in whole or in part, of any violation by Customer of any Federal, State or Local statute or regulation, or of any nationally accepted standard. It shall be Customer's sole responsibility to comply with all applicable laws and regulations regarding the handling, use, transportation, or disposal of products upon taking possession of same.

AUTHORIZATION: HILTI SALES REPRESENTATIVES ARE NOT AUTHORIZED TO MODIFY THESE TERMS AND CONDITIONS, WARRANT SPECIFIC APPLICATIONS, OR EXECUTE CUSTOMER DOCUMENTS.

In Canada

PAYMENT TERMS: Net 30 days from date of invoice. Customer agrees to pay all costs incurred by Hilti in collecting delinquent amounts, if any, including reasonable attorney's fees.

FREIGHT: Sales are F.O.B. Destination Point with transportation allowed via Hilti designated mode. Additional charges may apply for expedited delivery, special handling requirements, and order under certain limits. A fuel surcharge may apply depending on market conditions.

CREDIT: All orders sold on credit are subject to Credit Department approval.

RETURN POLICY: Product may be returned prepaid (unless otherwise authorized) to Hilti provided:

i) it is returned by the original purchaser

ii) it is not dated product returned more than 30 days after the original delivery date

iii) it is not discontinued, clearance or special order product

iv) it is unused, in original packaging and in unbroken quantities.

Hilti will inspect product and, if the above requirements are satisfied, will credit to customer the original purchase price. A 15% restocking fee may apply.

WARRANTY: Other than the manufacturer's published warranty, no warranties or conditions, express or implied, written or oral, statutory or otherwise are implied. Any and all conditions and warranties implied by law or by the Sale of Goods Act or any similar statutes of any Province are hereby expressly waived.

TITLE TO PRODUCT: Title to product remains with Hilti until the total purchase price of product is paid.

PRICES: Customer agrees to pay Hilti prices set out on invoice. Customer agrees to pay taxes as indicated on invoice unless Hilti receives acceptable exemption certificates.

INDEMNIFICATION: Customer agrees to use product at own risk and to indemnify Hilti against all liabilities, including legal fees, to third parties arising out of the use or possession thereof. Hilti shall in no event be liable for special, incidental or consequential damages.

CHANGES: Hilti sales personnel are not authorized to modify these Terms and Conditions or modify Customer's credit terms. Terms are subject to change by Hilti with reasonable notice to Customer.

CASH SALES: Payment in full is due prior to goods being released.

QUOTATIONS: All terms and conditions apply once customer agrees to purchase product. Quotations on special promotion products are only valid until end of promotion period.