



Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-23/6689 of 04/05/2023
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	Hilti Concrete screw HUS3 and HUS
Product family to which the construction product belongs:	Concrete screw for redundant non-structural systems
Manufacturer:	Hilti Aktiengesellschaft Feldkircherstrasse 100 9494 SCHAAN Principality of Liechtenstein
Manufacturing plant(s):	HILTI Plants
This UK Technical Assessment contains:	19 pages including 3 Annexes which form an integral part of this assessment.
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330747-00-0601 Fasteners for use in concrete in redundant for non-structural systems

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1. Technical description of the product

The Hilti screw anchor HUS3 and HUS is an anchor made of galvanized steel (HUS3 -H, -C, -A, -P, -PS, -PL, -I, I-Flex) or stainless steel (HUS-HR, HUS-CR) of size 6. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterized by mechanical interlock in the special thread.

The product description is given in Annex A.

2. Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this UK Technical Assessment is based lead to the assumption of a working life of the anchor of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. Performance of the product and references to the methods used for its assessment

3.1. Mechanical resistance and stability (BWR 1)

The essential characteristic regarding Mechanical resistance and stability are included under Basic Works Requirement 4: Safety and accessibility in use.

3.2. Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C3

3.3. Health, hygiene and the environment (BWR 3)

Not relevant.

3.4. Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for static and quasi-static loads for simplified design method B	See Annexes C1 and C2

3.5. Protection against noise (BWR 5)

Not relevant.

3.6. Energy economy and heat retention (BWR 6)

Not relevant.

3.7. Sustainable use of natural resources (BWR 7)

No performance assessed.

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied

4.1. System of assessment and verification of constancy of performance

According to UKAD No. 330747-00-0601 and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011) as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 2+ applies.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

5.1. UKCA marking for the product/ system must contain the following information:

- Identification number of the Approved Body
- Name/address of the manufacturer of the product/ system
- Marking with intention of clarification of intended use
- Date of marking
- Number of certificate of constancy of performance (where applicable)
- UKTA number.

On behalf of the British Board of Agrément



Date of Issue: 4 April 2023

Hardy Giesler
Chief Executive Officer

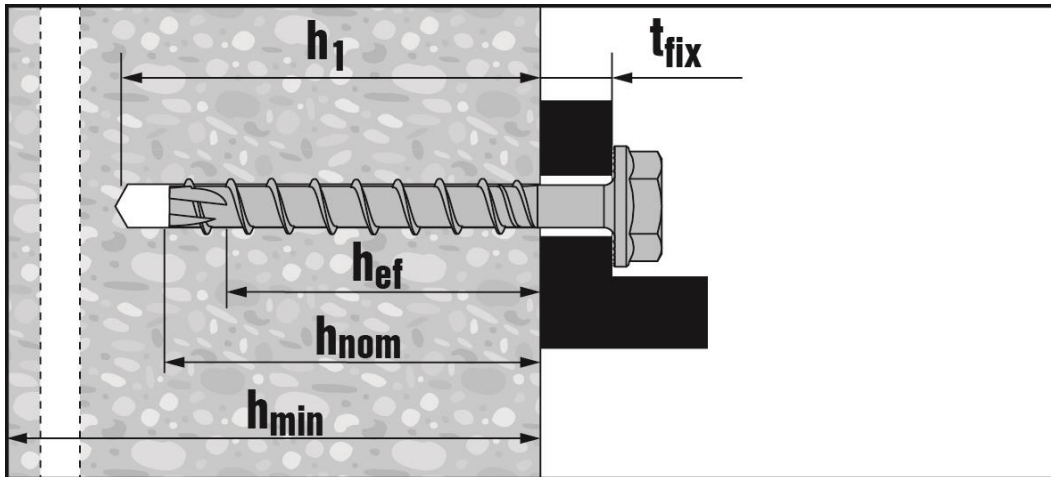


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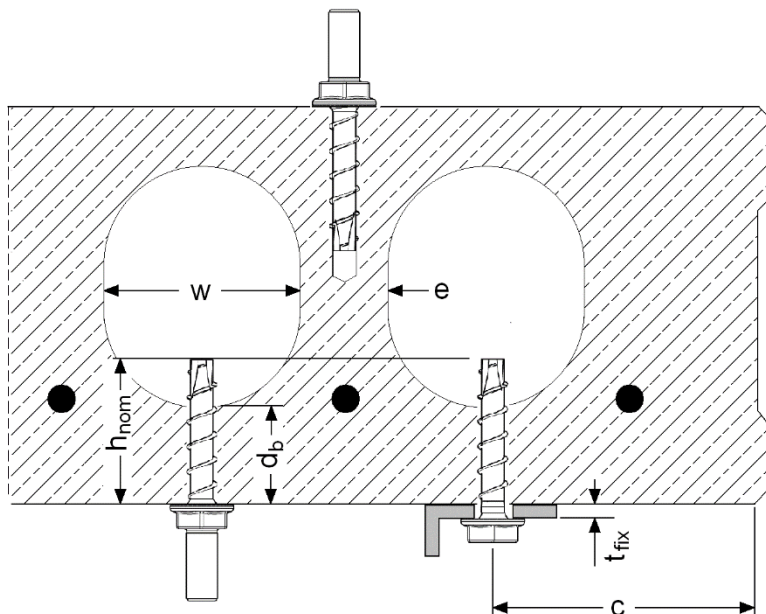
ANNEX A1
Product description.
Installed condition.

This annex applies to the product described in the main body of the UK Technical Assessment.

Product and installed condition.



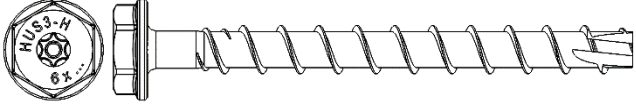
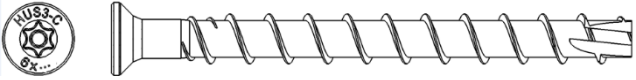
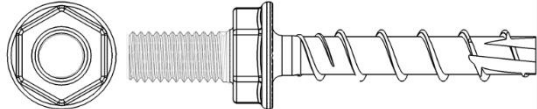
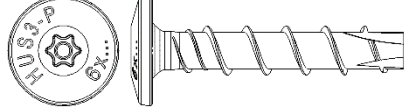
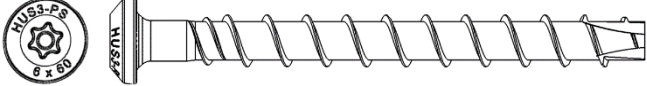
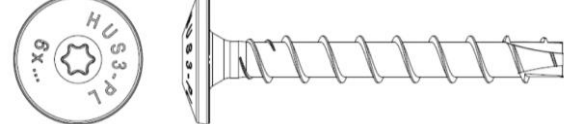
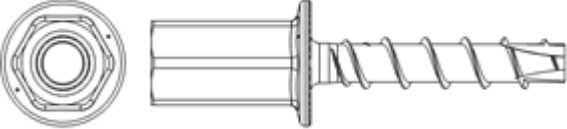
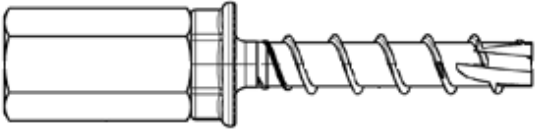
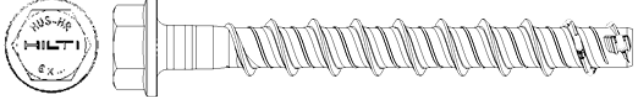

Product and installed condition in precast pre-stressed hollow core slabs.



ANNEX A2
Product description.
Screw types.

This annex applies to the product described in the main body of the UK Technical Assessment.

Table A1: Screw types

	<p>1) Hilti HUS3-H, size 6, hexagonal head configuration, galvanized;</p>
	<p>2) Hilti HUS3-C, size 6, countersunk head configuration, galvanized;</p>
	<p>3) Hilti HUS3-A, size 6, external thread M8/16 and M10/21, galvanized;</p>
	<p>4) Hilti HUS3-P, size 6, pan head configuration, galvanized;</p>
	<p>5) Hilti HUS3-PS, size 6, pan head (small) configuration, galvanized;</p>
	<p>6) Hilti HUS3-PL, size 6, pan head (large) configuration, galvanized;</p>
	<p>7) Hilti HUS3-I, size 6, internal thread M8 and M10, galvanized;</p>
	<p>8) Hilti HUS3-I Flex, size 6, galvanized, with external thread: - M8/16 preassembled with coupler M6 or M8, - M10/21 preassembled with coupler M10 or M12;</p>
	<p>9) Hilti HUS-HR, size 6, hexagonal head configuration, stainless steel (A4 grade);</p>
	<p>10) Hilti HUS-CR, size 6, countersunk head configuration, stainless steel (A4 grade).</p>

ANNEX A3
Product description
Materials and fastener dimensions and marking

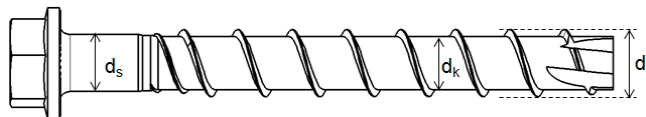
This annex applies to the product described in the main body of the UK Technical Assessment.

Table A2: Materials

Part	Designation	Material	
Screw anchor HUS3 (all types in Table A1)	Size 6, all lengths	$f_{yk} \geq 745 \text{ N}\cdot\text{mm}^{-2}$, $f_{uk} \geq 930 \text{ N}\cdot\text{mm}^{-2}$	Carbon steel, galvanized ($\geq 5 \mu\text{m}$) Rupture elongation $A_5 \leq 8\%$
Screw anchor HUS-HR and HUS-CR	Size 6, all lengths	$f_{yk} \geq 900 \text{ N}\cdot\text{mm}^{-2}$, $f_{uk} \geq 1050 \text{ N}\cdot\text{mm}^{-2}$	Stainless steel (A4 grade) Rupture elongation $A_5 > 8\%$

Table A3: Fastener dimensions and marking.

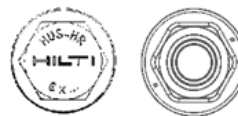
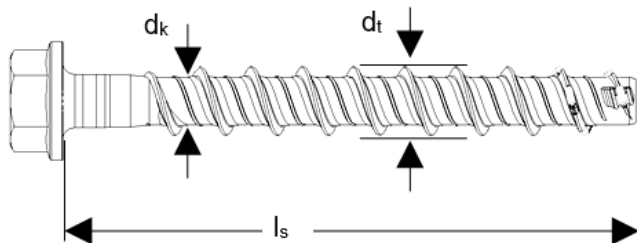
Type	HUS-HR, CR		HUS3-H, C, A, P, PS, PL, I, I-Flex	
	6			
Fastener size				
Nominal embedment depth	[mm]		h_{nom}	
			35	
Threaded outer diameter	d_t	[mm]	7.6	7.85
Core diameter	d_k	[mm]	5.4	5.85
Shaft diameter	d_s	[mm]	5.8	6.15
Stressed section	A_s	[mm ²]	22.9	26.9



Hilti: Manufacturer
HUS3: Hilti Universal Screw anchor 3rd generation

e.g., "H": Hexagonal head
R: Corrosion resistance (stainless steel, grade A4)

6: Nominal anchor diameter/ drill bit diameter



Head stamp:

e.g., Hilti HUS-HR 6 x ...
or circle marks

ANNEX B1

Intended use.

Specifications.

This annex applies to the product described in the main body of the UK Technical Assessment.

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loadings.
- Only for fasteners for use in concrete for redundant non-structural systems according to UKAD 330747-00-0601.
- Fire exposure: only for concrete C20/25 to C50/60, not pre-stressed hollow concrete slabs.

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013.
- Strength classes C20/25 to C50/60 according to EN 206:2013.
- Non-cracked or cracked concrete.
- Precast, pre-stressed hollow concrete slabs with $w/e \leq 4,2$ and strength classes C30/37 to C50/60.

Use conditions (Environmental conditions):

- Anchorages subject to dry internal conditions: all screw types.
- Anchorages subject to dry internal conditions or external atmospheric exposure including industrial and marine environment or permanently damp internal conditions, if no particularly aggressive conditions exist: screw types made of stainless steel (HUS-HR, CR).

Note: Particularly aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurisation plants or road tunnels where de-icing materials are used).

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the fastener is indicated on the design drawings (e. g. position of the fastener relative to reinforcement or to supports, etc.).
- Anchorages are designed in accordance with:
EN 1992-4:2018 Design method B and EOTA Technical Report TR 055.

Installation:

- Hammer drilling only.
- Fastener installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- In the case of an aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.
- After installation, further turning of the fastener must not be possible.
- The head of the fastener must be supported on the fixture and is not damaged.

ANNEX B2

Intended use.

Installation parameters.

Minimum concrete thickness and minimum edge distance and spacing.

This annex applies to the product described in the main body of the UK Technical Assessment.

Table B1: Installation parameters

Type	HUS		HUS3						
	HR	CR	H	C	A	P, PS, PL	I, I-Flex		
Fastener size	6								
Nominal embedment depth	h_{nom}	[mm]	35						
Nominal drill hole diameter	d_0	[mm]	6						
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6.40						
Clearance hole diameter	$d_f \leq$	[mm]	9						
Wrench size (H, A, I -type)	SW	[mm]	13	-	13	-	13	-	13
Countersunk head diameter	d_h	[mm]	-	11.0	-	11.5	-	-	-
Torx size	TX	[-]	-	T30	T30	T30	-	T30	-
Depth of drill hole in floor/ wall position	$h_1 \geq$	[mm]	45						
Depth of drill hole in ceiling position	$h_1 \geq$	[mm]	38						
Installation Torque	T_{inst}	[Nm]	- ¹⁾	- ¹⁾	18				
Setting tool ⁽¹⁾	Strength class \geq C20/25		Impact screw driver, e.g. Hilti SIW 14 A or Hilti SIW 22 A ⁽²⁾						

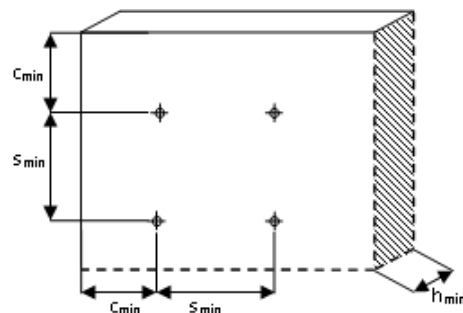
⁽¹⁾ Hand setting in concrete base material not allowed (machine setting only).

⁽²⁾ Hilti recommended electrical impact screw drivers are listed in the related MPII.

Table B2: Minimum thickness of concrete member, minimum edge distance and spacing

Type	HUS		HUS3					
	HR	CR	H	C	A	P, PS, PL	I, I-Flex	
Fastener size	6							
Nominal embedment depth	h_{nom}	[mm]	35					
Minimum thickness of concrete member	h_{min}	[mm]	80					
Minimum edge distance	c_{min}	[mm]	35 (80) ⁽¹⁾					
Minimum spacing	s_{min}	[mm]	35					

⁽¹⁾ See Table C1, Annex C1.



ANNEX B3
Intended use.
Screw length and thickness of the fixture.

This annex applies to the product described in the main body of the UK Technical Assessment.

Table B3: Screw length and maximum thickness of fixture

Type	HUS		HUS3							
	HR	CR	H	C	A	P	PS	PL	I	I-Flex
Fastener size	6									
Nominal embedment depth [mm]	h_{nom} 35									
	Maximum thickness of fixture [mm]									
Length of screw [mm]	t_{fix}									
35	-	-	-	-	0	-	-	-	0	-
40	-	5	5	5	-	5	5	-	-	-
45	10	-	-	-	-	-	-	-	-	-
55	-	-	-	-	20	-	-	-	20	20
60	25	25	25	25	-	25	25	25	-	-
70	35	35	-	35	-	-	-	-	-	-
80	-	-	45	-	-	45	-	-	-	-
100	-	-	65	-	-	-	-	-	-	-
120	-	-	85	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	100
155	-	-	-	-	-	-	-	-	-	120
175	-	-	-	-	-	-	-	-	-	140
195	-	-	-	-	-	-	-	-	-	160

ANNEX B4

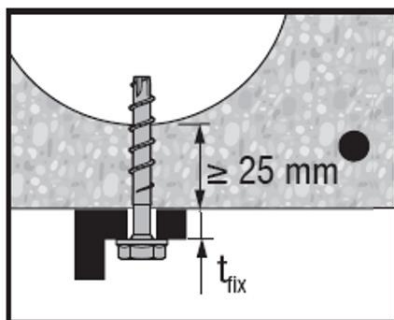
Intended use.

Screw length and thickness of the fixture used in precast pre-stressed hollow core slabs.

This annex applies to the product described in the main body of the UK Technical Assessment.

Table B4: Screw length and thickness of fixture used in precast pre-stressed hollow core slabs.

Type	HUS		HUS3							
	HR	CR	H	C	A	P	PS	PL	I	I-Flex
Fastener size	6									
Thickness of fixture [mm]	t_{fix}									
Length of screw [mm]										
35	-	-	-	-	0	-	-	-	0	-
40	-	10	5	5	-	5	5	-	-	-
45	15	-	-	-	-	-	-	-	-	-
55	-	-	-	-	20	-	-	-	20	20
60	5-25	5-25	5-25	5-25	-	5-25	5-25	5-25	-	-
70	15-35	15-35	-	15-35	-	-	-	-	-	-
80	-	-	25-45	-	-	25-45	-	-	-	-
100	-	-	45-65	-	-	-	-	-	-	-
120	-	-	65-85	-	-	-	-	-	-	-
135	-	-	-	-	-	-	-	-	-	80-100
155	-	-	-	-	-	-	-	-	-	100-120
175	-	-	-	-	-	-	-	-	-	120-140
195	-	-	-	-	-	-	-	-	-	140-160

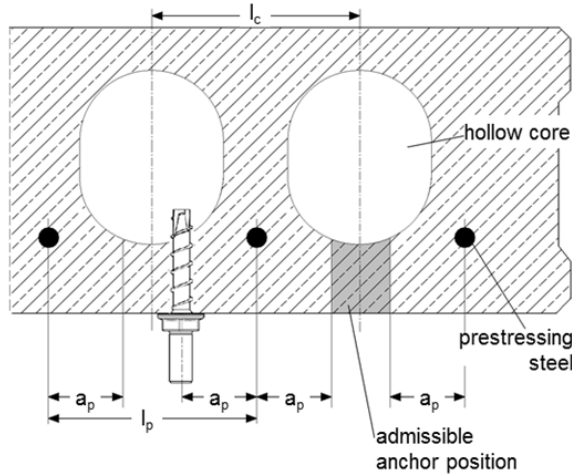


ANNEX B5
Intended use.

Admissible anchor positions, minimum spacing and edge distance of anchors and distance between anchor groups in precast pre-stressed hollow core slabs.

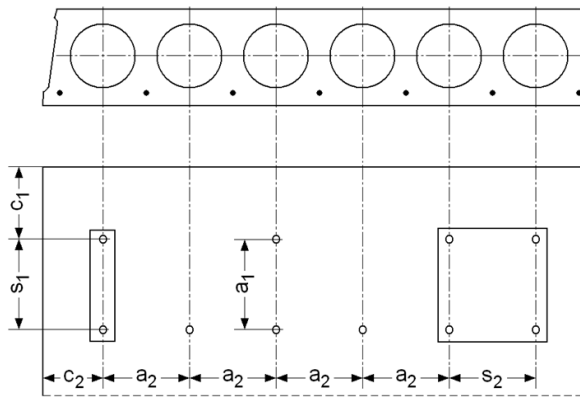
This annex applies to the product described in the main body of the UK Technical Assessment.

Admissible anchor positions in precast pre-stressed hollow core slabs



Core distance	$l_c \geq 100 \text{ mm}$
Prestressing steel distance	$l_p \geq 100 \text{ mm}$
Distance between anchor position and prestressing steel	$a_p \geq 50 \text{ mm}$

Minimum spacing and edge distance of anchors and distance between anchor groups in precast pre-stressed hollow core slabs



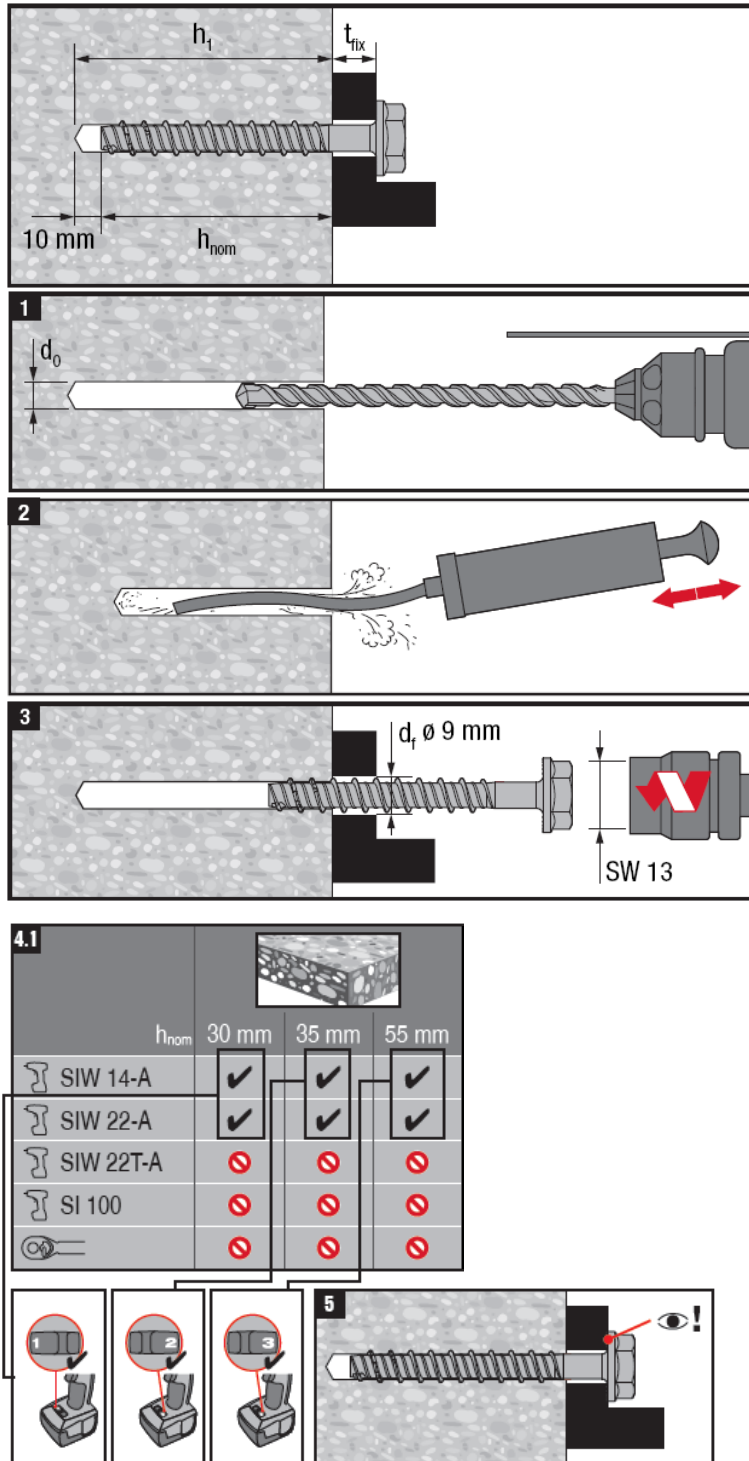
Minimum edge distance	$c_{min} \geq 100 \text{ mm}$
Minimum anchor spacing	$s_{min} \geq 100 \text{ mm}$
Minimum distance between anchor groups	$a_{min} \geq 100 \text{ mm}$

c_1, c_2 Edge distance.
 s_1, s_2 Anchor spacing.
 a_1, a_2 Distances between anchor groups.

ANNEX B6
Intended use.
Installation instruction.

This annex applies to the product described in the main body of the UK Technical Assessment.

Installation instruction (HUS-HR, CR)



Hand setting of HUS-HR, CR in concrete base material not allowed (machine setting only).

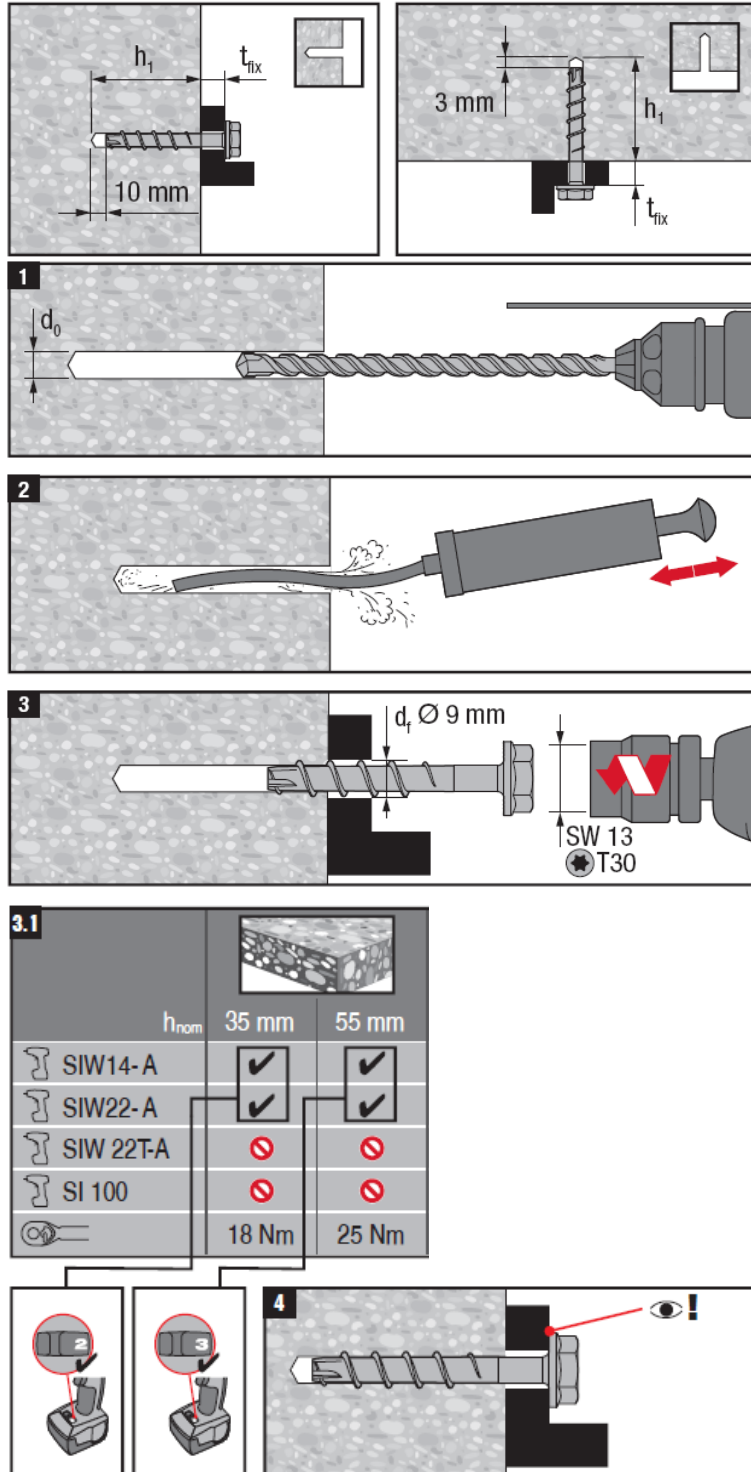
Hilti recommended electrical impact screw drivers are listed in the instruction for use included in the sales box.

Installation with other electrical impact screw drivers of equivalent force and performance is possible

ANNEX B7
Intended use.
Installation instruction.

This annex applies to the product described in the main body of the UK Technical Assessment.

Installation instruction (HUS3-H, C, I, I-Flex, A, P, PS, PL)



Hilti recommended electrical impact screw drivers are listed in the instruction for use included in the sales box.

Installation with other electrical impact screw drivers of equivalent force and performance is possible.

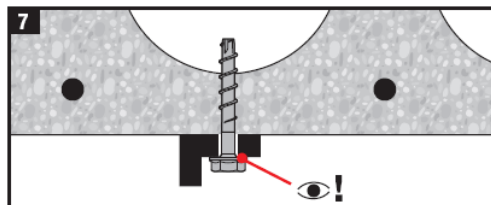
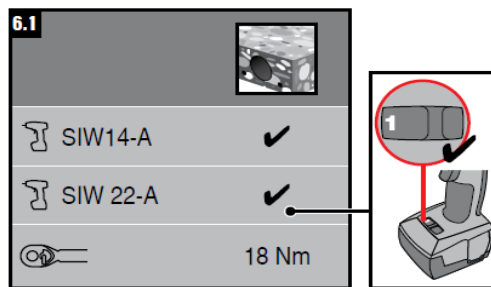
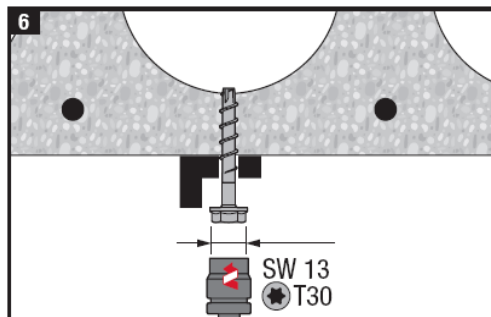
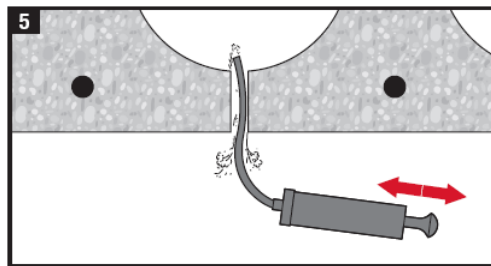
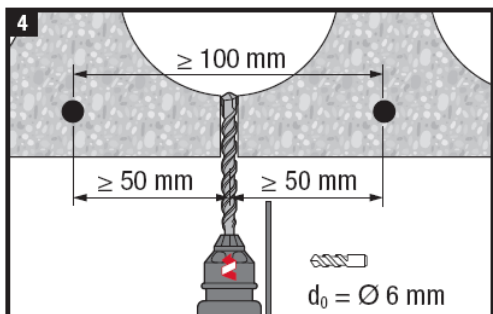
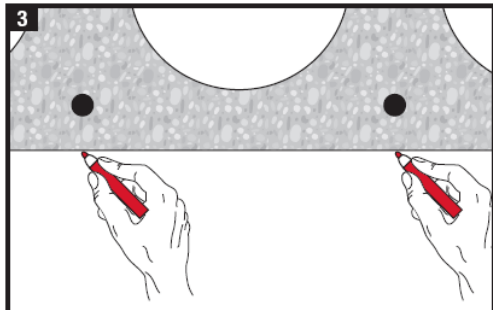
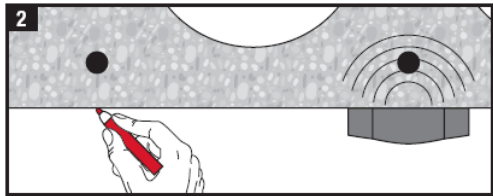
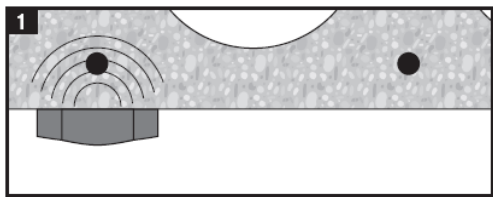
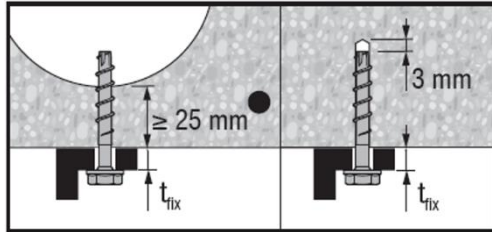
ANNEX B8

Intended use.

Installation instruction in precast pre-stressed hollow core slabs.

This annex applies to the product described in the main body of the UK Technical Assessment.

Installation instruction in precast pre-stressed hollow core slabs



Installation with other electrical impact screw drivers of equivalent force and performance is possible.

Hilti recommended electrical impact screw drivers are listed in the instruction for use included in the sales box.

ANNEX C1

Performances

Characteristic values for resistance under static and quasi-static action

This annex applies to the product described in the main body of the UK Technical Assessment.

Table C1: Characteristic values of resistance in case of static and quasi-static loading

Type				HUS		HUS3				
				HR, CR		H	P, PS, PL	I, I-Flex	A	C
Fastener size				6x40, 6x45	6x60, 6x70	6 all lengths				
Nominal embedment depth				$h_{nom} \geq$	[mm]	35				
All load directions										
Characteristic resistance in C20/25		$c \geq 35\text{mm}$	F_{Rk}^0	[kN]	3		2			
		$c \geq 80\text{ mm}$	F_{Rk}^0	[kN]	3.5	5	3			
Partial factor		γ_M	[-]		1.5					
Installation factor		γ_{inst}	[-]		1.4		1.0			
Increasing factors of concrete for F_{Rk}^0 , ψ_c		C30/37		1,22						
		C40/50		1,41						
		C50/60		1,55						
Effective anchorage depth		h_{ef}	[mm]		27		25			
Characteristic edge distance		c_{cr}	[mm]		1.5 h_{ef}					
Characteristic spacing		s_{cr}	[mm]		3 h_{ef}					
Shear load with lever arm										
Characteristic bending resistance		$M_{Rk,s}^0$	[Nm]		19		22			
Partial factor		$\gamma_{Ms,V}$	[-]		1.5					

ANNEX C2

Performances

Characteristic values of resistance in case of static and quasi-static loading in precast pre-stressed hollow core slabs C30/37 to C50/60

This annex applies to the product described in the main body of the UK Technical Assessment.

Table C2: Characteristic values of resistance in case of static and quasi-static loading in precast pre-stressed hollow core slabs C30/37 to C50/60

Type			HUS-HR, CR		HUS-HR, CR	HUS3-H, P, PS, PL, I, I-Flex, A, C		
Fastener size			6x40, 6x45		6x60, 6x70	6 all lengths		
All load directions								
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 25	≥ 30	≥ 35	
Characteristic resistance	F^0_{Rk}	[kN]	1	2	1	2	3	
Partial factor	γ_M	[-]	1.5					
Installation factor	γ_{inst}	[-]	1.0					

Note: the fixture thickness values according to Table B4 (Annex B4) shall be considered.

ANNEX C3
Performances
Characteristic values of resistance under fire exposure

This annex applies to the product described in the main body of the UK Technical Assessment.

Table C3: Characteristic values of resistance under fire exposure

Type				HUS		HUS3				
				HR	CR	H	P, PS, PL	I, I-Flex	A	C
Fastener size				6						
Nominal embedment depth		$h_{nom} \geq$	[mm]	35						
All load directions										
Characteristic resistance	R30...R90	$F_{Rk,fi}$	[kN]	0.7	0.2	0.5				
	R120	$F_{Rk,fi}$	[kN]	0.5	0.1	0.4				
Edge distance	R30...R120	$c_{cr,fi}$	[mm]	54		50				
Anchor spacing	R30...R120	$s_{cr,fi}$	[mm]	108		100				

The fire resistance data is only valid for concrete C20/25 to C50/60 with a minimum slab thickness of 80 mm. The data is not valid for precast pre-stressed hollow core slabs.

The edge distance of the anchor must be $c \geq 300$ mm and $\geq 2h_{ef}$ if the fire attack is from more than one side.

The anchorage depth shall be increased for wet concrete by at least 30 mm compared to the given value.



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