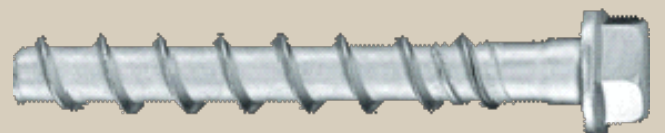




HUS2-H SCREW ANCHOR

Technical Datasheet

Update: Jan-23





HUS2-H Screw anchors

Premium screw anchor for use in concrete with hex head

Anchor version



HUS2-H
(8-10)

Benefits

- High productivity- less drilling and fewer operations than with conventional anchors
- Suitable for cracked and non-cracked concrete C20/25
- ETA approval for cracked and non-cracked concrete
- Technical data for reusability in fresh concrete ($f_{ck,cube} = 10/15/20 \text{ Nmm}^2$) for temporary applications
- Two embedment depths for maximum design flexibility

Base material

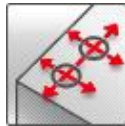


Concrete
(non-cracked)

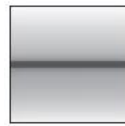


Concrete
(cracked)

Load condition



Small edge
distance
and spacing



Static /
quasi-static



Fire
resistance

Other information



European
Technical
Assessment



CE
conformity

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European Technical Assessment	ZAG, Ljubjana	ETA-19/0170 / 2019-08-30
Fire test report	ZAG, Ljubjana	ETA-19/0170 / 2019-08-30

a) All data given in this section for h_{nom} equal to 65 and 75 of size 8 and 10, respectively, is according ETA-19/0170 issue 2019-08-30.

Static and quasi-static loading data (for a single anchor)

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Steel failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$

Anchorage depth

		Hilti Technical Data		ETA 19/0170	
Anchor size		8	10	8	10
Nominal embedment depth	h_{nom} [mm]	50	55	65	75

Characteristic resistance

		Hilti Technical Data		ETA 19/0170		
Anchor size		8	10	8	10	
Non-cracked concrete						
Tension	HUS2-H	N_{Rk} [kN]	9,0	9,0	16,0	20,0
Shear	HUS2-H	V_{Rk} [kN]	12,0	13,6	18,4	22,7
Cracked concrete						
Tension	HUS2-H	N_{Rk} [kN]	4,0	6,0	9,0	14,0
Shear	HUS2-H	V_{Rk} [kN]	8,4	9,5	18,4	22,7

Design resistance

		Hilti Technical Data		ETA 19/0170		
Anchor size		8	10	8	10	
Non-cracked concrete						
Tension	HUS2-H	N_{Rd} [kN]	5,0	5,0	8,9	11,1
Shear	HUS2-H	V_{Rd} [kN]	8,0	9,1	12,3	15,1
Cracked concrete						
Tension	HUS2-H	N_{Rd} [kN]	2,2	3,3	5,0	7,8
Shear	HUS2-H	V_{Rd} [kN]	5,6	6,4	12,3	15,1

Recommended loads ^{a)}

		Hilti Technical Data		ETA 19/0170		
Anchor size		8	10	8	10	
Non-cracked concrete						
Tension	HUS2-H	N_{Rec} [kN]	3,6	3,6	6,4	7,9
Shear	HUS2-H	V_{Rec} [kN]	5,7	6,5	8,8	10,8
Cracked concrete						
Tension	HUS2-H	N_{Rec} [kN]	1,6	2,4	3,6	5,6
Shear	HUS2-H	V_{Rec} [kN]	4,0	4,6	8,8	10,8

- a) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.



Fire resistance

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Steel failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cyl} = 20 \text{ N/mm}^2$ (EN 1992-4 design)
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi}=1,0$ (in absence of other national regulations)

Nominal embedment depth

			Hilti Technical Data		ETA 19/0170	
Anchor size			8	10	8	10
Nominal embedment depth	h_{nom}	[mm]	50	55	65	75

Characteristic resistance

			Hilti Technical Data		ETA 19/0170	
Anchor size			8	10	8	10
Fire exposure R30						
Tension	HUS2-H	$N_{Rk,fi}$ [kN]	-	-	0,4	0,89
Shear	HUS2-H	$V_{Rk,fi}$ [kN]	-	-	0,4	0,89
Fire exposure R120						
Tension	HUS2-H	$N_{Rk,fi}$ [kN]	-	-	0,2	0,48
Shear	HUS2-H	$V_{Rk,fi}$ [kN]	-	-	0,2	0,48

Design resistance

			Hilti Technical Data		ETA 19/0170	
Anchor size			8	10	8	10
Fire exposure R30						
Tension	HUS2-H	$N_{Rd,fi}$ [kN]	-	-	0,4	0,89
Shear	HUS2-H	$V_{Rd,fi}$ [kN]	-	-	0,4	0,89
Fire exposure R120						
Tension	HUS2-H	$N_{Rd,fi}$ [kN]	-	-	0,2	0,48
Shear	HUS2-H	$V_{Rd,fi}$ [kN]	-	-	0,2	0,48

Materials

Mechanical properties

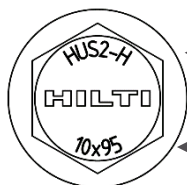
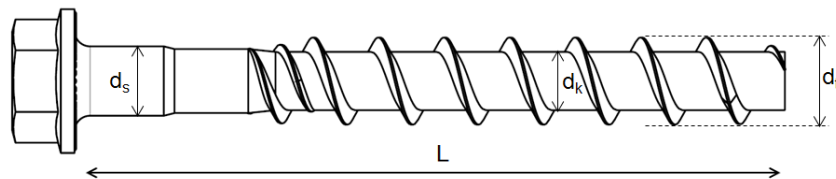
Anchor size		8	10
Nominal tensile strength	f_{uk} [N/mm ²]	880	715
Yield strength	f_{yk} [N/mm ²]	755	610
Stressed cross-section	A_s [mm ²]	39,6	59,4
Moment of resistance	W [mm ³]	35	65
Characteristic bending resistance	$M^0_{Rk,s}$ [Nm]	37	55

Material quality

Part	Material
HUS2-H	Carbon steel; Galvanized $\geq 5 \mu\text{m}$

Anchor dimensions

Anchor size		8	10
Threaded outer diameter	d_t [mm]	10,6	12,65
Core diameter	d_k [mm]	7,1	8,7
Shaft diameter	d_s [mm]	8,45	10,55
Stressed section	A_s [mm ²]	39,6	59,4



HUS2-H : Premium Hilti Screw anchor – hexagonal head

10x95 : screw diameter x screw length

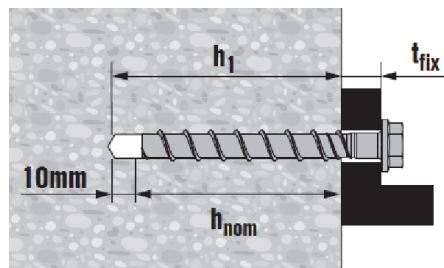
Screw length and thickness of fixture for HUS2-H (hex head)

Anchor size		8		10	
Nominal anchorage depth	h_{nom1}, h_{nom2} [mm]	50	65	55	75
Thickness of fixture		t_{fix1}	t_{fix2}	t_{fix1}	t_{fix2}
Length of anchor [mm]	55	5	-	-	-
	60	-	-	5	-
	75	25	10	-	-
	85	35	20	30	10
	95	45	30	40	20
	105	-	-	50	30
	130	-	-	75	55

Setting information

Setting details

Anchor size			8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Nominal diameter of drill bit	d_0		8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45		10,45	
Drill hole depth	$h_1 \geq$	[mm]	60	75	65	85
Maximum diameter of clearance hole in the fixture ²⁾	$d_f \leq$	[mm]	12		14	
Wrench size	SW	[mm]	13		15	



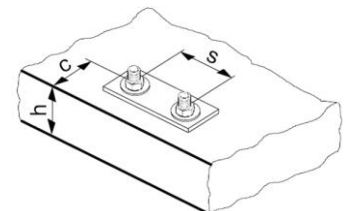
Installation equipment

Anchor size		8	10
Rotary hammer		TE 2 – TE 30	
Drill bit for concrete		CX 8	CX 10
Socket wrench insert		S-NSD 13 1/2	S-NSD 15 1/2
Tube for temporary application		HRG D=8-10-14 MM	
Setting tool for concrete	C20/25	SIW 22 T-A 1/2"; SIW 6AT-A22	
	C20/25 – C50/60	SIW 22 T-A	

Setting parameters

Anchor size			8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Effective anchorage depth	h_{ef}	[mm]	39,1	51,9	42,5	59,5
Minimum base material thickness	h_{min}	[mm]	100	110	100	130
Minimum spacing	s_{min}	[mm]	40	50	50	50
Minimum edge distance	c_{min}	[mm]	50	50	50	50
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	117	140	130	180
Critical edge distance for splitting failure	$c_{cr,sp}$	[mm]	59	70	65	90
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	117,3	155,7	127,5	178,5
Critical edge distance for concrete cone failure	$c_{cr,N}$	[mm]	58,65	77,85	63,75	89,25

For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced.



Setting instructions

Setting instruction	
1. Make a cylinder hole 	2. Clean the borehole
3. Install the screw anchor by impact screw driver 	4. Ensure that the fixture is caught

*For detailed information on installation see instruction for use given with the package of the product

Basic loading data for temporary application in standard & fresh concrete < 28 days old, $f_{ck,cube} \geq 10 \text{ N/mm}^2$:

All data in this section applies to the following conditions:

- Strength class, $f_{ck,cube} \geq 10 \text{ N/mm}^2$
- Only temporary use
- Screw is reusable, before each usage it must be checked according Hilti instruction for use with the suited tube Hilti HRG D=8,10,14 MM
- Design resistance and recommended load are valid for single anchor only
- Design resistance as well as the recommended load are valid for all load direction and valid for both cracked and non-cracked concrete
- Minimum base material thickness
- No edge distance and spacing influence

Anchorage depth

Anchor size			8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75

Design resistance

Anchor size			8		10		
Cracked and non-cracked concrete							
Tensile	$f_{ck,cube} \geq 10 \text{ N/mm}^2$	$N_{Rd} = V_{Rd}$	[kN]	1,4	3,0	1,7	3,2
=	$f_{ck,cube} \geq 15 \text{ N/mm}^2$		[kN]	1,7	3,7	2,1	3,9
Shear	$f_{ck,cube} \geq 20 \text{ N/mm}^2$		[kN]	2,0	4,2	2,4	4,5

Recommended^{a)} loads

Anchor size			8		10		
Cracked and non-cracked concrete							
Tensile	$f_{ck,cube} \geq 10 \text{ N/mm}^2$	$N_{Rec} = V_{Rec}$	[kN]	1,0	2,1	1,2	2,3
=	$f_{ck,cube} \geq 15 \text{ N/mm}^2$		[kN]	1,2	2,6	1,5	2,8
Shear	$f_{ck,cube} \geq 20 \text{ N/mm}^2$		[kN]	1,4	3,0	1,7	3,2

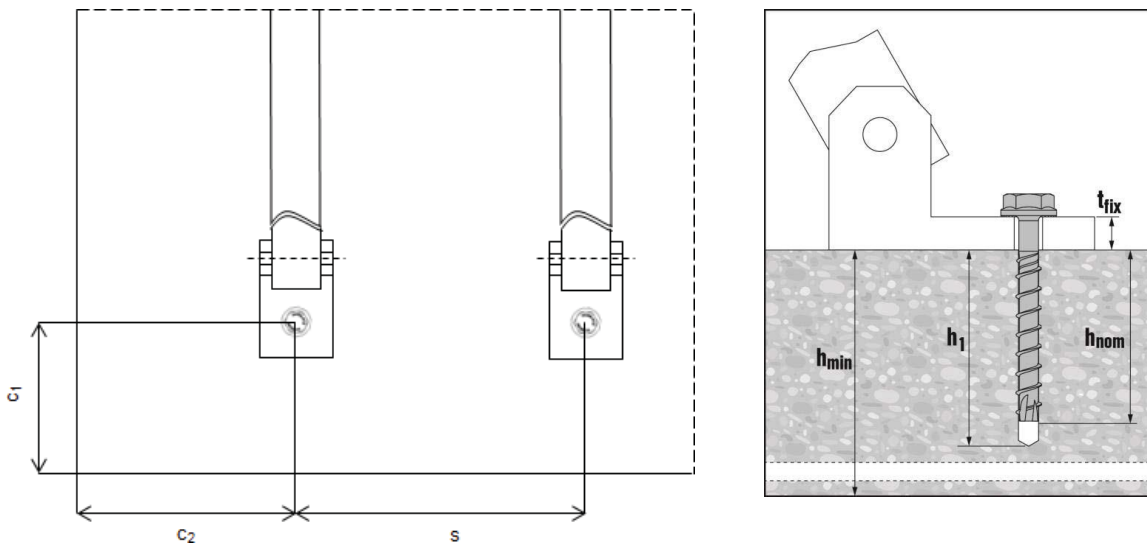
a) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Setting details

Anchor size			8		10	
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75
Minimum base material thickness	h_{min}	[mm]	100	110	100	130
Minimum spacing	s_{min}	[mm]	135	225	150	240
Minimum edge distance direction 1	c_1	[mm]	45	75	50	80
Minimum edge distance direction 2	c_2	[mm]	70	115	75	120

Setting details

Anchor size			8		10		
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75	
Nominal diameter of drill bit	d_o	[mm]	8		10		
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45		10,45		
Depth of drill bit	$h_1 \leq$	[mm]	60	75	65	85	
Diameter of clearance hole the fixture	$d_f \leq$	[mm]	12		14		
Width across	SW	[mm]	13		15		
Impact screw driver						SIW 22T-A 1/2"; SIW 6AT-A22	
Suited tube						HRG D=8-14 MM	



Tube specification

Anchor size / tube		8 / HRG 8	10 / HRG 10
Inner tube diameter	\varnothing_i [mm]	9,7	11,7
Outer tube diameter	\varnothing_e [mm]	15,0	17,0
Tube length	Lt [mm]	23,0	28,0

Instruction for use – re-use of screw

