HUS-V Screw anchors

Economical screw anchor with hex head

Anchor version

HUS-V
(8-10)

Benefits

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

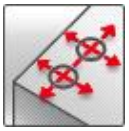
Base material

Concrete (non-cracked)

Concrete (cracked)

Installation conditions

Tensile zone



Small edge distance and spacing

Basic 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 N/mm²
- Adjustment allowed during the installation for size 8 and 10, h_{nom2} only.

Effective anchorage depth for static

Anchor size			8		10	
Eff. Anchorage depth	h_{ef}	[mm]	50	65	55	75

Mean ultimate resistance

Anchor size			8		10	
Non-cracked concrete						
Tension $N_{Ru,m}$	HUS-V	[kN]	11,9	21,2	11,9	26,6
Shear $V_{Ru,m}$	HUS-V	[kN]	16,4	*16,7*	18,6	*20,5*
Cracked concrete						
Tension $N_{Ru,m}$	HUS-V	[kN]	5,3	11,9	8,0	21,2
Shear $V_{Ru,m}$	HUS-V	[kN]	11,7	*16,7*	13,2	*20,5*

Characteristic resistance

Anchor size			8		10	
Non-cracked concrete						
Tension N_{Rk}	HUS-V	[kN]	9,0	16,0	9,0	20,0
Shear V_{Rk}	HUS-V	[kN]	12,3	*15,9*	14,0	*19,5*
Cracked concrete						
Tension N_{Rk}	HUS-V	[kN]	4,0	9,0	6,0	16,0
Shear V_{Rk}	HUS-V	[kN]	8,8	*15,9*	10,0	*19,5*

Design resistance

Anchor size			8		10	
Non-cracked concrete						
Tension N_{Rd}	HUS-V	[kN]	5,0	8,9	5,0	9,5
Shear V_{Rd}	HUS-V	[kN]	6,9	*10,6*	7,8	*13,0*
Cracked concrete						
Tension N_{Rd}	HUS-V	[kN]	2,2	5,0	3,3	7,5
Shear V_{Rd}	HUS-V	[kN]	4,9	*10,9*	5,5	*13,0*

Recommended loads[a)]

Anchor size			8		10	
Non-cracked concrete						
Tension N_{Rec}	HUS-V	[kN]	3,6	6,3	3,6	6,8
Shear V_{Rec}	HUS-V	[kN]	4,9	7,6	5,6	9,3
Cracked concrete						
Tension N_{Rec}	HUS-V	[kN]	1,6	3,6	2,4	5,4
Shear V_{Rec}	HUS-V	[kN]	3,5	7,6	4,0	9,3

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

Materials

Mechanical properties

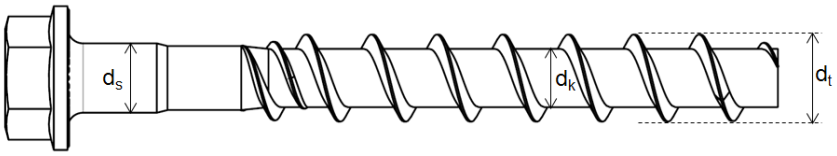
Anchor size		8	10
Nominal tensile strength f_{uk}	[N/mm²]	880	715
Yield strength f_{yk}	[N/mm²]	755	610
Stressed cross-section A_s	[mm²]	36,6	59,4
Moment of resistance W	[mm³]	35	65
Characteristic bending resistance $M^0_{Rk,s}$	[Nm]	37,1	55,5

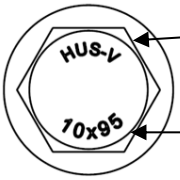
Material quality

Part	Material
HUS-V	Carboon steel; Galvanized ≥ 5 µm

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	[mm²]	36,6	59,4





HUS-V : Hilti Universal Screw – hexagonal head

10x95 : screw diameter x screw length

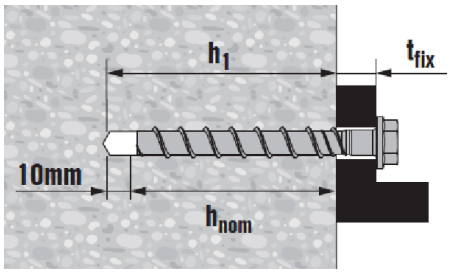
Screw length and thickness of fixture for HUS-v (hex head)

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	15	-	-
	85	35	25	30	10
	95	45	35	40	20
	105	-	-	50	30

Setting information

Setting details

Anchor size			**8**		**10**	
Thread engagement length	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	
Width across	SW	[mm]	13		15	



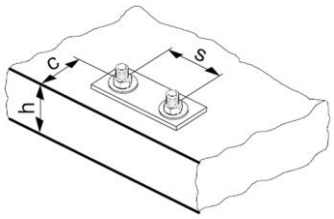
Installation equipment

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 8	HRG 10
Setting tool for concrete C12/15 to C50/60	SIW 22T-A – SIW 22-A	

Setting parameters

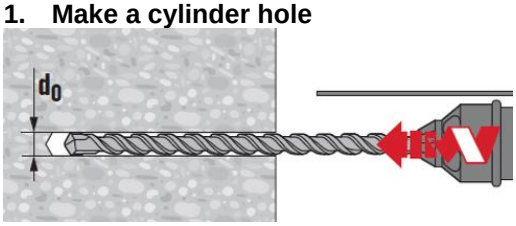
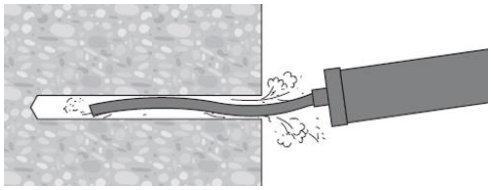
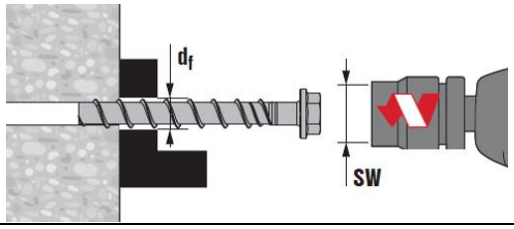
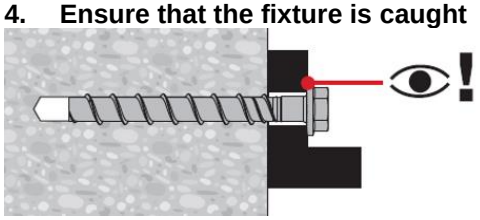
Anchor size			8		10	
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75
Effective anchorage depth	h_{ef}	[mm]	39,1	51,9	42,5	59,5
Minimum base material thickness	h_{min}	[mm]	100	110	100	130
Minimum spacing	s_{min}	[mm]	40	50	50	50
Minimum edge distance	c_{min}	[mm]	50	50	50	50
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	117,3	140	130	180
Critical edge distance for splitting failure	$c_{cr,sp}$	[mm]	58,65	70	65	90
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	117,3	177,3	127,5	178,5
Critical edge distance for concrete cone failure	$c_{cr,sp}$	[mm]	58,65	88,65	63,75	89,25

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



Setting instructions

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

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** 

Basic loading data for temporary application in standard and fresh concrete < 28 days old, $f_{ck,cube}$ ≥ 10 N/mm²:

All data in this section applies to the following conditions:

- Strength class, $f_{ck,cube}$ ≥ 10 N/mm²
- Only temporary use
- Screw is reusable, before each usage it must be checked according Hilti instruction for use with the suited tube Hilti HRG
- 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

Design resistance

Anchor size	**HUS-V**	**8**		**10**	
Nominal embedment depth	h_{nom} [mm]	50	65	55	75
Cracked and non-cracked concrete					
Tensile N_{Rd} = Shear V_{Rd}					
$f_{ck,cube}$ ≥ 10 N/mm²	[kN]	1,4	3,0	1,7	3,2
$f_{ck,cube}$ ≥ 15 N/mm²	[kN]	1,7	3,7	2,1	3,9
$f_{ck,cube}$ ≥ 20 N/mm²	[kN]	2,0	4,2	2,4	4,5

Recommended load

Anchor size	**HUS-V**	**8**		**10**	
Nominal embedment depth	h_{nom} [mm]	50	65	55	75
Tensile N_{rec} = Shear V_{rec}					
$f_{ck,cube}$ ≥ 10 N/mm²	[kN]	1,0	2,1	1,2	2,3
$f_{ck,cube}$ ≥ 15 N/mm²	[kN]	1,2	2,6	1,5	2,8
$f_{ck,cube}$ ≥ 20 N/mm²	[kN]	1,4	3,0	1,7	3,2

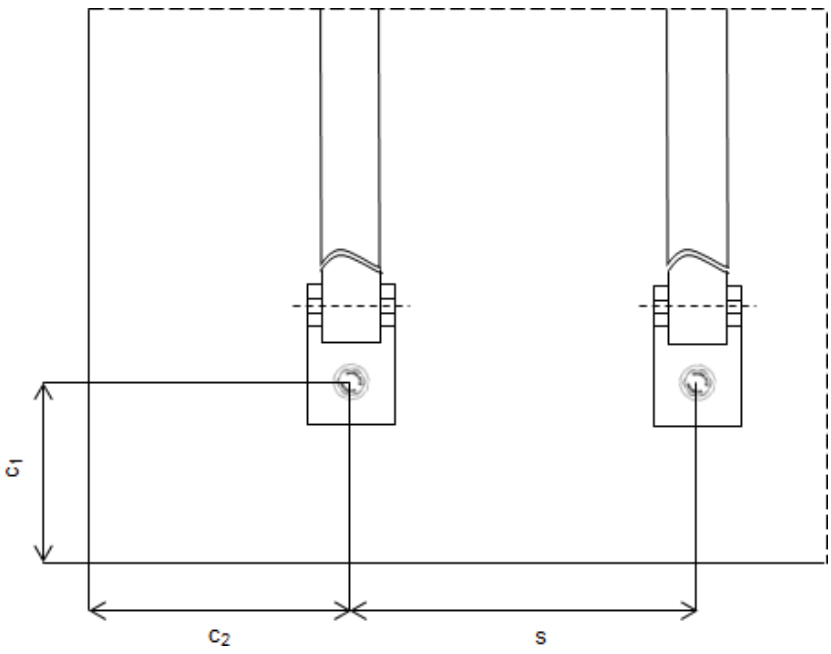
a) With overall partial safety factor for action ψ = 1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

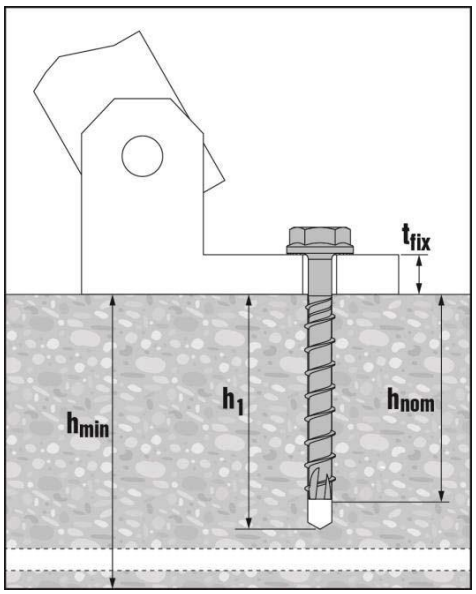
Setting details

Anchor size		HUS-V	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

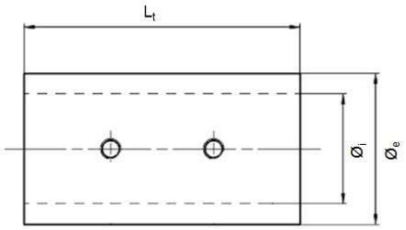
Anchor size		HUS-V	8		10	
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75
Nominal diameter of drill bit	d_o	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45		10,45	
Depth of drill bit	$h_1 \geq$	[mm]	60	75	65	85
Diameter of clearance in hole the fixture	$d_f \leq$	[mm]	12		14	
Width across	SW	[mm]	13		15	
Impact screw driver			Hilti SIW 22 T-A or SIW 22 A			
Suited tube			Hilti HRG 8		Hilti HRG 10	





Tube specification

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



Instruction for use – re-use of screw