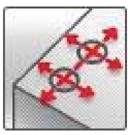
HUS-V Screw anchor

	Anchor version	Benefits
	HUS-V 8 / 10 Carbon steel concrete screw with hexagonal head	- High productivity – less drilling and fewer operations than with conventional anchors - 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

Concrete

Tensile zone



Small edge distance and spacing

Basic loading data (for a single anchor)

All data in this section applies to

For details see Simplified design method

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Cracked and non-cracked Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²
- Adjustment allowed during the installation for size 8 and 10, h_{nom2} only,.

Mean ultimate resistance

Anchor size		**HUS-V**	**8**		**10**	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Non-cracked concrete						
Tensile $N_{Ru,m}$		[kN]	11,9	21,2	11,9	26,6
Shear $V_{Ru,m}$		[kN]	16,4	*16,7*	18,6	*20,5*
Cracked concrete						
Tensile $N_{Ru,m}$		[kN]	5,3	11,9	8,0	21,2
Shear $V_{Ru,m}$		[kN]	11,7	*16,7*	13,2	*20,5*

Characteristic resistance

Anchor size		HUS-V	8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Non-cracked concrete						
Tensile N_{Rk}		[kN]	9,0	16,0	9,0	20,0
Shear V_{Rk}		[kN]	12,3	*15,9*	14,0	*19,5*
Cracked concrete						
Tensile N_{Rk}		[kN]	4,0	9,0	6,0	16,0
Shear V_{Rk}		[kN]	8,8	*15,9*	10,0	*19,5*

Design resistance

Anchor size		HUS-V	8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Non-cracked concrete						
Tensile N_{Rd}		[kN]	5,0	8,9	5,0	9,5
Shear V_{Rd}		[kN]	6,9	*10,6*	7,8	*13,0*
Cracked concrete						
Tensile N_{Rd}		[kN]	2,2	5,0	3,3	7,6
Shear V_{Rd}		[kN]	4,9	*10,6*	5,5	*13,0*

Recommended load

Anchor size		HUS-V	8		10	
Nominal embedment depth	h_{nom}	[mm]	50	65	55	75
Non-cracked concrete						
Tensile N_{Rec}		[kN]	3,6	6,3	3,6	6,8
Shear V_{Rec}		[kN]	4,9	*7,6*	5,6	9,3
Cracked concrete						
Tensile N_{Rec}		[kN]	1,6	3,6	2,4	5,4
Shear V_{Rec}		[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	HUS-V	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
Char, bending resistance $M^0_{Rk,s}$	[Nm]	37,1	55,5

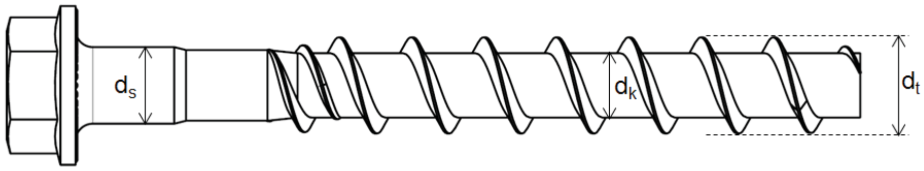
Material quality

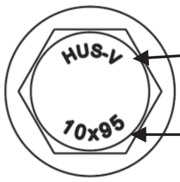
Type	Material	Coating
HUS-V	Carbon steel	Galvanized (≥5 μm)

Anchor dimensions

Dimensions

Anchor size		HUS-V	8	10
Threaded outer diameter	d_t	[mm]	10,60	12,65
Core diameter	d_k	[mm]	7,1	8,70
Shaft diameter	d_s	[mm]	8,45	10,55
Stressed section	A_s	[mm^2]	36,6	59,4



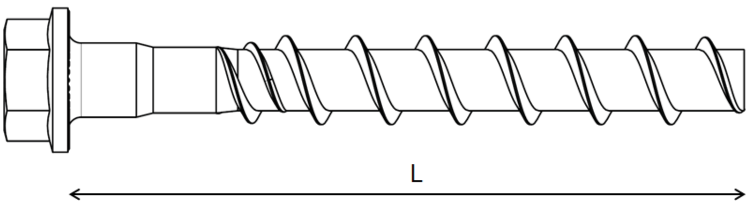


HUS-V : Hilti Universal Screw – hexagonal head

10x95 : screw diameter x screw length

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

Anchor size HUS-V	8		10	
Nominal anchorage depth [mm] / Length of anchor [mm]	h_{nom1} 50	h_{nom2} 60	h_{nom1} 55	h_{nom2} 75
	thickness of fixture			
	t_{fix1}	t_{fix2}	t_{fix1}	t_{fix2}
55	5	-	-	-
60	-	-	5	-
75	25	15	-	-
85	35	25	30	10
95	45	35	40	20
105	-	-	50	30



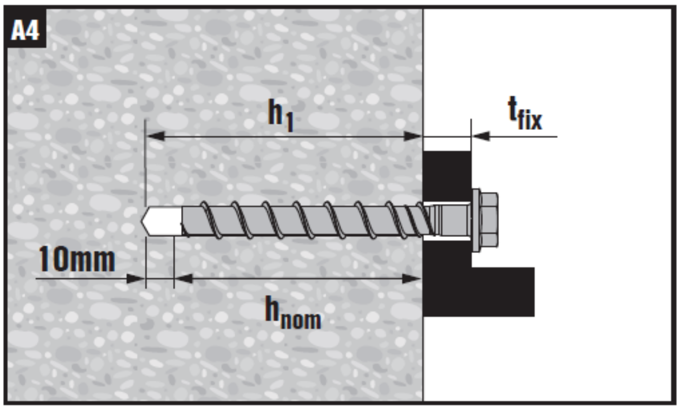
Setting

Installation equipment

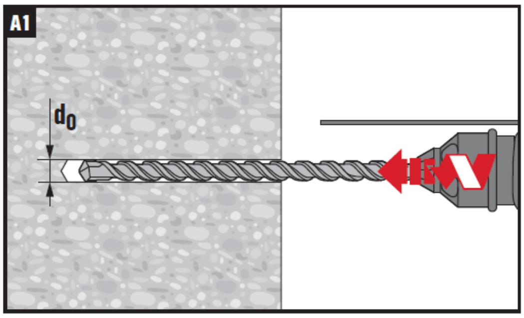
Anchor size HUS-V	8	10
Rotary hammer	TE 2 – TE 30	TE 2 – TE 30
Drill bit for concrete	CX 8	CX 10
Socket wrench insert	S-NSD 13 1/2	S-NSD 15 1/2
Tube for temporary application	HRG 8	HRG 10
Setting tool for concrete C12/15 to C50/60	SIW 22T-A – SIW 22-A	

Setting details for concrete

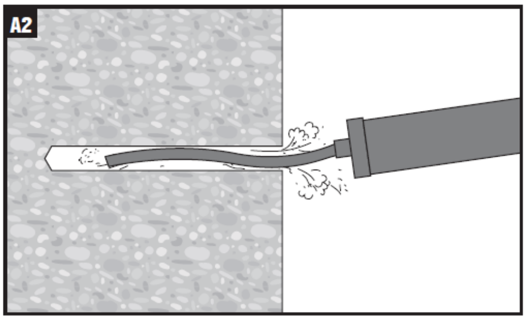
Anchor size		HUS-V	8		10	
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75
Nominal diameter of drill bit	d_o	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45		10,45	
Depth of drill hole	$h_1 \geq$	[mm]	60	75	65	85
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	12		14	
Width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



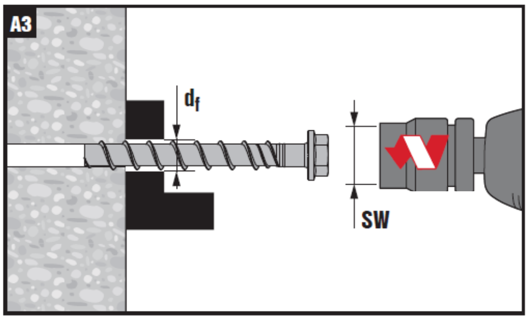
Setting instruction

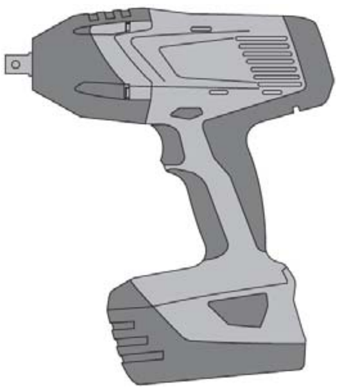


Make a cylindrical hole

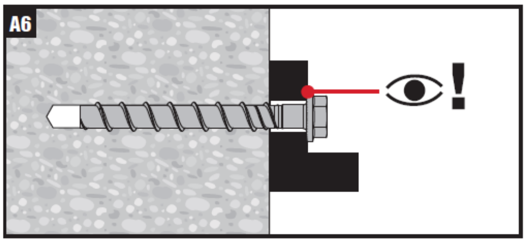


Clean the borehole





Install the screw anchor by impact screw driver Hilti SIW 22T-A or SIW22-A

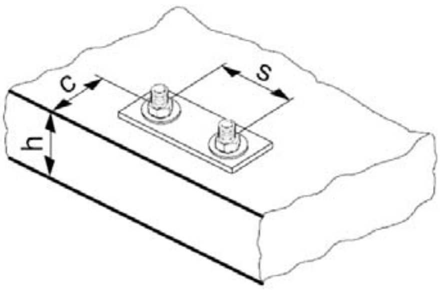


Ensure that the fixture is caught

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

Design parameters

Anchor size		HUS-V	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	$c_{cr,N}$	[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,

Simplified design method

Simplified version of the design method according ETAG 001, Annex C,

- Influence of concrete strength
- Influence of edge distance
- Influence of spacing
- Valid for a group of two anchors, (The method may also be applied for anchor groups with more than two anchors or more than one edge, The influencing factors must then be considered for each edge distance and spacing, The calculated design loads are then conservative: They will be lower than the exact values according ETAG 001, Annex C.

The design method is based on the following simplification:

- No different loads are acting on individual anchors (no eccentricity)

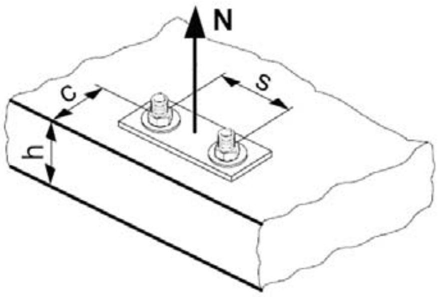
The values are valid for one anchor,

Tension loading

The design tensile resistance is the lower value of

- Steel resistance: $N_{Rd,s}$
- Concrete pull-out resistance: $N_{Rd,p} = N^0_{Rd,p} \cdot f_B$
- Concrete cone resistance: $N_{Rd,c} = N^0_{Rd,c} \cdot f_B \cdot f_{1,N} \cdot f_{2,N} \cdot f_{3,N} \cdot f_{re,N}$
- Concrete splitting resistance (only non-cracked concrete):

$$N_{Rd,sp} = N^0_{Rd,c} \cdot f_B \cdot f_{1,sp} \cdot f_{2,sp} \cdot f_{3,sp} \cdot f_{h,sp} \cdot f_{re,N}$$



Basic design tensile resistance

Design steel resistance $N_{Rd,s}$

Anchor size HUS-V	8	10
$N_{Rd,s}$ [kN]	25	30,3

Design pull-out resistance $N_{Rd,p} = N^0_{Rd,p} \cdot f_B$

Anchor size HUS-V	8		10	
Nominal anchorage depth h_{nom} [mm]	50	65	55	75
Non-cracked concrete				
$N^0_{Rd,p}$ [kN]	5	8,9	5	9,5
Cracked concrete				
$N^0_{Rd,p}$ [kN]	2,2	5	3,3	7,6

Design concrete cone resistance $N_{Rd,c} = N^0_{Rd,c} \cdot f_B \cdot f_{1,N} \cdot f_{2,N} \cdot f_{3,N} \cdot f_{re,N}$
Design splitting resistance [a)] $N_{Rd,sp} = N^0_{Rd,c} \cdot f_B \cdot f_{1,sp} \cdot f_{2,sp} \cdot f_{3,sp} \cdot f_{h,sp} \cdot f_{re,N}$

Anchor size HUS-V	8		10	
Nominal anchorage depth h_{nom} [mm]	50	65	55	75
Non-cracked concrete				
$N^0_{Rd,c}$ [kN]	6,9	10,5	7,8	11,0
Cracked concrete				
$N^0_{Rd,c}$ [kN]	4,9	7,5	5,5	7,9

Influencing factors

Influence of concrete strength

Concrete strength designation (ENV 206)	C 20/25	C 25/30	C 30/37	C 35/45	C 40/50	C 45/55	C 50/60
Pull-out , concrete cone and splitting resistance							
$f_B = (f_{ck,cube}/25N/mm^2)^{1/2}$ a)	1	1,1	1,22	1,34	1,41	1,48	1,55

a) $f_{ck,cube}$ = concrete compressive strength, measured on cubes with 150 mm side length

Influence of edge distance a)

$c/c_{cr,N}$ $c/c_{cr,sp}$	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1
$f_{1,N} = 0,7 + 0,3 \cdot c/c_{cr,N} \leq 1$ $f_{1,sp} = 0,7 + 0,3 \cdot c/c_{cr,sp} \leq 1$	0,73	0,76	0,79	0,82	0,85	0,88	0,91	0,94	0,97	1
$f_{2,N} = 0,5 \cdot (1 + c/c_{cr,N}) \leq 1$ $f_{2,sp} = 0,5 \cdot (1 + c/c_{cr,sp}) \leq 1$	0,55	0,60	0,65	0,70	0,75	0,80	0,85	0,90	0,95	1

a) The edge distance shall not be smaller than the minimum edge distance c_{min} given in the table with the setting details, These influencing factors must be considered for every edge distance,

Influence of anchor spacing a)

$s/s_{cr,N}$ $s/s_{cr,sp}$	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1
$f_{3,N} = 0,5 \cdot (1 + s/s_{cr,N}) \leq 1$ $f_{3,sp} = 0,5 \cdot (1 + s/s_{cr,sp}) \leq 1$	0,55	0,60	0,65	0,70	0,75	0,80	0,85	0,90	0,95	1

a) The anchor spacing shall not be smaller than the minimum anchor spacing s_{min} given in the table with the setting details, This influencing factor must be considered for every anchor spacing,

Influence of base material thickness

h/h_{min}	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	≥ 1,84
$f_{h,sp} = [h/(h_{min})]^{2/3}$	1	1,07	1,13	1,19	1,25	1,31	1,37	1,42	1,48	1,5

Influence of reinforcement a)

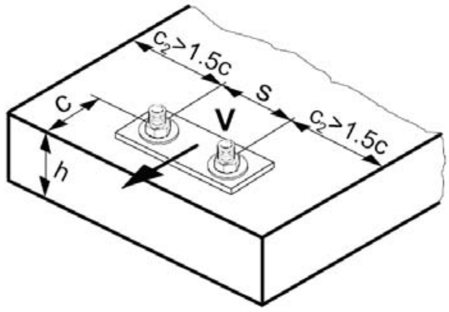
Anchor size		8		10	
Type	HUS-V				
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
$f_{re,N} = 0,5 + h_{ef}/200mm \leq 1$		0,70	0,76	0,71	0,80

e) This factor applies only for dense reinforcement, If in the area of anchorage there is reinforcement with a spacing ≥ 150 mm (any diameter) or with a diameter ≤ 10 mm and a spacing ≥ 100 mm, then a factor $f_{re,N}$ = 1 may be applied,

Shear loading

The design shear resistance is the lower value of

- Steel resistance: $V_{Rd,s}$
- Concrete pryout resistance: $V_{Rd,cp} = k \cdot N_{Rd,c}$
- Concrete edge resistance: $V_{Rd,c} = V^0_{Rd,c} \cdot f_B \cdot f_ß \cdot f_h \cdot f_4 \cdot f_{hef} \cdot f_c$



Basic design shear resistance

Design steel resistance $V_{Rd,s}$

Anchor size HUS-V	8	10
$V_{Rd,s}$ [kN]	10,6	13

Design concrete pry-out resistance $V_{Rd,cp} = k \cdot N_{Rd,c}$ a)

Anchor size HUS-V		8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
k		1	2	1	2

a) $N_{Rd,c}$: Design concrete cone resistance

Design concrete edge resistance a) $V_{Rd,c} = V^0_{Rd,c} \cdot f_B \cdot f_ß \cdot f_h \cdot f_4 \cdot f_{hef} \cdot f_c$

Anchor size HUS-V		8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
Non-cracked concrete					
$V^0_{Rd,c}$	[kN]	5,0	5,0	7,2	6,2
Cracked concrete					
$V^0_{Rd,c}$	[kN]	3,5	3,5	5,1	4,4

d) For anchor groups only the anchors close to the edge must be considered,

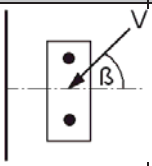
Influencing factors

Influence of concrete strength

Concrete strength designation (ENV 206)	C 20/25	C 25/30	C 30/37	C 35/45	C 40/50	C 45/55	C 50/60
$f_B = (f_{ck,cube}/25N/mm^2)^{1/2}$ a)	1	1,1	1,22	1,34	1,41	1,48	1,55

a) $f_{ck,cube}$ = concrete compressive strength, measured on cubes with 150 mm side length

Influence of angle between load applied and the direction perpendicular to the free edge

Angle ß		0°	10°	20°	30°	40°	50°	60°	70°	80°	≥ 90°
$f_\beta = \frac{1}{\sqrt{(\cos\alpha_V)^2 + \left(\frac{\sin\alpha_V}{2,5}\right)^2}}$		1	1,01	1,05	1,13	1,24	1,40	1,64	1,97	2,32	2,50

Influence of base material thickness

h/c	0,15	0,3	0,45	0,6	0,75	0,9	1,05	1,2	1,35	≥ 1,5
$f_h = \{h/(1,5 \cdot c)\}^{1/2} \le 1$	0,32	0,45	0,55	0,63	0,71	0,77	0,84	0,89	0,95	1,00

Influence of anchor spacing and edge distance a) for concrete edge resistance: f_4

$f_4 = (c/h_{ef})^{1,5} \cdot (1 + s / [3 \cdot c]) \cdot 0,5$

c/h_{ef}	Single anchor	Group of two anchors s/h_{ef}														
		0,75	1,50	2,25	3,00	3,75	4,50	5,25	6,00	6,75	7,50	8,25	9,00	9,75	10,50	11,25
0,50	0,35	0,27	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,35
0,75	0,65	0,43	0,54	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65	0,65
1,00	1,00	0,63	0,75	0,88	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
1,25	1,40	0,84	0,98	1,12	1,26	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40
1,50	1,84	1,07	1,22	1,38	1,53	1,68	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84
1,75	2,32	1,32	1,49	1,65	1,82	1,98	2,15	2,32	2,32	2,32	2,32	2,32	2,32	2,32	2,32	2,32
2,00	2,83	1,59	1,77	1,94	2,12	2,30	2,47	2,65	2,83	2,83	2,83	2,83	2,83	2,83	2,83	2,83
2,25	3,38	1,88	2,06	2,25	2,44	2,63	2,81	3,00	3,19	3,38	3,38	3,38	3,38	3,38	3,38	3,38
2,50	3,95	2,17	2,37	2,57	2,77	2,96	3,16	3,36	3,56	3,76	3,95	3,95	3,95	3,95	3,95	3,95
2,75	4,56	2,49	2,69	2,90	3,11	3,32	3,52	3,73	3,94	4,15	4,35	4,56	4,56	4,56	4,56	4,56
3,00	5,20	2,81	3,03	3,25	3,46	3,68	3,90	4,11	4,33	4,55	4,76	4,98	5,20	5,20	5,20	5,20
3,25	5,86	3,15	3,38	3,61	3,83	4,06	4,28	4,51	4,73	4,96	5,18	5,41	5,63	5,86	5,86	5,86
3,50	6,55	3,51	3,74	3,98	4,21	4,44	4,68	4,91	5,14	5,38	5,61	5,85	6,08	6,31	6,55	6,55
3,75	7,26	3,87	4,12	4,36	4,60	4,84	5,08	5,33	5,57	5,81	6,05	6,29	6,54	6,78	7,02	7,26
4,00	8,00	4,25	4,50	4,75	5,00	5,25	5,50	5,75	6,00	6,25	6,50	6,75	7,00	7,25	7,50	7,75
4,25	8,76	4,64	4,90	5,15	5,41	5,67	5,93	6,18	6,44	6,70	6,96	7,22	7,47	7,73	7,99	8,25
4,50	9,55	5,04	5,30	5,57	5,83	6,10	6,36	6,63	6,89	7,16	7,42	7,69	7,95	8,22	8,49	8,75
4,75	10,35	5,45	5,72	5,99	6,27	6,54	6,81	7,08	7,36	7,63	7,90	8,17	8,45	8,72	8,99	9,26
5,00	11,18	5,87	6,15	6,43	6,71	6,99	7,27	7,55	7,83	8,11	8,39	8,66	8,94	9,22	9,50	9,78
5,25	12,03	6,30	6,59	6,87	7,16	7,45	7,73	8,02	8,31	8,59	8,88	9,17	9,45	9,74	10,02	10,31
5,50	12,90	6,74	7,04	7,33	7,62	7,92	8,21	8,50	8,79	9,09	9,38	9,67	9,97	10,26	10,55	10,85

a) The anchor spacing and the edge distance shall not be smaller than the minimum anchor spacing s_{min} and the minimum edge distance c_{min},

Influence of embedment depth

Anchor size HUS-V		8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
$f_{hef} = 0,05 \cdot (h_{ef} / d)^{1,68}$		0,72	1,15	0,56	1,00

Influence of edge distance a)

c/d	4	6	8	10	15	20	30	40
$f_c = (d / c)^{0,19}$	0,77	0,71	0,67	0,65	0,60	0,57	0,52	0,50

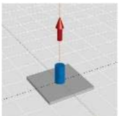
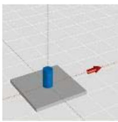
a) The edge distance shall not be smaller than the minimum edge distance c_{min},

Precalculated values

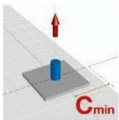
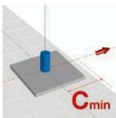
Design resistance calculated according ETAG 001, Annex C,
All data applies to concrete C 20/25 – $f_{ck,cube}$ =25 N/mm²,

Design resistance

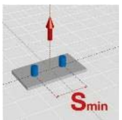
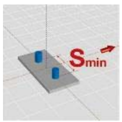
Single anchor, no edge effects

Anchor size	HUS-V	8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
Min, base material thickness	**h_{min} [mm]**	100	110	100	130
 **Tensile N_{Rd}**					
Non-cracked concrete	[kN]	5,0	8,9	5,0	9,5
Cracked concrete	[kN]	2,2	5,0	3,3	7,6
 **Shear V_{Rd}, without lever arm**					
Non-cracked concrete	[kN]	6,9	10,6	7,8	13,0
Cracked concrete	[kN]	4,9	10,6	5,5	13,0

Single anchor, min, edge distance (c = c_{min})

Anchor size	HUS-V	8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
Min, base material thickness	**h_{min} [mm]**	100	110	100	130
Min, edge distance	**c_{min}** [mm]	50	50	50	50
 **Tensile N_{Rd}**					
Non-cracked concrete	[kN]	5,0	7,7	5,0	7,4
Cracked concrete	[kN]	2,2	5,0	3,3	5,3
 **Shear V_{Rd}, without lever arm**					
Non-cracked concrete	[kN]	3,7	3,9	3,8	3,5
Cracked concrete	[kN]	2,6	2,8	2,7	2,5

Double anchor, no edge effects, min, spacing ($s = s_{min}$), (load values are valid for one anchor)

Anchor size	HUS-V	8		10	
Nominal anchorage depth	h_{nom} [mm]	50	65	55	75
Min, base material thickness	h_{min} [mm]	100	110	100	130
Min, spacing	s_{min} [mm]	40	50	50	50
 **Tensile N_{Rd}**					
Non-cracked concrete	[kN]	4,6	6,9	5,4	7,1
Cracked concrete	[kN]	3,3	4,9	3,8	5,0
 **Shear V_{Rd}, without lever arm**					
Non-cracked concrete	[kN]	4,6	10,6	5,4	13,0
Cracked concrete	[kN]	3,3	9,9	3,9	10,1

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/mm^2	[kN]	1,4	3,0	1,7	3,2
	$f_{ck,cube}$ ≥ 15 N/mm^2	[kN]	1,7	3,7	2,1	3,9
	$f_{ck,cube}$ ≥ 20 N/mm^2	[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/mm^2	[kN]	1,0	2,1	1,2	2,3
	$f_{ck,cube}$ ≥ 15 N/mm^2	[kN]	1,2	2,6	1,5	2,8
	$f_{ck,cube}$ ≥ 20 N/mm^2	[kN]	1,4	3,0	1,7	3,2

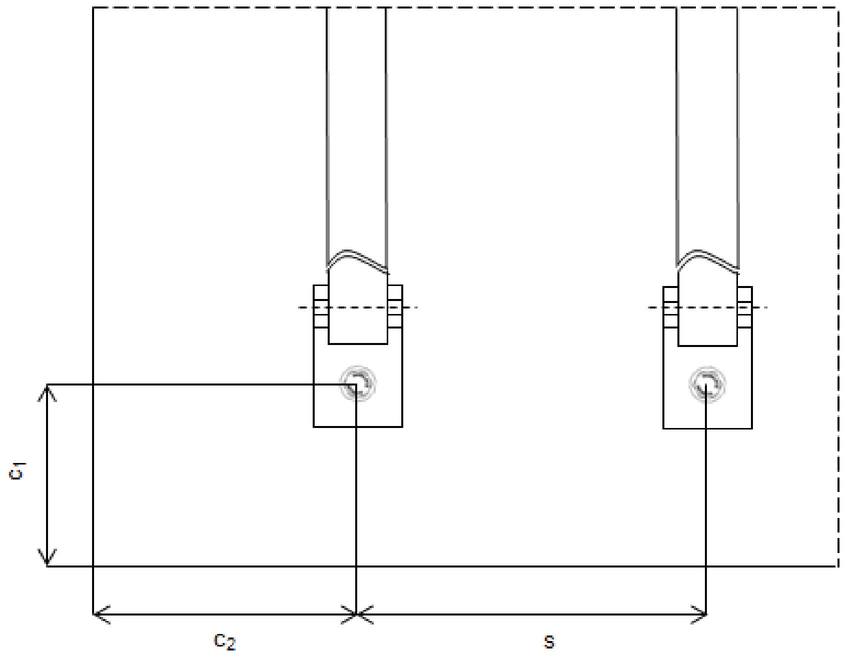
a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

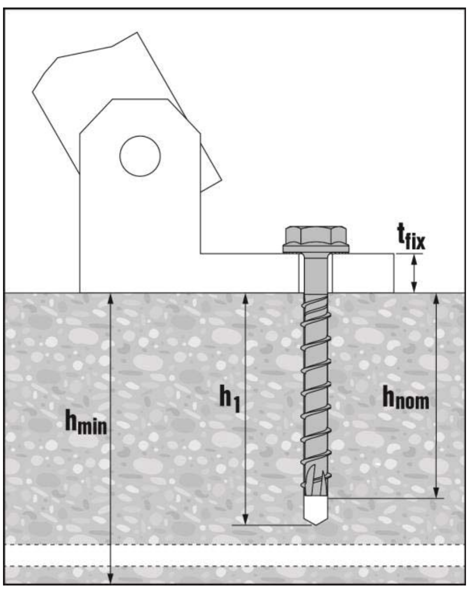
Setting details

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

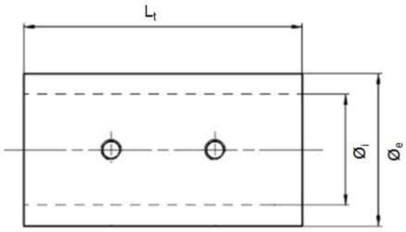
Anchor size		HUS-V	8		10	
Nominal anchorage depth	h_{nom}	[mm]	50	65	55	75
Nominal diameter of drill bit	d_o	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45		10,45	
Depth of drill bit	$h_1 \leq$	[mm]	60	75	65	85
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	12		14	
Width 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	$Ø_i$	[mm]	9,7	11,7
Outer tube diameter	$Ø_e$	[mm]	15,0	17,0
Tube length	Lt	[mm]	23,0	28,0



Instruction for use – re-use of screw