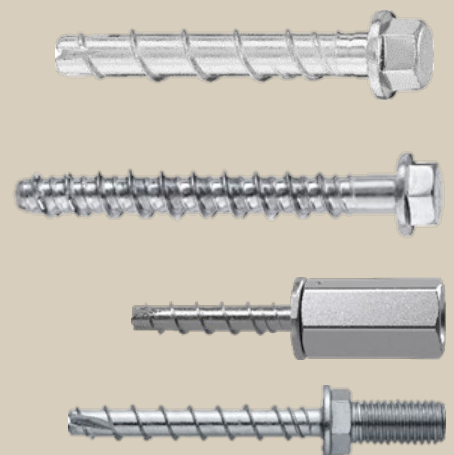




# HUS3-HUS4 HUS

## Screw anchor

**Product Technical Datasheet**  
**Redundant fastening**  
Update: Sep 24



Redundant fastening :

Steel-to-concrete

Page no:02

Hollow core slabs

Page no:11

# HUS3-HUS4 HUS

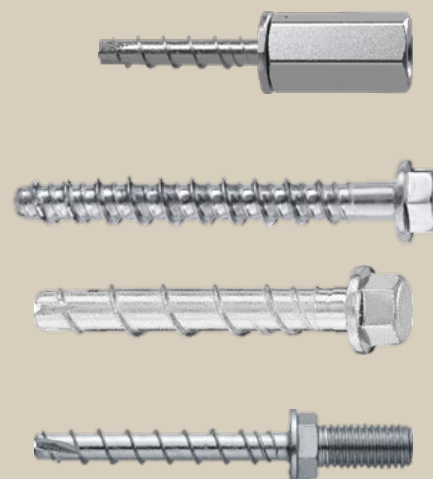
## Screw anchor

**Product Technical Datasheet**

**Redundant fastening**

**Steel-to-concrete**












**Update: Sep 24**





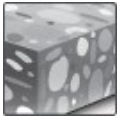
# HUS4, HUS3, HUS Screw anchor for use in concrete

## High performance screw anchor for redundant fastening applications

Anchor version		Benefits
	HUS3-H/HF (6)	<ul style="list-style-type: none"><li>- Quick and easy setting</li><li>- Low expansion forces in base materials</li><li>- Removable</li><li>- Forged-on washer and hexagon head with no protruding thread</li><li>- ETA approval for cracked and uncracked concrete</li><li>- High productivity – less drilling and fewer operations than with conventional anchors</li><li>- Through-fastening and pre-setting (based on the head configuration),</li></ul>
	HUS4-HR (6) HUS-HR (6)	
	HUS3-C (6)	
	HUS4-CR (6) HUS-CR (6)	
	HUS3-A (6)	
	HUS3-PL (6)	
	HUS3-P (6)	
	HUS3-PS (6)	
	HUS3-IQ (6)	
	HUS3-I (6)	
	HUS3-I Flex (6)	



**Base material**

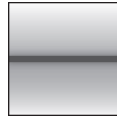


Concrete (uncracked)



Concrete (cracked)

**Load conditions**

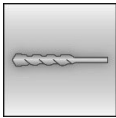


Static / quasi-static



Fire Resistance

**Drilling, cleaning, setting**



Hammer drilled holes

**Other information**



Hilti Technical data

**Linked Approvals/Certificates**

**Approvals/certificates**

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
<a href="#">ETA-10/0005</a>	Static and quasi-static / Fire	DIBt, Berlin	05-02-2024

The instructions for use can be viewed using the link in the instructions for use table or the QR code/link in the Hilti webpage table.

**Instruction for use (IFU)**

Anchor size	6 all lengths				
	H(F)	I	IQ	I-flex	A
HUS3	<a href="#">IFU HUS3-H-6</a>	<a href="#">IFU HUS3-I 6</a>	<a href="#">IFU HUS3-IQ 6</a>	<a href="#">IFU HUS3-I FLEX 6</a>	<a href="#">IFU HUS3-A 6</a>
HUS3	C	P	PL	PS	
	<a href="#">IFU HUS3-C 6</a>	<a href="#">IFU HUS3-P 6</a>	<a href="#">IFU HUS3-PL 6</a>	<a href="#">IFU HUS3-PS 6</a>	
HUS4	HR	CR			
	<a href="#">IFU HUS4-HR-6</a>	<a href="#">IFU HUS4-CR 6</a>	-		

**Link to Hilti Webpage**

<a href="#">HUS3-H</a>	<a href="#">HUS3-I</a>	<a href="#">HUS3-IQ</a>	<a href="#">HUS3-I-flex</a>	<a href="#">HUS3-A</a>	<a href="#">HUS3-C</a>	<a href="#">HUS3-P</a>	<a href="#">HUS3-PL</a>	<a href="#">HUS3-PS</a>
<a href="#">HUS4-HR</a>	<a href="#">HUS4-HR</a>							

### Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in EN 1992-4 and CEN/TR 17079. In Absence of a definition by a Member State the following default values may be taken.

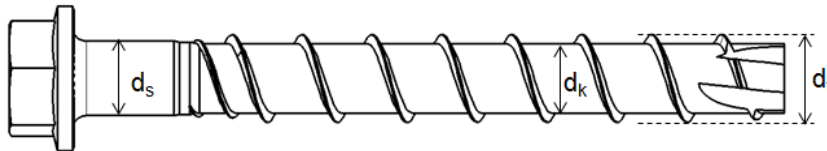
Minimum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action $N_{Sd}$ per fixing point
3	1	2 kN
4	1	3 kN

The value for maximum design load of actions per fastening point  $N_{Sd}$  is valid in general that means all fastening points are considered in the design of the redundant structural system. The value  $N_{Sd}$  may be increased if the failure of one (=most unfavourable) fixing point is taken into account in the design (serviceability and ultimate limit state) of the structural system e.g. suspended ceiling.

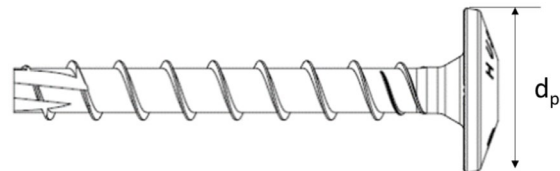
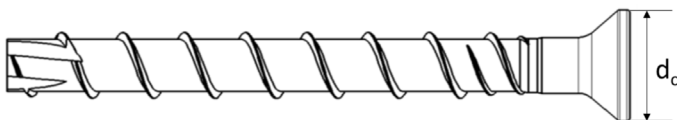
### Fastener special dimensions

#### Anchor dimensions

Type		HUS4, HUS	HUS3								
		HR,CR	H	C	A	PL	P	PS	I	I-Flex	IQ
Nominal length	$l_s$ [mm]	40-70	40-120	40-70	35-55	60	40-80	40-60	35-55	55-195	35
Threaded outer diameter	$d_t$ [mm]	7,6	7,85								
Core diameter	$d_k$	5,4	5,85								
Shaft diameter	$d_s$ [mm]	5,8	6,15								
Diameter of integrated washer	$d_i$ [mm]	-	16,5	-	-	-	-	-	-	-	-



Type		HUS3-C		HUS4-CR, HUS-CR		HUS3-		
		6	8	6	8	PL	P	PS
<b>Diameter</b>		<b>6</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>6</b>
Countersunk height	$h_c$ [mm]	4,0	6,3	4,3	6,3	-	-	-
Diameter of the countersunk	$d_c$ [mm]	11,5	18	11,5	18	-	-	-
Pan head diameter	$d_p$ [mm]	-	-	-	-	21,8	17,6	13,3



Head configuration

Type	Head		
HUS3-H 6	Hexagonal head		
HUS4-HR 6 HUS-HR 6	Hexagonal head		
HUS3-C 6	Countersunk head		
HUS4-CR 6 HUS-CR 6	Countersunk head		
HUS3-A 6	External thread		
HUS3-PL	Pan head (large)		
HUS3-P	Pan head		
HUS3-PS 6	Pan head (small)		
HUS3-I 6	Internal thread		
HUS3-I Flex 6	External thread		
HUS3-IQ	Coupler with spring		

**Static and quasi-static loading based on ETA-10/0005 and Hilti technical data.  
Design according to EN 1992-4 (method B)**

**All data in this section applies to:**

- Correct setting (See setting instruction)
- For a single anchor
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (see table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Concrete C20/25
- Hammer drilled holes
- Design resistance is valid for all load directions and valid for both cracked and uncracked concrete
- Recommended loads: With overall partial safety factor for action  $\gamma = 1,4$

**Design resistance for all loads directions**

Type	HUS		HUS4, HUS		HUS3
	HR, CR		HR, CR		H,PL,P,PS, I,I-Flex,IQ,A,C
<b>Fastener size</b>	<b>6 all lengths</b>		<b>6x40 6x45</b>	<b>6x60 6x70</b>	<b>6 all lengths</b>
Technical data source	Hilti		ETA		ETA
Nominal embedment depth $h_{nom}$ [mm]	30		35		35
$35 \text{ mm} \leq c < 80 \text{ mm}$ $F^0_{Rd}$ [kN]	1,0		1,4		1,3
$c > 80 \text{ mm}$ $F^0_{Rd}$ [kN]	1,0		1,7	2,4	2,0

**Recommended loads for all load directions**

Type	HUS		HUS4, HUS		HUS3
	HR,CR		HR, CR		H,PL,P,PS, I,I-Flex,IQ,A,C
<b>Fastener size</b>	<b>6 all lengths</b>		<b>6x40 6x45</b>	<b>6x60 6x70</b>	<b>6 all lengths</b>
Technical data source	Hilti data		ETA		ETA
Nominal embedment depth $h_{nom}$ [mm]	30		35		35
$35 \text{ mm} \leq c < 80 \text{ mm}$ $F^0_{rec}$ [kN]	0,7		1,0		0,9
$c > 80 \text{ mm}$ $F^0_{rec}$ [kN]	0,7		1,2	1,7	1,4

**Fire resistance based on ETA-10/0005. Design according to EN 1992-4, method B**

**All data in this section applies to:**

- Correct setting (See setting instruction)
- For a single anchor
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete.
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (see table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Concrete C20/25
- Hammer drilled holes
- Design resistance is valid for all load directions and valid for both cracked and uncracked concrete
- Partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1,0$  (in absence of other national recommendations)

**Design resistance**

Type	HUS4, HUS		HUS3
	HR	CR	H, P, PS, PL, I, I-Flex, A, C, IQ
<b>Fastener size</b>	<b>6 all lengths</b>		
Nominal embedment depth $h_{nom}$ [mm]	35		
<b>Fire exposure R30, R60, R90</b>			
All load directions $F_{Rd,fi}$ [kN]	0,7	0,2	0,5
<b>Fire exposure R120</b>			
All load directions $F_{Rd,fi}$ [kN]	0,5	0,1	0,4

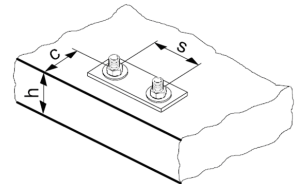


## Setting information

### Setting details

Type	HUS4, HUS				HUS3								
	HR	CR	H	C	A	P	PL	PS	I	I-Flex	IQ		
<b>Fastener size</b>	<b>6 all lengths</b>												
Nominal diameter of drill bit	d <sub>0</sub>	[mm]	6										
Maximum diameter of clearance hole in the fixture	d <sub>f</sub>	[mm]	9										
Wrench size	SW	[mm]	13	-	13	-	13	-	-	-	13	13	17
Countersunk diameter	d <sub>h</sub>	[mm]	-	11,0	-	11,5	-	-	-	-	-	-	-
Torx size	TX	[-]	-	T30	T30	T30	-	T30	T30	T30	-	-	-
Installation torque	T <sub>inst</sub>	[mm]	machine setting only				18						
Depth of drill hole in floor/wall position	h <sub>1</sub>	[mm]	45										
Depth of drill hole in ceiling position	h <sub>1</sub>	[mm]	38										
Minimum base material thickness	h	[mm]	80										
<b>Minimum distances</b>													
Spacing	s <sub>min</sub>	[mm]	35										
Edge distance	c <sub>min</sub>	[mm]	35										
<b>Characteristic distances</b>													
Spacing	s <sub>cr</sub>	[mm]	3*h <sub>ef</sub>										
Edge distance	c <sub>cr</sub>	[mm]	1,5*h <sub>ef</sub>										

For spacing (edge distance) smaller than characteristic spacing (characteristic edge distance) the design loads have to be reduced (see system design resistance).





### Screw length and maximum thickness of fixture

Type	HUS4, HUS				HUS3								
	HR	CR	H	C	A	PL	P	PS	I	I-Flex	IQ		
<b>Anchor size</b>	<b>6</b>												
<b>Nominal embedment depth</b>	[mm]	<b>h<sub>nom</sub></b>											
		<b>35</b>											
<b>Thickness of fixture</b>	[mm]	<b>t<sub>fix</sub></b>											
Length of screw	35	[mm]	-	-	-	-	0	-	-	-	0	-	0
	40	[mm]	-	5	5	5	-	-	5	5	-	-	-
	45	[mm]	10	-	-	-	-	-	-	-	-	-	-
	55	[mm]	-	-	-	-	20	-	-	-	20	20	-
	60	[mm]	25	25	25	25	-	25	25	25	-	-	-
	70	[mm]	35	35	-	35	-	-	-	-	-	-	-
	80	[mm]	-	-	45	-	-	-	45	-	-	-	-
	100	[mm]	-	-	65	-	-	-	-	-	-	-	-
	120	[mm]	-	-	85	-	-	-	-	-	-	-	-
	135	[mm]	-	-	-	-	-	-	-	-	-	100	-
	155	[mm]	-	-	-	-	-	-	-	-	-	120	-
	175	[mm]	-	-	-	-	-	-	-	-	-	140	-
195	[mm]	-	-	-	-	-	-	-	-	-	160	-	

**Drilling and Installation equipment**

For detailed setting information on installation ,see instructions for use given with the product.

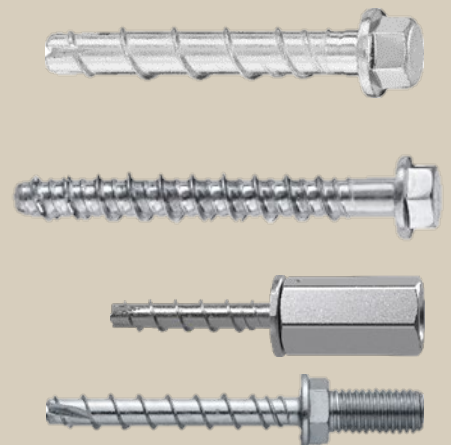
<p>Rotary Hammers (Corded and Cordless)</p>		<p>TE 2 - TE 30</p>
<p>Other tools</p>		<p>Impact wrench- SIW (use recommended socket/driver bit )</p>
		<p>Hammer drill bit TE-CX, TE-C</p>
		<p>Blow out pump</p>



# HUS3-HUS4 HUS













## Screw anchor

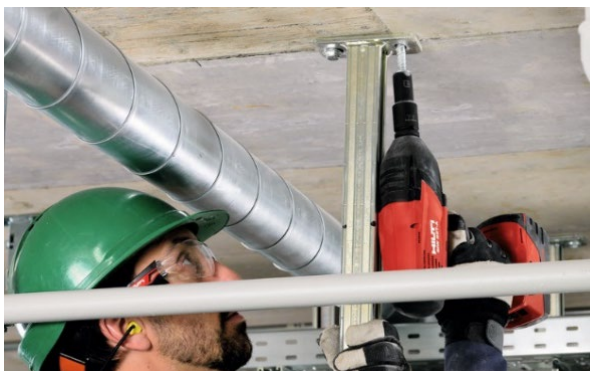
**Product Technical Datasheet**  
**Hollow core slabs**  
**Steel-to-concrete**  
Update: Sep 24



# HUS4, HUS3, HUS Screw anchor for use in Hollow core slabs

## High performance screw anchor for redundant fastening applications

Anchor version		Benefits
	HUS3-H/HF (6-8)	<ul style="list-style-type: none"> <li>- Quick and easy setting</li> <li>- Low expansion forces in base materials</li> </ul>
	HUS4-HR (6)	<ul style="list-style-type: none"> <li>- Removable</li> </ul>
	HUS3-C (6-8)	<ul style="list-style-type: none"> <li>- Forged-on washer and hexagon head with no protruding thread</li> </ul>
	HUS4-CR (6)	<ul style="list-style-type: none"> <li>- ETA approval for hollow core slabs</li> </ul>
	HUS-CR (6)	<ul style="list-style-type: none"> <li>- High productivity – less drilling and fewer operations than with conventional anchors</li> </ul>
	HUS3-A (6)	<ul style="list-style-type: none"> <li>- Through-fastening and pre-setting (based on the head configuration),</li> </ul>
	HUS3-PL (6)	
	HUS3-P (6)	
	HUS3-PS (6)	
	HUS3-IQ (6)	
	HUS3-I (6)	
	HUS3-I Flex (6)	

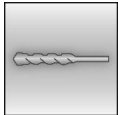


**Base material**


Prestressed hollow core slabs

**Load conditions**


Static / quasi-static

**Drilling, cleaning, setting**


Hammer drilled holes

**Other information**


Hilti Technical data

**Linked Approvals/Certificates and Instructions for use**
**Approvals/certificates**

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
<a href="#">ETA-10/0005</a>	Static and quasi-static / Fire	DIBt, Berlin	05-02-2024

The instructions for use can be viewed using the link in the instructions for use table or the QR code/link in the Hilti webpage table.

**Instruction for use (IFU)**

Anchor Type	H(F)	I	IQ	I-flex	A
HUS3 (6)	<a href="#">IFU HUS3-H-6</a>	<a href="#">IFU HUS3-I 6</a>	<a href="#">IFU HUS3-IQ 6</a>	<a href="#">IFU HUS3-I FLEX 6</a>	<a href="#">IFU HUS3-A 6</a>
	C	P	PL	PS	
	<a href="#">IFU HUS3-C 6</a>	<a href="#">IFU HUS3-P 6</a>	<a href="#">IFU HUS3-PL 6</a>	<a href="#">IFU HUS3-PS 6</a>	-
HUS4 (6)	HR	CR			
	<a href="#">IFU HUS4-HR-6</a>	<a href="#">IFU HUS4-CR 6</a>		-	
HUS3 (8)	H	C			
	<a href="#">IFU HUS3-H-8</a>	<a href="#">IFU HUS3-C-8</a>			

**Link to Hilti Webpage**

<a href="#">HUS3-H</a>	<a href="#">HUS3-I</a>	<a href="#">HUS3-IQ</a>	<a href="#">HUS3-I-flex</a>	<a href="#">HUS3-A</a>	<a href="#">HUS3-C</a>	<a href="#">HUS3-P</a>	<a href="#">HUS3-PL</a>	<a href="#">HUS3-PS</a>
<a href="#">HUS4-HR</a>	<a href="#">HUS4-HR</a>							

### Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in the EAD 330747 § 1.2.1. In Absence of a definition by a Member State the following default values may be taken.

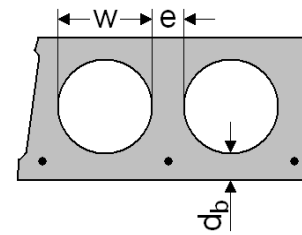
Minimum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action $N_{Sd}$ per fixing point <sup>a)</sup>
3	1	2 kN
4	1	3 kN

a) The value for maximum design load of actions per fastening point  $N_{Sd}$  is valid in general that means all fastening points are considered in the design of the redundant structural system. The value  $N_{Sd}$  may be increased if the failure of one (=most unfavourable) fixing point is taken into account in the design (serviceability and ultimate limit state) of the structural system e.g. suspended ceiling.

### Basic loading data for redundant fastening in prestressed hollow core slabs based on ETA-10/0005 and Hilti technical data. Design according to EN 1992-4 (method B)

#### All data in this section applies to:

- Correct setting (See setting instruction)
- For a single anchor
- No edge distance and spacing influence (provided  $c \geq c_{min}$  and  $s \geq s_{min}$ )
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Concrete C 30/37 to C50/56
- Hammer drilled holes
- Design resistance is valid for all load directions and valid for both cracked and uncracked concrete
- Recommended loads: With overall partial safety factor for action  $\gamma = 1,4$ .



#### Design resistance as per ETA

Type		HUS-HR,CR 6x40, 6x45		HUS4-HR,CR; HUS-HR, CR 6x60, 6x70			HUS3-H, PL, P, PS, I, I-Flex, IQ, A, C 6 all lengths		
Minimum Bottom flange thickness	$d_b$ [mm]	25	30	25	30	35	25	30	35
All load directions	$F_{Rd}$ [kN]	0,7	1,3	0,7	1,3	2,0	0,7	1,3	2,0

#### Recommended load as per ETA

Type		HUS-HR,CR 6x40, 6x45		HUS4-HR,CR; HUS-HR, CR 6x60, 6x70			HUS3-H, PL, P, PS, I, I-Flex, IQ, A, C 6 all lengths		
Minimum Bottom flange thickness	$d_b$ [mm]	25	30	25	30	35	25	30	35
All load directions	$F_{rec}$ [kN]	0,5	1,0	0,5	1,0	1,4	0,5	1,0	1,4

#### Design resistance as per Hilti data

Type		HUS3-C, H, HF 8 all lengths	
Bottom flange thickness	$d_b$ [mm]	30	
All load directions	$F_{Rd}$ [kN]	1,3	

#### Recommended loads as per Hilti data

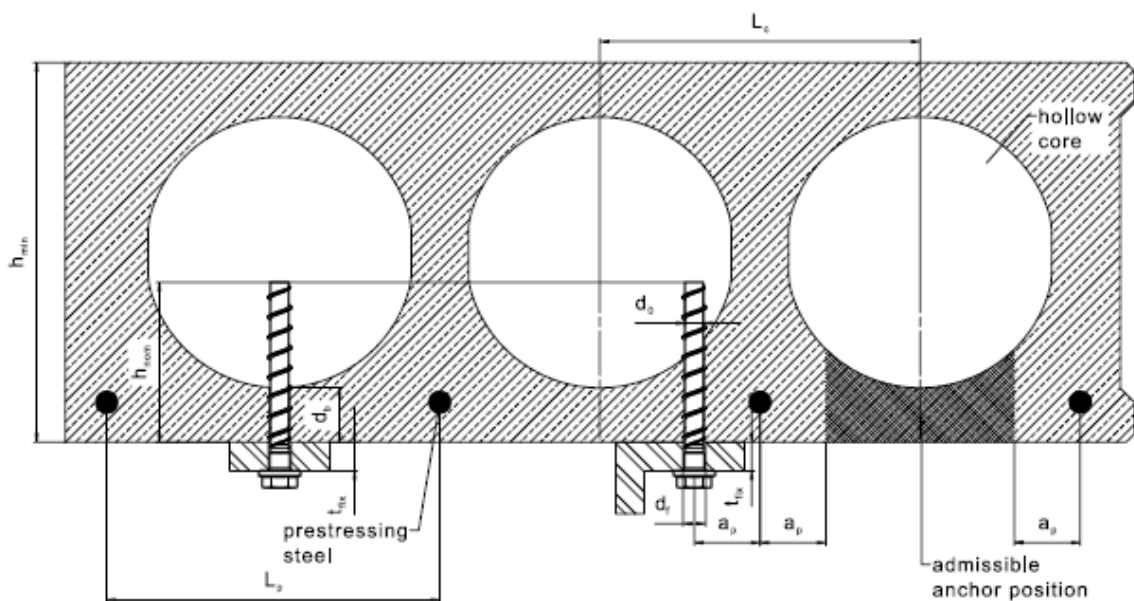
Type		HUS3-C, H, HF 8 all lengths	
Bottom flange thickness	$d_b$ [mm]	30	
All load directions	$F_{rec}$ [kN]	0,95	

## Setting information

### Setting details

Type	HUS4, HUS		HUS3-H, PL, P, PS, I, I-Flex, IQ, A, C
	HR	CR	
<b>Anchor size</b>			<b>6</b>
Effective anchorage depth	$h_{ef}$	[mm]	25
Bottom flange thickness	$d_{bmin}$	[mm]	25
Nominal diameter of drill bit	$d_0$	[mm]	6
Cutting diameter of drill bit	$d_{cutmax}$	[mm]	6,4
Nominal depth of drill hole	$h_{1min}$	[mm]	38
Clearance hole diameter	$d_f$	[mm]	9
Distance between anchor and prestressing steel	$a_{pmin}$	[mm]	50
Core distance	$l_{cmin}$	[mm]	100
Pre-stressing steel distance	$l_{pmin}$	[mm]	100
Installation torque	$T_{inst}$	[mm]	-(machine setting only) 18

Type	HUS3-C, H, HF		
<b>Anchor size</b>	<b>8</b>		
Effective anchorage depth	$h_{ef}$	[mm]	30
Bottom flange thickness	$d_{bmin}$	[mm]	30
Nominal diameter of drill bit	$d_0$	[mm]	8
Cutting diameter of drill bit	$d_{cutmax}$	[mm]	8,45
Nominal depth of drill hole	$h_{1min}$	[mm]	40
Clearance hole diameter	$d_f$	[mm]	12
Distance between anchor and prestressing steel	$a_{pmin}$	[mm]	50
Core distance	$l_{cmin}$	[mm]	100



**Screw length and thickness of fixture used in precast pre-stressed hollow core slabs for size 6**

Type			HUS4, HUS		HUS3								
			HR	CR	H	C	A	PL	P	PS	I	I-Flex	IQ
Fastener size			6										
Nominal embedment depth [mm]			$h_{nom}$										
Thickness of fixture [mm]			35										
			$t_{fix}$										
Length of screw	35	[mm]	-	-	-	-	0	-	-	-	0	-	0
	40	[mm]	-	-	5	5	-	-	5	5	-	-	-
	45	[mm]	15	-	-	-	-	-	-	-	-	-	-
	55	[mm]	-	-	-	-	20	-	-	-	20	20	-
	60	[mm]	5-25	5-25	5-25	5-25	-	5-25	5-25	5-25	-	-	-
	70	[mm]	15-35	15-35	-	15-35	-	-	-	-	-	-	-
	80	[mm]	-	-	25-45	-	-	-	25-45	-	-	-	-
	100	[mm]	-	-	45-65	-	-	-	-	-	-	-	-
	120	[mm]	-	-	65-85	-	-	-	-	-	-	-	-
	135	[mm]	-	-	-	-	-	-	-	-	-	80-100	-
	155	[mm]	-	-	-	-	-	-	-	-	-	100-120	-
	175	[mm]	-	-	-	-	-	-	-	-	-	120-140	-
195	[mm]	-	-	-	-	-	-	-	-	-	140-160	-	

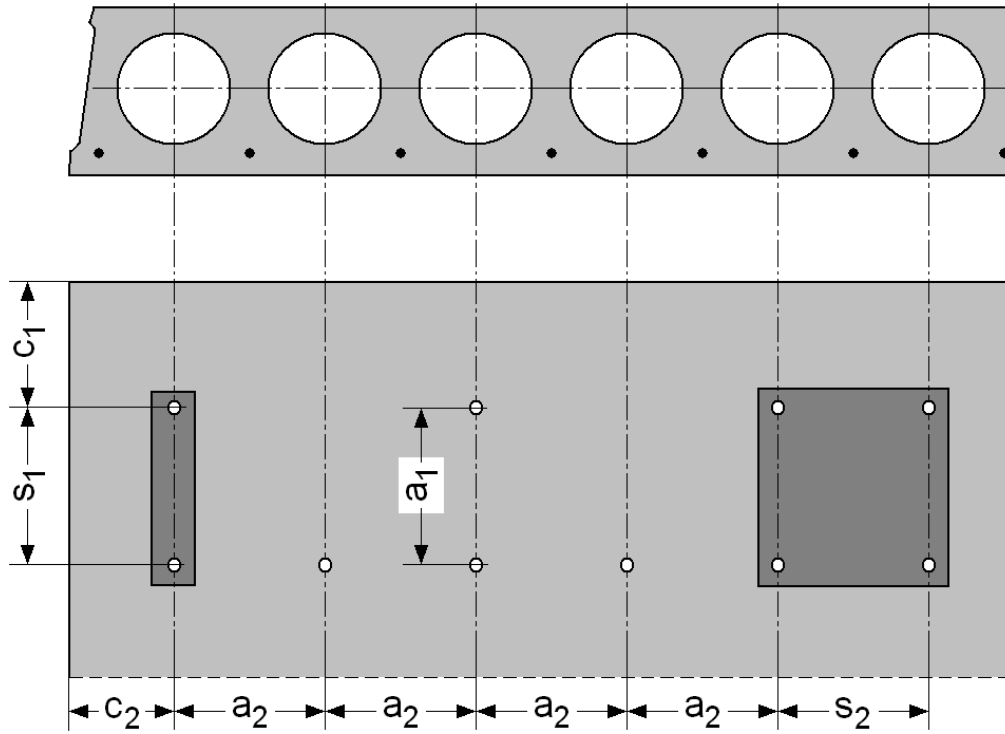
**Screw length and thickness of fixture used in precast pre-stressed hollow core slabs for size 8**

Anchor Type	Size [mm]	Length [mm]	$d_b=30$		$d_b=35$		$d_b=40$		$d_b=50$	
			$t_{fix,min}$	$t_{fix,max}$	$t_{fix,min}$	$t_{fix,max}$	$t_{fix,min}$	$t_{fix,max}$	$t_{fix,min}$	$t_{fix,max}$
HUS3-H	8	55	5	15	5	10	5	5	5	5
		65	5	25	5	20	5	15	5	5
		75	5	35	5	30	5	25	5	15
		85	15	45	15	40	15	35	15	25
		100	30	60	30	55	30	50	30	40
		120	50	80	50	75	50	70	50	60
		150	80	110	80	105	80	100	80	90
HUS3-HF	8	65	5	25	5	20	5	15	5	5
		75	5	35	5	30	5	25	5	15
		85	15	45	15	40	15	35	15	25
		100	30	60	30	55	30	50	30	40
HUS3-C	8	65	15	25	15	20	15	15	15	5
		75	15	35	15	30	15	25	15	15
		85	15	45	15	40	15	35	15	25



### Anchor spacing and edge distance

Type	HUS4-HR, CR; HUS-HR, CR HUS3-H, PL,P, PS, I, I-Flex, IQ, A, C	
Minimum edge distance	$c_{min}$	[mm] 100
Minimum anchor spacing	$s_{min}$	[mm] 100
Minimum distance between anchor groups	$a_{min}$	[mm] 100



- $c_1, c_2$  edge distance
- $s_1, s_2$  Anchor spacing
- $a_1, a_2$  Distances between anchor groups

**Drilling and Installation equipment**

For detailed setting information on installation ,see instructions for use given with the product.

<p>Rotary Hammers (Corded and Cordless)</p>		<p>TE 2 - TE 30</p>
<p>Other tools</p>		<p>Impact wrench- SIW (use recommended socket/driver bit )</p>
		<p>Hammer drill bit TE-CX, TE-C</p>
		<p>Blow out pump</p>