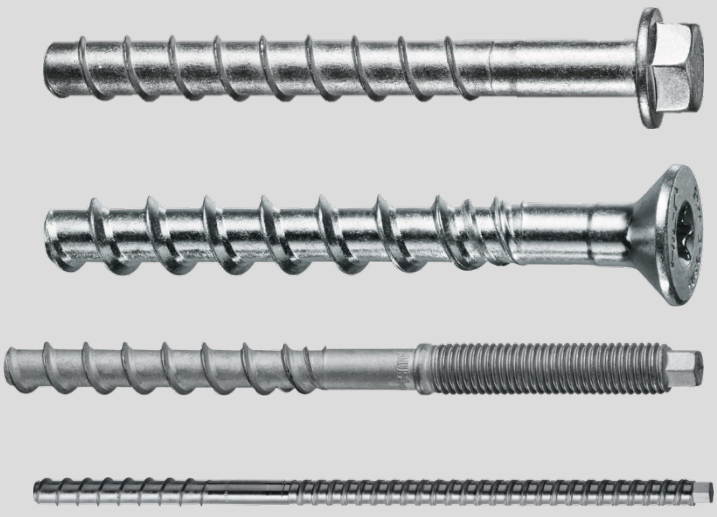
PRODUCT TECHNICAL DATASHEET

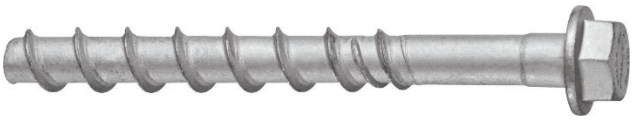
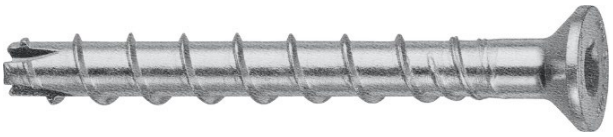
HUS4 Screw anchor

Update: Feb-26



HUS4 Screw anchor

High performance screw anchor for use in concrete

Type	Description and use	
HUS4-H	High performing hexagonal head screw anchor for fastening to concrete and masonry (carbon steel)	
HUS4-HF	High performing hexagonal head screw anchor for fastening to concrete and masonry (multilayer corrosion protection)	
HUS4 T-H	High performing hexagonal head screw anchor for fastening to tough concrete (carbon steel)	
HUS4 T-HF	High performing hexagonal head screw anchor for fastening to tough concrete (multilayer corrosion protection)	
HUS4-C	High-performing countersunk head screw anchor for fastening to concrete and masonry (carbon steel)	
HUS4 T-C	High-performing countersunk head screw anchor for fastening to tough concrete (carbon steel)	
HUS4-A	High-performing threaded head screw anchor for fastening to concrete and masonry (carbon steel)	
HUS4-AF	High-performing threaded head screw anchor for fastening to concrete and masonry (corrosion protection coated)	
HUS4-DW	High-performing screw anchor with an externally threaded tie rod head for fastening to concrete (carbon steel)	

Link to Instructions for use and Hilti Webpage

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.

Instructions for use (IFU)

Anchor size HUS4	8	10	12	14	16
H, HF	IFU HUS4-H(F) 8	IFU HUS4-H(F) 10	IFU HUS4-H(F) 12	IFU HUS4-H(F) 14	IFU HUS4-H(F) 16
H(F) G02	-				IFU HUS4-H(F) 16 G02
C	IFU HUS4-C 8	IFU HUS4-C 10	-		
A, AF	-	IFU HUS4-A 10	-	IFU-HUS4-A 14	-
T-C	IFU HUS4 T-C 8	IFU HUS4 T-C 10	-		
TH, T-HF	IFU HUS4 T-H(F) 8	IFU HUS4 T-H(F) 10	-		
DW					IFU HUS4-DW 16
Filling set	IFU Filling set				

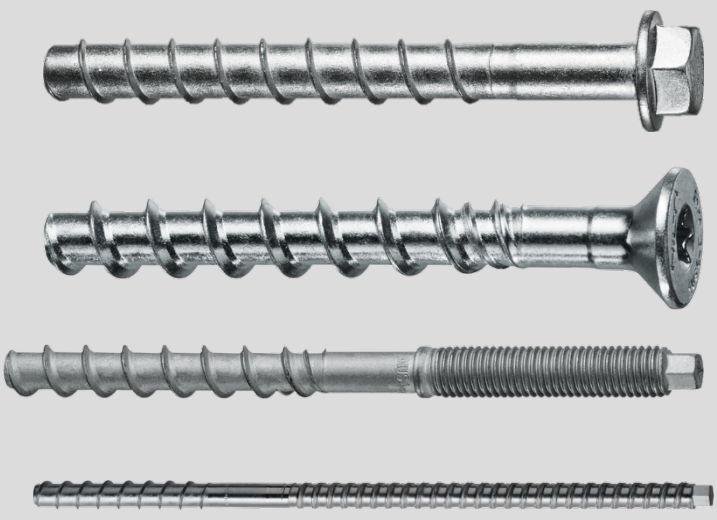
Link to Hilti Webpage

HUS4-H	HUS4-HF	HUS4-C	HUS4-A	HUS4-AF
HUS4-TC	**HUS4 T-H**	**HUS4 T-HF**	**HUS4 -DW**	

PRODUCT TECHNICAL DATASHEET

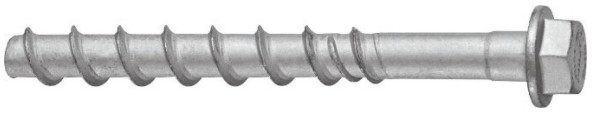
HUS4 Screw anchor

Steel-to-concrete



HUS4 Screw anchor for use in concrete

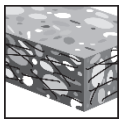
High performance screw anchor for single point fastening

Anchor version		Benefits
	HUS4-H(F) (8-16)	- Faster and easier installation – no cleaning, torque wrench or hammering required - Removable and adjustable (nominal embedment ≥ 60 mm) - Reusable for temporary fastenings (H, T-H, A) - Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates - Countersunk head (C) to fasten flush to a baseplate for improved aesthetics and trip safety - External metric thread (A) for pre-installation or to fasten stand-off baseplates - Multilayer coating for corrosion protection (HF, T-HF, AF) - Cost-saving design – pair with PROFIS Engineering software to optimize designs and reduce material costs - Externally threaded tie rod head – combines a HUS4 screw anchor with an 15 mm tie rod thread for use with industry standard formwork tie nuts (HUS4-DW).
	HUS4 T-H(F) (8-10)	
	HUS4-C (8-10)	
	HUS4 TC (8-10)	
	HUS4-A(F) (10 & 14)	
	HUS4-DW (16)	

Base material

Concrete (uncracked)

Concrete (cracked)



SFRC

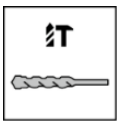
Load conditions

Static / quasi-static

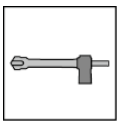
Seismic, C1, C2

Fire resistance

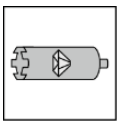
Drilling, cleaning, setting



Hammer drilled holes



Hollow drill-bit drilling



Diamond drilled holes

Impact wrench with adaptative torque module [1)]

Other information

PROFIS Engineering Software

Steel to concrete handbook

[1)] Approved Only for HUS4 anchors with H and C head

Linked Approvals/Certificates

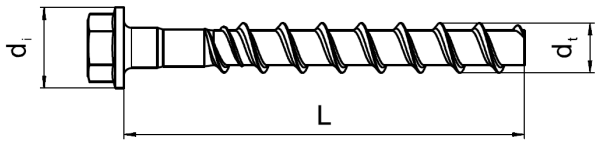
Approvals/certificates for normal weight concrete without steel fibre and with maximum steel fibre content of 80 kg/m³

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
ETA-20/0867	Static and quasi-static / Seismic / Fire.	DIBt, Berlin	22-12-2025

Fastener special dimensions

Fastener dimensions and marking HUS4 (T)-H(F)

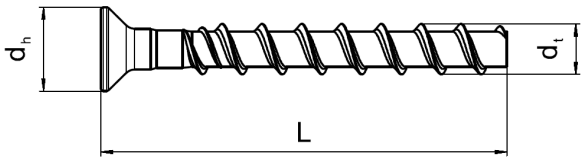
Anchor size			8	8	10	10	12	14	16	
Type		HUS4 -	H, HF	T,TF	H, HF	T,TF	H	H,HF	H, HF	H(F) G02
Outer diameter of screw	d_t	[mm]	10,50	10,30	12,70	12,40	14,70	16,70	18,80	19,20
Diameter of integrated washer	d_i	[mm]	17,50	18,00	20,50	21,00	23,60	29,00	32,60	32,60
Length of the screw	L	[mm]	45/150	55/150	60/305	60/150	70/150	75/150	100/205	100/205



HUS4: Hilti Universal Screw 4th generation
(T-)H: Hexagonal head
(T-)HF: Hexagonal head, multilayer coating
10: Screw diameter
100: Usable length of the screw

Fastener dimensions and marking HUS4-(T)-C

Anchor size			8	8	10	10
Type		HUS4	C	T-C	C	T-C
Outer diameter of the screw	d_t	[mm]	10,50	10,30	12,70	12,40
Countersunk head diameter	d_h	[mm]	18,00	18,00	21,00	21,00
Length of the screw (min/max)	L	[mm]	55/160	65/85	70/180	70/305

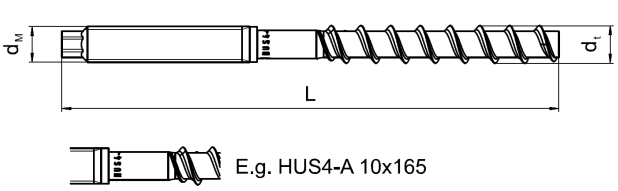


HUS4: Hilti Universal Screw 4th generation
(T-)C: Countersunk head
10: Screw diameter
100: Total length of the screw

Fastener dimensions and marking HUS4-A(F)

Anchor size			10	14
Type		HUS4-	A, AF	A, AF
Outer diameter of screw thread	d_t	[mm]	12,70	16,70
Diameter of the metric thread	d_M	[mm]	M12	M16
Length of the screw (min/max)	L	[mm]	120/165	155/205

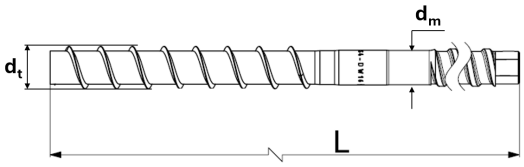
Hilti HUS4-A, size 10 with external thread M12 and size 14 with external thread M16

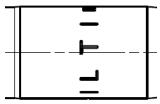


HUS4: Hilti Universal Screw 4th generation
A: Threaded head
10: Screw diameter
165: Total length of the screw
8: Carbon steel 8.8
K: length of the screw (more info in ETA)

Fastener dimensions and marking HUS4-DW

Anchor size			16
Type		**HUS4-**	**DW**
Outer diameter of screw thread	d_t	[mm]	19,20
Diameter of the metric thread	d_M	[mm]	17
Length of the screw (min/max)	L	[mm]	458 / 858





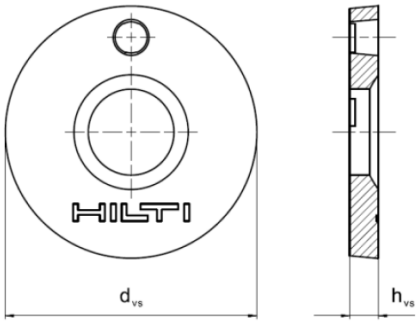
HUS4: Hilti Universal Screw 4th generation
DW: trapeziodal thread connection,galvanized
16: Nominal screw diameter d [mm]
458: Length of screw [mm]

Hilti Filling set

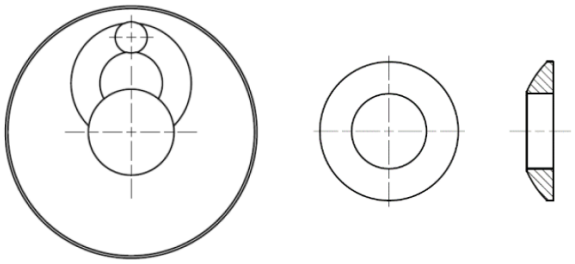
Hilti filling set for HUS4 (T)-H(F) and HUS4-A (F) With Hilti HY/RE…

Hilti filling set size			M10	M12	M16	M20
HUS4-(T)-H(F)			8	10	12, 14	16
HUS4-A(F)			-	10	14	-
Filling washer diameter	d_{vs}	[mm]	42	44	52	60
Filling washer + spherical washer thickness	h_{fs}	[mm]	9	10	11	13

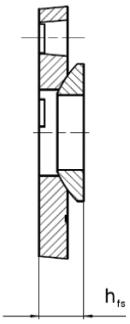
Sealing washer



Spherical washer



Filling Set



Static and quasi-static loading based on ETA-20/0867. Design according to EN 1992-4

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- 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 characteristic 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 with or without steel fibres.
- Hammer drilled holes
- Recommended loads: With overall partial safety factor for action γ = 1,4.
- Values for HUS4-DW 16 apply to nuts with a working load of 90KN according to DIN 18216 and thread compatible to SAS 750/875 tie rod type FS (according to DIBt Z-12.5-104)

For specific design cases refer to PROFIS Engineering.

Design resistance

Anchor type HUS4-		**H, HF, C**			**T-H, T-HF,T-C**			**H, HF, C,A,AF**			**T-H, T-HF,T-C**		
Anchor size		**8**						**10**					
Nominal embedment depth	h_{nom} [mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
		40	60	70	50	60	70	55	75	85	55	75	85
Uncracked concrete													
Tension	N_{Rd} [kN]	5,6	10,8	13,8	6,0	8,0	10,7	7,2	14,7	18,4	8,0	13,3	18,0
Shear	V_{Rd} [kN]	5,6	15,0	17,5	8,3	12,7	14,7	9,1	23,0	25,6	8,8	20,0	22,7
Cracked concrete													
Tension	N_{Rd} [kN]	3,7	7,5	9,6	4,0	6,0	8,0	5,3	10,5	12,9	6,0	10,0	12,6
Shear	V_{Rd} [kN]	3,9	15,0	17,5	5,8	12,7	14,7	6,4	21,1	25,6	6,2	20,0	22,7

Design resistance

Anchor type	**HUS4-**	**H ,HF**			**H, HF, A, AF**			**H, HF**		**H(F) G02**			**DW**
Anchor size		**12**			**14**			**16**					
Nominal embedment depth	h_{nom} [mm]	h_{nom}	h_{nom}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
		60	80	100	65	85	115	85	130	85	110	130	130
Uncracked concrete													
Tension	N_{Rd} [kN]	10,2	16,4	23,4	11,4	17,7	28,8	14,7	30,7	17,6	26,8	34,9	34,9
Shear	V_{Rd} [kN]	20,4	31,1	35,9	22,7	35,4	49,6	35,6	58,5	35,2	53,5	66,3	48,0
Cracked concrete													
Tension	N_{Rd} [kN]	6,7	11,5	16,4	7,9	12,4	20,2	10,7	21,3	12,3	18,7	24,5	24,5
Shear	V_{Rd} [kN]	14,3	22,9	32,8	15,9	24,8	40,4	25,0	49,3	24,7	37,5	48,9	48,0

Recommended load													
Anchor type	**HUS4-**	**H, HF, C**			**T-H, T-HF,T-C**			**H, HF, C, A, AF**			**T-H, T-HF,T-C**		
Anchor size		**8**						**10**					
Nominal embedment depth	h_{nom} [mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
		40	60	70	50	60	70	55	75	85	65	85	115
Uncracked concrete													
Tension	N_{rec} [kN]	4,0	7,7	9,8	4,3	5,7	7,6	5,2	10,5	13,1	5,7	9,5	12,9
Shear	V_{rec} [kN]	4,0	10,7	12,5	5,9	9,0	10,5	6,5	16,5	18,3	6,3	14,3	16,2
Cracked concrete													
Tension	**N_{rec}** [kN]	2,6	5,4	6,9	2,9	4,3	5,7	3,8	7,5	9,2	4,3	7,1	9,0
Shear	**V_{rec}** [kN]	2,8	10,7	12,5	4,1	9,0	10,5	4,5	15,1	18,3	4,4	14,3	16,2

Recommended load

Anchor type	**HUS4-**	**H, HF**			**H, HF, A, AF**			**H, HF**		**H(F) G02**			**DW**
Anchor size		**12**			**14**			**16**					
Nominal embedment depth	h_{nom} [mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
		60	80	100	65	85	115	85	130	85	110	130	130
Uncracked concrete													
Tension	N_{rec} [kN]	7,3	11,7	16,7	8,1	12,6	20,6	10,5	21,9	12,6	19,1	25,0	25,0
Shear	V_{rec} [kN]	14,6	22,2	25,7	16,2	25,3	35,4	25,5	41,8	25,2	38,2	47,4	34,3
Cracked concrete													
Tension	N_{rec} [kN]	4,8	8,2	11,7	5,7	8,9	14,4	7,6	15,2	8,8	13,4	17,5	17,5
Shear	V_{rec} [kN]	10,2	16,4	23,4	11,4	17,7	28,8	17,8	35,2	17,6	26,8	34,9	34,3

Seismic loading based on ETA-20/0867. Design according to EN 1992-4

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- 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 characteristic edge distance for concrete cone failure are decisive
- Minimum base material thickness (see setting detail table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Concrete C20/25 with or without steel fibre for C1 and only without steel fibres for C2
- α_{gap} = 1,0 (using Hilti filling set) and α_{gap} = 0,5 (without using Hilti filling set) accordingly
- Hammer drilled holes
- Values for HUS4-DW 16 apply to nuts with a working load of 90 kN according to DIN 18216 and thread compatible to SAS 750/875 tie rod type FS (according to DIBt Z-12.5-104)

For specific design cases refer to PROFIS Engineering.

Design resistance in case of seismic performance category C2 Size 8-10

with Hilti filling set												
Anchor type	**HUS4-**	**H, HF**		**T-H, T-HF,T-C**			**H, HF, A, AF**			**T-H, T-HF,T-C**		
Anchor size		**8**					**10**					
Nominal embedment depth	h_{nom} [mm]	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
		60	70	50	60	70	55	75	85	55	75	85
Tension	$N_{Rd,seis}$ [kN]	1,2	1,8	1,5	1,9	2,1	1,4	2,4	3,6	1,9	3,6	4,3
Shear	$V_{Rd,seis}$ [kN]	7,0	12,8	4,9	6,1	9,8	5,4	12,1	18,5	5,2	8,9	17,1
without Hilti filling set												
Anchor type	**HUS4-**	**H, HF, C**		**T-H, T-HF,T-C**			**H, HF, A, AF**			**T-H, T-HF,T-C**		
Anchor size		**8**					**10**					
Nominal embedment depth	h_{nom} [mm]	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
		60	70	50	60	70	55	75	85	55	75	85
Tension	$N_{Rd,seis}$ [kN]	1,2	1,8	1,5	1,9	2,1	1,4	2,4	3,6	1,9	3,6	4,3
Shear	$V_{Rd,seis}$ [kN]	3,5	4,3	2,5	3,1	3,6	2,7	5,9	5,9	2,6	4,4	5,9

Design resistance in case of seismic performance category C2 Size 12-16

with Hilti filling set											
Anchor type	**HUS4-**	**H**			**H, HF, A, AF**			**H(F) G02**			**DW**
Anchor size		**12**			**14**			**16**			
Nominal embedment depth	h_{nom} [mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
		60	80	100	65	85	115	85	110	130	-
Tension	$N_{Rd,seis}$ [kN]	3,8	5,7	7,6	3,6	5,9	11,8	7,8	13,4	17,2	-
Shear	$V_{Rd,seis\ C2}$ [kN]	12,1	16,0	22,9	13,5	21,1	34,3	21,0	31,8	41,6	-
without Hilti filling set											
Anchor type	**HUS4-**	**H**			**H, HF, A, AF**			**H(F) G02**			**DW**
Anchor size		**12**			**14**			**16**			
Nominal embedment depth	h_{nom} [mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
		60	80	100	65	85	115	85	110	130	130
Tension	$N_{Rd,seis}$ [kN]	3,8	5,7	7,6	3,6	5,9	11,8	7,8	13,4	17,2	17,2
Shear	$V_{Rd,seis\ C2}$ [kN]	6,1	8,0	9,5	6,8	10,5	13,8	10,5	15,9	20,8	17,6

Design resistance in case of seismic performance category C1 Size 8-10

with Hilti filling set													
Anchor type	**HUS4-**		**H, HF**		**T-H, T-HF**			**H, HF, A, AF**			**T-H, T-HF**		
Anchor size			**8**					**10**					
Nominal embedment depth	h_{nom}	[mm]	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom}
			60	70	50	60	70	55	75	85	55	75	85
Tension	$N_{Rd,seis\ C1}$	[kN]	6,4	8,2	3,6	5,5	7,3	5,4	9,0	10,9	5,1	8,5	10,8
Shear	$V_{Rd,seis\ C1}$	[kN]	12,8	15,0	4,9	11,0	11,0	5,4	17,9	21,4	5,2	17,1	17,1
without Hilti filling set													
Ancho Type	**HUS4-**		**H, HF, C**		**T-H, T-HF,T-C**			**H, HF, C, A, AF**			**T-H, T-HF,T-C**		
Anchor size			**8**					**10**					
Nominal embedment depth	h_{nom}	[mm]	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom}
			60	70	50	60	70	85	80	100	55	75	85
Tension	$N_{Rd,seis\ C1}$	[kN]	6,4	8,2	3,6	5,5	7,3	5,4	9,0	10,9	5,1	8,5	10,8
Shear	$V_{Rd,seis\ C1}$	[kN]	6,4	7,5	2,5	5,5	5,5	2,7	9,0	10,7	2,6	8,6	8,6

Design resistance in case of seismic performance category C1 Size 12-16

with Hilti filling set													
Anchor	**HUS4-**		**H**			**H, HF,A, AF**			**H(F)**		**H(F) G02**		**DW**
Anchor size			**12**			**14**			**16**				
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
			60	80	100	65	85	115	85	130	85	110	130	-
Tension	$N_{Rd,seis\ C1}$	[kN]	6,1	9,7	13,9	6,8	10,5	17,2	5,0	12,7	10,5	15,9	20,8	-
Shear	$V_{Rd,seis\ C1}$	[kN]	12,1	19,5	27,9	13,5	21,1	34,3	21,2	20,2	21,0	31,8	40,8	-
without Hilti filling set													
Anchor	**HUS4-**		**H**			**H, HF, A,AF**			**H(F)**		**H(F) G02**		**DW**
Anchor size			**12**			**14**			**16**				
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
			60	80	100	65	85	115	85	130	85	110	130	130
Tension	$N_{Rd,seis\ C1}$	[kN]	6,1	9,7	13,9	6,8	10,5	17,2	5,0	12,7	10,5	15,9	20,8	20,8
Shear	$V_{Rd,seis\ C1}$	[kN]	6,1	9,7	13,9	6,8	10,5	17,2	10,6	10,1	10,5	15,9	20,4	14,8

Fire loading based on ETA-20/0867. Design according to EN 1992-4

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- 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 characteristic edge distance for concrete cone failure are decisive
- Minimum base material thickness (see setting detail table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Concrete C20/25 with or without steel fibres.
- Hammer drilled holes
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1{,}0$ (in absence of other national regulations)
- Values for HUS4-DW 16 apply to nuts with a working load of 90 kN according to DIN 18216 and thread compatible to SAS 750/875 tie rod type FS (according to DIBt Z-12.5-104)

For specific design cases refer to PROFIS Engineering.

Design resistance

Type	**HUS4-**		**H, HF**			**T-H,T-HF**			**C**			**T-C**		
Anchor size			**8**											
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
			40	60	70	50	60	70	40	60	70	50	60	70
Fire exposure R30														
Tension	$N_{Rd,fi}$	[kN]	0,8	2,6	2,6	1,5	2,3	3,0	0,5	0,5	0,5	0,5	0,5	0,5
Shear	$V_{Rd,fi}$	[kN]	0,9	2,6	2,6	1,5	2,3	3,0	0,5	0,5	0,5	0,5	0,5	0,5
Fire exposure R60														
Tension	$N_{Rd,fi}$	[kN]	0,8	1,9	1,9	1,5	2,3	2,8	0,4	0,4	0,4	0,4	0,4	0,4
Shear	$V_{Rd,fi}$	[kN]	0,8	1,9	1,9	1,5	2,3	2,8	0,4	0,4	0,4	0,4	0,4	0,4
Fire exposure R90														
Tension	$N_{Rd,fi}$	[kN]	0,8	1,2	1,2	1,5	1,6	1,9	0,3	0,3	0,3	0,3	0,3	0,3
Shear	$V_{Rd,fi}$	[kN]	0,8	1,2	1,2	1,5	1,6	1,9	0,3	0,3	0,3	0,3	0,3	0,3
Fire exposure R120														
Tension	$N_{Rd,fi}$	[kN]	0,7	0,9	0,9	1,2	1,2	1,5	0,2	0,2	0,2	0,2	0,2	0,2
Shear	$V_{Rd,fi}$	[kN]	0,7	0,9	0,9	1,2	1,2	1,5	0,2	0,2	0,2	0,2	0,2	0,2

Design resistance

Type	HUS4-		H, HF			T-H,T-HF			C			T-C			A		
Anchor size			10														
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
			55	75	85	55	75	85	55	75	85	55	75	85	55	75	85
Fire exposure R30																	
Tension	$N_{Rd,fi}$	[kN]	2,0	3,9	4,2	2,0	4,0	4,9	1,0	1,0	1,0	1,2	1,2	1,2	2,0	3,9	4,2
Shear	$V_{Rd,fi}$	[kN]	2,0	3,9	4,2	2,0	4,0	4,9	1,0	1,0	1,0	1,2	1,2	1,2	2,0	4,2	4,2
Fire exposure R60																	
Tension	$N_{Rd,fi}$	[kN]	2,0	3,1	3,1	2,0	4,0	4,7	0,9	0,9	0,9	1,0	1,0	1,0	2,0	3,3	3,3
Shear	$V_{Rd,fi}$	[kN]	3,1	3,1	3,1	2,0	4,0	4,7	0,9	0,9	0,9	1,0	1,0	1,0	2,0	3,3	3,3
Fire exposure R90																	
Tension	$N_{Rd,fi}$	[kN]	2,0	2,3	2,3	2,0	3,2	3,2	0,7	0,7	0,7	0,8	0,8	0,8	2,0	2,5	2,5
Shear	$V_{Rd,fi}$	[kN]	2,0	2,3	2,3	2,0	3,2	3,2	0,7	0,7	0,7	0,8	0,8	0,8	2,0	2,5	2,5
Fire exposure R120																	
Tension	$N_{Rd,fi}$	[kN]	1,5	1,7	1,7	1,6	2,5	2,5	0,6	0,6	0,6	0,6	0,6	0,6	1,6	2,1	2,1
Shear	$V_{Rd,fi}$	[kN]	1,5	1,7	1,7	1,6	2,5	2,5	0,6	0,6	0,6	0,6	0,6	0,6	1,6	2,1	2,1

Design resistance

Type	HUS4-		H, HF			H, HF			A		
Anchor size			12			14					
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
			60	80	100	65	85	115	55	75	85
Fire exposure R30											
Tension	$N_{Rd,fi}$	[kN]	2,4	4,2	6,1	2,9	4,5	7,5	2,9	4,5	7,5
Shear	$V_{Rd,fi}$	[kN]	4,9	7,6	7,6	5,9	10,4	10,5	5,9	8,4	8,4
Fire exposure R60											
Tension	$N_{Rd,fi}$	[kN]	2,4	4,2	5,8	2,9	4,5	7,5	2,9	4,5	6,8
Shear	$V_{Rd,fi}$	[kN]	4,9	5,7	5,8	5,9	7,9	6,0	5,9	6,8	6,8
Fire exposure R90											
Tension	$N_{Rd,fi}$	[kN]	2,4	3,9	4,1	2,9	5,6	5,8	2,9	4,5	5,1
Shear	$V_{Rd,fi}$	[kN]	3,7	3,9	4,1	5,2	5,6	5,8	5,1	5,1	5,1
Fire exposure R120											
Tension	$N_{Rd,fi}$	[kN]	1,9	3,0	3,1	2,3	3,6	4,4	2,3	3,6	4,3
Shear	$V_{Rd,fi}$	[kN]	2,8	3,0	3,1	3,9	4,2	4,4	4,3	4,3	4,3

Design resistance

Type	HUS4-		H, HF		H(F) 16 G02			DW
Anchor size			16					
Nominal embedment depth	h_{nom}	[mm]	h_{nom1}	h_{nom1}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
			85	130	85	110	130	130
Fire exposure R30								
Tension	$N_{Rd,fi}$	[kN]	4,6	8,7	5,1	9,1	10,7	3,9
Shear	$V_{Rd,fi}$	[kN]	10,6	10,7	10,2	10,6	10,7	3,9
Fire exposure R60								
Tension	$N_{Rd,fi}$	[kN]	4,6	8,2	5,1	8,1	8,2	2,9
Shear	$V_{Rd,fi}$	[kN]	8,1	8,2	8,1	8,1	8,2	2,9
Fire exposure R90								
Tension	$N_{Rd,fi}$	[kN]	4,6	5,9	5,1	5,7	5,9	2,5
Shear	$V_{Rd,fi}$	[kN]	5,7	5,9	5,7	5,7	5,9	2,5
Fire exposure R120								
Tension	$N_{Rd,fi}$	[kN]	3,7	4,5	4,1	4,3	4,5	2,0
Shear	$V_{Rd,fi}$	[kN]	4,3	4,5	4,3	4,3	4,5	2,0

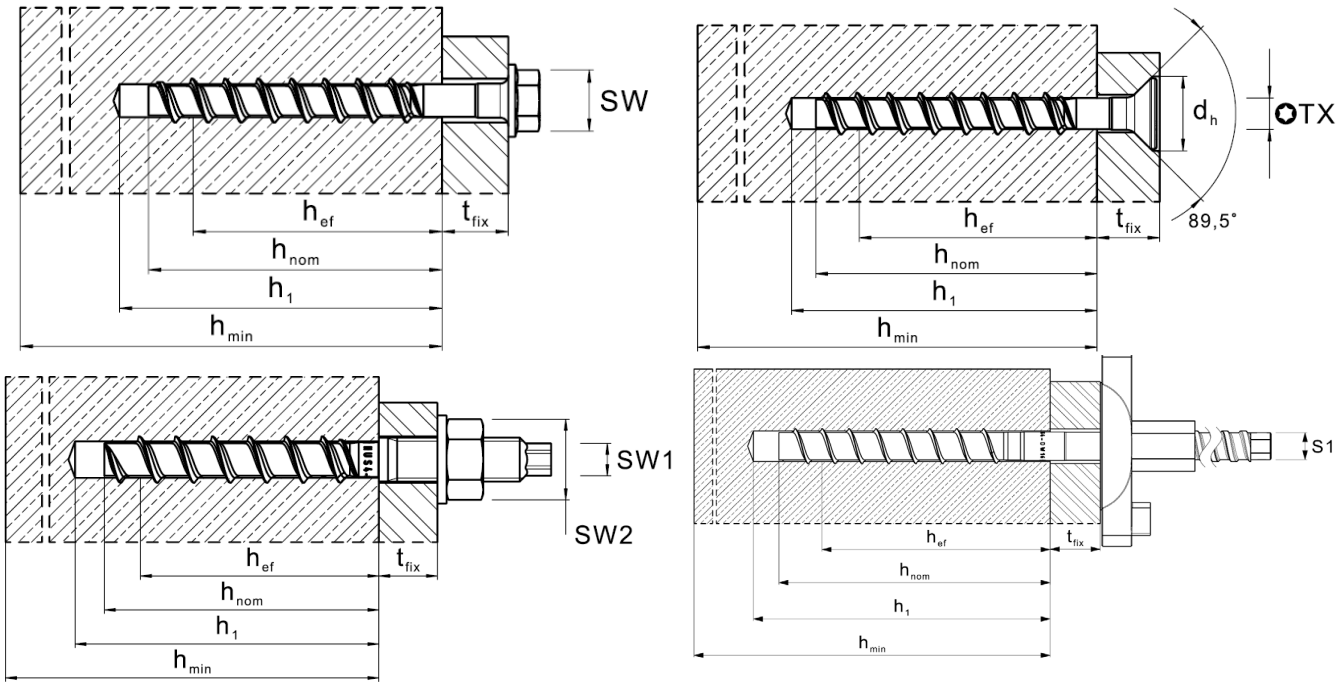
Setting information

Anchor type	HUS4-		H(F), C			T-H(F), T-C			H(F), C, A(F)		
Anchor size HUS4			**8**			**8**			**10**		
			h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
Nominal embedmenth depth	h_{nom}	[mm]	40	60	70	50	60	70	55	75	85
Nominal drill hole diameter	d_0	[mm]	8			8			10		
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45			8,45			10,45		
Cutting diameter of diamond core	$d_{cut} \leq$	[mm]	-			-			9,9		
Clearance hole diameter through setting	d_f min	[mm]	11			11			13		
	d_f max	[mm]	12			12			14		
Clearance hole diameter pre	$d_f \leq$	[mm]	-			-			14		
Wrench size (H, HF-type)	s	[mm]	13			13			15		
Wrench size for hex head (A-type)	s1	[mm]	-			-			8		
Wrench size for nut (A-type)	s2	[mm]	-			-			19		
Maximum installation torque (A-	max T_{inst}	[Nm]	-			-			40		
Torx size (C-type)	TX	-	45			45			50		
Diameter of countersunk head	d_h	[mm]	18			18			21		
Depth of drill hole for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling upwards	$h_1 \geq$	[mm]	h_{nom} + 10 mm								
			50	70	80	60	70	80	65	85	95
Depth of drill hole for uncleanded hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	h_{nom} + 25						h_{nom} + 30		
			65	85	95	75	85	95	85	105	115
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling	$h_1 \geq$	[mm]	h_{nom} + 20 mm								
			-	80	90	70	80	90	-	95	105
Depth of drill hole (with adjustability) for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	h_{nom} + 35						h_{nom} + 40		
			-	95	105	85	95	105	-	115	125
Minimum distances											
Minimum thickness of concrete member	$h_{min} \geq$	[mm]	h_1 + 30 mm								
			80	100	120	100	100	120	100	130	140
Minimum spacing	$s_{min} \geq$	[mm]	35			50[2)]	50	50	40		
Minimum edge distance	$c_{min} \geq$	[mm]	35			40	40	40	40		
Characteristics distances											
Spacing for splitting failure	$s_{cr,sp}$	[mm]	3,0 h_{ef}			120	140	170	3,30 h_{ef}		
Edge distance for splitting	$c_{cr,sp}$	[mm]	1,5 h_{ef}			60	70	85	1,65 h_{ef}		
Spacing for concrete cone failure	$s_{cr,N}$	[mm]	3 h_{ef}								
Edge distance for concrete cone	$c_{cr,N}$	[mm]	1,5 h_{ef}								

Anchor type	HUS4-		T-H(F), T-C			H(F)			H(F), A(F)		
Fastener size HUS4			**10**			**12**			**14**		
			h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
Nominal embedmenth depth	h_{nom}	[mm]	55	75	85	60	80	100	65	85	115
Nominal drill hole diameter	d_0	[mm]	10			12			14		
Clearance hole diameter through setting	d_f min / max	[mm]	14			16			18		
Clearance hole diameter pre setting (A-	$d_f \leq$	[mm]	-			-			18		
Wrench size (H, HF-type)	s	[mm]	15			17			21		
Wrench size for hex head (A-type)	s1	[mm]	-			-			12		
Wrench size for nut (A-type)	s2	[mm]	-			-			24		
Maximum installation torque (A-type)	max T_{inst}	[Nm]	-			-			80		
Torx size (C-type)	TX	-	50			-			-		
Diameter of countersunk head	d_h	[mm]	21			-			-		
Depth of drill hole for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling upwards	$h_1 \geq$	[mm]	h_{nom} + 10 mm								
			65	85	95	70	90	110	75	95	125
Depth of drill hole for uncleanded hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	h_{nom} + 30			h_{nom} + 35			h_{nom} + 40		
			85	105	115	95	115	135	105	125	155
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling upwards	$h_1 \geq$	[mm]	h_{nom} + 20 mm								
			75	95	105	-	100	120	-	105	135
Depth of drill hole (with adjustability) for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	h_{nom} + 40			h_{nom} + 45			h_{nom} + 50		
			95	115	125	105	125	145	115	135	165
Minimum distances											
Minimum thickness of concrete member	$h_{min} \geq$	[mm]	h_1 + 30 mm								
			100	130	140	110	130	150	120	160	200
Minimum spacing	$s_{min} \geq$	[mm]	50			50			60		
Minimum edge distance	$c_{min} \geq$	[mm]	50			50			60		
Characteristics distances											
Spacing for splitting failure	$s_{cr,sp}$	[mm]	130	180	220	3,30 h_{ef}			3,20 h_{ef}		
Edge distance for splitting	$c_{cr,sp}$	[mm]	65	90	110	1,65 h_{ef}			1,60 h_{ef}		
Spacing for concrete cone failure	$s_{cr,N}$	[mm]	3 h_{ef}								
Edge distance for concrete cone failure	$c_{cr,N}$	[mm]	1,5 h_{ef}								

Anchor type / Fastener size HUS4		HUS4-	H(F)		H(F) G02			DW
			16					
			h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom}
Nominal embedmenth depth	h_{nom}	[mm]	85	130	85	110	130	130
Nominal drill hole diameter	d_0	[mm]	16					
Clearance hole diameter through setting	$d_f \leq$	[mm]	20					
Wrench size	s	[mm]	24					-
Wrench size for hex head (A-type)	s1	[mm]	-					13
Depth of drill hole for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling upwards	$h_1 \geq$	[mm]	h_{nom} + 10 mm					
			95	140	95	120	140	140
Depth of drill hole for uncleanded hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	-		h_{nom} + 40 mm			
			-	-	125	150	170	170
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling	$h_1 \geq$	[mm]	-		h_{nom} + 20 mm			
			-	-	105	130	150	150
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, diamond coring or for uncleanded hole when drilling upwards	$h_1 \geq$	[mm]	-		h_{nom} + 50 mm			
			-	-	135	160	180	180
Minimum distances								
Minimum thickness of concrete member	$h_{min} \geq$	[mm]	130	195	130	155	175	175
Minimum spacing	$s_{min} \geq$	[mm]	90		75			
Minimum edge distance	$c_{min} \geq$	[mm]	65		65			
Characteristics distances								
Spacing for splitting failure	$s_{cr,sp}$	[mm]	3,20 h_{ef}		3,30 h_{ef}	3,10 h_{ef}	3,00 h_{ef}	
Edge distance for splitting	$c_{cr,sp}$	[mm]	1,60 h_{ef}		1,65 h_{ef}	1,55 h_{ef}	1,50 h_{ef}	
Spacing for concrete cone failure	$s_{cr,N}$	[mm]	3 h_{ef}					
Edge distance for concrete cone failure	$c_{cr,N}$	[mm]	1,5 h_{ef}					

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



Drilling and Installation equipment [1)]

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

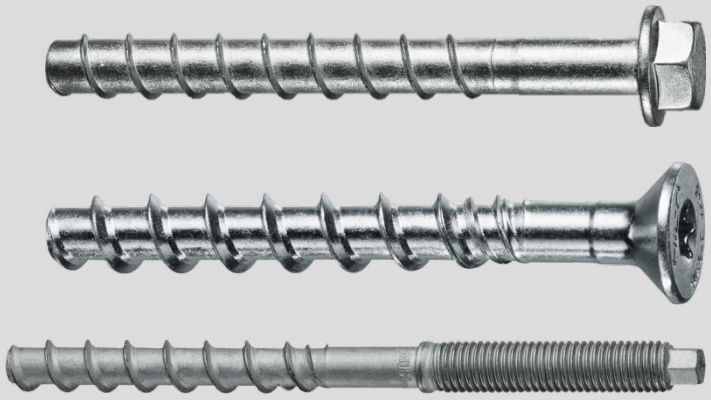
Rotary Hammers (Corded and Cordless)		TE 2 - TE 30
Other tools		Impact wrench with SIW 4 and SIW 6 (use recommended socket/driver bit)
		Torque impact wrench SIW 6AT-22 & SI-AT-22 (use recommended socket/driver bit)
		Hammer drill bit TE-CX, TE-C
		Hollow drill bit TE-CD
		Diamond core bit TS, TL, SPX-T, SPX-L
		Blow out pump

1) Please refer IFU section for more inofmation

PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

Steel-to-masonry



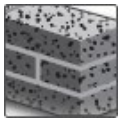
HUS4 Screw anchor for use in masonry

High performance screw anchor for single point fastening
Anchor design (TR054)

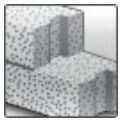
Anchor version		Benefits
	HUS4-H (8, 10)	- Faster and easier installation – no cleaning, torque wrench or hammering required - Removable and adjustable (nominal embedment ≥ 60 mm) - Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates - Countersunk head (C) to fasten flush to a baseplate for improved aesthetics - External metric thread (A) for pre-installation or to fasten stand-off baseplates - Multilayer coating for corrosion protection (HF, AF)
	HUS4-HF (8, 10)	
	HUS4-C (8, 10)	
	HUS4-A (10)	
	HUS4-AF (10)	

Application condition

Base material

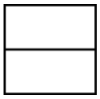


Solid brick



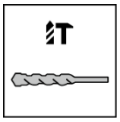
Autoclaved aerated concrete

Load conditions



Static / quasi-static

Drilling, cleaning, setting



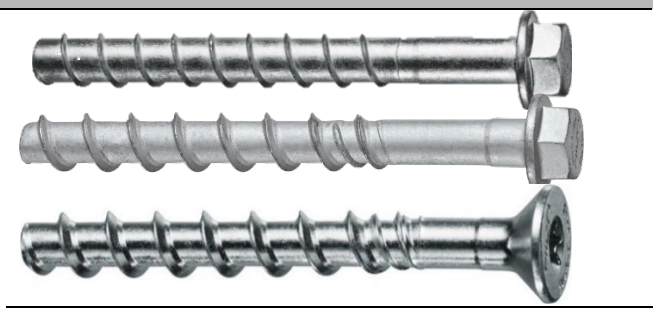
Hammer drilled holes

PROFIS Engineering Software

Linked Approvals/Certificates and Instructions for use

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
ETA 23/0936	Static and quasi-static, Fire	DIBt, Berlin	13-05-2025

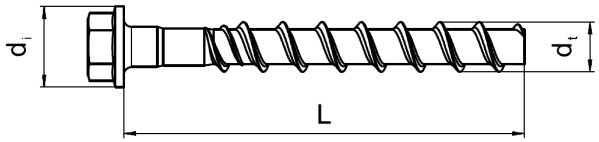
Head configuration

Type	Description and use	
HUS4-H	Hexagonal head (carbon steel, zinc plated)	
HUS4-HF	Hexagonal head screw (carbon steel, multilayer corrosion protection coated)	
HUS4-C	Countersunk head screw (carbon steel, zinc plated)	
HUS4-A	Threaded head (carbon steel, zinc plated)	
HUS4-AF	Threaded head (cacrbon steel, multilayer corrosion protection coated)	

Fastener special dimensions

Fastener dimensions and marking HUS4-H(F)

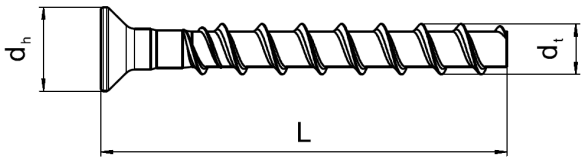
Anchor size			8	10
Type		**HUS4**	**H, HF**	**H, HF**
Outer diameter of screw thread	d_t	[mm]	10,50	12,70
Diameter of integrated washer	d_i	[mm]	17,50	20,50
Length of the screw (min/max)	L	[mm]	65/150	80/305



HUS4: Hilti Universal Screw 4th generation
H: Hexagonal head
HF: Hexagonal head, multilayer coating
10: Screw diameter
100: Usable length of the screw

Fastener dimensions and marking HUS4-C

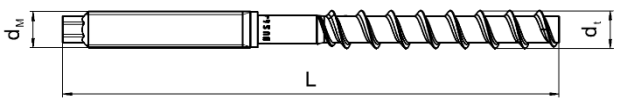
Anchor size			8	10
Type	**HUS4**		**C**	**C**
Outer diameter of the screw thread	d_t	[mm]	10,50	12,70
Countersunk head diameter	d_h	[mm]	18,00	21,00
Length of the screw (min/max)	L	[mm]	65/160	80/120

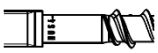


HUS4: Hilti Universal Screw 4th generation
C: Countersunk head
10: Screw diameter
100: Total length of the screw

Fastener dimensions and marking HUS4-A(F)

Anchor size			10
Type	**HUS4**		**A, AF**
Outer diameter of the screw thread	d_t	[mm]	12,70
Diameter of the metric thread	d_M	[mm]	M12
Length of the screw (min/max)	L	[mm]	120/165



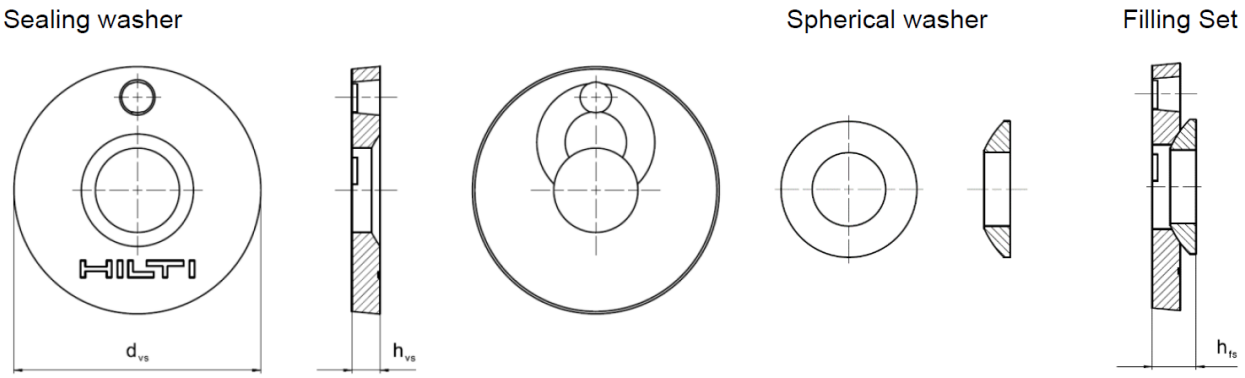


E.g. HUS4-A 10x165

HUS4: Hilti Universal Screw 4th generation
A: Threaded head
10: Screw diameter
165: Total length of the screw
8: Carbon steel 8.8
K: length of the screw (more info in ETA)

Hilti Filling set with Hilti HY/RE…

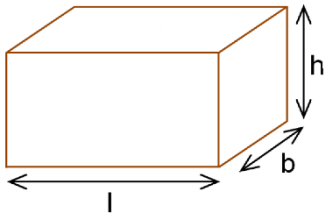
Hilti filling set size			M10	M12
HUS4-H(F)			8	10
HUS4-A(F)			-	10
Diameter of sealing washer	d_{vs}	[mm]	42	44
Thickness of sealing washer	h_{vs}	[mm]	5	5
Thickness of Hilti Filling set	h_{fs}	[mm]	9	10



Brick types according to EN 771 and properties

Instruction to this technical data

- The technical data provided in this technical data sheet are valid for the specified masonry unit (brick) or for units made of the same material with equal or larger unit dimension, compressive strength or dry density.
- Screws can only be set in the allowed setting area as shown below (see table allowed setting area). The minimum allowable distances to wall edge ($c_{min} = c_{cr}$ see table installation parameters) and joints (c_j see table minimum allowable distance to joints) have to be respected.
- Application in unplasterd walls only, to account for setting position limitations with respect to joint distance.

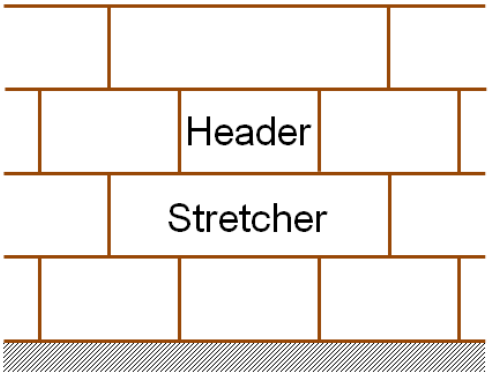


Brick types and properties

Brick type	Trade names, e.g.	Image	Minimum Brick size l / b / h [mm]	Mean compressive strength $f_{b,mean}$ [N/mm²]	Minimum dry density ρ [kg/dm³]	Minimum wall thickness h_{min} [mm]
Solid clay brick EN 771-1	Mz 1DF Mz NF Mz 2DF Rosso vivo Rosso classico		≥ 240 / 115 / 52	18	1,5	≥ 115
Solid calcium silicate brick EN 771-2	KS 2DF, KS 8DF		≥ 240 / 115 / 113	20	1,7	≥ 115
Solid lightweight concrete EN 771-3	LECA murblock		≥ 498 / 150 / 199	5	0,9	≥ 150
Autoclaved areated concrete EN 771-4	Xella Ytong Therm-Combi		≥ 499 / 240 / 249	4	0,55	≥ 240
				6	0,65	

Anchor installation parameters

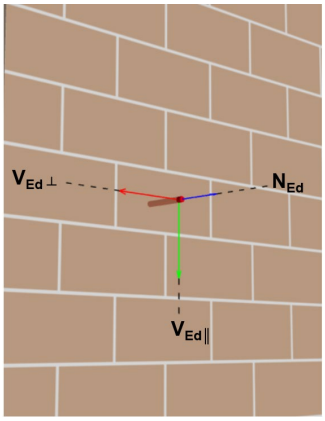
Brick position:



Header (H): The longest dimension of the brick is in direction of the width of the wall

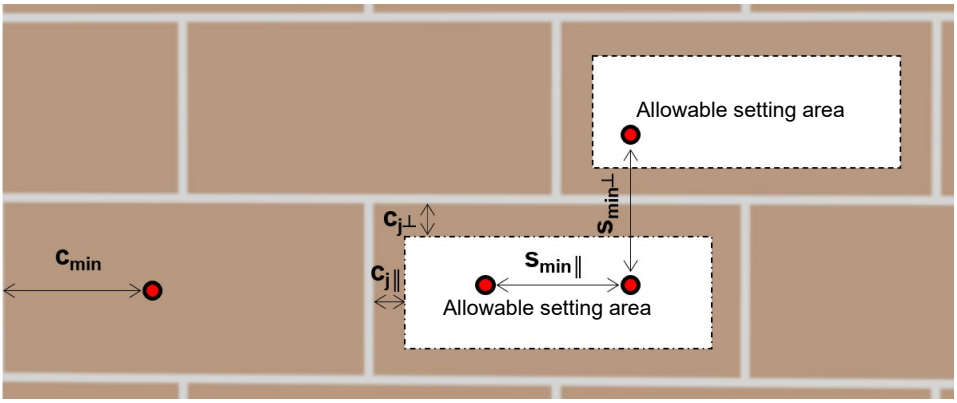
Stretcher (S): The longest dimension of the brick is in direction of the length of the wall

Load direction:



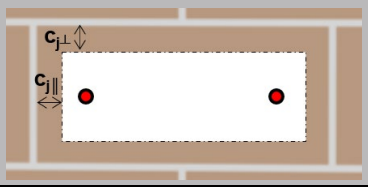
N_{Ed} = Design tension load
$V_{Ed}\parallel$ = Design horizontal shear load
$V_{Ed}\perp$ = Design vertical design shear load

Allowable setting area



$c_{j}\parallel$ = Minimum allowable distance to vertical joints
$c_{j}\perp$ = Minimum allowable distance to horizontal joints
$s_{min}\parallel$ = Minimum spacing parallel to the horizontal joint
$s_{min}\perp$ = Minimum spacing perpendicular to the horizontal joint
c_{min} = Minimum edge distance to the free edge of the wall

Allowable setting area

		 Solid clay brick	 Solid calcium silicate brick	 Solid lightweight concrete brick	 Autoclaved aerated concrete brick
		[mm]			
Minimum allowable distance to horizontal joints	$c_{j}\perp$	≥ 20			
Minimum allowable distance to vertical joints	$c_{j}\parallel$	≥ 20	≥ 40		

Static and quasi-static loading based on ETA 23/0936. Design according to EOTA TR 054.

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- Hammer drilled holes
- A single anchor
- No edge distance and spacing influence
- Solid bricks without cavities
- Recommended setting machine (see IFU section)
- Mortar strength class M2,5 or higher (EN 998-2:2016)
- Under tension loads the values in the tables for design resistance and recommended loads represent the minimum of steel failure, pull-out failure of the anchor and brick breakout failure. Under shear load the values in the tables for design resistance and recommended loads represent the minimum of steel failure, local brick failure and brick edge failure.
- Brick pull-out and combined failure for tension loading and brick push out for shear loading must be calculated separately in accordance with TR054. Information on calculation as well as tabulated minimum resistances are given below.
- Use category: **d/d** - Installation and use in structures subject to **dry**, internal conditions, for wet conditions (w/d and (w/w) refer to ETA 23/0936
- Recommended loads: With overall partial safety factor for action $\gamma = 1,4$
- Due to the large variation of bricks, the number of bricks covered by ETA 23/0936 cannot be complete. On-site anchor testing can support to determine the resistance of an anchor in an unknown or uncertain base material. On-site testing is not covered by EAD 330460-00-0604 for screw anchors for use in masonry. Therefore, evaluation and assessment of on-site tests is outside of the scope of ETA 23/0936.
  In case of evaluation of on-site testing results, the values of ETA 23/0936 must be taken as upper limit of resistance. For support, please refer to Hilti On-site testing service.

Design resistance

Brick type	Load direction			f_b [N/mm²]	HUS4 H(F), C 8 d/d	HUS4 H(F), C, A(F) 10 d/d
Nominal embedment depth	h_{nom} [mm]				**60**	**75**
Solid clay brick (EN 771-1)						
	Tension	N_{Rd}	[kN]	≥ 18	1,94	2,32
	Shear vertical	$V_{Rd\parallel}$			3,16	4,56
	Tension	N_{Rd}		≥ 27	2,36	2,82
	Shear vertical	$V_{Rd\parallel}$			3,88	5,60
Solid calcium silicate brick (EN 771-2)						
	Tension	N_{Rd}	[kN]	≥ 20	2,93	3,45
	Shear vertical	$V_{Rd\parallel}$			5,44	6,24
	Tension	N_{Rd}		≥ 30	3,53	4,18
	Shear vertical	$V_{Rd\parallel}$			6,56	7,52
Solid lightweight concrete brick (EN 771-3)						
	Tension	N_{Rd}	[kN]	≥ 5,0	0,85	0,83
	Shear vertical	$V_{Rd\parallel}$			0,72	0,99
	Tension	N_{Rd}		≥ 7,5	1,06	1,06
	Shear vertical	$V_{Rd\parallel}$			0,84	1,23
Autoclaved aerated concrete brick (EN 771-4)						
	Tension	N_{Rd}	[kN]	≥ 4	0,18	0,38
	Shear vertical	$V_{Rd\parallel}$			0,50	0,80
	Tension	N_{Rd}		≥ 6	0,33	0,67
	Shear vertical	$V_{Rd\parallel}$			0,90	1,40

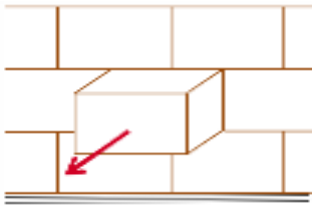
Recommended loads

Brick type	Load direction			f_b [N/mm²]	HUS4 H(F), C 8	HUS4 H(F), C, A(F) 10
					d/d	
Nominal embedment depth h_{nom} [mm]					**60**	**75**
Solid clay brick (EN 771-1)						
	Tension	N_{rec}	[kN]	≥ 18	1,38	1,66
	Shear vertical	$V_{rec\|\|}$			2,26	3,26
	Tension	N_{rec}		≥ 27	1,68	2,02
	Shear vertical	$V_{rec\|\|}$			2,77	4,00
Solid calcium silicate brick (EN 771-2)						
	Tension	N_{rec}	[kN]	≥ 20	2,09	2,46
	Shear vertical	$V_{rec\|\|}$			3,89	4,46
	Tension	N_{rec}		≥ 30	2,52	2,98
	Shear vertical	$V_{rec\|\|}$			4,69	5,37
Solid lightweight concrete brick (EN 771-3)						
	Tension	N_{rec}	[kN]	≥ 5,0	0,61	0,59
	Shear vertical	$V_{rec\|\|}$			0,51	0,71
	Tension	N_{rec}		≥ 7,5	0,76	0,76
	Shear vertical	$V_{rec\|\|}$			0,60	0,88
Autoclaved aerated concrete brick (EN 771-4)						
	Tension	N_{rec}	[kN]	≥ 4	0,13	0,27
	Shear vertical	$V_{rec\|\|}$			0,36	0,57
	Tension	N_{rec}		≥ 6	0,23	0,48
	Shear vertical l	$V_{rec\|\|}$			0,64	1,00

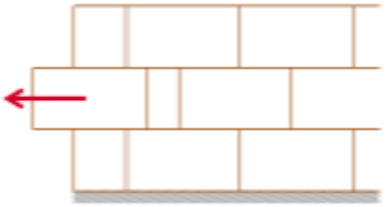
Design tension and shear resistance – Pull out / Pushing out of one brick failure modes

Pull out resistance of one brick (tension):
Unfilled vertical joints
$N_{Rd,pb} = 2 \cdot l \cdot b \cdot (0{,}5 \cdot f_{vk0} + 0{,}4 \cdot \sigma_d) / (2{,}5 \cdot 1000)$ [kN]

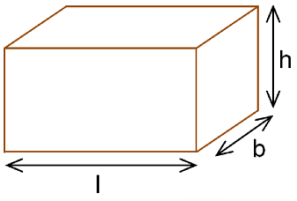
Filled vertical joints
$N_{Rd,pb} = (2 \cdot l \cdot b \cdot (0{,}5 \cdot f_{vk0} + 0{,}4 \cdot \sigma_d) + b \cdot h \cdot f_{vk0} / (2{,}5 \cdot 1000)$ [kN]



Pushing out resistance of one brick (shear):
$V_{Rd,pb} = 2 \cdot l \cdot b \cdot (0{,}5 \cdot f_{vk0} + 0{,}4 \cdot \sigma_d) / (2{,}5 \cdot 1000)$ [kN]



σ_d = design compressive stress perpendicular to the shear (N/mm^2)
f_{vk0} = initial shear strength according to EN 1996-1-1, Table 5.4
Values below for general purpose mortar. For thin layer mortar or lightweight mortar refer to EN 1996-1-1:



Brick type	f_m [N/mm^2]	f_{vk0} [N/mm^2]
Clay brick	2,5 to 9	0,20
	10 to 20	0,30
All other types	2,5 to 9	0,15
	10 to 20	0,20

The failure mode “brick pull-out and combined failure” is dependent on brick size, filling of vertical joints, compression on wall and mortar strength. The table below gives the minimum values for non-filled vertical joints, minimum mortar strength class M2,5 general purpose mortar and no compression on the wall for the most common brick types.

The decisive resistance to tension loads is the lower value of N_{Rd} (brick breakout, pull out) and N_{pb} (pull out of one brick).

Brick pull-out and combined failure

Image	Brick type	Minimum Brick size l / b / h [mm]	Load direction			Loads
	Solid clay brick (EN 771-1)	≥ 240 / 115 / 52	Tension	$N_{Rd,p}$	[kN]	2,2
All other types (EN 771-2 / -3 / -4)		≥ 240 / 115 / 113	Tension	$N_{Rd,p}$	[kN]	1,6

Fire loading based on ETA-23/0936. Design according to EOTA TR 054

All data in this section applies to:

- In case of fire a partial safety factor $\gamma_{M,fi}$ = 1,0 is taken (in absence of other national recomendations)
- Correct setting (see setting instructions)
- For a single anchor
- Hammer drilled holes
- Minimum edge distances and spacing as given below
- Fire exposure from one side only

Edge distance and spacing

All brick types	Minimum edge distance	$c_{min,fi} = c_{j,fi}$	[mm]	120	150
	Minimum spacing	$s_{min,fi}$	[mm]	106	106

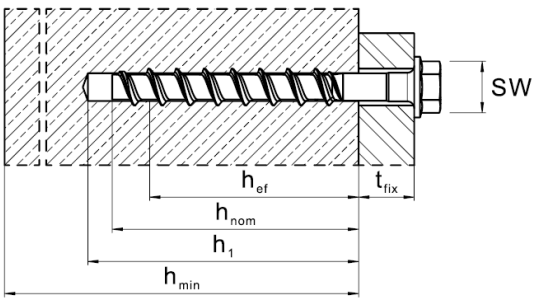
Design resistance

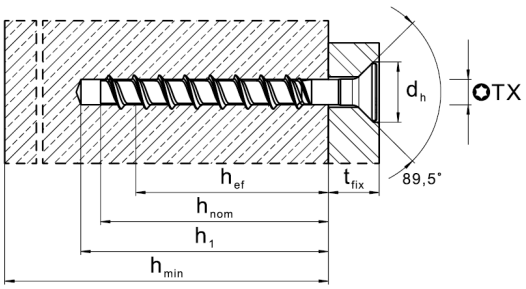
Brick type	Load direction			f_b [N/mm²]	HUS4 H(F), C 8	HUS4 H(F), C, A(F) 10
					d/d	
Nominal embedment depth h_{nom} [mm]					**60**	**75**
Solid clay brick (EN 771-1)						
	Tension	$N_{Rd,fi(30)}$	[kN]	≥ 18	0,48	1,03
	Shear vertical	$V_{Rd,fi(30)}$ ‖			0,48	1,03
	Tension	$N_{Rd,fi(60)}$			0,43	0,90
	Shear vertical	$V_{Rd,fi(60)}$ ‖			0,43	0,90
	Tension	$N_{Rd,fi(90)}$			0,33	0,69
	Shear vertical	$V_{Rd,fi(90)}$ ‖			0,33	0,69
	Tension	$N_{Rd,fi(120)}$			0,24	0,55
	Shear vertical	$V_{Rd,fi(120)}$			0,24	0,55
Solid calcium silicate brick (EN 771-2)						
	Tension	$N_{Rd,fi(30)}$	[kN]	≥ 20	0,48	1,03
	Shear vertical	$V_{Rd,fi(30)}$ ‖			0,48	1,03
	Tension	$N_{Rd,fi(60)}$			0,43	0,90
	Shear vertical	$V_{Rd,fi(60)}$ ‖			0,43	0,90
	Tension	$N_{Rd,fi(90)}$			0,33	0,69
	Shear vertical	$V_{Rd,fi(90)}$ ‖			0,33	0,69
	Tension	$N_{Rd,fi(120)}$			0,24	0,55
	Shear vertical	$V_{Rd,fi(120)}$			0,24	0,55
Solid lightweight concrete brick (EN 771-3)						
	Tension	$N_{Rd,fi(30)}$	[kN]	≥ 5,0	0,40	0,40
	Shear vertical	$V_{Rd,fi(30)}$ ‖			0,40	0,40
	Tension	$N_{Rd,fi(60)}$			0,40	0,40
	Shear vertical	$V_{Rd,fi(60)}$ ‖			0,40	0,40
	Tension	$N_{Rd,fi(90)}$			0,33	0,40
	Shear vertical	$V_{Rd,fi(90)}$ ‖			0,33	0,40
	Tension	$N_{Rd,fi(120)}$			0,24	0,30
	Shear vertical	$V_{Rd,fi(120)}$ ‖			0,24	0,30
Autoclaved aerated concrete brick (EN 771-4)						
	Tension	$N_{Rd,fi(30)}$	[kN]	≥ 6	0,10	0,10
	Shear vertical	$V_{Rd,fi(30)}$ ‖			0,10	0,10
	Tension	$N_{Rd,fi(60)}$			0,10	0,10
	Shear vertical	$V_{Rd,fi(60)}$ ‖			0,10	0,10
	Tension	$N_{Rd,fi(90)}$			0,10	0,10
	Shear vertical	$V_{Rd,fi(90)}$ ‖			0,10	0,10
	Tension	$N_{Rd,fi(120)}$			0,10	0,10
	Shear vertical	$V_{Rd,fi(120)}$ ‖			0,10	0,10

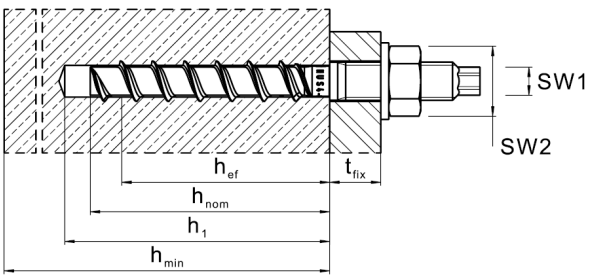
Setting details

Setting details size 8-10

HUS4			H(F), C	H(F), C, A(F)
Anchor Size			**8**	**10**
Nominal embedment depth	h_{nom}	[mm]	60	75
Nominal drill hole diameter	d_0	[mm]	8	10
Clearance hole diameter through setting	d_f min	[mm]	11	13
	d_f max		12	14
Clearance hole diameter pre setting	$d_f \leq$	[mm]	-	14
Wrench size (H, HF-type)	s	[mm]	13	15
Wrench size for hex head (A-type)	s1	[mm]	-	8
Wrench size for nut (A-type)	s2	[mm]	-	19
Torx size (C-type)	TX	-	45	50
Diameter of countersunk head	d_h	[mm]	18	21
Depth of drill hole for cleaned hole hammer drilling or for uncleaned hole when drilling upwards	$h_1 \geq$	[mm]	(h_{nom} + 10 mm)	
			70	85
Depth of drill hole for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	(h_{nom} + 10 mm) + 2 · d_0	
			86	105
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, hammer drilling uncleaned hole when drilling upwards	$h_1 \geq$	[mm]	(h_{nom} + 20 mm)	
			80	95
Depth of drill hole (with adjustability) for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	(h_{nom} + 20 mm) + 2 · d_0	
			96	115
Edge distance and spacing				
Minimum edge distance from free edge	c_{min}	[mm]	1,5 h_{nom}	
Minimum spacing	$s_{min\parallel} = s_{min\perp}$	[mm]	80	
Characteristic distance from free edge	c_{cr}	[mm]	1,5 h_{nom}	
Characteristic spacing	s_{cr}	[mm]	3,0 h_{nom}	







Drilling and Installation equipment

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

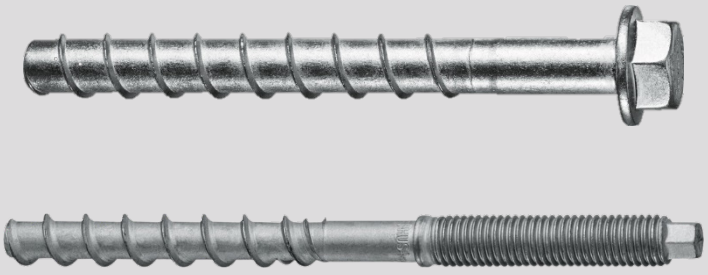
Rotary Hammers (Corded and Cordless)		TE 2 - TE 30
Other tools		Impact wrench- SIW / SF [1)] (use recommended socket/driver bit)
		Hammer drill bit TE-CX, TE-C
		Blow out pump

[1)] Please refer IFU or ETA for more information

PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

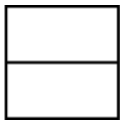
Temporary fastening
Steel-to-concrete



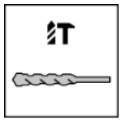
HUS4 Screw anchor for use in concrete temporary fastening

High performance screw anchor for single point fastening

Anchor version		Benefits
	HUS4-H (8-16)	- Removable, adjustable (nominal embedment ≥ 60 mm) and reusable for temporary fastenings - Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates - External metric thread (A) for pre-installation or to fasten stand-off baseplates - Faster and easier installation – no cleaning, torque wrench or hammering required
	HUS4 T-H (8-10)	
	HUS4-A (10 & 14)	

Base material		Load conditions
		
Concrete (uncracked)	Concrete (cracked)	Static / quasi-static

Drilling, cleaning, setting



Hammer drilled holes

Linked Approvals/Certificates and Instructions for use

Approvals/certificates

Approval no	Application / loading condition	Authority / Laboratory	Date of issue	Date of expiry
Z-21.8-2137	aBG for temporary fastening	DIBt, Berlin	28-03-2025	21-12-2026

Basic loading data for temporary application in standard and fresh concrete <28 days old, based on DIBt approval Z-21.8-2137. Design according to EN 1992-4 (Method C).

All data in this section applies to the following conditions:

- Concrete strength (cylinder) $f_c \geq 8$ N/mm^2
- Temporary use
- Screw is reusable, before each usage it must be checked according to Hilti instruction for use with the suited tube Hilti HRG
- Design resistance is valid for single anchor only
- Design resistence is valid for all load directions and valid for both cracked and uncracked concrete
- Minimum base material thickness
- No edge distance and spacing influence (provided $c \geq c_{min}$ and $s \geq s_{min}$)

Type				**HUS4-**	**H**		**T**			**H, A**			**T**		
Anchor size					**8**		**8**			**10**			**10**		
Nominal embedment depth h_{nom} [mm]					h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
					60	70	50	60	70	55	75	85	55	75	85
Tension = Shear	$f_c \geq 8$ N/mm²	N_{Rd} = V_{Rd}		[kN]	3,3	4,7	2,3	3,3	4,7	3,3	5,3	6,3	3,3	5,3	6,3
	$f_c \geq 12$ N/mm²			[kN]	4,0	5,7	2,8	4,0	5,7	4,0	6,4	7,8	4,0	6,4	7,8
	$f_c \geq 16$ N/mm²			[kN]	4,6	6,6	3,3	4,6	6,6	4,7	7,4	9,0	4,7	7,4	9,0
	$f_c \geq 20$ N/mm²			[kN]	5,1	7,4	3,7	5,1	7,4	5,3	8,3	10,1	5,3	8,3	10,1

Type				**HUS4-**	**H, A**			**H, A**			**H**	
Anchor size					**12**			**14**			**16**	
Nominal embedment depth h_{nom} [mm]					h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}
					60	80	100	65	85	115	85	130
Tension = Shear	$f_c \geq 8$ N/mm²	N_{Rd} = V_{Rd}		[kN]	2,6	5,4	7,8	4,4	7,0	12,3	5,5	12,6
	$f_c \geq 12$ N/mm²			[kN]	3,5	7,3	10,6	5,4	8,5	15,0	7,5	17,0
	$f_c \geq 16$ N/mm²			[kN]	4,0	8,4	12,2	6,2	9,9	17,3	8,7	19,7
	$f_c \geq 20$ N/mm²			[kN]	4,5	9,4	13,6	6,9	11,1	19,3	9,7	22,0

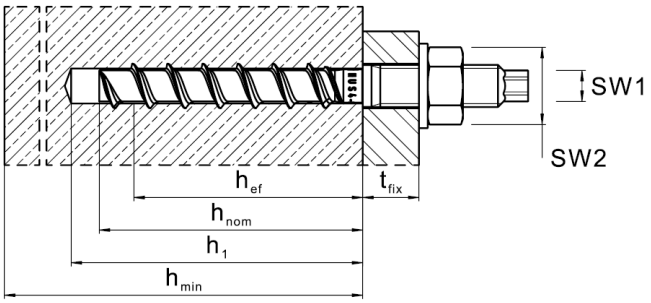
Setting information

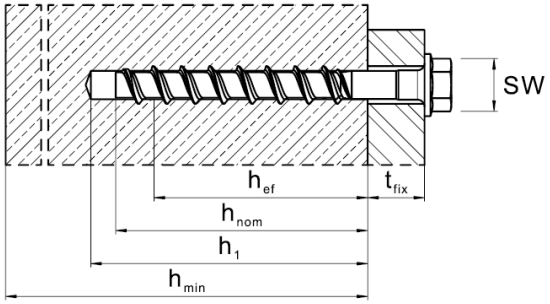
Setting details

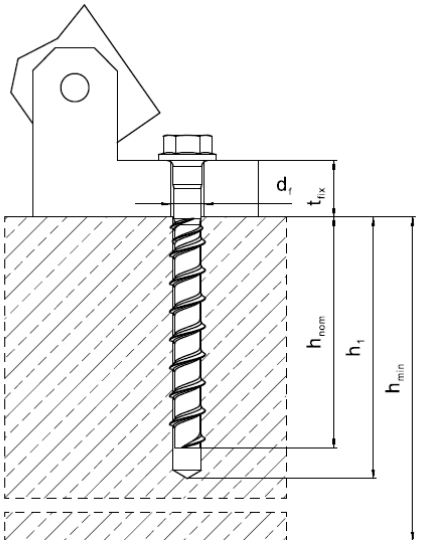
Anchor type	HUS4-		T	H		(T)-H, A			H		
Anchor size			**8**	**8**		**10**			**12**		
Nominal embedment depth	h_{nom}		h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}	h_{nom3}
		[mm]	50	60	70	55	75	85	60	80	100
Drilling depth	h_{1min}	[mm]	60	70	80	65	85	95	70	90	110
Option 1, balanced option											
Minimum edge distance	c_{1min}	[mm]	60	80	100	75	100	115	65	105	135
Minimum base material thickness	h_{min}	[mm]	90	120	150	115	150	175	110	160	205
Minimum edge distance	c_{2min}	[mm]	$1,5\ c_1$								
Minimum spacing	s_{min}	[mm]	$3,0\ c_1$								
Option 2, minimum slab thickness											
Minimum edge distance	c_{1min}	[mm]	60	85	110	85	120	135	65	120	160
Minimum base material thickness	h_{min}	[mm]	90	100	120	100	130	140	110	130	150
Minimum edge distance	c_{2min}	[mm]	$1,5\ c_1$								
Minimum spacing	s_{min}	[mm]	$3,0\ c_1$								
Option 3, minimum spacing (away from edges)											
Minimum edge distance	c_{1min}	[mm]	480	480	560	600	600	680	720	720	800
Minimum base material thickness	h_{min}	[mm]	90	100	120	100	130	140	110	130	150
Minimum edge distance	c_{2min}	[mm]	480	480	560	600	600	680	720	720	800
Minimum spacing	s_{min}	[mm]	120	145	170	130	180	205	140	190	240
Check gauge			HRG 8			HRG 10			HRG 12		
Diameter of clearance hole for H head	d_{fmax}	[mm]	14			16			20		
Diameter of clearance hole for A head	d_{fmax}	[mm]	-			14			-		
Socket size H head	SW	-	13			15			17		
Socket size A head	SW1 (SW2)	-	-			8 (17)			-		

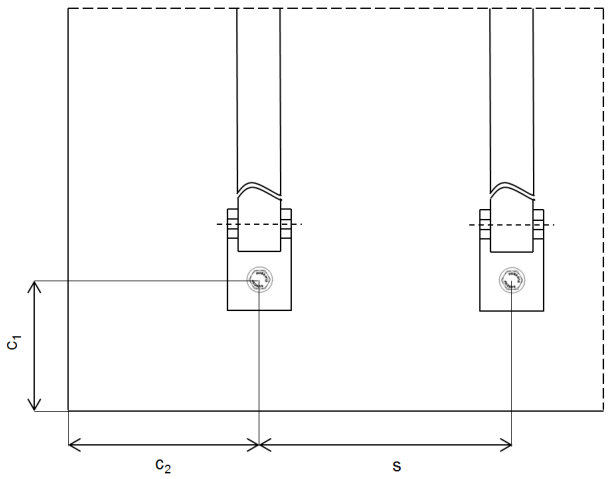
Setting details

Anchor type	HUS4-		H, A			H	
Anchor size			**14**			**16**	
Nominal embedment depth	h_{nom}	-	h_{nom1}	h_{nom2}	h_{nom3}	h_{nom1}	h_{nom2}
		[mm]	65	85	115	85	130
Drilling depth	h_{1min}	[mm]	75	95	125	95	140
Option 1, balanced option							
Minimum edge distance	c_{1min}	[mm]	85	115	180	105	180
Minimum base material thickness	h_{min}	[mm]	130	175	255	160	220
Minimum edge distance	c_{2min}	[mm]	1,5 c_1				
Minimum spacing	s_{min}	[mm]	3,0 c_1				
Option 2, minimum slab thickness							
Minimum edge distance	c_{1min}	[mm]	100	135	300	115	215
Minimum base material thickness	h_{min}	[mm]	120	160	200	130	195
Minimum edge distance	c_{2min}	[mm]	1,5 c_1				
Minimum spacing	s_{min}	[mm]	3,0 c_1				
Option 3, minimum spacing (away from edges)							
Minimum edge distance	c_{1min}	[mm]	840	840	920	960	1050
Minimum base material thickness	h_{min}	[mm]	120	160	200	130	195
Minimum edge distance	c_{2min}	[mm]	840	840	920	960	1050
Minimum spacing	s_{min}	[mm]	150	200	275	200	315
Check gauge			HRG 14			HRG 16	
Diameter of clearance hole for H head	d_{fmax}	[mm]	22			24	
Diameter of clearance hole for A head	d_{fmax}	[mm]	18			-	
Socket size H head	SW	-	21			24	
Socket size A head	SW1 (SW2)	-	12 (24)			-	









Drilling and Installation equipment

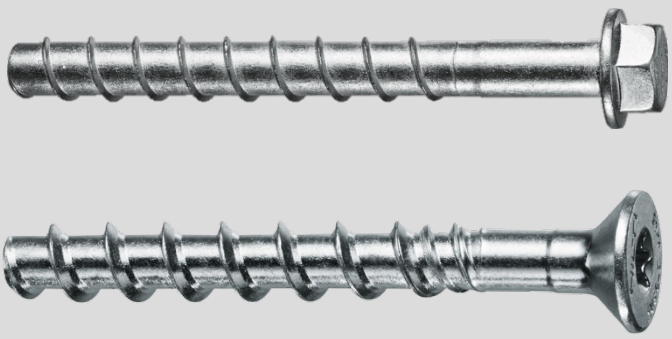
For detailed setting information on installation ,see instructions for use given with the product.

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

PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

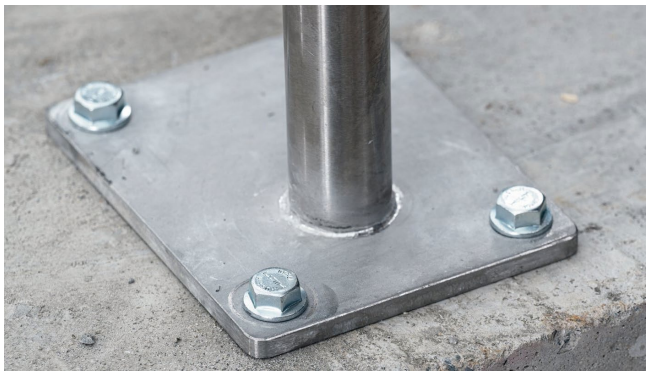
Hollow core slabs
Steel-to-concrete

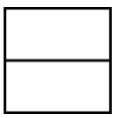


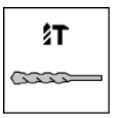
HUS4 Screw anchor for use in Hollow core slabs

High performance screw anchor for single point fastening

Anchor version		Benefits
	HUS4-H(F) (8-10)	- Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates - Countersunk head (C) to fasten flush to a baseplate for improved aesthetics and trip safety - External metric thread (A) for pre-installation or to fasten stand-off baseplates - Multilayer coating for corrosion protection (HF, T-HF, AF)
	HUS4 T-H(F) (8-10)	
	HUS4-C (8-10)	
	HUS4 TC (8-10)	
	HUS4-A(F) (10)	



Base material	Load conditions
	 
Hollow core slabs	Static / quasi-static Fire resistance

Drilling, cleaning, setting	Other information
	
Hammer drilled holes	Hilti Technical data

Linked Approvals/Certificates and Instructions for use

Approvals/certificates

Certificates no	Application / loading condition	Authority / Laboratory	Date of issue
GS 6.1/21-041-3	Fire assessment for prestressed HCS	MFPA, Leipzig	29-06-2022

Hilti Technical Data

Assessment no	Application / loading condition	Date		Remarks
		Issue	Valid	
ARA 21-012	Static	Mar-2025	Mar-2030	Permanent and temporary fastening

Basic loading data in pre-stressed Hollow core slab (HCS) for permanent fastening based on Hilti Technical data: Installationon the top and on the bottom of the slab (generic position).

All data in this section applies to

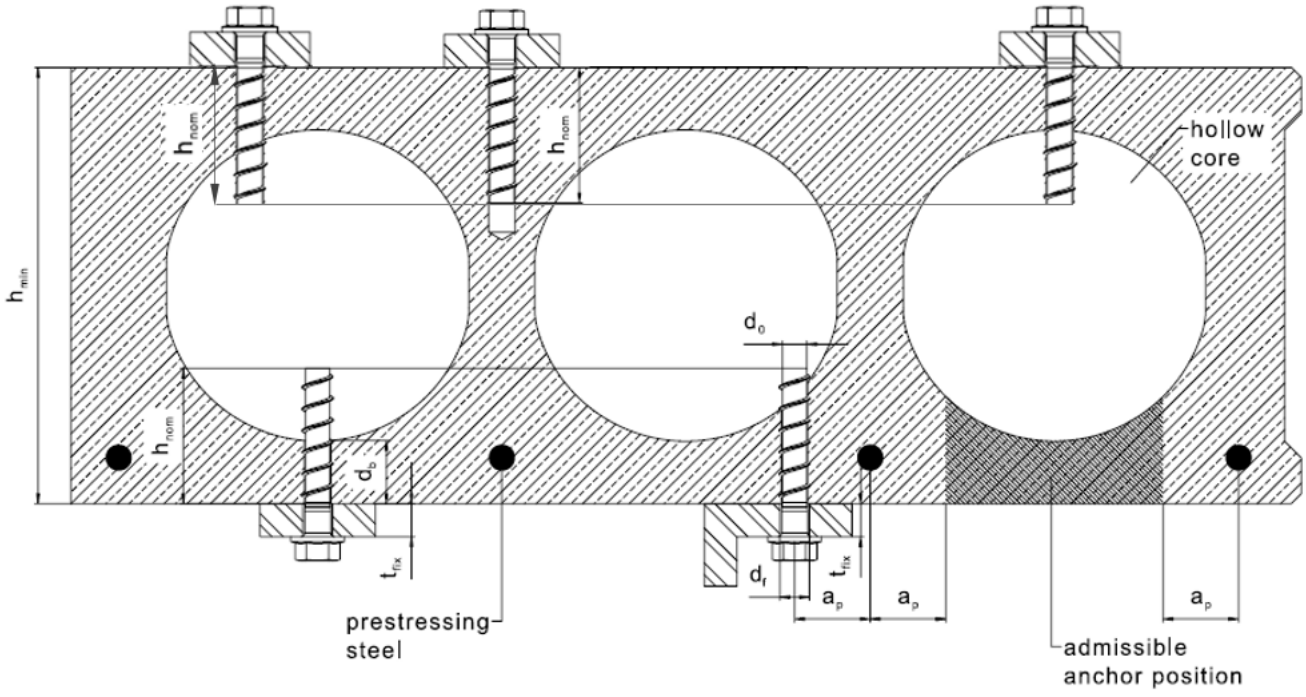
- Correct anchor setting (see Instructions for use (IFU))
- For a single anchor
- No edge distance and spacing influence
- Ratio core width / web thickness ≤ 5,3
- Concrete from C30/37 to C45/55,uncracked
- Recommended loads: With overall partial safety factor for action γ = 1,4.

Design resistance

Anchor type	**HUS4-**		**H,HF,C,T,TH,TC**					**H,HF,C,T,TH,TC,A,AF**				
Anchor size			**8**					**10**				
Concrete strength			**C30/37**			**C45/55**		**C30/37**			**C45/55**	
Nominal embedmenth depth	h_{nom}	[mm]	d_b+10									
Drilling depth	d_0	[mm]	≥ h_{nom} + 10									
Bottom flange thickness	d_{bmin}	[mm]	30	35	40	35	40	30	35	40	35	40
Tension	N_{Rd}	[kN]	1,3	3,2	3,9	4,0	4,8	1,3	3,2	3,9	4,0	4,8
Shear	V_{Rd}	[kN]	1,3	6,2	7,6	7,6	9,3	1,3	6,8	8,3	8,3	10,1

Recommended loads

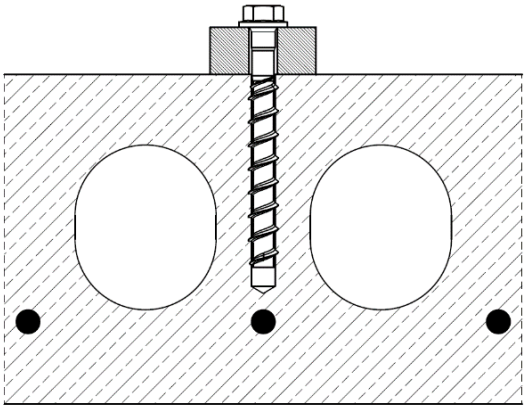
Anchor type	**HUS4-**		**H,HF,C,T,TH,TC**					**H,HF,C,T,TH,TC,A,AF**				
Anchor size			**8**					**10**				
Concrete strength			**C30/37**			**C45/55**		**C30/37**			**C45/55**	
Nominal embedmenth depth	h_{nom}	[mm]	d_b+10									
Drilling depth	d_0	[mm]	≥ h_{nom} + 10									
Bottom flange thickness	d_{bmin}	[mm]	30	35	40	35	40	30	35	40	35	40
Tension	N_{rec}	[kN]	0,95	2,3	2,8	2,9	3,4	0,95	2,3	2,8	2,9	3,4
Shear	V_{rec}	[kN]	0,95	4,4	5,4	5,4	6,6	0,95	4,9	5,9	5,9	7,2

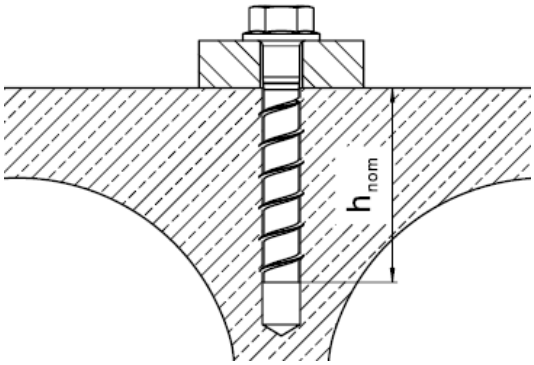


Basic loading data in pre-stressed Hollow core slab (HCS) for permanent fastening based on Hilti Technical data: Installation on the web centerline position only

All data in this section applies to
- Correct setting (see Instructions for use (IFU))
- for single anchor
- No edge distance and spacing influence
- Ratio core width / web thickness w/e ≤ 5,3
- Concrete C30/37 to C50/60, uncracked
- Recommended loads: With overall partial safety factor for action γ = 1,4.

Installation position for fastening in HCS:
- Top position of the slab is allowed.
- Anchor to be installed within position of ± 10 mm of the thickest section of the solid part.





Design resistance: Concrete C30/37

Anchor type			**HUS4-**	**A, AF, C, H, HF,T,TH,TC**			**H**			**A, AF, H, HF**		
Anchor size				**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]		55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]		h_{nom} + 10 mm								
Tension	N_{Rd}	[kN]		9,6	14,7	15,8	11,2	16,0	20,1	12,1	17,7	25,1
Shear	V_{Rd}	[kN]		10,0	16,7	17,6	15,5	18,8	22,2	17,0	20,9	24,7

Recommended load: Concrete C30/37

Anchor type			**HUS4-**	**A, AF, C, H, HF, T,TH,TC**			**H**			**A, AF, H, HF**		
Anchor size				**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]		55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]		h_{nom} + 10 mm								
Tension	N_{rec}	[kN]		6,8	10,5	11,3	8,0	11,4	14,3	8,7	12,6	17,9
Shear	V_{rec}	[kN]		7,2	12,0	12,6	11,1	13,5	15,9	12,1	15,0	17,6

Design resistance: Concrete C45/55

Anhor type	HUS4-		A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size			**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]	55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]	h_{nom} + 10 mm								
Tension	N_{Rd}	[kN]	11,7	18,1	19,3	13,8	19,6	24,6	14,9	21,7	30,7
Shear	V_{Rd}	[kN]	12,3	16,7	17,6	15,5	18,8	22,2	17,3	20,9	24,7

Recommended load: Concrete C45/55

Anchor type	HUS4-		A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size			**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]	55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]	h_{nom} + 10 mm								
Tension	N_{rec}	[kN]	8,4	12,9	13,8	9,8	14,0	17,6	10,6	15,5	21,9
Shear	V_{rec}	[kN]	8,8	12,0	12,6	11,1	13,5	15,9	12,3	15,0	17,6

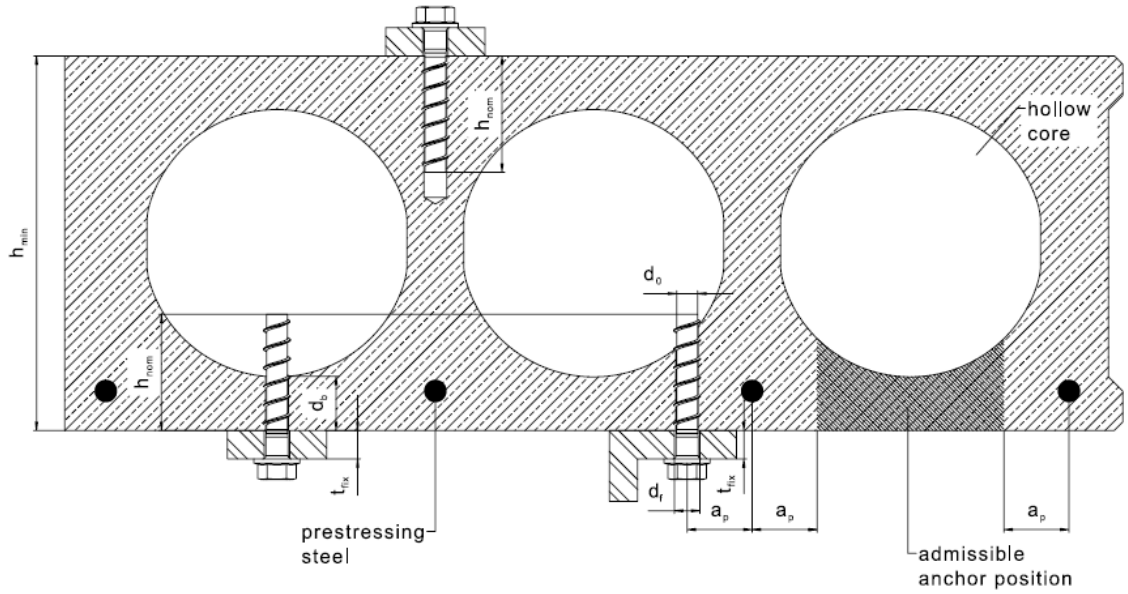
Fire resistance and design in pre-stressed Hollow core slab (HCS) for permanent fastening based on Hilti Technical data.

All data in this section applies to

- Correct anchor setting (see Instructions for use (IFU))
- Recommended drilling machine: TE2 A22, recommended setting machine: SIW 6AT-A
- No edge distance and spacing influence
- For a single anchor
- Ratio core width / web thickness ≤ 5,3
- Concrete from C30/37
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1{,}0$ (in absence of other national regulations)

Design resistance

Anchor size	**HUS4-H**		**8**	**10**	**8**	**10**
Concrete strength			**C30/37**			
Nominal embedmenth depth	h_{nom}	[mm]	d_b+10			
Hollow core slab height	h_{min}	[mm]	265		380	
Bottom flange thickness	d_{bmin}	[mm]	35		40	
Fire exposure R30	$F_{Rd,fi}$	[kN]	0,26	0,60	0,76	0,80
Fire exposure R60	$F_{Rd,fi}$	[kN]	0,26	0,60	0,76	0,80
Fire exposure R90	$F_{Rd,fi}$	[kN]	0,26	0,60	0,76	0,80
Fire exposure R120	$F_{Rd,fi}$	[kN]	0,26	0,60	0,61	0,80



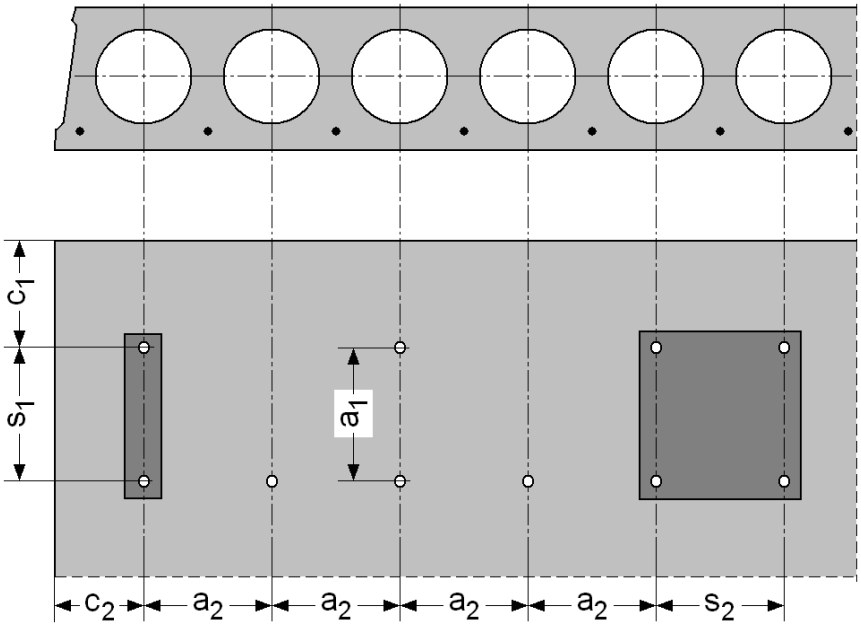
Setting information

Instllation on the top and on the bottom of the slab (generic position).

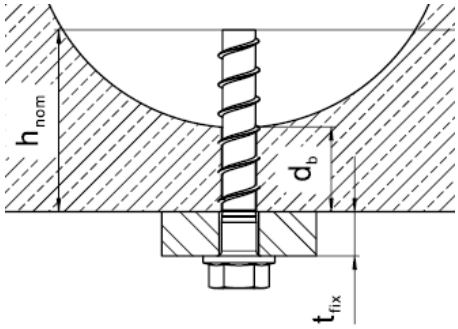
Type			H,HF,C,T,TH,TC	H,HF,C,T,TH,TC
Anchor size	**HUS4**		**8**	**10**
Minimum and characteristic spacing	$s_{min} = s_{cr}$	[mm]	4 * d_b	
Minimum and characteristic edge distance	$c_{min} = c_{cr}$	[mm]	4 * d_b	
Minimum group distance	a_{min}	[mm]	4 * d_b	

Instalation on the web centerline position only

Type			A, AF, C, H, HF T, TH, TC	H	A, AF, H, HF
Anchor size	**HUS4**		**10**	**12**	**14**
Minimum and characteristic spacing	$s_{min} = s_{cr}$	[mm]	3 h_{ef}		
Minimum and characteristic edge distance	c_{min}	[mm]	2,0 h_{ef}		
Minimum group distance	a_{min}	[mm]	3 h_{ef}		



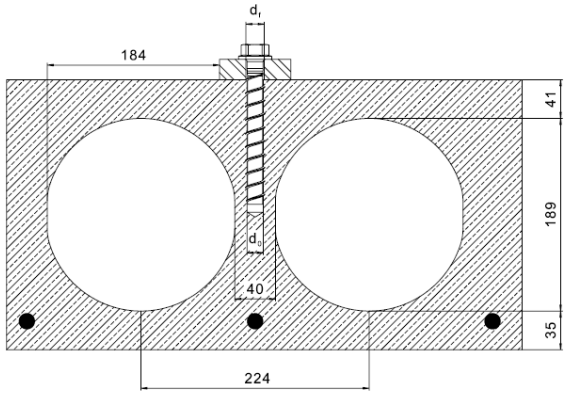
Anchor Type	Size	Length	d_b=30 [mm]		d_b=35 [mm]		d_b=40 [mm]		d_b=50 [mm]	
	[mm]	[mm]	$t_{fix,min}$ [mm]	$t_{fix,max}$ [mm]	$t_{fix,min}$ [mm]	$t_{fix,max}$ [mm]	$t_{fix,min}$ [mm]	$t_{fix,max}$ [mm]	$t_{fix,min}$ [mm]	$t_{fix,max}$ [mm]
HUS4-H(F)	8	45	5	10	5	5	-	-	-	-
		55	15	20	15	15	-	-	-	-
		65	5	30	5	25	5	20	5	10
		75	10	40	10	35	10	30	10	20
		85	20	50	20	45	20	40	20	30
		100	35	65	35	60	35	55	35	45
		120	55	85	55	80	55	75	55	65
		150	85	115	85	110	85	105	85	95
HUS4-H(F)	10	60	5	20	5	15	5	10	-	-
		70	15	30	15	25	15	20	-	-
		80	5	40	5	35	5	30	5	20
		90	10	50	10	45	10	40	10	30
		100	20	60	20	55	20	50	20	40
		110	30	70	30	65	30	60	30	50
		130	50	90	50	85	50	80	50	70
		150	70	110	70	105	70	100	70	90

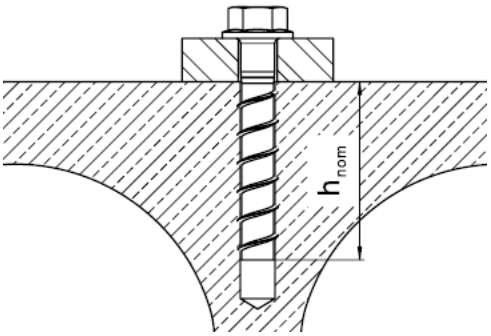


Basic data loading in pre-stressed hollow core slabs (HCS) for temporary fastening, with the option for reusability of the screw.

All data in this section applies to
- Correct setting (see Instructions for use (IFU))
- for single anchor
- Verification of wear of the screw with HUS HRG check gauge is needed
- No edge distance and spacing influence
- Ratio core width / web thickness w/e ≤ 5,3
- Concrete C30/37 to C50/60, uncracked
- Recommended loads: With overall partial safety factor for action γ = 1,4.

Installation position for temporary fastening in HCS:
- Top position of the slab is allowed.
- Anchor to be installed within position of ± 10 mm of the thickest section of the solid part.





Design resistance: Concrete C30/37

Anchor type		HUS4-		A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size				**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]		55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]		h_{nom} + 10 mm								
Tension	N_{Rd}	[kN]		9,6	14,7	15,8	11,2	16,0	20,1	12,1	17,7	25,1
Shear	V_{Rd}	[kN]		10,0	16,7	17,6	15,5	18,8	22,2	17,0	20,9	24,7

Recommended load: Concrete C30/37

Anchor type		HUS4-		A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size				**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]		55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]		h_{nom} + 10 mm								
Tension	N_{rec}	[kN]		6,8	10,5	11,3	8,0	11,4	14,3	8,7	12,6	17,9
Shear	V_{rec}	[kN]		7,2	12,0	12,6	11,1	13,5	15,9	12,1	15,0	17,6

Design resistance: Concrete C45/55

Anchor type		HUS4-		A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size				**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]		55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]		h_{nom} + 10 mm								
Tension	N_{Rd}	[kN]		11,7	18,1	19,3	13,8	19,6	24,6	14,9	21,7	30,7
Shear	V_{Rd}	[kN]		12,3	16,7	17,6	15,5	18,8	22,2	17,3	20,9	24,7

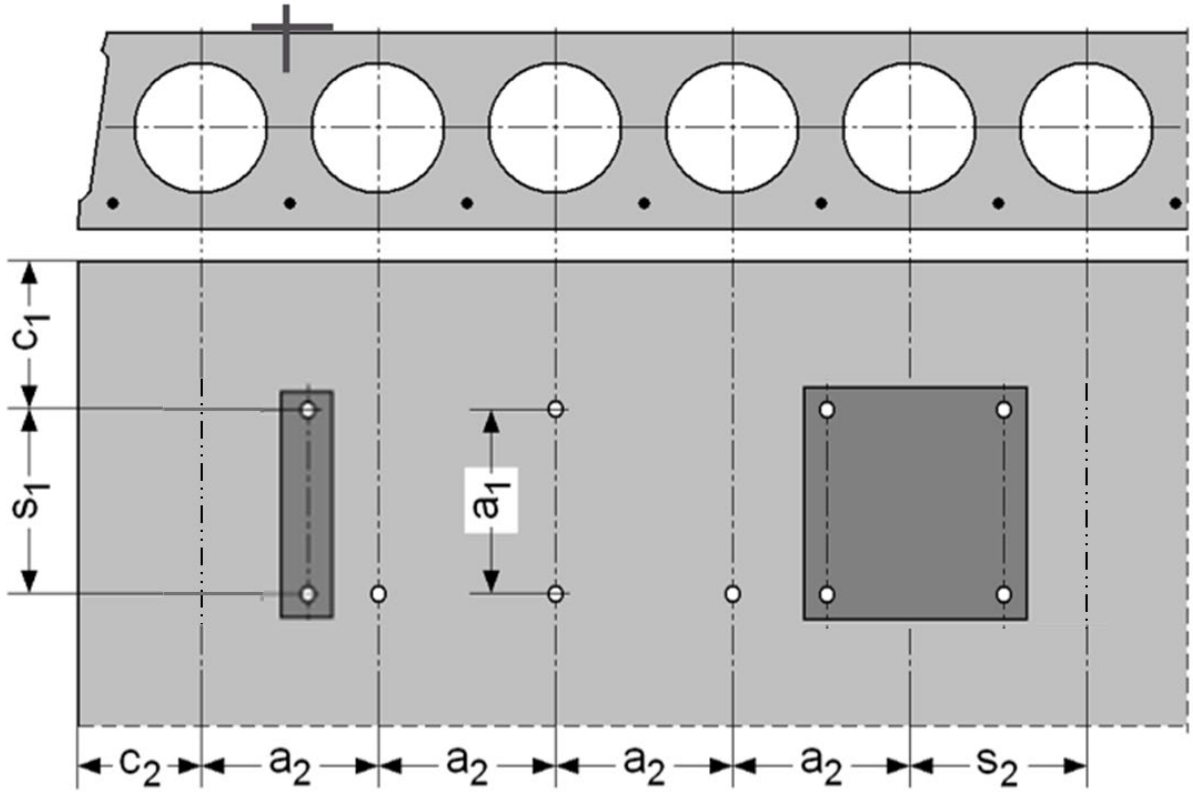
Recommended load: Concrete C45/55

Anchor type		HUS4-	A, AF, C, H, HF T,TH,TC			H			A, AF, H, HF		
Anchor size			**10**			**12**			**14**		
Nominal embedment depth	h_{nom}	[mm]	55	75	85	60	80	100	65	85	115
Drill hole depth	h_{1min}	[mm]	h_{nom} + 10 mm								
Tension	N_{rec}	[kN]	8,4	12,9	13,8	9,8	14,0	17,6	10,6	15,5	21,9
Shear	V_{rec}	[kN]	8,8	12,0	12,6	11,1	13,5	15,9	12,3	15,0	17,6

Anchor spacing and edge distance

Anchor type		HUS4-	A, AF, C, H, HF T,TH,TC	H	A, AF, H, HF
Anchor size			**10**	**12**	**14**
Minimum spacing	s_{min}	[mm]	40	50	60
Minimum edge distance	c_{min}	[mm]	40	50	60
Characteristic distances					
Spacing	s_{cr}	[mm]	3 h_{ef}		
Edge distance	c_{cr}	[mm]	1,5 h_{ef}		

for single anchor



Drilling and Installation equipment

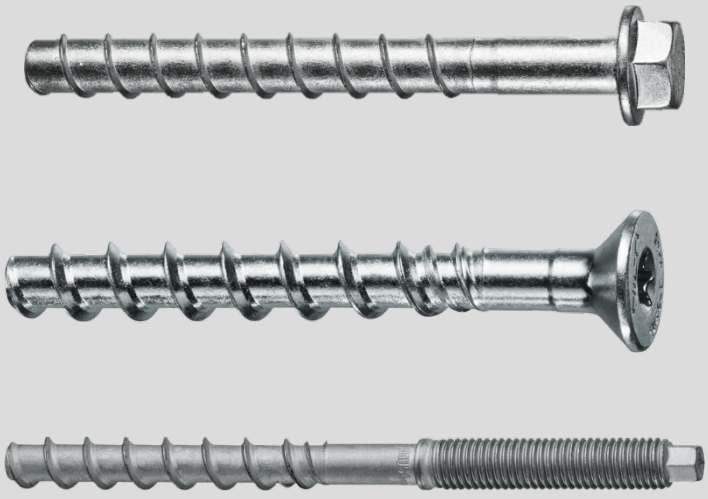
For detailed setting information on installation ,see instructions for use given with the product.

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

PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

Metal decks
Steel-to-concrete

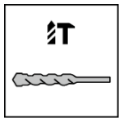


HUS4 Screw anchor for use with metal decks in concrete

High performance screw anchor for single point fastening into ComFlor® 60, 80 and SR

Anchor version		Benefits
	HUS4-H(F) (8-10)	- Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates
	HUS4-C (8-10)	- Countersunk head (C) to fasten flush to a baseplate for improved aesthetics and trip safety
	HUS4-A(F) (10)	- External metric thread (A) for pre-installation or to fasten stand-off baseplates - Multilayer coating for corrosion protection (HF, T-HF, AF)

Base material		Load conditions	
			
Concrete (uncracked)	Concrete (cracked)	Static / quasi-static	Seismic, C1

Drilling, cleaning, setting	Other information
	
Hammer drilled holes	Hilti Technical data

Static and quasi-static loading based on Hilti technical data. Design according to EN 1992-4

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- Hammer drilled holes
- For a single anchor
- No edge distance and spacing influence (see setting detail tables with characteristic distances). Only one anchor can be used in the lower flute at a time with the min. spacing between anchors along the length of the flute to be at least
  $s = 3\ h_{ef}$. This datasheet does not give information for the design of fasteners in a group.
- Minimum base material thickness (see setting detail table)
- Embedment depth, as specified in the table of this section
- Concrete from C30/37 without steel fiber
- Recommended loads: With overall partial safety factor for action γ = 1,4.

For anchoring into the upper flute, either use table below conservatively or refer to ETA-20/0867. In this case the minimum required slab thickness h_{min} must be larger than the deck thickness $h_{min,deck}$.

Design resistance

Anchor type		HUS4-	H, HF, C		H, HF, C, A, AF	
Anchor size			**8**		**10**	
Nominal embedment depth	h_{nom}	[mm]	60	70	75	85
Uncracked concrete						
Tension	N_{Rd}	[kN]	10,6	11,7	12,8	13,3
Shear	V_{Rd}	[kN]	11,5	11,5	13,7	13,7
Cracked concrete						
Tension	N_{Rd}	[kN]	7,4	8,2	9,0	9,3
Shear	V_{Rd}	[kN]	11,5	11,5	13,7	13,7

Recommended loads

Anchor type		HUS4-	H, HF, C		H, HF, C, A, AF	
Anchor size			**8**		**10**	
Nominal embedment depth	h_{nom}	[mm]	60	70	75	85
Uncracked concrete						
Tension	N_{rec}	[kN]	7,6	8,3	9,1	9,5
Shear	V_{rec}	[kN]	8,2	8,2	9,8	9,8
Cracked concrete						
Tension	N_{rec}	[kN]	5,3	5,9	6,4	6,7
Shear	V_{rec}	[kN]	8,2	8,2	9,8	9,8

Seismic loading based on Hilti technical data. Design according to EN 1992-4

All data in this section applies to:

- Correct setting (see Instructions for use (IFU))
- For a single anchor
- Hammer drilled holes
- No edge distance and spacing influence (see setting detail tables with characteristic distances). Only one anchor can be used in the lower flute at a time with the min.spacing between anchors along the length of the flute to be at least
  $s = 3\ h_{ef}$. This datasheet does not give information for the design of fasteners in a group.
- Minimum base material thickness (see setting detail table)
- Embedment depth, as specified in the table of this section
- Concrete from C30/37 without steel fibre
- $\alpha_{gap} = 1{,}0$ (using Hilti filling set) and $\alpha_{gap} = 0{,}5$ (without using Hilti filling set) accordingly

For anchoring into the upper flute, either use table below conservatively or refer to ETA-20/0867. In this case the minimum required slab thickness h_{min} must be larger than the deck thickness $h_{min,deck}$.

Design resistance in case of seismic performance category C1

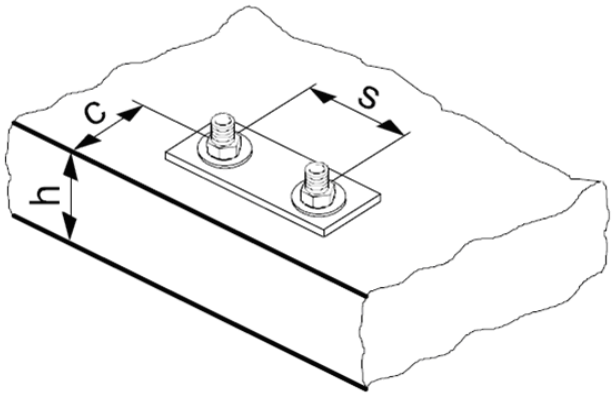
Anchor type		**HUS4-**	**H, HF, C**		**H, HF, C, A, AF**	
Anchor size			**8**		**10**	
Nominal embedment depth	h_{nom}	[mm]	60	70	75	85
with and without Hilti filling set						
Tension	$N_{Rd,C1}$	[kN]	7,4	8,2	9,0	9,3
with Hilti filling set ($\alpha_{gap} = 1{,}0$)						
Shear	$V_{Rd,C1}$	[kN]	11,8	11,8	13,8	13,8
without Hilti filling set ($\alpha_{gap} = 0{,}5$)						
Shear	$V_{Rd,C1}$	[kN]	5,8	5,8	6,9	6,9

Setting information

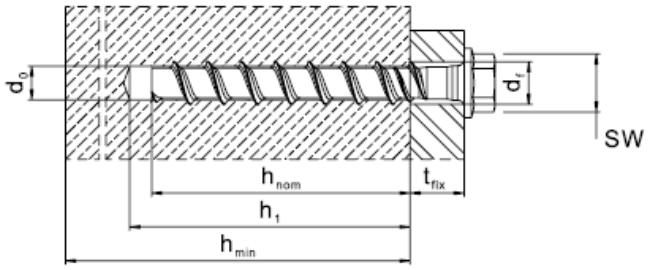
Setting details

Anchor type	HUS4-		H, HF, C		H, HF, C, A, AF	
Anchor size			**8**		**10**	
Nominal embedment depth	h_{nom}	[mm]	60	70	75	85
Effective embedment depth	h_{ef}	[mm]	47,6	56,1	59,5	68
Nominal diameter of drill bit	d_0	[mm]	8		10	
Clearance hole diameter	d_f	[mm]	12		14	
Wrench size HUS4-H	SW1	[mm]	13		15	
Wrench size HUS4-A	SW1	[mm]	-		8	
Wrench size for nut on HUS4-A	SW2	[mm]	-		19	
Torx size for HUS4-C	TX	[-]	45		50	
Countersunk head diameter	d_h	[mm]	18		21	
Depth of drill hole for cleaned or uncleaned hole overhead	h_{1min}	[mm]	70	80	85	95
Minimum base material thickness	h_{min}	[mm]	125	125	130	140
Minimum concrete thickness over upper flute	$h_{min,deck}$	[mm]	70	70	70	70
Minimum distances						
Spacing	s_{min}	[mm]	3 h_{ef}		3,3 h_{ef}	
Edge distance	c_{min}	[mm]	1,5 h_{ef}		1,65 h_{ef}	
Minimum distance to edge of lower flute	$c_{min,deck}$	[mm]	45		47	
Characteristics distances						
Spacing for splitting failure	$s_{cr,sp}$	[mm]	3 h_{ef}		3,3 h_{ef}	
Edge distance for splitting	$c_{cr,sp}$	[mm]	1,5 h_{ef}		1,65 h_{ef}	
Spacing for concrete cone failure	$s_{cr,N}$	[mm]	3 h_{ef}			
Edge distance for concrete cone failure	$c_{cr,N}$	[mm]	1,5 h_{ef}			

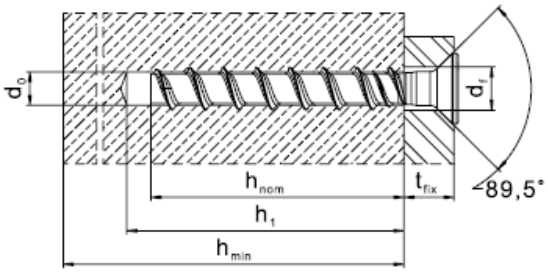
For spacing (edge distance) smaller than characteristic spacing (characteristic edge distance) the design loads have to be reduced.



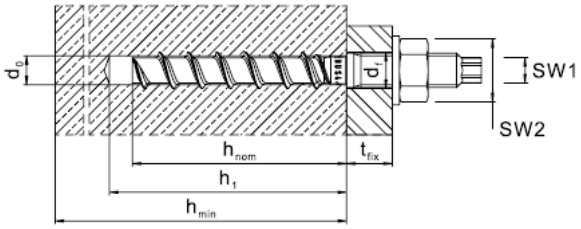
HUS4-H, -HF



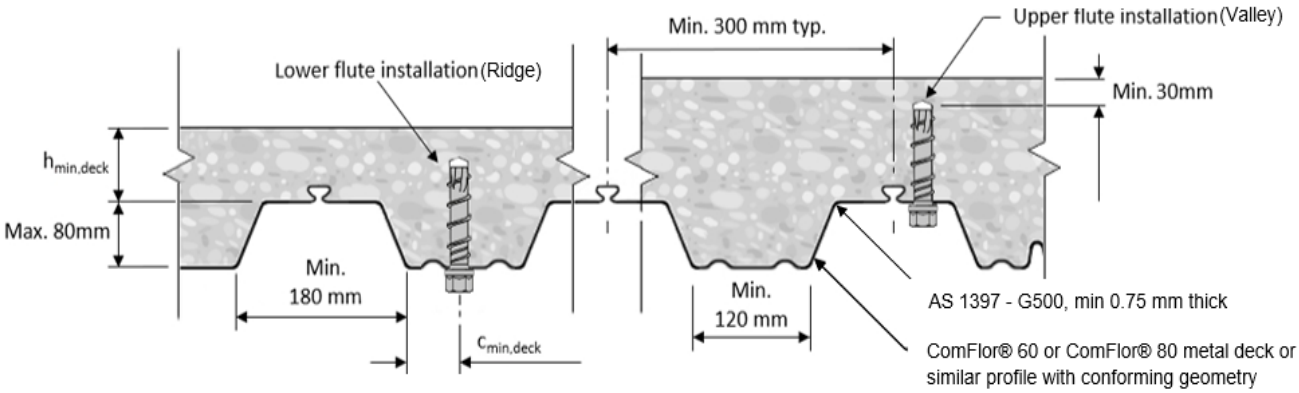
HUS4-C

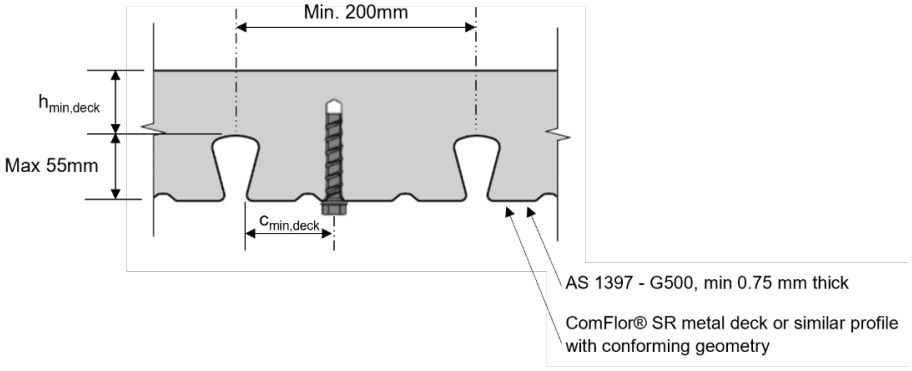


HUS4-A, -AF



Installation position for HUS4 anchor in metal decks :





Drilling and Installation equipment

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

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