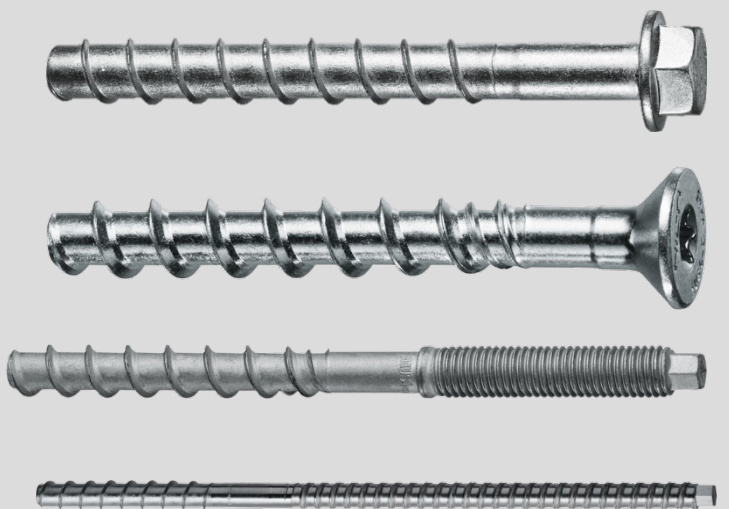




PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

Update: Feb-26

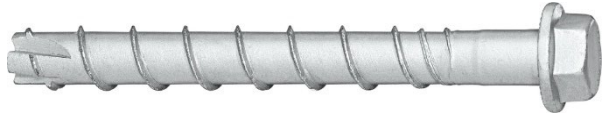
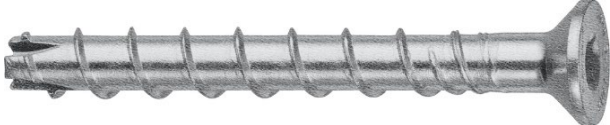


Steel-to-concrete
Steel-to-masonry
Temporary fastening
Hollow core slabs
Metal decks

Page no:04
Page no:20
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Page no:54

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

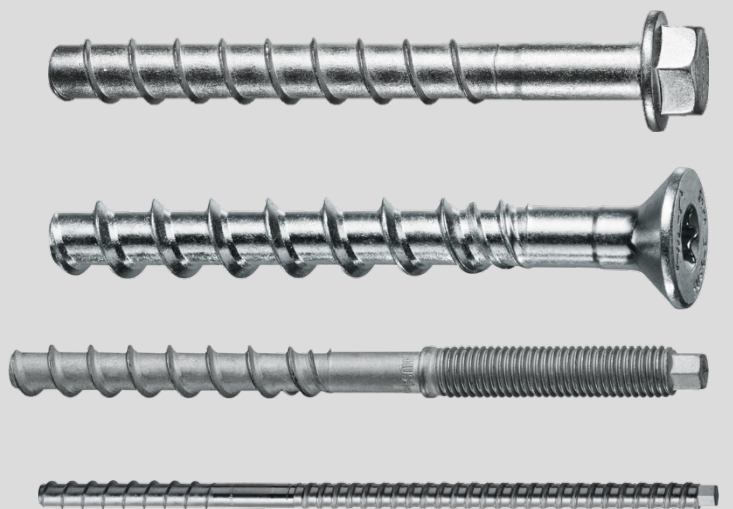
HUS4-H	HUS4-HF	HUS4-C	HUS4-A	HUS4-AF
				
HUS4-TC	HUS4 T-H	HUS4 T-HF	HUS4 -DW	
				



PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

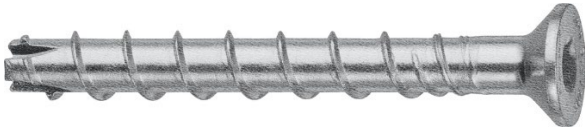
Steel-to-concrete





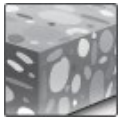
HUS4 Screw anchor for use in concrete

High performance screw anchor for single point fastening

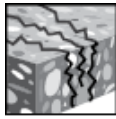
Anchor version		Benefits
	HUS4-H(F) (8-16)	- Faster and easier installation – no cleaning, torque wrench or hammering required - Removable and adjustable (nominal embedment ≥ 60 mm)
	HUS4 T-H(F) (8-10)	- Reusable for temporary fastenings (H, T-H, A) - Hexagonal head (H) with an integrated washer for 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 TC (8-10)	- External metric thread (A) for pre-installation or to fasten stand-off baseplates - Multilayer coating for corrosion protection (HF, T-HF, AF)
	HUS4-A(F) (10 & 14)	- Cost-saving design – pair with PROFIS Engineering software to optimize designs and reduce material costs
	HUS4-DW (16)	- 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).



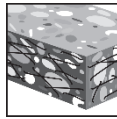
Base material



Concrete
(uncracked)



Concrete
(cracked)

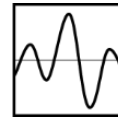


SFRC

Load conditions



Static /
quasi-static

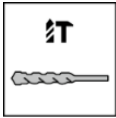


Seismic,
C1, C2

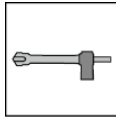


Fire
resistance

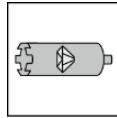
Drilling, cleaning, setting



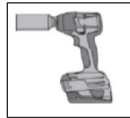
Hammer
drilled holes



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

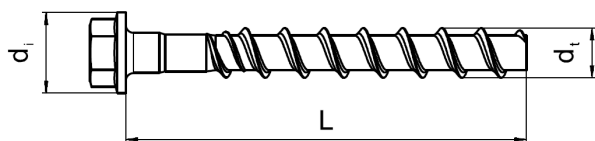
Approvals/certificates for normal weight concrete without steel fibre and with maximum steel fibre content of 80 kg/m³

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

Fastener special dimensions

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

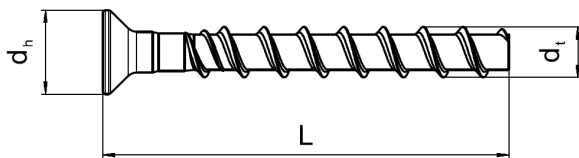
Anchor size		8	8	10	10	12	14	16	
Type	HUS4	H, HF	T,TF	H, HF	T,TF	H	H, HF	H, HF	H(F) G02
Outer diameter of screw	d_t [mm]	10,50	10,30	12,70	12,40	14,70	16,70	18,80	19,20
Diameter of integrated washer	d_i [mm]	17,50	18,00	20,50	21,00	23,60	29,00	32,60	32,60
Length of the screw	L [mm]	45/150	55/150	60/305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

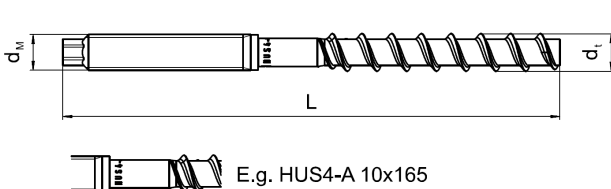


HUS4: Hilti Universal Screw 4th generation
(T-)C: Countersunk head
10: Screw diameter
100: Total length of the screw

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

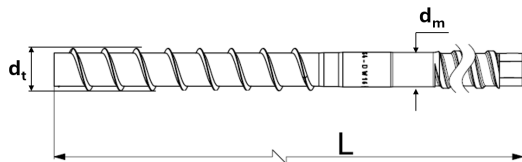
Hilti HUS4-A, size 10 with external thread M12 and size 14 with external thread M16



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			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



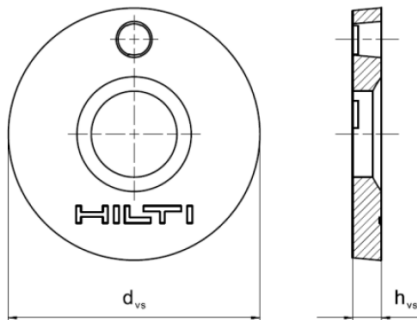
HUS4: Hilti Universal Screw 4th generation
DW: trapezoidal thread connection,galvanized
16: Nominal screw diameter d [mm]
458: Length of screw [mm]

Hilti Filling set

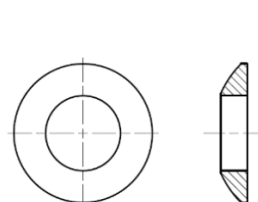
Hilti filling set for HUS4 (T)-H(F) and HUS4-A (F) With Hilti HY/RE...

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

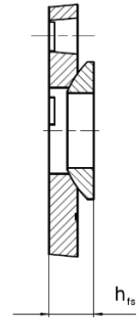
Sealing washer



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 $\gamma = 1,4$.
- 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		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 h_{nom} [mm]	depth	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

Design Resistance													
Anchor type	HUS4-	H , HF			H, HF, A, AF			H, HF		H(F) G02			DW
Anchor size		12			14			16					
Nominal embedment h_{nom} [mm] depth		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
- $\alpha_{gap} = 1,0$ (using Hilti filling set) and $\alpha_{gap} = 0,5$ (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

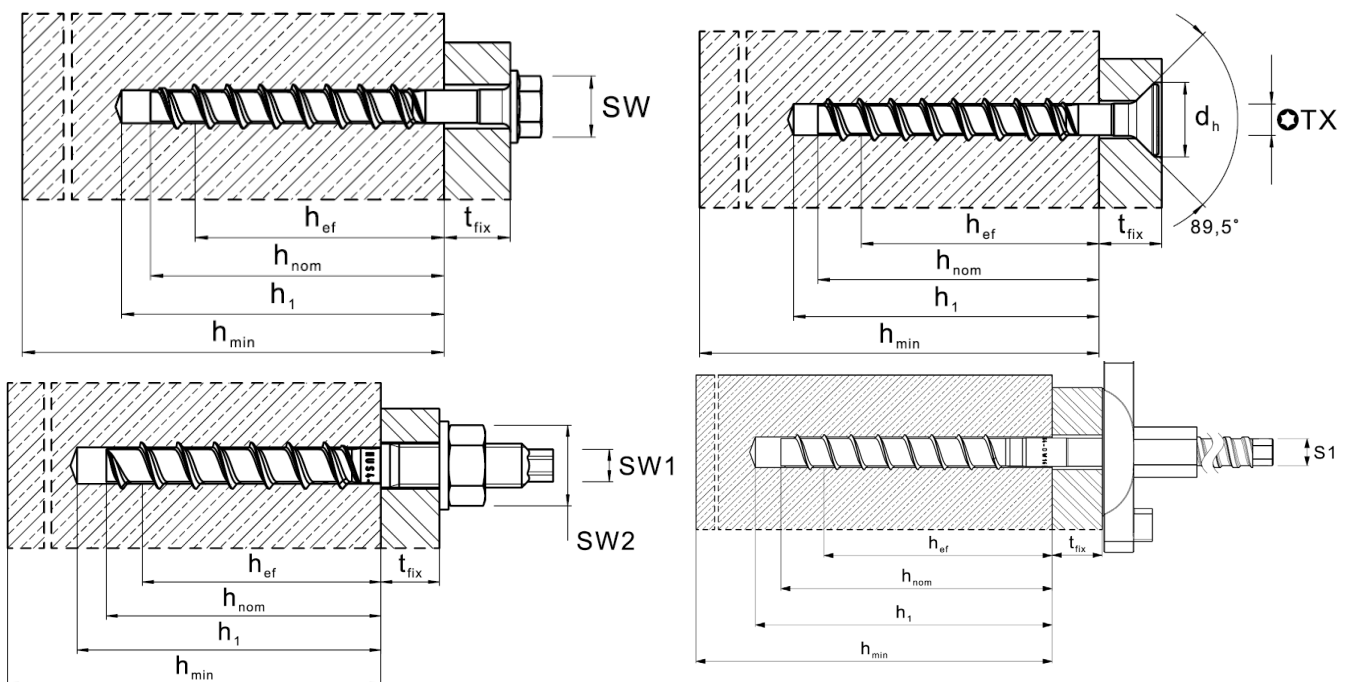
Setting information

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 embedment 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} ≤	[mm]	8,45			8,45			10,45		
Cutting diameter of diamond core	d _{cut} ≤	[mm]	-			-			9,9		
Clearance hole diameter through setting	d _f $\frac{\text{min}}{\text{max}}$	[mm]	11			11			13		
			12			12			14		
Clearance hole diameter pre	d _f ≤	[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 ≥	[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 ≥	[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 ≥	[mm]	h _{nom} + 20 mm								
			-	80	90	70	80	90	-	95	105
Depth of drill hole (with adjustability) for uncleanded hole hammer drilling in wall and floor position	h ₁ ≥	[mm]	h _{nom} + 35						h _{nom} + 40		
			-	95	105	85	95	105	-	115	125
Minimum distances											
Minimum thickness of concrete member	h _{min} ≥	[mm]	h ₁ + 30 mm								
			80	100	120	100	100	120	100	130	140
Minimum spacing	s _{min} ≥	[mm]	35			50 ²⁾	50	50	40		
Minimum edge distance	c _{min} ≥	[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 embedment 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 $\frac{\text{min}}{\text{max}}$	[mm]	14			16			18		
Clearance hole diameter pre setting (A-			d _f ≤	[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 _{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 _{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 _{nom} + 20 mm								
					75	95	105	-	100	120	-	105	135
Depth of drill hole (with adjustability) for uncleanded hole hammer drilling in wall and floor position					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 ₁ + 30 mm								
					100	130	140	110	130	150	120	160	200
Minimum spacing			s _{min} ≥	[mm]	50			50			60		
Minimum edge distance			c _{min} ≥	[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 embedment 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

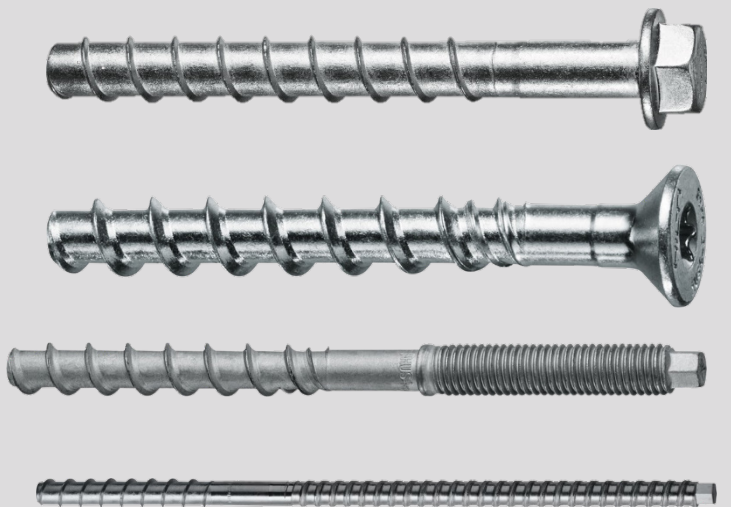
¹⁾ Please refer IFU section for more information



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
	HUS4-HF (8, 10)	- Removable and adjustable (nominal embedment ≥ 60 mm)
	HUS4-C (8, 10)	- Hexagonal head (H) with an integrated washer for a neat appearance of through-fastened baseplates
	HUS4-A (10)	- Countersunk head (C) to fasten flush to a baseplate for improved aesthetics
	HUS4-AF (10)	- External metric thread (A) for pre-installation or to fasten stand-off baseplates
		- Multilayer coating for corrosion protection (HF, AF)

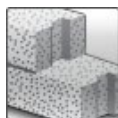


Application condition

Base material



Solid brick



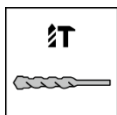
Autoclaved
aerated
concrete

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

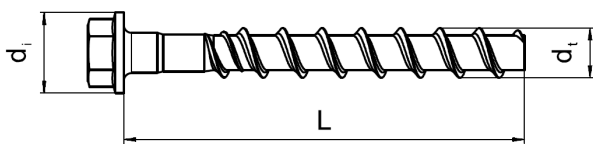
Head configuration

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 (carbon steel, multilayer corrosion protection coated)	

Fastener special dimensions

Fastener dimensions and marking HUS4-H(F)

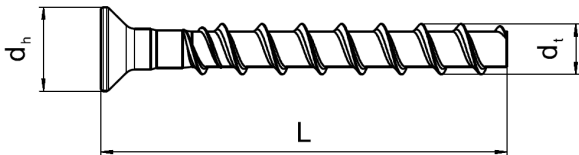
Anchor size			8	10
Type	HUS4		H, HF	H, HF
Outer diameter of screw thread	d_t	[mm]	10,50	12,70
Diameter of integrated washer	d_i	[mm]	17,50	20,50
Length of the screw (min/max)	L	[mm]	65/150	80/305



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

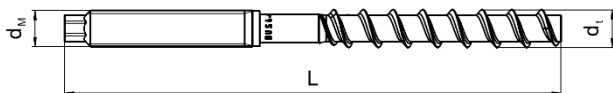
Anchor size			8	10
Type	HUS4		C	C
Outer diameter of the screw thread	d_t	[mm]	10,50	12,70
Countersunk head diameter	d_h	[mm]	18,00	21,00
Length of the screw (min/max)	L	[mm]	65/160	80/120



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



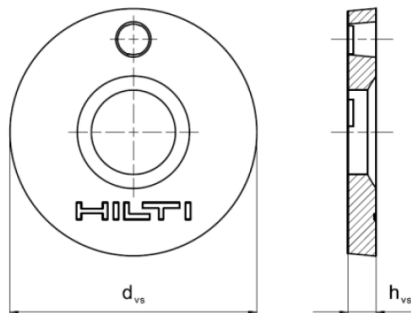
HUS4: Hilti Universal Screw 4th generation
A: Threaded head
10: Screw diameter
165: Total length of the screw
8: Carbon steel 8.8
K: length of the screw (more info in ETA)

E.g. HUS4-A 10x165

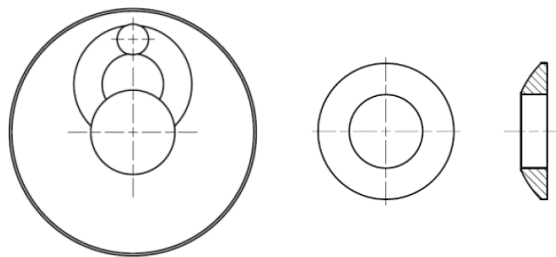
Hilti Filling set with Hilti HY/RE...

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

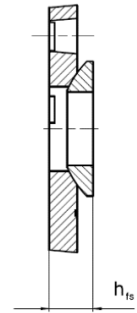
Sealing washer



Spherical washer



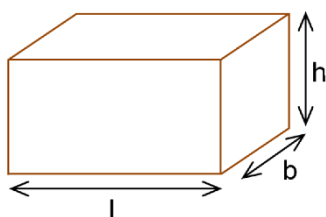
Filling Set



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 unplastered walls only, to account for setting position limitations with respect to joint distance.

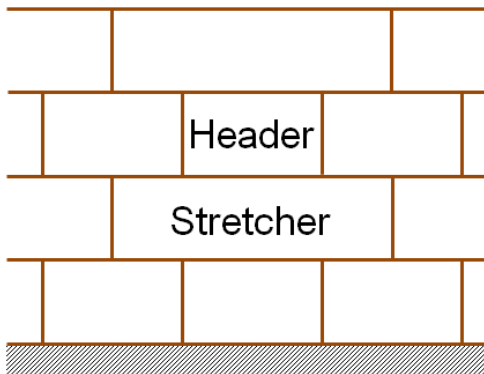


Brick types and properties

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

Anchor installation parameters

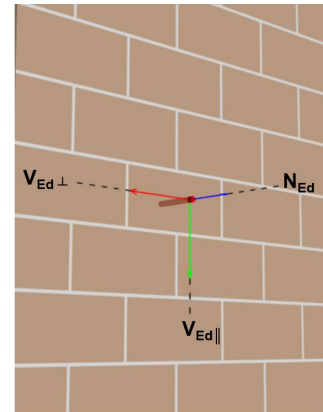
Brick position:



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

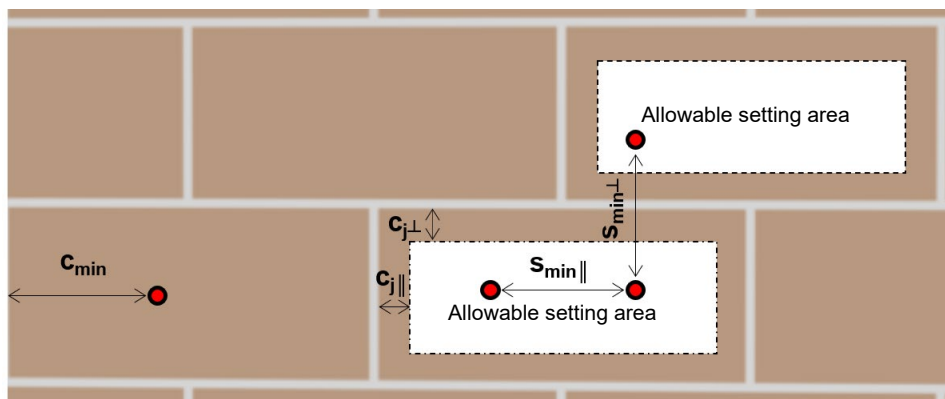
Stretcher (S): The longest dimension of the brick is in direction of the length of the wall

Load direction:



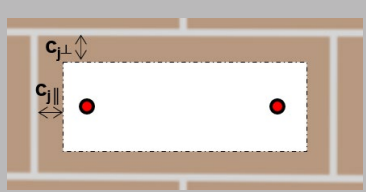
N_{Ed} = Design tension load
 $V_{Ed||}$ = Design horizontal shear load
 $V_{Ed\perp}$ = Design vertical design shear load

Allowable setting area



$c_{j||}$ = Minimum allowable distance to vertical joints
 $c_{j\perp}$ = Minimum allowable distance to horizontal joints
 $s_{min||}$ = 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	$c_{j }$	≥ 20	≥ 40		

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/mm ²]	HUS4 H(F), C	HUS4 H(F), C, A(F)	
			8	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/mm ²]	HUS4 H(F), C	HUS4 H(F), C, A(F)	
			8	10	
Nominal embedment depth h_{nom} [mm]			d/d		
			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]	$\geq 5,0$	0,61	0,59
	Shear vertical $V_{rec }$			0,51	0,71
	Tension N_{rec}	$\geq 7,5$	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 $V_{rec }$		0,64	1,00	

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

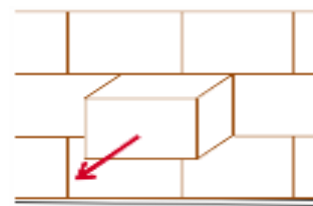
Pull out resistance of one brick (tension):

Unfilled vertical joints

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

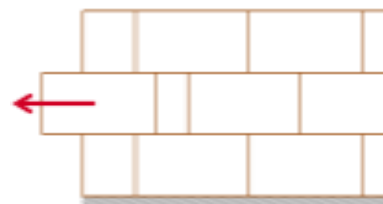
Filled vertical joints

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



Pushing out resistance of one brick (shear):

$$V_{Rd,pb} = 2 \cdot l \cdot b \cdot (0,5 \cdot f_{vk0} + 0,4 \cdot \sigma_d) / (2,5 \cdot 1000) \quad [\text{kN}]$$

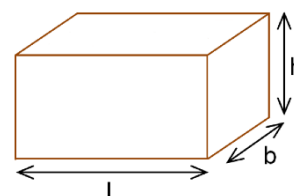


σ_d = design compressive stress perpendicular to the shear (N/mm²)

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 recommendations)
- 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

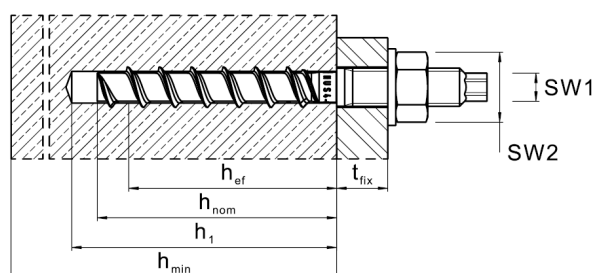
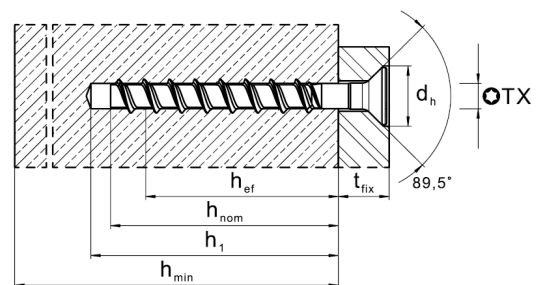
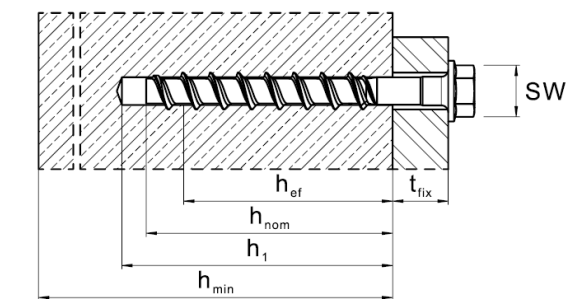
Design resistance

Brick type	Load direction	f _b [N/mm ²]	HUS4 H(F), C			
			8	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	$\frac{\min}{\max}$ [mm]	11	13
			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]	$(h_{nom} + 10 \text{ mm})$	
			70	85
Depth of drill hole for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	$(h_{nom} + 10 \text{ mm}) + 2 \cdot d_0$	
			86	105
Depth of drill hole (with adjustability) for cleaned hole hammer drilling, hammer drilling uncleaned hole when drilling upwards	$h_1 \geq$	[mm]	$(h_{nom} + 20 \text{ mm})$	
			80	95
Depth of drill hole (with adjustability) for uncleaned hole hammer drilling in wall and floor position	$h_1 \geq$	[mm]	$(h_{nom} + 20 \text{ mm}) + 2 \cdot d_0$	
			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

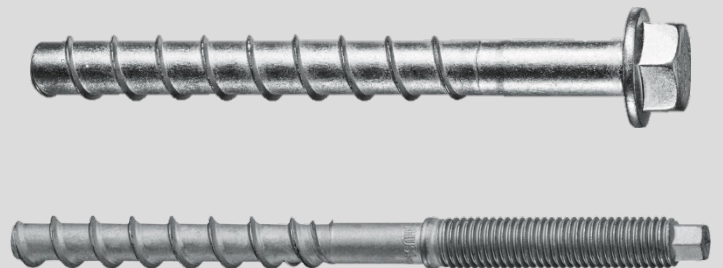
¹⁾ Please refer IFU or ETA for more information



PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

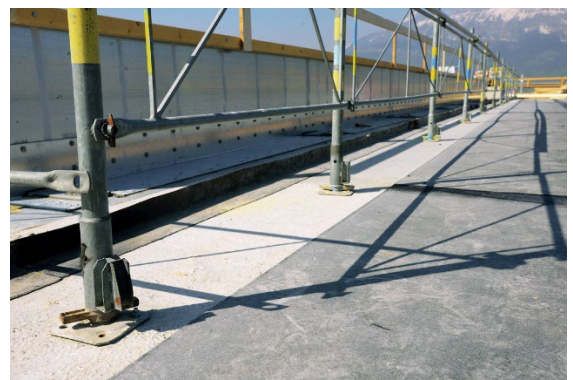
Temporary fastening
Steel-to-concrete



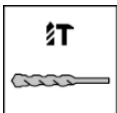
HUS4 Screw anchor for use in concrete temporary fastening

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	Other information



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
<u>Z-21.8-2137</u>	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) $f_c \geq 8 \text{ N/mm}^2$
- 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 resistance 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]					$h_{\text{nom}2}$	$h_{\text{nom}3}$	$h_{\text{nom}1}$	$h_{\text{nom}2}$	$h_{\text{nom}3}$	$h_{\text{nom}1}$	$h_{\text{nom}2}$	$h_{\text{nom}3}$	$h_{\text{nom}1}$	$h_{\text{nom}2}$	$h_{\text{nom}3}$
					60	70	50	60	70	55	75	85	55	75	85
Tension = Shear	$f_c \geq 8 \text{ N/mm}^2$	N_{Rd}	[kN]		3,3	4,7	2,3	3,3	4,7	3,3	5,3	6,3	3,3	5,3	6,3
	$f_c \geq 12 \text{ N/mm}^2$	N_{Rd}	[kN]		4,0	5,7	2,8	4,0	5,7	4,0	6,4	7,8	4,0	6,4	7,8
	$f_c \geq 16 \text{ N/mm}^2$	V_{Rd}	[kN]		4,6	6,6	3,3	4,6	6,6	4,7	7,4	9,0	4,7	7,4	9,0
	$f_c \geq 20 \text{ N/mm}^2$	V_{Rd}	[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]					$h_{\text{nom}1}$	$h_{\text{nom}2}$	$h_{\text{nom}3}$	$h_{\text{nom}1}$	$h_{\text{nom}2}$	$h_{\text{nom}3}$	$h_{\text{nom}1}$	$h_{\text{nom}2}$
					60	80	100	65	85	115	85	130
Tension = Shear	$f_c \geq 8 \text{ N/mm}^2$	N_{Rd}	[kN]		2,6	5,4	7,8	4,4	7,0	12,3	5,5	12,6
	$f_c \geq 12 \text{ N/mm}^2$	N_{Rd}	[kN]		3,5	7,3	10,6	5,4	8,5	15,0	7,5	17,0
	$f_c \geq 16 \text{ N/mm}^2$	V_{Rd}	[kN]		4,0	8,4	12,2	6,2	9,9	17,3	8,7	19,7
	$f_c \geq 20 \text{ N/mm}^2$	V_{Rd}	[kN]		4,5	9,4	13,6	6,9	11,1	19,3	9,7	22,0

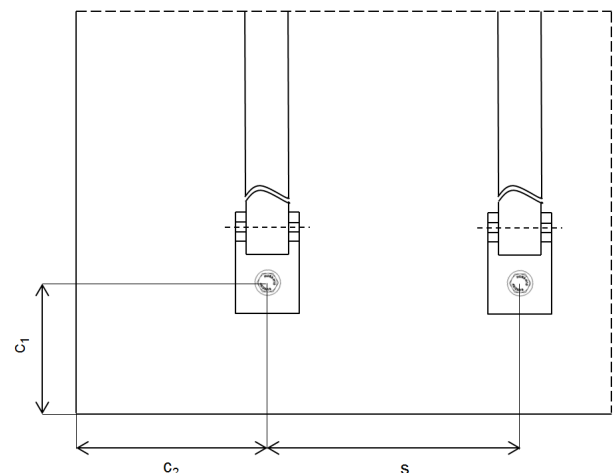
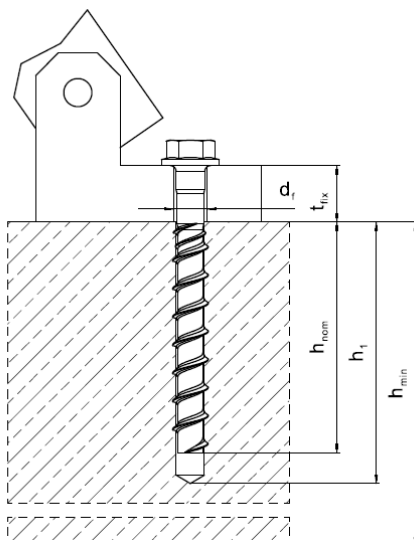
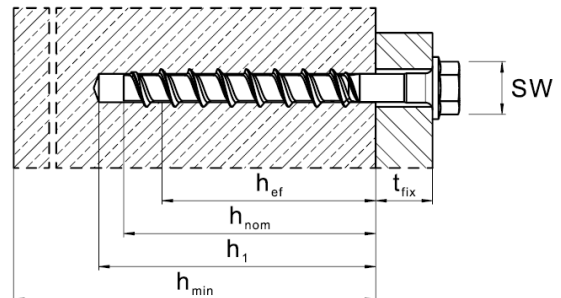
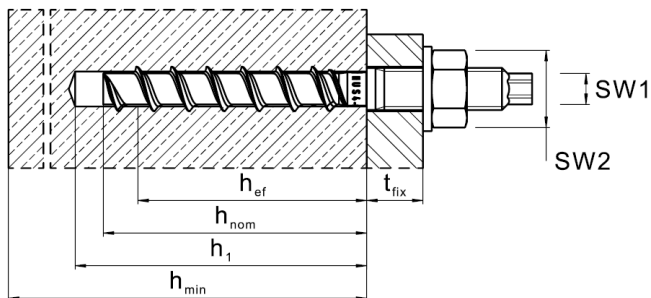
Setting information

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.

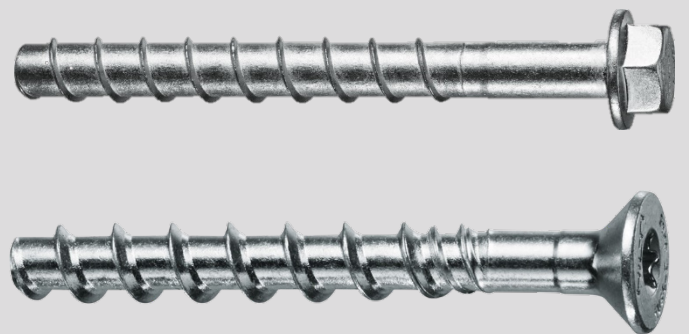
Rotary Hammers (Corded and Cordless)		TE 2 - TE 30
Other tools		Impact wrench- SIW (use recommended socket/driver bit)
		Check gauge
		Hammer drill bit TE-CX TE-C
		Blow out pump



PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

Hollow core slabs
Steel-to-concrete

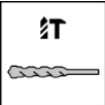


HUS4 Screw anchor for use in Hollow core slabs

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
<u>GS 6.1/21-041-3</u>	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: Installation on the top and on the bottom of the slab (generic position).

All data in this section applies to

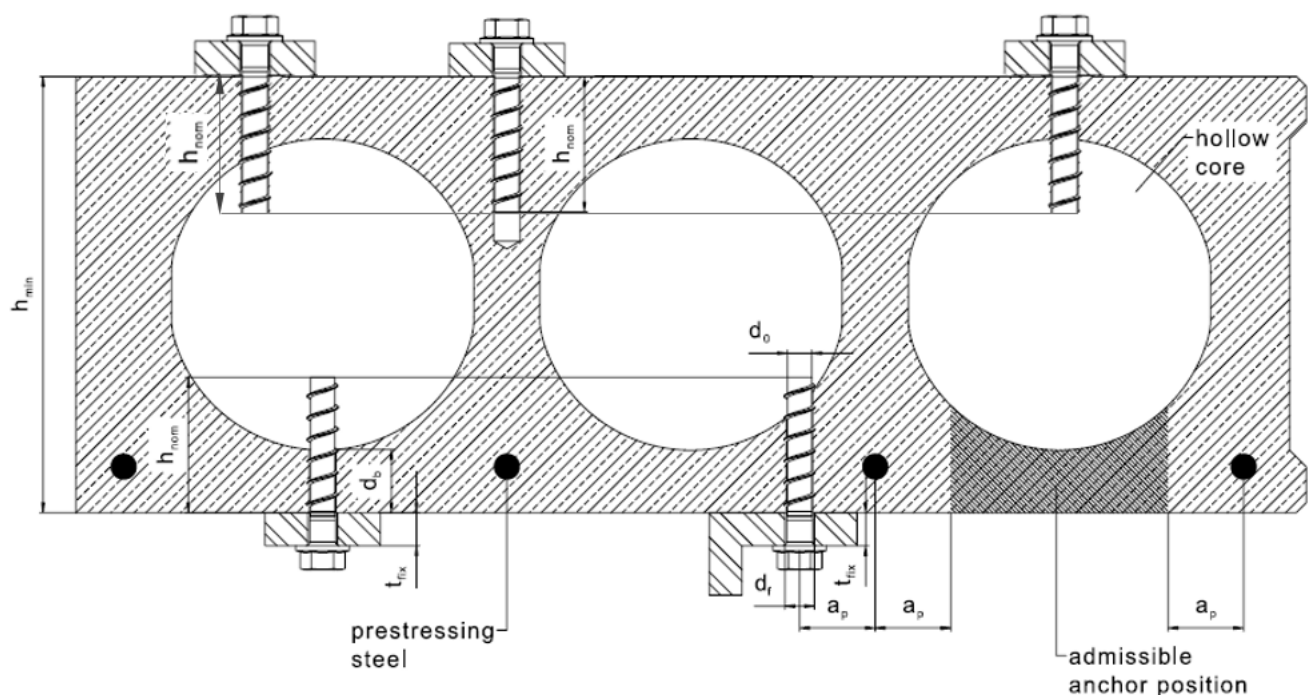
- Correct anchor setting (see Instructions for use (IFU))
- For a single anchor
- No edge distance and spacing influence
- Ratio core width / web thickness $\leq 5,3$
- Concrete from C30/37 to C45/55, uncracked
- Recommended loads: With overall partial safety factor for action $\gamma = 1,4$.

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 embedment depth		h_{nom}	[mm]		$d_b + 10$									
Drilling depth		d_0	[mm]		$\geq h_{nom} + 10$									
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 embedment depth		h_{nom}	[mm]		d_b+10									
Drilling depth		d_0	[mm]		$\geq h_{nom} + 10$									
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



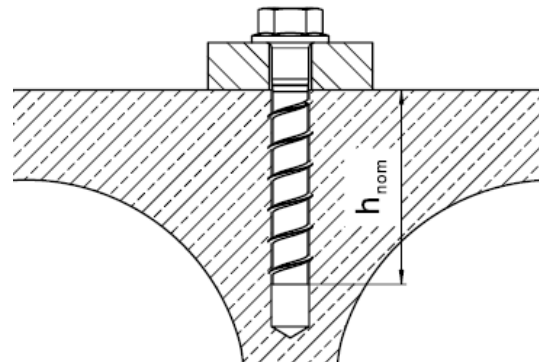
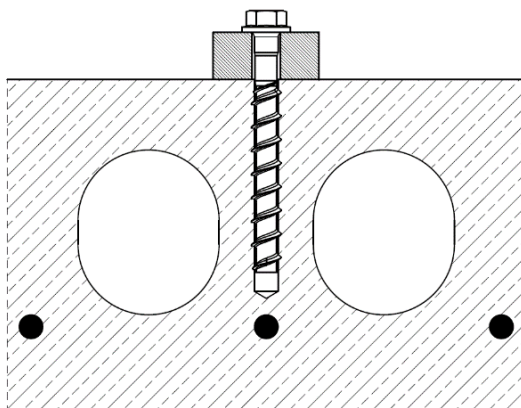
Basic loading data in pre-stressed Hollow core slab (HCS) for permanent fastening based on Hilti
Technical data: Installation on the web centerline position only

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 $w/e \leq 5,3$
- Concrete C30/37 to C50/60, uncracked
- Recommended loads: With overall partial safety factor for action $\gamma = 1,4$.

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

Anchor type			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]	$h_{nom} + 10 \text{ mm}$								
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			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]	$h_{nom} + 10 \text{ mm}$								
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

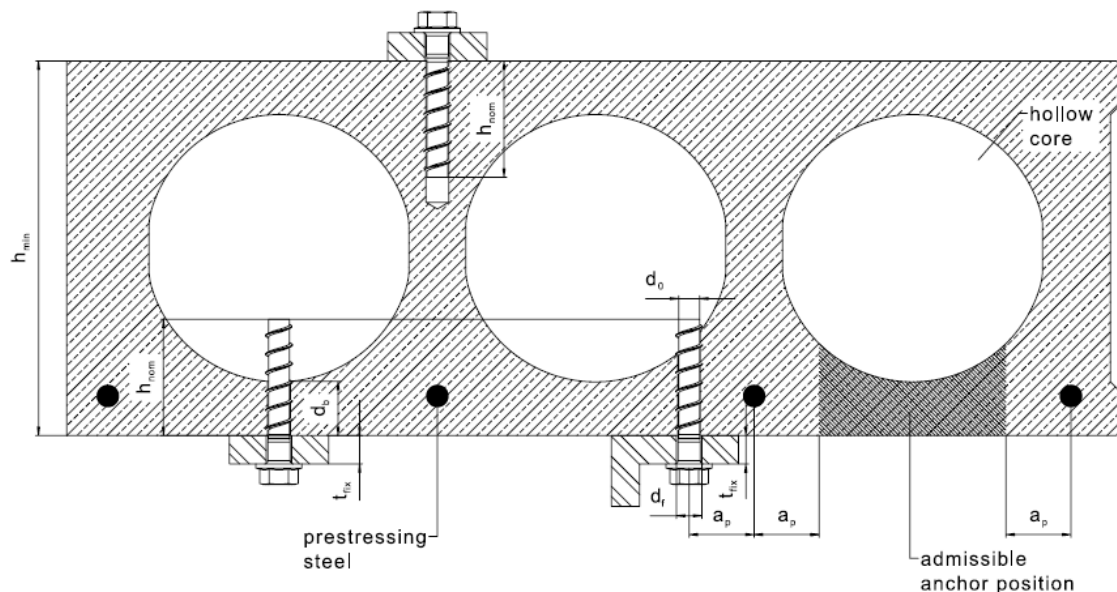
Fire resistance and design in pre-stressed Hollow core slab (HCS) for permanent fastening based on Hilti Technical data.

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 $\leq 5,3$
- 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 embedment 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



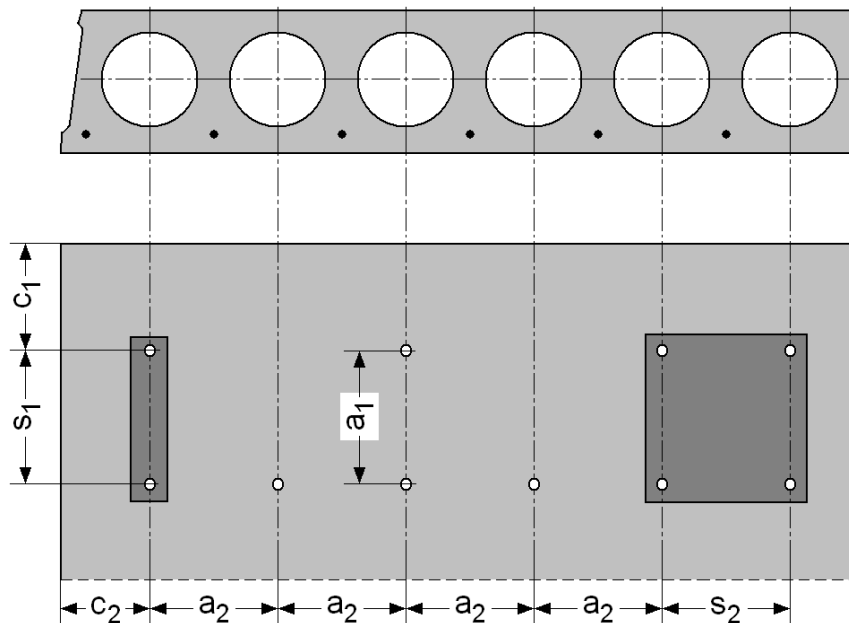
Setting information

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

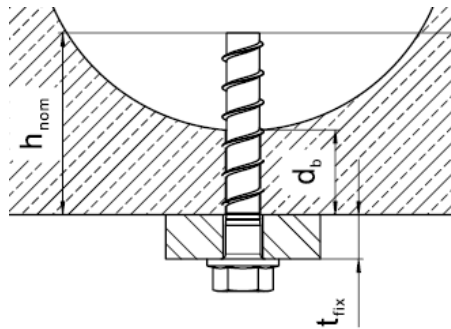
Type		H, HF, C, T, TH, TC	H, HF, C, T, TH, TC
Anchor size	HUS4	8	10
Minimum and characteristic spacing	$s_{min} = s_{cr}$ [mm]	$4 * d_b$	
Minimum and characteristic edge distance	$c_{min} = c_{cr}$ [mm]	$4 * d_b$	
Minimum group distance	a_{min} [mm]	$4 * d_b$	

Installation 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



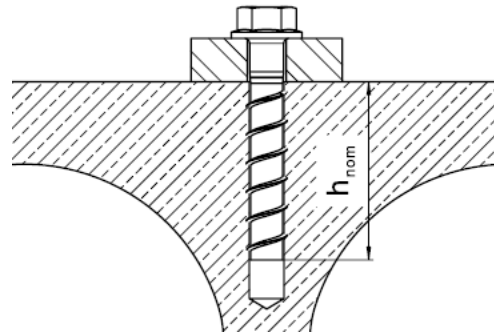
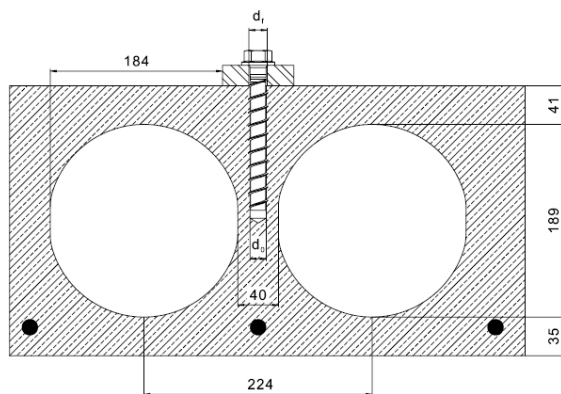
Basic data loading in pre-stressed hollow core slabs (HCS) for temporary fastening, with the option for reusability of the screw.

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 $w/e \leq 5,3$
- Concrete C30/37 to C50/60, uncracked
- Recommended loads: With overall partial safety factor for action $\gamma = 1,4$.

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

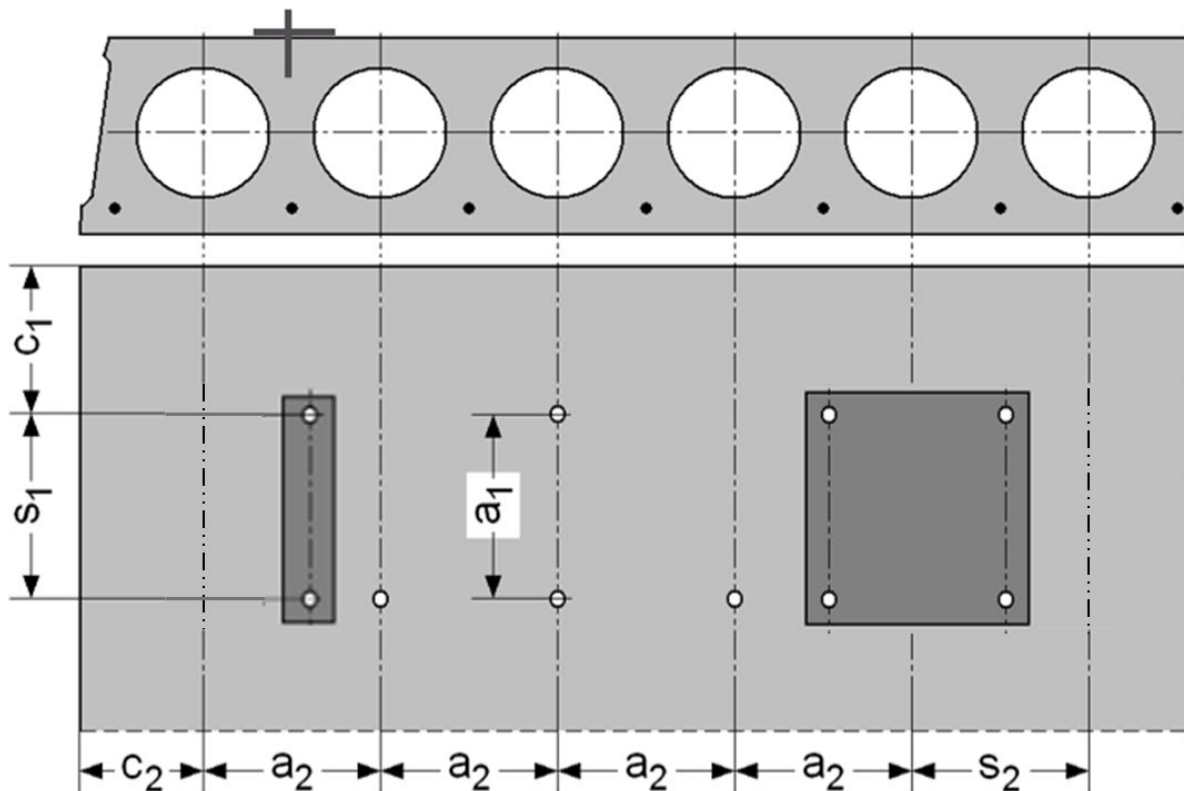
Recommended load: Concrete C45/55

Anchor type			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]	$h_{nom} + 10 \text{ mm}$								
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.

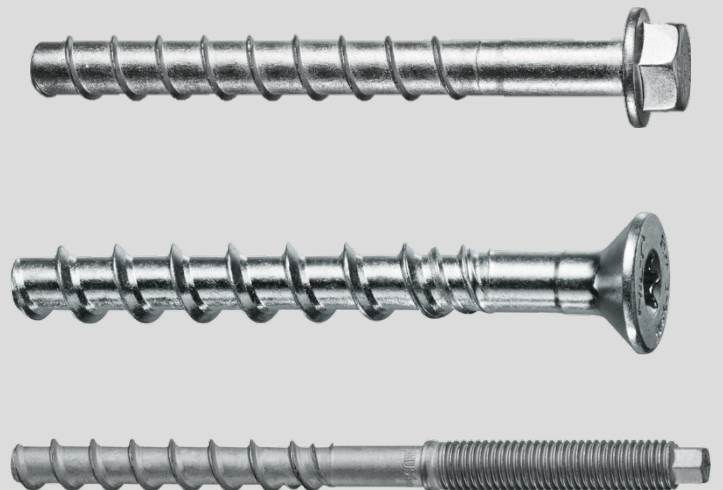
Rotary Hammers (Corded and Cordless)		TE 2 - TE 30
Other tools		Impact wrench- SIW (use recommended socket/driver bit)
		Hammer drill bit TE-CX ,TE-C
		Blow out pump
		Check gauge



PRODUCT TECHNICAL DATASHEET

HUS4 Screw anchor

Metal decks
Steel-to-concrete



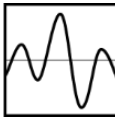
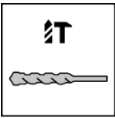


HUS4 Screw anchor for use with metal decks in concrete

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)	 Static / quasi-static
 Concrete (cracked)	 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 $\gamma = 1,4$.

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

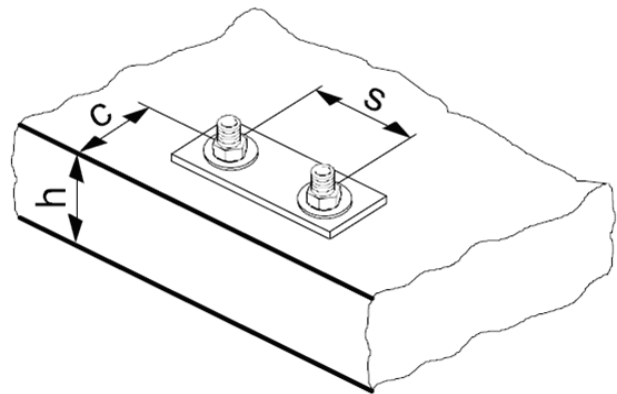
Anchor type			HUS4-		H, HF, C		H, HF, C, A, AF	
Anchor size					8		10	
Nominal embedment depth	h_{nom}	[mm]	60		70		75	85
with and without Hilti filling set								
Tension	$N_{Rd,C1}$	[kN]	7,4		8,2		9,0	9,3
with Hilti filling set ($\alpha_{gap} = 1,0$)								
Shear	$V_{Rd,C1}$	[kN]	11,8		11,8		13,8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

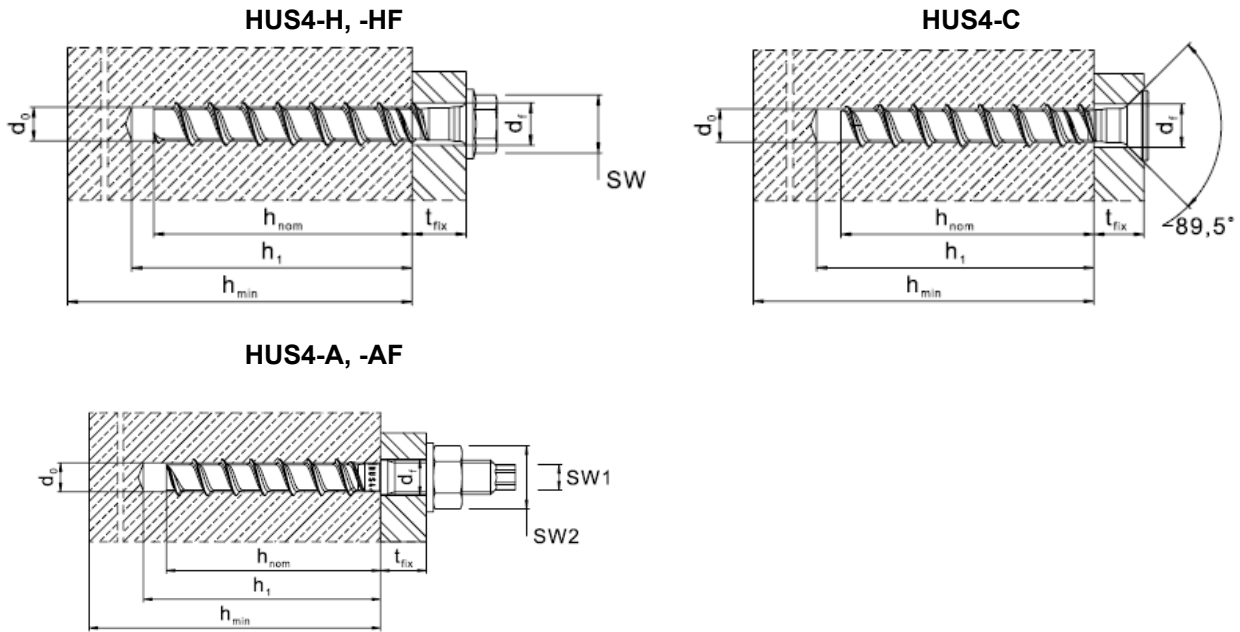
Setting information

Setting details

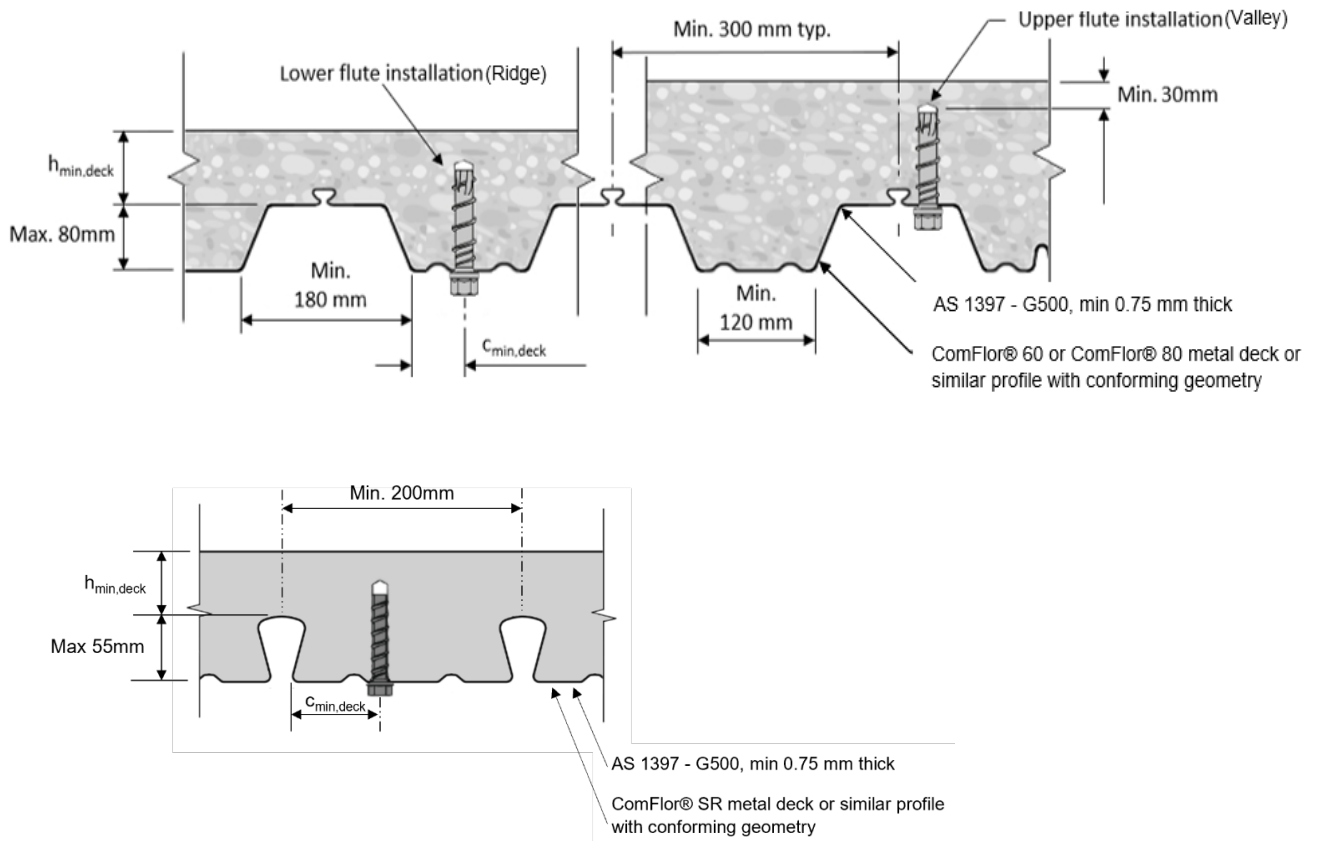
Anchor type			HUS4-		H, HF, C		H, HF, C, A, AF	
Anchor size					8		10	
Nominal embedment depth	h_{nom}	[mm]	60		70		75	85
Effective embedment depth	h_{ef}	[mm]	47,6		56,1		59,5	68
Nominal diameter of drill bit	d_0	[mm]	8			10		
Clearance hole diameter	d_f	[mm]	12			14		
Wrench size HUS4-H	SW1	[mm]	13			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.





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