









HUS4 Bonded screw

Product Technical Datasheet
Steel-to-concrete
Update: March 25



HUS4 Bonded screw anchor for use in concrete

Ultimate performance screw anchor for single point fastening

Anchor version	Benefits
 <p>HUS4-H(F) (10-16)</p>	<ul style="list-style-type: none"> - High productivity - less drilling and fewer operations than with conventional anchors
 <p>HUS4-C (10)</p>	<ul style="list-style-type: none"> - ETA approval for cracked and uncracked concrete - ETA approval for Seismic C1 and C2
 <p>HUS4-A(F) (10 and 14)</p>	<ul style="list-style-type: none"> - ETA approval for adjustability¹⁾ (unscrew-rescrew) - Smaller edge and spacing distance
 <p>HUS4-HR (10 and 14)</p>	<ul style="list-style-type: none"> - One embedment at the level of h.nom3 of HUS4 for maximum performance - No cleaning allowed size 10 to 16
 <p>HUS4-CR (10)</p>	<ul style="list-style-type: none"> - HUS4-HF and HUS4-AF with multilayer coatings for additional corrosion protection
 <p>HUS4-MAX capsule</p>	<ul style="list-style-type: none"> - Through fastening with H, A and C head - Pre-fastening with A head

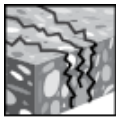
¹⁾ Not available for HUS4-HR and HUS4-CR



Base material



Concrete (uncracked)



Concrete (cracked)

Load conditions



Static / quasi-static

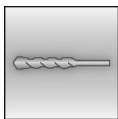


Seismic, C1, C2

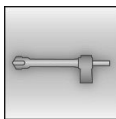


Fire resistance

Drilling, cleaning, setting



Hammer drilled holes



Hollow drill-bit drilling

Other information



PROFIS Engineering software



Hilti Technical Data



Bonded Screw anchor Handbook



Steel to concrete Handbook



Linked Approvals/Certificates and Instructions for use

Approval no	Application / loading condition	Authority / Laboratory	Date of issue
ETA-18/1160	Static and quasi-static / Seismic / Fire	DIBt, Berlin	16-01-2025

Hilti Technical Data






Assessment no	Application / loading condition	Date		Remarks
		Issue	Valid	
ARA 25-003	Fire	Mar-2025	Mar-2030	Fire data for HUS4 HR 10 and 14

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)

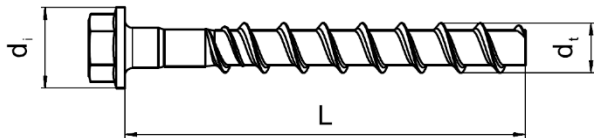
Anchor	Size	10	12	14	16
HUS4-MAX		IFU HUS4-MAX			
Filling set		IFU Filling set			

Link to Hilti Webpage

HUS4-H	HUS4-C	HUS4-A	HUS4-HF	HUS4-AF
				
HUS4- HR	HUS4- CR	HUS4-MAX		
				

Fastener special dimensions

Anchor size			10		12	14		16
Type	HUS4		H, HF	HR	H	H, HF	HR	H, HF
Outer diameter of screw thread	d_t	[mm]	12,70	12,25	14,70	16,70	16,56	18,80
Diameter of integrated washer	d_i	[mm]	20,50	20,50	23,60	29,00	30,00	32,60
Length of the screw (min/max)	L	[mm]	90/305	95/130	110/150	130/150	120/135	140/205



HUS4: Hilti Universal Screw 4th generation

H: Hexagonal head

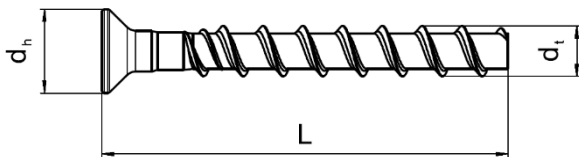
HR: Hexagonal head, stainless steel

10: Screw diameter

100: Total length of the screw

Fastener dimensions and marking HUS4-C(R)

Anchor size			10	
Type	HUS4		C	CR
Outer diameter of the screw thread	d_t	[mm]	12,70	12,25
Countersunk head diameter	d_h	[mm]	21,00	21,00
Length of the screw (min/max)	L	[mm]	100/120	105



HUS4: Hilti Universal Screw 4th generation

C: Countersunk head

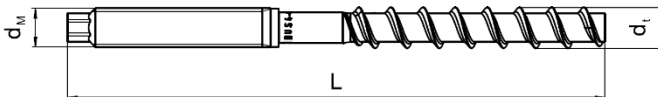
CR: HR: Countersunk head, stainless steel

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 the 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]	140/165	185/205



HUS4: Hilti Universal Screw 4th generation

A: Threaded head

10: Screw diameter

100: total length of the screw


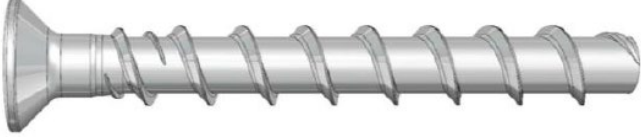

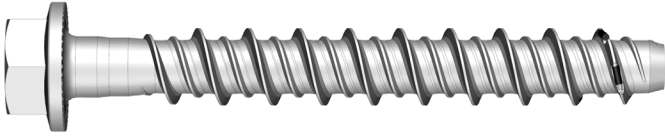
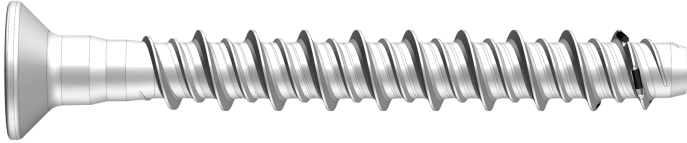
8: carbon steel 8.8

K: length of the screw (more info in ETA)

E.g. HUS4-A 10x165

Hilti Filling set

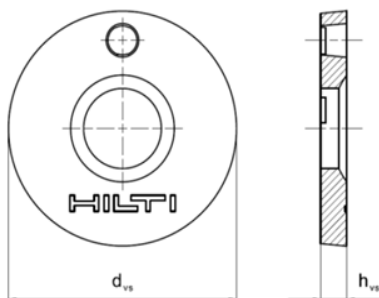
Head configuration

Type	Part	
HUS4-H HUS4-HF	Hexagonal head	
HUS4-C	Countersunk head	
HUS4-A HUS4-AF	External thread	 Hilti HUS4-A, size 10 with external thread M12 and size 14 with external thread M16
HUS4-HR	Hexagonal head	
HUS4-CR	Countersunk head	

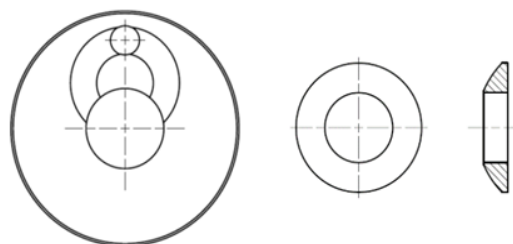
Hilti Filling set dimensions with Hilti HIT-HY...

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

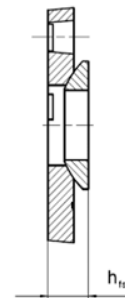
Sealing washer



Spherical washer



Filling Set



Static and quasi-static loading based on ETA-18/1160. Design according to EN 1992-4 and EOTA TR 075.

All data in this section applies to:

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

For specific design cases refer to [PROFIS Engineering](#).

Design resistance

Anchor size		10		12	14		16
Type	HUS4	H(F), C, A(F)	HR, CR	H	H(F), A(F)	HR	H
Nominal embedment depth	h_{nom} [mm]	85	90	100	115	110	130
Uncracked concrete							
Tension	N_{Rd} [kN]	25,1	26,7	32,8	40,4	34,1	48,6
Shear	V_{Rd} [kN]	25,6	22,0	35,9	49,6	51,3	58,5
Cracked concrete							
Tension	N_{Rd} [kN]	15,9	16,0	23,0	27,5	26,5	34,0
Shear	V_{Rd} [kN]	25,6	22,0	35,9	49,6	51,3	58,5

Recommended loads

Anchor size		10		12	14		16
Type	HUS4	H(F), C, A(F)	HR, CR	H	H(F), A(F)	HR	H
Nominal embedment depth	h_{nom} [m]	85	90	100	115	85	130
Uncracked concrete							
Tension	N_{rec} [kN]	17,9	19,0	23,4	28,9	24,3	34,7
Shear	V_{rec} [kN]	18,3	15,7	25,7	35,4	36,7	41,8
Cracked concrete							
Tension	N_{rec} [kN]	11,3	11,4	16,4	19,7	18,9	24,3
Shear	V_{rec} [kN]	18,3	15,7	25,7	35,4	36,7	41,8

All data in this section applies to:

- Correct setting (See setting instruction)
- For a single anchor
- Concrete C 20/25
- Hammer drilled holes
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete.
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (See setting instruction)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- $\alpha_{\text{gap}} = 1,0$ (using Hilti seismic filling set) or $\alpha_{\text{gap}} = 0,5$ (without using Hilti seismic filling set) accordingly

For specific design cases refer to [PROFIS Engineering](#).

Design resistance in case of seismic performance category C2

Anchor size		10	12	14
Type	HUS4 -	H(F), A(F)	H	H(F), A(F)
Nominal embedment depth	h_{nom} [mm]	85	100	115
with Hilti filling set (HUS4-H and HUS4-A)				
Tension	$N_{\text{Rd,seis}}$ [kN]	7,1	11,5	12,1
Shear	$V_{\text{Rd,seis}}$	18,6	22,9	37,2
without Hilti filling set				
Tension	$N_{\text{Rd,seis}}$ [kN]	7,1	11,5	12,1
Shear	$V_{\text{Rd,seis}}$	5,9	9,5	13,8

Design resistance in case of seismic performance category C1

Anchor size		10	12	14
Type	HUS4 -	H(F), C, A(F)	H	H(F), A(F)
Nominal embedment depth	h_{nom} [mm]	85	100	115
with Hilti filling set (HUS4-H and HUS4-A)				
Tension	$N_{\text{Rd,seis}}$ [kN]	15,9	23,0	27,5
Shear	$V_{\text{Rd,seis}}$	21,4	31,1	27,6
without Hilti filling set				
Tension	$N_{\text{Rd,seis}}$ [kN]	15,9	23,0	27,5
Shear	$V_{\text{Rd,seis}}$	10,7	15,6	13,8

Fire loading data based on ETA-18/1160 and Hilti Technical data. Design according to EN 1992-4 and EOTA TR 075.

All data in this section applies to:

- Correct setting (See setting instruction)
- For a single anchor
- Hammer drilled holes
- Concrete C 20/25
- No edge distance and spacing influence (see table with characteristic distances)
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (See setting instruction)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ (in absence of other national regulations)

For specific design cases refer to [PROFIS Engineering](#).

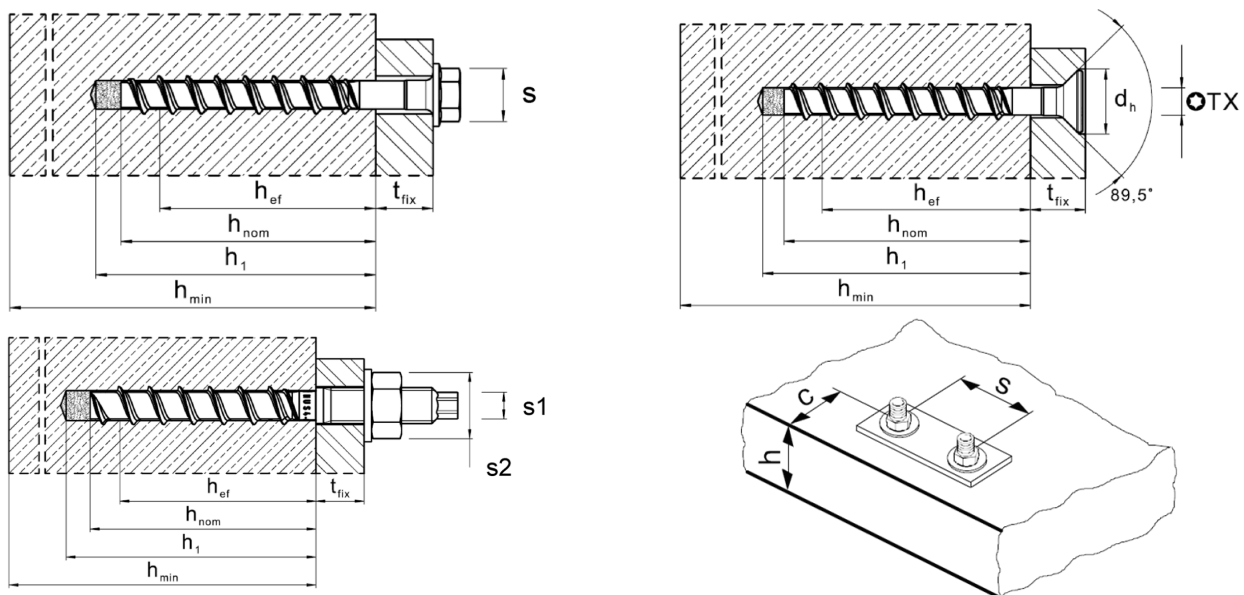
Design resistance

Anchor size		10				12	14			16
Type	HUS4	H(F)	C	A(F)	HR	H	H(F)	A(F)	HR	H(F)
Approval document		ETA			Hilti data	ETA	ETA		Hilti data	ETA
Nominal embedment depth	h_{nom} [mm]	85				100	115			130
Fire Exposure R30										
Tension	$N_{Rd,fi}$ [kN]	4,2	1,0	4,2	4,0	6,1	7,5	7,5	6,3	8,7
Shear	$V_{Rd,fi}$ [kN]	4,2	1,0	4,2	18,5	7,7	10,5	8,4	41,7	10,7
Fire Exposure R60										
Tension	$N_{Rd,fi}$ [kN]	3,2	0,9	3,3	-	5,9	5,9	7,5	-	8,2
Shear	$V_{Rd,fi}$ [kN]	3,2	0,9	3,3	-	5,9	5,9	7,5	-	8,2
Fire Exposure R90										
Tension	$N_{Rd,fi}$ [kN]	2,4	0,7	2,5	-	4,1	5,8	5,1	-	5,9
Shear	$V_{Rd,fi}$ [kN]	2,4	0,7	2,5	-	4,1	5,8	5,1	-	5,9
Fire Exposure R120										
Tension	$N_{Rd,fi}$ [kN]	1,7	0,6	2,1	2,4	3,1	4,4	4,3	5,0	4,5
Shear	$V_{Rd,fi}$ [kN]	1,7	0,6	2,1	2,4	3,1	4,4	4,3	5,4	4,5

Setting details

Anchor size		10		12	14		16
Type	HUS4	H(F), C, A(F)	HR, CR	H	H(F), A(F)	HR	H(F), A(F)
Nominal embedment depth	h_{nom} [mm]	85	90	100	115	110	130
Nominal diameter of drill bit	d_0 [mm]	10	10	12	14	14	16
Clearance hole diameter through setting	$d_{r(\min-max)}$ [mm]	13-14	14	15-16	17-18	18	20
Clearance hole diameter through setting (A-type)	$d_{r\leq}$ [mm]	14			18		
Wrench size (H, HF Size)	S [mm]	15		17	21		24
Wrench size for Hex head (A-type)	S1 [mm]	8	-	-	12	-	-
Wrench size (A-type)	S2 [mm]	19	-	-	24	-	-
Torx size (C type)	TX -	50		-	-	-	-
Countersunk head diameter	d_h [mm]	21		-	-	-	-
Depth of drill hole for							
Cleaned or uncleaned hole when drilling upwards	$h_1=$ [mm]	95	100	110	125	120	140
		$(h_{nom} + 10 \text{ mm})$					
Uncleaned hole when hammer drilling in wall and floor position	$h_1=$ [mm]	115	120	134	153	148	172
		$(h_{nom} + 10 \text{ mm}) + 2 \cdot d_0$					
Cleaned or uncleaned hole when drilling upwards (with adjustability)	$h_1=$ [mm]	105	-	120	135	-	-
		$(h_{nom} + 20 \text{ mm})$					
Uncleaned hole hammer drilling in wall and floor position (with adjustability)	$h_1=$ [mm]	125	-	144	163	-	-
		$(h_{nom} + 20 \text{ mm}) + 2 \cdot d_0$					
Minimum base material thickness	h_{min} [mm]	140	140	160	200	160	195
Minimum distances							
Spacing	s_{min} [mm]	40	50	50	60	60	90
Edge distance	c_{min} [mm]	40	50	50	60	60	65
Characteristic distances							
Spacing for splitting failure	$s_{cr,sp}$ [mm]	272	351	340	426	407	507
Edge distance for splitting failure	$c_{cr,sp}$ [mm]	136	176	170	213	204	254
Spacing for concrete cone failure	$s_{cr,N}$ [mm]	255	270	300	345	330	390
Edge distance for concrete cone failure	$c_{cr,N}$ [mm]	128	135	150	173	165	195

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



Storage and transport temperature range:

-20°C to +25°C

Installation temperature

-10°C to +40°C

Service temperature range

HUS4-MAX anchors may be applied in the temperature range given below.

Temperature range	Base material temperature	Max. long term base material temperature	Max. short term base material temperature
Temperature range I	-40 °C to +120 °C	+72 °C	+120 °C

Max short term base material temperature

Short-term elevated base material temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Max long term base material temperature

Long-term elevated base material temperatures are roughly constant over significant periods of time

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
		Hollow drill bit TE-CD
		Blow out pump