



HAC-V

Cast-in anchor channel



Technical Datasheet


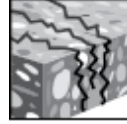
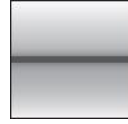
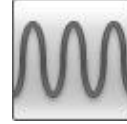




Update: Jan-23




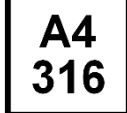


HAC-V TCRS

Cast-in anchor channels in standard sizes and lengths for everyday applications

Anchor channel version	Benefits
 	<ul style="list-style-type: none"> - Heavy-duty solution - designed for high loads and design parameters; - Approved for static, seismic (ICC-ESR 3520), fatigue and fire loads; - Customizable - options available for almost any specification; - Production with low energy consumption - anchor channels can contribute to the environmental certification of construction projects; - High-precision manufacturing

Base material	Load conditions
 Concrete (non-cracked)  Concrete (cracked)	 Static/quasi-static  Fatigue  Seismic  Fire resistance  Static 2D loading  Static 3D loading

Other information			
 European Technical Assessment	 CE conformity	 PROFIS Anchor channel design Software	 Corrosion resistance

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment ^{a)}	DIBt, Berlin	ETA-11/0006 of 24.10.2022

a) All data given in this section according to ETA-11/0006 of 24.10.2022

Static and quasi-static loading

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- No influence of bolt type and diameter
- Decisive failure mode – local flexure of channel lips
- Shear load applied perpendicular to the longitudinal axis of the channel

Effective anchorage depth

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Minimum effective anchorage depth ^{a)}	$h_{ef,min}$	[mm]	91	91	71	148	175	68	71	175
Minimum thickness of concrete member ^{a) b)}	h_{min}	[mm]	105	105	90	168	196	80	90	196

a) HAC-V 50, 60, 70 and HAC-V-T 50, 70 are produced with different length of anchors and as well available with increased embedment depth, which will lead to increased concrete cone capacity. Additional information is presented in Setting details;

b) Minimum thickness of concrete member depends on the minimum edge distance. Additional information is presented in Setting details

Characteristic resistance

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Tension	$N^{0}_{Rk,s,l}$	[kN]	31,4	31,4	41,0	55,0	71,0	19,9	41,0	71,0
Shear	$V^{0}_{Rk,s,l}$	[kN]	37,4	37,4	55,0	82,9	102,9	27,7	60,5	118,8

Design resistance

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Tension	$N^{0}_{Rd,s,l}$	[kN]	17,4	17,4	22,8	30,6	39,4	11,1	22,8	39,4
Shear	$V^{0}_{Rd,s,l}$	[kN]	20,8	20,8	30,6	46,1	57,2	15,4	33,6	66,0

Note: Values shown in table above are representing only limited amount of the possible failure modes and might be used only for comparison of different products. For detailed design of fixing point please use Hilti PROFIS Anchor Channel software, consult ETA-11/0006 or contact Hilti Engineering team.



Characteristic resistance for bolts

Channel bolt diameter				M10	M12	M16	M20
Channel bolt type				HBC-B			
Tension	HBC-B 4.6	$N_{Rk,s}$	[kN]	23,2	33,7	- a)	- a)
	HBC-B A4-50			29,0	42,2	- a)	- a)
Shear	HBC-B 4.6	$V_{Rk,s}$	[kN]	13,9	20,2	- a)	- a)
	HBC-B A4-50			17,4	25,3	- a)	- a)
Channel bolt type				HBC-C / HBC-C-E			
Tension	HBC-C / HBC-C-E 4.6	$N_{Rk,s}$	[kN]	23,2	33,7	62,8	98,0
	HBC-C / HBC-C-E 8.8			46,4	67,4	125,6	174,3
	HBC-C / HBC-C-E A4-50			29,0	42,2	78,5	122,5
Shear	HBC-C / HBC-C-E 4.6	$V_{Rk,s}$	[kN]	13,9	20,2	37,7	58,8
	HBC-C / HBC-C-E 8.8			23,2	33,7	62,8	101,7
	HBC-C / HBC-C-E A4-50			17,4	25,3	47,1	73,5
Channel bolt type				HBC-C-N			
Tension	HBC-C-N 8.8	$N_{Rk,s}$	[kN]	- a)	67,4	125,6	174,3
Shear	HBC-C-N 8.8	$V_{Rk,s}$	[kN]	- a)	33,7	62,8	101,7
Channel bolt type				HBC-T			
Tension	HBC-T 8.8	$N_{Rk,s}$	[kN]	- a)	67,4	125,6	174,3
Shear	HBC-T 8.8	$V_{Rk,s}$	[kN]	- a)	33,7	62,8	101,7

a) Product is not available in standard Hilti portfolio. For additional information please contact Hilti Engineering team.

Design resistance for bolts

Channel bolt diameter				M10	M12	M16	M20
Channel bolt type				HBC-B			
Tension	HBC-B 4.6	$N_{Rd,s}$	[kN]	11,6	16,9	- a)	- a)
	HBC-B A4-50			10,1	14,8	- a)	- a)
Shear	HBC-B 4.6	$V_{Rd,s}$	[kN]	8,3	12,1	- a)	- a)
	HBC-B A4-50			7,3	10,6	- a)	- a)
Channel bolt type				HBC-C / HBC-C-E			
Tension	HBC-C / HBC-C-E 4.6	$N_{Rd,s}$	[kN]	11,6	16,9	31,4	49,0
	HBC-C / HBC-C-E 8.8			30,9	44,9	83,7	116,2
	HBC-C / HBC-C-E A4-50			10,1	14,8	27,4	42,8
Shear	HBC-C / HBC-C-E 4.6	$V_{Rd,s}$	[kN]	8,3	12,1	22,6	35,2
	HBC-C / HBC-C-E 8.8			18,6	27,0	50,2	67,8
	HBC-C / HBC-C-E A4-50			7,3	10,6	19,8	30,9
Channel bolt type				HBC-C-N			
Tension	HBC-C-N 8.8	$N_{Rd,s}$	[kN]	- a)	44,9	83,7	116,2
Shear	HBC-C-N 8.8	$V_{Rd,s}$	[kN]	- a)	27,0	50,2	67,8
Channel bolt type				HBC-T			
Tension	HBC-T 8.8	$N_{Rd,s}$	[kN]	- a)	44,9	83,7	116,2
Shear	HBC-T 8.8	$V_{Rd,s}$	[kN]	- a)	27,0	50,2	67,8

a) Product is not available in standard Hilti portfolio. For additional information please contact Hilti Engineering team.

Note: combined effects of loads (tension and shear) must be verified additionally. For detailed design of fixing point please use Hilti PROFIS Anchor Channel software, consult ETA-11/0006 or contact Hilti Engineering team.

Seismic loading

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- No influence of bolt type and diameter
- Decisive failure mode – local flexure of channel lips
- Shear load applied perpendicular to the longitudinal axis of the channel

Effective anchorage depth

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Minimum effective anchorage depth ^{a)}	$h_{ef,min}$	[mm]	91	91	71	148	175	68	71	175
Minimum thickness of concrete member ^{a) b)}	h_{min}	[mm]	105	105	90	168	196	80	90	196

a) HAC-V 50, 60, 70 and HAC-V-T 50, 70 are produced with different length of anchors and as well available with increased embedment depth, which will lead to increased concrete cone capacity. Additional information is presented in Setting details;

b) Minimum thickness of concrete member depends on the minimum edge distance. Additional information is presented in Setting details

Characteristic resistance

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Seismic performance category C1										
Tension	$N_{Rk,s,l,eq}^0$	[kN]	31,4	31,4	40,0	40,0	71,0	19,9	41,0	71,0
Shear	$V_{Rk,s,l,eq}^0$	[kN]	37,4	37,4	55,0	55,0	102,9	27,7	60,5	118,8

Design resistance

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Seismic performance category C1										
Tension	$N_{Rd,s,l,eq}^0$	[kN]	17,4	17,4	22,8	30,6	39,4	11,1	22,8	39,4
Shear	$V_{Rd,s,l,eq}^0$	[kN]	20,8	20,8	30,6	46,1	57,2	15,4	33,6	66,0

Note: Values shown in table above are representing only limited amount of the possible failure modes and might be used only for comparison of different products. For detailed design of fixing point please use Hilti PROFIS Anchor Channel software, consult ETA-11/0006 or contact Hilti Engineering team.

Fire resistance

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- No influence of bolt type and diameter
- Decisive failure mode – steel failure
(one of the following: anchor, connection between anchor and channel, local flexure of channel lip)
- Shear load applied perpendicular to the longitudinal axis of the channel
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi}=1,0$ (in absence of other national regulations)

Effective anchorage depth

Anchor channel type			HAC-V					HAC-V-T		
Anchor channel size			35	40	50	60	70	30	50	70
Minimum effective anchorage depth ^{a)}	$h_{ef,min}$	[mm]	91	91	71	148	175	68	71	175
Minimum thickness of concrete member ^{a) b)}	h_{min}	[mm]	105	105	90	168	196	80	90	196

- a) HAC-V 50, 60, 70 and HAC-V-T 50, 70 are produced with different length of anchors and as well available with increased embedment depth, which will lead to increased concrete cone capacity. Additional information is presented in Setting details;
- b) Minimum thickness of concrete member depends on the minimum edge distance. Additional information is presented in Setting details

Characteristic resistance

Anchor channel type			HAC-V					HAC-V-T (serrated)			
Anchor channel size			35	40	50	60	70	30	50	70	
Fire exposure R60											
Tension = Shear	Bolt M10	$N_{Rk,s,fi}$ = $V_{Rk,s,fi}$	[kN]	1,7	1,7	1,7	1,7	1,7	1,3	-	-
	Bolt M12			2,4	2,4	2,4	2,4	2,4	1,8	-	-
	Bolt M16			2,4	2,4	4,0	4,0	4,0	-	-	-
	Bolt M20			2,4	2,4	4,0	4,7	4,7	-	-	-
Fire exposure R120											
Tension = Shear	Bolt M10	$N_{Rk,s,fi}$ = $V_{Rk,s,fi}$	[kN]	1,0	1,0	1,0	1,0	1,0	0,7	-	-
	Bolt M12			1,5	1,5	1,5	1,5	1,5	0,8	-	-
	Bolt M16			1,5	1,5	1,6	1,6	1,6	-	-	-
	Bolt M20			1,5	1,5	1,6	2,1	2,1	-	-	-

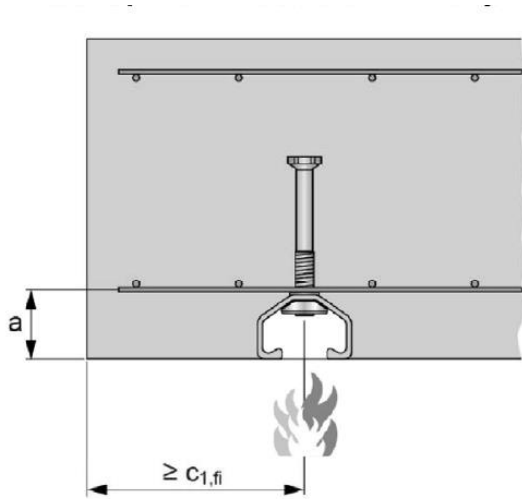
Characteristic resistance

Anchor channel type			HAC-V					HAC-V-T (serrated)			
Anchor channel size			35	40	50	60	70	30	50	70	
Fire exposure R60											
Tension = Shear	Bolt M10	$N_{Rd,s,fi}$ = $V_{Rd,s,fi}$	[kN]	1,7	1,7	1,7	1,7	1,7	1,3	-	-
	Bolt M12			2,4	2,4	2,4	2,4	2,4	1,8	-	-
	Bolt M16			2,4	2,4	4,0	4,0	4,0	-	-	-
	Bolt M20			2,4	2,4	4,0	4,7	4,7	-	-	-
Fire exposure R120											
Tension = Shear	Bolt M10	$N_{Rd,s,fi}$ = $V_{Rd,s,fi}$	[kN]	1,0	1,0	1,0	1,0	1,0	0,7	-	-
	Bolt M12			1,5	1,5	1,5	1,5	1,5	0,8	-	-
	Bolt M16			1,5	1,5	1,6	1,6	1,6	-	-	-
	Bolt M20			1,5	1,5	1,6	2,1	2,1	-	-	-

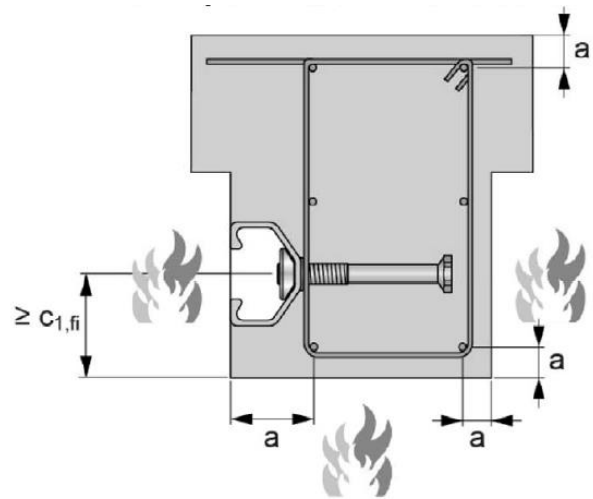
Note: Values shown in table above are representing only limited amount of the possible failure modes and might be used only for comparison of different products. For detailed design of fixing point please use Hilti PROFIS Anchor Channel software, consult ETA-11/0006 or contact Hilti Engineering team.

Minimum axis distance of reinforcement

Anchorage channel type		HAC-V					HAC-V-T (serrated)		
		35	40	50	60	70	30	50	70
Fire exposure R60									
Minimum axis distance	a [mm]	35	35	50	50	50	35	-	-
Fire exposure R120									
Minimum axis distance	a [mm]	60	60	60	65	70	60	-	-



Fire exposure from one side only



Fire exposure from more than one side



Fatigue resistance

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- No influence of bolt type and diameter
- Shear load applied perpendicular to the longitudinal axis of the channel

Combination of anchor channels and channel bolts under fatigue tension load

Anchor channel	Channel bolt type	Diameter	Steel grade	Corrosion protection
HAC-V-T 30	HBC-B	M10	4.6	G ^{a)} F (HDG) ^{b)}
		M12		
HAC-V 35 HAC-V 40	HBC-C	M12	4.6	
		M16		
M20				
M16		8.8		
M20				
M16				
M20				
HAC-V 50			M16	
HAC-V 60			M20	
HAC-V 70			M20	

a) Electroplated

b) Hot-dip galvanized

Characteristic resistance

Anchor channel type	HAC-V (plain)					HAC-V-T (serrated)		
	35	40	50	60	70	30		
Fire exposure R60								
Characteristic resistance under fatigue tension load after n load cycles without static preload	$\leq 10^6$	1,57	1,57	2,66	3,54	6,44	1,76	
	$\leq 3 \cdot 10^6$							
	$\leq 10^7$	1,5	1,5	2,6	3,5	6,4	1,6	
	$\leq 3 \cdot 10^7$							
	$\leq 6 \cdot 10^7$							
$> 6 \cdot 10^7$								
Reduction factor after n load cycles without static preload for: $\Delta N_{Rk,p,0,n} = \eta_{c,fat} \cdot N_{Rk,p}$ $\Delta N_{Rk,c,0,n} = \eta_{c,fat} \cdot N_{Rk,c}$	$\leq 10^6$	0,600						
	$\leq 3 \cdot 10^6$	0,571						
	$\leq 10^7$	0,542						
	$\leq 3 \cdot 10^7$	0,516						
	$\leq 6 \cdot 10^7$	0,500						
$> 6 \cdot 10^7$								
Characteristic fatigue limit resistance without static	$(n \rightarrow \infty)$	$\Delta N_{Rk,s,0,\infty}$ [kN]	1,5	1,5	2,6	3,5	6,4	1,6
Reduction factor for fatigue limit resistance without static preload ($N_{Ed} = 0$) for: $\Delta N_{Rk,p,0,n} = \eta_{c,fat} \cdot N_{Rk,p}$ $\Delta N_{Rk,c,0,n} = \eta_{c,fat} \cdot N_{Rk,c}$	$(n \rightarrow \infty)$	$\eta_{c,fat}$ [-]	0,5					

Note: Values shown in table above are representing only limited amount of the possible failure modes and might be used only for comparison of different products. For detailed design of fixing point please use Hilti PROFIS Anchor Channel software, consult ETA-11/0006 or contact Hilti Engineering team.

Materials

Material quality for anchor channels

Part	Material
Channel profile HAC-V F	Carbon steel according to EN 10025:2004 Hot-dip galvanized $\geq 50 \mu\text{m}$ ^{a)} or $\geq 70 \mu\text{m}$ ^{b)} according to EN ISO 1461:2009
Rivet HAC-V F	Carbon steel Hot-dip galvanized $\geq 45 \mu\text{m}$ according to EN ISO 1461:2009
Anchor HAC-V F	Carbon steel Hot-dip galvanized $\geq 45 \mu\text{m}$ according to EN ISO 1461:2009

a) For HAC-V-T 30F, HAC-V 35F, HAC-V 40 F, HAC-V-50 F, HAC-V-T 50 F;

b) For HAC-V 60 F, HAC-V-70 F, HAC-V-T-70 F

Material quality for channel bolts

Part	Material	
Channel bolts	HBC	Carbon steel grade 4.6 and 8.8 according to EN ISO 898-1:2013 Electroplated $\geq 8 \mu\text{m}$ according to DIN EN ISO 4042: 1999
	HBC F	Carbon steel grade 4.6 and 8.8 according to EN ISO 898-1:2013 Hot-dip galvanized $\geq 45 \mu\text{m}$ according to EN ISO 1461: 2009
	HBC A4	Stainless steel grade 50 according to EN ISO 3506-1: 1.4401 / 1.4404 / 1.4571 / 1.4362 / 1.4578 / 1.4439
Plain washer	Galvanized	Carbon steel Hardness class A $\geq 200 \text{ HV}$ Electroplated $\geq 8 \mu\text{m}$ according to DIN EN ISO 4042: 1999
	F	Carbon steel Hardness class A $\geq 200 \text{ HV}$ Hot-dip galvanized $\geq 45 \mu\text{m}$ according to EN ISO 1461: 2009
	A4	Stainless steel Hardness class A $\geq 200 \text{ HV}$ 1.4401 / 1.4404 / 1.4571 / 1.4362 / 1.4578 / 1.4439
Hexagonal nut ^{a)}	Galvanized	Carbon steel Property class 8 according to EN ISO 898-2: 2012 Electroplated $\geq 8 \mu\text{m}$
	F	Carbon steel Property class 8 according to EN ISO 898-2: 2012 Hot-dip galvanized $\geq 45 \mu\text{m}$ according to EN ISO 1461: 2009
	A4	Stainless steel Property class 70 according to EN ISO 3506-2: 2009 1.4401 / 1.4404 / 1.4571 / 1.4362 / 1.4578 / 1.4439

a) Hexagonal nuts according to DIN 934: 1987-10 for channel bolts made from carbon steel (4.6) and stainless steel

Mechanical properties

Part	HAC-V / HBC	
Nominal tensile strength	Carbon steel 4.6	400
	Carbon steel 8.8	f_{uk} [N/mm ²] 800 / 830 ^{a)}
	Stainless steel A4-50	500
Yield strength	Carbon steel 4.6	240
	Carbon steel 8.8	f_{yk} [N/mm ²] 640 / 660 ^{a)}
	Stainless steel A4-50	210

a) Material properties according to EN ISO 898-1

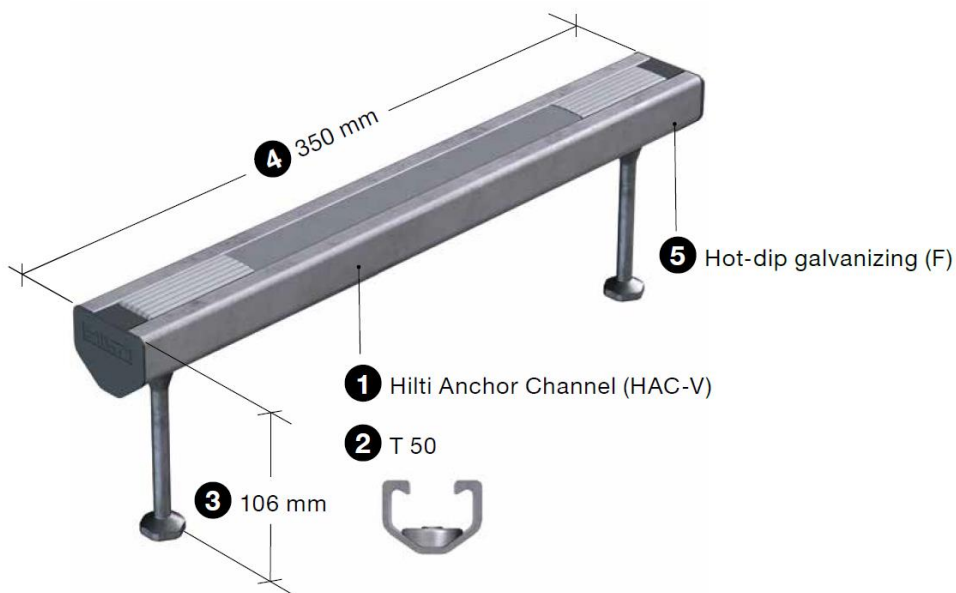
Corrosion class

Class / Mark	Material / Coating type
G	Carbon steel, electroplated
F (HDG)	Carbon steel, hot-dip galvanized
R (A4)	Stainless steel

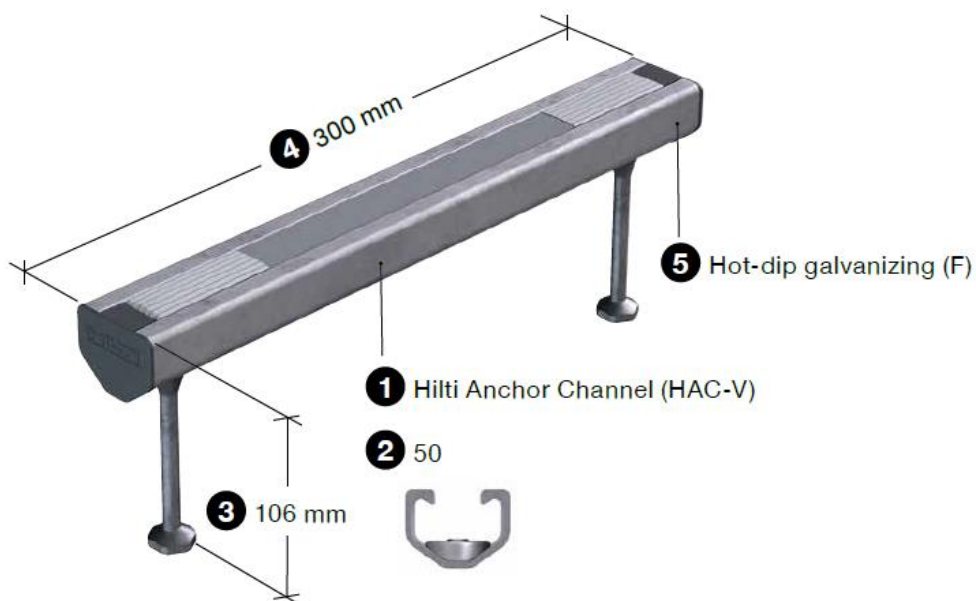
Nomenclature of HAC-V anchor channels (example)

Hilti anchor channel type	Profile type and size	Effective embedment depth	Channel length	Finish or material
①	②	③	④	⑤
HAC-V	T 50	106	350	F (HDG)
HAC-V	50	106	300	F (HDG)

HAC-V-T 50 106/350 F



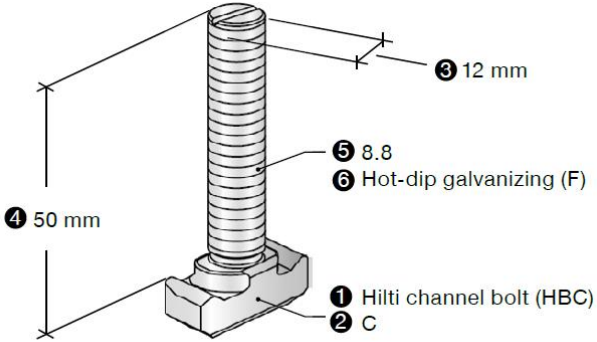
HAC-V 50 106/300 F



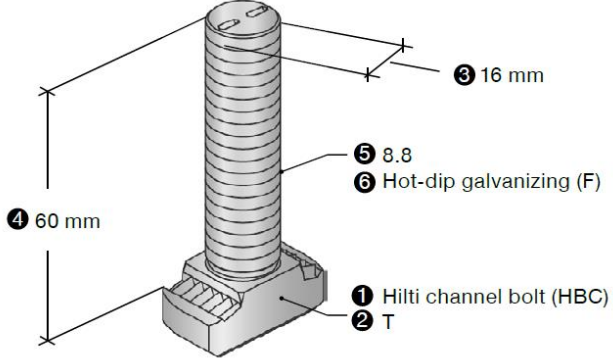
Nomenclature of HBC channel bolts (example)

Hilti channel bolt	Bolt type	Diameter	Bolt length	Steel grade	Finish or material
①	②	③	④	⑤	⑥
HBC	C	M12	50	8.8	F (HDG)
HBC	T	M16	60	8.8	F (HDG)

HBC-C M12x50 8.8 F



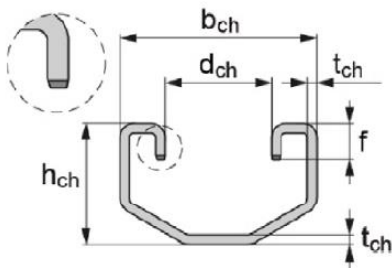
HBC-T M16x60 8.8 F



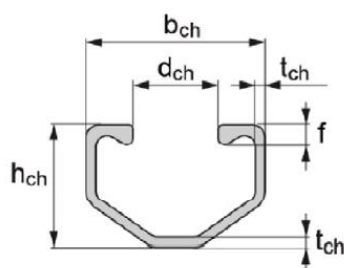
Dimensions of anchor channels

Dimensions of channel profile

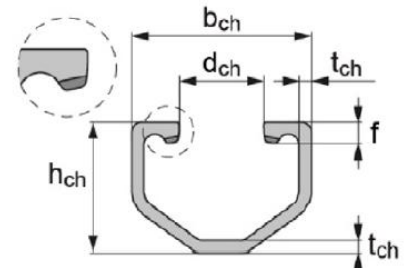
Anchor channel type			HAC-V					HAC-V-T (serrated)		
Anchor channel size			35	40	50	60	70	30	50	70
Channel width	b_{ch}	[mm]	40,9	40,9	41,9	43,4	45,4	41,3	41,9	45,4
Channel height	h_{ch}	[mm]	28,0	28,0	31,0	35,5	40,0	25,6	31,0	40,0
Nominal thickness	t_{ch}	[mm]	2,25	2,25	2,75	3,50	4,50	2,00	2,75	4,50
Width of channel opening	d_{ch}	[mm]	19,5	19,5	19,5	19,5	19,5	22,3	19,5	19,5
Height of channel lips	f	[mm]	4,5	4,5	5,3	6,3	7,4	7,5	5,3	7,1
Moment of inertia	I_y	[mm ⁴]	21463	21463	33125	57930	95457	15349	33125	92192



HAC-V-T 30



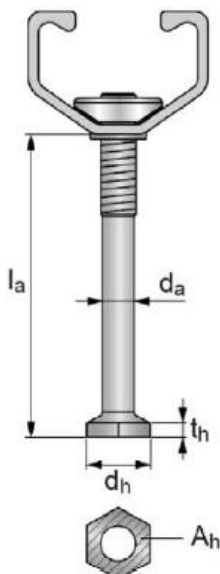
HAC-V 35, HAC-V 40, HAC-V 50,
HAC-V 60, HAC-V 70



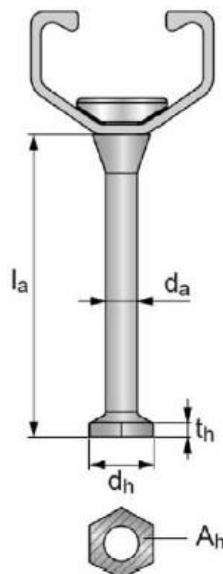
HAC-V-T 50, HAC-V-T 70

Dimensions of anchors

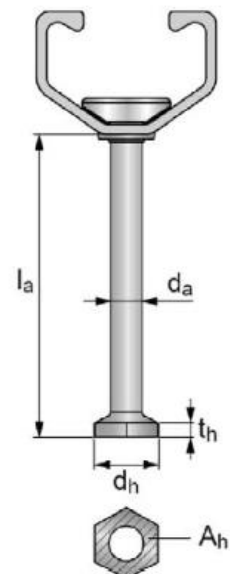
Anchor channel type			HAC-V					HAC-V-T (serrated)		
Anchor channel size			35	40	50	60	70	30	50	70
Minimum anchor length	min. l_a	[mm]	66,0	66,0	78,5	117,0	140,0	44,4	78,5	14,0
Diameter of anchor	d_a	[mm]	7,2	7,2	9,0	9,0	10,9	5,4	9,0	10,9
Diameter of round anchor head	d_h	[mm]	17,5	17,5	19,5	19,5	23,0	11,5	19,5	23,0
Thickness of round anchor head	t_h	[mm]	3,0	3,0	3,5	4,5	5,0	2,0	3,5	5,0
Area of round anchor head	A_h	[mm ²]	209,0	209,0	258,0	258,0	356,0	89,0	258,0	356,0



HAC with bolted anchor



HAC-V with bolted anchor



Welded anchor

Dimensions of channel bolts

Dimensions of channel bolts

Channel bolt type			HBC-B	
Appropriate anchor channel			HAC-V-T 30	
Nominal diameter	d	[mm]	10,0	12,0
Width (1)	b ₁	[mm]	19,0	
Width (2)	b ₂	[mm]	34,0	
Thickness	k	[mm]	9,2	

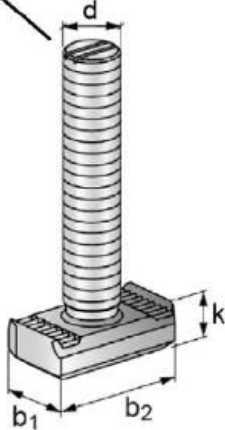
Dimensions of channel bolts

Channel bolt type			HBC-C-E	
Appropriate anchor channel			HAC-V 35 ; HAC-V 40 ; HAC-V 50	
Nominal diameter	d	[mm]	12,0	16,0
Width (1)	b ₁	[mm]	14,0	17,0
Width (2)	b ₂	[mm]	33,0	
Thickness	k	[mm]	10,4	13,4

Dimensions of channel bolts

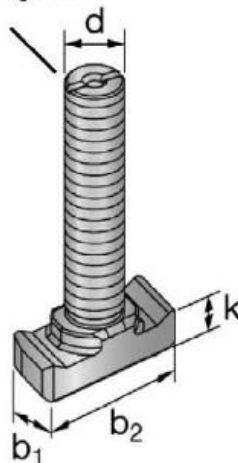
Channel bolt type			HBC-C			
Appropriate anchor channel			HAC-V 35 ; HAC-V 40 ; HAC-V 50 ; HAC-V 60 ; HAC-V 70			
Nominal diameter	d	[mm]	10,0	12,0	16,0	20,0
Width (1)	b ₁	[mm]	14,0		18,5	
Width (2)	b ₂	[mm]	33,0			
Thickness	k	[mm]	10,4		11,4	13,9

Single groove
for marking the
position



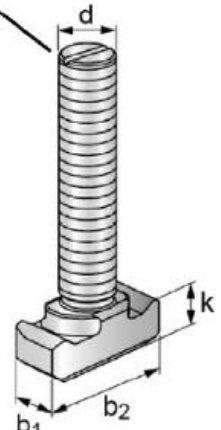
HBC-B

Single groove
for marking the
position



HBC-C-E

Single groove
for marking the
position



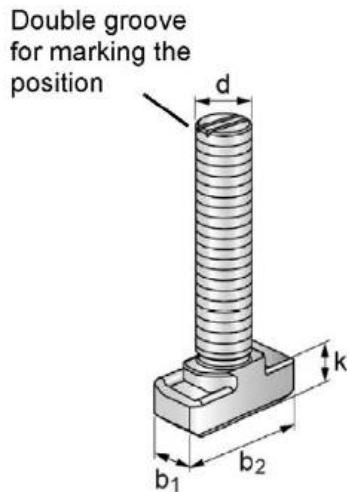
HBC-C

Dimensions of channel bolts

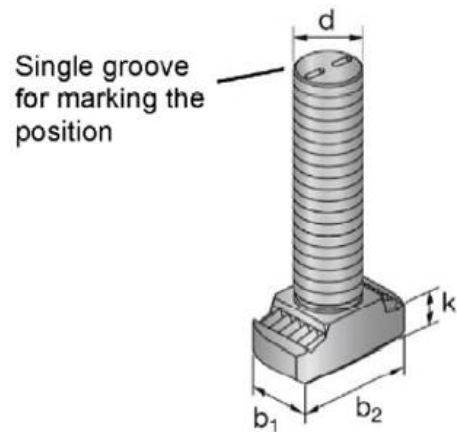
Channel bolt type			HBC-C-N		
Appropriate anchor channel			HAC-V 35 ; HAC-V 40 ; HAC-V 50 ; HAC-V 60 ; HAC-V 70		
Nominal diameter	d	[mm]	12,0	16,0	20,0
Width (1)	b ₁	[mm]	18,5		
Width (2)	b ₂	[mm]	33,0		
Thickness	k	[mm]	11,4		13,9

Dimensions of channel bolts

Channel bolt type			HBC-T		
Appropriate anchor channel			HAC-T 50 ; HAC-T 70 ; HAC-V-T 50 ; HAC-V-T 70		
Nominal diameter	d	[mm]	12,0	16,0	20,0
Width (1)	b ₁	[mm]	18,5		
Width (2)	b ₂	[mm]	35,4		
Thickness	k	[mm]	12,0		



HBC-C-N



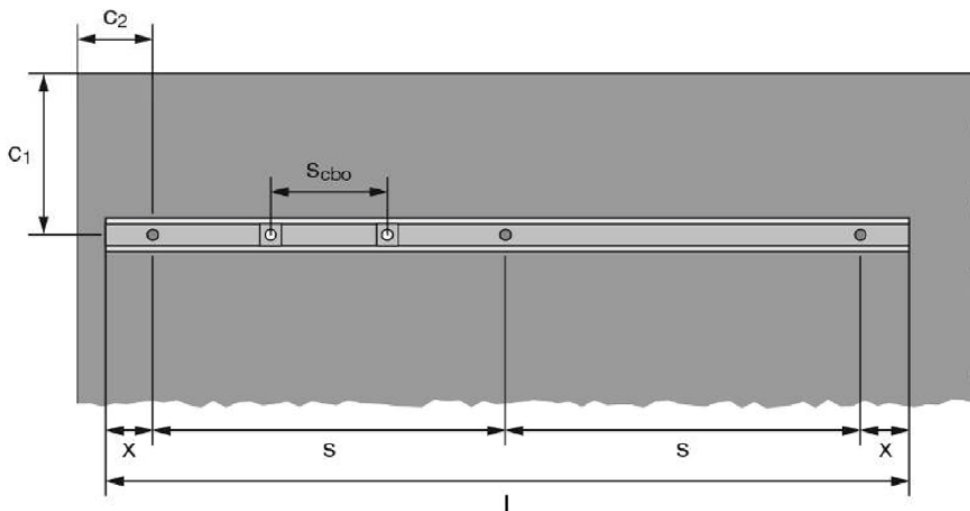
HBC-T

Setting information

Setting details for anchor channels

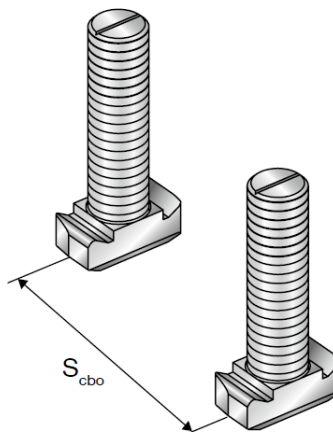
Anchor channel type		HAC-V										HAC-V-T (serrated)					
Anchor channel size		35		40		50		60		70		30		50		70	
Minimum effective embedment depth	$h_{ef,min}$ [mm]	91	91	110	71	106	148	183	175	295	68	71	106	175	295		
Minimum spacing	s_{min} [mm]	100	100	100	150	100	100	100	100	100	50	100	150	100	100		
Maximum spacing	s_{max} [mm]	250	250	250		250		250		250		250		250		250	
End spacing	x [mm]	25	25	25		25		25		25		25		25		25	
Minimum channel length	l_{min} [mm]	150	150	150	200	150	150	150	150	150	100	150	200	150	150		
Minimum edge distance	c_{min} [mm]	50	50	50	100	50	75	63,5	75	63,5	50	50	100	50	75	63,5	
Minimum thickness of concrete member	h_{min} [mm]	105	105	125	125	90	125	168	400	196	400	80	125	90	125	196	400
		$h_{ef} + t_h + c_{nom}^a)$															

a) c_{min} according to EN 1992-1-1:2004 + AC2010



Setting details for channel bolts

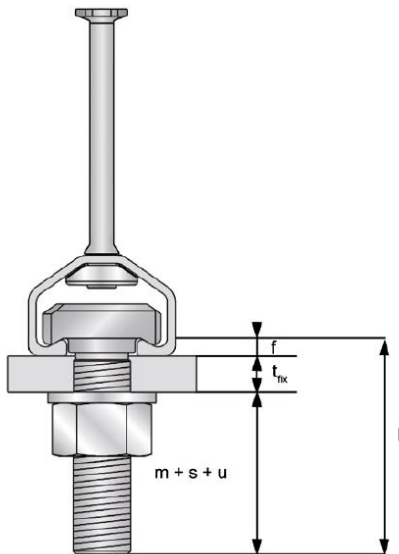
Anchor channel size		M10	M12	M16	M20
Minimum spacing between channel bolts	$s_{cbo,min}$ [mm]	50	60	80	100





Determination of the minimum required T-bolt length

Anchor channel type			HAC-V					HAC-V-T (serrated)		
Anchor channel size			35	40	50	60	70	30	50	70
Channel bolt type			HBC-C(-E)			HBC-C		HBC-B	HBC-T	
Height of channel lip	f	[mm]	4,5	4,5	5,3	6,3	7,4	7,5	5,2	7,1
Thickness of nut, washer and channel bolt projection	Bolt M10	m	13,9	13,9	13,9	13,9	13,9	13,9	-	-
	Bolt M12	+	17,3	17,3	17,3	17,3	17,3	17,3	17,3	17,3
	Bolt M16	+	21,8	21,8	21,8	21,8	21,8	-	21,8	21,8
	Bolt M20	u	-	-	27,0	27,0	27,0	-	27,0	27,0



Dimensions

l	[mm]	nominal length of channel bolt
t _{fix}	[mm]	fastenable thickness (thickness of the attached part)
f	[mm]	height of channel lip
m	[mm]	thickness of the nut (ISO 4032)
s	[mm]	thickness of the washer
u	[mm]	channel bolt projection

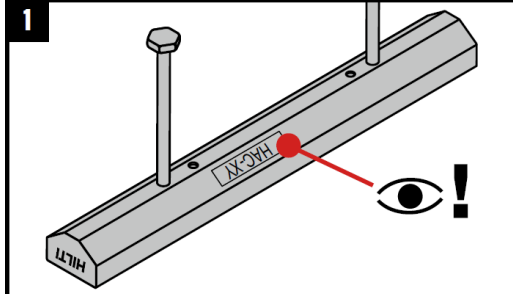
Required T-Bolt length : $l = t_{fix} + f + (m + s + u)$

Setting instructions

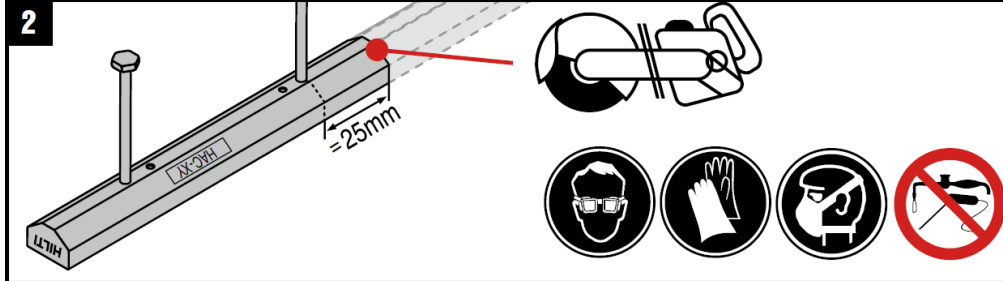
*For detailed information on installation see instruction for use given with the package of the product

Setting instruction for anchor channel

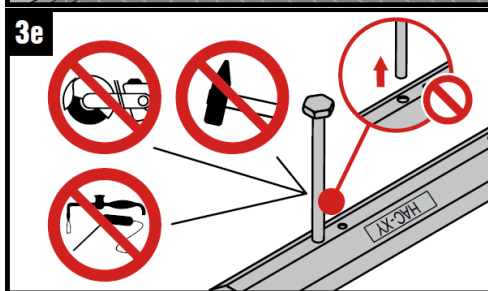
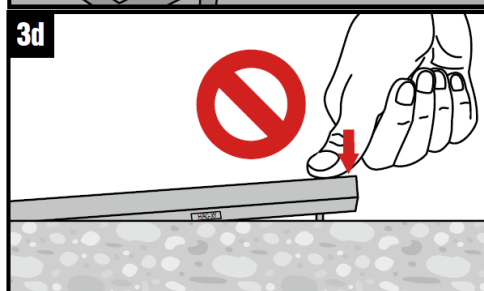
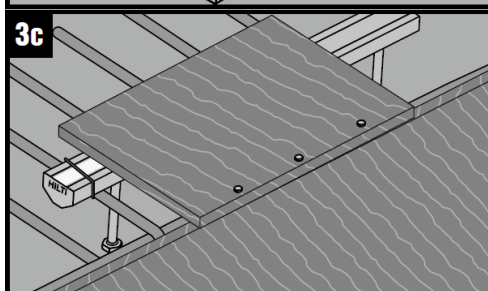
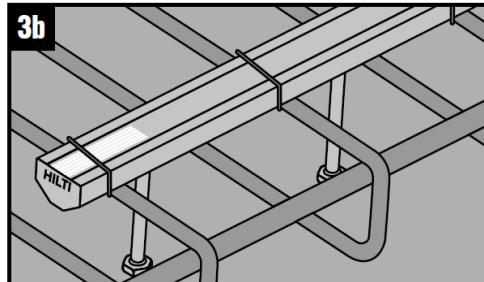
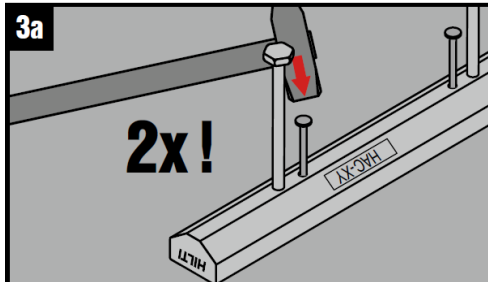
1. Correct selection of anchor channel



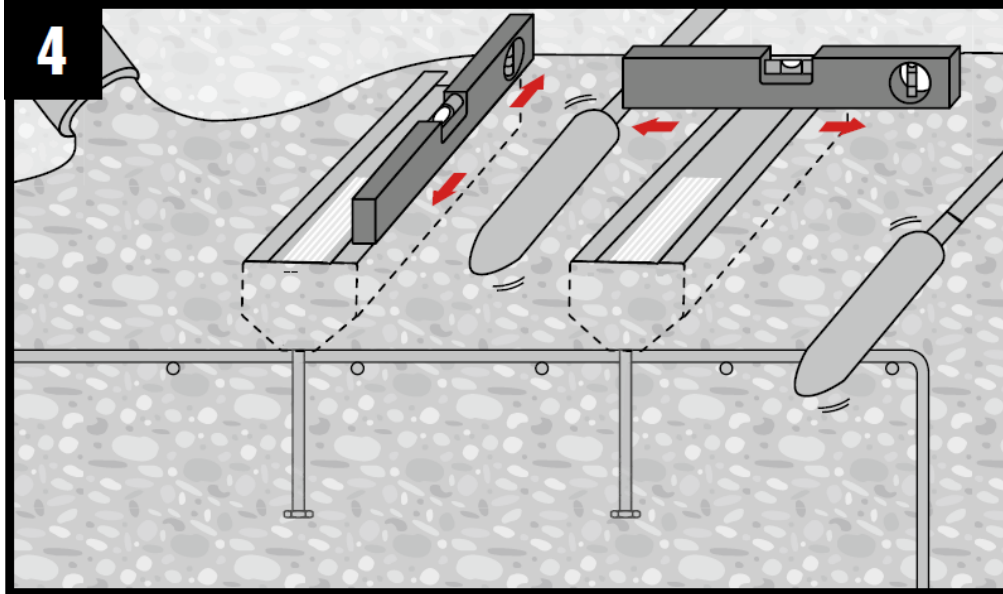
2. Cut the anchor channel (if necessary) with required end spacing



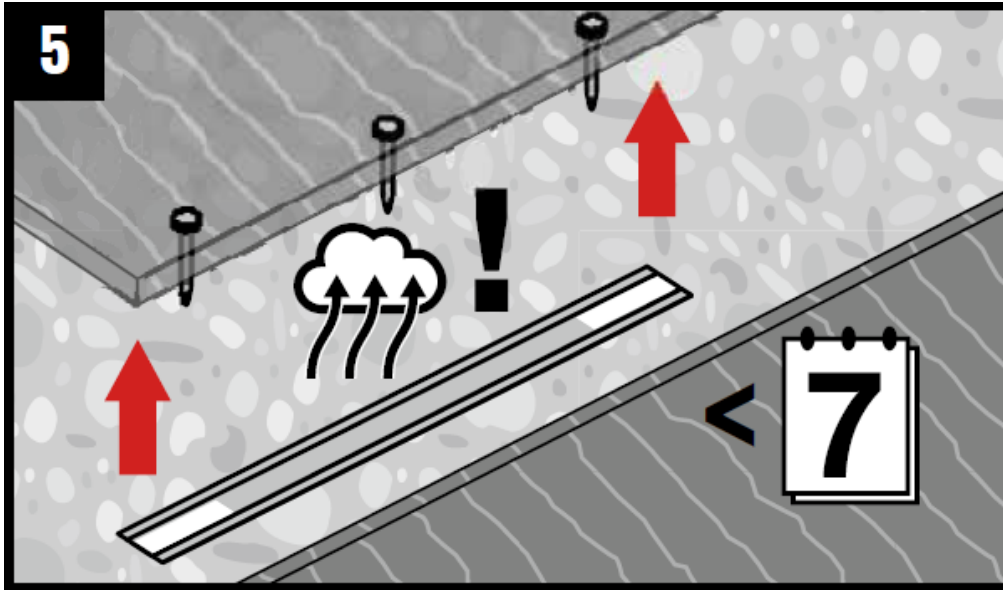
3. Position of anchor channel flush with the surface



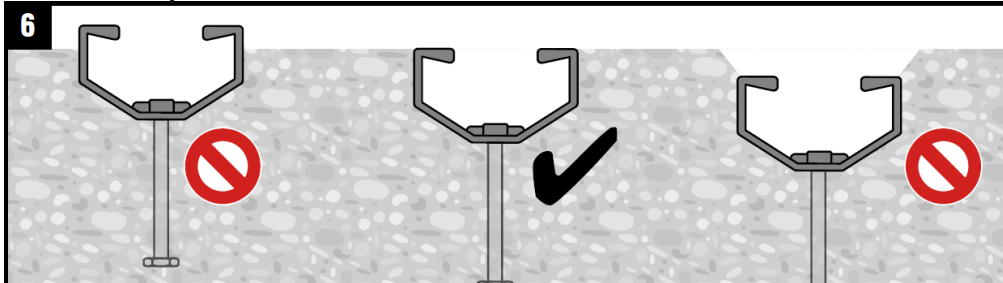
4. Pouring the concrete



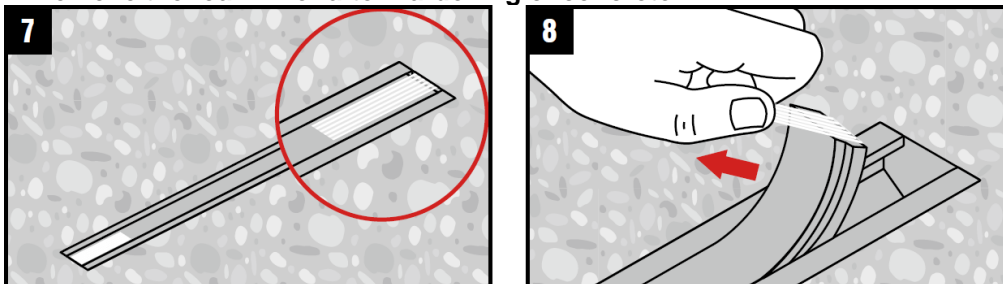
5. Remove the wormwork



6. Check the position of anchor channel



7. Remove the foam filler after hardening of concrete



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

Setting instruction for channel bolts

1. Correct selection of channel bolt

HBC-C 4.6 HBC-C 8.8 HBC-C A4-50 HBC-C-E 8.8	HAC(-V)-35 to HAC(-V)-70 HAC(-V)-50 to HAC(-V)-70 XT/XTS HAC(-V)-40 to HAC(-V)-70 CRFoS HAC(-V)-40, -50 EDGE (Lite)

2-5. Installation of the channel bolt

6. Installation of the fixture

7. Apply the installation torque T_{inst} a)

M10 M12 M16 M20	AT-System SI-AT-A22 + SIW 6AT-A22**
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a) Required T_{inst} value and compatibility with SI-AT tool must be checked additionally