



HRD redundant PLASTIC ANCHOR

Technical Datasheet






Update: Jan-23



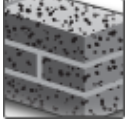

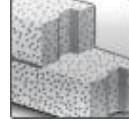





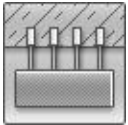





HRD Plastic frame anchors

Everyday standard plastic frame anchor for redundant fastening applications

Anchor version	Benefits
 HRD-C HRD-CR (d8)	<ul style="list-style-type: none"> - Innovative screw design for better hold - Suitable on practically all base materials - Flexible embedment depth (approved at 50mm and 70mm) - Suitable for fastening thicknesses up to 260mm - Available in 4 different materials for optimum suitability in all corrosive environments - Pre-assembled for optimum handling and fastening quality
 HRD-C HRD-CR HRD-CR2 (d10)	
 HRD-H HRD-HR HRD-HR2 HR-HF (d10)	
 HRD-K HRD-KR HRD-KR2 (d10)	
 HRD-P HRD-PR HRD-PR2 (d10)	

Base material							
							
Concrete (non-cracked)	Concrete (cracked)	Solid brick	Hollow brick	Autoclaved aerated concrete	Drywall	Prestressed hollow core slabs	Window frame

Load conditions	Other information
 Redundant fastening	 Fire resistance
	 European Technical Approval
	 CE conformity

Approvals / certificates		
Description	Authority / Laboratory	No./ date of issue
European technical approval ^{a)}	DIBt, Berlin	ETA-07/0219 / 2018-06-28
Fire test report	MFPA, Leipzig	GS 3.2/10-157-1/ 2010-09-02
Window frame report ^{b)}	Ift, Rosenheim	Ift report 105 33035 / 2007-07-09

a) All data given in this section according ETA-07/0219, issue 2017-09-19. The anchor is to be used only for redundant fastening for non-structural applications.
 b) Only available for HRD 8

Basic loading data

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Base material as specified in the table
- Minimum base material thickness
- Steel failure
- Shear without lever arm
- Anchor in redundant fastening

The additional Hilti recommended data, not part of the approval

Characteristic resistance for concrete

Anchor size			HRD 8	HRD 10		
		h_{nom} [mm]	50	50	70	90
Concrete C12/15						
Tension	HRD	N_{Rk} [kN]	2,0	3,0	6,0	-
	HRD-F		- a)	3,0	6,0	-
	HRD-R2 / HRD-R		2,0	3,0	6,0	-
Shear	HRD	V_{Rk} [kN]	6,9	10,6	10,6	-
	HRD-F		- a)	10,1	10,1	-
	HRD-R2 / HRD-R		6,6	11,1	11,1	-
Concrete C16/20 – C 50/60						
Tension	HRD	N_{Rk} [kN]	3,0	4,5	8,5	-
	HRD-F		- a)	4,5	8,5	-
	HRD-R2 / HRD-R		3,0	4,5	8,5	-
Shear	HRD	V_{Rk} [kN]	6,9	10,6	10,6	-
	HRD-F		- a)	10,1	10,1	-
	HRD-R2 / HRD-R		6,6	11,1	11,1	-
Thin concrete skins ^{b)} C12/15						
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	2,5	-	-
Thin concrete skins ^{b)} ≥C16/20						
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	3,5	-	-

a) HRD-F 8 is not available in standard portfolio

b) Weather resistant skins of external wall panels) with $h=40$ mm to 100 mm



Design resistance for concrete

Anchor size		h_{nom} [mm]	HRD 8		HRD 10	
			50	50	70	90
Concrete C12/15						
Tension	HRD	N_{Rk} [kN]	1,1	1,7	3,3	-
	HRD-F		- a)	1,7	3,3	-
	HRD-R2 / HRD-R		1,1	1,7	3,3	-
Shear	HRD	V_{Rk} [kN]	5,5	8,5	8,5	-
	HRD-F		- a)	8,1	8,1	-
	HRD-R2 / HRD-R		5,2	8,5	8,5	-
Concrete C16/20 – C 50/60						
Tension	HRD	N_{Rk} [kN]	1,7	2,5	4,7	-
	HRD-F		- a)	2,5	4,7	-
	HRD-R2 / HRD-R		1,7	2,5	4,7	-
Shear	HRD	V_{Rk} [kN]	5,5	8,5	8,5	-
	HRD-F		- a)	8,1	8,1	-
	HRD-R2 / HRD-R		5,2	8,5	8,5	-
Thin concrete skins ^{b)} C12/15						
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	1,4	-	-
Thin concrete skins ^{b)} ≥C16/20						
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	2,5	-	-

a) HRD-F 8 is not available in standard portfolio

b) Weather resistant skins of external wall panels) with $h=40$ mm to 100 mm

Recommended ^{c)} loads for concrete

Anchor size		h_{nom} [mm]	HRD 8		HRD 10		
			50	50	70	90	
Concrete C12/15							
Tension	HRD	N_{Rd} [kN]	0,8	1,2	2,4	-	
	HRD-F		- a)	1,2	2,4	-	
	HRD-R2 / HRD-R		0,8	1,2	2,4	-	
Shear	HRD	V_{Rd} [kN]	3,9	6,1	6,1	-	
	HRD-F		- a)	5,8	5,8	-	
	HRD-R2 / HRD-R		3,7	6,1	6,1	-	
Concrete C16/20 – C 50/60							
Tension	HRD	N_{Rd} [kN]	1,2	1,8	3,4	-	
	HRD-F		- a)	1,8	3,4	-	
	HRD-R2 / HRD-R		1,2	1,8	3,4	-	
Shear	HRD	V_{Rd} [kN]		6,1	6,1	-	
	HRD-F		- a)		5,8	5,8	-
	HRD-R2 / HRD-R			6,1	6,1	-	
Thin concrete skins ^{b)} C12/15							
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	1,0	-	-	
Thin concrete skins ^{b)} ≥C16/20							
Tension	HRD / HRD-F / HRD-R2 / HRD-R	N_{Rk} [kN]	-	1,8	-	-	

a) HRD-F 8 is not available in standard portfolio

b) Weather resistant skins of external wall panels) with $h=40$ mm to 100 mm

c) With overall partial safety factor for action $\gamma = 1.4$, The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Characteristic resistance for masonry (Part 1)

Anchor size			HRD 8		HRD 10		
			50 ^{d)}	50 ^{d)}	70 ^{d)}	90	
h_{nom} [mm]							
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \geq 20 \text{ N/mm}^2$	F_{Rk} [kN]	1,5	3,0	c)	-	
				4,5 ^{a)}			
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]	1,2	2,0	c)		
				3,0 ^{a)}			
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \geq 20 \text{ N/mm}^2$	F_{Rk} [kN]	2,5	3,0	c)	-	
				4,5 ^{a)}			
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]	2,0	2,0	c)	-	
				3,0 ^{a)}			
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \geq 20 \text{ N/mm}^2$	F_{Rk} [kN]	-	3,5	c)	-	
				6,0 ^{a)}			
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]		-			2,5
			4,5 ^{a)}				
	$f_b \geq 2 \text{ N/mm}^2$	F_{Rk} [kN]	0,5	-	-	-	
Ital. solid brick Tufo	$f_b \geq n/a$	F_{Rk} [kN]	1,4	-	-	-	
Hollow clay brick Hz B 12/1,2 Brick A ^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk} [kN]	0,5	-	-	-	
Vertic. perforated clay brick Hz 1,2-2DF Brick F ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk} [kN]	-	1,5	-	-	
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]	-	2,0	-	-	
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk} [kN]	-	2,0	-	-	
Vertic. perforated clay brick Hz 1,0-2DF Brick G ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk} [kN]	-	0,4	0,75	-	
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]	-	0,5	0,9	-	
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk} [kN]	-	0,6	0,9	-	
	$f_b \geq 20 \text{ N/mm}^2$	F_{Rk} [kN]	-	0,9	1,5	-	
Vertic. perforated clay brick Hz 1,0-2DF Brick H ^{b)}	$f_b \geq 28 \text{ N/mm}^2$	F_{Rk} [kN]	-	2,0	2,5	-	
	$f_b \geq 50 \text{ N/mm}^2$	F_{Rk} [kN]	-	3,0	3,5	-	
Vertic. perforated clay brick Poroton T8 Brick M ^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rk} [kN]	-	0,75	1,5	-	
Vertic. perforated clay brick Hz 1,0-9DF Brick L ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk} [kN]	-	1,2	1,5	-	
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk} [kN]	-	1,5	1,5	-	
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk} [kN]	-	1,5	2,0	-	
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rk} [kN]	-	2,0	2,5	-	

a) Valid for edge distance $c \geq 150 \text{ mm}$, intermediate values can be interpolated.

b) Specification on hollow base material brick types see separate table below.

c) Data can be determined by job-site testing, data for $h_{nom}=50 \text{ mm}$ can be applied.

d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing



Characteristic resistance for masonry (Part 2)

Anchor size		h_{nom} [mm]		HRD 8		HRD 10		
				50 ^{d)}	50 ^{d)}	70 ^{d)}	90	
Hollow sand-lime brick KSL 12/1,4 Brick O^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk}	[kN]	0,75	-	-	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick P^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,5	-	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,5	-	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk}	[kN]	-	2,0	-	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick Q^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk}	[kN]	-	-	2,0	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk}	[kN]	-	-	2,5	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk}	[kN]	-	-	3,0	-	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick R^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rk}	[kN]	-	0,9	1,2	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,2	1,5	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,5	2,0	-	-
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rk}	[kN]	-	2,0	2,5	-	-
Lightweight hollow brick Hbl B 2/0,8 Brick S^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rk}	[kN]	0,30	-	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick T^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rk}	[kN]	-	0,5	0,75	-	-
	$f_b \geq 6 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,2	2,0	-	-
Ital. hollow brick Poroton P700 Brick N^{b)}	$f_b \geq 15 \text{ N/mm}^2$	F_{Rk}	[kN]	1,5	- ^{c)}	0,6	-	-
Ital. hollow brick Doppio Uni Brick C+I^{b)}	$f_b \geq 25 \text{ N/mm}^2$	F_{Rk}	[kN]	0,9 (C)	- ^{c)} (I)	1,5 (I)	-	-
Span. hollow brick Rojo hidrofugano Brick D^{b)}	$f_b \geq 40 \text{ N/mm}^2$	F_{Rk}	[kN]	0,6	-	-	-	-
Span. hollow brick Ladrillo perforado Brick J^{b)}	$f_b \geq 26 \text{ N/mm}^2$	F_{Rk}	[kN]	-	1,5	2,0	-	-
Span. hollow brick Clinker mediterraneo Brick K^{b)}	$f_b \geq 75 \text{ N/mm}^2$	F_{Rk}	[kN]	-	- ^{c)}	1,5	-	-
French hollow brick Brique Creuse B^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rk}	[kN]	0,50	-	-	-	-

a) Valid for edge distance $c \geq 150 \text{ mm}$, intermediate values can be interpolated.

b) Specification on hollow base material brick types see separate table below.

c) Data can be determined by job-site testing, data for $h_{nom}=50 \text{ mm}$ can be applied.

d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing

Design resistance for masonry (Part 1)

Anchor size			HRD 8	HRD 10		
h_{nom} [mm]			50 ^{d)}	50 ^{d)}	70 ^{d)}	90
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \geq 20 \text{ N/mm}^2$	F_{Rd} [kN]	0,6	1,2	c)	-
				1,8 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	0,48	0,8	c)	
				1,2 ^{a)}		
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \geq 20 \text{ N/mm}^2$	F_{Rd} [kN]	1,0	1,2	c)	-
				1,8 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	0,8	0,8	c)	-
				1,2 ^{a)}		
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \geq 20 \text{ N/mm}^2$	F_{Rd} [kN]	-	1,4	c)	-
				2,4 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]		-		
			1,8 ^{a)}			
	$f_b \geq 2 \text{ N/mm}^2$	F_{Rd} [kN]	0,2	-	-	-
Ital. solid brick Tufo	$f_b \geq n/a$	F_{Rd} [kN]	0,56	-	-	-
Hollow clay brick Hz B 12/1,2 Brick A ^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	0,2	-	-	-
Vertic. perforated clay brick Hz 1,2-2DF Brick F ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,6	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,8	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,8	-	-
Vertic. perforated clay brick Hz 1,0-2DF Brick G ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,16	0,3	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,2	0,36	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,24	0,36	-
	$f_b \geq 20 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,36	0,6	-
Vertic. perforated clay brick Hz 1,0-2DF Brick H ^{b)}	$f_b \geq 28 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,8	1,0	-
	$f_b \geq 50 \text{ N/mm}^2$	F_{Rd} [kN]	-	1,2	1,4	-
Vertic. perforated clay brick Poroton T8 Brick M ^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,3	0,6	-
Vertic. perforated clay brick Hz 1,0-9DF Brick L ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,48	0,6	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,6	0,6	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,6	0,8	-
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,8	1,0	-

a) Valid for edge distance $c \geq 150 \text{ mm}$, intermediate values can be interpolated.

b) Specification on hollow base material brick types see separate table below.

c) Data can be determined by job-site testing, data for $h_{nom}=50 \text{ mm}$ can be applied.

d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing



Design resistance for masonry (Part 2)

Anchor size		h_{nom} [mm]		HRD 8		HRD 10	
				50 ^{d)}	50 ^{d)}	70 ^{d)}	90
Hollow sand-lime brick KSL 12/1,4 Brick O^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd}	[kN]	0,3	-	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick P^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,6	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,6	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,8	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick Q^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd}	[kN]	-	-	0,8	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd}	[kN]	-	-	1,0	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd}	[kN]	-	-	1,2	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick R^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,36	0,48	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,48	0,6	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,6	0,8	-
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,8	1,0	-
Lightweight hollow brick Hbl B 2/0,8 Brick S^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rd}	[kN]	0,12	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick T^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,2	0,3	-
	$f_b \geq 6 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,48	0,8	-
Ital. hollow brick Poroton P700 Brick N^{b)}	$f_b \geq 15 \text{ N/mm}^2$	F_{Rd}	[kN]	0,6	- ^{c)}	0,24	-
Ital. hollow brick Doppio Uni Brick C+I^{b)}	$f_b \geq 25 \text{ N/mm}^2$	F_{Rd}	[kN]	0,36 (C)	- ^{c)} (I)	0,6 (I)	-
Span. hollow brick Rojo hidrofugano Brick D^{b)}	$f_b \geq 40 \text{ N/mm}^2$	F_{Rd}	[kN]	0,24	-	-	-
Span. hollow brick Ladrillo perforado Brick J^{b)}	$f_b \geq 26 \text{ N/mm}^2$	F_{Rd}	[kN]	-	0,6	0,8	-
Span. hollow brick Clinker mediterraneo Brick K^{b)}	$f_b \geq 75 \text{ N/mm}^2$	F_{Rd}	[kN]	-	- ^{c)}	0,6	-
French hollow brick Brique Creuse B^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rd}	[kN]	0,20	-	-	-

a) Valid for edge distance $c \geq 150 \text{ mm}$, intermediate values can be interpolated.

b) Specification on hollow base material brick types see separate table below.

c) Data can be determined by job-site testing, data for $h_{nom}=50 \text{ mm}$ can be applied.

d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing

Recommended ^{e)} loads for masonry (Part 1)

Anchor size			HRD 8	HRD 10		
			50 ^{d)}	50 ^{d)}	70 ^{d)}	90
h_{nom} [mm]						
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \geq 20 \text{ N/mm}^2$	F_{Rec} [kN]	0,42	0,85	c)	-
				1,28 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	0,34	0,57	c)	
				0,85 ^{a)}		
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \geq 20 \text{ N/mm}^2$	F_{Rec} [kN]	0,7	0,85	c)	-
				1,28 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	0,57	0,57	c)	-
				0,85 ^{a)}		
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \geq 20 \text{ N/mm}^2$	F_{Rec} [kN]	-	1,0	c)	-
				1,71 ^{a)}		
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,71	c)	-
			0,14	-	-	-
Ital. solid brick Tufo	$f_b \geq n/a$	F_{Rd} [kN]	0,4	-	-	-
Hollow clay brick Hz B 12/1,2 Brick A ^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	0,14	-	-	-
Vertic. perforated clay brick Hz 1,2-2DF Brick F ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,42	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,57	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,57	-	-
Vertic. perforated clay brick Hz 1,0-2DF Brick G ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,11	0,21	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,14	0,25	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,17	0,25	-
	$f_b \geq 20 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,25	0,42	-
Vertic. perforated clay brick Hz 1,0-2DF Brick H ^{b)}	$f_b \geq 28 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,57	0,71	-
	$f_b \geq 50 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,85	1,0	-
Vertic. perforated clay brick Poroton T8 Brick M ^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,21	0,42	-
Vertic. perforated clay brick Hz 1,0-9DF Brick L ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,34	0,42	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,42	0,42	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,42	0,57	-
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rd} [kN]	-	0,57	0,71	-

a) Valid for edge distance $c \geq 150 \text{ mm}$, intermediate values can be interpolated.

b) Specification on hollow base material brick types see separate table below.

c) Data can be determined by job-site testing, data for $h_{nom}=50 \text{ mm}$ can be applied.

d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing

e) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.



Recommended ^{e)} loads for masonry (Part 1)

Anchor size			HRD 8	HRD 10		
			50 ^{d)}	50 ^{d)}	70 ^{d)}	90
h_{nom} [mm]						
Hollow sand-lime brick KSL 12/1,4 Brick O ^{b)}	$f_b \geq 12 \text{ N/mm}^2$	F_{Rec} [kN]	0,21	-	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick P ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,42	-	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,42	-	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,57	-	-
Vertic. perforated clay brick Hz 1,6-2DF Brick Q ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rec} [kN]	-	-	0,57	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	-	-	0,71	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rec} [kN]	-	-	0,85	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick R ^{b)}	$f_b \geq 8 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,25	0,34	-
	$f_b \geq 10 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,34	0,42	-
	$f_b \geq 12 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,42	0,57	-
	$f_b \geq 16 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,57	0,71	-
Lightweight hollow brick Hbl B 2/0,8 Brick S ^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rec} [kN]	0,09	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick T ^{b)}	$f_b \geq 2 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,14	0,21	-
	$f_b \geq 6 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,34	0,57	-
Ital. hollow brick Poroton P700 Brick N ^{b)}	$f_b \geq 15 \text{ N/mm}^2$	F_{Rec} [kN]	0,43	- ^{c)}	0,17	-
Ital. hollow brick Doppio Uni Brick C+I ^{b)}	$f_b \geq 25 \text{ N/mm}^2$	F_{Rec} [kN]	0,25 (C)	- ^{c)}	0,42 (I)	-
Span. hollow brick Rojo hidrofugano Brick D ^{b)}	$f_b \geq 40 \text{ N/mm}^2$	F_{Rec} [kN]	0,17	-	-	-
Span. hollow brick Ladrillo perforado Brick J ^{b)}	$f_b \geq 26 \text{ N/mm}^2$	F_{Rec} [kN]	-	0,42	0,57	-
Span. hollow brick Clinker mediterraneo Brick K ^{b)}	$f_b \geq 75 \text{ N/mm}^2$	F_{Rec} [kN]	-	- ^{c)}	0,42	-
French hollow brick Brique Creuse B ^{b)}	$f_b \geq 6 \text{ N/mm}^2$	F_{Rec} [kN]	0,14	-	-	-

- a) Valid for edge distance $c \geq 150\text{mm}$, intermediate values can be interpolated.
b) Specification on hollow base material brick types see separate table below.
c) Data can be determined by job-site testing, data for $h_{nom}=50\text{mm}$ can be applied.
d) The influence of $h_{nom} > 50 \text{ mm}$ (HRD 8) or $h_{nom,1} > 50 \text{ mm}$ or $h_{nom,2} > 70 \text{ mm}$ (HRD 10) has to be checked by job-site testing
e) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Characteristic resistance for AAC ^{a)} (Part 2)

Anchor size			HRD 8		HRD 10	
			50	50	70	90
		h_{nom} [mm]				
Autoclaved aerated concrete AAC	AAC 2	F_{Rk} [kN]	-	-	0,9	0,9
	AAC 4	F_{Rk} [kN]	0,42	-	2,0	2,0
			0,42	-	2,0 ^{b)}	2,5 ^{b)}
	AAC 6	F_{Rk} [kN]	0,42	-	2,0	2,5
0,42			-	3,5 ^{b)}	4,5 ^{b)}	

a) Drilling method: rotary drilling only

b) Valid for edge distance $c \geq 150$ mm, intermediate values can be interpolated

Characteristic resistance for AAC ^{a)} (Part 2)

Anchor size			HRD 8		HRD 10	
			50	50	70	90
		h_{nom} [mm]				
Autoclaved aerated concrete AAC	AAC 2	F_{Rd} [kN]	-	-	0,45	0,45
	AAC 4	F_{Rd} [kN]	0,21	-	1,0	1,0
			0,21	-	1,0 ^{b)}	1,25 ^{b)}
	AAC 6	F_{Rd} [kN]	0,21	-	1,0	1,25
0,21			-	1,75 ^{b)}	2,25 ^{b)}	

a) Drilling method: rotary drilling only

b) Valid for edge distance $c \geq 150$ mm, intermediate values can be interpolated

Recommended ^{c)} loads for AAC ^{a)} (Part 2)

Anchor size			HRD 8		HRD 10	
			50	50	70	90
		h_{nom} [mm]				
Autoclaved aerated concrete AAC	AAC 2	F_{Rec} [kN]	-	-	0,32	0,32
	AAC 4	F_{Rec} [kN]	0,15	-	0,71	0,71
			0,15	-	0,71 ^{b)}	0,89 ^{b)}
	AAC 6	F_{Rec} [kN]	0,15	-	0,71	0,89
0,15			-	1,25 ^{b)}	1,6 ^{b)}	

a) Drilling method: rotary drilling only

b) Valid for edge distance $c \geq 150$ mm, intermediate values can be interpolated

c) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

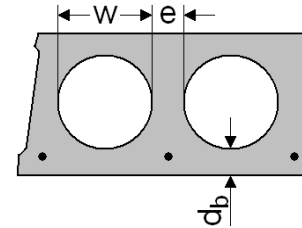
Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in ETAG 020. In Absence of a definition by a Member State the following default values may be taken.		
Maximum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action N_{Sd} per fixing point ^{a)}
3	1	3 [kN]
4	1	4,5 [kN]

Basic loading data for redundant fastening in prestressed hollow core slabs

All data in this section applies to:

- Correct anchor setting (See setting instruction)
- No edge distance and spacing influence
- Concrete \geq C35/45
- Data is according to ETA-07/0219



Characteristic resistance

Anchor size			HRD 10			
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 35	≥ 40
Resistance, all load directions	N_{Rk}	[kN]	0,6	1,5	2,5	3,5

a) The anchor may be used in a flange thickness of 30 mm with the same resistance but the drill hole is not allowed to cut cavity

Design resistance

Anchor size			HRD 10			
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 35	≥ 40
Resistance, all load directions	N_{Rd}	[kN]	0,3	0,8	1,4	1,9

a) The anchor may be used in a flange thickness of 30 mm with the same resistance but the drill hole is not allowed to cut cavity

Recommended loads ^{a)}

Anchor size			HRD 10			
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 35	≥ 40
Resistance, all load directions	N_{Rec}	[kN]	0,2	0,6	1,0	1,4

a) With overall partial safety factor for action $\gamma = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in ETAG 020. In Absence of a definition by a Member State the following default values may be taken.

Maximum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action N_{Sd} per fixing point ^{a)}
3	1	3 [kN]
4	1	4,5 [kN]

Specification of hollow base material brick types

Specification	Picture	Drilling method	Specification	Picture	Drilling method
Brick A Hlz B 12/1,2 LxWxH [mm]: 300x240x248 h _{min} [mm]: 240		Rotary drilling	Brick B Brique Creuse LxWxH [mm] : 210x198x... h _{min} [mm]: 210		Rotary drilling
Brick C Doppio Uni LxWxH [mm]: 230x120x100 h _{min} [mm]: 120		Rotary drilling	Brick D Rojo hidrofugano LxWxH [mm]: 240x115x50 h _{min} [mm]: 115		Rotary drilling
brick E Mattone LxWxH [mm]: 240x180x100 h _{min} [mm]: 180		Rotary drilling	brick F Hlz 1,2-2DF LxWxH [mm]: 240x115x113 h _{min} [mm]: 115		Hammer drilling
brick G Hlz 1,0-2DF LxWxH [mm]: 240x115x113 h _{min} [mm]: 110		Hammer drilling	brick H VHlz 1,6-2DF LxWxH [mm]: 240x115x113 h _{min} [mm]: 115		Hammer drilling
brick I Doppio Uni LxWxH [mm]: 250x120x190 h _{min} [mm]: 120		Rotary drilling	brick J Ladrillo perforado LxWxH [mm]: 240x110x100 h _{min} [mm]: 110		Rotary drilling
brick K Clinker mediterr. LxWxH [mm]: 240x113x50 h _{min} [mm]: 113		Hammer drilling	brick L Hlz 1,0-9DF LxWxH [mm]: 372x175x238 h _{min} [mm]: 175		Rotary drilling
brick M Poroton T8 LxWxH [mm]: 248x365x249 h _{min} [mm]: 365		Rotary drilling	brick N Poroton P700 LxWxH [mm]: 225x300x190 h _{min} [mm]: 300		Rotary drilling
Hollow sand-lime bricks according EN 771-2					
brick O KSL 12/1,4 LxWxH [mm]: 240x248x248 h _{min} [mm]: 240		Hammer drilling	brick P KS L 1,6-2DF LxWxH [mm]: 240x115x113 h _{min} [mm]: 115		Hammer drilling
brick Q KS L 1,4-3DF LxWxH [mm]: 240x175x113 h _{min} [mm]: 175		Hammer drilling	brick R KS L R 1,6-16DF LxWxH [mm]: 480x240x248 h _{min} [mm]: 240		Rotary drilling
brick S Hbl 2/0,8 LxWxH [mm]: 497x240x248 h _{min} [mm]: 240		Hammer drilling	brick T Hbl 1,2-12DF LxWxH [mm]: 497x175x238 h _{min} [mm]: 175		Rotary drilling



Materials

Mechanical properties

Anchor size			HRD 8		HRD 10		
			Galvanized steel	Stainless steel	Galvanized steel	Hot-deep galvanized	Stainless steel
Nominal tensile strength	f_{uk}	[N/mm ²]	600	580	600	600	630
Yield strength	f_{yk}	[N/mm ²]	480	450	480	480	480
Stressed cross-section	A_s	[mm ²]	22,9	22,9	35,3	33,7	35,3
Moment of resistance	W	[mm ³]	15,5	15,5	29,5	27,6	29,5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	11,1	10,8	21,3	19,9	22,3

Material quality

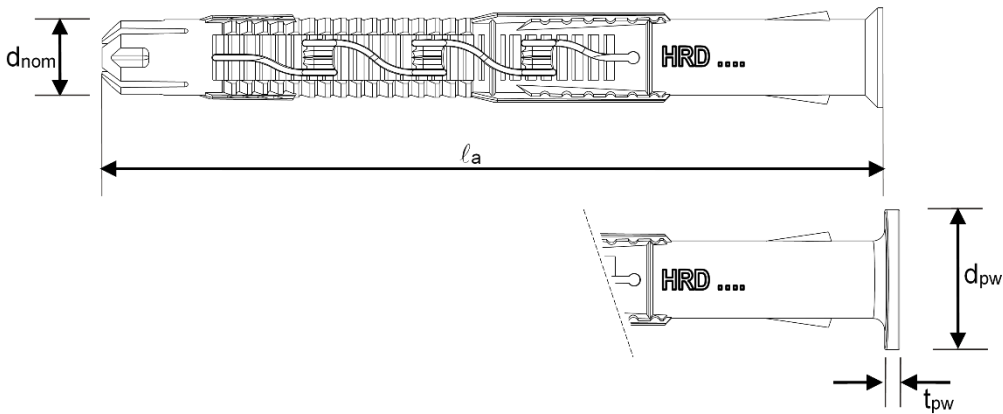
Part	Material	
Sleeve	Polyamide, color red	
Screw ^{a)}	HRD-C, -H, -K, -P HDS-C, -H, -K, -P	Carbon steel, galvanized to min.5 μ m
	HRD-HF; HDS-HF	Carbon steel, hot-dip galvanized to min. 65 μ m
	HRD-CR2, -HR2, -KR2, -PR2 HDS-CR2, -HR2, -KR2, -PR2	Stainless steel, corrosion class II: 1.4301 / 1.4567
	HRD-CR, -HR, -KR, -PR HDS-CR, -HR, -KR, -PR	Stainless steel, corrosion class III: 1.4362/1.4401/1.4404/1.4571

a) Marking of the screw (HDR and HDS) depending on the supply.

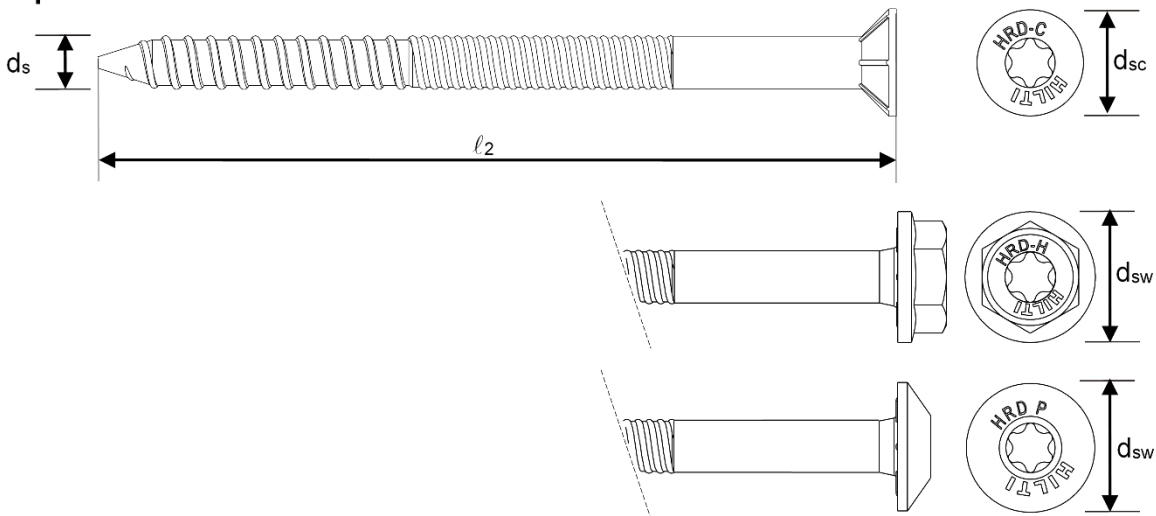
Anchor dimension

Anchor size			HRD 8	HRD 10
Minimum thickness of fixture	$t_{fix,min}$	[mm]	0	0
Maximum thickness of fixture	$t_{fix,max}$	[mm]	90	260
Diameter of the sleeve	d_{nom}	[mm]	8	10
Minimum length of the sleeve	$l_{1,min}$	[mm]	60	60
Maximum length of the sleeve	$l_{1,max}$	[mm]	140	310
Diameter of plastic washer	d_{pw}	[mm]	-	17,5
Thickness of plastic washer	t_{pw}	[mm]	-	2
Diameter of the screw	d_s	[mm]	6	7
Minimum length of the screw	$l_{2,min}$	[mm]	65	65
Maximum length of the screw	$l_{2,max}$	[mm]	145	315
Head diameter of countersunk screw	d_{sc}	[mm]	11	14
Head diameter of hexhead screw	d_{sw}	[mm]	-	17,5

Anchor sleeve



Special screw



Setting information

Installation temperature

-10°C to +40°C

Service temperature range

Hilti HRD frame 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	-40 °C to +80 °C	+50 °C	+80 °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.



Setting details

Anchor size			HRD 8	HRD 10
Drill hole diameter	d_o	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45	10,45
Depth of drilled hole to deepest point	$h_{1,1} \geq$	[mm]	60	60
	$h_{1,2} \geq$	[mm]	-	80
	$h_{1,3} \geq$	[mm]	-	100 ^{a)}
Overall plastic anchor embedment depth in base material	$h_{nom,1} \geq$	[mm]	50	50
	$h_{nom,2} \geq$	[mm]	-	70
	$h_{nom,3} \geq$	[mm]	-	90 ^{a)}
Diameter of clearance hole in the fixture	Countersunk screw	$d_f \leq$	[mm]	8,5
	Hexhead screw	$d_f \leq$	[mm]	-
				12

a) For use in AAC

Setting parameters

Anchor size			HRD 8	HRD 10	
	h_{nom}	[mm]	50	50	70
Minimum base material thickness	Concrete	h_{min}	[mm]	100	100
	Concrete thin skin	h_{min}	[mm]	-	40
	Masonry ^{e)}	h_{min}	[mm]	115-300	
Minimum spacing	Concrete \geq C16/20	s_{min}	[mm]	100	50
		for $c \geq$	[mm]	50	100 ^{c)}
	Concrete C12/15	s_{min}	[mm]	140	70
		for $c \geq$	[mm]	70	140 ^{c)}
	Masonry and AAC	a_{min}	[mm]	250	250
		s_{min1}	[mm]	200 (120 ^{d)})	100
s_{min2}		[mm]	400 (240 ^{d)})	100	
Minimum edge distance	Concrete \geq C16/20	c_{min}	[mm]	50	50
		for $s \geq$	[mm]	100	150 ^{c)}
	Concrete C12/15	c_{min}	[mm]	70	70
		for $s \geq$	[mm]	140	210 ^{c)}
Masonry and AAC	c_{min}	[mm]	100 (60 ^{d)})	100	
Critical spacing in concrete ^{a)}	Concrete \geq C16/20	$s_{cr,N}$	[mm]	62	80
	Concrete C12/15	$s_{cr,N}$	[mm]	68	90
Critical edge distance in concrete ^{b)}	Concrete \geq C16/20	$c_{cr,N}$	[mm]	100	100
	Concrete C12/15	$c_{cr,N}$	[mm]	140	140

a) For spacing larger than the critical spacing each anchor in a group can be considered in design

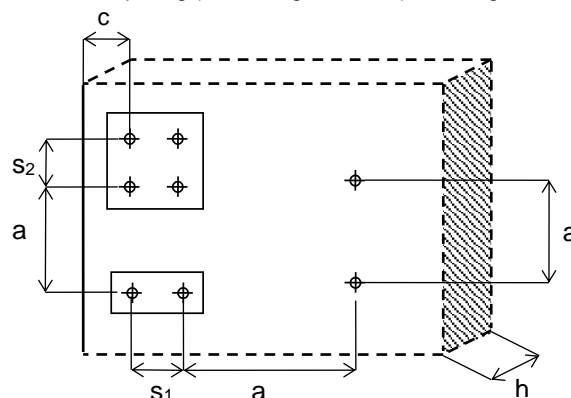
b) For edge distance smaller than critical edge distance the design loads

c) Linear interpolation allowed

d) Only for brick "Doppio Uni" and "Mattoni"

e) Minimum base material thickness of masonry depends on brick type; see specification of brick types in the table above

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



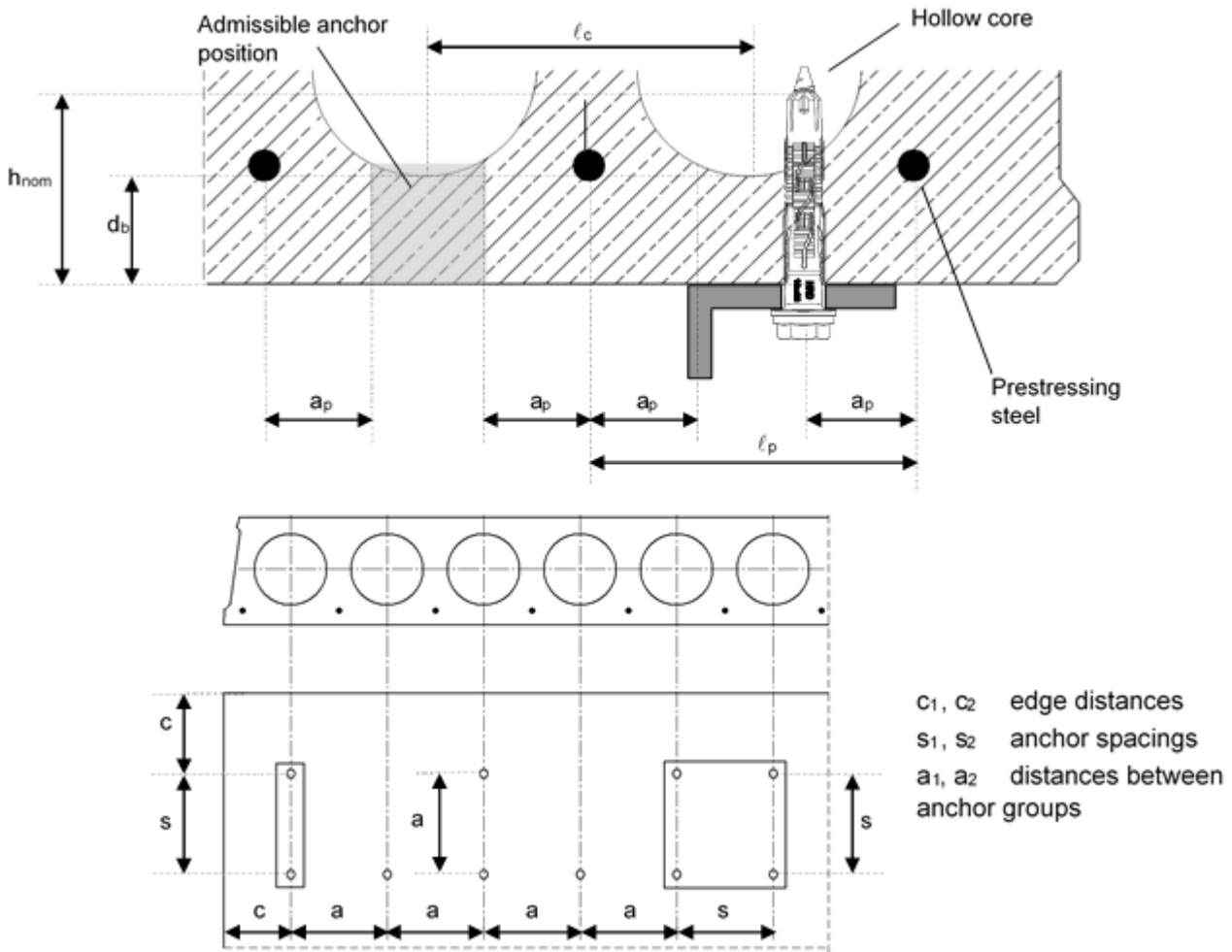
Installation equipment

Anchor size	HRD 8	HRD 10
Rotary hammer	TE 2- TE16	
Other tools	Hammer, Screwdriver	

Admissible anchor positions, min. spacing and edge distance of anchors and distance between anchor groups in precast pre-stressed hollow core slabs

Anchor size		HRD 8	HRD 10
Overall plastic anchor embedment depth in the base material	$h_{nom} \geq$ [mm]	-	50
Bottom flange thickness	$d_b \geq$ [mm]	-	25
Core distance	$l_c \geq$ [mm]	-	100
Prestressing steel distance	$l_p \geq$ [mm]	-	100
Distance between anchor position and prestressing steel	$a_p \geq$ [mm]	-	50
Minimum edge distance	$c_{min} \geq$ [mm]	-	100
Minimum anchor spacing	$s_{min} \geq$ [mm]	-	100
Minimum distance between anchor groups	$a_{min} \geq$ [mm]	-	100

Schemes of distances and spacing





Setting instruction

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

Setting instruction for HRD	
<p>1. Drilling</p> <p>HRD 10</p> <p>Cat. a Cat. b Cat. c Cat. d</p>	<p>2. Inserting the anchor</p>
<p>3. Inserting the anchor</p>	<p>4. Setting tools</p> <p>T30 (HRD 8) T40 (HRD 10)</p>
<p>5. Checking</p>	<p>6. Attaching the belonging washer</p>
<p>7. Attaching the belonging washer</p>	
Additional preparation in case of application in precast prestressed hollow core slabs	
<p>1. Location of pre-stressed bars</p>	<p>2. Marking location of pre-stressed bars</p>
<p>3. Marking location of pre-stressed bars</p>	<p>4. Drilling</p> <p>$d_0 = \text{Ø}10 \text{ mm}$</p>