HRD
PLASTIC ANCHOR

Technical Datasheet

Update: Aug-18

HRD Plastic frame anchors

Everyday standard plastic frame anchor for redundant fastening applications

Anchor version

HRD-C
HRD-CR
(M8)

HRD-C
HRD-CR
HRD-CR2
(M10)

HRD-H
HRD-HR
HRD-HR2
HR-HF
(M10)

HRD-K
HRD-KR
HRD-KR2
(M10)

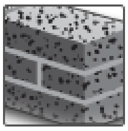
HRD-P
HRD-PR
HRD-PR2
(M10)

Benefits

- 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

Base material

Concrete (non-cracked)



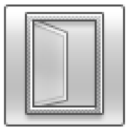
Solid brick

Hollow brick

Autoclaved aerated concrete

Drywall

Prestressed hollow core slabs



Window frame

Load conditions

Tensile zone[a)]

Fire resistance

a) Redundant fastening only

Other information

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

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	50	50	70	90
Concrete C12/15		F_{Rk}	[kN]	2,0	3,0	6,0	-
		V_{Rk}	[kN]	6,9 / 6,6 [b]	10,6 / 10,1 [b] / 11,1 [c]		-
Concrete C16/20 – C 50/60		F_{Rk}	[kN]	3,0	4,5	8,5	-
		V_{Rk}	[kN]	6,9 / 6,6 [b]	10,6 / 10,1 [b] / 11,1 [c]		-
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \ge 20$ N/mm^2	F_{Rk}	[kN]	1,5	3,0 4,5 [d]	[f]	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	1,2	2,0 3,0 [d]	[f]	
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \ge 20$ N/mm^2	F_{Rk}	[kN]	2,5	3,0 4,5 [d]	[f]	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	2,0	2,0 3,0 [d]	[f]	-
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \ge 20$ N/mm^2	F_{Rk}	[kN]	-	3,5 6,0 [d]	[f]	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	-	2,5 4,5 [d]	[f]	-
	$f_b \ge 6$ N/mm^2	F_{Rk}	[kN]	0,5	-	-	-
Ital. solid brick Tufo	$f_b \ge$ n/a	F_{Rk}	[kN]	1,4	-	-	-
Hollow clay brick Hlz B 12/1,2 Brick **A**[e]	$f_b \ge 12$ N/mm^2	F_{Rk}	[kN]	0,5	-	-	-
Vertic. perforated clay brick Hlz 1,2-2DF Brick **F**[e]	$f_b \ge 8$ N/mm^2	F_{Rk}	[kN]	-	1,5	-	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	-	2,0	-	-
	$f_b \ge 12$ N/mm^2	F_{Rk}	[kN]	-	2,0	-	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **G**[e]	$f_b \ge 8$ N/mm^2	F_{Rk}	[kN]	-	0,4	0,75	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	-	0,5	0,9	-
	$f_b \ge 12$ N/mm^2	F_{Rk}	[kN]	-	0,6	0,9	-
	$f_b \ge 20$ N/mm^2	F_{Rk}	[kN]	-	0,9	1,5	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **H**[e]	$f_b \ge 28$ N/mm^2	F_{Rk}	[kN]	-	2,0	2,5	-
	$f_b \ge 50$ N/mm^2	F_{Rk}	[kN]	-	3,0	3,5	-
Vertic. perforated clay brick Poroton T8 Brick **M**[e]	$f_b \ge 6$ N/mm^2	F_{Rk}	[kN]	-	0,75	1,5	-
Vertic. perforated clay brick Hlz 1,0-9DF Brick **L**[e]	$f_b \ge 8$ N/mm^2	F_{Rk}	[kN]	-	1,2	1,5	-
	$f_b \ge 10$ N/mm^2	F_{Rk}	[kN]	-	1,5	1,5	-
	$f_b \ge 12$ N/mm^2	F_{Rk}	[kN]	-	1,5	2,0	-
	$f_b \ge 16$ N/mm^2	F_{Rk}	[kN]	-	2,0	3,0	-

b) Values for hot-dipped galvanized carbon steel.
c) Values for stainless steel.
d) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
e) Specification on hollow base material brick types see separate table below.
f) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Characteristic resistance

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	50	50	70	90
Hollow sand-lime brick KSL 12/1,4 Brick **O**[e)]	$f_b \geq 12$ N/mm^2	F_{Rk}	[kN]	0,75	-	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **P**[e)]	$f_b \geq 8$ N/mm^2	F_{Rk}	[kN]	-	1,5	-	-
	$f_b \geq 10$ N/mm^2	F_{Rk}	[kN]	-	1,5	-	-
	$f_b \geq 12$ N/mm^2	F_{Rk}	[kN]	-	2,0	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **Q**[e)]	$f_b \geq 8$ N/mm^2	F_{Rk}	[kN]	-	-	2,0	-
	$f_b \geq 10$ N/mm^2	F_{Rk}	[kN]	-	-	2,5	-
	$f_b \geq 12$ N/mm^2	F_{Rk}	[kN]	-	-	3,0	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick **R**[e)]	$f_b \geq 8$ N/mm^2	F_{Rk}	[kN]	-	0,9	1,2	-
	$f_b \geq 10$ N/mm^2	F_{Rk}	[kN]	-	1,2	1,5	-
	$f_b \geq 12$ N/mm^2	F_{Rk}	[kN]	-	1,5	2,0	-
	$f_b \geq 16$ N/mm^2	F_{Rk}	[kN]	-	2,0	2,5	-
Lightweight hollow brick Hbl B 2/0,8 Brick **S**[e)]	$f_b \geq 2$ N/mm^2	F_{Rk}	[kN]	0,30	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick **T**[e)]	$f_b \geq 8$ N/mm^2	F_{Rk}	[kN]	-	0,5	0,75	-
	$f_b \geq 10$ N/mm^2	F_{Rk}	[kN]	-	1,2	2,0	-
Ital. hollow brick Poroton P700 Brick **N**[e)]	$f_b \geq 20$ N/mm^2	F_{Rk}	[kN]	1,5	-	-	-
Ital. hollow brick Doppio Uni Brick **C+I**[e)]	$f_b \geq 28$ N/mm^2	F_{Rk}	[kN]	-	-	0,6	-
	$f_b \geq 50$ N/mm^2	F_{Rk}	[kN]	0,9 (C)	-	1,5 (I)	-
Span. hollow brick Rojo hydrofugano Brick **D**[e)]	$f_b \geq 6$ N/mm^2	F_{Rk}	[kN]	0,60	-	-	-
Span. hollow brick Ladrillo perforado Brick **J**[e)]	$f_b \geq 16$ N/mm^2	F_{Rk}	[kN]	-	1,5	2,0	-
Span. hollow brick Clinker mediterraneo Brick **K**[e)]	$f_b \geq 75$ N/mm^2	F_{Rk}	[kN]	-	-	1,5	-
French hollow brick Brique Creuse **B**[e)]	$f_b \geq 6$ N/mm^2	F_{Rk}	[kN]	0,50	-	-	-
Autoclaved aerated concrete AAC	AAC 2	F_{Rk}	[kN]	-	-	0,9	0,9
	AAC 4	F_{Rk}	[kN]	-	-	2,0	2,5
	AAC 6	F_{Rk}	[kN]	-	-	2,0	2,5
				-	-	3,5 [d)]	4,5 [d)]

b) Values for hot-dipped galvanized carbon steel.
c) Values for stainless steel.
d) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
e) Specification on hollow base material brick types see separate table below.
f) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Design resistance

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	50	50	70	90
Concrete C12/15		N_{Rd}	[kN]	1,1	1,7	3,3	-
		V_{Rd}	[kN]	5,5 / 5,2 b)	8,5 / 8,1 b) / 8,5 c)		-
Concrete C16/20 – C 50/60		N_{Rd}	[kN]	1,7	2,5	4,7	-
		V_{Rd}	[kN]	5,5 / 5,2 b)	8,5 / 8,1 b) / 8,5 c)		-
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	0,6	1,2 1,8 d)	f)	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	0,48	0,8 1,2 d)	f)	
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	1,0	1,2 1,8 d)	f)	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	0,8	0,8 1,2 d)	f)	-
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	-	1,4 2,4 d)	f)	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	1,0 1,8 d)	f)	-
	$f_b \geq 6$ N/mm²	F_{Rd}	[kN]	0,2	-	-	-
Ital. solid brick Tufo	$f_b \geq$ n/a	F_{Rd}	[kN]	0,56	-	-	-
Hollow clay brick Hlz B 12/1,2 Brick **A** e)	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	0,2	-	-	-
Vertic. perforated clay brick Hlz 1,2-2DF Brick **F** e)	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,6	-	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,8	-	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,8	-	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **G** e)	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,16	0,3	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,2	0,36	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,24	0,36	-
	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	-	0,36	0,6	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **H** e)	$f_b \geq 28$ N/mm²	F_{Rd}	[kN]	-	0,8	1,0	-
	$f_b \geq 50$ N/mm²	F_{Rd}	[kN]	-	1,2	1,4	-
Vertic. perforated clay brick Poroton T8 Brick **M** e)	$f_b \geq 6$ N/mm²	F_{Rd}	[kN]	-	0,3	0,6	-
Vertic. perforated clay brick Hlz 1,0-9DF Brick **L** e)	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,48	0,6	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,6	0,6	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,6	0,8	-
	$f_b \geq 16$ N/mm²	F_{Rd}	[kN]	-	0,8	1,2	-

b) Values for hot-dipped galvanized carbon steel.
c) Values for stainless steel.
d) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
e) Specification on hollow base material brick types see separate table below.
f) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Design resistance

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	50	50	70	90
Hollow sand-lime brick KSL 12/1,4 Brick **O**[e)]	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	0,3	-	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **P**[e)]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,6	-	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,6	-	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,8	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **Q**[e)]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	-	0,8	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	-	1,0	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	-	1,2	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick **R**[e)]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,36	0,48	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,48	0,6	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,6	0,8	-
	$f_b \geq 16$ N/mm²	F_{Rd}	[kN]	-	0,8	1,0	-
Lightweight hollow brick Hbl B 2/0,8 Brick **S**[e)]	$f_b \geq 2$ N/mm²	F_{Rd}	[kN]	0,12	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick **T**[e)]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,2	0,3	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,48	0,8	-
Ital. hollow brick Poroton P700 Brick **N**[e)]	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	0,6	-	-	-
Ital. hollow brick Doppio Uni Brick **C+I**[e)]	$f_b \geq 28$ N/mm²	F_{Rd}	[kN]	-	-	0,24	-
	$f_b \geq 50$ N/mm²	F_{Rd}	[kN]	0,36 (C)	-	0,6 (I)	-
Span. hollow brick Rojo hydrofugano Brick **D**[e)]	$f_b \geq 6$ N/mm²	F_{Rd}	[kN]	0,24	-	-	-
Span. hollow brick Ladrillo perforado Brick **J**[e)]	$f_b \geq 16$ N/mm²	F_{Rd}	[kN]	-	0,6	0,8	-
Span. hollow brick Clinker mediterraneo Brick **K**[e)]	$f_b \geq 75$ N/mm²	F_{Rd}	[kN]	-	-	0,6	-
French hollow brick Brique Creuse **B**[e)]	$f_b \geq 6$ N/mm²	F_{Rd}	[kN]	0,20	-	-	-
Autoclaved aerated concrete AAC	AAC 2	F_{Rd}	[kN]	-	-	0,45	0,45
	AAC 4	F_{Rd}	[kN]	0,21	-	1,0	1,25
	AAC 6	F_{Rd}	[kN]	0,21	-	1,0	1,25
				0,21	-	1,75 [d)]	2,25 [d)]

b) Values for hot-dipped galvanized carbon steel.
c) Values for stainless steel.
d) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
e) Specification on hollow base material brick types see separate table below.
f) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Recommended loads [a]

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	**50**	**50**	**70**	**90**
Concrete C12/15		N_{Rec}	[kN]	0,8	1,2	2,4	-
		V_{Rec}	[kN]	3,9 / 3,7 [b]	6,1 / 5,8 [b] / 6,1 [c]		-
Concrete C16/20 – C 50/60		N_{Rec}	[kN]	1,2	1,8	3,4	-
		V_{Rec}	[kN]	3,9 / 3,7 [b]	6,1 / 5,8 [b] / 6,1 [c]		-
Solid clay brick Mz 2,0 DIN V 105-100/EN 771-1	$f_b \geq 20$ N/mm²	F_{Rec}	[kN]	0,42	0,85 1,28 [d]	[f]	-
	$f_b \geq 10$ N/mm²	F_{Rec}	[kN]	0,34	0,57 0,85 [d]	[f]	
Solid sand-lime brick KS 2,0 DIN V 106 /EN 771-2	$f_b \geq 20$ N/mm²	F_{Rec}	[kN]	0,7	0,85 1,28 [d]	[f]	-
	$f_b \geq 10$ N/mm²	F_{Rec}	[kN]	0,57	0,57 0,85 [d]	[f]	-
Lightweight solid block Vbl 0,9 DIN V 18151-100/EN 771	$f_b \geq 20$ N/mm²	F_{Rec}	[kN]	-	1,0 1,71 [d]	[f]	-
	$f_b \geq 10$ N/mm²	F_{Rec}	[kN]	-	0,71 1,28 [d]	[f]	-
	$f_b \geq 6$ N/mm²	F_{Rec}	[kN]	0,14	-	-	-
Ital. solid brick Tufo	$f_b \geq$ n/a	F_{Rd}	[kN]	0,4	-	-	-
Hollow clay brick Hlz B 12/1,2 Brick **A**[e]	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	0,14	-	-	-
Vertic. perforated clay brick Hlz 1,2-2DF Brick **F**[e]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,42	-	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,57	-	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,57	-	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **G**[e]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,11	0,21	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,14	0,25	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,17	0,25	-
	$f_b \geq 20$ N/mm²	F_{Rd}	[kN]	-	0,25	0,42	-
Vertic. perforated clay brick Hlz 1,0-2DF Brick **H**[e]	$f_b \geq 28$ N/mm²	F_{Rd}	[kN]	-	0,57	0,71	-
	$f_b \geq 50$ N/mm²	F_{Rd}	[kN]	-	0,85	1,0	-
Vertic. perforated clay brick Poroton T8 Brick **M**[e]	$f_b \geq 6$ N/mm²	F_{Rd}	[kN]	-	0,21	0,42	-
Vertic. perforated clay brick Hlz 1,0-9DF Brick **L**[e]	$f_b \geq 8$ N/mm²	F_{Rd}	[kN]	-	0,34	0,42	-
	$f_b \geq 10$ N/mm²	F_{Rd}	[kN]	-	0,42	0,42	-
	$f_b \geq 12$ N/mm²	F_{Rd}	[kN]	-	0,42	0,57	-
	$f_b \geq 16$ N/mm²	F_{Rd}	[kN]	-	0,57	0,85	

a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall b-e taken from national regulations.
b) Values for hot-dipped galvanized carbon steel.
c) Values for stainless steel.
d) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
e) Specification on hollow base material brick types see separate table below.
f) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Recommended loads [a)]

Anchor size				HRD 8	HRD 10		
		h_{nom}	[mm]	50	50	70	90
Hollow sand-lime brick KSL 12/1,4 Brick **O**[e)]	f_b ≥ 12 N/mm²	F_{Rec}	[kN]	0,21	-	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **P**[e)]	f_b ≥ 8 N/mm²	F_{Rec}	[kN]	-	0,42	-	-
	f_b ≥ 10 N/mm²	F_{Rec}	[kN]	-	0,42	-	-
	f_b ≥ 12 N/mm²	F_{Rec}	[kN]	-	0,57	-	-
Vertic. perforated clay brick Hlz 1,6-2DF Brick **Q**[e)]	f_b ≥ 8 N/mm²	F_{Rec}	[kN]	-	-	0,57	-
	f_b ≥ 10 N/mm²	F_{Rec}	[kN]	-	-	0,71	-
	f_b ≥ 12 N/mm²	F_{Rec}	[kN]	-	-	0,85	-
Vertic. perforated clay brick KSL R 1,6-16DF Brick **R**[e)]	f_b ≥ 8 N/mm²	F_{Rec}	[kN]	-	0,25	0,34	-
	f_b ≥ 10 N/mm²	F_{Rec}	[kN]	-	0,34	0,42	-
	f_b ≥ 12 N/mm²	F_{Rec}	[kN]	-	0,42	0,57	-
	f_b ≥ 16 N/mm²	F_{Rec}	[kN]	-	0,57	0,71	-
Lightweight hollow brick Hbl B 2/0,8 Brick **S**[e)]	f_b ≥ 2 N/mm²	F_{Rec}	[kN]	0,09	-	-	-
Lightweight concrete hollow block Hbl 1,2-12DF Brick **T**[e)]	f_b ≥ 8 N/mm²	F_{Rec}	[kN]	-	0,14	0,21	-
	f_b ≥ 10 N/mm²	F_{Rec}	[kN]	-	0,34	0,57	-
Ital. hollow brick Poroton P700 Brick **N**[e)]	f_b ≥ 20 N/mm²	F_{Rec}	[kN]	0,43	-	-	-
Ital. hollow brick Doppio Uni Brick **C+I**[e)]	f_b ≥ 28 N/mm²	F_{Rec}	[kN]	-	-	0,17	-
	f_b ≥ 50 N/mm²	F_{Rec}	[kN]	0,25 (C)	-	0,42 (I)	-
Span. hollow brick Rojo hydrofugano Brick **D**[e)]	f_b ≥ 6 N/mm²	F_{Rec}	[kN]	0,17	-	-	-
Span. hollow brick Ladrillo perforado Brick **J**[e)]	f_b ≥ 16 N/mm²	F_{Rec}	[kN]	-	0,42	0,57	-
Span. hollow brick Clinker mediterraneo Brick **K**[e)]	f_b ≥ 75 N/mm²	F_{Rec}	[kN]	-	-	0,42	-
French hollow brick Brique Creuse **B**[e)]	f_b ≥ 6 N/mm²	F_{Rec}	[kN]	0,14	-	-	-
Autoclaved aerated concrete AAC	AAC 2	F_{Rec}	[kN]	-	-	0,32	0,32
	AAC 4	F_{Rec}	[kN]	0,15	-	0,71	0,89
	AAC 6	F_{Rec}	[kN]	0,15	-	0,71	0,89
				0,15	-	1,25 [d)]	1,6 [d)]

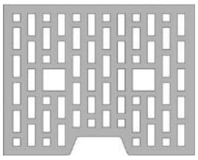
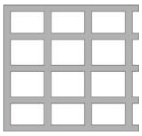
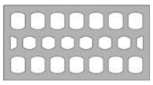
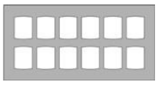
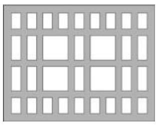
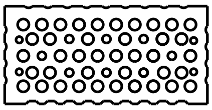
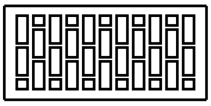
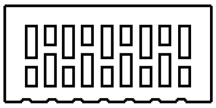
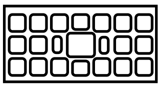
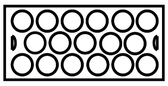
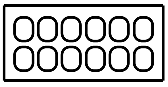
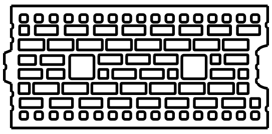
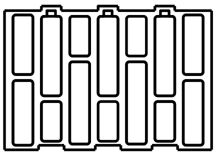
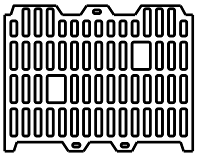
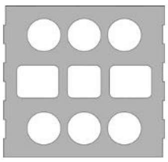
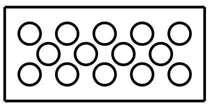
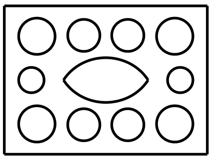
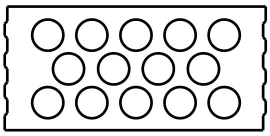
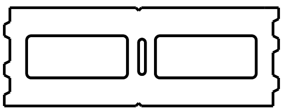
a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.
b) Values for stainless steel.
c) Valid for edge distance c ≥150mm, intermediate values can be interpolated.
d) Specification on hollow base material brick types see separate table below.
e) Data can be determined by job-site testing, data for h_{nom}=50mm can be applied.

Characteristic resistance for pull-out failure (plastic sleeve) for use in concrete

Anchor size					**HRD 8**	**HRD 10**	
In standard concrete slabs							
Embedment depth			$h_{nom} \geq$	[mm]	50	50	70
Characteristic resistance		≥C16/20	$N_{Rk,p}$	[kN]	3,0	4,5	8,5
		C12/15	$N_{Rk,p}$	[kN]	2,0	3,0	6,0
Partial safety factor			γ_{Mc} a)		1,8		
In thin skins (wheather resistant skins of external wall panels)							
Embedment depth			$h_{nom} \geq$	[mm]	-	50	-
Characteristic resistance	h=100mm to 400mm	≥C16/20	$N_{Rk,p}$	[kN]	-	3,5	-
		C12/15	$N_{Rk,p}$	[kN]	-	2,5	-
Partial safety factor			γ_{Mc} a)		1,8		
In precast prestressed hollow cored slabs							
Embedment depth			$h_{nom} \geq$	[mm]	-	50	
Characteristic resistance	$d_b \geq 25$mm	≥C16/20	$N_{Rk,p}$	[kN]	-	0,6	
	$d_b \geq 30$mm	≥C16/20	$N_{Rk,p}$	[kN]	-	1,5	
	$d_b \geq 35$mm	≥C16/20	$N_{Rk,p}$	[kN]	-	2,5	
	$d_b \geq 40$mm	≥C16/20	$N_{Rk,p}$	[kN]		3,5	
Partial safety factor			γ_{Mc} a)		1,8		

a) In absence of other regulations.

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 hmin [mm]: 240		Rotary drilling	Brick **B** Brique Creuse LxWxH [mm] : 210x198x… hmin [mm]: 210		Rotary drilling
Brick **C** Doppio Uni LxWxH [mm]: 230x120x100 hmin [mm]: 120		Rotary drilling	Brick **D** Rojo hydrofugano LxWxH [mm]: 240x115x50 hmin [mm]: 115		Rotary drilling
brick **E** Mattone LxWxH [mm]: 240x180x100 hmin [mm]: 180		Rotary drilling	brick **F** Hlz 1,2-2DF LxWxH [mm]: 240x115x113 hmin [mm]: 115		Hammer drilling
brick **G** Hlz 1,0-2DF LxWxH [mm]: 240x115x113 hmin [mm]: 110		Hammer drilling	brick **H** VHlz 1,6-2DF LxWxH [mm]: 240x115x113 hmin [mm]: 115		Hammer drilling
brick **I** Doppio Uni LxWxH [mm]: 250x120x190 h_{min} [mm]: 120		Rotary drilling	brick **J** Ladrillo perforado LxWxH [mm]: 240x110x100 hmin [mm]: 110		Rotary drilling
brick **K** Clinker mediterr. LxWxH [mm]: 240x113x50 hmin [mm]: 113		Hammer drilling	brick **L** Hlz 1,0-9DF LxWxH [mm]: 372x175x238 hmin [mm]: 175		Rotary drilling
brick **M** Poroton T8 LxWxH [mm]: 248x365x249 hmin [mm]: 365		Rotary drilling	brick **N** Poroton P700 LxWxH [mm]: 225x300x190 hmin [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 hmin [mm]: 115		Hammer drilling
brick **Q** KS L 1,4-3DF LxWxH [mm]: 240x175x113 hmin [mm]: 175		Hammer drilling	brick **R** KS L R 1,6-16DF LxWxH [mm]: 480x240x248 hmin [mm]: 240		Rotary drilling
brick **S** Hbl 2/0,8 LxWxH [mm]: 497x240x248 hmin [mm]: 240		Hammer drilling	brick **T** Hbl 1,2-12DF LxWxH [mm]: 497x175x238 hmin [mm]: 175		Rotary drilling

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]

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/mm²]	600	580	600	600	630
Yield strength f_{yk}	[N/mm²]	480	450	480	480	480
Stressed cross-section A_s	[mm²]	22,9	22,9	35,3	33,7	35,3
Moment of resistance W	[mm³]	15,5	15,5	29,5	27,6	29,5
Char. bending resistance $M^0_{Rk,s}$	[Nm]	11,1	10,8	21,3	19,9	22,3

Material quality

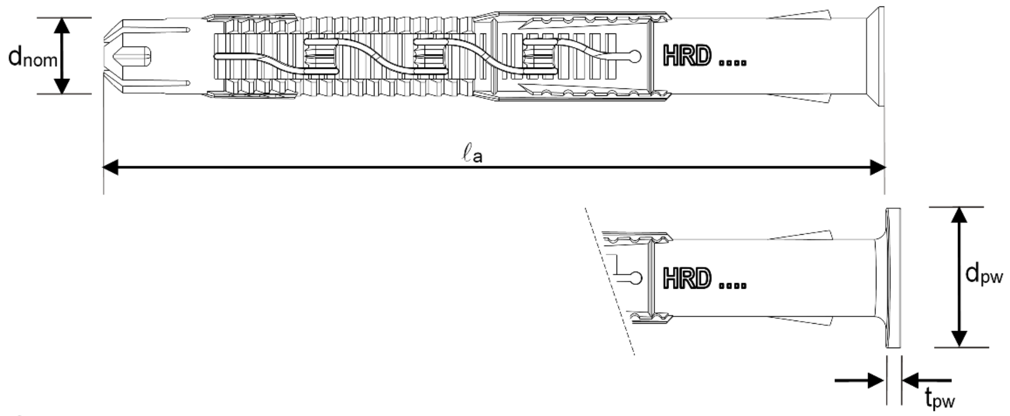
Part		Material
Sleeve		Polyamide, colour red
Screw[a)]	HRD-C, -H, -K, -P HDS-C, -H, -K, -P	Carbon steel, galvanized to min.5 µm
	HRD-HF; HDS-HF	Carbon steel, hot-dip galvanized to min. 65 µm
	HRD-CR2, -HR2, -KR2, -PR2 HDS-CR2, -HR2, -KR2, -PR2	Stainless steel, corrosion class II: 1.4301 / 1.4567
	HRD-CR, -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.

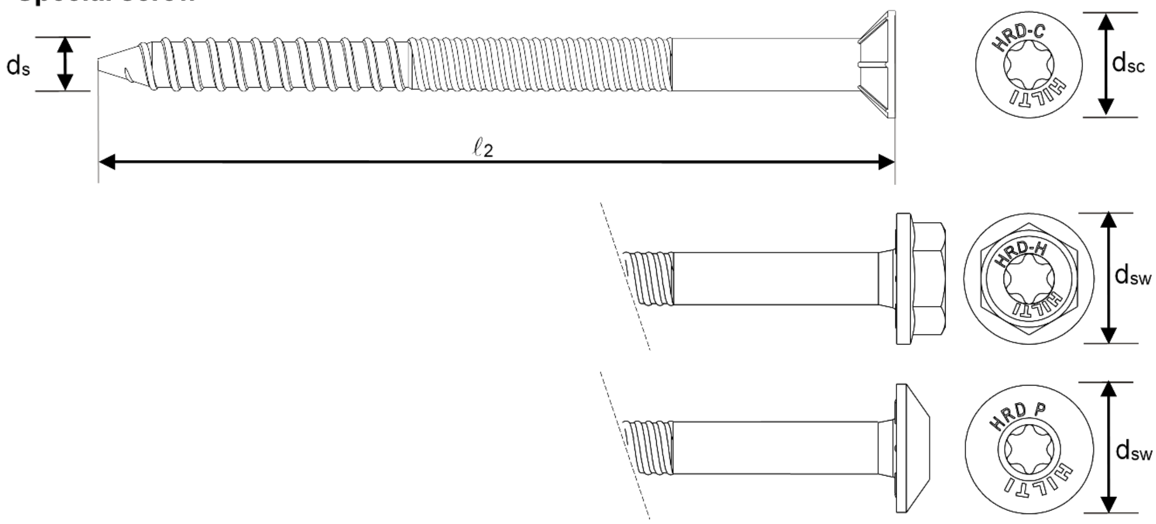
Anchor dimension

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	$\ell_{1,min}$	[mm]	60	60
Maximum length of the sleeve	$\ell_{1,max}$	[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	$\ell_{2,min}$	[mm]	65	65
Maximum length of the screw	$\ell_{2,max}$	[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

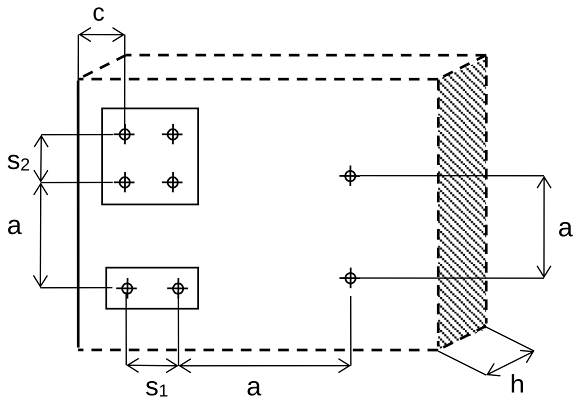
Anchor size				HRD 8	HRD 10
Drill hole diameter		d_o	[mm]	8	10
Cutting diameter of drill bit		$d_{cut} \leq$	[mm]	8,45	10,45
Depth of drilled hole to deepest point		$h_{1,1} \geq$	[mm]	60	60
		$h_{1,2} \geq$	[mm]	-	80
		$h_{1,3} \geq$	[mm]	-	100[a)]
Overall plastic anchor embedment depth in base material		$h_{nom,1} \geq$	[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	11
	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	120
	Concrete thin skin	h_{min}	[mm]	-	40	-
	Masonry[e)]	h_{min}	[mm]	115-300		
Minimum spacing	Concrete ≥C16/20	s_{min}	[mm]	100	50	
		for c ≥	[mm]	50	100 [c)]	
	Concrete C12/15	s_{min}	[mm]	140	70	
		for c ≥	[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 ≥C16/20	c_{min}	[mm]	50	50	
		for s ≥	[mm]	100	150 [c)]	
	Concrete C12/15	c_{min}	[mm]	70	70	
		for s ≥	[mm]	140	210 [c)]	
	Masonry and AAC	c_{min}	[mm]	100 (60 [d)])	100	
Critical spacing in concrete[a)]	Concrete ≥C16/20	$s_{cr,N}$	[mm]	62	80	125
	Concrete C12/15	$s_{cr,N}$	[mm]	68	90	135
Critical edge distance in concrete[b)]	Concrete ≥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 "Mattone"
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.



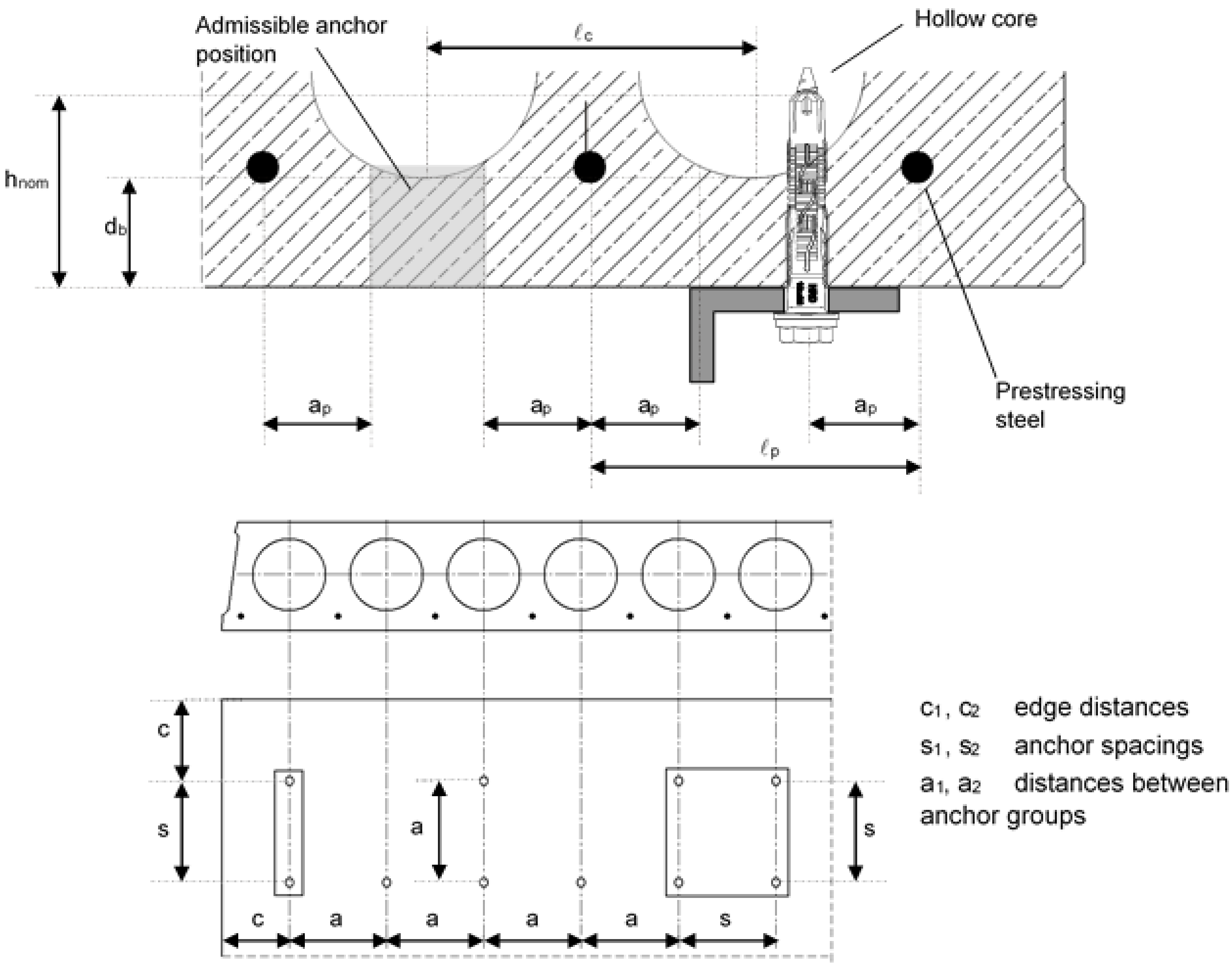
Installation equipment

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

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

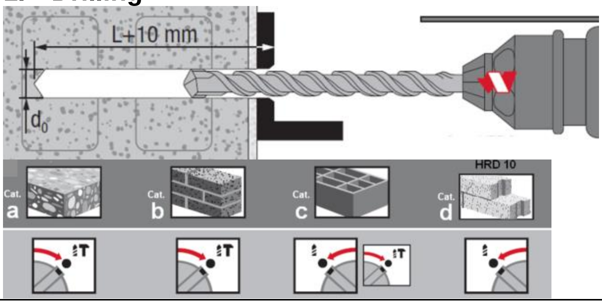
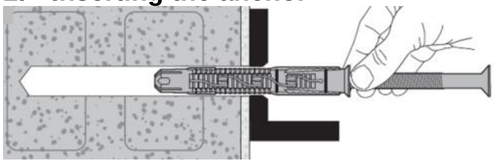
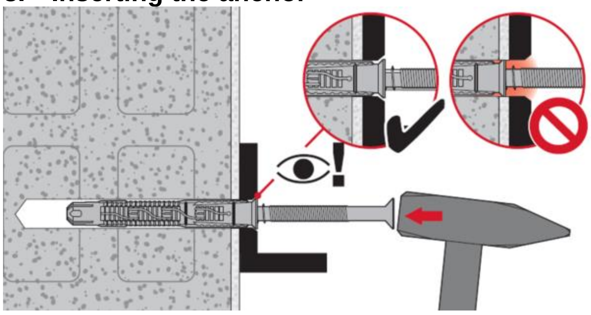
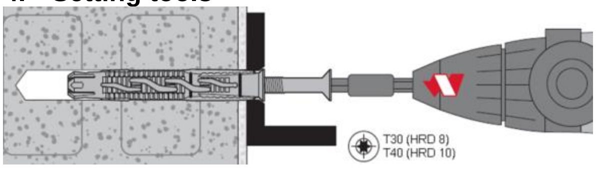
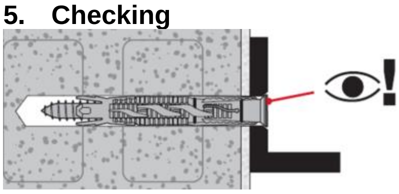
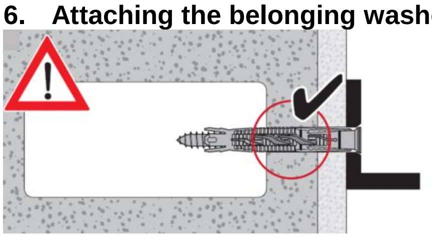
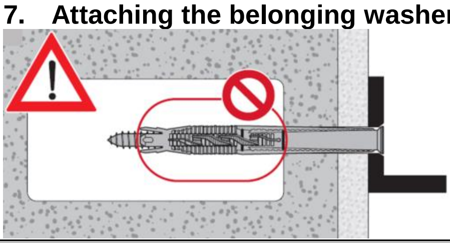
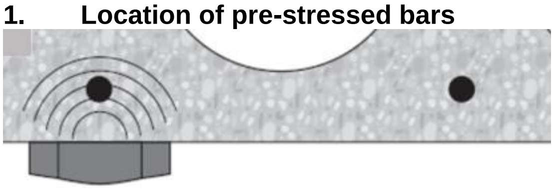
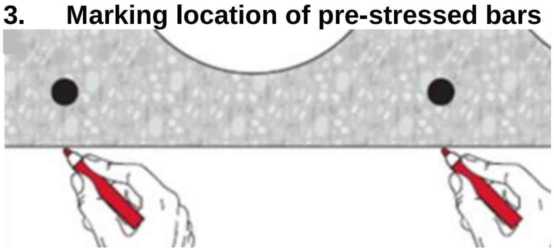
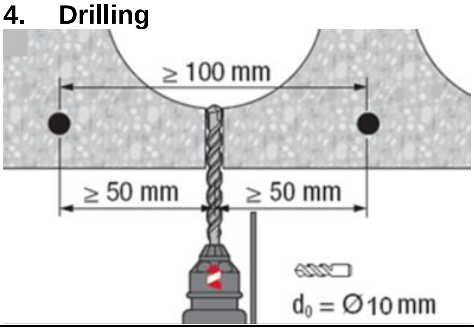
Anchor size			HRD 8	HRD 10
Overall plasic anchor embedment depth in the base material	$h_{nom} \geq$	[mm]	-	50
Bottom flange thickness	$d_b \geq$	[mm]	-	25
Core distance	$l_c \geq$	[mm]	-	100
Prestressing steel distance	$l_p \geq$	[mm]	-	100
Distance between anchor position and prestressing steel	$a_p \geq$	[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	
1. Drilling 	**2. Inserting the anchor** 
3. Inserting the anchor 	**4. Setting tools** 
5. Checking 	**6. Attaching the belonging washer** 
7. Attaching the belonging washer 	
Additional preparation in case of application in precast prestressed hollow core slabs	
1. Location of pre-stressed bars 	**2. Marking location of pre-stressed bars** 
3. Marking location of pre-stressed bars 	**4. Drilling** 

HRD Plastic frame anchors

Everyday standard plastic frame anchor for single use applications

Anchor version		Benefits
	HRD-C HRD-CR HRD-CR2 (M10)	- 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-H HRD-HR HRD-HR2 HR-HF (M10)	
	HRD-K HRD-KR HRD-KR2 (M10)	
	HRD-P HRD-PR HRD-PR2 (M10)	

Base material

Concrete

Approvals / certificates

Description	Authority / Laboratory	No./ date of issue
Allgemeine bauaufsichtliche Zulassung [a)] (German approval)	DIBt, Berlin	Z-21.2-2034 / 2014-11-14

c) All data given in this section according Z-21.2-2034, issue 2014-11-14.

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
- Shear without lever arm
- Use at max. temperature of +30°C(long term) or +50°C (short term)

Mean ultimate resistance

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension $N_{Ru,m}$	[kN]	18,4	17,5	19,3
Shear $V_{Ru,m}$	[kN]	11,1	10,6	11,7
Cracked concrete				
Tension $N_{Ru,m}$	[kN]	5,8	5,8	5,8
Shear $V_{Ru,m}$	[kN]	11,1	10,6	11,7

Characteristic resistance

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension N_{Rk}	[kN]	15,2	15,2	15,2
Shear V_{Rk}	[kN]	10,6	10,1	11,1
Cracked concrete				
Tension N_{Rk}	[kN]	4,4	4,4	4,4
Shear V_{Rk}	[kN]	9,0	9,0	9,0

Design resistance

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension N_{Rd}	[kN]	6,0	6,0	6,0
Shear V_{Rd}	[kN]	8,5	8,1	8,5
Cracked concrete				
Tension N_{Rd}	[kN]	1,7	1,7	1,7
Shear V_{Rd}	[kN]	5,0	5,0	5,0

Recommended loads [a)]

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension N_{Rec}	[kN]	4,3	4,3	4,3
Shear V_{Rec}	[kN]	6,1	5,8	6,1
Cracked concrete				
Tension N_{Rec}	[kN]	1,2	1,2	1,2
Shear V_{Rec}	[kN]	3,6	3,6	3,6

a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall b-e taken from national regulations.

Materials

Mechanical properties

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Nominal tensile strength f_{uk}	[N/mm²]	600	600	630
Yield strength f_{yk}	[N/mm²]	480	480	480
Stressed cross-section A_s	[mm²]	35,3	33,7	35,3
Moment of resistance W	[mm³]	29,5	27,6	29,5
Char. bending resistance $M^0_{Rk,s}$	[Nm]	21,3	19,9	22,3

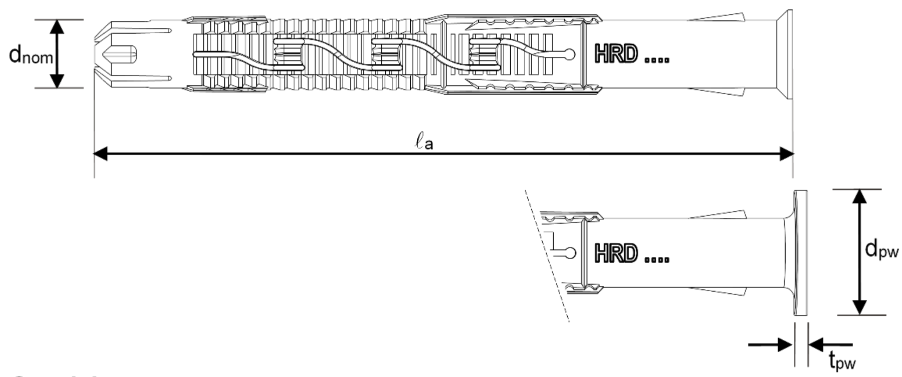
Material quality

Part		Material
Sleeve		Polyamide, colour red
Screw	HRD-C, -H, -K, -P	Carbon steel, galvanized to min.5 µm
	HRD-HF	Carbon steel, hot-dip galvanized to min. 65 µm
	HRD-CR2, -HR2, -KR2, -PR2	Stainless steel, corrosion class II: 1.4301 / 1.4567
	HRD-CR, -HR, -KR, -PR	Stainless steel, corrosion class III: 1.4362/1.4401/1.4404/1.4571

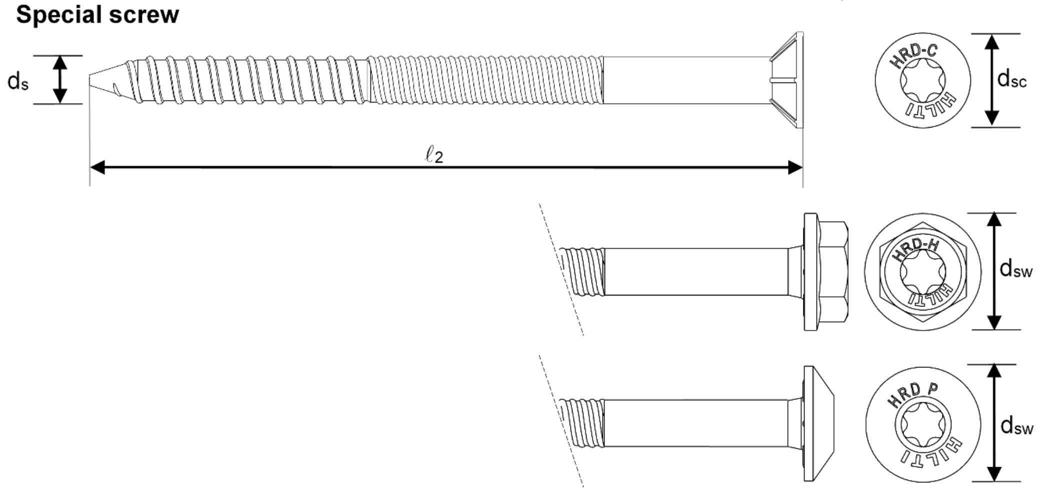
Anchor dimension

Anchor size			HRD 10
Minimum thickness of fixture	$t_{fix,min}$	[mm]	0
Maximum thickness of fixture	$t_{fix,max}$	[mm]	260
Diameter of the sleeve	d_{nom}	[mm]	10
Minimum length of the sleeve	$\ell_{1,min}$	[mm]	60
Maximum length of the sleeve	$\ell_{1,max}$	[mm]	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]	7
Minimum length of the screw	$\ell_{2,min}$	[mm]	65
Maximum length of the screw	$\ell_{2,max}$	[mm]	315
Head diameter of countersunk screw	d_{sc}	[mm]	14
Head diameter of hexhead screw	d_{sw}	[mm]	17,5
Length of threaded section	L_t	[mm]	70

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 I	-40 °C to +50 °C	+30 °C	+50 °C
Temperature range II	-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.

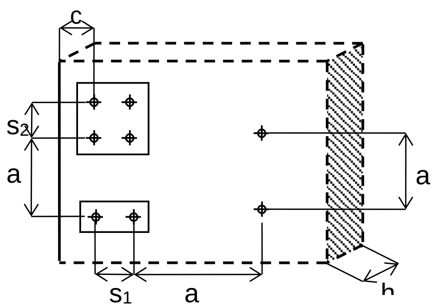
Setting details

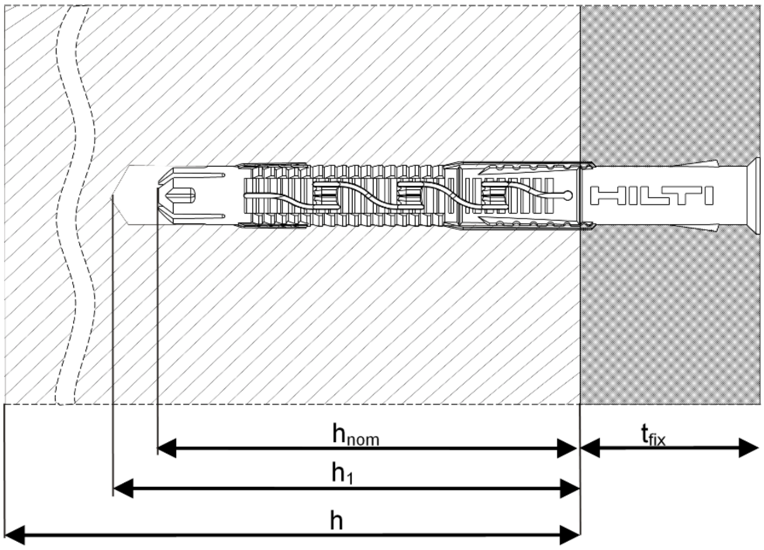
Anchor size				HRD 10
Drill hole diameter		d_o	[mm]	10
Cutting diameter of drill bit		$d_{cut} \leq$	[mm]	10,45
Depth of drilled hole to deepest point		$h_1 \geq$	[mm]	80
Overall plastic anchor embedment depth in base material		$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	Countersunk screw	$d_f \leq$	[mm]	11
	Hexhead screw	$d_f \leq$	[mm]	12

Setting parameters

Anchor size				HRD 10	
		h_{nom}	[mm]	**70**	
Minimum base material thickness	Concrete	h_{min}	[mm]	120	
Minimum spacing [a)]	Concrete ≥ C20/25	s_{min}	[mm]	50	
		for c ≥	[mm]	100	
Minimum edge distance [a)]	Concrete ≥ C20/25	c_{min}	[mm]	50	
		for s ≥	[mm]	150	
Critical spacing for splitting failure	Concrete ≥ C20/25	$s_{cr,sp}$	[mm]	300	
Critical edge distance for splitting failure	Concrete ≥ C20/25	$c_{cr,sp}$	[mm]	150	
Concrete				**Non-cracked**	**Cracked**
Critical spacing for concrete cone failure	Concrete ≥ C20/25	$s_{cr,N}$	[mm]	135	75
Critical edge distance for concrete cone failure	Concrete ≥ C20/25	$c_{cr,N}$	[mm]	38	68

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





Installation equipment

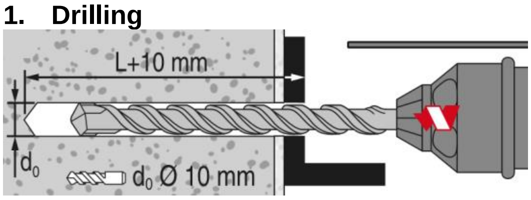
Anchor size	HRD 10
Rotary hammer	TE 2 (-A) - TE16 (-A)
Other tools	Hammer, Screwdriver

Setting instruction

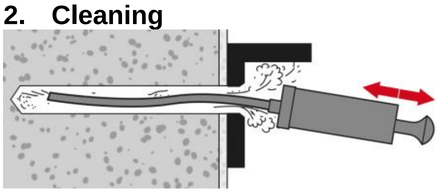
***For detailed information on installation see instruction for use given with the package of the product.**

Setting instruction for HRD

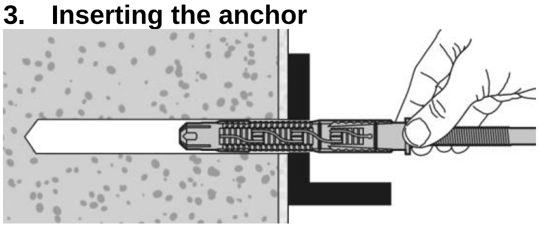
1. Drilling



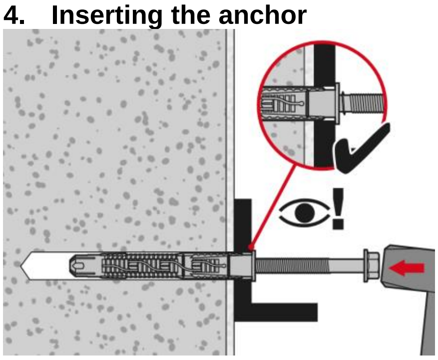
2. Cleaning



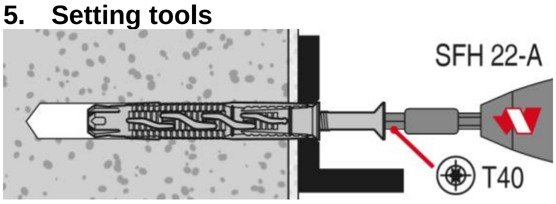
3. Inserting the anchor



4. Inserting the anchor



5. Setting tools



6. Checking