



HRD PLASTIC ANCHOR

Technical Datasheet





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HRD Plastic frame anchors

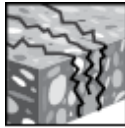
Everyday standard plastic frame anchor for single use applications

Anchor version		Benefits
	HRD-C HRD-CR HRD-CR2 (d10)	<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-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)

Approvals / certificates

Description	Authority / Laboratory	No./ date of issue
Allgemeine bauaufsichtliche Zulassung ^{a)} (German approval)	DIBt, Berlin	Z-21.2-2034 / 2019-11-15

a) All data given in this section according Z-21.2-2034, issue 2019-11-15.

Basic loading data

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Steel failure
- 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)

Characteristic resistance

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension	N_{Rk} [kN]	14,9	14,9	14,9
Shear	V_{Rk} [kN]	10,6	10,1	11,1
Cracked concrete				
Tension	N_{Rk} [kN]	4,3	4,3	4,3
Shear	V_{Rk} [kN]	8,6	8,6	8,6

Design resistance

Anchor type		HRD 10		
Anchor screw material		Galvanized steel	Hot-dip galvanized steel	Stainless steel
Non-cracked concrete				
Tension	N_{Rd} [kN]	5,9	5,9	5,9
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]	4,8	4,8	4,8

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]	4,2	4,2	4,2
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]	3,4	3,4	3,4

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.



Materials

Mechanical properties

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

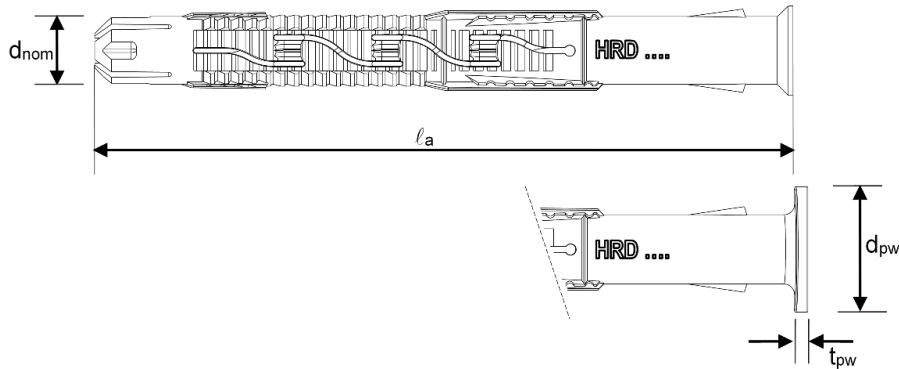
Material quality

Part		Material
Sleeve		Polyamide, color red
Screw	HRD-C, -H, -K, -P	Carbon steel, galvanized to min.5 μ m
	HRD-HF	Carbon steel, hot-dip galvanized to min. 65 μ m
	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

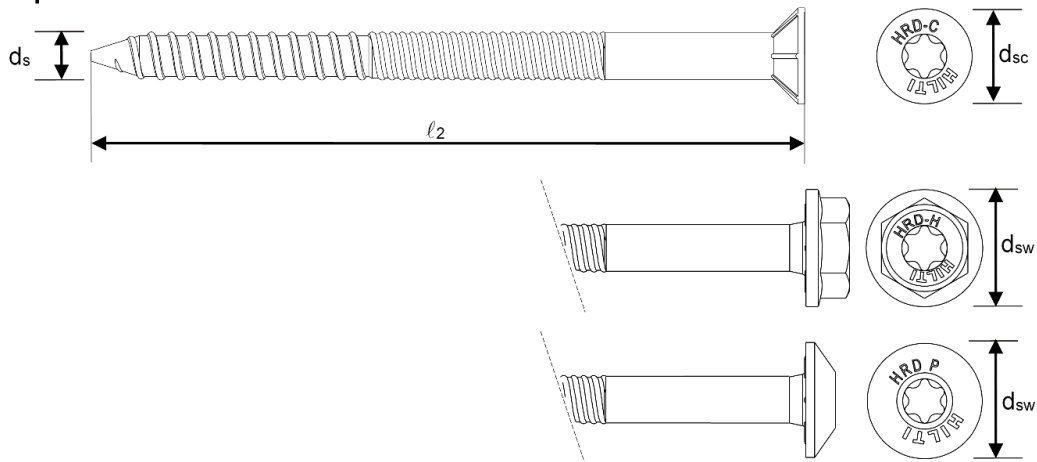
Anchor dimension

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

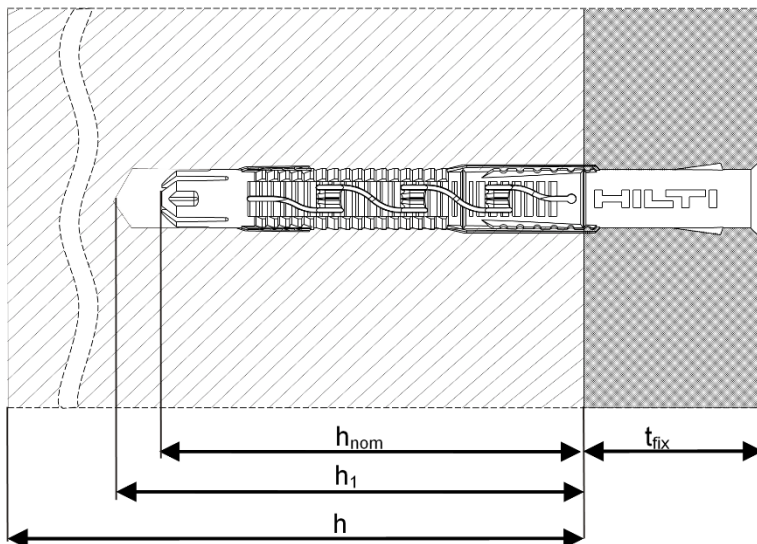
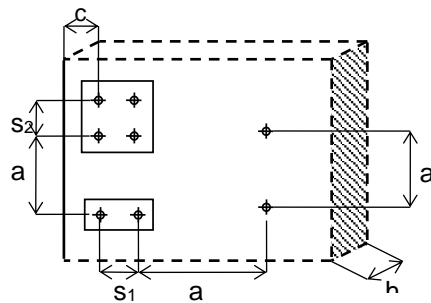
Anchor size			HRD 10
Drill hole diameter	d_o	[mm]	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10,45
Depth of drilled hole to deepest point	$h_1 \geq$	[mm]	80
Overall plastic anchor embedment depth in base material	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	Countersunk screw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

Setting parameters

Anchor size			HRD 10	
		h_{nom}	70	
Minimum base material thickness	Concrete	h_{min}	120	
Minimum spacing ^{a)}	Concrete \geq C20/25	s_{min}	50	
		for $c \geq$	100	
Minimum edge distance ^{a)}	Concrete \geq C20/25	c_{min}	50	
		for $s \geq$	150	
Critical spacing for splitting failure	Concrete \geq C20/25	$s_{cr,sp}$	300	
Critical edge distance for splitting failure	Concrete \geq C20/25	$c_{cr,sp}$	150	
Concrete			Non-cracked	Cracked
Critical spacing for concrete cone failure	Concrete \geq C20/25	$s_{cr,N}$	135	75
Critical edge distance for concrete cone failure	Concrete \geq C20/25	$c_{cr,N}$	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	
<p>1. Drilling</p>	<p>2. Cleaning</p>
<p>3. Inserting the anchor</p>	<p>4. Inserting the anchor</p>
<p>5. Setting tools</p>	<p>6. Checking</p>