HRV
PLASTIC ANCHOR

Technical Datasheet

Update: Jan-23

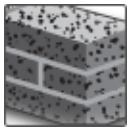
HRV Plastic anchors

Economical plastic frame anchor

Anchor version	Benefits
 HRV-H HRV-HF (d10)	- Available in carbon steel and hot-deep galvanized - Suitable for concrete and steel washers - Integrated plastic and steel washer

Base material

Concrete (non-cracked)



Solid brick

Basic loading data

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Non-cracked concrete C16/20 – C50/60, other base material as specified
- Minimum base material thickness
- Steel failure
- Shear without lever arm
- Anchor for single point application

Anchorage depth

Anchor size			HRV 10
Overall plastic anchor embedment depth in base material	h_{nom}	[mm]	70

Characteristic resistance

Anchor size				HRV 10
Concrete C16/20 – C50/60		N_{Rk}	[kN]	6,0
		V_{Rk}	[kN]	8,5
Solid clay brick	$f_b \geq 10$ n/mm²	F_{Rk}	[kN]	2,0
	$f_b \geq 20$ n/mm²	F_{Rk}	[kN]	3,0
Russian solid clay brick	$f_b \geq 10$ n/mm²	F_{Rk}	[kN]	2,0
	$f_b \geq 20$ n/mm²	F_{Rk}	[kN]	3,0

Design resistance

Anchor size				HRV 10
Concrete C16/20 – C50/60		N_{Rd}	[kN]	3,3
		V_{Rd}	[kN]	6,8
Solid clay brick	$f_b \geq 10$ n/mm²	F_{Rd}	[kN]	0,8
	$f_b \geq 20$ n/mm²	F_{Rd}	[kN]	1,2
Russian solid clay brick	$f_b \geq 10$ n/mm²	F_{Rd}	[kN]	0,8
	$f_b \geq 20$ n/mm²	F_{Rd}	[kN]	1,2

Recommended loads[a)]

Anchor size					HRV 10
Concrete C16/20 – C50/60			N_{Rd}	[kN]	2,4
			V_{Rd}	[kN]	4,8
Solid clay brick	$f_b \geq 10$ n/mm²		F_{Rd}	[kN]	0,57
	$f_b \geq 20$ n/mm²		F_{Rd}	[kN]	0,86
Russian solid clay brick	$f_b \geq 10$ n/mm²		F_{Rd}	[kN]	0,57
	$f_b \geq 20$ n/mm²		F_{Rd}	[kN]	0,86

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.

Materials

Mechanical properties

Anchor size				HRV 10	
				Galvanized steel	Hot-dip galvanized
Nominal tensile strength		f_{uk}	[N/mm²]	600	600
Yield strength		f_{yk}	[N/mm²]	480	480
Stressed cross-section	tension	A_s	[mm²]	27,3	27,3
	shear			28,3	28,3
Moment of resistance		W	[mm³]	21,2	21,2
Characteristic bending resistance		$M^0_{Rk,s}$	[Nm]	15,3	15,3

Material quality

Part		Material
Sleeve		Polyamide, color black
Screw	HRV-H	Carbon steel, galvanized to min.5 µm
	HRV-HF	Carbon steel, hot-dip galvanized to min. 65 µm

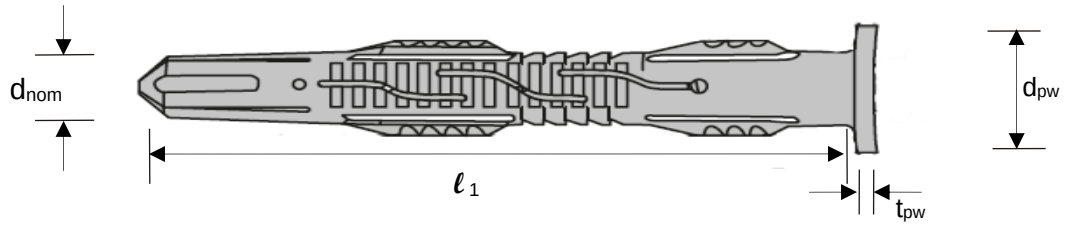
Masonry base materials

Solid clay brick	Russian solid clay brick
Mz 1,8 DIN 105-100 / EN 771-1 LxWxH [mm]: 240x115x113 h_{min} [mm]: 115 	Density [kg/dm³]: 1,9 LxWxH [mm]: 250x120x65 h_{min} [mm]: 120 

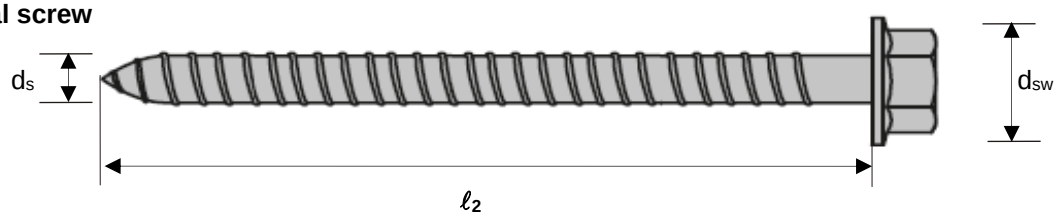
Anchor dimension

Anchor size			HRV 10
Minimum thickness of fixture	$t_{fix,min}$	[mm]	0
Maximum thickness of fixture	$t_{fix,max}$	[mm]	30
Diameter of the sleeve	d_{nom}	[mm]	10
Minimum length of the sleeve	$\ell_{1,min}$	[mm]	80
Maximum length of the sleeve	$\ell_{1,max}$	[mm]	100
Diameter of plastic washer	d_{pw}	[mm]	17,8
Thickness of plastic washer	t_{pw}	[mm]	2,5
Diameter of the screw	d_S	[mm]	7
Minimum length of the screw	$\ell_{2,min}$	[mm]	75
Maximum length of the screw	$\ell_{2,max}$	[mm]	105
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 HRV frame anchors may be applied in the temperature range given below.

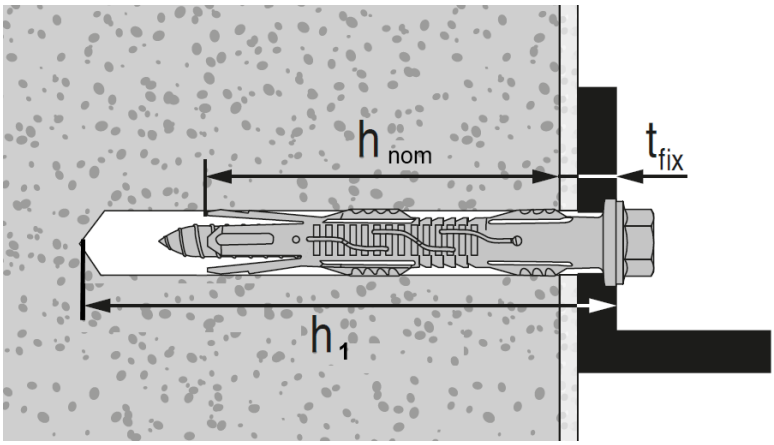
Temperature range	Base material temperature	Max. long term base material temperature	Max. short term base material temperature
Temperature range	-40 °C to +80 °C	+50 °C	+80 °C

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			HRV 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	$d_f \leq$	[mm]	12



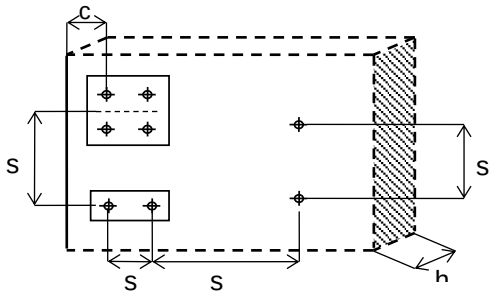
Installation equipment

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

Setting parameters

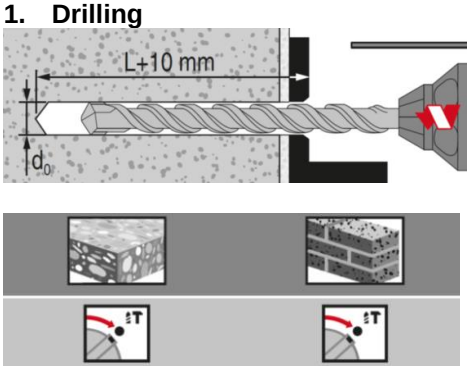
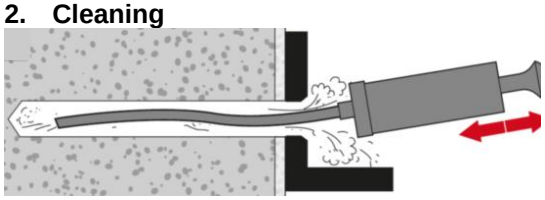
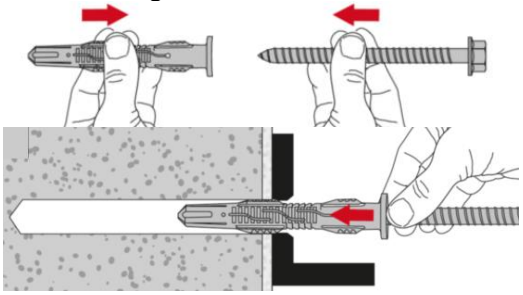
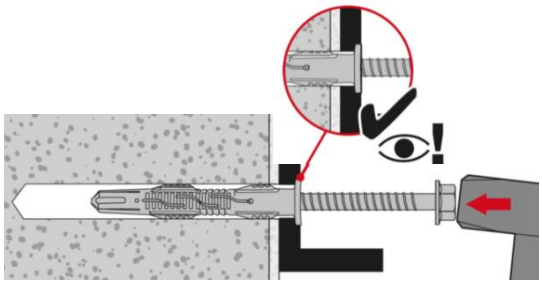
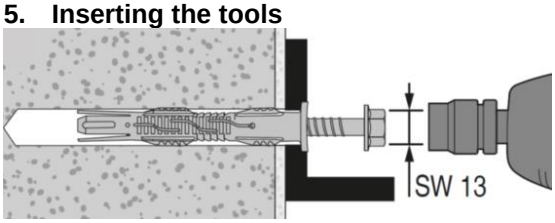
Anchor size			HRV 10
	h_{nom}	**[mm]**	**70**
Minimum base material thickness	h_{min}	[mm]	120
Minimum spacing	s_{min}	[mm]	50
	for c ≥	[mm]	100 a)
Minimum edge distance	c_{min}	[mm]	50
	for c ≥	[mm]	150 a)
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	200
Critical edge distance for splitting failure	$c_{cr,sp}$	[mm]	100
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	210
Critical edge distance for concrete cone failure	$c_{cr,N}$	[mm]	105

a) Linear interpolation allowed



Setting instruction

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

Setting instruction for HRV	
1. Drilling  	**2. Cleaning** 
3. Inserting the anchor with hand 	**4. Inserting the anchor with hammer** 
5. Inserting the tools  	**6. Checking**