HRD-U 10 / - S 10 / -U 14 Frame anchor

Anchor version	Benefits
 HRD-U 10 Carbon steel Stainless steel  HRD-S 10 Carbon steel Stainless steel  HRD-U 14 Carbon steel Stainless steel	- universal frame anchor for façade, steelwork, and mechanical installation - base material versatility - excellent setting behaviour


Concrete


Solid brick


Hollow brick


Autoclaved aerated concrete


Fire resistance

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
Fire test report	IBMB, Braunschweig	UB 3613/3891-1 Nau / 2001-11-23 UB 3613/3891-2 Nau / 2001-11-26

Basic loading data (for a single anchor)

All data in this section applies to
- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Base materials as specified in the table
  Minimum base material thickness
- Anchor is set in the brick, not in the joints

Recommended loads

Anchor size				HRD-U 10	HRD-S 10	HRD-U 14
Concrete	≥ C12/15	F_{rec}	[kN]	1,6	1,2	1,8
Solid clay brick	Mz 12	F_{rec}	[kN]	0,6	0,6	0,6
Solid clay brick	Mz 20	F_{rec}	[kN]	1,2	0,8	1,25
Solid sand-lime brick	KS 12/2,0	F_{rec}	[kN]	0,6	0,6	0,6
Lightweight solid block	V 2	F_{rec}	[kN]	0,25	0,25	0,5
Hollow clay brick	Hlz 12 – 1,0	F_{rec}	[kN]	0,3	-	0,5
Hollow sand-lime brick	KSL 6	F_{rec}	[kN]	0,4	0,4	0,6
Lightweight hollow brick	Hbl 2	F_{rec}	[kN]	0,25	0,25	0,3
AAC blocks	AAC 2	F_{rec}	[kN]	0,2	0,2	0,3
	≥ AAC 4	F_{rec}	[kN]	0,5	0,35	0,6
AAC members	P 3,3	F_{rec}	[kN]	0,2	0,2	0,3
	≥ P 4,4	F_{rec}	[kN]	0,5	0,35	0,6
AAC acc. TGL	Plant Laussig	F_{rec}	[kN]	0,3	-	-
	Plant Parchim	F_{rec}	[kN]	0,15	-	-
Thin skins of external wall paneels		F_{rec}	[kN]	0,6	0,6	-
hwpLb acc. TGL		F_{rec}	[kN]	0,5	-	0,7

Service temperature range

Hilti HRD-U 10 / -S 10 / -U 14 frame anchor may be applied in the temperature range given below.

Temperature range	Base material temperature	Maximum long term base material temperature	Maximum 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.

Materials

Mechanical properties of HRD-U 10 / S 10 / U 14

Anchor size			U 10	S 10	U 14
Nominal tensile strength f_{uk}	Carbon steel	[N/mm²]	600		
	Stainless steel	[N/mm²]	580		500
Yield strength f_{yk}	Carbon steel	[N/mm²]	480		
	Stainless steel	[N/mm²]	450		400
Stressed cross-section A_s		[mm²]	31,2		56,8
Moment of resistance W		[mm³]	24,6		60,4
Char. bending resistance $M^0_{Rk,s}$	Carbon steel	[Nm]	17,7		43,5
	Stainless steel	[Nm]	17,1		36,2

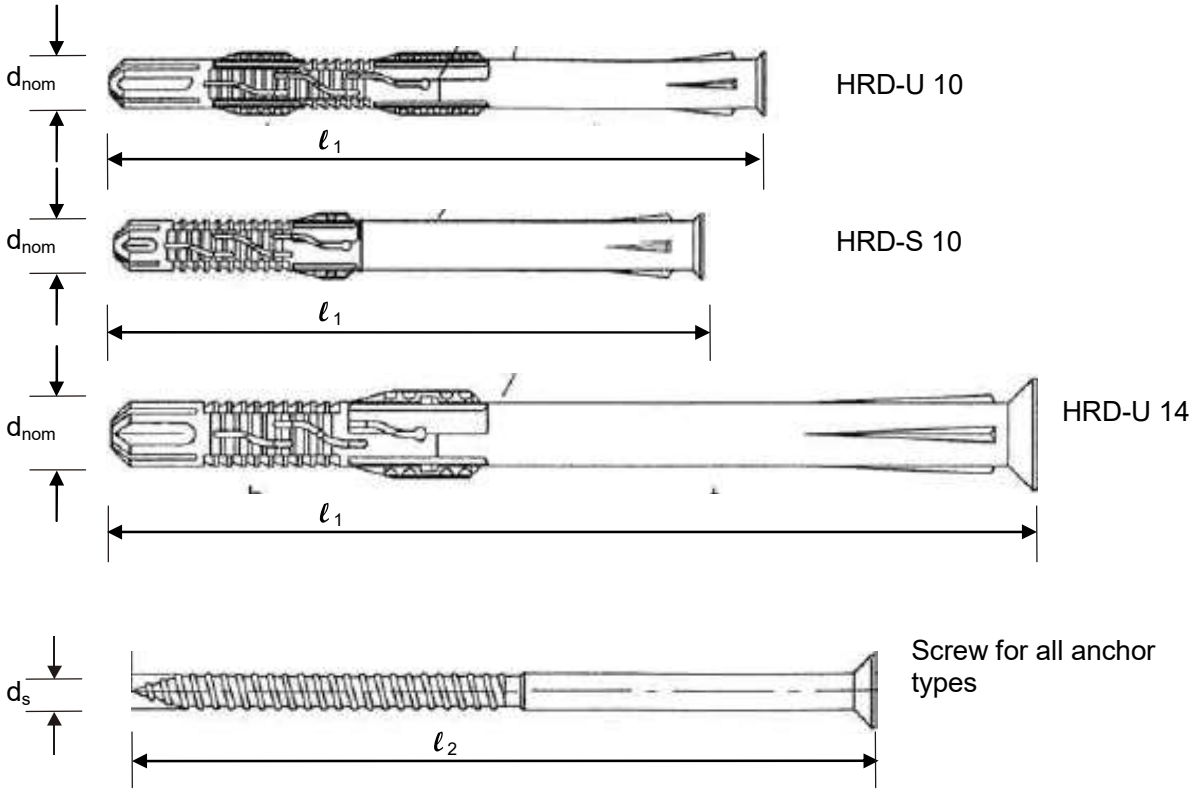
The recommended bending moment shall be calculated by dividing the characteristic bending moment by 1,4 and 1,25

Material quality

Part		Material
Sleeve	HRD	Polyamide
Screw	HRD-UG	Carbon steel, galvanised to min. 5 µm
	HRD-UR	Stainless steel

Anchor dimensions

Anchor size			U 10	S 10	U 14	UP 14
Minimum thickness of fixture	$t_{fix,min}$	[mm]	10	10	10	10
Maximum thickness of fixture	$t_{fix,max}$	[mm]	160	130	280	250
Diameter of the sleeve	d_{nom}	[mm]	10	10	14	14
Minimum length of the sleeve	$\ell_{1,min}$	[mm]	80	60	80	110
Maximum length of the sleeve	$\ell_{1,max}$	[mm]	230	180	350	330
Diameter of the screw	d_S	[mm]	7	7	10	10
Minimum length of the screw	$\ell_{2,min}$	[mm]	85	65	85	115
Maximum length of the screw	$\ell_{2,max}$	[mm]	235	285	355	335

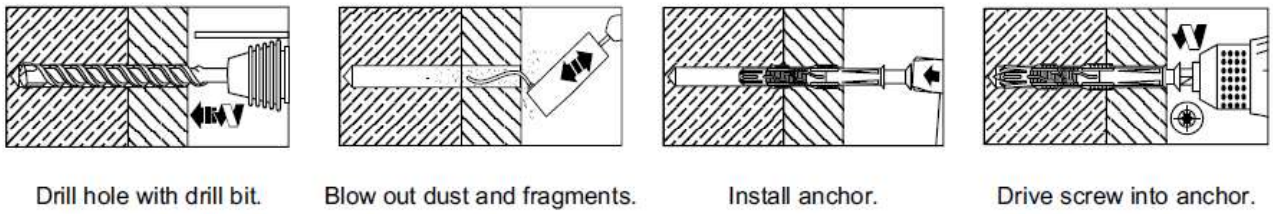


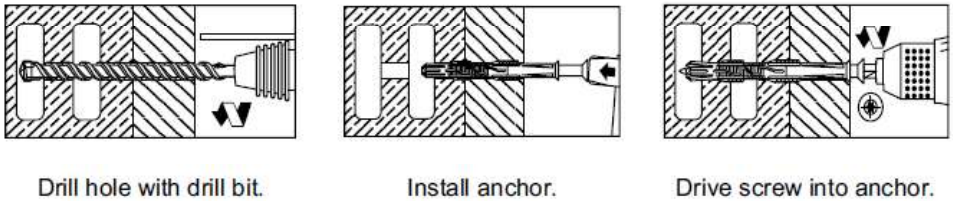
Setting

Installation equipment

Anchor size	U 10	S 10	U 14
Rotary hammer	TE2 … TE16		TE16… TE40
Other tools	hammer, screw driver		

Setting instruction

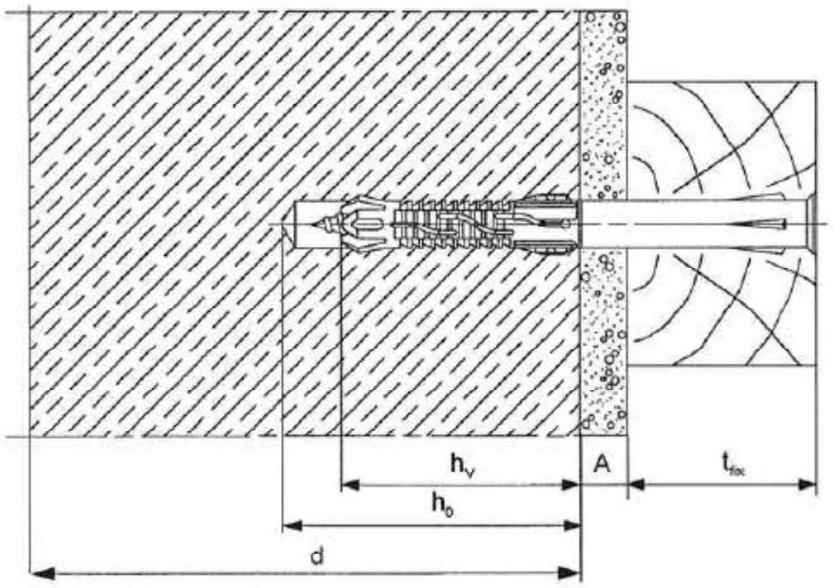




For detailed information on installation see instruction for use given with the package of the product.

For technical data for anchors in diamond drilled holes please contact the Hilti Technical advisory service.

Setting details: depth of drill hole h_1 and effective anchorage depth h_{nom}



Setting details HRD-U 10 / S 10 / U 14

			U 10	S 10	U 14
Nominal diameter of drill bit	d_o	[mm]	10	10	14
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10,45	10,45	14,5
Depth of drill hole	$h_1 \geq$	[mm]	80	60	85
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	10,5	10,5	14,5
Overall embedment depth in the base material	h_{nom}	[mm]	70	50	70
Installation temperature		[°C]	-10 - +40		

Base material thickness, anchor spacing and edge distance

Anchor size				U 10	S 10	U 14
Minimum base material thickness	Concrete	h_{min}	[mm]	120	100	120
	Masonry	h_{min}	[mm]	115	115	115
	AAC	h_{min}	[mm]	115	115	115
	Wetterschale	h_{min}	[mm]	40	40	-
	hwpLb	h_{min}	[mm]	40	40	-
Minimum spacing of single anchors	Concrete	s_{min}	[mm]	150	100	150
	Solid masonry	s_{min}	[mm]	100	100	250
	Hollow masonry	s_{min}	[mm]	250	250	250
	AAC	s_{min}	[mm]	100[a)]	-	-
	Wetterschale	s_{min}	[mm]	100	100	-
	hwpLb	s_{min}	[mm]	100	-	100
Minimum spacing in a group in concrete		s_{min1}	[mm]	50	50	50
Minimum spacing of groups in concrete		s_{min2}	[mm]	300	240	300
Minimum edge distance	Concrete	c_{min}	[mm]	100	80	100
	Solid masonry	c_{min}	[mm]	100	100	100
	Hollow masonry	c_{min}	[mm]	100	100	100
	AAC	c_{min}	[mm]	150	-	-
	Wetterschale	c_{min}	[mm]	50	50	-
	hwpLb	c_{min}	[mm]	100	100	100