

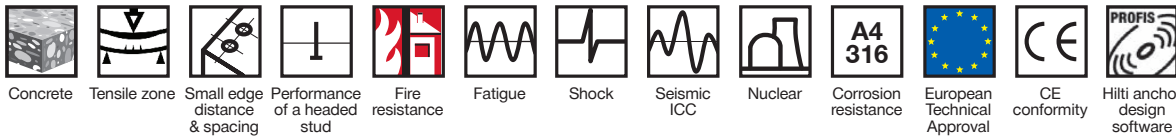


### HDA design anchor

Anchor version	Benefits
 <p>HDA-P HDA-PR HDA-PF Anchor for presetting</p>	<ul style="list-style-type: none"> <li>■ suitable for non-cracked and cracked concrete C 20/25 to C 50/60</li> <li>■ mechanical interlock (undercut)</li> <li>■ low expansion force (thus small edge distance / spacing)</li> <li>■ automatic undercutting (without special undercutting tool)</li> <li>■ high loading capacity, performance of a headed stud</li> <li>■ complete system (anchor, stop drill bit, setting tool, drill hammer)</li> <li>■ setting mark on anchor for control (easy and safe)</li> <li>■ completely removable</li> <li>■ test reports: fire resistance, fatigue, shock, seismic</li> </ul>
 <p>HDA-T HDA-TR HDA-TF Anchor for through-fastening</p>	



### 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
- Concrete as specified in the table
- Steel failure
- Minimum base material thickness
- Concrete  $f_{c,cyl} = 32$  MPa

### Recommended loads

Type HDA-P

Anchor size	M10	M12	M16	M20
Tensile $N_{rec}$	21.9	31.9	60.0	91.4
Shear $V_{rec}$	12.6	17.1	35.4	52.6

Type HDA-T

Anchor size	M10	M12	M16	M20
Tensile $N_{rec}$	21.9	31.9	60.0	91.4
Shear $V_{rec}$	30.9	38.1	66.6	97.6

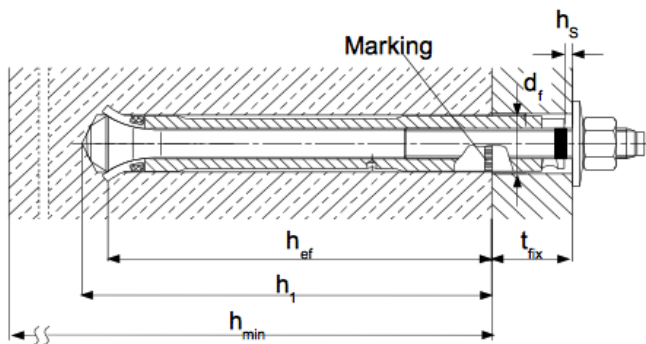
**Important Note:** HDA Sherardised, stainless steel, all M20 sizes and HDA-T M16 190x60 versions are available on request and subject to lead time

### Approvals / certificates

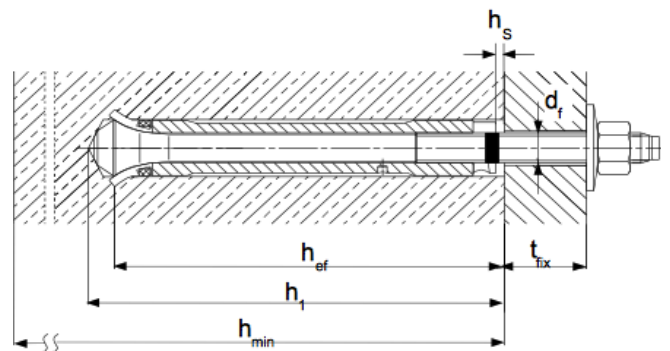
Description	Authority / Laboratory	No. / date of issue
European technical approval <sup>a)</sup>	CSTB, Paris	ETA-99/0009 / 2008-03-25
ICC-ES report	ICC evaluation service	ESR 1546 / 2008-03-01
Shockproof fastenings in civil defence installations	Bundesamt für Zivilschutz, Bern	BZS D 04-221 / 2004-09-02
Nuclear power plants	DIBt, Berlin	Z-21.1-1696 / 2008-09-01
Dynamic loads	DIBt, Berlin	Z-21.1-1693 / 2007-05-25
Fire test report	IBMB, Braunschweig	UB 3039/8151-CM / 2001-01-31
Assessment report (fire)	warringtonfire	WF 166402 / 2007-10-26

a) All data given in this section according ETA 99/0009 issue 2008-03-05.

### Setting details



HDA-P / HDA-PR / HDA-PF



HDA-T / HDA-TR / HDA-TF

Anchor size	HDA-P / HDA-PR / HDA-PF / HDA-T / HDA-TR / HDA-TF						
	M10		M12		M16		M20
	x100/20	x125/30	x125/50	x190/40	x190/60	x250/50	x250/100
Head marking	I	L	N	R	S	V	X
Nominal diameter of drill bit	$d_0$ [mm]	20	22	30	37		
Cutting diameter of drill bit	$d_{cut,min}$ [mm]	20,10	22,10	30,10	37,15		
	$d_{cut,max}$ [mm]	20,55	22,55	30,55	37,70		
Depth of drill hole <sup>a)</sup>	$h_1$ [mm]	107	133	203	266		
Anchorage depth	$h_{ef}$ [mm]	100	125	190	250		
Sleeve recess	$h_{s,min}$ [mm]	2	2	2	2		
	$h_{s,max}$ [mm]	6	7	8	8		
Torque moment <sup>b)</sup>	$T_{inst}$ [Nm]	50	80	120	300		

#### For HDA-P/-PF/-PR

Clearance hole	$d_f$ [mm]	12	14	18	22		
Minimum base material thickness	$h_{min}$ [mm]	180	200	270	350		
Fixture thickness	$t_{fix,min}$ [mm]	0	0	0	0		
	$t_{fix,max}$ [mm]	20	30	50	40	60	50

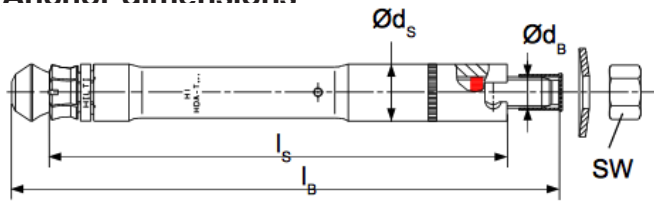
#### For HDA-T/-TF/-TR

Clearance hole	$d_f$ [mm]	21	23	32	40			
Minimum base material thickness	$h_{min}$ [mm]	200- $t_{fix}$	230- $t_{fix}$	250- $t_{fix}$	310- $t_{fix}$	330- $t_{fix}$	400- $t_{fix}$	450- $t_{fix}$
Min. fixture thickness:								
- Tension load only!	$t_{fix,min}$ [mm]	10	10	15	20	50		
- Shear load - <b>without</b> use of centering washer	$t_{fix,min}^{b)}$ [mm]	15	15	20	25	50		
- Shear load - <b>with</b> use of centering washer	$t_{fix,min}$ [mm]	10	10	15	20	-		
Max. fixture thickness	$t_{fix,max}$ [mm]	20	30	50	40	60	50	100

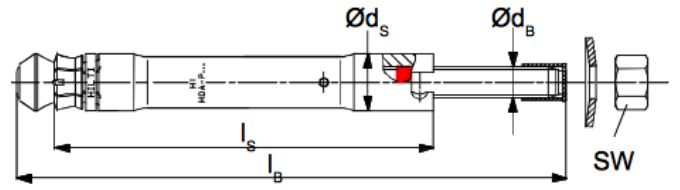
a) use specified stop drill bit

b) with use of centering washer a reduction of  $t_{fix,min}$  is possible for shear loading, details see ETA-99/0009

### Anchor dimensions



HDA-P / HDA-PR / HDA-PF



HDA-T / HDA-TR / HDA-TF

### Dimensions of HDA

Anchor size	HDA-P / HDA-PR / HDA-PF / HDA-T / HDA-TR / HDA-TF							
	M10		M12		M16		M20	
	x100/20	x125/30	x125/50	x190/40	x190/60	x250/50	x250/100	
Length code letter	I	L	N	R	S	V	X	
Total length of bolt	$l_B$ [mm]	150	190	210	275	295	360	410
Diameter of bolt	$d_B$ [mm]	10	12		16		20	
Total length of sleeve:								
- HDA-P	$l_s$ [mm]	100	125	125	190	190	250	250
- HDA-T	$l_s$ [mm]	120	155	175	230	250	300	350
Max. diameter of sleeve	$d_s$ [mm]	19	21		29		35	
Washer diameter	$d_w$ [mm]	27,5	33,5		45,5		50	
Width across flats	$S_w$ [mm]	17	19		24		30	

### Setting parameters

Anchor size			HDA-P / HDA-PR / HDA-PF / HDA-T / HDA-TR / HDA-TF						
			M10	M12		M16		M20	
			x100/20	x125/30	x125/50	x190/40	x190/60	x250/50	x250/100
Minimum spacing	$s_{min}$	[mm]	100	125		190		250	
Minimum edge distance	$c_{min}$	[mm]	80	100		150		200	

### Setting

#### Drilling

The stop drill is required for drilling in order to achieve the correct hole depth.



Anchor	Stop drill bit with TE-C (SDS plus) connection end	Stop drill bit with TE-Y (SDS max) connection end
HDA-P/ PF/ PR M10x100/20	TE-C-HDA-B 20*100	TE-Y-HDA-B 20*100
HDA-T/ TF/ TR M10x100/20	TE-C-HDA-B 20*120	TE-Y-HDA-B 20*120
HDA-P/ PF/ PR M12*125/30	TE-C HDA-B 22*125	TE-Y HDA-B 22*125
HDA-P/ PF/ PR M12*125/50		
HDA-T/ TF/ TR M12*125/30	TE-C HDA-B 22*155	TE-Y HDA-B 22*155
HDA-T/ TF/ TR M12*125/50	TE-C HDA-B 22*175	TE-Y HDA-B 22*175
HDA-P/ PF/ PR M16 *190/40		TE-Y HDA-B 30*190
HDA-P/ PF/ PR M16 *190/60		
HDA-T/ TF/ TR M16*190/40		TE-Y HDA-B 30*230
HDA-T/ TF/ TR M16*190/60		TE-Y HDA-B 30*250
HDA-P M20 *250/50		TE-Y HDA-B 37*250
HDA-P M20 *250/100		
HDA-T M20*250/50		TE-Y HDA-B 37*300
HDA-T M20*250/100		TE-Y HDA-B 37*350

### Setting

Drilling



Setting tool



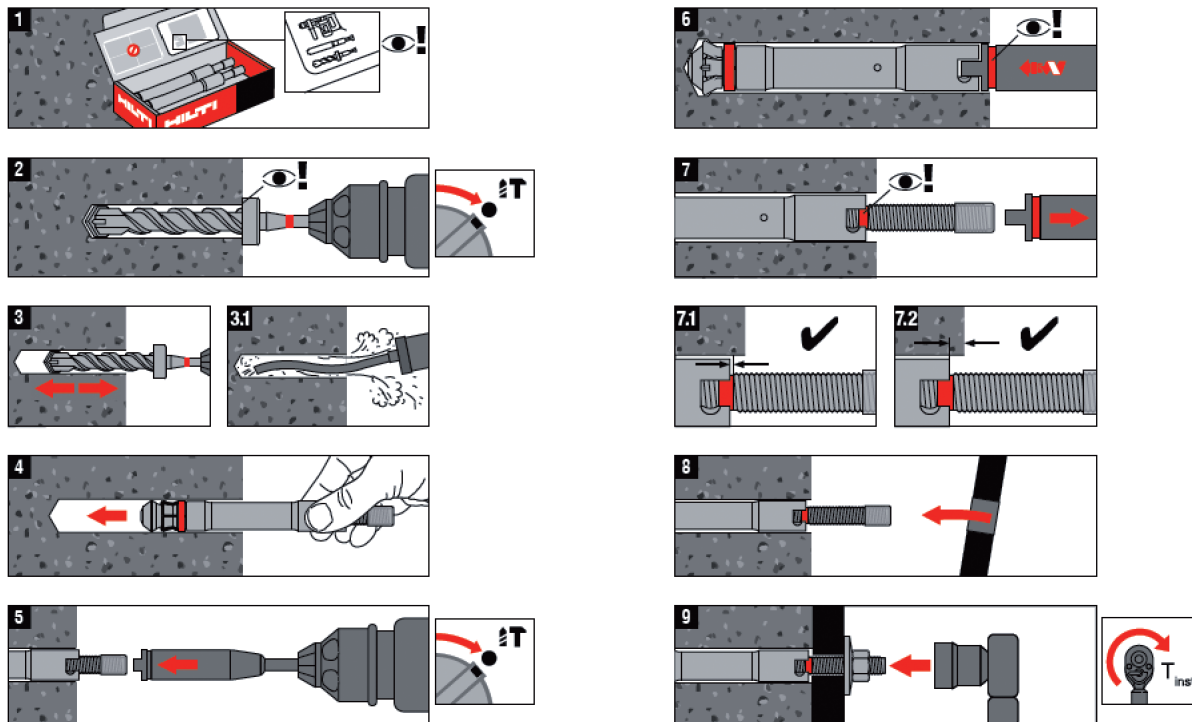
The setting system (tool and setting tool) is required for transferring the specific energy for the undercutting process.

### Setting HDA carbon steel version

Anchor									Setting tool	Technical data of the required drilling hammer	
	TE 25 <sup>a)</sup> TE 24 <sup>a)</sup>	TE 35	TE 40 AVR TE 40	TE 50	TE 56 <sup>b)</sup> TE 56-ATC <sup>b)</sup>	TE 75 <sup>b)</sup>	TE 76-ATC <sup>b)</sup> TE 76 <sup>b)</sup>	TE 70-ATC <sup>b)</sup> TE 70 <sup>b)</sup>		Single impact energy [J]	Speed under load [1/min]
HDA-P/T20-M10*100/20	■		■						TE-C-HDA-ST 20 M10	3.5 - 4.9	250 - 555
					■				TE-Y-HDA-ST 20 M10	6.5 - 7.5	480 - 500
HDA-P/T 22-M12*125/30 HDA-P/T 22-M12*125/50	■		■						TE-C-HDA-ST 22 M12	3,5 - 4.9	250 - 555
					■				TE-Y-HDA-ST 22 M12	6.5 - 7.5	480 - 500
HDA-P/T 30-M16*190/40 HDA-P/T 30-M16*190/60						■	■	■	TE-Y-HDA-ST 30 M16	8.0 - 11.0	250 - 360
								■	TE-Y-HDA-ST 37 M20	8.3 - 11.0	280 - 360
HDA-P/T 37-M20*250/50 HDA-P/T 37-M20*250/100											

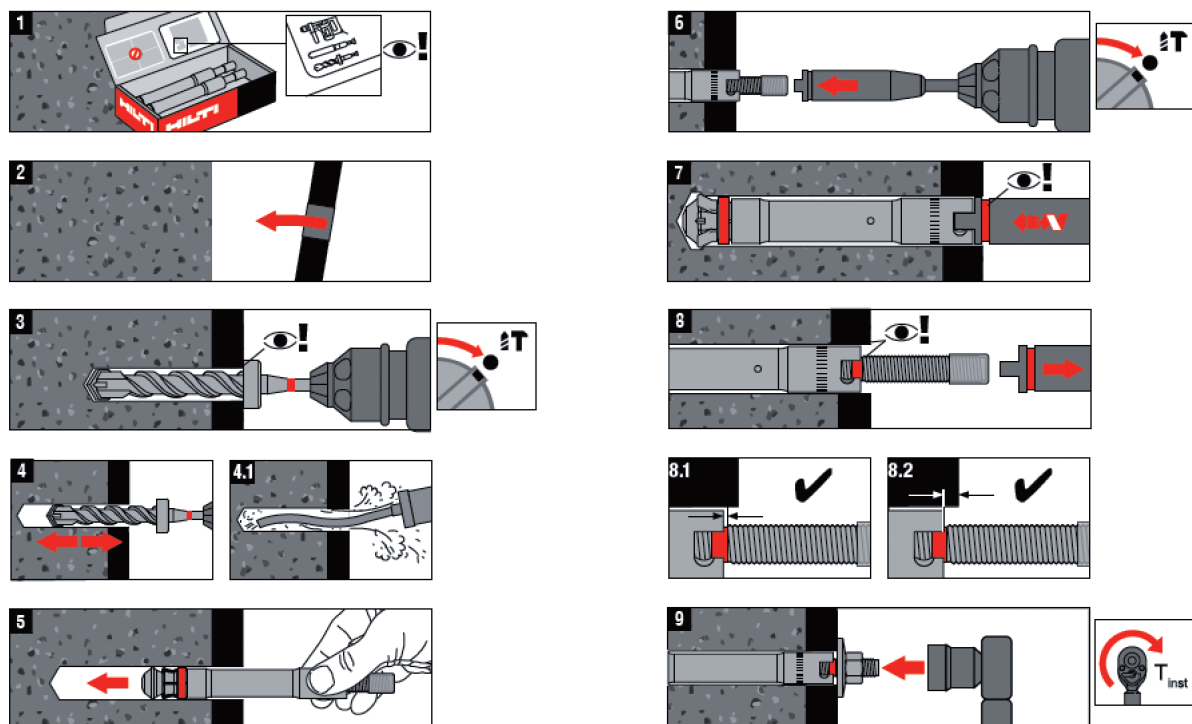
## Setting instructions

### HDA-P, HDA-PR, HDA-PF



209616-A /05.07

### HDA-T, HDA-TR, HDA-TF



209617-A /05.07