

## CLR BETOFAST OPTION 1



### PRODUCT DESCRIPTION

High performance carbon steel galvanized screw anchor 8/10 for structural fixing with hexagonal head with build-in washer and knurling under head. The anchor screw is intended for installing in cracked and non-cracked concrete (Option 1).

Special cutting thread make it easier to screw the anchor into concrete.

Permanent and temporary fixing. Anchor can be unscrew and removed.

### APPLICATION



### LENGTH OF SCREWS

d <sub>0</sub> <sup>1)</sup>	L <sup>2)</sup> [mm]	Thickness fixture <sup>3)</sup> [mm]			Marking	Code
		t <sub>fix, 3</sub>	t <sub>fix, 3</sub>	t <sub>fix, 3</sub>		
8	60	15	10	-	LR 10x60	72005b10060
	75	30	25	10	LR 10x75	72005b10075
	100	55	50	35	LR 10x100	72005b10100
	130	85	80	65	LR 10x130	72005b10130
	150	105	100	85	LR 10x150	72005b10150
10	60	10	-	-	LR 12x60	72005b12060
	75	25	15	-	LR 12x75	72005b12075
	100	50	40	25	LR 12x100	72005b12100
	130	80	70	55	LR 12x130	72005b12130
	150	100	90	75	LR 12x150	72005b12150
12	75	25	15	-	LR 12x75	72005b14075
	100	50	40	5	LR 12x100	72005b14100
	130	80	70	35	LR 12x130	72005b14130
14	80	20	10	-	LR 16x80	72005b16080
	100	40	30	-	LR 16x100	72005b16100
	130	70	60	15	LR 16x130	72005b16130
	150	90	80	35	LR 16x150	72005b16150

<sup>1)</sup> Anchor size; <sup>2)</sup> Length of screw; <sup>3)</sup> Thickness fixture on different embedment depth, see Annex I° (h<sub>nom,1</sub> = t<sub>fix,1</sub>; h<sub>nom,2</sub> = t<sub>fix,2</sub>; h<sub>nom,3</sub> = t<sub>fix,3</sub>)

## EUROPEAN TECHNICAL ASSESSMENT ETA-16/0177

CHARACTERISTIC LOADS acc. to <u>ETA-16/0177</u> - ETAG001 part 1 i 3														
Design method acc. to EN 1992-4:2018														
ESSENTIAL CHARACTERISTICS			PERFORMANCE											
Installation parameters			8			10			12			14		
<b>d<sub>0</sub></b>	Nominal diameter of drill bit	[mm]	8			10			12			14		
<b>h<sub>nom</sub></b>	Minimum installation depth	[mm]	45	50	65	50	60	75	50	60	95	60	70	115
			<small>h<sub>nom,1</sub></small>	<small>h<sub>nom,2</sub></small>	<small>h<sub>nom,3</sub></small>	<small>h<sub>nom,1</sub></small>	<small>h<sub>nom,2</sub></small>	<small>h<sub>nom,3</sub></small>	<small>h<sub>nom,1</sub></small>	<small>h<sub>nom,2</sub></small>	<small>h<sub>nom,3</sub></small>	<small>h<sub>nom,1</sub></small>	<small>h<sub>nom,2</sub></small>	<small>h<sub>nom,3</sub></small>
<b>h<sub>ef</sub></b>	Effective anchorage depth	[mm]	30	34	47	33	42	54	33	42	71	40	48	86
<b>h<sub>min</sub></b>	Minimum thickness of the concrete member	[mm]	110			110			130			150		
<b>s<sub>min</sub></b>	Minimum spacing	[mm]	60			70			80			90		
<b>c<sub>min</sub></b>	Minimum Edge distance	[mm]	60			70			80			90		
<b>Tension Steel failure</b>			8			10			12			14		
<b>N<sub>Rk,s</sub></b>	Tension Steel characteristic failure	[kN]	42,4			67,2			99,4			134,0		
<b>γ<sub>m,sN</sub><sup>1)</sup></b>	Partial safety factor for tension steel failure	[-]	1,4											
<b>Pull-out failure</b>			8			10			12			14		
<b>N<sub>Rk,p,cr</sub></b>	Tension characteristic load in cracked concrete C20/25	[kN]	3	4	7,5	4	6	9	4	6	16	5	7,5	20
<b>N<sub>Rk,p,ucr</sub></b>	Tension characteristic load in un-cracked concrete C20/25	[kN]	6	6	12	6	9	16	6	9	25	9	12	35
<b>γ<sub>inst</sub></b>	Partial safety factor	[-]	1,2											
<b>γ<sub>m,p</sub><sup>1)</sup></b>	Partial safety factor	[-]	1,8											
<b>ψ<sub>C C30/37</sub></b>	Increasing factor for concrete C30/37	[-]	1,17			1,17			1,17			1,22		
<b>ψ<sub>C C40/50</sub></b>	Increasing factor for concrete C40/50	[-]	1,32			1,32			1,32			1,41		
<b>ψ<sub>C C50/60</sub></b>	Increasing factor for concrete C50/60	[-]	1,42			1,42			1,42			1,55		
<b>Concrete Cone and Splitting failure</b>			8			10			12			14		
<b>h<sub>ef</sub></b>	Effective anchorage depth	[mm]	30	34	47	33	42	54	33	42	71	40	48	86
<b>s<sub>cr,N</sub></b>	Critical spacing	[mm]	90	102	141	100	124	162	100	124	213	118	144	258
<b>c<sub>cr,N</sub></b>	Critical edge distance	[mm]	45	51	71	50	62	81	50	62	107	59	72	129
<b>s<sub>cr,sp</sub></b>	Critical spacing (splitting)	[mm]	90	102	141	100	124	162	100	124	213	118	144	258
<b>c<sub>cr,sp</sub></b>	Critical edge distance (splitting)	[mm]	45	51	71	50	62	81	50	62	107	59	72	129
<b>Displacement on Tension Load</b>			8			10			12			14		
<b>N<sub>cr</sub></b>	Service tension load in cracked concrete C20/25	[kN]	-	-	3,2	-	-	4,0	-	-	6,9	-	-	9,6
<b>δ<sub>NO,cr</sub></b>	Short term displacement under tension load	[mm]	-	-	0,4	-	-	0,5	-	-	0,5	-	-	0,6
<b>δ<sub>N∞,cr</sub></b>	Long term displacement under tension load	[mm]	-	-	2,0	-	-	2,0	-	-	2,0	-	-	2,0
<b>N<sub>ucr</sub></b>	Service tension load in un-cracked concrete C20/25	[kN]	-	-	5,8	-	-	8,5	-	-	12,6	-	-	15,6
<b>δ<sub>NO,ucr</sub></b>	Short term displacement under tension load	[mm]	-	-	0,3	-	-	0,4	-	-	0,4	-	-	0,6
<b>δ<sub>N∞,ucr</sub></b>	Long term displacement under tension load	[mm]	-	-	1,4	-	-	1,5	-	-	1,8	-	-	1,9

Shear Steel failure		8			10			12			14		
$h_{nom}$	Minimum installation depth [mm]	45	50	65	50	60	75	50	60	95	60	70	115
$V_{Rk,s}$	Shear Steel characteristic failure [kN]	17,0			26,9			39,8			53,5		
$M^0_{Rk,s}$	Bending Moment characteristic failure [Nm]	46,8			93,2			167,7			261,8		
$\gamma_{m,sV}^{1)}$	Partial safety factor for shear steel failure [-]	1,5											
Shear Concrete Pry-out failure		8			10			12			14		
$K_8$	Factor acc. to EN 1992-4 § 7.2.2.4 [-]	1,0			1,0			2,0			2,0		
Shear Concrete Edge failure		8			10			12			14		
$l_{ef}$	Effective anchorage length [mm]	30	34	47	33	42	54	33	42	71	40	48	86
$d_{nom}$	Nominal diameter of anchor [mm]	8			10			12			14		
$\gamma_{mc}^{1)}$	Partial safety factor [-]	1,5											
Displacement on Shear Load		8			10			12			14		
$V$	Service shear load in concrete [kN]	6,9			11,0			15,0			15,5		
$\delta_{V0}$	Short term displacement under shear load [mm]	1,5			1,7			2,0			2,7		
$\delta_{V\infty}$	Long term displacement under shear load [mm]	2,3			2,6			3,0			4,1		

<sup>1)</sup> In absence of other national regulations

FIRE RESISTANCE acc. to <u>ETA-16/0177</u>					
Design method acc. to EN 1992-4:2018					
ESSENTIAL CHARACTERISTICS		PERFORMANCE			
Tension steel failure		8	10	12	14
$h_{nom}$	Minimum installation depth [mm]	65	75	95	115
$N_{Rk,s,fi,R30}$	Characteristic Tension Resistance = 30 min. [kN]	0,64	1,34	1,99	2,68
$N_{Rk,s,fi,R60}$	Characteristic Tension Resistance = 60 min. [kN]	0,55	1,01	1,49	2,01
$N_{Rk,s,fi,R90}$	Characteristic Tension Resistance = 90 min. [kN]	0,42	0,87	1,29	1,74
$N_{Rk,s,fi,R120}$	Characteristic Tension Resistance = 120 min. [kN]	0,34	0,67	0,99	1,34
$S_{cr,N,fi}$	Critical spacing under fire exposure [mm]	4x $h_{ef}$			
$C_{cr,N,fi}$	Critical edge distance under fire exposure [mm]	2x $h_{ef}$			
$\gamma_{M,fi}^{1)}$	Partial safety factor under fire exposure [-]	1,0			
Shear steel failure without lever arm		8	10	12	14
$h_{nom}$	Minimum installation depth [mm]	65	75	95	115
$V_{Rk,s,fi,R30}$	Characteristic Shear Resistance = 30 min. [kN]	0,64	1,34	1,99	2,68
$V_{Rk,s,fi,R60}$	Characteristic Shear Resistance = 60 min. [kN]	0,55	1,01	1,49	2,01
$V_{Rk,s,fi,R90}$	Characteristic Shear Resistance = 90 min. [kN]	0,42	0,87	1,29	1,74
$V_{Rk,s,fi,R120}$	Characteristic Shear Resistance = 120 min. [kN]	0,34	0,67	0,99	1,34
Shear steel failure with lever arm					
$M^0_{Rk,s,fi,R30}$	Characteristic Bending Moment = 30 min. [Nm]	0,70	1,86	3,36	5,24
$M^0_{Rk,s,fi,R60}$	Characteristic Bending Moment = 60 min. [Nm]	0,61	1,40	5,52	3,93
$M^0_{Rk,s,fi,R90}$	Characteristic Bending Moment = 90 min. [Nm]	0,47	1,21	2,18	3,40
$M^0_{Rk,s,fi,R120}$	Characteristic Bending Moment = 120 min. [Nm]	0,37	0,93	1,68	2,62
Shear concrete pry-out failure					
$k$	Factor acc. to EN 1992-4 [-]	1,0	1,0	2,0	2,0
Shear concrete edge failure					
The characteristic resistance $V^0_{Rk,c,fi}$ in C20/25 to C50/60 concrete is determined by: $V^0_{Rk,c,fi} = 0,25 \times V^0_{Rk,c} (\leq R90)$ and $V^0_{Rk,c,fi} = 0,20 \times V^0_{Rk,c} (R120)$ with $V^0_{Rk,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature acc. to EN 1992-4					

<sup>1)</sup> In absence of other national regulations, under fire exposure is recommended the safety factor  $\gamma_{M,fi} = 1,0$ .

## OTHER PERFORMANCE FEATURES

<b>Type</b>	<b>Concrete screw</b>
<b>Material</b>	Steel cl. 10.9 acc. to EN ISO 898-1
<b>Durability</b>	Internal dry conditions
<b>Anticorrosion protection</b>	Zinc coating > 5µm ISO 4042



DOP/DWU



Fire resistance  
R120

