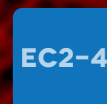


Pure-Epoxy GEN³

B+BTec
DesignFix®

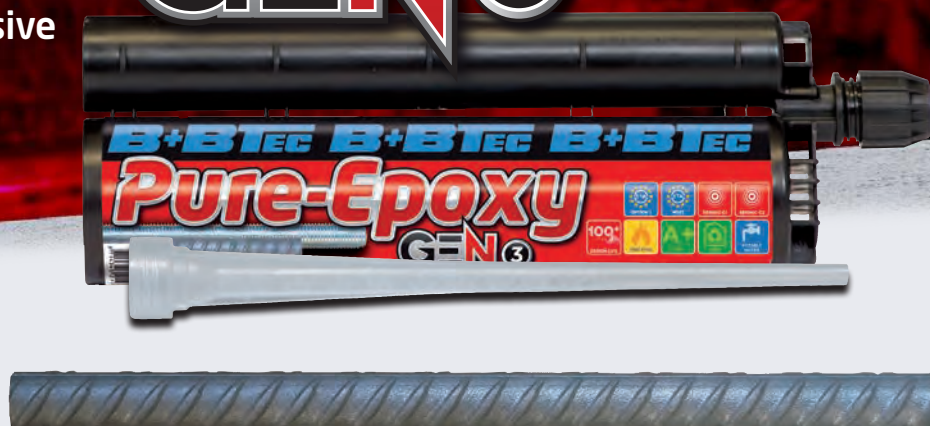
TDS BIS-PE GEN3
REBAR 0850.0123.03



**Pure-Epoxy Injection Adhesive
ETA Option 1 Assessed
for Cracked & Non-Cracked
Concrete**

**Rebar Dowels
Ø8 - Ø32 mm**

- Rebar EN 1992-1-1:2004 + AC:2010 Annex C
Bars and de-coiled rods class B or C with f_{yk} and k acc. to NDP or NCL of EN 1992-1-1/NA
 $f_{uk} = f_{tk} = k \cdot f_{yk}$



Features

- **NEW!** ETA Assessed for the Installation in Flooded Holes
- **NEW!** No Cleaning required for Hollow Drilling
- **NEW!** Extended Seismic C2 Range: M12 - M24
- **NEW!** Significantly Higher Loads especially @ Higher Temperatures
- **NEW!** 100 Year Design Life
- Slow Curing
- **NEW!** Increased Embedment Depths
- Low VOC: A+ Rating
- Fire Rated
- Leed Tested
- Potable Water Approved
- B+BTec DesignFix® support

Use Conditions

- Installation in Cracked & Non-Cracked Concrete C20/25 to C50/60
- For Anchor Rods M8-M30, Rebar Ø8-32 mm and Threaded Sleeves M6-M20
- Seismic Action C1: M8-M30, Ø8-32 mm
- Seismic Action C2: M12 - M24
- For Hammer/Air drilled Holes
- **NEW!** For Hollow Drilled Holes
- **NEW!** For Diamond Drilled Holes
- Installation in Dry and Wet Holes
- Installation in Flooded Holes
- Overhead Installation allowed.

Approvals & Test Reports



Temperature Range

B+BTec BIS-PE GEN3 injection mortar may be applied in the temperature ranges given below. An elevated base material temperature leads to a reduction of the bond resistance.

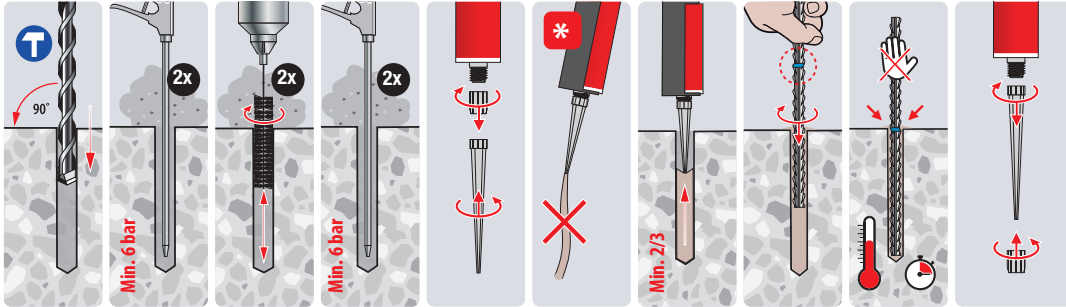
Max. long term base material temperature: Long term elevated base material temperatures are roughly constant over significant periods of time.

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.

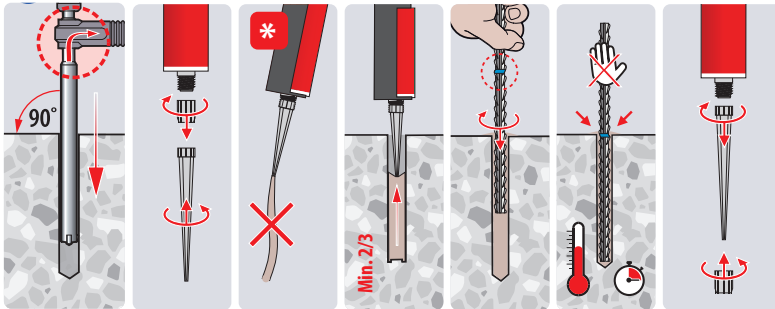
Temperature Range	Temperature Base Material	Max. Long Term Base Material Temperature	Max. Short Term Base Material Temperature
Temp. Range I	-40°C to +40°C	+24°C	+40°C
Temp. Range II	-40°C to +72°C	+50°C	+72°C



Installation Procedures (Hammer Drilling)



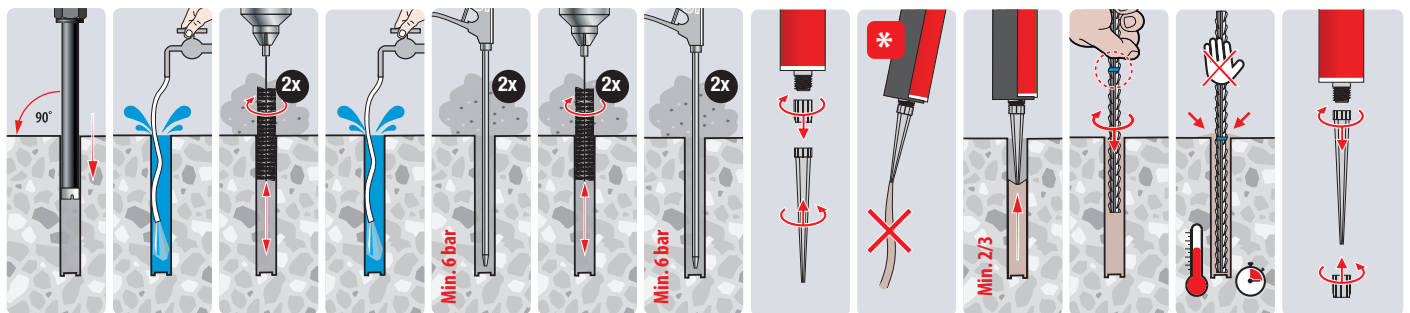
Installation Procedures (Hollow Drilling)



* Squeeze out seperately a minimum of 3 full strokes (Equal to 10-15 cm) until the mortar shows a consistent colour.



Installation Procedures (Diamond Drilling)



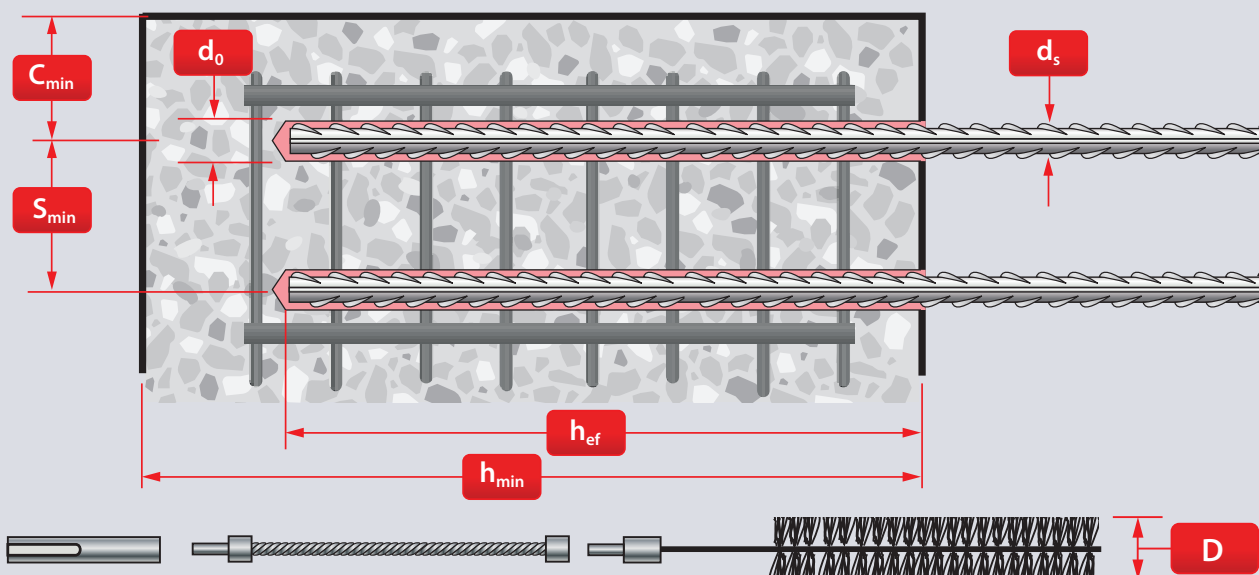
Curing Times¹⁾

Temperature²⁾	°C	0 to +4	+5 to +9	+10 to +14	+15 to +19	+20 to +24	+25 to +34	+35 to +39	+40
Processing/Working Time		90 min	80 min	60 min	40 min	30 min	12 min	8 min	8 min
Curing Time Dry Holes		144 h	48 h	28 h	18 h	12 h	9 h	6 h	4 h
Curing Time Wet Holes		288 h	96 h	56 h	36 h	24 h	18 h	12 h	8 h

1) Cartridge Temperature must be between +5°C and +40°C. 2) Concrete Temperature



Specification Data for the use in Cracked & Uncracked Concrete and Hammer/Air Drilled Holes according to EN 1992-4:2018 and Technical Report TR 055



Installation Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32			
Min. Eff. Anchorage Depth	$h_{ef,min}$	[mm]	60	60	70	75	80	90	96	100	112	128			
Max. Eff. Anchorage Depth	$h_{ef,max}$	[mm]	160	200	240	280	320	400	480	500	560	640			
Hole Diameter	d_o	[mm]	10	12	12	14	14	16	18	20	25	32	35	40	
Required Volume per cm Embedment Depth	V_s	[ml/cm]	0,34	0,75	0,41	0,90	0,49	1,06	1,21	1,36	2,12	4,22	3,76	4,16	5,43

Member Thickness, Edge Distance & Spacing

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
Min. Member Thickness	h_{min}	[mm]	$h_{ef} + 30 \text{ mm}$ $\geq 100 \text{ mm}$			$h_{ef} + 2d_0$						
Min. Edge Distance	C_{min}	[mm]	35	40	45	50	50	60	70	70	75	85
Min. Spacing	S_{min}	[mm]	40	50	60	70	75	95	120	120	130	150

Steel Brush & Piston Plug Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
Brush Diameter	D	[mm]	13,5	15,5	17,5	20,0	20,0	27,0	34,0	34,0	37,0	43,5
Min. Brush Diameter	D_{min}	[mm]	12,5	14,5	16,5	18,5	20,5	25,5	32,5	32,5	35,5	40,5
Piston Plug	#	--	No piston plug required			18	20	25	32	32	35	40

Static and quasi-static resistance for a service life of 50 years (for a single rebar)

All data in this section subject to:

- Correct setting (see setting instructions).
- No edge distance and spacing influence.
- Minimum and maximum embedment depth, as specified in the 'Installation Dimensions' table.
- Concrete C20/25, $f_{ck} = 20 \text{ N/mm}^2$.
- Temperature range I: (max. long/short term temperature $+24^\circ\text{C}/+40^\circ\text{C}$).
- Shear loads are calculated without the influence of a lever arm.
- $\psi_{sus} = 1,0$ according EN 1992-4:2018; eq. 7.14a.
- Recommended loads are with overall partial safety factor for action $\gamma_G = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.
- Increasing factors for concrete ψ_c in case of HD/HDB:
C25/30 = **1,02** C30/37 = **1,04** C35/45 = **1,07** C40/50 = **1,08** C45/55 = **1,09** C50/60 = **1,10**
- Increasing factors for concrete ψ_c in case of DD:
C25/30 = **1,04** C30/37 = **1,08** C35/45 = **1,12** C40/50 = **1,15** C45/55 = **1,17** C50/60 = **1,19**



Design Resistance Dry/Wet Holes (Hammer Drilled)

Steel Decisive

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	15,2	15,2	19,2	21,3	23,5	28,0	30,8	32,8	38,9	47,5
	Tensile Max.	$N_{Rd,max}$	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	7,0	8,8	13,4	14,9	16,4	19,6	21,6	23,0	27,2	33,2
	Tensile Max.	$N_{Rd,max}$	[kN]	18,8	29,3	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Design Resistance Flooded Holes (Hammer Drilled)

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	12,7	12,7	16,0	17,8	19,6	23,3	25,7	27,3	32,4	39,6
	Tensile Max.	$N_{Rd,max}$	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	5,9	7,3	11,2	12,4	13,7	16,3	18,0	19,1	22,7	27,7
	Tensile Max.	$N_{Rd,max}$	[kN]	15,6	24,4	42,7	58,2	76,0	118,7	170,9	185,4	232,6	303,8
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Hammer Drilled)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	10,9	10,9	13,7	15,2	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	5,0	6,3	9,6	10,7	11,7	14,0	15,4	16,4	19,4	23,7
	Tensile Max.	N _{rec,max}	[kN]	13,4	20,9	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Recommended Loads Flooded Holes (Hammer Drilled)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	9,1	9,1	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	4,2	5,2	8,0	8,9	9,8	11,7	12,9	13,7	16,2	19,8
	Tensile Max.	N _{rec,max}	[kN]	11,2	17,5	30,5	41,5	54,3	84,8	122,1	132,5	166,2	217,0
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3



Design Resistance Dry/Wet Holes (Hollow Drilling)

Steel Decisive

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	14,1	15,2	19,2	21,3	23,5	28,0	30,8	32,8	38,9	47,5
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	7,0	8,8	13,4	14,9	16,4	19,6	21,6	23,0	27,2	33,2
	Tensile Max.	N _{Rd,max}	[kN]	18,8	29,3	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4



Design Resistance Flooded Holes (Hollow Drilling)

Steel Decisive

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	10,9	12,7	16,0	17,8	19,6	23,3	25,7	27,3	32,4	39,6
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	5,9	7,3	11,2	12,4	13,7	16,3	18,0	19,1	22,7	27,7
	Tensile Max.	N _{Rd,max}	[kN]	15,6	24,4	42,7	58,2	76,0	118,7	170,9	185,4	232,6	303,8
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Hollow Drilling)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	10,1	10,9	13,7	15,2	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	5,0	6,3	9,6	10,7	11,7	14,0	15,4	16,4	19,4	23,7
	Tensile Max.	N _{rec,max}	[kN]	13,4	20,9	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Recommended Loads Flooded Holes (Hollow Drilling)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	7,8	9,1	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	4,2	5,2	8,0	8,9	9,8	11,7	12,9	13,7	16,2	19,8
	Tensile Max.	N _{rec,max}	[kN]	11,2	17,5	30,5	41,5	54,3	84,8	122,1	132,5	166,2	217,0
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3



Design Resistance Dry/Wet Holes (Diamond Drilled)

Steel Decisive

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	14,1	15,2	19,2	21,3	23,5	28,0	30,8	32,8	38,9	47,5
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Design Resistance Flooded Holes (Diamond Drilled)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	11,7	12,7	16,0	17,8	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Diamond Drilled)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	10,1	10,9	13,7	15,2	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6.5	10.3	14.8	20.2	26.3	41.1	59.2	64.3	80.7	105.3

Recommended Loads Flooded Holes (Diamond Drilled)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	8,4	9,1	11,4	12,7	12,0	14,3	15,7	16,7	19,8	24,2
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Combined tension and shear loading in accordance with EN 1992-4:2018 please refer to the B+BTEC Designfix software or contact B+BTEC engineering department engineering@bbtec.nl for further information.

Seismic resistance for a service life of 50 years (for a single rebar)

All data in this section subject to:

- Correct setting (see setting instructions).
- No edge distance and spacing influence.
- Minimum and maximum embedment depth, as specified in the 'Installation Dimensions' table.
- Concrete C20/25, $f_{ck} = 20 \text{ N/mm}^2$.
- Temperature range I: (max. long/short term temperature $+24^\circ\text{C}/+40^\circ\text{C}$).
- Shear loads are calculated without the influence of a lever arm.
- $\alpha_{gap} = 1,0$ (using special filling washer according ETA-19/0850 Annex A 3).
- Increasing factor for concrete ψ_c : C25/30 to C50/60 = 1,0



Design Resistance Dry/Wet Holes in case of seismic performance category C1

Steel Decisive

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,eq,min}$	[kN]	7,0	8,8	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	$N_{Rd,eq,max}$	[kN]	18,8	29,3	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,eq,min}$	[kN]	6,4	10,1	14,5	19,8	25,8	33,3	36,7	39,0	46,3	56,5
	Shear Max.	$V_{Rd,eq,max}$	[kN]	6,4	10,1	14,5	19,8	25,8	40,3	58,0	63,0	79,1	103,2

Design Resistance Flooded holes in case of seismic performance category C1

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,eq,min}$	[kN]	5,9	6,4	8,1	9,0	9,9	11,8	13,0	13,8	16,4	20,0
	Tensile Max.	$N_{Rd,eq,max}$	[kN]	15,6	24,4	42,7	58,2	76,0	110,6	145,4	154,5	183,2	223,8
	Shear Min.	$V_{Rd,eq,min}$	[kN]	6,4	10,1	14,5	19,8	25,8	33,3	36,7	39,0	46,3	56,5
	Shear Max.	$V_{Rd,eq,max}$	[kN]	6,4	10,1	14,5	19,8	25,8	40,3	58,0	63,0	79,1	103,2

Combined tension and shear loading in accordance with EN 1992-4:2018 please refer to the B+BTec Designfix software or contact B+BTec engineering department engineering@bbtec.nl for further information.

Static and quasi-static resistance for a service life of **100 years** (for a single rebar)

All data in this section subject to:

- Correct setting (see setting instructions).
- No edge distance and spacing influence.
- Minimum and maximum embedment depth, as specified in the 'Installation Dimensions' table.
- Concrete C20/25, $f_{ck} = 20 \text{ N/mm}^2$.
- Temperature range I: (max. long/short term temperature $+24^\circ\text{C}/+40^\circ\text{C}$).
- Shear loads are calculated without the influence of a lever arm.
- $\psi_{SUS} = 1,0$ according EN 1992-4:2018; eq. 7.14a.
- Recommended loads are with overall partial safety factor for action $\gamma_G = 1,4$. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.



Design Resistance Dry/Wet Holes (Hammer Drilled)

Steel Decisive

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	15,2	15,2	19,2	21,3	23,5	28,0	30,8	32,8	38,9	47,5
	Tensile Max.	$N_{Rd,max}$	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Design Resistance Flooded Holes (Hammer Drilled)

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,min}$	[kN]	12,7	12,7	16,0	17,8	19,6	23,3	25,7	27,3	32,4	39,6
	Tensile Max.	$N_{Rd,max}$	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,min}$	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	$V_{Rd,max}$	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Hammer Drilled)

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{rec,min}$	[kN]	10,9	10,9	13,7	15,2	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	$N_{rec,max}$	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	$V_{rec,min}$	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	$V_{rec,max}$	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Recommended Loads Flooded Holes (Hammer Drilled)

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{rec,min}$	[kN]	9,1	9,1	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	$N_{rec,max}$	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	$V_{rec,min}$	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	$V_{rec,max}$	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3



Design Resistance Dry/Wet Holes (Hollow Drilling)

Steel Decisive

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	14,1	15,2	19,2	21,3	23,5	28,0	30,8	32,8	38,9	47,5
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Design Resistance Flooded Holes (Hollow Drilling)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	10,9	12,7	16,0	17,8	19,6	23,3	25,7	27,3	32,4	39,6
	Tensile Max.	N _{Rd,max}	[kN]	19,6	31,0	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	36,9	56,0	61,7	65,6	77,7	95,0
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Hollow Drilling)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	10,1	10,9	13,7	15,2	16,8	20,0	22,0	23,4	27,8	33,9
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Recommended Loads Flooded Holes (Hollow Drilling)

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	7,8	9,1	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	N _{rec,max}	[kN]	14,0	22,2	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	26,3	40,0	44,1	46,9	55,5	67,8
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Combined tension and shear loading in accordance with EN 1992-4:2018 please refer to the B+BTec Designfix software or contact B+BTec engineering department engineering@bbtec.nl for further information.



Design Resistance Dry/Wet Holes (Hammer/Hollow Drilling)

Steel Decisive

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	6,5	8,2	13,2	14,9	16,4	19,6	21,6	23,0	27,2	33,2
	Tensile Max.	N _{Rd,max}	[kN]	17,4	27,2	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Design Resistance Flooded Holes (Hammer/Hollow Drilling)

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{Rd,min}	[kN]	5,4	6,8	11,0	12,4	13,7	16,3	18,0	19,1	22,7	27,7
	Tensile Max.	N _{Rd,max}	[kN]	14,5	22,7	37,7	51,3	67,0	104,7	150,8	163,6	205,3	268,1
	Shear Min.	V _{Rd,min}	[kN]	9,2	14,5	20,7	28,2	32,9	39,2	43,2	45,9	54,4	66,5
	Shear Max.	V _{Rd,max}	[kN]	9,2	14,5	20,7	28,2	36,9	57,6	82,9	90,0	112,9	147,4

Recommended Loads Dry/Wet Holes (Hammer/Hollow Drilling)

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	4,7	5,8	9,44	10,7	11,7	14,0	15,4	16,4	19,4	23,7
	Tensile Max.	N _{rec,max}	[kN]	12,4	19,4	31,7	43,2	56,4	88,1	126,8	137,8	172,9	225,6
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Recommended Loads Flooded Holes (Hammer/Hollow Drilling)

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	N _{rec,min}	[kN]	3,9	4,9	7,9	8,9	9,8	11,7	12,9	13,7	16,2	19,8
	Tensile Max.	N _{rec,max}	[kN]	10,4	16,2	26,9	36,7	47,9	74,8	107,7	116,9	146,6	191,5
	Shear Min.	V _{rec,min}	[kN]	6,5	10,3	14,8	20,2	23,5	28,0	30,8	32,8	38,9	47,5
	Shear Max.	V _{rec,max}	[kN]	6,5	10,3	14,8	20,2	26,3	41,1	59,2	64,3	80,7	105,3

Combined tension and shear loading in accordance with EN 1992-4:2018 please refer to the B+BTec Designfix software or contact B+BTec engineering department engineering@bbtec.nl for further information.

Seismic resistance for a service life of 100 years (for a single rebar)

All data in this section subject to:

- Correct setting (see setting instructions).
- No edge distance and spacing influence.
- Minimum and maximum embedment depth, as specified in the 'Installation Dimensions' table.
- Concrete C20/25, $f_{ck} = 20 \text{ N/mm}^2$.
- Temperature range I: (max. long/short term temperature $+24^\circ\text{C}/+40^\circ\text{C}$).
- Shear loads are calculated without the influence of a lever arm.
- $\alpha_{gap} = 1,0$ (using special filling washer according ETA-19/0850 Annex A 3).
- Increasing factor for concrete ψ_c : C25/30 to C50/60 = 1,0



Design Resistance Dry/Wet Holes in case of seismic performance category C1 (Hammer/Hollow Drilling)

Steel Decisive

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,eq,min}$	[kN]	7,0	8,8	11,4	12,7	14,0	16,7	18,4	19,5	23,1	28,3
	Tensile Max.	$N_{Rd,eq,max}$	[kN]	18,8	29,3	44,4	60,5	79,0	123,4	177,6	192,9	242,0	315,9
	Shear Min.	$V_{Rd,eq,min}$	[kN]	6,4	10,1	14,5	19,8	25,8	33,3	36,7	39,0	46,3	56,5
	Shear Max.	$V_{Rd,eq,max}$	[kN]	6,4	10,1	14,5	19,8	25,8	40,3	58,0	63,0	79,1	103,2

Design Resistance Flooded holes in case of seismic performance category C1 (Hammer/Hollow Drilling)

Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
B500B	Tensile Min.	$N_{Rd,eq,min}$	[kN]	5,9	6,4	8,1	9,0	9,9	11,8	13,0	13,8	16,4	20,0
	Tensile Max.	$N_{Rd,eq,max}$	[kN]	15,6	24,4	42,7	58,2	76,0	110,6	145,4	154,5	183,2	223,8
	Shear Min.	$V_{Rd,eq,min}$	[kN]	6,4	10,1	14,5	19,8	25,8	33,3	36,7	39,0	46,3	56,5
	Shear Max.	$V_{Rd,eq,max}$	[kN]	6,4	10,1	14,5	19,8	25,8	40,3	58,0	63,0	79,1	103,2

Combined tension and shear loading in accordance with EN 1992-4:2018 please refer to the B+BTec Designfix software or contact B+BTec engineering department engineering@bbtec.nl for further information.

Free Anchor Design Software for Structural Safety!



B+BTEC DesignFiX® Anchor Design made Easy!

Input Freedom & 3D User Interface

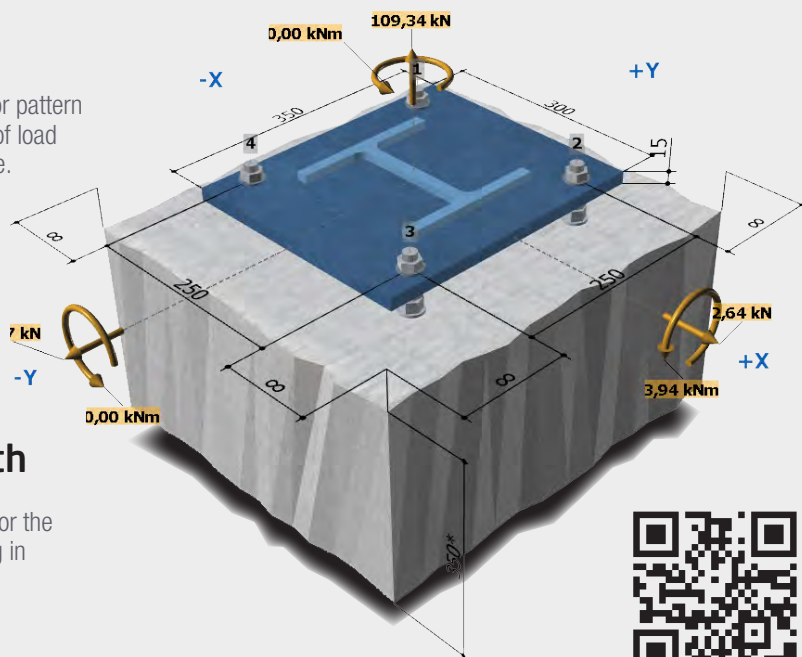
B+BTEC DesignFiX® offers complete freedom to select an anchor pattern and base plate configuration, as well as the position and direction of load combinations. Changes are made directly into the 3D user interface.

Anchor Type Comparison

B+BTEC DesignFiX® displays the usability of the various anchor types (according to European directive ETAG 001 and EN 1992-4), including the values for static loads and under seismic influence. This allows you to compare the calculation results of the different anchor types in a single easy to read panel.

Calculation Effective Anchorage Depth

When selecting an Injection Mortar B+BTEC DesignFiX® allows for the automatic calculation of the most effective anchorage depth, taking in consideration the minimal and maximum values of the ETA.



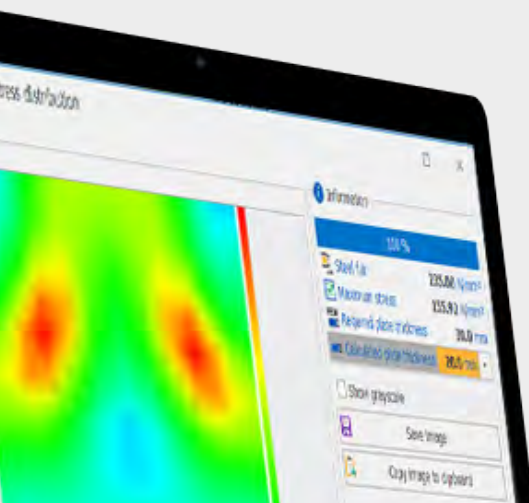
Calculation Base Plate Thickness

The integrated FEM-Calculation Method (Finite Element Method) in B+BTEC DesignFiX® allows you to calculate the base plate thickness based upon the stresses in the base plate in combination with the base plate configuration.



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