



Hybrid Injection System with ETA Assessment **Option 1** for Cracked & Non-Cracked Concrete SA TS 101: 2015 compliant



B+B Tec	
Munterij 8, NL 4762AH, Zevenbergen	
16	
1343-CPR-M 529-7	
ETA-16/0958	
ETAG 001-5 Option 1	
M8 - M30/Ø8 - 32 mm	
European Technical Assessment	
Option 1 for Cracked Concrete	
DoP: 1343-CPR-M 529-7	

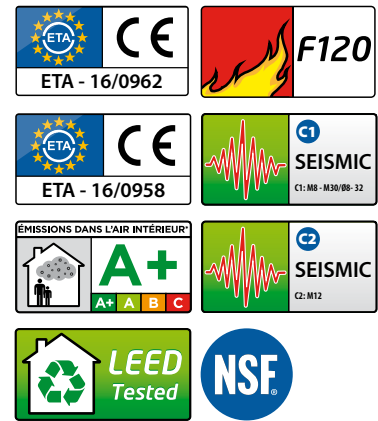
Use Conditions

- 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
- For Hammer/Air drilled Holes
- Installation in Dry and Wet Holes
- Overhead Installation allowed.
- Fire Rated

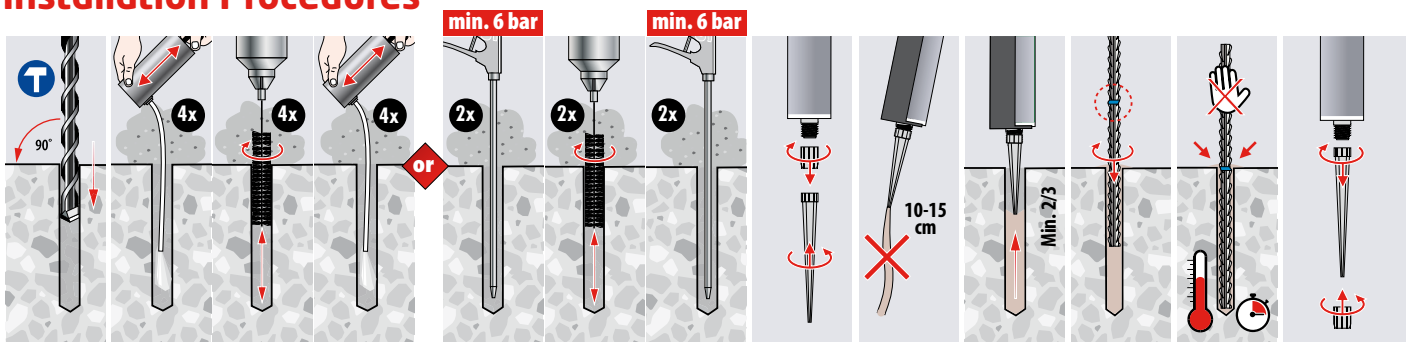
Typical Applications

- Infrastructure Construction (Roads, Viaducts, Sound Barriers, Crash Barriers, Harbours, High Rise Construction, Steel Construction)
- Production Facilities (Installation of Cranes, Robots, Conveyor Lines etc.)

Approvals & Test Reports



Installation Procedures

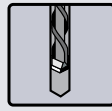


1) Blow out with Hand Pump for Bore Hole Diameter $D_0 \leq 20$ mm, Bore Hole Depth $h_0 \leq 10$ ds and Non-Cracked Concrete only.

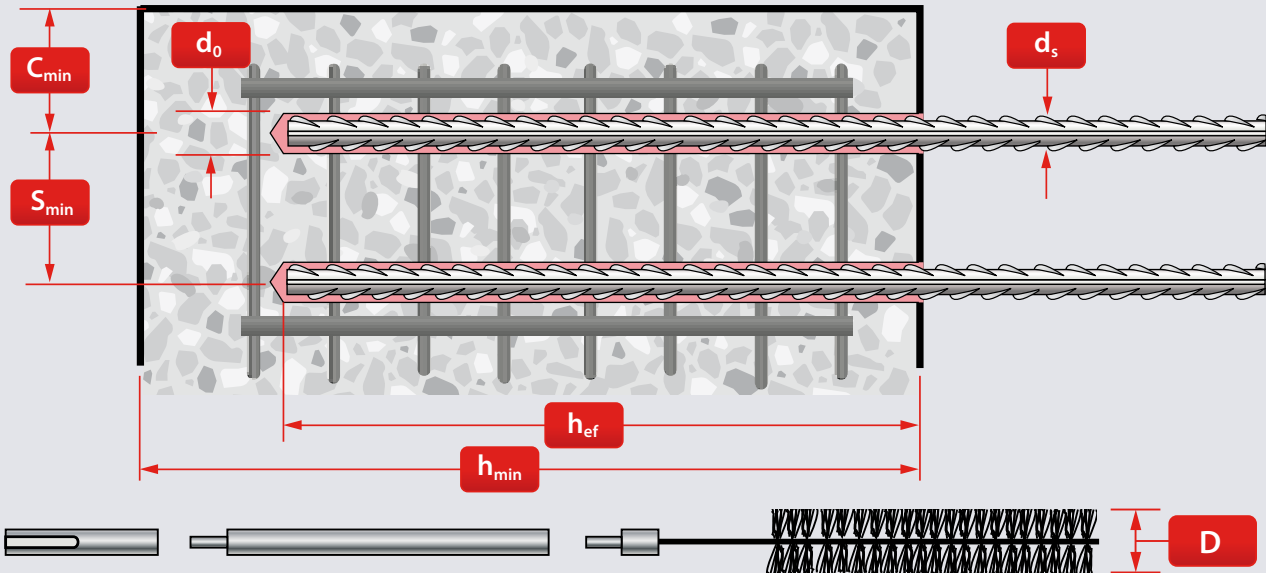
Curing Times²⁾

Temperature ³⁾	°C	-5 to -1	0 to +4	+5 to +9	+10 to +14	+15 to +19	+20 to +29	+30 to +40
Processing Time		50 min	25 min	15 min	10 min	6 min	3 min	2 min
Curing Time Dry Holes		5 h	3,5 h	2 h	1h	40 min	30 min	30 min
Curing Time Wet Holes		10 h	7 h	4h	2h	80 min	60 min	60 min

2) Cartridge Temperature must be between +5°C and +40°C. 3) Concrete Temperature



Specification Data for the use in Cracked & Uncracked Concrete and Hammer/Air Drilled Holes according to ETAG TR029, CEN/TS 1992-4 and SA TS 101: 2015



2 Installation Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
Min. Eff. Anchorage Depth	$h_{ef,min}$	[mm]	60	60	70	75	80	90	96	112	128
Max. Eff. Anchorage Depth	$h_{ef,max}$	[mm]	160	200	240	280	320	400	480	560	640
Hole Diameter	d_0	[mm]	12	14	16	18	20	25	32	35	40
Required Volume per cm Embedment Depth	V_s	[ml/cm]	0,75	0,90	1,06	1,21	1,36	2,12	3,76	4,16	5,43

Member Thickness, Edge Distance & Spacing

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	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	65	75	85
Min. Spacing	S_{min}	[mm]	40	50	60	70	75	95	115	130	150

Steel Brush & Piston Plug Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
Brush Diameter	D	[mm]	13,5	15,5	17,5	20,0	22,0	27,0	34,0	37,0	43,5
Min. Brush Diameter	D_{min}	[mm]	12,5	14,5	16,5	18,5	20,5	24,5	32,5	35,5	40,5
Piston Plug	#	--		14	16	18	20	25	32	35	40



Performance Data¹⁾

Steel Failure

- 1) **Performance Data:** Loads in kN for a single Rebar Dowel in Concrete C20/C25*. Temperature 50°C/80°C for long/short term. No influence of Edge- or Center to Center Distances.
- 2) **Shear Loads:** Steel strength in kN without bending moment.
- 3) **Recommended Loads** incl. Safety factor $\gamma_G = 1,4$.

Design Resistance Dry/Wet Holes

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile Min.	N_{Rd,min}	[kN]	14,1	15,6	19,7	21,9	24,1	24,0	26,4	33,3	40,6
	Tensile Max.	N_{Rd,max}	[kN]	19,7	30,9	44,4	60,5	79,0	123,4	177,6	241,9	316,0
	Shear ²⁾ Max.	V_{Rd,max}	[kN]	9,2	14,4	20,7	28,2	36,9	57,6	82,9	112,9	147,4

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile Min.	N_{Rd,min}	[kN]	4,2	5,8	8,8	11,0	14,3	17,1	18,8	23,7	29,0
	Tensile Max.	N_{Rd,max}	[kN]	11,2	19,2	30,2	41,1	67,0	104,7	150,8	205,3	286,0
	Shear ²⁾ Max.	V_{Rd,max}	[kN]	9,2	14,4	20,7	28,2	36,9	57,6	82,9	112,9	147,4

Recommended Loads³⁾ Dry/Wet Holes

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile Min.	N_{Rec,min}	[kN]	10,1	11,2	14,1	15,6	17,2	17,1	18,9	23,8	29,0
	Tensile Max.	N_{Rec,max}	[kN]	14,1	22,0	31,7	43,2	56,4	88,2	126,9	172,8	225,7
	Shear ²⁾ Max.	V_{Rec,max}	[kN]	6,6	10,3	14,8	20,2	26,3	41,1	59,2	80,6	105,3

Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile Min.	N_{Rec,min}	[kN]	3,0	4,1	6,3	7,9	10,2	12,2	13,4	16,9	20,7
	Tensile Max.	N_{Rec,max}	[kN]	8,0	13,7	21,5	29,3	47,9	74,8	107,7	146,6	204,3
	Shear ²⁾ Max.	V_{Rec,max}	[kN]	6,6	10,3	14,8	20,2	26,3	41,1	59,2	80,6	105,3



INNOVATIVE SOFTWARE - ANCHOR DESIGN MADE EASY

- Innovative 3d visual user interface, ETAG-001 & SA TS 101:2015 compliant
- SEISMIC DESIGN under earthquake loads according to ETAG-001, Annex E, TR045
- Finite element analysis steel baseplate design

ICCONS® DesignFiX Software is simple, intuitive and FREE to DOWNLOAD anchor design program for Design Engineers, Project Managers, Site Engineers and End Users. Complex mechanical or chemical heavy duty anchor arrangements can be calculated in minutes. All designs are ETA based and qualify under the newly released SA TS 101:2015 now directly referenced in the 2016 National Construction Code.

With input Freedom & 3D user Interface ICCONS® DesignFiX offers complete

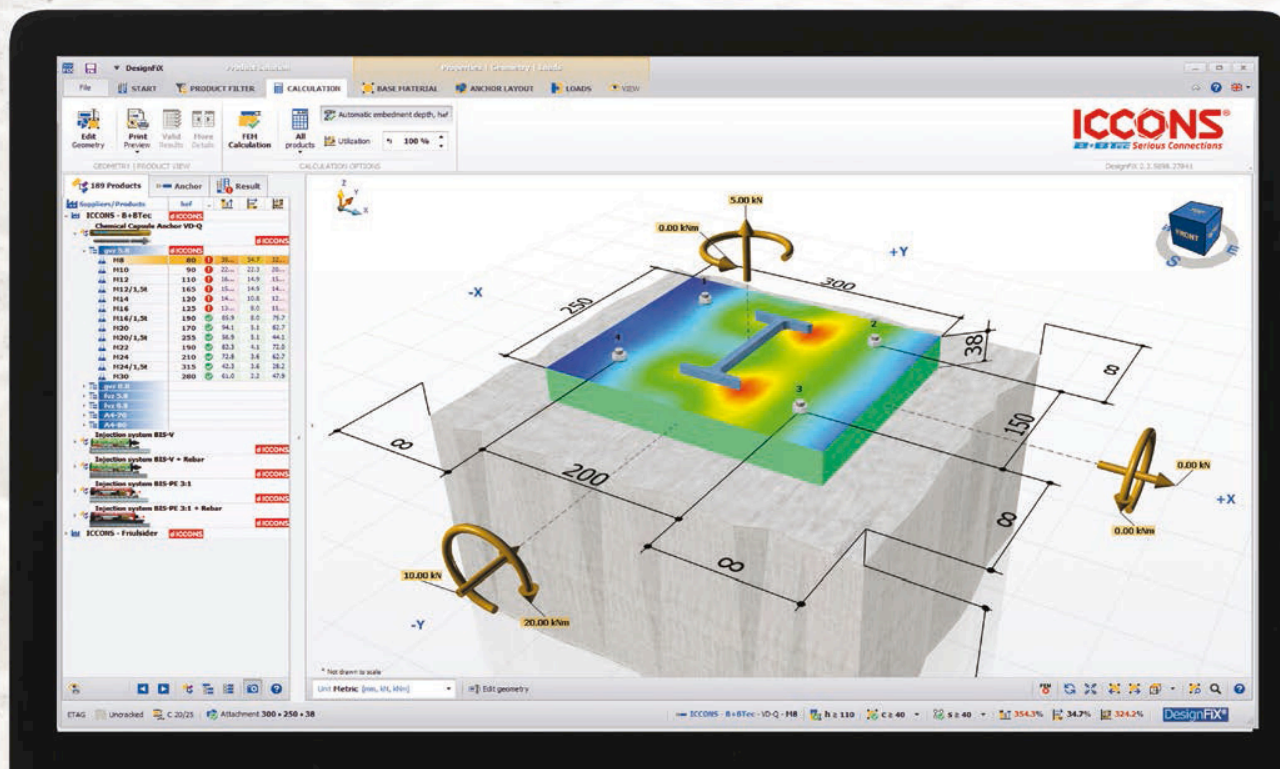
freedom to select an anchor pattern and base plate configuration, as well as the position and direction of load combinations. Changes are made directly into the 3D user interface.

Anchor Type Comparison

ICCONS® DesignFiX displays the usability of the various anchor types (according to ETAG-001, Annex C, TR029), including the values for each load type. This allows you to compare the calculation result of the different anchor types in a single easy to read panel.

Optimum BIS Injection System Anchorage Depth when selecting a BIS Injection Mortar.

ICCONS® DesignFiX allows for the automatic calculation of the most effective anchorage depth, taking in consideration the minimal and maximum values of the ETA. The integrated FEM-Calculation Method (Finite Element Method) in ICCONS® DesignFiX allows you to calculate the base plate thickness based upon the stresses in the base plate combination with the base plate configuration.



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