Epoxy Injection System with ETA Assessment Option 1 for Cracked & Non-Cracked Concrete AS 5216:2018 Compliant

Suitable Anchor Rods M8 - M30

- Steel 5.8 and 8.8 Zinc Plated and Hot Dip Galvanized
- Stainless Steel A4-50 and A4-70
- High Corrosion Resistant Steel 1.4529

Use Conditions

- Installation in Cracked & Non-Cracked Concrete C20/25 to C50/60 according to EN 206-1:2000 and SA TS 101:2015
- For Static and quasi static loading & Seismic Action C1 and C2
- In Dry, Wet and Flooded Holes
- Structures subject to dry internal and permanent damp internal conditions.
- Structures subject to external atmospheric exposure.
- Overhead Installation allowed.

Typical Applications

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

Approvals & Test Reports

1343
B+BTec
Munterij 8, NL 4762AH, Zevenbergen
14
ETA CE
1343-CPR-M 529-1
ETA-14/0351
ETAG 001-5 Option 1
M8 - M30/Ø8 - 32 mm
European Technical Assessment Option 1 for cracked concrete

F120 MPA BRAUNSCHWEIG 3785/695/14

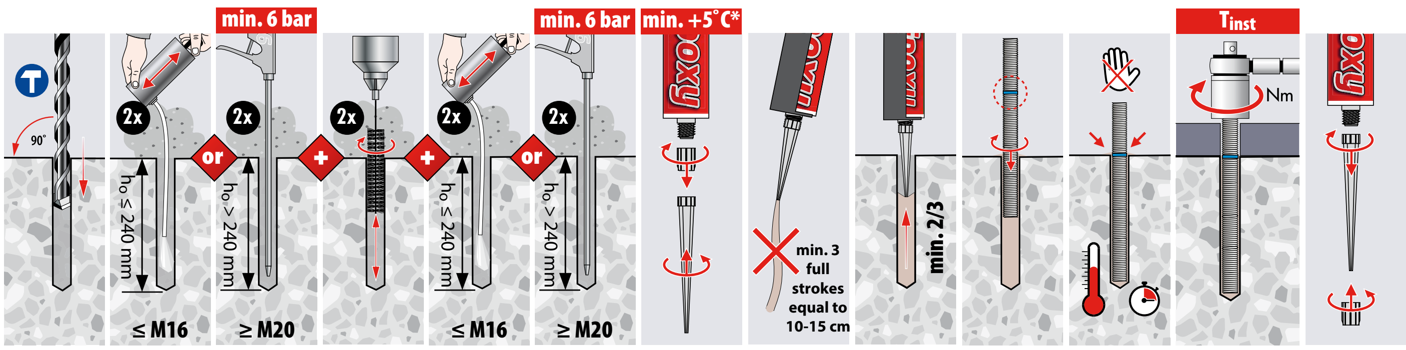
C1 C2 SEISMIC C1: M12 - M30/Ø12 - 32 C2: M12 - M16

NCC™ NATIONAL CODE COMPLIANT

LEED Tested

ÉMISSIONS DANS L'AIR INTÉRIEUR* A+ A+ A B C

Installation Procedures



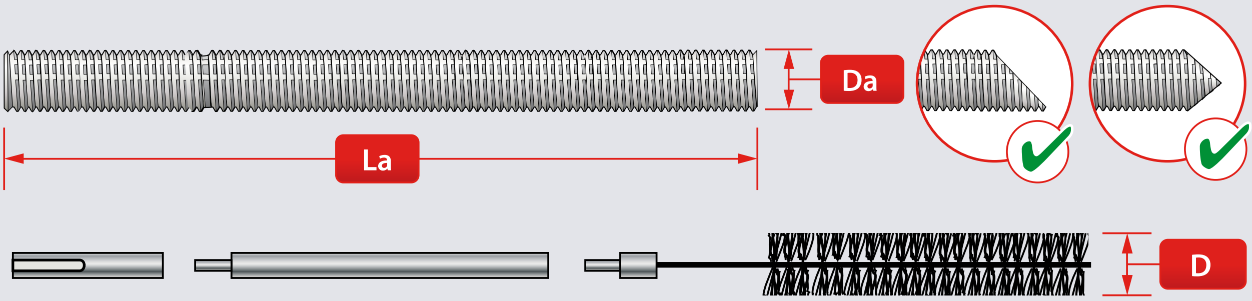
*Cartridge Temperature **must** be min. +5°C. Optimal Cartridge Temperature +20°C.

Curing Times

Temperature*	°C	+5	+10	+20	+30	+40
Processing / Working Time		2 h	1,5 h	30 min	20 min	12 min
Curing Time Dry Holes		50 h	30 h	10 h	6 h	4 h
Curing Time Wet Holes		100 h	60 h	20 h	12 h	8 h

* Concrete Temperature

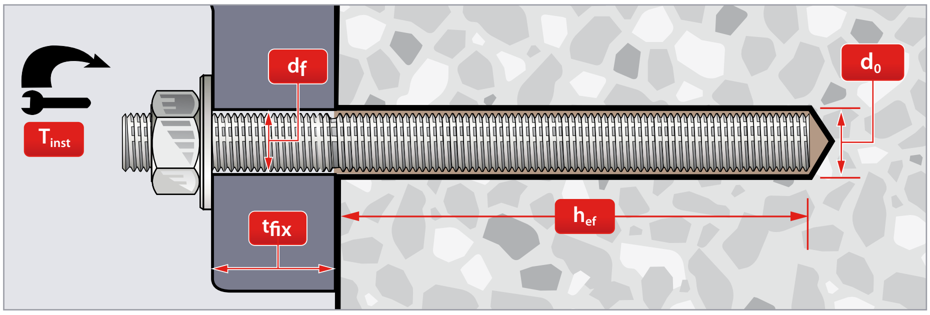
Specification Data for the use in Cracked & Uncracked Concrete and Carbide/Air Drilled Holes according to ETAG TR029 and CEN/TS 1992-4

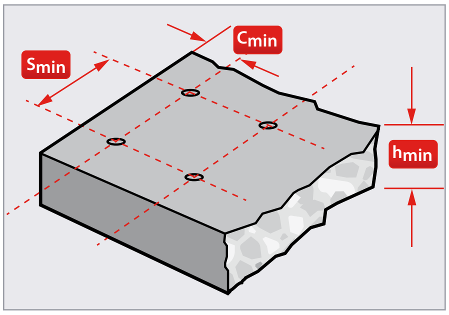


Installation Dimensions

Anchor Size	Da		M8	M10	M12	M16	M20	M24	M27	M30
Hole Diameter	d_0	[mm]	10	12	14	18	24	28	32	35
Min. Eff. Anchorage Depth	$h_{ef,min}$	[mm]	60	60	70	80	90	96	108	120
Max. Eff. Anchorage Depth	$h_{ef,max}$	[mm]	96	120	144	192	240	288	324	360
Diameter Fixture Hole	df	[mm]	9	12	14	18	22	26	30	33
Recommended Torque	Tinst	[Nm]	10	20	40	80	120	160	180	200
Required Volume per cm Embedment Depth	Vs	[ml/cm]	0,44	0,59	0,75	1,09	2,25	2,87	3,72	4,37

2





Member Thickness, Edge Distance & Spacing

Anchor Size	Da		M8	M10	M12	M16	M20	M24	M27	M30
Min. Member Thickness	hmin	[mm]	h_{ef} + 30 mm ≥100 mm			$h_{ef} + 2d_0$				
Min. Edge Distance	Cmin	[mm]	40	50	60	80	100	120	135	150
Min. Spacing	Smin	[mm]	40	50	60	80	100	120	135	150

Steel Brush & Piston Plug Dimensions

Anchor Size	Da		M8	M10	M12	M16	M20	M24	M27	M30
Brush Diameter	D	[mm]	12	14	16	20	26	30	34	37
Min. Brush Diameter	Dmin	[mm]	10,5	12,5	14,5	18,5	24,5	28,5	32,5	35,5
Piston Plug		[#]					24	28	32	35

Performance Data[1)]

Steel Failure

1) **Performance Data:** Loads in kN for a single anchor in Concrete C20/C25*. Temperature 24°C/40°C for long/short term.
No influence of Edge- or Center to Center Distances. Increasing factors for concrete ψ_C: **C30/37**: 1,04 **C40/50**: 1,08 **C50/60**: 1,10
2) **Shear Loads**: Steel strength in kN without bending moment.
3) **Recommended Loads** incl. Safety factor γ_G = 1,4.

Design Resistance Dry/Wet Holes

Non-Cracked Concrete		Da		M8	M10	M12	M16	M20	M24	M27	M30
Steel 5.8	Tensile	N_{Rd}	[kN]	12,0	19,3	28,0	39,2	53,3	73,2	95,1	112,7
	Shear[2)]	V_{Rd}	[kN]	7,2	11,2	16,8	31,2	48,8	70,4	92,0	112,0
Steel 8.8	Tensile	N_{Rd}	[kN]	16,8	23,6	34,6	39,2	53,3	73,2	95,1	112,7
	Shear[2)]	V_{Rd}	[kN]	12,0	18,4	27,2	50,4	78,4	112,8	147,2	179,2
A4-50	Tensile	N_{Rd}	[kN]							95,1	112,7
	Shear[2)]	V_{Rd}	[kN]							48,3	58,8
A4-70	Tensile	N_{Rd}	[kN]	13,9	21,4	31,6	39,2	53,3	73,2		
	Shear[2)]	V_{Rd}	[kN]	8,3	12,8	19,2	35,3	55,1	79,5		
Cracked Concrete		**Da**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel 5.8	Tensile	N_{Rd}	[kN]			17,3	22,7	30,5	41,5	55,5	69,1
	Shear[2)]	V_{Rd}	[kN]			16,8	31,2	48,8	70,4	92,0	112,0
Steel 8.8	Tensile	N_{Rd}	[kN]			17,3	22,7	30,5	41,5	55,5	69,1
	Shear[2)]	V_{Rd}	[kN]			27,2	50,4	78,4	112,8	147,2	179,2
A4-50	Tensile	N_{Rd}	[kN]							55,5	69,1
	Shear[2)]	V_{Rd}	[kN]							48,3	58,8
A4-70	Tensile	N_{Rd}	[kN]			17,3	22,7	30,5	41,5		
	Shear[2)]	V_{Rd}	[kN]			19,2	35,3	55,1	79,5		

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Design Resistance Flooded Holes

Non-Cracked Concrete		Da		M8	M10	M12	M16	M20	M24	M27	M30
Steel 5.8	Tensile	N_{Rd}	[kN]	12,0	18,8	25,7	29,9	48,3	64,1	75,7	88,0
	Shear[2)]	V_{Rd}	[kN]	7,2	11,2	16,8	31,2	48,8	70,4	92,0	112,0
Steel 8.8	Tensile	N_{Rd}	[kN]	14,4	18,8	25,7	29,9	48,3	64,1	75,7	88,0
	Shear[2)]	V_{Rd}	[kN]	12,0	18,4	27,2	50,4	78,4	112,8	147,2	179,2
A4-50	Tensile	N_{Rd}	[kN]							75,7	88,0
	Shear[2)]	V_{Rd}	[kN]							48,3	58,8
A4-70	Tensile	N_{Rd}	[kN]	13,9	18,8	25,7	29,9	48,3	64,1		
	Shear[2)]	V_{Rd}	[kN]	8,3	12,8	19,2	35,3	55,1	79,5		
Cracked Concrete		**Da**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel 5.8	Tensile	N_{Rd}	[kN]			14,8	18,0	25,4	33,9	40,4	50,3
	Shear[2)]	V_{Rd}	[kN]			16,8	31,2	48,8	70,4	92,0	112,0
Steel 8.8	Tensile	N_{Rd}	[kN]			14,8	18,0	25,4	33,9	40,4	50,3
	Shear[2)]	V_{Rd}	[kN]			27,2	50,4	78,4	112,8	147,2	179,2
A4-50	Tensile	N_{Rd}	[kN]							40,4	50,3
	Shear[2)]	V_{Rd}	[kN]							48,3	58,8
A4-70	Tensile	N_{Rd}	[kN]			14,8	18,0	25,4	33,9		
	Shear[2)]	V_{Rd}	[kN]			19,2	35,3	55,1	79,5		

Performance Data[1]

Steel Failure

Recommended Loads[3] Dry/Wet Holes

Non-Cracked Concrete		Da		M8	M10	M12	M16	M20	M24	M27	M30
Steel 5.8	Tensile	N_{rec}	[kN]	8,6	13,8	20,0	28,0	38,1	52,3	67,9	80,5
	Shear[2]	V_{rec}	[kN]	5,1	8,0	12,0	22,3	34,9	50,3	65,7	80,0
Steel 8.8	Tensile	N_{rec}	[kN]	12,0	16,8	24,7	28,0	38,1	52,3	67,9	80,5
	Shear[2]	V_{rec}	[kN]	8,6	13,1	19,4	36,0	56,0	80,6	105,1	128,0
A4-50	Tensile	N_{rec}	[kN]							67,9	80,5
	Shear[2]	V_{rec}	[kN]							34,5	42,0
A4-70	Tensile	N_{rec}	[kN]	9,9	15,3	22,5	28,0	38,1	52,3		
	Shear[2]	V_{rec}	[kN]	6,0	9,2	13,7	25,2	39,4	56,8		
Cracked Concrete		**Da**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel 5.8	Tensile	N_{rec}	[kN]			12,3	16,2	21,8	29,6	39,7	49,4
	Shear[2]	V_{rec}	[kN]			12,0	22,3	34,9	50,3	65,7	80,0
Steel 8.8	Tensile	N_{rec}	[kN]			12,3	16,2	21,8	29,6	39,7	49,4
	Shear[2]	V_{rec}	[kN]			19,4	36,0	56,0	80,6	105,1	128,0
A4-50	Tensile	N_{rec}	[kN]							39,7	49,4
	Shear[2]	V_{rec}	[kN]							34,5	42,0
A4-70	Tensile	N_{rec}	[kN]			12,3	16,2	21,8	29,6		
	Shear[2]	V_{rec}	[kN]			13,7	25,2	39,4	56,8		

Recommended Loads[3] Flooded Holes

Non-Cracked Concrete		Da		M8	M10	M12	M16	M20	M24	M27	M30
Steel 5.8	Tensile	N_{rec}	[kN]	8,6	13,5	18,3	21,4	34,5	45,8	54,1	62,8
	Shear[2]	V_{rec}	[kN]	5,1	8,0	12,0	22,3	34,9	50,3	65,7	80,0
Steel 8.8	Tensile	N_{rec}	[kN]	10,3	13,5	18,3	21,4	34,5	45,8	54,1	62,8
	Shear[2]	V_{rec}	[kN]	8,6	13,1	19,4	36,0	56,0	80,6	105,1	128,0
A4-50	Tensile	N_{rec}	[kN]							54,1	62,8
	Shear[2]	V_{rec}	[kN]							34,5	42,0
A4-70	Tensile	N_{rec}	[kN]	9,9	13,5	18,3	21,4	34,5	45,8		
	Shear[2]	V_{rec}	[kN]	6,0	9,2	13,7	25,2	39,4	56,8		
Cracked Concrete		**Da**		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel 5.8	Tensile	N_{rec}	[kN]			10,6	12,8	18,2	24,2	28,9	35,9
	Shear[2]	V_{rec}	[kN]			12,0	22,3	34,9	50,3	65,7	80,0
Steel 8.8	Tensile	N_{rec}	[kN]			10,6	12,8	18,2	24,2	28,9	35,9
	Shear[2]	V_{rec}	[kN]			19,4	36,0	56,0	80,6	105,1	128,0
A4-50	Tensile	N_{rec}	[kN]							28,9	35,9
	Shear[2]	V_{rec}	[kN]							34,5	42,0
A4-70	Tensile	N_{rec}	[kN]			10,6	12,8	18,2	24,2		
	Shear[2]	V_{rec}	[kN]			13,7	25,2	39,4	56,8		

Notes:

Notes:

Notes:

INNOVATIVE SOFTWARE – ANCHOR DESIGN MADE EASY

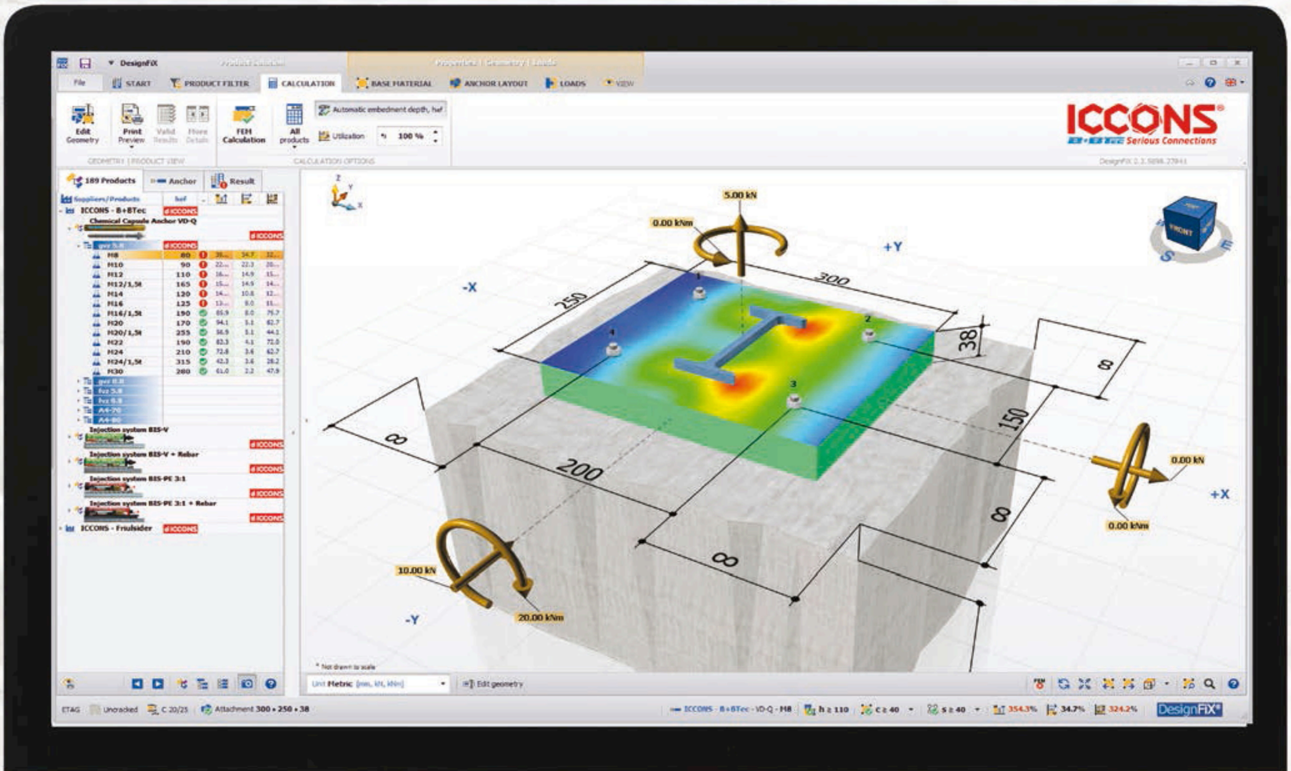
- Innovative 3d visual user interface, ETAG-001 & SA TS 101:2015 compliant
- SEISMIC DESIGN under earthquake loads according to ETAG-001, Annex E, TR045
- Finite element analysis steel baseplate design

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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