

Mortar Injection System with ETA Assessment Option 7 for Non-Cracked Concrete

Anchor Rods ASTA M8 - M24

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



Use Conditions

- Installation in Non-Cracked Concrete C20/25 to C50/60 according to EN 206-1:2000
- For Static and quasi static loading
- In Dry and Wet Holes
- Structures subject to dry internal and permanent damp internal conditions.
- Structures subject to external atmospheric exposure.
- Overhead Installation allowed.

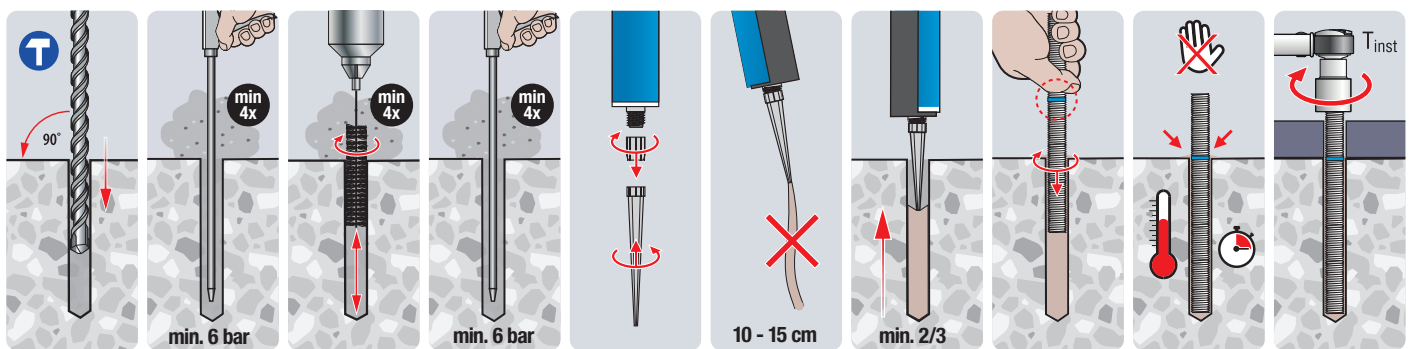
Typical Applications

- 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



Installation Procedures

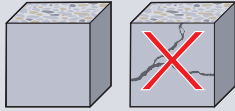


Curing Times

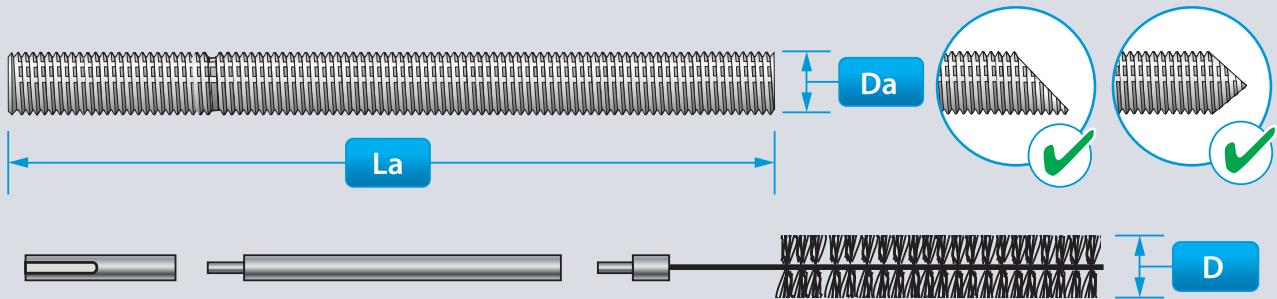
Temperature ¹⁾	°C	-5	+0	+5	+10	+20	+30	+35
Processing Time		90 min	45 min	25 min	20 min	6 min	4 min	2 min
Curing Time Dry Holes		6 h	3 h	2 h	100 min	45 min	25 min	20 min

1) Concrete Temperature

Polyester

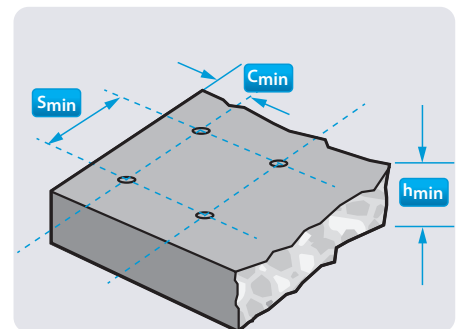
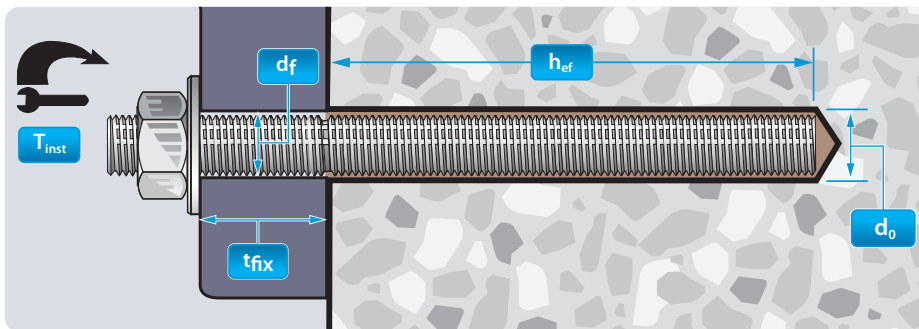


Specification Data for the use in Non-Cracked Concrete and Carbide/Air Drilled Holes



Installation Dimensions

Anchor Size	D_a		M8	M10	M12	M16	M20	M24
Rod Length	$L_a \geq$	[mm]	110	130	160	190	260	300
Hole Diameter	d_o	[mm]	10	12	14	18	24	28
Embedment Depth	$h_o = h_{ef}$	[mm]	80	90	110	125	170	210
Diameter Fixture Hole	d_f	[mm]	9	12	14	18	22	26
Fixture Thickness	$t_{fix} \leq$	[mm]	20	30	35	45	70	65
Recommended Torque	T_{inst}	[Nm]	10	20	40	80	120	160
Required Volume per cm Embedment Depth	V_s	[ml/cm]	0,44	0,59	0,75	1,09	2,25	2,87



Member Thickness, Edge Distance & Spacing

Anchor Size	D_a		M8	M10	M12	M16	M20	M24
Min. Member Thickness	h_{min}	[mm]	110	120	140	160	215	270
Min. Edge Distance	C_{min}	[mm]	40	50	60	80	100	120
Min. Spacing	S_{min}	[mm]	40	50	60	80	100	120

Steel Brush Dimensions

Anchor Size	D_a		M8	M10	M12	M16	M20	M24
Brush Diameter	D	[mm]	12	14	16	20	26	30
Min. Brush Diameter	D_{min}	[mm]	10,5	12,5	14,5	18,5	24,5	28,5

Performance Data¹⁾

Steel Failure

- 1) **Performance Data:** Loads in kN for a single anchor in Non-Cracked 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:** 1,08 **C40/50:** 1,15 **C50/60:** 1,19
- 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 _a		m8	m10	m12	m16	m20	m24
Steel 5.8	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	47,5	70,4
	Shear ²⁾	V_{Rd}	[kN]	7,2	11,2	16,8	31,2	48,8	70,4
Steel 8.8	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	47,5	70,4
	Shear ²⁾	V_{Rd}	[kN]	12,0	18,4	27,2	50,4	78,4	112,8
A4-70	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	47,5	70,4
	Shear ²⁾	V_{Rd}	[kN]	8,3	12,8	19,2	35,3	55,1	79,5

Design Resistance Flooded Holes

Non-Cracked Concrete		D _a		m8	m10	m12	m16	m20	m24
Steel 5.8	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	n/a	n/a
	Shear ²⁾	V_{Rd}	[kN]	7,2	11,2	16,8	31,2	n/a	n/a
Steel 8.8	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	n/a	n/a
	Shear ²⁾	V_{Rd}	[kN]	12,0	18,4	27,2	50,4	n/a	n/a
A4-70	Tensile	N_{Rd}	[kN]	9,5	12,6	18,4	27,9	n/a	n/a
	Shear ²⁾	V_{Rd}	[kN]	8,3	12,8	19,2	35,3	n/a	n/a

Recommended Loads³⁾ Dry/Wet Holes

Non-Cracked Concrete		D _a		m8	m10	m12	m16	m20	m24
Steel 5.8	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	33,9	50,3
	Shear ²⁾	V_{rec}	[kN]	5,1	8,0	12,0	22,3	34,9	50,3
Steel 8.8	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	33,9	50,3
	Shear ²⁾	V_{rec}	[kN]	8,6	13,1	19,4	36,0	56,0	80,6
A4-70	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	33,9	50,3
	Shear ²⁾	V_{rec}	[kN]	6,0	9,2	13,7	25,2	39,4	56,8

Recommended Loads³⁾ Flooded Holes

Non-Cracked Concrete		D _a		m8	m10	m12	m16	m20	m24
Steel 5.8	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	n/a	n/a
	Shear ²⁾	V_{rec}	[kN]	5,1	8,0	12,0	22,3	n/a	n/a
Steel 8.8	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	n/a	n/a
	Shear ²⁾	V_{rec}	[kN]	8,6	13,1	19,4	36,0	n/a	n/a
A4-70	Tensile	N_{rec}	[kN]	6,8	9,0	13,2	19,9	n/a	n/a
	Shear ²⁾	V_{rec}	[kN]	6,0	9,2	13,7	25,2	n/a	n/a