

HIGH-PERFORMANCE EPOXY CHEMICAL ANCHOR

- CE option 1 for cracked and uncracked concrete
- C2 Seismic performance category (M12-M24)
- Certificate for recasting with reinforcement bars (ETA-23/0420)
- Certified fire resistance F120
- Comply with LEED® v4 and v4.1 BETA
- A+ Class: emission of volatile organic compounds (VOC) in living environments
- Ideal for extra-heavy anchor systems and reinforcement rods
- Excellent long-term creep behaviour
- Dry or wet concrete
- Concrete with submerged holes
- Overhead application allowed
- Certified installation also with hollow drill bit
- Maximum tensile strength



USA, Canada and more design values available online.

CODES AND DIMENSIONS

CODE	format	pcs
	[ml] [US fl oz]	
EPO585	585 19.78	12

Expiry from date of manufacturing: 24 months.
Storage temperature between +5 and +35° C.

ADDITIONAL PRODUCTS - ACCESSORIES

type	description	format	pcs
MAMDB	double cartridge gun	585 ml	1
STING	nozzle	-	12
STINGRED	nozzle tip reducer	-	1
FILL	filling washer	M8-M24	-
BRUH	steel pipe cleaner	M8-M30	-
BRUHAND	grip and extension for pipe cleaner	-	1
CAT	compressed air tool	-	1
PONY	blow pump	-	1
IR (INTERNAL THREADED ROD)	bushing with internal metric thread	M8-M16	-

INSTALLATION TIME AND TEMPERATURE

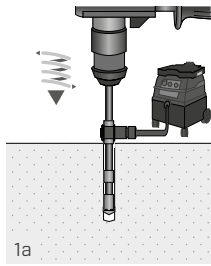
support temperature	cartridge temperature	workability time	curing time before loading(*)
0°C ÷ + 4°C	5°C ÷ + 40°C	90 min	144 h
5°C ÷ + 9°C		80 min	48 h
10°C ÷ + 14°C		60 min	28 h
15°C ÷ + 19°C		40 min	18 h
20°C ÷ + 24°C		30 min	12 h
25°C ÷ + 34°C		12 min	9 h
35°C ÷ + 39°C		8 min	6 h
+ 40°C		8 min	4 h

(*) For wet support, the waiting time for load application must be doubled

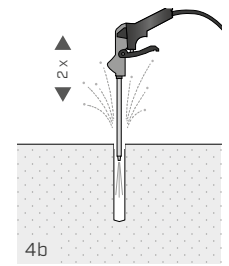
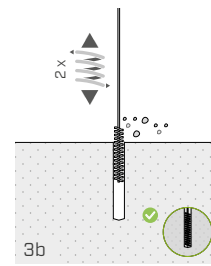
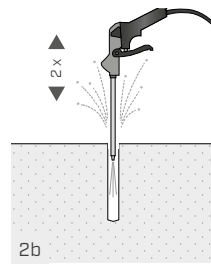
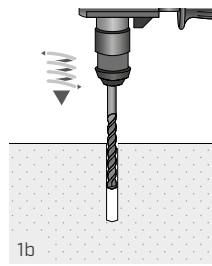
MOUNTING

Hole execution: three different installation possibilities.

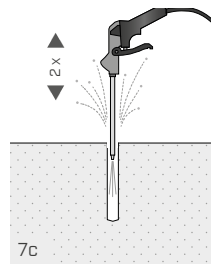
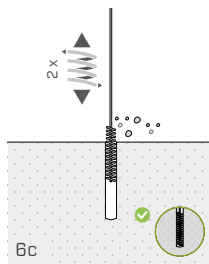
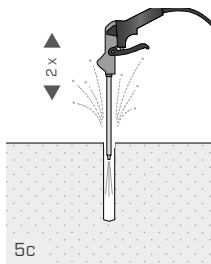
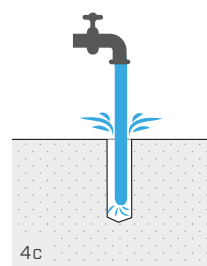
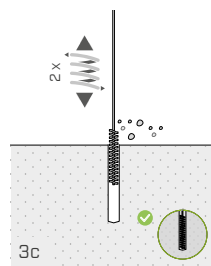
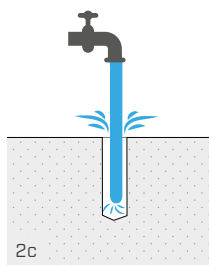
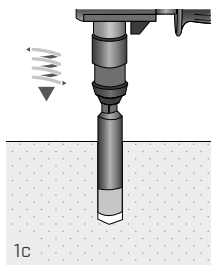
a. INSTALLATION WITH HOLLOW DRILL BIT (HDE)



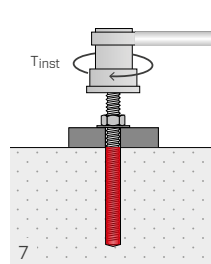
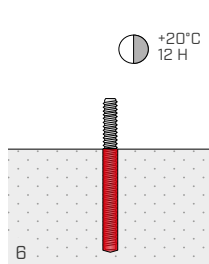
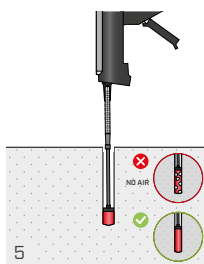
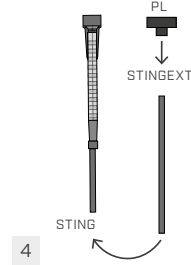
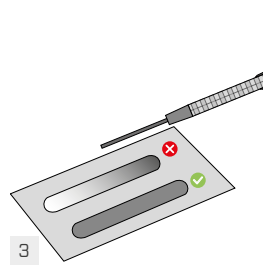
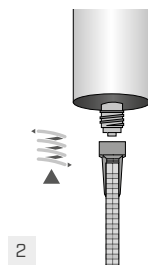
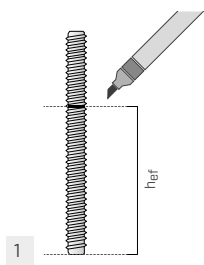
b. ASSEMBLY WITH HAMMER DRILLING HD



c. ASSEMBLY WITH DIAMOND DRILL BIT



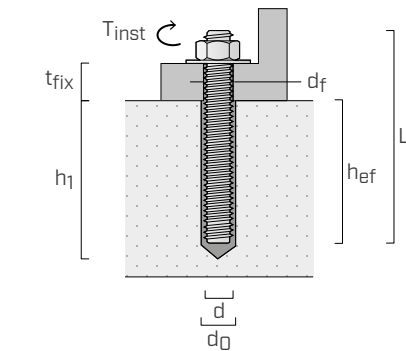
Rod installation:



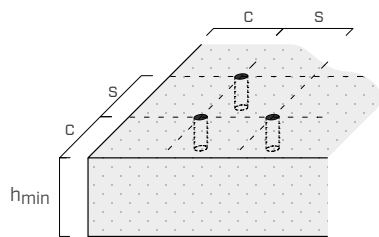
■ INSTALLATION

INSTALLATION GEOMETRY FEATURES ON CONCRETE

THREADED RODS (INA or MGS TYPE)



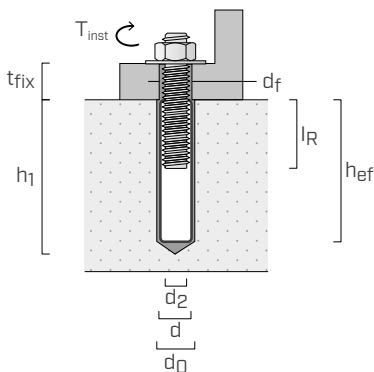
d	anchor diameter
d₀	hole diameter in the concrete support
h_{ef}	effective anchoring depth
d_f	hole diameter in the element to be fastened
T_{inst}	maximum tightening torque
L	anchor length
t_{fix}	maximum fastening thickness
h₁	minimum hole depth



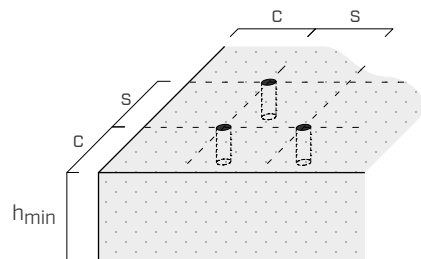
d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d₀	[mm]	10	12	14	18	22	28	30	35
h_{ef,min}	[mm]	60	60	70	80	90	96	108	120
h_{ef,max}	[mm]	160	200	240	320	400	480	540	600
d_f	[mm]	9	12	14	18	22	26	30	33
T_{inst}	[Nm]	10	20	40	60	100	170	250	300

			M8	M10	M12	M16	M20	M24	M27	M30
Minimum spacing	s_{min}	[mm]	40	50	60	75	95	115	125	140
Minimum edge distance	c_{min}	[mm]	35	40	45	50	60	65	75	80
Minimum thickness of concrete support	h_{min}	[mm]	$h_{ef} + 30 \geq 100 \text{ mm}$			$h_{ef} + 2 d_0$				

BUSHING WITH INTERNAL METRIC THREAD (IR TYPE)



d₂	internal threaded rod diameter
d	diameter of the element anchored on concrete
d₀	hole diameter in the concrete support
h_{ef}	effective anchoring depth
d_f	hole diameter in the element to be fastened
T_{inst}	maximum tightening torque
t_{fix}	maximum fastening thickness
h₁	minimum hole depth
l_R	length of internal threaded rod



d	[mm]	IR-M6	IR-M8	IR-M10	IR-M12	IR-M16	IR-M20
d₂	[mm]	6	8	10	12	16	20
d	[mm]	10	12	16	20	24	30
d₀	[mm]	12	14	18	22	28	35
h_{ef,min}	[mm]	60	70	80	90	96	120
h_{ef,max}	[mm]	200	240	320	400	480	600
d_f	[mm]	7	9	12	14	18	22
T_{inst}	[Nm]	20	40	60	100	170	300
l_{R,min}	[mm]	6	8	10	12	16	20
l_{R,max}	[mm]	10	12	16	20	24	30

			IR-M6	IR-M8	IR-M10	IR-M12	IR-M16	IR-M20
Minimum spacing	s_{min}	[mm]	50	60	75	95	115	140
Minimum edge distance	c_{min}	[mm]	40	45	50	60	65	80
Minimum thickness of concrete support	h_{min}	[mm]	$h_{ef} + 30 \geq 100 \text{ mm}$			$h_{ef} + 2 d_0$		

STRUCTURAL CHARACTERISTIC VALUES

Valid for a single threaded rod (INA or MGS) when installed in C20/25 grade concrete with a thin reinforcing layer, considering spacing, edge-distance, and base-concrete thickness as non-limiting parameters.

UNCRACKED CONCRETE⁽⁵⁾

TENSION

rod	h _{ef,standard} [mm]	N _{Rk,c} N _{Rk,s} [kN]				h _{ef,max} [mm]	N _{Rk,s} [kN]			
		5.8 steel	γ _M	8.8 steel	γ _M		5.8 steel	γ _M	8.8 steel	γ _M
M8	80	18,0	γ _{Ms} = 1,5 ⁽¹⁾	29,0	γ _{Ms} = 1,5 ⁽¹⁾	160	18,0	γ _{Ms} = 1,5	29,0	γ _{Ms} = 1,5
M10	90	29,0		42,0		200	29,0		46,0	
M12	110	42,0		56,8		240	42,0		67,0	
M16	128	71,2	γ _{Mc} = 1,5 ⁽²⁾	71,2	γ _{Mc} = 1,5 ⁽²⁾	320	79,0		126,0	
M20	170	109,0		109,0		400	123,0		196,0	
M24	210	149,7		149,7		480	177,0		282,0	
M27	240	182,9		182,9		540	230,0		367,0	
M30	270	218,3		218,3		600	281,0		449,0	

SHEAR

rod	h _{ef} [mm]	V _{Rk,s} ⁽¹⁾ [kN]			
		5.8 steel	γ _{Ms}	8.8 steel	γ _{Ms}
M8	≥ 60	11,0	1,25	15,0	1,25
M10	≥ 60	17,0		23,0	
M12	≥ 70	25,0		34,0	
M16	≥ 80	47,0		63,0	
M20	≥ 120	74,0		98,0	
M24	≥ 150	106,0		141,0	
M27	≥ 180	138,0		184,0	
M30	≥ 200	168,0		224,0	

CRACKED CONCRETE⁽⁵⁾

TENSION

rod	h _{ef,standard} [mm]	N _{Rk,p} N _{Rk,c} [kN]				h _{ef,max} [mm]	N _{Rk,s} N _{Rk,p} [kN]			
		5.8 steel	γ _M	8.8 steel	γ _M		5.8 steel	γ _M	8.8 steel	γ _M
M8	80	14,1	γ _{Mp} = 1,5 ⁽⁴⁾	14,1	γ _{Mp} = 1,5 ⁽⁴⁾	160	18,0	γ _{Ms} = 1,5	28,2	γ _{Mp} = 1,5 ⁽⁴⁾
M10	90	19,8		19,8		200	29,0		44,0	
M12	110	35,3		35,3		240	42,0		67,0	
M16	128	49,9	γ _{Mc} = 1,5 ⁽²⁾	49,9	γ _{Mc} = 1,5 ⁽²⁾	320	78,0		125,0	γ _{Ms} = 1,5 ⁽¹⁾
M20	170	76,3		76,3		400	122,0		196,0	
M24	210	104,8		104,8		480	176,0		282,0	
M27	240	128,0		128,0		540	230,0		368,0	
M30	270	152,8		152,8		600	280,0		449,0	

SHEAR

rod	h _{ef} [mm]	V _{Rk,s} ⁽¹⁾ [kN]			
		5.8 steel	γ _{Ms}	8.8 steel	γ _{Ms}
M8	80	11,0	1,25	15,0	1,25
M10	90	17,0		23,0	
M12	110	25,0		34,0	
M16	128	47,0		63,0	
M20	170	74,0		98,0	
M24	210	106,0		141,0	
M27	240	138,0		184,0	
M30	270	168,0		224,0	

incremental factor for N _{Rk,p} ⁽³⁾		
ψ _c	C25/30	1,02
	C30/37	1,04
	C40/50	1,07
	C50/60	1,10

NOTES

- ⁽¹⁾ Steel failure mode.
 - ⁽²⁾ Concrete cone failure method.
 - ⁽³⁾ Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.
 - ⁽⁴⁾ Pull-out and concrete cone failure.
 - ⁽⁵⁾ Refer to the relevant ETA document for use high bond rods.
- In the presence of flooded holes, the factors γ_M in the case of both the concrete cone slipping and failure and the concrete cone formation are both equal to 1.8

Component A classification: Skin Irrit. 2; Eye Irrit. 2; Skin Sens. 1; Aquatic Chronic 2.
Component B classification: Acute Tox. 4; Skin Corr. 1A; Eye Dam. 1; Skin Sens. 1

GENERAL PRINCIPLES

- The characteristic values are according to EN 1992-4:2018 with a factor α_{SUS}=0.6 and in accordance with ETA-23/0419.
- The design values are obtained from the characteristic values as follows: R_d = R_k/γ_M. Coefficients γ_M are listed in the table in accordance with the failure characteristics and product certificates.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- For the design of anchors subjected to seismic loading refer to ETA and to EN 1992-4:2018.
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications), please refer to ETA.

STRUCTURAL CHARACTERISTIC VALUES

Valid for a single threaded rod (INA or MGS) when installed with IR in C20/25 grade concrete with a thin reinforcing layer, considering spacing, edge-distance, and base-concrete thickness as non-limiting parameters.

UNCRACKED CONCRETE

TENSION

rod	$h_{ef,min}$ [mm]	$N_{Rk,c} N_{Rk,s}$ [kN]			
		5.8 steel	γ_M	8.8 steel	γ_M
IR-M6	60	10,0	1,5 ⁽¹⁾	16,0	1,5 ⁽¹⁾
IR-M8	70	17,0		27,0	
IR-M10	80	29,0		35,2	
IR-M12	90	42,0	1,5 ⁽²⁾	42,0	1,5 ⁽²⁾
IR-M16	96	46,3		46,3	
IR-M20	120	64,7		64,7	

SHEAR

rod	$h_{ef,min}$ [mm]	$V_{Rk,s}$ ⁽¹⁾ [kN]			
		5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
IR-M6	60	5,0	1,25	8,0	1,25
IR-M8	70	9,0		14,0	
IR-M10	80	15,0		23,0	
IR-M12	90	21,0		34,0	
IR-M16	96	38,0		60,0	
IR-M20	120	61,0		98,0	

CRACKED CONCRETE

TENSION

rod	$h_{ef,min}$ [mm]	$N_{Rk,s} N_{Rk,c}$ [kN]		h_{ef} [mm]	$N_{Rk,s}$ [kN]		h_{ef} [mm]	$N_{Rk,s}$ [kN]	
		5.8 steel	γ_M		5.8 steel	γ_M		8.8 steel	γ_M
IR-M6	60	10,0	1,5 ⁽¹⁾	≥ 70	10,0	1,5 ⁽¹⁾	≥ 70	16,0	1,5 ⁽¹⁾
IR-M8	70	17,0		≥ 80	17,0		≥ 90	27,0	
IR-M10	80	24,6	1,5 ⁽²⁾	≥ 100	29,0		≥ 130	46,0	
IR-M12	90	29,4		≥ 120	42,0		≥ 160	67,0	
IR-M16	96	32,4		≥ 180	76,0		≥ 240	121,0	
IR-M20	120	45,3		≥ 240	123,0		≥ 330	196,0	

SHEAR

rod	$h_{ef,min}$ [mm]	$V_{Rk,s} V_{Rk,cp}$ [kN]			
		5.8 steel	γ_{Ms}	8.8 steel	γ_M
IR-M6	60	5,0	1,25	8,0	1,25 ⁽¹⁾
IR-M8	70	9,0		14,0	
IR-M10	80	15,0		23,0	
IR-M12	90	21,0		34,0	1,5 ⁽⁵⁾
IR-M16	96	38,0		64,8	
IR-M20	120	61,0		90,5	

incremental factor for $N_{Rk,p}$ ⁽³⁾		
ψ_c	C25/30	1,02
	C30/37	1,04
	C40/50	1,07
	C50/60	1,10

NOTES

⁽¹⁾ Steel failure mode.

⁽²⁾ Concrete cone failure method.

⁽³⁾ Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.

⁽⁴⁾ Pull-out and concrete cone failure.

⁽⁵⁾ Pry-out failure in the concrete.

In the presence of flooded holes, the factors γ_M in the case of both the concrete cone pull-out and failure and concrete cone formation are both equal to 1.8.

Component A classification: Skin Irrit. 2; Eye Irrit. 2; Skin Sens. 1; Aquatic Chronic 2.

Component B classification: Acute Tox. 4; Skin Corr. 1A; Eye Dam. 1; Skin Sens. 1

GENERAL PRINCIPLES

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- The design values are obtained from the characteristic values as follows: $R_d = R_k / \gamma_M$. Coefficients γ_M are listed in the table in accordance with the failure characteristics and product certificates.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- For the design of anchors subjected to seismic loading refer to ETA and to EN 1992-4:2018.
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications), please refer to ETA.