

EPO-FIX PLUS

HIGH-PERFORMANCE EPOXY CHEMICAL ANCHOR



- CE option 1 for cracked and uncracked concrete
- C2 seismic performance category (M12-M16-M20)
- A+ Class: emission of volatile organic compounds (VOC) in lived environments
- Dry or damp concrete
- Concrete with submerged holes



CODES AND DIMENSIONS

CODE	format [ml]	pcs.
EPO385	385	12

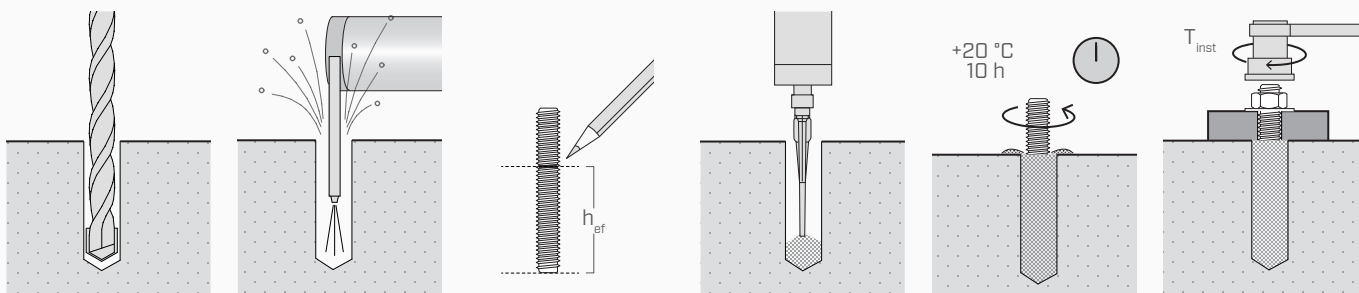
Expiry from date of manufacturing: 24 months
Storage temperature between +5 and +25° C.

COMPLEMENTARY PRODUCTS

ACCESSORIES

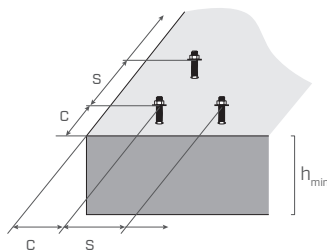
CODE	description	format [ml]	pcs.
MAMDB	double cartridge gun	385	1
STING	nozzle	-	12
PONY	blowing pump	-	1

ASSEMBLY



■ INSTALLATION

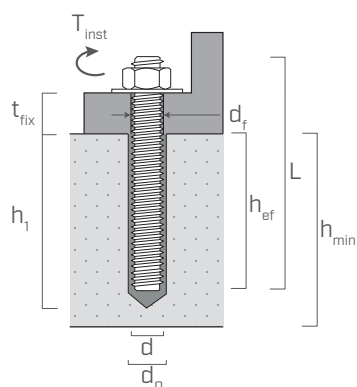
INSTALLATION GEOMETRY ON CONCRETE - THREADED RODS (TYPE INA or MGS)



d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d_0	[mm]	10	12	14	18	22	26	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	80	120	160	180	200

		M8	M10	M12	M16	M20	M24	M27	M30
Minimum spacing	s_{min} [mm]	$\max(h_{ef} / 2; 5d)$							
Minimum edge distance	c_{min} [mm]	$\max(h_{ef} / 2; 5d)$							
Minimum thickness of concrete support	h_{min} [mm]	$h_{ef} + 30 \geq 100 \text{ mm}$				$h_{ef} + 2 d_0$			

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.



d = anchor diameter
 d_0 = hole diameter in the concrete support
 h_{ef} = effective anchor depth
 d_f = maximum hole diameter in the element to be fastened

T_{inst} = tightening torque
 L = anchor length
 t_{fix} = maximum fastening thickness
 h_1 = minimum hole depth

INSTALLATION TIME AND TEMPERATURE

support temperature	workability time	curing time before loading	
		dry support	wet support
+ 5 ÷ + 9 °C	120 min	50 h	100 h
+ 10 ÷ + 14 °C	45 min	30 h	60 h
+ 15 ÷ + 19 °C	25 min	18 h	36 h
+ 20 ÷ + 29 °C	12 min	10 h	20 h
+ 30 ÷ + 39 °C	6 min	6 h	12 h
+ 40 °C	5 min	4 h	8 h

Cartridge storage temperature + 5 ÷ + 25 °C

■ STATIC CHARACTERISTIC VALUES

Valid for a single threaded rod (INA or MGS) in very thick C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

UNCRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk,s} ⁽²⁾ [kN]			
		steel 5.8	γ _M	steel 8.8	γ _M		steel 5.8	γ _{Ms}	steel 8.8	γ _{Ms}
M8	80	18,0	γ _{Ms} = 1,5	29,0	γ _{Ms} = 1,5	160	18,0	1,5	29,0	1,5
M10	90	29,0		42,4	γ _{Mp} = 1,5	200	29,0		46,0	
M12	110	42,0		58,3	γ _{Mc} = 1,5	240	42,0		67,0	
M16	128	73,1	γ _{Mc} = 1,5	73,1		320	78,0		125,0	
M20	170	111,9		111,9		400	122,0		196,0	
M24	210	153,7		153,7		480	176,0		282,0	
M27	240	187,8		187,8		540	230,0		368,0	
M30	270	224,0		224,0		600	280,0		449,0	

SHEAR

Ø [mm]	h _{ef,standard} [mm]	V _{Rk,s} [kN]			
		steel 5.8	γ _{Ms}	steel 8.8	γ _{Ms}
M8	80	9,0	1,25	15,0	1,25
M10	90	15,0		23,0	
M12	110	21,0		34,0	
M16	128	39,0		63,0	
M20	170	61,0		98,0	
M24	210	88,0		141,0	
M27	240	115,0		184,0	
M30	270	140,0		224,0	

increment factor for concrete ⁽⁴⁾

ψ _c	C25/30	1,02
	C30/37	1,04
	C40/50	1,07
	C50/60	1,09

CRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk} ⁽²⁾ [kN]			
		steel 5.8	γ _{Mp}	steel 8.8	γ _{Mp}		steel 5.8	γ _{Ms}	steel 8.8	γ _M
M12	110	31,1	1,5	31,1	1,5	240	42,0	1,5	67,0	γ _{Ms} = 1,5
M16	128	41,8		41,8		320	78,0		104,5	γ _{Mp} = 1,5
M20	170	64,1		64,1		400	122,0		150,8	
M24	210	87,1		87,1		480	176,0		199,0	
M27	240	112,0		112,0		540	230,0		251,9	
M30	270	140,0		140,0		600	280,0		311,0	

SHEAR

Ø [mm]	h _{ef,min} [mm]	V _{Rk,s} ⁽³⁾ [kN]			
		steel 5.8	γ _{Ms}	steel 8.8	γ _{Ms}
M12	110	21,0	1,25 ⁽⁴⁾	34,0	1,25
M16	128	39,0		63,0	
M20	170	61,0		98,0	
M24	210	88,0		141,0	
M27	240	115,0		184,0	
M30	270	140,0		224,0	

■ STATIC ADMISSIBLE VALUES

UNCRAKED CONCRETE TENSION

$\emptyset$ [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M8	80	8,6	13,8	160	8,6	13,8
M10	90	13,8	20,2	200	13,8	21,9
M12	110	20,0	27,8	240	20,0	31,9
M16	128	34,8	34,8	320	37,1	59,5
M20	170	53,3	53,3	400	58,1	93,3
M24	210	73,2	73,2	480	83,8	134,3
M27	240	89,4	89,4	540	109,5	175,2
M30	270	106,7	106,7	600	133,3	213,8

SHEAR

$\emptyset$ [mm]	$h_{ef,standard}$ [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8
M8	80	5,1	8,6
M10	90	8,6	13,1
M12	110	12,0	19,4
M16	128	22,3	36,0
M20	170	34,9	56,0
M24	210	50,3	80,6
M27	240	65,7	105,1
M30	270	80,0	128,0

CRACKED CONCRETE TENSION

$\emptyset$ [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M12	110	14,8	14,8	240	20,0	31,9
M16	128	19,9	19,9	320	37,1	49,8
M20	170	30,5	30,5	400	58,1	71,8
M24	210	41,5	41,5	480	83,8	94,8
M27	240	53,3	53,3	540	109,5	120,0
M30	270	66,7	66,7	600	133,3	148,1

SHEAR

$\emptyset$ [mm]	$h_{ef,standard}$ [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8
M12	110	12,0	19,4
M16	128	22,3	36,0
M20	170	34,9	56,0
M24	210	50,3	80,6
M27	240	65,7	105,1
M30	270	80,0	128,0

GENERAL PRINCIPLES:

- Characteristic values according to ETA-17/0347.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$. Coefficients γ_m are listed in the table and are in accordance with the product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- 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 TR045.
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications), please refer to ETA.

NOTES:

- (1) For the calculation of anchors in masonry or in case of high bond rods, please refer to ETA document.
- (2) The table shows the characteristic values N_{Rk} and the related partial safety coefficient in accordance with the key failure characteristics.
- (3) Steel failure mode.
- (4) Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.

INA

5.8 STEEL CLASS THREADED ROD FOR CHEMICAL ANCHORS

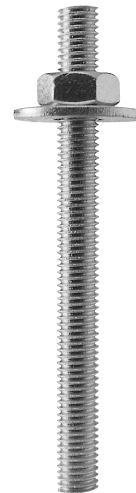
- Complete with nut (ISO4032) and washer (ISO7089)
- 5.8 grade galvanized steel

CODES AND DIMENSIONS

CODE	Ø [mm]	L _t [mm]	d ₀ [mm]	d _f [mm]	pcs.
FE210100	M8	110	10	≤ 9	10
FE210105	M10	110	12	≤ 12	10
FE210110	M10	130	12	≤ 13	10
FE210115	M12	130	14	≤ 14	10
FE210119	M12	180	14	≤ 15	10
FE210116	M16	160	18	≤ 18	10
FE210118	M16	190	18	≤ 18	10
FE210121	M16	230	18	≤ 18	10
FE210117	M20	240	24	≤ 22	10
FE210122	M24	270	28	≤ 26	10
FE210123	M27	400	32	≤ 30	10

d₀ = hole diameter in the support

d_f = hole diameter in the element to be fastened



IHP

MESH BRUSH FOR HOLLOW PLASTIC MATERIALS

CODES AND DIMENSIONS

CODE	d ₀ [mm]	L [mm]	Ø [mm]	pcs.
FE210120	16	85	M10 (M8)	10
FE210125	16	130	M10 (M8)	10
FE210130	20	85	M12 / M16	10



IHM

MESH BRUSH FOR HOLLOW METAL MATERIALS

CODES AND DIMENSIONS

CODE	d ₀ [mm]	L [mm]	Ø [mm]	pcs.
FE210230	12	1000	M8	10
FE210235	16	1000	M10 / M8	10
FE210240	20	1000	M12 / M16	5

