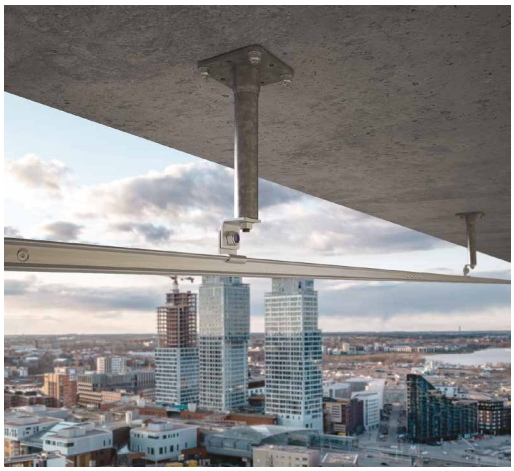
H-NEX

F120 SEISMIC C2 LEED tested A+ ETA-20/1285

HIGH-PERFORMANCE HYBRID CHEMICAL ANCHOR

- Urethane-methacrylate based resin
- CE option 1 for cracked and uncracked concrete
- C2 Seismic performance category (M12-M24)
- Certified fire resistance F120
- Complies with LEED® v4.1 BETA
- A+ Class: emission of volatile organic compounds (VOC) in living environments
- Ideal for extra-heavy anchors and post-installed reinforcement rods
- Excellent long-term creep behaviour
- Dry or wet concrete
- Concrete with submerged holes
- Appliation from below allowed.
- Certified installation also with hollow drill bit



CODE	format [ml]	format *[US fl oz]*	pcs
HNEX280	280	*9.47*	12
HNEX420	420	*14.20*	12

Shelf life from date of manufacture: 18 months.
Storage temperature between +5 and 25° C.
Nozzle included in the package.

AVAILABLE ACCESSORIES

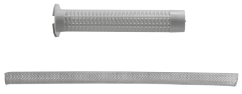
CODE	description	pcs
STING	spare nozzle for 280 and 420 ml cartridges	1

RELATED PRODUCTS

FLY HARD
ANCHORS GUN

FLY LITE
PROFESSIONAL GUN FOR 310 ml CARTRIDGES

INA
THREADED ROD CL. 5.8 WITH NUT AND WASHER



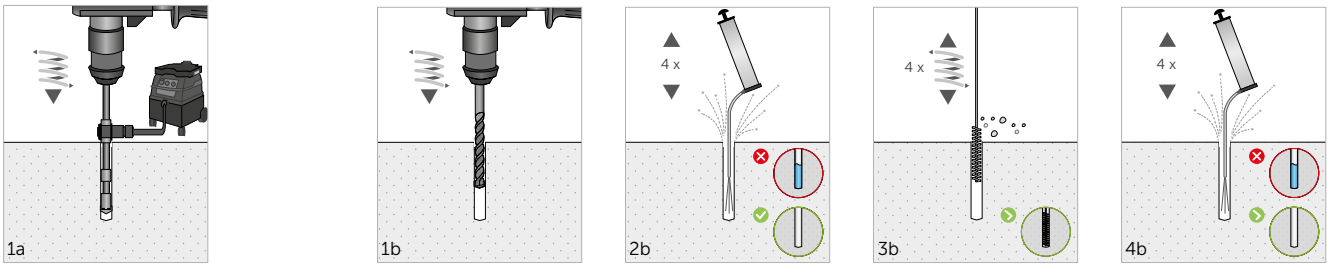
IHM | IHP
BUSHINGS FOR PERFORATED MATERIALS

ASSEMBLY

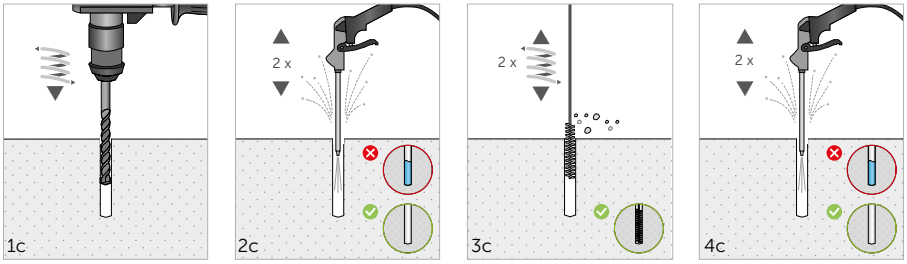
Hole execution: three different installation possibilities.

a. INSTALLATION WITH HOLLOW DRILL BIT (HDE)

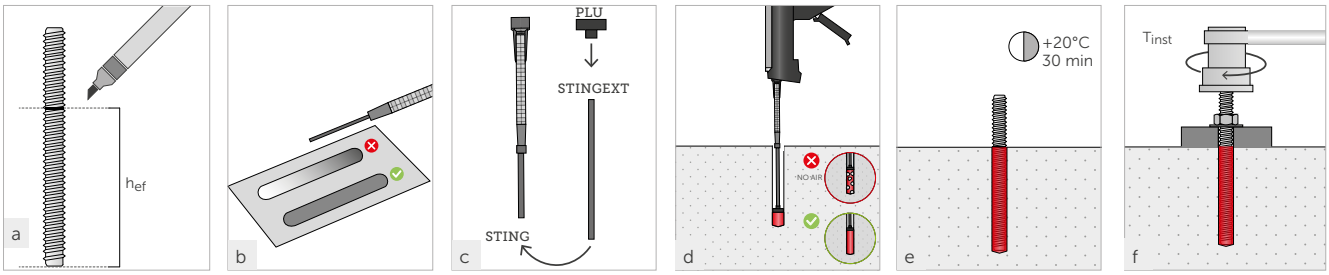
b. ASSEMBLY WITH HP + BRUH (valid only for uncracked concrete, hole diameter ≤ 20 mm, hole depth ≤ 10 d)



c. ASSEMBLY WITH CAT + BRUH



Rod installation:



INSTALLATION TIME AND TEMPERATURE

support temperature	workability time	curing time before loading	
		dry support	wet support
-5 ÷ -1 °C	50 min	5 h	10 h
0 ÷ +4 °C	25 min	3,5 h	7 h
+5 ÷ +9 °C	15 min	2 h	4 h
+10 ÷ +14 °C	10 min	1 h	2 h
+15 ÷ +19 °C	6 min	40 min	80 min
+20 ÷ +29 °C	3 min	30 min	60 min
+30 ÷ +40 °C	2 min	30 min	60 min

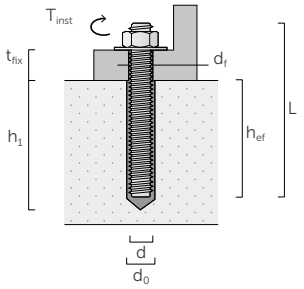
Cartridge storage temperature +5 - +40°.

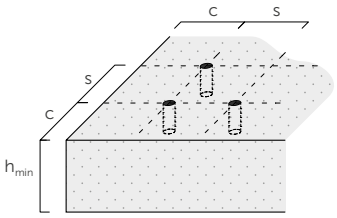
INSTALLATION

INSTALLATION GEOMETRY FEATURES ON CONCRETE

THREADED RODS (INA or MGS TYPE)

d	anchor diameter
d_0	hole diameter in the concrete support
$h_{ef,min}$	effective anchor depth
d_f	diameter hole in the element to be fastened
T_{inst}	maximum tightening torque
L	anchor length
t_{fix}	maximum fastening thickness
h_1	minimum hole depth





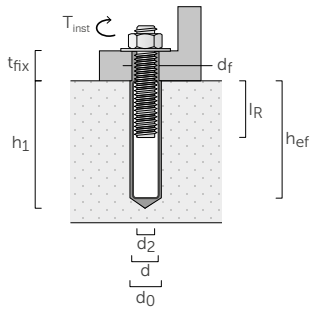
d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d_0	[mm]	10	12	14	18	22	28	30	35
$h_{ef,min}$	[mm]	60	60	70	80	90	96	108	120
$h_{ef,max}$	[mm]	160	200	240	320	400	480	540	600
d_f	[mm]	9	12	14	18	22	26	30	33
T_{inst}	[Nm]	10	20	40	60	100	170	250	300

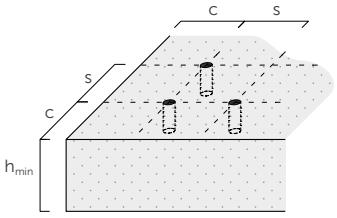
			M8	M10	M12	M16	M20	M24	M27	M30
Minimum spacing	s_{min}	[mm]	40	50	60	75	95	115	125	140
Minimum edge distance	c_{min}	[mm]	35	40	45	50	60	65	75	80
Minimum thickness of concrete support	h_{min}	[mm]	h_{ef} + 30 ≥ 100 mm			h_{ef} + 2 d_0				

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

BUSHING WITH INTERNAL METRIC THREAD (IR TYPE)

d_2	internal threaded rod diameter
d	diameter of the element anchored on concrete
d_0	hole diameter in the concrete support
$h_{ef,min}$	effective anchor depth
d_f	diameter hole in the element to be fastened
T_{inst}	maximum tightening torque
t_{fix}	maximum fastening thickness
h_1	minimum hole depth
l_R	length of internal threaded rod





		IR-M8	IR-M10	IR-M12	IR-M16
d_2	[mm]	8	10	12	16
d	[mm]	12	16	20	24
d_0	[mm]	14	18	22	28
$h_{ef,min}$	[mm]	70	80	90	96
$h_{ef,max}$	[Nm]	240	320	400	480
d_f	[mm]	9	12	14	18
T_{inst}	[mm]	10	20	40	60
$l_{R,min}$	[mm]	8	10	12	16
$l_{R,max}$	[mm]	20	25	30	32

			IR-M8	IR-M10	IR-M12	IR-M16
Minimum spacing	s_{min}	[mm]	60	75	95	115
Minimum edge distance	c_{min}	[mm]	45	50	60	65
Minimum thickness of concrete support	h_{min}	[mm]	h_{ef} + 30 ≥ 100 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.

Component A and Component B classification: Skin Sens. 1. May cause an allergic skin reaction.

STRUCTURAL 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

rod	$h_{ef,standard}$	$N_{Rk,p}/N_{Rk,s}$ [kN]				h_{ef}	$N_{Rk,s}$(2) [kN]			
	[mm]	5.8 steel	γ_M	8.8 steel	γ_M	[mm]	5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
M8	**80**	18,0	$\gamma_{Ms} = 1,5$(2)	29,0	$\gamma_{Ms} = 1,5$(2)	**≥ 80**	18,0	1,5	29,0	1,5
M10	**90**	29,0		42,0	$\gamma_{Mc} = 1,5$(4)(5)	**≥ 100**	29,0		46,0	
M12	**110**	42,0		56,8		**≥ 130**	42,0		67,0	
M16	**128**	71,2	$\gamma_{Mc} = 1,5$(4)(5)	71,2		**≥ 180**	78,0		125,0	
M20(3)	**170**	109,0		109,0		**≥ 250**	122,0		196,0	
M24(3)	**210**	149,7		149,7		**≥ 325**	176,0		282,0	
M27(3)	**240**	182,9		182,9		**≥ 390**	230,0		368,0	
M30(3)	**270**	218,2		218,2		**≥ 440**	280,0		449,0	

SHEAR

rod	h_{ef}	$V_{Rk,s}$(2) [kN]			
	[mm]	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(3)	**≥ 100**	74,0		98,0	
M24(3)	**≥ 130**	106,0		141,0	
M27(3)	**≥ 155**	138,0		184,0	
M30(3)	**≥ 175**	168,0		224,0	

NOTES

(1) Refer to the relevant ETA document for use of rebars.
(2) Steel failure mode.
(3) Installation is only allowed with CAT and HDE.
(4) Concrete cone failure method.
(5) Valid concrete material safety coefficient value using CAT in the installation. For different installation systems, use a coefficient of γ_M equal to 1,8.
(6) Pull-out and concrete cone failure.
(7) Tensile-strength increment factor (excluding steel and concrete cone failure) for both cracked and uncracked concrete.

GENERAL PRINCIPLES

- The characteristic values are according to EN 1992-4:2018 with a factor α_{sus}=0.6 and in accordance with ETA-20/1285.
- 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.

STRUCTURAL 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.

CRACKED CONCRETE[1]

TENSION

rod	$h_{ef,standard}$	$N_{Rk,p}$ [kN]				$h_{ef,max}$	$N_{Rk,s}/N_{Rk,p}$ [kN]			
	[mm]	5.8 steel	γ_{Mp}	8.8 steel	γ_M	[mm]	5.8 steel	γ_M	8.8 steel	γ_M
M8	**80**	14,1	$\gamma_{Mp} = 1,5^{(5)(6)}$	14,1	$\gamma_{Mp} = 1,5^{(5)(6)}$	**160**	18,0	$\gamma_{Ms} = 1,5^{(2)}$	28,2	$\gamma_{Mp} = 1,5^{(5)(6)}$
M10	**90**	21,2		21,2		**200**	29,0		46,0	$\gamma_{Ms} = 1,5^{(2)}$
M12	**110**	33,2		33,2		**240**	42,0		67,0	
M16	**128**	49,9	$\gamma_{Mc} = 1,5^{(4)(5)}$	49,9	$\gamma_{Mc} = 1,5^{(4)(5)}$	**320**	78,0		125,0	
M20[3]	**170**	76,3		76,3		**400**	122,0		196,0	
M24[3]	**210**	104,8		104,8		**480**	176,0		253,3	$\gamma_{Mp} = 1,5^{(5)(6)}$
M27[3]	**240**	128,0		128,0		**540**	230,0		320,6	
M30[3]	**270**	152,8		152,8		**600**	280,0		395,8	

SHEAR

rod	$h_{ef,standard}$	$V_{Rk,s}$[2] [kN]			
	[mm]	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[3]	**170**	74,0		98,0	
M24[3]	**210**	106,0		141,0	
M27[3]	**240**	138,0		184,0	
M30[3]	**270**	168,0		224,0	

incremental factor for $N_{Rk,p}$[7]		
Ψ_c	C25/30	1,02
	C30/37	1,04
	C40/50	1,08
	C50/60	1,10

NOTES

(1) Refer to the relevant ETA document for use of rebars.
(2) Steel failure mode.
(3) Installation is only allowed with CAT and HDE.
(4) Concrete cone failure method.
(5) Valid concrete material safety coefficient value using CAT in the installation. For different installation systems, use a coefficient of γ_M equal to 1,8.
(6) Pull-out and concrete cone failure.
(7) Tensile-strength increment factor (excluding steel and concrete cone failure) for both cracked and uncracked concrete.

GENERAL PRINCIPLES

- The characteristic values are according to EN 1992-4:2018 with a factor α_{sus}=0.6 and in accordance with ETA-20/1285.
- 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.

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(1)

TENSION

rod	h_{ef}	h_{min}(2)	$N_{Rk,s}/N_{Rk,p}$ [kN]			
	[mm]	[mm]	5.8 steel	γ_{Ms}	8.8 steel	γ_M
IR-M8	**80**	**110**	17,0	1,5(3)	27,0	γ_{Ms} = 1,5(3)
IR-M10	**80**	**116**	29,0		35,2	γ_{Mc} = 1,5(5)(6)
IR-M12(4)	**125**	**169**	42,0		67,0	γ_{Ms} = 1,5(3)
IR-M16(4)	**170**	**226**	76,0		109,0	γ_{Mc} = 1,5(5)(6)

SHEAR

rod	h_{ef}	h_{min}(2)	$V_{Rk,s}$(3) [kN]			
	[mm]	[mm]	5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
IR-M8	**80**	**110**	9,0	1,25	14,0	1,25
IR-M10	**80**	**116**	15,0		23,0	
IR-M12(4)	**125**	**169**	21,0		34,0	
IR-M16(4)	**170**	**226**	38,0		60,0	

CRACKED CONCRETE(1)

TENSION

rod	h_{ef}	h_{min}(2)	$N_{Rk,s}/N_{Rk,p}$ [kN]				h_{ef}	$N_{Rk,s}$(3) [kN]			
	[mm]	[mm]	5.8 steel	γ_M	8.8 steel	γ_M	[mm]	5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
IR-M8	**80**	**110**	17,0	γ_{Ms} = 1,5(3)	19,6	γ_{Mc} = 1,5(6)(7)	**≥ 120**	17,0	1,5	27,0	1,5
IR-M10	**80**	**116**	24,6	γ_{Mc} = 1,5(5)(6)	24,6	γ_{Mc} = 1,5(5)(6)	**≥ 150**	29,0		46,0	
IR-M12(4)	**125**	**169**	42,0	γ_{Ms} = 1,5(3)	48,1		**≥ 180**	42,0		67,0	
IR-M16(4)	**170**	**226**	76,0		76,3		**≥ 250**	76,0		121,0	

SHEAR

rod	h_{ef}	h_{min}(2)	$V_{Rk,s}$(3) [kN]			
	[mm]	[mm]	5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
IR-M8	**80**	**110**	9,0	1,25	14,0	1,25
IR-M10	**80**	**116**	15,0		23,0	
IR-M12(4)	**125**	**169**	21,0		34,0	
IR-M16(4)	**170**	**226**	38,0		60,0	

incremental factor for $N_{Rk,p}$(8)		
Ψ_c	C25/30	1,02
	C30/37	1,04
	C40/50	1,08
	C50/60	1,10

NOTES

(1) Refer to the relevant ETA document for use of rebars.
(2) Minimum thickness of concrete support.
(3) Steel failure mode.
(4) Installation is only allowed with CAC and HDE.
(5) Concrete cone failure method.
(6) Valid concrete material safety coefficient value using CAT in the installation. For different installation systems, use a coefficient of γ_M equal to 1,8.
(7) Pull-out and concrete cone failure.
(8) Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.

GENERAL PRINCIPLES

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