

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
- Comply with LEED®, IEQ Credit 4.1
- A+ Class: emission of volatile organic compounds (VOC) in living environments
- Ideal for extra-heavy anchor systems and for recasting with reinforcing bars
- Excellent long-term creep behaviour
- Dry or wet concrete
- Concrete with submerged holes
- Overhead application allowed
- Certified installation with hollow drill bit



CODES AND DIMENSIONS

CODE	format [ml]	pcs
HYB280	280	12
HYB420	420	12

Expiry from date of manufacturing: 18 months. Storage temperature between +5 and +25° C.

ADDITIONAL PRODUCTS - ACCESSORIES

type	description	format [ml]	pcs
MAMDB	double cartridge gun	420	1
FLY	gun for cartridge	280	1
STING	nozzle	-	12
STINGEXT	extension tube for nozzle	-	1
PLU	injection nozzle	M12 - M30	-
FILL	filling washer	M8 - M24	-
BRUH	steel pipe cleaner	M8 - M30	-
IR (INTERNAL THREADED ROD)	bushing with internal metric thread	M8 - M16	-
PONY	blow pump	-	1
CAT	compressed air tool	-	1
HDE	hollow drill bit for concrete	M8 - M30	-
DUXHA	hollow drill bit for concrete	M16 - M30	-
DUISPS	class M suction system	-	1

■ INSTALLATION TIME AND TEMPERATURE

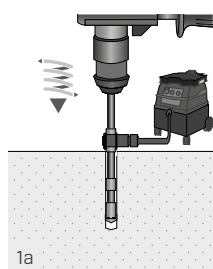
support temperature	workability time	curing time before loading	
		dry support	wet support
-5 ÷ -1 °C	50 min	5 h	10 h
0 ÷ +4 °C	25 min	3,5 h	7 h
+5 ÷ +9 °C	15 min	2 h	4 h
+10 ÷ +14 °C	10 min	1 h	2 h
+15 ÷ +19 °C	6 min	40 min	80 min
+20 ÷ +29 °C	3 min	30 min	60 min
+30 ÷ +40 °C	2 min	30 min	60 min

Cartridge storage temperature +5 - +40°.

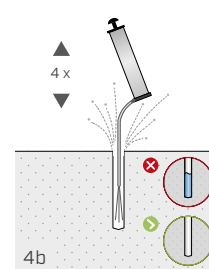
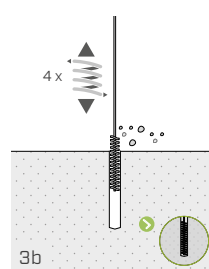
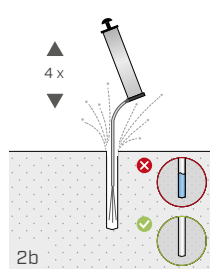
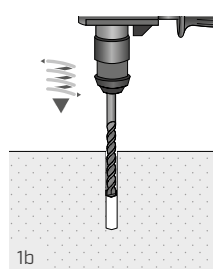
■ ASSEMBLY

Hole execution: three different installation possibilities.

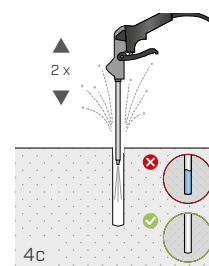
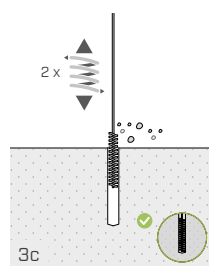
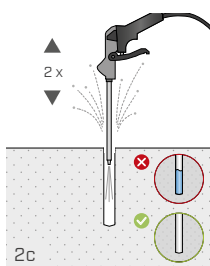
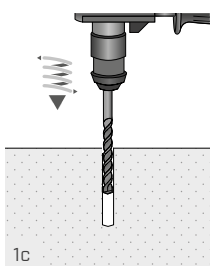
a. INSTALLATION WITH HOLLOW DRILL BIT (HDE)



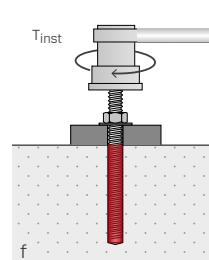
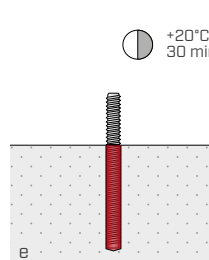
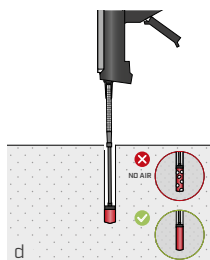
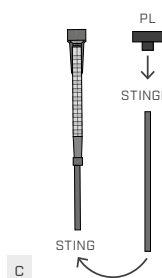
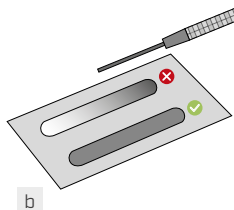
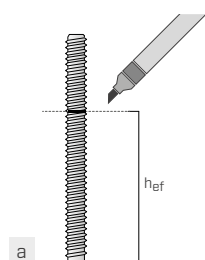
b. ASSEMBLY WITH HP + BRUH



c. ASSEMBLY WITH CAT + BRUH



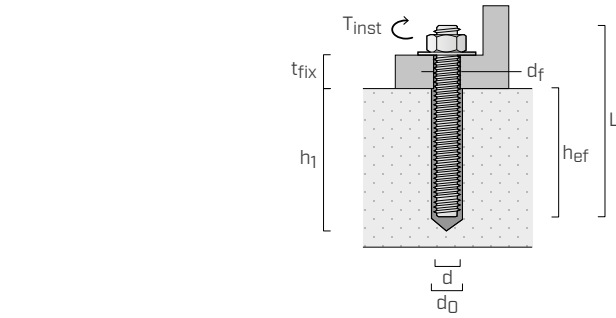
Rod installation:



INSTALLATION

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

THREADED RODS



d anchor diameter
d₀ hole diameter in the concrete support
h_{ef} effective anchor 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

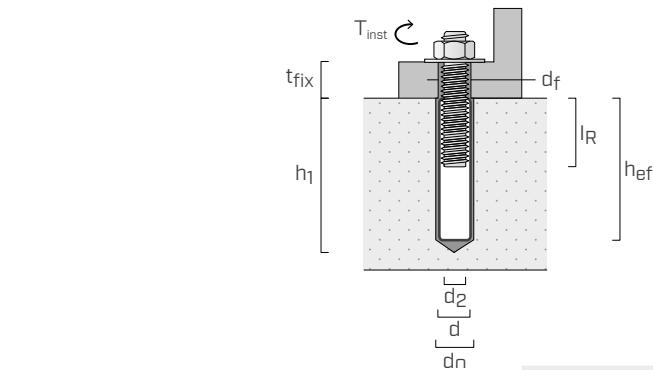


d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d ₀	[mm]	10	12	14	18	22	28	30	35
h _{ef,min}	[mm]	60	60	70	80	90	96	108	120
h _{ef,max}	[mm]	160	200	240	320	400	480	540	600
d _f	[mm]	9	12	14	18	22	26	30	33
T _{inst}	[Nm]	10	20	40	60	100	170	250	300

		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.

INTERNAL THREADED RODS



d₂ internal threaded rod diameter
d diameter of the element anchored on concrete
d₀ hole diameter in the concrete support
h_{ef} effective anchor 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



		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}	[mm]	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.

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⁽¹⁾

TENSION

rod	$h_{ef,standard}$ [mm]	$N_{Rk,p}/N_{Rk,s}$ [kN]				h_{ef} [mm]	$N_{Rk,s}^{(2)}$ [kN]			
		5.8 steel	γ_M	8.8 steel	γ_M		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		≥ 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	$\gamma_{Mc} = 1,5^{(4)(5)}$	≥ 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} [mm]	$V_{Rk,s}^{(2)}$ [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 ⁽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	

CRACKED CONCRETE⁽¹⁾

TENSION

rod	$h_{ef,standard}$ [mm]	$N_{Rk,p}$ [kN]				$h_{ef,max}$ [mm]	$N_{Rk,s}/N_{Rk,p}$ [kN]			
		5.8 steel	γ_{Mp}	8.8 steel	γ_M		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	$\gamma_{Mp} = 1,5^{(5)(6)}$
M20 ⁽³⁾	170	76,3		76,3		400	122,0		196,0	
M24 ⁽³⁾	210	104,8		104,8		480	176,0		253,3	
M27 ⁽³⁾	240	128,0		128,0		540	230,0		320,6	$\gamma_{Mp} = 1,5^{(5)(6)}$
M30 ⁽³⁾	270	152,8		152,8		600	280,0		395,8	

SHEAR

rod	$h_{ef,standard}$ [mm]	$V_{Rk,s}^{(2)}$ [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 ⁽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.

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

GENERAL PRINCIPLES:

- Characteristic values according to 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 EN1992-4.
- 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} [mm]	$h_{min}^{(2)}$ [mm]	$N_{Rk,s}/N_{Rk,p}$ [kN]			
			5.8 steel	γ_{Ms}	8.8 steel	γ_M
IR-M8	80	110	17,0	1,5 ⁽³⁾	27,0	$\gamma_{Ms} = 1,5^{(3)}$
IR-M10	80	116	29,0		35,2	$\gamma_{Mc} = 1,5^{(5)(6)}$
IR-M12 ⁽⁴⁾	125	169	42,0		67,0	$\gamma_{Ms} = 1,5^{(3)}$
IR-M16 ⁽⁴⁾	170	226	76,0		109,0	$\gamma_{Mc} = 1,5^{(5)(6)}$

SHEAR

rod	h_{ef} [mm]	$h_{min}^{(2)}$ [mm]	$V_{Rk,s}^{(3)}$ [kN]			
			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} [mm]	$h_{min}^{(2)}$ [mm]	$N_{Rk,s}/N_{Rk,p}$ [kN]				h_{ef} [mm]	$N_{Rk,s}^{(3)}$ [kN]			
			5.8 steel	γ_M	8.8 steel	γ_M		5.8 steel	γ_{Ms}	8.8 steel	γ_{Ms}
IR-M8	80	110	17,0	$\gamma_{Ms} = 1,5^{(3)}$	19,6	$\gamma_{Mc} = 1,5^{(6)(7)}$	≥ 120	17,0	1,5	27,0	1,5
IR-M10	80	116	24,6	$\gamma_{Mc} = 1,5^{(5)(6)}$	24,6	$\gamma_{Mc} = 1,5^{(5)(6)}$	≥ 150	29,0		46,0	
IR-M12 ⁽⁴⁾	125	169	42,0	$\gamma_{Ms} = 1,5^{(3)}$	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} [mm]	$h_{min}^{(2)}$ [mm]	$V_{Rk,s}^{(3)}$ [kN]			
			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 $N_{Rk,p}^{(9)}$		
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:

- Characteristic values according to 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 EN1992-4.
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications), please refer to ETA.

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

IR

BUSHING WITH INTERNAL METRIC THREAD



- 5.8 grade zinc plated steel
- It makes it possible to reach the maximum tensile performance of the chemical anchor system
- Certified installation with the chemical anchor HYB-FIX

CODE	d ₂ [mm]	d [mm]	d ₀ [mm]	L [mm]	d _f [mm]	pcs
IRM8	M8	12	14	80	≤ 9	10
IRM10	M10	16	18	80	≤ 12	10
IRM12	M12	20	24	125	≤ 14	10
IRM16	M16	24	28	170	≤ 18	5

d₂ = internal threaded rod diameter

d = diameter of the element anchored on concrete

d₀ = hole diameter in the concrete support

d_f = diameter hole in the element to be fastened

PLU

INJECTION NOZZLE



- For bubble-free filling of the drill hole
- It is used for overhead applications of the chemical anchor
- EPDM material

CODE	rod [mm]	internal thread bushing [mm]	d ₀ [mm]	pcs
PL14	M12	-	14	20
PL18	M16	IRM10	18	20
PL24	M20	IRM12	24	20
PL28	M24	IRM16	28	20
PL32	M27	-	32	20
PL35	M30	-	35	20

FILL

FILLING WASHER



- It makes it possible to fill the annular space as a final step to set the anchor system
- It can be used to drill larger holes in the item to be attached
- Increased shear resistance under seismic load

CODE	rod [mm]	d _{INT} [mm]	d _{EXT} [mm]	s [mm]	pcs
FILL8	M8	9	23	5	10
FILL10	M10	12	26	5	10
FILL12	M12	14	28	5	10
FILL16	M16	17	34	5	5
FILL20	M20	21	41	5	5
FILL24	M24	25	48	6	5

ADDITIONAL PRODUCTS - ACCESSORIES

CODE	description	format	pcs
STINGRED	nozzle tip reducer	-	1



BRUH

STEEL PIPE CLEANER

- Stainless steel
- It allows certified installation with PONY blow pump and CAT compressed air tool gun

CODE	rod [mm]	internal thread bushing [mm]	d ₀ [mm]	L [mm]	pcs
BRUH10	M8	-	10	150	1
BRUH12	M10	-	12	150	1
BRUH14	M12	IR-M8	14	150	1
BRUH18	M16	IR-M10	18	150	1
BRUH22	M20	IR-M12	22	150	1
BRUH28	M24	IR-M16	28	150	1
BRUH30	M27	-	30	150	1
BRUH35	M30	-	35	150	1

d₀ = hole diameter in the support

DUHXA

HOLLOW DRILL BIT FOR CONCRETE

- It combines two steps in one: Drilling and suction in one work step
- Significantly higher drilling speed due to optimal dust removal
- Dust-free working environment to protect the user
- Universal adapter for vacuum cleaner fits all common industrial vacuum cleaners

CODE	rod [mm]	internal thread bushing [mm]	d ₀ [mm]	EL [mm]	TL [mm]	pcs
DUHXA1840	M16	IR-M10	18	400	600	1
DUHXA2240	M20	IR-M12	22	400	600	1
DUHXA2840	M24	IR-M16	28	400	620	1
DUHXA3040	M27	-	30	400	620	1
DUHXA3540	M30	-	35	400	620	1

d₀ = hole diameter in the support

EL = Useful length

TL = Total length

ADDITIONAL PRODUCTS - ACCESSORIES

CODE	description	format	pcs
DUISPS	class M suction system	-	1

CAT

COMPRESSED AIR TOOL

- The installation with CAT makes it possible to reach the maximum certified performances

CODE	description	format	pcs
CAT	compressed air tool	-	1