Certificates

ETA 22/0214 Certification according to EAD 330499-01-0601 (former ETAG 001-5) for use on non-cracked and cracked concrete (Option 1) with threaded bar; performance category C1 for seismic actions with threaded bars from M8 to M16; performance category C2 for seismic actions with threaded bars M12, M16. Use on non-cracked concrete with reinforcing bars.

ETA 22/0211 Certification according to EAD 330076-01-0604 (former ETAG 029) for anchoring on solid and hollow masonry with threaded bar and plastic sleeve

ETA 22/0213 Certification according to EAD 330087-01-0601 for rebar connections in existing structures, design according to Eurocode 2 (EN 1992-1-1)

Complies with LEED® requirements, EQ Credit “Low-emitting products”
Class A+ for emission of volatile organic compounds (VOCs) in living spaces

Base material

uso certificato		**uso specifico**
non-cracked concrete cracked concrete solid masonry hollow masonry	lightweight concrete masonry concrete hollow block autoclaved aerated concrete	natural stone solid, perforated and hollow masonry timber

Sizes

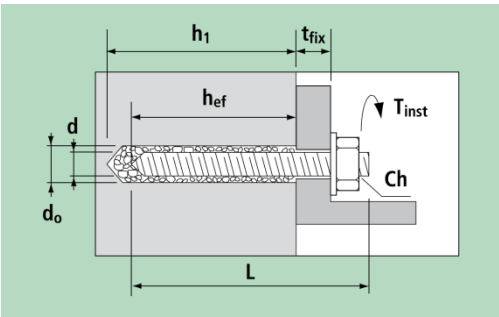
art.	**content**	**mixer**	**gun**
CC38	300 ml	1 M17	CP07, CP17
CC37	410 ml	1 M17	CP01, CP11, CP30, CP16

Intended use

Dry or wet concrete
Flooded holes on concrete
Dry or wet masonry
Cartridge temperature: between +5 and +40 °C
Installation temperature: between -5 and +39 °C
Work temperature: I between -40 and +40 °C (maximum short term temperature +40 °C; long term +24 °C)
II between -40 and +80 °C (maximum short term temperature +80 °C; long term +50 °C)
Shelf life: 18 months for 410 ml ml cartridges, 12 months for 300 ml cartridges (storage temperature between +5 and +25 °C)

Time and temperatures

temperature of base material	**working time**	**full curing dry base material**
-5 ÷ -1 °C	90 min	6 h
0 ÷ +4 °C	45 min	3 h
+5 ÷ +9 °C	25 min	2 h
+10 ÷ +14 °C	20 min	100 min
+15 ÷ +19 °C	15 min	80 min
+20 ÷ +29 °C	6 min	45 min
+30 ÷ +34 °C	4 min	25 min
+35 ÷ +39 °C	2 min	20 min

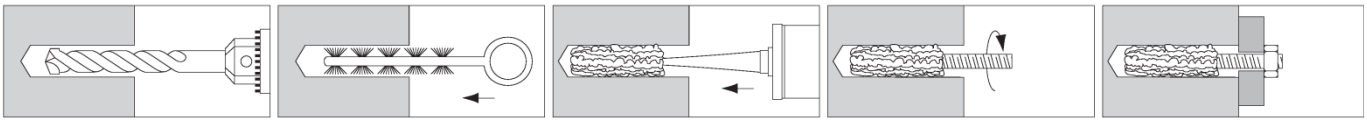


d = bar diameter
L = bar length
t_{fix} = fixable thickness
d_0 = hole diameter
h_1 = minimum hole depth
h_{nom} = setting depth
h_{ef} = effective anchorage depth
T_{inst} = tightening torque

use without sleeve: $h_{ef} = h_1 = h_{nom}$

- **Use on non-cracked and cracked concrete with threaded bars**

Installation



Setting parameters

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
hole diameter	d_0 (mm)	10	12	14	18	24	28
hole depth	$h_{ef,min}$ (mm)	60	60	70	80	90	96
	$h_{ef,max}$ (mm)	160	200	240	320	400	480
minimum spacing	s_{min} (mm)	40	50	60	80	100	120
minimum edge distance	c_{min} (mm)	40	50	60	80	100	120
min. base material thickness	h_{min} (mm)	h_{ef} + 30 ≥ 100			h_{ef} + $2d_0$		
tightening torque	T_{inst} (Nm)	10	20	40	80	120	160

Strength data

For installation on dry or wet concrete and work temperature I (minimum temperature -40 °C, maximum short term temperature +40 °C; long term +24 °C).
Valid for a single anchor far from the edges, on a thick concrete member of class C20/25 with sparse reinforcing.

○ Threaded bars on non-cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**
tension	$N_{Rk,p}$ (kN)	17,1	22,6	33,2	50,3	85,5	126,7

Design resistance (kN)
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**
tension	N_{Rd} (kN)	9,5	12,6	18,4	27,9	47,5	70,4
shear	V_{Rd} (kN)	8,8 11,7	13,9 18,6	20,2 27,0	37,7 50,2	58,8 78,4	84,7 113,0

Recommended load
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**170**	**210**
tension	N_{rec} (kN)	6,8	9,0	13,2	19,9	33,9	50,3
shear	V_{rec} (kN)	6,3 8,4	9,9 13,3	14,5 19,3	26,9 35,9	42,0 56,0	60,5 80,7

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

○ Threaded bars on cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	$N_{Rk,p}$ (kN)	9,0	12,7	18,7	28,3

Design resistance
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	N_{Rd} (kN)	5,0	7,1	10,4	15,7
shear	V_{Rd} (kN)	8,8 11,7	13,9 17,0	20,2 24,9	37,7 37,7

Recommended load
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	N_{rec} (kN)	3,6	5,0	7,4	11,2
shear	V_{rec} (kN)	6,3 8,4	9,9 12,1	14,5 17,8	26,9 26,9

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

○ Threaded bars under seismic actions, performance category C1

Characteristic resistance of resin
at standard embedment depth

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	$N_{Rk,p}$ (kN)	4,6	6,4	9,5	13,8

Design resistance
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	N_{Rd} (kN)	2,6	3,5	5,3	7,7
shear	V_{Rd} (kN)	2,6	3,6	5,4	7,8

Recommended load
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M8**	**M10**	**M12**	**M16**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**
tension	N_{rec} (kN)	1,8	2,5	3,8	5,5
shear	V_{rec} (kN)	1,9	2,6	3,9	5,6

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

○ Threaded bars under seismic actions, performance category C2

Characteristic resistance of resin
at standard embedment depth

bar size		**M12**	**M16**
embedment depth	h_{ef} (mm)	**110**	**125**
tension	$N_{Rk,p}$ (kN)	3,1	6,0

Design resistance
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M12**	**M16**
embedment depth	h_{ef} (mm)	**110**	**125**
tension	N_{Rd} (kN)	1,7	3,3
shear	V_{Rd} (kN)	1,8	3,4

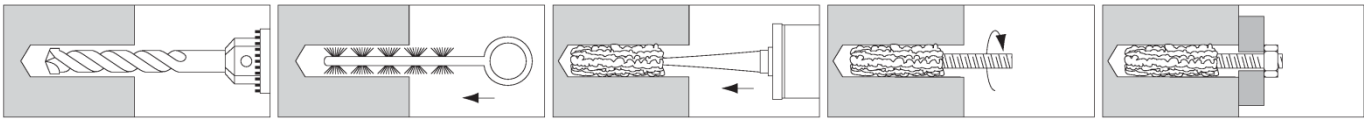
Recommended load
at standard embedment depth, for threaded bars in steel class 5.8 and 8.8

bar size		**M12**	**M16**
embedment depth	h_{ef} (mm)	**110**	**125**
tension	N_{rec} (kN)	1,2	2,4
shear	V_{rec} (kN)	1,3	2,4

1 kN ≈ 100 kg
steel failure class 5.8 – steel failure class 8.8

- **Use on non-cracked concrete with reinforcing bars** (used as anchors)

Installation



Setting parameters

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**
hole diameter	d_0 (mm)	12	14	16	18	20	25	32
hole depth	$h_{ef,min}$ (mm)	60	60	70	75	80	90	100
	$h_{ef,max}$ (mm)	160	200	240	280	320	400	500
minimum spacing	s_{min} (mm)	50	55	65	70	80	100	130
minimum edge distance	c_{min} (mm)	50	55	65	70	80	100	130
min. base material thickness	h_{min} (mm)	h_{ef} + 30 ≥ 100		h_{ef} + 2d_0				

Strength data

For installation on dry or wet concrete and work temperature I (minimum temperature -40 °C, maximum short term temperature +40 °C; long term +24 °C)
Valid for a single anchor far from the edges, on a thick concrete member of class C20/25 with sparse reinforcing.

○ Reinforcing bars on non-cracked concrete

Characteristic resistance of resin
at standard embedment depth

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**145**	**170**	**210**
tension	$N_{Rk,p}$ (kN)	14,1	19,8	29,0	38,5	47,4	69,4	107,2

Design resistance
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**145**	**170**	**210**
tension	N_{Rd} (kN)	7,8	11,0	16,1	21,4	26,3	38,6	59,6
shear	V_{Rd} (kN)	9,2	14,5	20,7	28,2	36,9	57,6	90,0

Recommended load
at standard embedment depth, for reinforcing bars with f_{uk} = 550 N/mm²

bar size		**Ø8**	**Ø10**	**Ø12**	**Ø14**	**Ø16**	**Ø20**	**Ø25**
embedment depth	h_{ef} (mm)	**80**	**90**	**110**	**125**	**145**	**170**	**210**
tension	N_{rec} (kN)	5,6	7,9	11,5	15,3	18,8	27,6	42,5
shear	V_{rec} (kN)	6,5	10,3	14,8	20,2	26,3	41,1	64,3

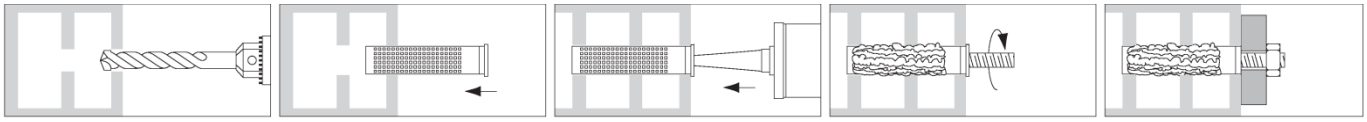
1 kN ≈ 100 kg
steel failure

Load values derive from parameters certified in European Technical Assessment ETA 22/0214. Characteristic resistance N_{Rk} refers uniquely to the resin resistance to failure due to pull-out and concrete cone. Design resistances N_{Rd} and V_{Rd} refer to all failure modes and include partial safety factors on strengths. Recommended loads N_{rec} and V_{rec} include the further 1.4 safety factor.

For the design of fixing with reduced spacing, near the edge or on concrete with increased resistance, reduced thickness or dense reinforcement refer to ETA 22/0214 or to Declaration of Performance DPGEB1027 and use the design method outlined in EN 1992-4. In the same way, for anchors installed in flooded holes and for different working temperatures (II, between -40 and +80 °C) refer to ETA or DoP. One can also calculate and verify the fixings made with Extreme Hybrid XTR by means of *G&B Calculation Program* available on the website www.gebfissaggi.com.

• Use on masonry

Installation



Base material

Type		example manufacturer	L/W/H (mm)	density ρ (kg/dm³)	compressive strength f_b (N/mm²)	drilling method
clay bricks (EN 771-1)						
solid brick	Mz-DF	Unipor (DE)	240/115/55	1,64	10, 20 ou 28	hammer
hollow brick	HLz-16DF	Unipor (DE)	497/238/240	0,83	6, 9, 12 ou 14	rotary
hollow brick	*Porotherm Homebrlc*	Wienerberger (FR)	500/200/299	0,68	6, 8, ou 10	rotary
hollow brick	BGV Thermo	Leroux (FR)	500/200/314	0,62	4, 6 ou 10	rotary
hollow brick	Calibric Th	Terreal (FR)	500/200/314	0,62	6, 9 ou 12	rotary
hollow brick	Urbanbric	Imerys (FR)	500/200/274	0,74	6 ou 9	rotary
hollow brick	Blocchi Leggeri	Wienerberger (IT)	250/120/250	0,55	4, 6 ou 8	rotary
hollow brick	Doppio Uni	Wienerberger (IT)	250/120/120	0,92	10, 16, 20 ou 28	rotary
calcium silicate bricks (EN 771-2)						
solid brick	KS-NF	Wemding (DE)	240/115/71	2,0	10, 20 ou 27	hammer
hollow brick	KS L-3DF	Wemding (DE)	240/175/113	1,4	8, 12 or 14	rotary
hollow brick	KS L-12DF	Wemding (DE)	498/175/238	1,4	10, 12 or 16	rotary
light weight concrete bricks (EN 771-3)						
solid brick	-	Bisotherm (DE)	300/123/248	0,63	2	rotary
solid brick	Leca Lex harkko RUH-200 kulma	Saint-Gobain Weber (FI)	498/200/195	0,78	3	rotary
hollow brick	Leca Lex harkko RUH-200	Saint-Gobain Weber (FI)	498/200/195	0,7	2,7	rotary
hollow brick	Bloc creux B40	Sepa (FR)	494/200/190	0,8	4	rotary
autoclaved aerated concrete units (EN 771-3)						
solid brick	AAC2	Ytong (CZ)	599/375/249	0,35	2	rotary
solid brick	AAC4	Ytong (CZ)	499/375/249	0,50	4	rotary
solid brick	AAC6	Ytong (CZ)	499/240/249	0,60	6	rotary

It is possible to use other bricks after job site tests conducted according to EAD 330076-01-0604 and TR053.

Setting parameters

Anchor rod in solid masonry without sleeve

bar size		**M8**	**M10**	**M12**	**M16**
hole diameter	d_0 mm	10	12	14	18
depth of the drilling hole	h_1 mm	80	90	100	100
effective anchorage depth	h_{ef} mm	80	90	100	100
minimum wall thickness	h_{min} mm	h_{ef} + 30			
diameter of clearance hole in the fixture	d_{fix} mm	9	12	14	18

Anchor rod in solid or hollow masonry with sleeve

bar size		**M8**	**M8 / M10**		**M12 / M16**		
sleeve		BR12x80	BR16x85	BR16x130 BR16x330/200	BR20x85	BR20x130	BR20x200
hole diameter	d_0 mm	12	16	16	20	20	20
depth of the drilling hole	h_1 mm	85	90	135	90	135	205
effective anchorage depth	h_{ef} mm	80	85	130	85	130	200
installation depth	h_{nom} mm	80	85	130	85	130	200
minimum wall thickness	h_{min} mm	115	115	195	115	195	240
diameter of clearance hole in the fixture	d_{fix} mm	9	9 (M8) / 12 (M10)		14 (M12) / 18 (M16)		

Strength data

For installation on dry concrete and work temperature I (minimum temperature -40 °C, maximum short term temperature +40 °C; long term +24 °C).
Valid for a single anchor far from the edges, with appropriate mortar joints between the bricks of the structure, for bricks with the indicated compressive strength (f_b).

Tensile strength (N) and shear strength (V) on solid bricks (kN)

Type		**Bar size**	**Characteristic resistance of resin**		**Design resistance**		**Recommended load**	
			N_{Rk}	**$V_{Rk,b}$**	**N_{Rd}**	**V_{Rd}**	**N_{rec}**	**V_{rec}**
Clay bricks	Mz-DF ($f_b \geq 28$ N/mm^2)	**M8**	3	5,5	1,20	2,20	0,86	1,57
		M10	3	6,5	1,20	2,60	0,86	1,86
		M12	2,5	9,0	1,00	3,60	0,71	2,57
		M16	4,5	9,0	1,80	3,60	1,29	2,57
Calcium silicate bricks	KS-NF ($f_b \geq 27$ N/mm^2)	**M8**	5,5	5,0	2,20	2,00	1,57	1,43
		M10	5,5	5,5	2,20	2,20	1,57	1,57
		M12	6,5	6,0	2,60	2,40	1,86	1,71
		M16	5,5	6,0	2,20	2,40	1,57	1,71
Light weight concrete bricks	- ($f_b \geq 2$ N/mm^2)	**M8**	2,0	3,0	0,80	1,20	0,57	0,86
		M10	2,0	3,5	0,80	1,40	0,57	1,00
		M12	2,0	4,0	0,80	1,60	0,57	1,14
		M16	2,0	4,0	0,80	1,60	0,57	1,14
	Leca Lex harkko RUH-200 kulma ($f_b \geq 3$ N/mm^2)	**M8**	2,0	3,0	0,80	1,20	0,57	0,86
		M10	3,0	4,0	1,20	1,60	0,86	1,14
		M12	3,0	4,0	1,20	1,60	0,86	1,14
		M16	3,0	4,0	1,20	1,60	0,86	1,14

Type		Bar size	Characteristic resistance		Design resistance		Recommended load	
			N_{Rk}	$V_{Rk,b}$	N_{Rd}	V_{Rd}	N_{rec}	V_{rec}
Autoclaved aerated concrete units	AAC2 ($f_b \geq 2$ N/mm²)	**M8**	0,9	1,5	0,45	0,75	0,32	0,54
		M10	0,9	2,0	0,45	1,00	0,32	0,71
		M12	1,5	2,5	0,75	1,25	0,54	0,89
		M16	1,5	3,5	0,75	1,75	0,54	1,25
	AAC4 ($f_b \geq 9$ N/mm²)	**M8**	0,9	1,5	0,45	0,75	0,32	0,54
		M10	2,5	2,0	1,25	1,00	0,89	0,71
		M12	2,5	2,5	1,25	1,25	0,89	0,89
		M16	3,5	3,5	1,75	1,75	1,25	1,25
	AAC6 ($f_b \geq 6$ N/mm²)	**M8**	2,0	5,5	1,00	2,75	0,71	1,96
		M10	3,0	9,0	1,50	4,50	1,07	3,21
		M12	4,5	9,0	2,25	4,50	1,61	3,21
		M16	5,5	11,0	3,25	5,50	2,32	3,93

Tensile strength (N) and shear strength (V) on hollow bricks (kN)

Type	Bar size	Sleeve	Characteristic resistance		Design resistance		Recommended load	
			N_{Rk}	$V_{Rk,b}$	N_{Rd}	V_{Rd}	N_{rec}	V_{rec}
Clay bricks (EN 771-1)								
Hlz-16DF ($f_b \geq 14$ N/mm²)	**M8**	BR12x80	1,50	4,00	0,60	1,60	0,43	1,14
		BR16x85	2,50	6,00	1,00	2,40	0,71	1,71
		BR16x130	3,50	6,50	1,40	2,60	1,00	1,86
		BR16x130/330	3,50	6,50	1,40	2,60	1,00	1,86
	M10	BR16x85	2,50	6,00	1,00	2,40	0,71	1,71
		BR16x130	3,50	9,00	1,40	3,60	1,00	2,57
		BR16x130/330	3,50	9,00	1,40	3,60	1,00	2,57
	M12 / M16	BR20x85	3,50	6,00	1,40	2,40	1,00	1,71
		BR20x130 / BR20x200	3,50	9,00	1,40	3,60	1,00	2,57
Porotherm Homebrlc ($f_b \geq 10$ N/mm²)	**M8**	BR12x80	1,20	3,00	0,48	1,20	0,34	0,86
		BR16x85	1,50	3,00	0,60	1,20	0,43	0,86
		BR16x130	2,00	3,50	0,80	1,40	0,57	1,00
		BR16x130/330	2,00	3,50	0,80	1,40	0,57	1,00
	M10	BR16x85	1,50	3,00	0,60	1,20	0,43	0,86
		BR16x130	2,00	3,50	0,80	1,40	0,57	1,00
		BR16x130/330	2,00	3,50	0,80	1,40	0,57	1,00
	M12 / M16	BR20x85	1,50	4,00	0,60	1,60	0,43	1,14
		BR20x130	2,00	4,00	0,80	1,60	0,57	1,14
BGV Thermo ($f_b \geq 10$ N/mm²)	**M8**	BR12x80	0,90	3,00	0,36	1,20	0,26	0,86
		BR16x85	1,20	3,50	0,48	1,40	0,34	1,00
		BR16x130	1,50	4,00	0,60	1,60	0,43	1,14
		BR16x130/330	1,50	4,00	0,60	1,60	0,43	1,14
	M10	BR16x85	1,20	3,50	0,48	1,40	0,34	1,00
		BR16x130	1,50	4,00	0,60	1,60	0,43	1,14
		BR16x130/330	1,50	4,00	0,60	1,60	0,43	1,14
	M12	BR20x85	1,20	3,50	0,48	1,40	0,34	1,00
		BR20x130	1,50	4,00	0,60	1,60	0,43	1,14
	M16	BR20x85	1,50	3,50	0,60	1,40	0,43	1,00
		BR20x130	1,50	4,00	0,60	1,60	0,43	1,14

Type	Bar size	Sleeve	Characteristic resistance		Design resistance		Recommended load	
			N_{Rk}	$V_{Rk,b}$	N_{Rd}	V_{Rd}	N_{rec}	V_{rec}
Calibric Th ($f_b \geq 12$ N/mm^2)	M8	BR12x80	0,90	4,00	0,36	1,60	0,26	1,14
		BR16x85	0,90	5,50	0,36	2,20	0,26	1,57
		BR16x130	1,20	5,50	0,48	2,20	0,34	1,57
		BR16x130/330	1,20	5,50	0,48	2,20	0,34	1,57
	M10	BR16x85	0,90	5,50	0,36	2,20	0,26	1,57
		BR16x130	1,50	5,50	0,60	2,20	0,43	1,57
		BR16x130/330	1,50	5,50	0,60	2,20	0,43	1,57
	M12	BR20x85	0,90	8,50	0,36	3,40	0,26	2,43
		BR20x130	1,50	8,50	0,60	3,40	0,43	2,43
	M16	BR20x85	1,50	8,50	0,60	3,40	0,43	2,43
		BR20x130	1,50	8,50	0,60	3,40	0,43	2,43
Urbanbric ($f_b \geq 9$ N/mm^2)	M8	BR12x80	1,20	3,50	0,48	1,40	0,34	1,00
	M8 / M10	BR16x85	1,50	4,00	0,60	1,60	0,43	1,14
		BR16x130	2,00	4,50	0,80	1,80	0,57	1,29
		BR16x130/330	2,00	4,50	0,80	1,80	0,57	1,29
	M12 / M16	BR20x85	1,50	5,00	0,60	2,00	0,43	1,43
		BR20x130	2,00	5,00	0,80	2,00	0,57	1,43
Blocchi Leggeri ($f_b \geq 8$ N/mm^2)	M8	BR12x80	0,60	2,50	0,24	1,00	0,17	0,71
	M8 / M10	BR16x85	0,60	2,50	0,24	1,00	0,17	0,71
		BR16x130	0,60	2,50	0,24	1,00	0,17	0,71
		BR16x130/330	0,60	2,50	0,24	1,00	0,17	0,71
	M12 / M16	BR20x85	0,60	3,00	0,24	1,20	0,17	0,86
		BR20x130	0,60	3,00	0,24	1,20	0,17	0,86
		BR20x200	0,60	3,00	0,24	1,20	0,17	0,86
Doppio Uni ($f_b \geq 28$ N/mm^2)	M8	BR12x80	1,50	3,50	0,60	1,40	0,43	1,00
	M8 / M10	BR16x85	1,50	3,50	0,60	1,40	0,43	1,00
		BR16x130	1,50	3,50	0,60	1,40	0,43	1,00
		BR16x130/330	1,50	3,50	0,60	1,40	0,43	1,00
	M12 / M16	BR20x85	2,00	3,50	0,80	1,40	0,57	1,00
		BR20x130	2,00	3,50	0,80	1,40	0,57	1,00
		BR20x200	2,00	3,50	0,80	1,40	0,57	1,00
Calcium silicate bricks (EN 771-2)								
KS L-3DF ($f_b \geq 14$ N/mm^2)	M8	BR12x80	2,50	3,00	1,00	1,20	0,71	0,86
		BR16x85	2,50	4,00	1,00	1,60	0,71	1,14
		BR16x130	4,00	5,00	1,60	2,00	1,14	1,43
		BR16x130/330	4,00	5,00	1,60	2,00	1,14	1,43
	M10	BR16x85	2,50	4,00	1,00	1,60	0,71	1,14
		BR16x130	4,00	5,00	1,60	2,00	1,14	1,43
		BR16x130/330	4,00	5,00	1,60	2,00	1,14	1,43
	M12	BR20x85	2,50	4,50	1,00	1,80	0,71	1,29
		BR20x130 / BR20x200	4,00	5,00	1,60	2,00	1,14	1,43
	M16	BR20x85	2,50	4,50	1,00	1,80	0,71	1,29
		BR20x130 / BR20x200	4,00	6,00	1,60	2,40	1,14	1,71

Type	Bar size	Sleeve	Characteristic resistance		Design resistance		Recommended load	
			N_{Rk}	$V_{Rk,b}$	N_{Rd}	V_{Rd}	N_{rec}	V_{rec}
KS L-12DF ($f_b \geq 16$ N/mm^2)	**M8**	BR12x80	0,50	4,00	0,20	1,60	0,14	1,14
		BR16x85	2,00	9,00	0,80	3,60	0,57	2,57
		BR16x130	5,50	10,00	2,20	4,00	1,57	2,86

Type	Bar size	Sleeve	Characteristic resistance		Design resistance		Recommended load	
		BR16x130/330	5,50	10,00	2,20	4,00	1,57	2,86
	M10	BR16x85	2,00	9,00	0,80	3,60	0,57	2,57
		BR16x130	5,50	10,00	2,20	4,00	1,57	2,86
		BR16x130/330	5,50	10,00	2,20	4,00	1,57	2,86
	M12 / M16	BR20x85	2,00	8,50	0,80	3,40	0,57	2,43
		BR20x130/ BR 20x200	5,50	10,00	2,20	4,00	1,57	2,86
Light weight concrete bricks (EN 771-3)								
Leca Lex harkko RUH-200 (f_b ≥ 2,7 N/mm^2)	**M8**	BR12x80	2,0	2,5	0,80	1,00	0,57	0,71
		BR16x85	2,0	3,5	0,80	1,40	0,57	1,00
		BR16x130	2,5	3,5	1,00	1,40	0,71	1,00
		BR16x130/330	2,5	3,5	1,00	1,40	0,71	1,00
	M10	BR16x85	2,0	3,5	0,80	1,40	0,57	1,00
		BR16x130	2,5	3,5	1,00	1,40	0,71	1,00
		BR16x130/330	2,5	3,5	1,00	1,40	0,71	1,00
	M12	BR20x85	2,5	3,5	1,00	1,40	0,71	1,00
		BR20x130	2,5	3,5	1,00	1,40	0,71	1,00
	M16	BR20x85	2,5	3,5	1,00	1,40	0,71	1,00
		BR20x130	2,5	3,5	1,00	1,40	0,71	1,00
Bloc creux B40 (f_b ≥ 4 N/mm^2)	**M8**	BR12x80	0,4	1,2	0,16	0,48	0,11	0,34
		BR16x85	0,6	3,0	0,24	1,20	0,17	0,86
		BR16x130	2,0	3,5	0,80	1,40	0,57	1,00
		BR16x130/330	2,0	3,5	0,80	1,40	0,57	1,00
	M10	BR16x85	0,6	3,0	0,24	1,20	0,17	0,86
		BR16x130	2,0	3,5	0,80	1,40	0,57	1,00
		BR16x130/330	2,0	3,5	0,80	1,40	0,57	1,00
	M12	BR20x85	0,9	3,0	0,36	1,20	0,26	0,86
		BR20x130	2,0	3,5	0,80	1,40	0,57	1,00
	M16	BR20x85	0,9	3,0	0,36	1,20	0,26	0,86
		BR20x130	2,0	3,5	0,80	1,40	0,57	1,00

1 kN ≈ 100 kg

Characteristic resistances N_{Rk} and V_{Rk} derive from European Technical Assessment ETA 22/0211. Design resistances N_{Rd} and V_{Rd} include partial safety factor on strengths. Recommended values N_{rec} and V_{rec} include the further 1.4 safety factor.

For the design of anchors in bricks of different compressive strengths, with reduced spacing or near the edge, or in groups of two or more fixings and for the resistance of a bar under shear with lever arm refer to ETA 22/0211 or to Declaration of Performance DPGEB1027 and use the design method A outlined in Technical Report 054 (issued by EOTA).