

SCHEDA TECNICA

SITA ACCIAIO CE 7 GBK ancorante pesante per calcestruzzo non fessurato

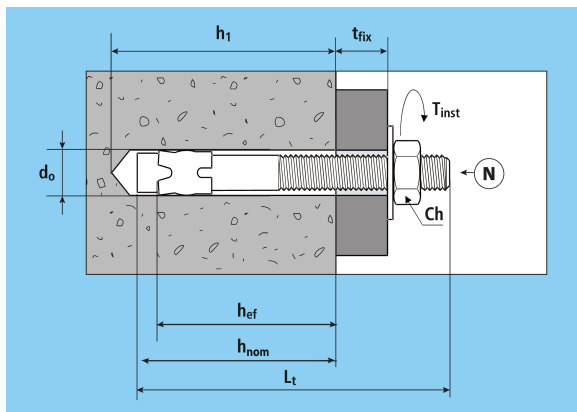
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Certificazioni

ETA-17/0237 Certificazione per utilizzo su calcestruzzo non fessurato (Opzione 7)

Supporti

uso certificato	uso specifico
calcestruzzo non fessurato	pietra compatta



- d_0 = diametro del foro = diametro tassello
- L_t = lunghezza tassello
- t_{fix} = spessore fissabile
- f = lunghezza filetto
- h_1 = profondità min. foro
- h_{nom} = profondità di inserimento
- h_{ef} = profondità effettiva di ancoraggio
- d_f = diametro del foro nell'elemento da fissare
- Ch = misura chiave
- T_{inst} = coppia di serraggio
- N = marcatura sulla punta per l'identificazione della lunghezza

SITA Acciaio CE7 GBK

zincato, completo di dado e rondella ISO 7089 (DIN 125) assemblati

art.	descr.	misura	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60322	GBK865/7	M8X65	8	65	7	A	60	50	45	10	20	13
60323	GBK875/17	M8X75		75	17	B						
60324	GBK895/37	M8X95		95	37	E						
60325	GBK8115/57	M8X115		115	57	H						
60326	GBK1075/10	M10X75	10	75	10	B	65	55	50	12	35	17
60327	GBK1090/25	M10X90		90	25	D						
60328	GBK10100/35	M10X100		100	35	F						
60329	GBK10120/55	M10X120		120	55	I						
60330	GBK10150/85	M10X150		150	85	N						
60331	GBK10170/105	M10X170		170	105	P						
60348	GBK1290/8	M12X90	12	90	8	D	80	70	60	14	55	19
60332	GBK12100/18	M12X100		100	18	F						
60333	GBK12110/28	M12X110		110	28	G						
60334	GBK12120/38	M12X120		120	38	I						
60335	GBK12140/58	M12X140		140	58	L						
60336	GBK12160/78	M12X160		160	78	O						
60337	GBK12180/98	M12X180		180	98	Q						
60341	GBK16125/10	M16X125	16	125	10	J	110	100	85	18	100	24
60342	GBK16145/30	M16X145		145	30	M						
60343	GBK16170/55	M16X170		170	55	P						
60349	GBK16200/85	M16X200		200	85	R						
60344	GBK16220/105	M16X220		220	105	S						

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SITA ACCIAIO CE 7 GBK ancorante pesante per calcestruzzo non fessurato

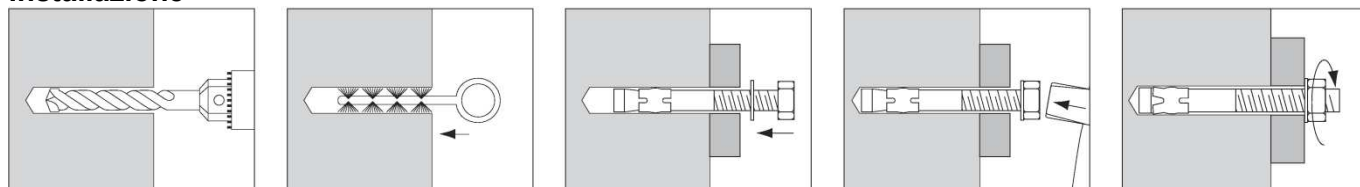
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art.	descr.	misura	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60350	GBK20150/15	M20X150	20	150	15	N	125	115	100	22	150	30
60345	GBK20170/35	M20X170		170	35	P						
60346	GBK20220/85	M20X220		220	85	S						
60347	GBK20270/135	M20X270		270	135	U						

SITA Acciaio CE7 GBK – misure extralunghe

zincato, completo di dado e rondella maggiorata ISO 7093 (DIN 9021) assemblati

art.	descr.	misura	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60135	GBK12200/118	M12X200	12	200	118	R	80	70	60	14	55	19
60136	GBK12220/138	M12X220		220	138	S						
60137	GBK12240/158	M12X240		240	158	T						
60138	GBK12280/198	M12X280		280	198	V						
60139	GBK12300/218	M12X300		300	218	W						
60140	GBK12360/278	M12X360		360	278	Y						
60141	GBK16240/125	M16X240	16	240	125	T	110	100	85	18	100	24
60142	GBK16280/165	M16X280		280	165	V						
60143	GBK16300/185	M16X300		300	185	W						
60144	GBK16400/285	M16X400		400	285	Z						

Installazione

Materiali

parte	materiale	rivestimento
corpo	acciaio al carbonio (f _{uk} ≥ 500 MPa M8÷M16; ≥ 480 MPa M20)	zincatura bianca ≥ 5 µm ISO 4042
fascetta	acciaio al carbonio	
dado	ISO 898-2 acciaio al carbonio classe 8	
rondella	ISO 7089 (DIN 125) o 7093 (DIN 2021)	

Caratteristiche geometriche di posa

misura		M8	M10	M12	M16	M20
interasse minimo	s _{min} mm	61	68	81	115	135
distanza minima dal bordo	c _{min} mm	61	68	81	115	135
spessore minimo del supporto in calcestruzzo	h _{min} mm	100	100	120	170	200

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SITA ACCIAIO CE 7 GBK ancorante pesante per calcestruzzo non fessurato

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Dati di carico

Validi per un ancorante singolo e lontano dal bordo, su calcestruzzo C20/25 di grande spessore e con armatura rada

Resistenza caratteristica (kN)

misura		M8	M10	M12	M16	M20
trazione	N_{Rk}	9,0	12,0	16,0	16,0	30,0
taglio	V_{Rk}	9,2	14,5	21,1	39,3	58,8

Resistenza di progetto (kN)

misura		M8	M10	M12	M16	M20
trazione	N_{Rd}	5,0	6,7	8,9	8,9	20,0
taglio	V_{Rd}	7,4	11,6	16,9	31,4	47,0

Carico raccomandato (kN)

misura		M8	M10	M12	M16	M20
trazione	N_{rec}	3,6	4,8	6,3	6,3	14,3
taglio	V_{rec}	5,3	8,3	12,1	22,5	33,6

 1 kN $\approx$ 100 kg

cedimento dell'acciaio

Le resistenze caratteristiche N_{Rk} e V_{Rk} derivano dai valori certificati nella Valutazione Tecnica Europea ETA-17/0237. Le resistenze di progetto N_{Rd} e V_{Rd} comprendono i coefficienti parziali di sicurezza sulle resistenze. I carichi raccomandati N_{rec} e V_{rec} comprendono l'ulteriore coefficiente di sicurezza 1,4.

Per il calcolo di ancoraggi con interassi ridotti, per ancoraggi vicini al bordo o per il fissaggio su calcestruzzo di resistenza superiore o di spessore ridotto fare riferimento all'ETA-17/0237 o alla Dichiarazione di Prestazione DPGE1004 ed utilizzare il metodo di calcolo A descritto nell'Annex C dell'ETAG 001 (emesso dall'EOTA) oppure CEN/TS 1992-4:2009 oppure FprEN 1992-4:2016. È anche possibile calcolare e verificare gli ancoraggi realizzati con SITA ACCIAIO CE 7 GBK mediante il programma di calcolo G&B Calculation Program disponibile sul sito internet www.gebfissaggi.com.

Dati per il calcolo
Distanze e interassi critici

misura		M8	M10	M12	M16	M20
interasse critico	$s_{cr,N}$ mm	135	150	180	255	300
	$s_{cr,sp}$ mm	225	250	300	425	500
distanza critica dal bordo	$c_{cr,N}$ mm	68	75	90	128	150
	$c_{cr,sp}$ mm	113	125	150	213	250

Fattori di incremento per la resistenza a trazione (escluso cedimento dell'acciaio)

ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55

Dichiarazione di prestazione

N. DPGE1004 v2.1

1. Codice di identificazione unico del prodotto-tipo: **SITA Acciaio CE7 GBK**

2. Usi previsti:

Utilizzo previsto per il prodotto da costruzione conformemente a ETA-17/0237	
Ancoraggi soggetti a:	Carichi statici e quasi-statici
Tipo di supporto:	Calcestruzzo normale non fessurato, rinforzato o non rinforzato, classe di resistenza da C20/25 a C50/60 secondo EN 206
Condizioni ambientali:	Strutture esposte a condizioni interne e asciutte
Reazione al fuoco:	Gli ancoranti soddisfano i requisiti per la classe A1
Installazione:	Foratura a rotazione e percussione Installazione praticata da personale adeguatamente qualificato a sotto la supervisione della persona responsabile per le questioni tecniche del cantiere

3. Fabbrikante: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italia

5. Sistema di VVCP: 1

6b.

Documento per la Valutazione Europea: "Mechanical fasteners for use in concrete" EAD 330232-00-0601

Valutazione Tecnica Europea: ETA-17/0237

Organismo di Valutazione Tecnica: Instytut Techniki Budowlanej

Organismo Notificato: 1488 INSTYTUT TECHNIKI BUDOWLANEJ (ITB)

7. Prestazioni dichiarate:

Prestazioni dichiarate in base a EAD 330232-00-0601, ETA-17/0237 (Metodo di progetto Technical Report TR 055)

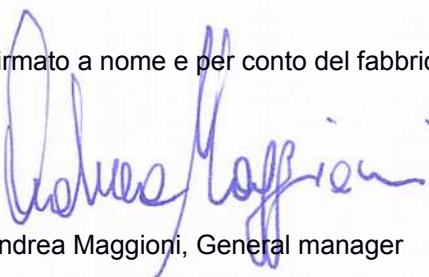
Diametro del filetto			M8	M10	M12	M16	M20
Caratteristiche essenziali			Prestazione				
Parametri di installazione							
d ₀	Diametro del foro	[mm]	8	10	12	16	20
d _f	Diametro del foro nell'oggetto da fissare	[mm]	9	12	14	18	22
h _{ef}	Profondità effettiva di ancoraggio	[mm]	45	50	60	85	100
h _{nom}	Profondità minima di inserimento	[mm]	50	55	70	100	115
h ₁	Profondità minima del foro	[mm]	60	65	80	110	125
h _{min}	Spessore minimo del supporto in calcestruzzo	[mm]	100	100	120	170	200
s _{min}	Minimo interasse	[mm]	61	68	81	115	135
c _{min}	Minima distanza dai bordi	[mm]	61	68	81	115	135
T _{inst}	Coppia di serraggio	[Nm]	20	35	55	100	150
Rottura dell'acciaio a trazione							
N _{Rk,s}	Resistenza caratteristica a trazione dell'acciaio	[kN]	18,3	29,0	42,2	78,5	117,6
E _s	Modulo di elasticità	[N/mm ²]	210 000				
γ _{Ms}	Coefficiente parziale di sicurezza	[-]	1,50				

Diametro del filetto			M8	M10	M12	M16	M20
Caratteristiche essenziali			Prestazione				
Rottura per sfilamento							
N _{Rk,p}	Resistenza caratteristica a estrazione in calcestruzzo non fessurato C20/25	[kN]	9	12	16	16	30
γ ₂ = γ _{inst}	Coefficiente di sicurezza per l'installazione	[-]	1,2				1,0
ψ _{f,c,C30/37}	Fattore di incremento per calcestruzzo C30/37	[-]	1,22				
ψ _{f,c,C40/50}	Fattore di incremento per calcestruzzo C40/50	[-]	1,41				
ψ _{f,c,C50/60}	Fattore di incremento per calcestruzzo C50/60	[-]	1,55				
Rottura del cono di calcestruzzo							
k ₁ = k _{ucr}	Fattore per calcestruzzo non fessurato, progetto secondo ETAG 001 Annex C o CEN/TS 1992-4-4:2009	[-]	10,1				
k ₁ = k _{ucr,N}	Fattore per calcestruzzo non fessurato, progetto secondo FprEN 1992-4:2016	[-]	11,0				
s _{cr,N}	Interasse critico	[mm]	135	150	180	255	300
c _{cr,N}	Distanza dal bordo critica	[mm]	68	75	90	128	150
γ ₂ = γ _{inst}	Coefficiente di sicurezza per l'installazione	[-]	1,2				1,0
Rottura per fessurazione							
N ⁰ _{Rk,c} = N ⁰ _{Rk} = N ⁰ _{Rk,sp}	Resistenza caratteristica per fessurazione	[kN]	9	12	16	16	30
s _{cr,sp}	Interasse critico	[mm]	225	250	300	425	500
c _{cr,sp}	Distanza dal bordo critica	[mm]	113	125	150	213	250
γ ₂ = γ _{inst}	Coefficiente di sicurezza per l'installazione	[-]	1,2				1,0
Spostamento a carico di trazione							
N	Carico di servizio a trazione	[kN]	3,8	5,0	8,7	9,8	14,4
δ _{N0}	Spostamento a breve termine sotto carico di trazione	[mm]	0,8	1,9	3,7	3,7	3,7
δ _{N∞}	Spostamento a lungo termine sotto carico di trazione	[mm]	1,2	1,2	1,2	1,2	1,2
Rottura dell'acciaio a taglio senza braccio di leva							
V _{Rk,s} = V ⁰ _{Rk,s}	Resistenza caratteristica a taglio dell'acciaio	[kN]	9,2	14,5	21,1	39,3	58,8
k = k ₂ = k ₇	Fattore di duttilità	[-]	0,8				
γ _{Ms}	Coefficiente parziale di sicurezza	[-]	1,25				
Rottura dell'acciaio a taglio con braccio di leva							
M ⁰ _{Rk,s}	Resistenza caratteristica a flessione dell'acciaio	[Nm]	18,8	37,4	65,6	166,6	311,8
γ _{Ms}	Coefficiente parziale di sicurezza	[-]	1,25				
Rottura per scalzamento del calcestruzzo							
k = k ₃ = k ₈	Fattore per la rottura per scalzamento del calcestruzzo	[-]	1,0		2,0		
γ _{Mc}	Coefficiente parziale di sicurezza	[-]	1,5				

Diametro del filetto			M8	M10	M12	M16	M20
Caratteristiche essenziali			Prestazione				
Rottura del bordo di calcestruzzo							
l_{ef}	Lunghezza effettiva dell'ancorante sotto carico di taglio	[mm]	45	50	60	85	100
d_{nom}	Diametro esterno dell'ancorante	[mm]	8	10	12	16	20
γ_{Mc}	Coefficiente parziale di sicurezza	[-]	1,5				
Spostamento a carico di taglio							
V	Carico di servizio a taglio	[kN]	2,7	6,2	8,3	13,7	25,1
δ_{v0}	Spostamento a breve termine sotto carico di taglio	[mm]	0,5	0,9	0,9	0,9	1,9
$\delta_{V\infty}$	Spostamento a lungo termine sotto carico di taglio	[mm]	0,7	1,3	1,3	1,3	2,8

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di prestazione viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:



Andrea Maggioni, General manager

Villastellone, 10 ottobre 2017



G&B
fissaggi S.r.l.
Corso Savona, n°22
10029 VILLASTELLONE (TO)
Tel. 011 9619433 - Fax 011 9619382



TECHNICAL DATASHEET

SITA ACCIAIO CE 7 GBK steel wedge anchor for non-cracked concrete

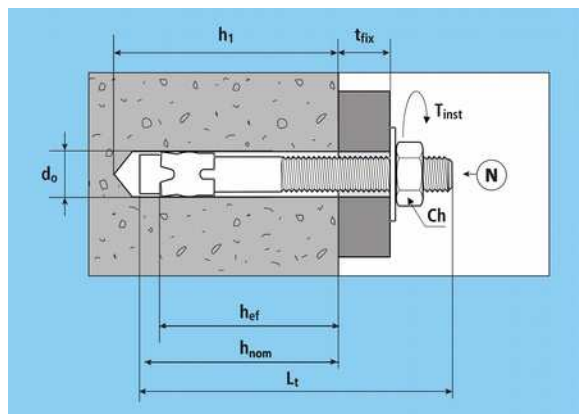
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Certificates

ETA-17/0237 Certification for use on non-cracked concrete (Option 7)

Use

certified use	specific use
non-cracked concrete	natural stone



- | | | |
|------------|---|---|
| d_0 | = | hole diameter = anchor diameter |
| L_t | = | anchor length |
| t_{fix} | = | fixable thickness |
| f | = | thread length |
| h_1 | = | minimum hole depth |
| h_{nom} | = | overall embedment depth |
| h_{ef} | = | effective anchorage depth |
| d_f | = | hole diameter in fixture |
| Ch | = | spanner |
| T_{inst} | = | tightening torque |
| N | = | marking on head for length identification |

SITA Acciaio CE7 GBK

zinc plated, with pre-assembled nut and washer ISO 7089 (DIN 125)

art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60322	GBK865/7	M8X65	8	65	7	A	60	50	45	10	20	13
60323	GBK875/17	M8X75		75	17	B						
60324	GBK895/37	M8X95		95	37	E						
60325	GBK8115/57	M8X115		115	57	H						
60326	GBK1075/10	M10X75	10	75	10	B	65	55	50	12	35	17
60327	GBK1090/25	M10X90		90	25	D						
60328	GBK10100/35	M10X100		100	35	F						
60329	GBK10120/55	M10X120		120	55	I						
60330	GBK10150/85	M10X150		150	85	N						
60331	GBK10170/105	M10X170		170	105	P						
60348	GBK1290/8	M12X90	12	90	8	D	80	70	60	14	55	19
60332	GBK12100/18	M12X100		100	18	F						
60333	GBK12110/28	M12X110		110	28	G						
60334	GBK12120/38	M12X120		120	38	I						
60335	GBK12140/58	M12X140		140	58	L						
60336	GBK12160/78	M12X160		160	78	O						
60337	GBK12180/98	M12X180		180	98	Q						
60341	GBK16125/10	M16X125	16	125	10	J	110	100	85	18	100	24
60342	GBK16145/30	M16X145		145	30	M						
60343	GBK16170/55	M16X170		170	55	P						
60349	GBK16200/85	M16X200		200	85	R						
60344	GBK16220/105	M16X220		220	105	S						

TECHNICAL DATASHEET
SITA ACCIAIO CE 7 GBK steel wedge anchor for non-cracked concrete

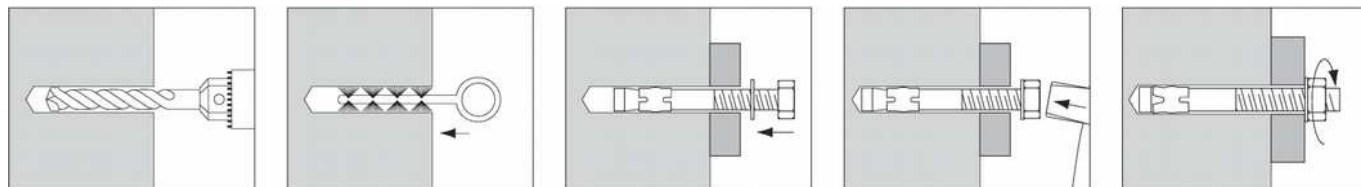
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art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60350	GBK20150/15	M20X150	20	150	15	N	125	115	100	22	150	30
60345	GBK20170/35	M20X170		170	35	P						
60346	GBK20220/85	M20X220		220	85	S						
60347	GBK20270/135	M20X270		270	135	U						

SITA Acciaio CE7 GBK – extralong sizes

zinc plated, with pre-assembled nut and washer ISO 7093 (DIN 9021)

art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60135	GBK12200/118	M12X200	12	200	118	R	80	70	60	14	55	19
60136	GBK12220/138	M12X220		220	138	S						
60137	GBK12240/158	M12X240		240	158	T						
60138	GBK12280/198	M12X280		280	198	V						
60139	GBK12300/218	M12X300		300	218	W						
60140	GBK12360/278	M12X360		360	278	Y						
60141	GBK16240/125	M16X240	16	240	125	T	110	100	85	18	100	24
60142	GBK16280/165	M16X280		280	165	V						
60143	GBK16300/185	M16X300		300	185	W						
60144	GBK16400/285	M16X400		400	285	Z						

Installation

Materials

part	material	coating
body	Carbon steel (f _{uk} ≥ 500 MPa M8÷M16; ≥ 480 MPa M20)	white zinc plating ≥ 5 µm ISO 4042
clip	Carbon steel	
nut	ISO 898-2 carbon steel class 8	
washer	ISO 7089 (DIN 125) or 7093 (DIN 2021)	

Setting parameters

size		M8	M10	M12	M16	M20
minimum spacing	s _{min} mm	61	68	81	115	135
minimum edge distance	c _{min} mm	61	68	81	115	135
minimum thickness of base material	h _{min} mm	100	100	120	170	200

TECHNICAL DATASHEET
SITA ACCIAIO CE 7 GBK steel wedge anchor for non-cracked concrete

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Strength data

Valid for a single anchor far from the edges, on a thick concrete member of class C20/25 with sparse reinforcement.

Characteristic resistance (kN)

size		M8	M10	M12	M16	M20
tension	N_{Rk}	9.0	12.0	16.0	16.0	30.0
shear	V_{Rk}	9.2	14.5	21.1	39.3	58.8

Design resistance (kN)

size		M8	M10	M12	M16	M20
tension	N_{Rd}	5.0	6.7	8.9	8.9	20.0
shear	V_{Rd}	7.4	11.6	16.9	31.4	47.0

Recommended load (kN)

size		M8	M10	M12	M16	M20
tension	N_{rec}	3.6	4.8	6.3	6.3	14.3
shear	V_{rec}	5.3	8.3	12.1	22.5	33.6

 1 kN $\approx$ 100 kg

steel failure

Characteristic resistances N_{Rk} and V_{Rk} derive from parameters certified in European Technical Assessment (ETA) Design resistances N_{Rd} e V_{Rd} include partial safety factors on strengths. Recommended values 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 or reduced thickness refer to ETA or to Declaration of Performance DPGEB1004 and use Design Method A outlined in Annex C of ETAG 001 (issued by EOTA) or CEN/TS 1992-4:2009 or FprEN 1992-4:2016. One can also calculate and verify the fixings made with SITA ACCIAIO CE 7 GBK by means of *G&B Calculation Program* available on the website www.gebfissaggi.com.

Data for design
Critical spacing and distances

size		M8	M10	M12	M16	M20
critical spacing	$s_{cr,N}$ mm	135	150	180	255	300
	$s_{cr,sp}$ mm	225	250	300	425	500
critical edge distance	$c_{cr,N}$ mm	68	75	90	128	150
	$c_{cr,sp}$ mm	113	125	150	213	250

Increasing factors for tension resistance (excluding steel failure)

Ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55

Declaration of Performance

No. **DPGEB1004** v2.1

1. Unique identification code of the product-type: **SITA Acciaio CE7 GBK**

2. Intended uses:

Intended use of the construction product according to ETA-17/0237	
Anchorage subject to:	Static and quasi-static loads
Base materials:	Non-cracked, reinforced or unreinforced normal weight concrete, strength class C20/25 to C50/60 according to EN 206
Environmental conditions:	Structures subject to dry internal conditions
Reaction to fire:	Anchorage satisfy requirements for Class A1
Installation:	Perforation by hammer drilling Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on job site

3. Manufacturer: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italia

5. System of AVCP: 1

6b.

European Assessment Document: "Mechanical fasteners for use in concrete" EAD 330232-00-0601

European Technical Assessment: ETA-17/0237

Technical Assessment Body: Instytut Techniki Budowlanej

Notified body: 1488 INSTYTUT TECHNIKI BUDOWLANEJ (ITB)

7. Declared performances:

Declared performances according to EAD 330232-00-0601, ETA-17/0237 (Design method Technical Report TR 055)

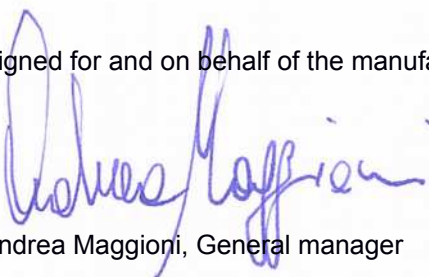
Thread diameter			M8	M10	M12	M16	M20
Essential Characteristics			Performance				
<i>Installation parameters, standard embedment depth</i>							
d ₀	Nominal diameter of drill bit	[mm]	8	10	12	16	20
d _f	Diameter of clearance hole in the fixture	[mm]	9	12	14	18	22
h _{ef}	Effective anchorage depth	[mm]	45	50	60	85	100
h _{nom}	Minimum installation depth	[mm]	50	55	70	100	115
h ₁	Minimum hole depth	[mm]	60	65	80	110	125
h _{min}	Minimum thickness of the concrete member	[mm]	100	100	120	170	200
s _{min}	Minimum spacing	[mm]	61	68	81	115	135
c _{min}	Minimum edge distance	[mm]	61	68	81	115	135
T _{inst}	Installation torque	[Nm]	20	35	55	100	150
<i>Tension steel failure mode</i>							
N _{Rk,s}	Characteristic tension resistance of steel	[kN]	18.3	29.0	42.2	78.5	117.6
E _s	Modulus of elasticity	[N/mm ²]	210 000				
γ _{Ms}	Partial safety factor	[-]	1.50				

Thread diameter			M8	M10	M12	M16	M20
Essential Characteristics			Performance				
Pull-out failure mode							
N _{Rk,p}	Tension characteristic resistance in non-cracked concrete C20/25	[kN]	9	12	16	16	30
γ ₂ = γ _{inst}	Installation safety factor	[-]	1.2				1,0
Ψ _{c,C30/37}	Increasing factor for concrete C30/37	[-]	1.22				
Ψ _{c,C40/50}	Increasing factor for concrete C40/50	[-]	1.41				
Ψ _{c,C50/60}	Increasing factor for concrete C50/60	[-]	1.55				
Concrete cone failure mode							
k ₁ = k _{ucr}	Factor for non-cracked concrete, design according to ETAG 001 Annex C or CEN/TS 1992-4-4:2009	[-]	10.1				
k ₁ = k _{ucr,N}	Factor for non-cracked concrete, design according to FprEN 1992-4:2016	[-]	11.0				
s _{cr,N}	Critical spacing	[mm]	135	150	180	255	300
c _{cr,N}	Critical edge distance	[mm]	68	75	90	128	150
γ ₂ = γ _{inst}	Installation safety factor	[-]	1.2				1.0
Splitting failure mode							
N ⁰ _{Rk,c} = N ⁰ _{Rk} = N ⁰ _{Rk,sp}	Characteristic resistance for splitting	[kN]	9	12	16	16	30
s _{cr,sp}	Critical spacing	[mm]	225	250	300	425	500
c _{cr,sp}	Critical edge distance	[mm]	113	125	150	213	250
γ ₂ = γ _{inst}	Installation safety factor	[-]	1.2				1.0
Displacement under tension load							
N	Service tension load	[kN]	3.8	5.0	8.7	9.8	14.4
δ _{N0}	Short term displacement under tension load	[mm]	0.8	1.9	3.7	3.7	3.7
δ _{N∞}	Long term displacement under tension load	[mm]	1.2	1.2	1.2	1.2	1.2
Shear steel failure mode without lever arm							
V _{Rk,s} = V ⁰ _{Rk,s}	Characteristic shear resistance of steel	[kN]	9.2	14.5	21.1	39.3	58.8
k = k ₂ = k ₇	Ductility factor	[-]	0.8				
γ _{Ms}	Partial safety factor	[-]	1.25				
Shear steel failure mode with lever arm							
M ⁰ _{Rk,s}	Characteristic bending resistance of steel	[Nm]	18.8	37.4	65.6	166.6	311.8
γ _{Ms}	Partial safety factor	[-]	1.25				
Concrete pry-out failure mode							
k = k ₃ = k ₈	Concrete pry-out failure factor	[-]	1.0		2.0		
γ _{Mc}	Partial safety factor	[-]	1.5				
Concrete edge failure mode							
l _{ef}	Effective length of anchor under shear loading	[mm]	45	50	60	85	100
d _{nom}	Outside diameter of anchor	[mm]	8	10	12	16	20
γ _{Mc}	Partial safety factor	[-]	1.5				

Thread diameter			M8	M10	M12	M16	M20
Essential Characteristics			Performance				
<i>Displacement under shear load</i>							
V	Service shear load	[kN]	2.7	6.2	8.3	13.7	25.1
δ_{V0}	Short term displacement under shear load	[mm]	0.5	0.9	0.9	0.9	1.9
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	0.7	1.3	1.3	1.3	2.8

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:



Andrea Maggioni, General manager



G&B
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Corso Savona, n°22
10029 VILLASTELLONE (TO)
Tel. 011 9619433 - Fax 011 9619382

Villastellone, 10 October 2017



FICHE TECHNIQUE

SITA ACCIAIO CE 7 GBK cheville à expansion pour béton non fissuré

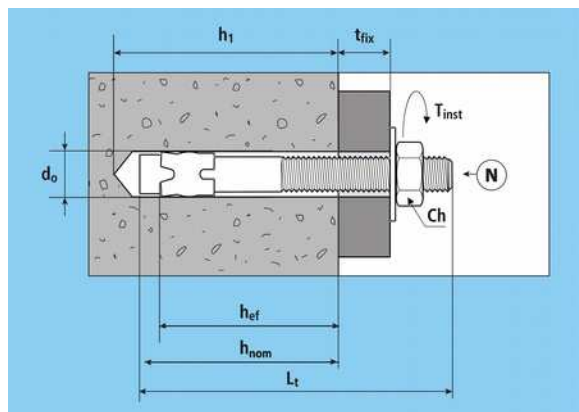
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Certifications

ETA-17/0237 Certification pour utilisation sur le béton non fissuré (Option 7)

Supports

utilisation certifié	utilisation spécifique
béton non fissuré	Pierre compacte



- d_0 = diamètre du trou = diamètre de la cheville
- L_t = longueur de la cheville
- t_{fix} = épaisseur fixable
- f = longueur de filet
- h_1 = profondeur min. du trou
- h_{nom} = profondeur d'insertion
- h_{ef} = profondeur d'ancrage effective
- d_f = diamètre du trou de passage dans le matériau à fixer
- Ch = clé
- T_{inst} = couple de serrage
- N = marquage dans la tête pour l'identification de la longueur

SITA Acciaio CE7 GBK

zingué, complet avec écrou et rondelle ISO 7089 (DIN 125) assemblés

art.	descr.	taille	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60322	GBK865/7	M8X65	8	65	7	A	60	50	45	10	20	13
60323	GBK875/17	M8X75		75	17	B						
60324	GBK895/37	M8X95		95	37	E						
60325	GBK8115/57	M8X115		115	57	H						
60326	GBK1075/10	M10X75	10	75	10	B	65	55	50	12	35	17
60327	GBK1090/25	M10X90		90	25	D						
60328	GBK10100/35	M10X100		100	35	F						
60329	GBK10120/55	M10X120		120	55	I						
60330	GBK10150/85	M10X150		150	85	N						
60331	GBK10170/105	M10X170		170	105	P						
60348	GBK1290/8	M12X90	12	90	8	D	80	70	60	14	55	19
60332	GBK12100/18	M12X100		100	18	F						
60333	GBK12110/28	M12X110		110	28	G						
60334	GBK12120/38	M12X120		120	38	I						
60335	GBK12140/58	M12X140		140	58	L						
60336	GBK12160/78	M12X160		160	78	O						
60337	GBK12180/98	M12X180		180	98	Q						
60341	GBK16125/10	M16X125	16	125	10	J	110	100	85	18	100	24
60342	GBK16145/30	M16X145		145	30	M						
60343	GBK16170/55	M16X170		170	55	P						
60349	GBK16200/85	M16X200		200	85	R						
60344	GBK16220/105	M16X220		220	105	S						

FICHE TECHNIQUE
SITA ACCIAIO CE 7 GBK cheville à expansion pour béton non fissuré

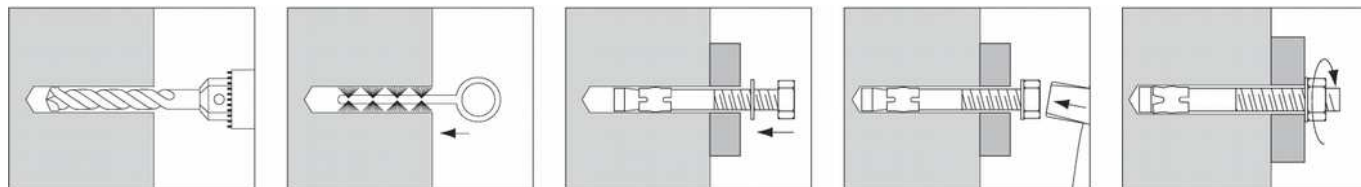
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art.	descr.	taille	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60350	GBK20150/15	M20X150	20	150	15	N	125	115	100	22	150	30
60345	GBK20170/35	M20X170		170	35	P						
60346	GBK20220/85	M20X220		220	85	S						
60347	GBK20270/135	M20X270		270	135	U						

SITA Acciaio CE7 GBK – extralong sizes

zingué, complet avec écrou et rondelle ISO 7093 (DIN 9021) assemblés

art.	descr.	taille	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60135	GBK12200/118	M12X200	12	200	118	R	80	70	60	14	55	19
60136	GBK12220/138	M12X220		220	138	S						
60137	GBK12240/158	M12X240		240	158	T						
60138	GBK12280/198	M12X280		280	198	V						
60139	GBK12300/218	M12X300		300	218	W						
60140	GBK12360/278	M12X360		360	278	Y						
60141	GBK16240/125	M16X240	16	240	125	T	110	100	85	18	100	24
60142	GBK16280/165	M16X280		280	165	V						
60143	GBK16300/185	M16X300		300	185	W						
60144	GBK16400/285	M16X400		400	285	Z						

Installation

Matériaux

pièce	matériau	revêtement
axe	acier au carbone (f _{uk} ≥ 500 MPa M8÷M16; ≥ 480 MPa M20)	zingué ≥ 5 µm ISO 4042
bague	acier au carbone	
écrou	acier au carbone ISO 898-2 classe 8	
rondelle	ISO 7089 (DIN 125) ou 7093 (DIN 2021)	

Caractéristiques de pose et d'installation

taille		M8	M10	M12	M16	M20
distance minimales entre axes	s _{min} mm	61	68	81	115	135
distance minimales au bord	c _{min} mm	61	68	81	115	135
épaisseur minimale du support	h _{min} mm	100	100	120	170	200

FICHE TECHNIQUE

SITA ACCIAIO CE 7 GBK cheville à expansion pour béton non fissuré

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Données de chargement

Valable pour une ancre seule et loin du bord, sur un élément en béton épais de classe C20/25 avec éparses renforcement

Résistance caractéristique (kN)

taille		M8	M10	M12	M16	M20
traction	N_{Rk}	9.0	12.0	16.0	16.0	30.0
cisaillement	V_{Rk}	9.2	14.5	21.1	39.3	58.8

Résistance de calcul (kN)

taille		M8	M10	M12	M16	M20
traction	N_{Rd}	5.0	6.7	8.9	8.9	20.0
cisaillement	V_{Rd}	7.4	11.6	16.9	31.4	47.0

Charge recommandée (kN)

taille		M8	M10	M12	M16	M20
traction	N_{rec}	3.6	4.8	6.3	6.3	14.3
cisaillement	V_{rec}	5.3	8.3	12.1	22.5	33.6

1 kN $\approx$ 100 kg

rupture de l'acier

Les résistances caractéristiques N_{Rk} et V_{Rk} dérivant des valeurs certifiées de l'Evaluation Technique Européenne ETA-17/0237. Les résistances de calcul N_{Rd} et V_{Rd} comprennent les facteurs partiels de sécurité sur les résistances. Les charges recommandées N_{rec} et V_{rec} comprennent le facteur de sécurité additionnelle 1,4.

Pour le calcul des ancrages avec des distances réduites, près du bord ou pour la fixation sur béton avec résistance supérieure, épaisseur réduite ou renforcement dense se référer à l'ETA-17/0237 ou à la Déclaration des Performances DPGE1004 et utiliser la méthode de calcul décrite dans le *Annex C* de l'ETAG 001 (délivrée par EOTA) ou CEN/TS 1992-4:2009 ou FprEN 1992-4:2016. On peut également calculer et vérifier les fixations faites avec SITA ACCIAIO CE 7 GBK au moyen du programme de calcul *G&B Calculation Program* disponible sur le site www.gebfissaggi.com.

Données pour le calcul

Entraxes et distances au bord critique

size		M8	M10	M12	M16	M20
entraxe critique	$s_{cr,N}$ mm	135	150	180	255	300
	$s_{cr,sp}$ mm	225	250	300	425	500
distance au bord critique	$c_{cr,N}$ mm	68	75	90	128	150
	$c_{cr,sp}$ mm	113	125	150	213	250

Facteurs de augmentation de la résistance à tension (à l'exclusion de la rupture de l'acier)

ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55

Déclaration des Performances

N° DPGE1004 v2.1

1. Code d'identification unique du produit type: **SITA Acciaio CE7 GBK**

2. Usages prévus:

Usage prévu du produit de construction conformément a ETA-17/0237	
Ancrages soumis à:	Charges statiques ou quasi-statiques
Support:	Béton non fissuré, armé ou non armé de densité courante, classe de résistance de C20/25 à C50/60 selon EN 206
Conditions environnementales:	Structures soumis à une ambiance intérieure sèche
Réaction au feu:	Les chevilles satisfont aux exigences de la Classe A1
Installation:	Perçage en rotation-percussion L'installation réalisée par un monteur qualifié et sous la supervision de la personne responsable des questions techniques du site

3. Fabricant: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italia

5. Système d'EVCP: 1

6b.

Document d'Évaluation Européen: "Mechanical fasteners for use in concrete" EAD 330232-00-0601

Évaluation Technique Européenne: ETA-17/0237

Organisme d'Évaluation Technique: Instytut Techniki Budowlanej

Organisme Notifié: 1488 INSTYTUT TECHNIKI BUDOWLANEJ (ITB)

7. Performances déclarées:

Performances déclarées selon EAD 330232-00-0601, ETA-17/0237 (Méthode de conception Technical Report TR 055)

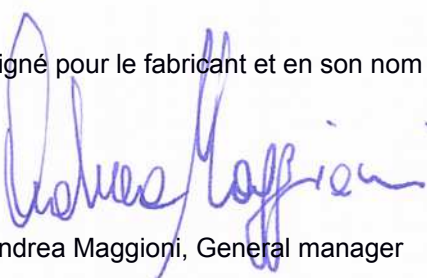
Diamètre de filetage			M8	M10	M12	M16	M20
Caractéristiques essentielles			Performance				
Paramètres de pose							
d ₀	Diamètre nominal du trou	[mm]	8	10	12	16	20
d _f	Diamètre du trou de passage dans le matériau à fixer	[mm]	9	12	14	18	22
h _{ef}	Profondeur d'ancrage effective	[mm]	45	50	60	85	100
h _{nom}	Profondeur minimale d'installation	[mm]	50	55	70	100	115
h ₁	Profondeur minimale du trou	[mm]	60	65	80	110	125
h _{min}	Épaisseur minimale du support en béton	[mm]	100	100	120	170	200
s _{min}	Entraxe minimal	[mm]	61	68	81	115	135
c _{min}	Distance au bord minimale	[mm]	61	68	81	115	135
T _{inst}	Couple de serrage	[Nm]	20	35	55	100	150
Rupture de l'acier sous traction							
N _{Rk,s}	Résistance caractéristique de l'acier sous traction	[kN]	18,3	29,0	42,2	78,5	117,6
E _s	Module d'élasticité	[N/mm²]	210 000				
γ _{Ms}	Coefficient partiel de sécurité	[-]	1,50				

Diamètre de filetage			M8	M10	M12	M16	M20
Caractéristiques essentielles			Performance				
Rupture par extraction							
N _{Rk,p}	Résistance caractéristique sous traction dans béton non fissuré C20/25	[kN]	9	12	16	16	30
γ ₂ = γ _{inst}	Coefficient de sécurité pour l'installation	[-]	1,2				1,0
ψ _{f,c,C30/37}	Coefficient d'accroissement pour béton C30/37	[-]	1,22				
ψ _{f,c,C40/50}	Coefficient d'accroissement pour béton C40/50	[-]	1,41				
ψ _{f,c,C50/60}	Coefficient d'accroissement pour béton C50/60	[-]	1,55				
Rupture par cône de béton							
k ₁ = k _{ucr}	Facteur pour béton non fissuré, conception selon ETAG 001 Annex C ou CEN/TS 1992-4-4:2009	[-]	10,1				
k ₁ = k _{ucr,N}	Facteur pour béton non fissuré, conception selon FprEN 1992-4:2016	[-]	11,0				
s _{cr,N}	Entraxe critique	[mm]	135	150	180	255	300
c _{cr,N}	Distance au bord critique	[mm]	68	75	90	128	150
γ ₂ = γ _{inst}	Coefficient de sécurité pour l'installation	[-]	1,2				1,0
Rupture par fendage							
N ⁰ _{Rk,c} = N ⁰ _{Rk} = N ⁰ _{Rk,sp}	Résistance caractéristique pour fendage	[kN]	9	12	16	16	30
s _{cr,sp}	Entraxe critique	[mm]	225	250	300	425	500
c _{cr,sp}	Distance au bord critique	[mm]	113	125	150	213	250
γ ₂ = γ _{inst}	Coefficient de sécurité pour l'installation	[-]	1,2				1,0
Déplacement sous charge de traction							
N	Charge de service de traction	[kN]	3,8	5,0	8,7	9,8	14,4
δ _{N0}	Déplacement court terme sous charge de traction	[mm]	0,8	1,9	3,7	3,7	3,7
δ _{N∞}	Déplacement long terme sous charge de traction	[mm]	1,2	1,2	1,2	1,2	1,2
Rupture de l'acier sous cisaillement sans bras de levier							
V _{Rk,s} = V ⁰ _{Rk,s}	Résistance caractéristique de l'acier sous cisaillement	[kN]	9,2	14,5	21,1	39,3	58,8
k = k ₂ = k ₇	Facteur de ductilité	[-]	0,8				
γ _{Ms}	Coefficient partiel de sécurité	[-]	1,25				
Rupture de l'acier sous cisaillement avec bras de levier							
M ⁰ _{Rk,s}	Résistance caractéristique de l'acier à la flexion	[Nm]	18,8	37,4	65,6	166,6	311,8
γ _{Ms}	Coefficient partiel de sécurité	[-]	1,25				
Rupture du béton par effet de levier							
k = k ₃ = k ₈	Facteur pour rupture du béton par effet de levier	[-]	1,0		2,0		
γ _{Mc}	Coefficient partiel de sécurité	[-]	1,5				

Diamètre de filetage			M8	M10	M12	M16	M20
Caractéristiques essentielles			Performance				
Rupture du béton en bord de dalle							
l _{ef}	Longueur effective de la cheville sous cisaillement	[mm]	45	50	60	85	100
d _{nom}	Diamètre extérieur de la cheville	[mm]	8	10	12	16	20
γ _{Mc}	Coefficient partiel de sécurité	[-]	1,5				
Déplacement sous charge de cisaillement							
V	Charge de service de cisaillement	[kN]	2,7	6,2	8,3	13,7	25,1
δ _{v0}	Déplacement court terme sous charge de cisaillement	[mm]	0,5	0,9	0,9	0,9	1,9
δ _{v∞}	Déplacement long terme sous charge de cisaillement	[mm]	0,7	1,3	1,3	1,3	2,8

Les performances du produit identifié ci-dessus sont conformes aux performances déclarées. Conformément au règlement (UE) n° 305/2011, la présente déclaration des performances est établie sous la seule responsabilité du fabricant mentionné ci-dessus.

Signé pour le fabricant et en son nom par:



Andrea Maggioni, General manager

Villastellone, 10 octobre 2017



G&B
fissaggi S.r.l.
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10029 VILLASTELLONE (TO)
Tel. 011 9619433 - Fax 011 9619382



DOCUMENTO TÉCNICO

SITA ACCIAIO CE 7 GBK anclaje macho en acero para hormigón no fisurado

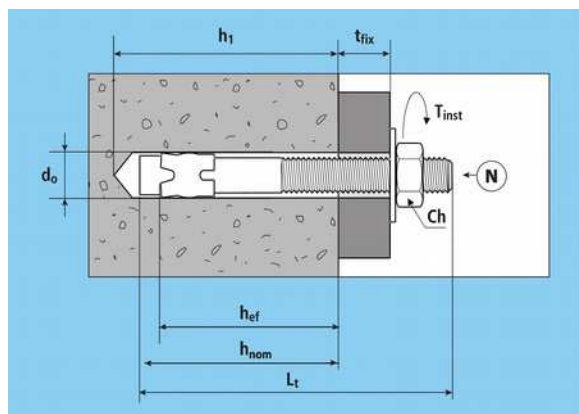
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Certificaciones

ETA-17/0237 Certificado para uso en hormigón no fisurado (Opción 7)

Soportes

uso certificado	uso específico
hormigón no fisurado	piedra



- d_0 = diametro del agujero = diametro anclaje
 L_t = longitud anclaje
 t_{fix} = espesor a fijar
 f = longitud de rosca
 h_1 = profundidad mín. del agujero
 h_{nom} = profundidad de inserción
 h_{ef} = profundidad efectiva del anclaje
 d_f = diametro del agujero en el elemento a fijar
 Ch = medida de la llave
 T_{inst} = par de apriete
 N = marca en la punta para la identificación de la longitud

SITA Acciaio CE7 GBK

cincado, completo con tuerca y arandela ISO 7089 (DIN 125) montadas

art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60322	GBK865/7	M8X65	8	65	7	A	60	50	45	10	20	13
60323	GBK875/17	M8X75		75	17	B						
60324	GBK895/37	M8X95		95	37	E						
60325	GBK8115/57	M8X115		115	57	H						
60326	GBK1075/10	M10X75	10	75	10	B	65	55	50	12	35	17
60327	GBK1090/25	M10X90		90	25	D						
60328	GBK10100/35	M10X100		100	35	F						
60329	GBK10120/55	M10X120		120	55	I						
60330	GBK10150/85	M10X150		150	85	N						
60331	GBK10170/105	M10X170		170	105	P						
60348	GBK1290/8	M12X90	12	90	8	D	80	70	60	14	55	19
60332	GBK12100/18	M12X100		100	18	F						
60333	GBK12110/28	M12X110		110	28	G						
60334	GBK12120/38	M12X120		120	38	I						
60335	GBK12140/58	M12X140		140	58	L						
60336	GBK12160/78	M12X160		160	78	O						
60337	GBK12180/98	M12X180		180	98	Q						
60341	GBK16125/10	M16X125	16	125	10	J	110	100	85	18	100	24
60342	GBK16145/30	M16X145		145	30	M						
60343	GBK16170/55	M16X170		170	55	P						
60349	GBK16200/85	M16X200		200	85	R						
60344	GBK16220/105	M16X220		220	105	S						

DOCUMENTO TÉCNICO
SITA ACCIAIO CE 7 GBK anclaje macho en acero para hormigón no fisurado

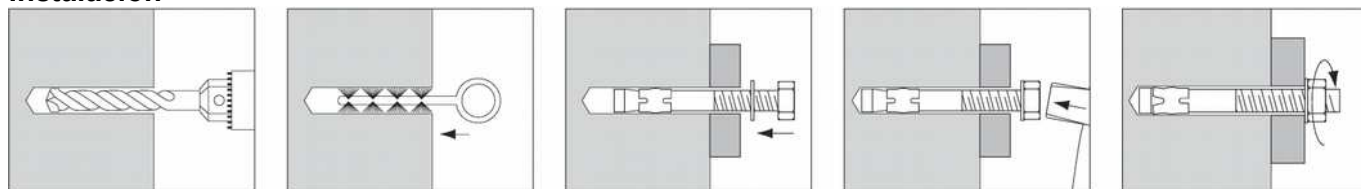
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art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60350	GBK20150/15	M20X150	20	150	15	N	125	115	100	22	150	30
60345	GBK20170/35	M20X170		170	35	P						
60346	GBK20220/85	M20X220		220	85	S						
60347	GBK20270/135	M20X270		270	135	U						

SITA Acciaio CE7 GBK – medidas extralargas

cincado, completo con tuerca y arandela ISO 7093 (DIN 9021) montadas

art.	descr.	size	d ₀ mm	L _t mm	t _{fix} mm	N	h ₁ mm	h _{nom} mm	h _{ef} mm	d _f mm	T _{inst} Nm	Ch mm
60135	GBK12200/118	M12X200	12	200	118	R	80	70	60	14	55	19
60136	GBK12220/138	M12X220		220	138	S						
60137	GBK12240/158	M12X240		240	158	T						
60138	GBK12280/198	M12X280		280	198	V						
60139	GBK12300/218	M12X300		300	218	W						
60140	GBK12360/278	M12X360		360	278	Y						
60141	GBK16240/125	M16X240	16	240	125	T	110	100	85	18	100	24
60142	GBK16280/165	M16X280		280	165	V						
60143	GBK16300/185	M16X300		300	185	W						
60144	GBK16400/285	M16X400		400	285	Z						

Instalación

Materiales

parte	material	revestimiento
cuerpo	acero al carbono (f _{uk} ≥ 500 MPa M8÷M16; ≥ 480 MPa M20)	cincado blanco ≥ 5 µm ISO 4042
abrazadera	acero al carbono	
tuerca	ISO 898-2 acero al carbono clase 8	
arandela	ISO 7089 (DIN 125) o 7093 (DIN 2021)	

Características geométricas de colocación

medida		M8	M10	M12	M16	M20
distancia mínima entre ejes	s _{min} mm	61	68	81	115	135
distancia mínima al borde	c _{min} mm	61	68	81	115	135
espesor mínimo de soporte en hormigón	h _{min} mm	100	100	120	170	200

DOCUMENTO TÉCNICO
SITA ACCIAIO CE 7 GBK anclaje macho en acero para hormigón no fisurado

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Datos de carga

Válidos para un anclaje aislado, lejos del borde, sobre un elemento de hormigón grueso de clase C20 / 25 con refuerzo escaso

Resistencia característica (kN)

medida		M8	M10	M12	M16	M20
tracción	N_{Rk}	9,0	12,0	16,0	16,0	30,0
cortadura	V_{Rk}	9,2	14,5	21,1	39,3	58,8

Resistencia de proyecto (kN)

medida		M8	M10	M12	M16	M20
tracción	N_{Rd}	5,0	6,7	8,9	8,9	20,0
cortadura	V_{Rd}	7,4	11,6	16,9	31,4	47,0

Carga recomendada (kN)

medida		M8	M10	M12	M16	M20
tracción	N_{rec}	3,6	4,8	6,3	6,3	14,3
cortadura	V_{rec}	5,3	8,3	12,1	22,5	33,6

 1 kN $\approx$ 100 kg

rotura del acero

Las resistencias características N_{Rk} y V_{Rk} son derivadas de los valores certificados en la Evaluación Técnica Europea ETA-17/0237. Las resistencias de proyecto N_{Rd} y V_{Rd} incluyen el coeficiente parcial de seguridad sobre las resistencias. Las cargas recomendadas N_{rec} y V_{rec} incluyen el factor de seguridad adicional de 1,4.

Para el cálculo de anclajes con distancias reducidas, para anclajes cercanos al borde o para fijaciones sobre hormigón de resistencia superior o de espesor reducido consultar la ETA-17/0237 o la Declaración de Prestaciones DPGE1004 y utilizar el método de cálculo descrito en *Annex C* de ETAG 001 (emitido por EOTA) o CEN/TS 1992-4:2009 o FprEN 1992-4:2016. También se puede calcular y verificar los anclajes hechos con SITA ACCIAIO CE 7 GBK usando el programa de cálculo G&B Calculation Program disponible en el sitio web www.gebfissaggi.com.

Datos para el cálculo

Distancia crítica, borde y ejes

medida		M8	M10	M12	M16	M20
distancia crítica ejes	$s_{cr,N}$ mm	135	150	180	255	300
	$s_{cr,sp}$ mm	225	250	300	425	500
distancia crítica al borde	$c_{cr,N}$ mm	68	75	90	128	150
	$c_{cr,sp}$ mm	113	125	150	213	250

Factores de incremento para la resistencia a la tracción (excluyendo fallo del acero)

Ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55



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European Technical Assessment

**ETA-17/0237
of 15/05/2017**

General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

G&B Fissaggi SITA Acciaio CE7 GBK

Product family to which the construction product belongs

Torque controlled expansion anchor of sizes M8, M10, M12, M16 and M20 for use in non-cracked concrete

Manufacturer

G&B Fissaggi S.r.l.
Corso Savona, 22
10029 Villastellone (TO)
Italy

Manufacturing plant

Plant 1

This European Technical Assessment contains

12 pages including 3 Annexes which form an integral part of this Assessment

This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of

European Assessment Document (EAD)
"Mechanical fasteners for use in concrete"
EAD 330232-00-0601

This European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific Part

1 Technical description of the product

The G&B Fissaggi SITA Acciaio CE7 GBK anchor in the sizes M8, M10, M12, M16 and M20 is made of galvanized steel. The anchor is placed into a drill hole and anchored by torque-controlled expansion.

An illustration and the description of the product are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in Annex C are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading), displacements	Annex C1
Characteristic resistance to shear load (static and quasi-static loading), displacements	Annex C2

3.1.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchors satisfy requirements for Class A1
Resistance to fire	No performance assessed

3.2 Methods used for the assessment

The assessment of fitness of anchors for the declared intended use in relation to the requirements for mechanical resistance and stability and safety in case of fire has been made in accordance with the EAD 330232-00-0601 "Mechanical fasteners for use in concrete".

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision 96/582/EC of the European Commission the system 1 of assessment and verification of constancy of performance applies (see Annex V to Regulation (EU) No 305/2011).

5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

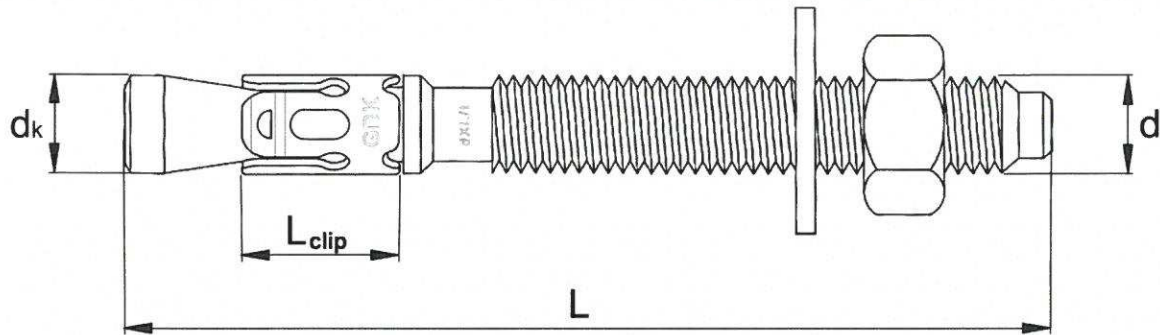
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 15/05/2017 by Instytut Techniki Budowlanej



Marcin M. Kruk, PhD
Director of ITB



Marking:

- expansion sleeve: **GBK** (marking identifying the product)
- bolt: **dXL/t** (d – diameter, L – length, t – thickness of fixed element)
- one letter marking on the tip of the bolt, according to table below:

Marking letter	Length L [mm]
A	60 – 67
B	68 – 80
C	81 – 87
D	88 – 92
E	93 – 97
F	98 – 105
G	106 – 112
H	113 – 117
I	118 – 122
J	123 – 127
K	128 – 135
L	136 – 142
M	143 – 147
N	148 – 155
O	156 – 165
P	166 – 175
Q	176 – 190
R	191 – 210
S	211 – 230
T	231 – 255
U	256 – 275
V	276 – 290
W	291 – 315
X	316 – 345
Y	346 – 375
Z	376 – 400

G&B Fissaggi SITA Acciaio CE7 GBK

Product description
Anchor

Annex A1
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Table A1: G&B Fissaggi SITA Acciaio CE7 GBK anchor dimensions

Type of anchor			d [mm]	d _k [mm]	L [mm]	L _{clip} [mm]	SW ²⁾ [mm]
Size	Marking	t _{fix} ¹⁾ [mm]					
M8	GBK M8	2 – 92	8	7,8	60 – 150	15	13
M10	GBK M10	5 – 135	10	9,8	70 – 200	18	17
M12	GBK M12	3 – 278	12	11,8	85 – 360	20	19
M16	GBK M16	5 – 285	16	15,8	120 – 400	24	24
M20	GBK M20	5 – 135	20	19,8	140 – 270	28	30

¹⁾ thickness of the fixed element²⁾ torque wrench width**G&B Fissaggi SITA Acciaio CE7 GBK****Product description**
Dimensions**Annex A2**
of European
Technical Assessment
ETA-17/0237

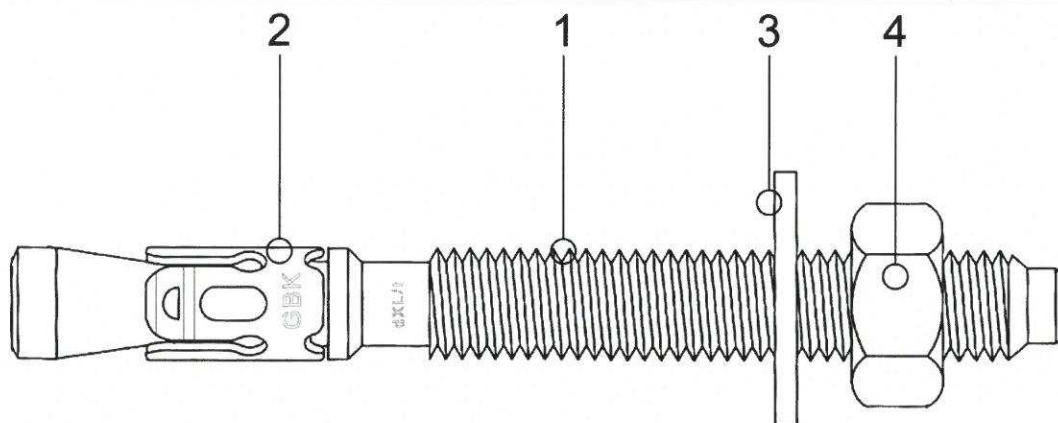


Table A2: Materials

Part	Designation	Material	Coating
1	Bolt	Cold-formed steel, $f_{uk} \geq \begin{cases} 500 \text{ MPa for M8 - M16} \\ 480 \text{ MPa for M20} \end{cases}$ $f_{yk} \geq 400 \text{ MPa}$	Zinc plated $\geq 5 \mu\text{m}$ EN ISO 4042
2	Expansion clip	Cold-formed steel	
3	Washer	ISO 7089 (DIN 125-A) or ISO 7093 (DIN 9021)	
4	Hexagon nut	EN ISO 898-2 carbon steel class 8 / DIN 934 carbon	

G&B Fissaggi SITA Acciaio CE7 GBK

Product description
Materials

Annex A3
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Specification of intended use

Anchorage subject to:

- Static and quasi-static loads.

Base material:

- Reinforced or unreinforced normal weight concrete of strength classes C20/25 at minimum and C50/60 at maximum according to EN 206.
- Non-cracked concrete.

Use conditions (environmental conditions):

- Structures subject to dry internal conditions.

Design:

- The anchorages under static and quasi-static loads are designed in accordance with EOTA Technical Report TR 055, under the responsibility of an engineer experienced in anchorages and concrete work.
- The position of the anchor is indicated on the design drawings.
- Verifiable calculation notes and drawings are taking account of the loads to be transmitted.

Installation of anchors:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specification and drawings and using the appropriate tools.
- Checks before placing the anchor to ensure that the strength class of the concrete in which the anchor is to be placed is in the range given and is not lower than that of the concrete to which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Effective anchorage depth, edge distances and spacings not less than the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- Hole drilling by hammer drill.
- Cleaning of the hole of drilling dust.
- Application of the torque moment using a calibrated torque wrench.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.

G&B Fissaggi SITA Acciaio CE7 GBK

Intended use
Specifications

Annex B1

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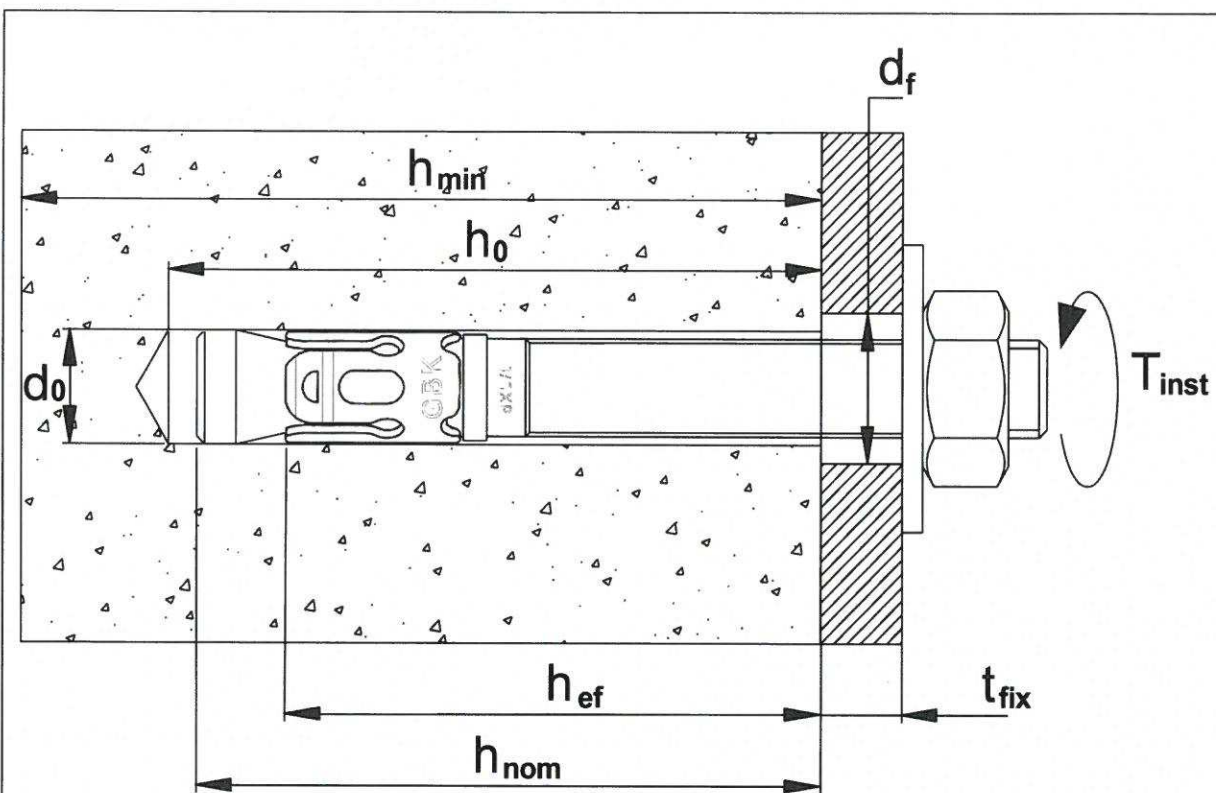


Table B1: Installation parameters

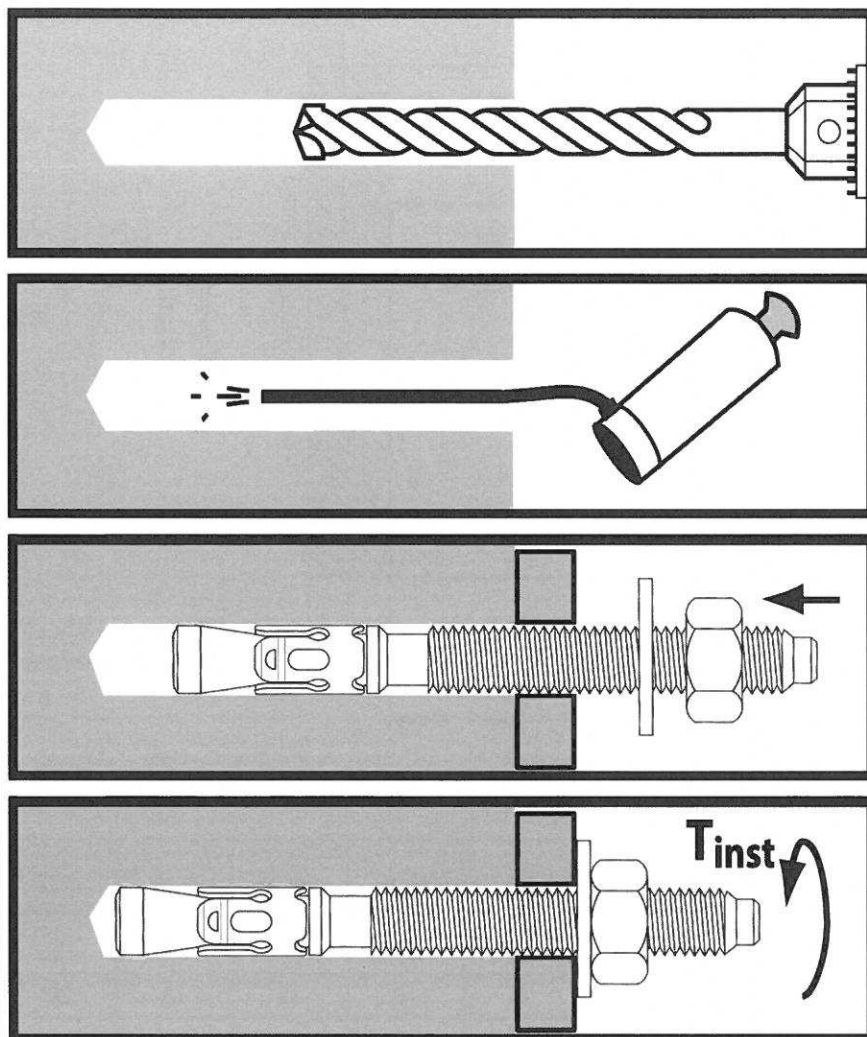
Anchor size		M8	M10	M12	M16	M20
Effective anchorage depth	h_{ef} [mm]	45	50	60	85	100
Nominal drill hole diameter	d_0 [mm]	8	10	12	16	20
Depth of drill hole	$h_0 \geq$ [mm]	60	65	80	110	125
Embedment depth	$h_{nom} \geq$ [mm]	50	55	70	100	115
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	9	12	14	18	22
Installation torque	T_{inst} [Nm]	20	35	55	100	150
Minimum thickness of member	h_{min} [mm]	100	100	120	170	200
Minimum spacing	s_{min} [mm]	61	68	81	115	135
Minimum edge distance	c_{min} [mm]	61	68	81	115	135

G&B Fissaggi SITA Acciaio CE7 GBK

Intended use
Installation parameters

Annex B2
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Installation instruction



G&B Fissaggi SITA Acciaio CE7 GBK

Intended use
Installation instruction

Annex B3
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Table C1: Design method A, characteristic values for tension loads

Anchor size		M8	M10	M12	M16	M20
Steel failure						
Characteristic resistance	$N_{Rk,s}$ [kN]	18,3	29,0	42,2	78,5	117,6
Modulus of elasticity	E_s [N/mm ²]	210 000				
Partial safety factor	$\gamma_{Ms}^{1)}$	1,50				
Pull-out failure						
Characteristic resistance in non-cracked concrete C20/25	$N_{Rk,p}$ [kN]	9	12	16	16	30
Installation safety factor	$\gamma_2^{2)} = \gamma_{inst}^{3)4)}$	1,2	1,2	1,2	1,2	1,0
Increasing factor for concrete C30/37	ψ_c	1,22	1,22	1,22	1,22	1,22
Increasing factor for concrete C40/50		1,41	1,41	1,41	1,41	1,41
Increasing factor for concrete C50/60		1,55	1,55	1,55	1,55	1,55
Concrete cone failure and splitting failure						
Effective anchorage depth	h_{ef} [mm]	45	50	60	85	100
Factor for non-cracked concrete	$k_1^{2)} = k_{ucr}^{3)}$	10,1	10,1	10,1	10,1	10,1
Factor for non-cracked concrete	$k_1^{4)} = k_{ucr,N}^{4)}$	11,0	11,0	11,0	11,0	11,0
Spacing	$s_{cr,N}$ [mm]	135	150	180	255	300
Edge distance	$c_{cr,N}$ [mm]	68	75	90	128	150
Characteristic resistance for splitting	$N_{Rk,s}^{0,2)} = N_{Rk}^{0,3)} = N_{Rk,sp}^{0,4)}$ [kN]	9	12	16	16	30
Characteristic spacing	$s_{cr,sp}$ [mm]	225	250	300	425	500
Characteristic edge distance	$c_{cr,sp}$ [mm]	113	125	150	213	250
Installation safety factor	$\gamma_2^{2)} = \gamma_{inst}^{3)4)}$	1,2	1,2	1,2	1,2	1,0
1) in absence of other national regulations 2) parameter for design according to ETAG 001 Annex C 3) parameter for design according to CEN/TS 1992-4-4:2009 4) parameter for design according to FprEN 1992-4:2016						

Table C2: Displacements under tension loads

Anchor size		M8	M10	M12	M16	M20
Tension load	N [kN]	3,8	5,0	8,7	9,8	14,4
Displacement	δ_{NO} [mm]	0,8	1,9	3,7	3,7	3,7
	$\delta_{N\infty}$ [mm]	1,2	1,2	1,2	1,2	1,2

G&B Fissaggi SITA Acciaio CE7 GBK**Performances**

Design method A, characteristic values for tension loads, displacements

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Table C3: Design method A, characteristic values for shear loads

Anchor size	M8	M10	M12	M16	M20	
Steel failure without lever arm						
Characteristic resistance	$V_{Rk,s}^{2)3)} = V_{Rk,s}^{0)4)} [kN]$	9,2	14,5	21,1	39,3	58,8
Ductility factor	$k^{2)} = k_2^{3)} = k_7^{4)}$	0,8	0,8	0,8	0,8	0,8
Partial safety factor	$\gamma_{Ms}^{1)}$	1,25				
Steel failure with lever arm						
Characteristic bending resistance	$M_{Rk,s}^0 [Nm]$	18,8	37,4	65,6	166,6	311,8
Partial safety factor	$\gamma_{Ms}^{1)}$	1,25				
Concrete pry-out failure						
Concrete pry-out failure factor	$k^{2)} = k_3^{3)} = k_8^{4)}$	1,0	1,0	2,0	2,0	2,0
Partial safety factor	$\gamma_{Mc}^{1)}$	1,5				
Concrete edge failure						
Effective length of anchor under shear loading	$l_f [mm]$	45	50	60	85	100
Outside diameter of anchor	$d_{nom} [mm]$	8	10	12	16	20
Partial safety factor	$\gamma_{Mc}^{1)}$	1,5				
1) in absence of other national regulations						
2) parameter for design according to ETAG 001 Annex C						
3) parameter for design according to CEN/TS 1992-4-4:2009						
4) parameter for design according to FprEN 1992-4:2016						

Table C4: Displacements under shear loads

Anchor size		M8	M10	M12	M16	M20
Shear load	$V [kN]$	2,7	6,2	8,3	13,7	25,1
Displacement	$\delta_{v0} [mm]$	0,5	0,9	0,9	0,9	1,9
	$\delta_{v\infty} [mm]$	0,7	1,3	1,3	1,3	2,8

G&B Fissaggi SITA Acciaio CE7 GBK**Performances**

Design method A, characteristic values for shear loads, displacements

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