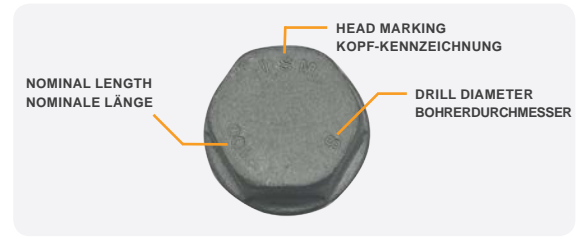


Be wise, choose SMART.

Smart[®]

CONCRETE SCREWS "TURBO SMART" BETONSCHRAUBEN "TURBO SMART"



APPROVALS

- European Technical Approval, Option 1 for use in cracked and uncracked concrete (6, 8, 10, 12 and 14mm).
- Approved for 3 embedment depths for optimal flexibility.
- European Technical Approval, Part 6 for multiple use for non-structural applications in concrete (5 and 6mm).
- Fire resistance R120.
- Seismic approval C1 (8, 10, 12 and 14mm).

ZULASSUNG

- Europäische Technische Zulassung, Option 1 für den Einsatz in gerissenen und ungerissenen Beton (6, 8, 10, 12 und 14mm).
- Geeignet für 3 Verankerungstiefen, für optimale Flexibilität.
- Europäische Technische Zulassung, Teil 6 für Mehrfachnutzung für nichtstrukturelle Anwendungen in Beton (5 und 6mm).
- Feuerbeständigkeit R120.
- Seismische Zulassung C1 (8, 10, 12 und 14mm).

CHARACTERISTICS

- User-friendly and quick installation provides significant time savings.
- Tension-free fixation.
- Small edge and spacing distance.
- Different shapes of heads for a wide range of applications.
- Easy dismantlable and two times reusable.

EIGENSCHAFTEN

- Benutzerfreundliche und schnelle Installation bietet erhebliche Zeitersparnis.
- Spannungsfreie Befestigung.
- Kleine Rand- und Achsabstände.
- Verschiedene Kopfformen für eine Vielzahl von Anwendungen.
- Einfach zu demontieren und kann zweimal verwendet werden.

CORROSION RESISTANCE

- Zinc flake coating (> 480h SST)
- Electrolytic zinc plated (> 5 µm)
- Stainless steel A4 (AISI 316)
- Stainless steel HCR (1.4529)

KORROSIONSBESTÄNDIGKEIT

- Zinklamellenbeschichtung (> 480h SST)
- Elektrolytisch verzinkt (> 5 µm)
- Edelstahl A4 (AISI 316)
- Edelstahl HCR (1.4529)

FUNCTIONING

- Guard-rails
- Substructures
- Profiles
- Steel constructions
- Wood constructions
- Ventilation and piping systems

ANWENDUNGSBEREICHE

- Schutzgeländer
- Unterstrukturen
- Profile
- Stahlkonstruktionen
- Holzkonstruktionen
- Lüftungs- und Rohrleitungssysteme

BASE MATERIALS - UNTERGRUNDMATERIAL



Concrete
Beton

Cracked concrete
ungerissener
Beton

Prestressed
hollow core slabs
Vorgespannte
Hohlkernplatten

Natural stone
Naturstein

Anchor can be used in concrete, cracked concrete, natural stone and prestressed hollow core slabs.

Anker kann in Beton, gerissenen Beton, Naturstein und vorgespannten Hohlkernplatten verwendet werden.

INSTALLATION

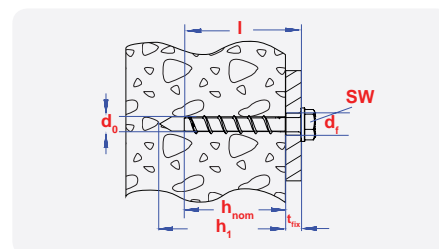


d_0 = nominal diameter of drill bit / Nenndurchmesser des Bohrers
 h_{nom} = nominal embedment depth / Nominale Verankerungstiefe
 h_1 = depth of drilled hole / Bohrlochtiefe

t_{fix} = fixture thickness / Dicke des Anbauteils
 d_f = fixture clearance hole diameter / Befestigungsdurchgangsl Lochdurchmesser

"TURBO SMART" WITH HEXAGON HEAD AND PRESSED-ON WASHER

"TURBO SMART" MIT SECHSKANTKOPF UND ANGEPRESSTER SCHEIBE




**) With washer DIN 440.
 Mit Unterlegscheibe DIN 440.

Zn-Alu
zinc flake

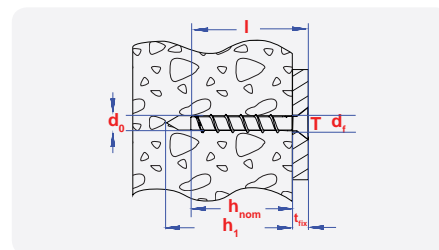



Size	pgb code	EAN13	d_0 [mm]	h_1 [mm]	d_f [mm]	h_{nom} [mm]	t_{fix} [mm]	SW [mm]	
5x40	SMBSZ3050040RUS	5902134198330	5	40/-/-	7	35/-/-	5/-/-	10	100
5x50	SMBSZ3050050RUS	5902134198347	5	40/-/-	7	35/-/-	15/-/-	10	100
5x60	SMBSZ3050060RUS	5902134198354	5	40/-/-	7	35/-/-	25/-/-	10	100
6x40	SMBSZ3060040RUS	5902134198361	6	40/-/-	8	35/-/-	5/-/-	13	100
6x50	SMBSZ3060050RUS	5902134198378	6	40/45/-	8	35/40/-	15/10/-	13	100
6x60	SMBSZ3060060RUS	5902134198385	6	40/45/60	8	35/40/55	25/20/5	13	100
6x80	SMBSZ3060080RUS	5902134198392	6	40/45/60	8	35/40/55	45/40/25	13	100
6x100	SMBSZ3060100RUS	5902134198408	6	40/45/60	8	35/40/55	65/60/45	13	100
8x50	SMBSZ3080050RUS	5902134198415	8	55/65/75	12	45/55/65	5/-/-	13	50
8x60	SMBSZ3080060RUS	5902134198422	8	55/65/75	12	45/55/65	15/5/-	13	50
8x70	SMBSZ3080070RUS	5902134198439	8	55/65/75	12	45/55/65	25/15/5	13	50
8x80	SMBSZ3080080RUS	5902134198446	8	55/65/75	12	45/55/65	35/25/15	13	50
8x90	SMBSZ3080090RUS	5902134198453	8	55/65/75	12	45/55/65	45/35/25	13	50
8x100	SMBSZ3080100RUS	5902134198460	8	55/65/75	12	45/55/65	55/45/35	13	50
8x120	SMBSZ3080120RUS	5902134198477	8	55/65/75	12	45/55/65	75/65/55	13	50
8x140	SMBSZ3080140RUS	5902134198484	8	55/65/75	12	45/55/65	95/85/75	13	50
10x60	SMBSZ3100060RUS	5902134198491	10	65/85/95	14	55/75/85	5/-/-	15	50
10x70	SMBSZ3100070RUS	5902134198507	10	65/85/95	14	55/75/85	15/-/-	15	50
10x80	SMBSZ3100080RUS	5902134198514	10	65/85/95	14	55/75/85	25/5/-	15	50
10x90	SMBSZ3100090RUS	5902134198521	10	65/85/95	14	55/75/85	35/15/5	15	50
10x100	SMBSZ3100100RUS	5902134198538	10	65/85/95	14	55/75/85	45/25/15	15	25
10x120	SMBSZ3100120RUS	5902134198545	10	65/85/95	14	55/75/85	65/45/35	15	25
10x140	SMBSZ3100140RUS	5902134198552	10	65/85/95	14	55/75/85	85/65/55	15	25
10x150	SMBSZ3100150RUS	5902134198569	10	65/85/95	14	55/75/85	95/75/65	15	25
10x160	SMBSZ3100160RUS	5902134198576	10	65/85/95	14	55/75/85	105/85/75	15	25
**10x180	SMBSZ3100180RUS	5902134198583	10	65/85/95	14	55/75/85	125/105/95	15	25
**10x200	SMBSZ3100200RUS	5902134198590	10	65/85/95	14	55/75/85	145/125/115	15	25
**10x240	SMBSZ3100240RUS	5902134198606	10	65/85/95	14	55/75/85	185/165/155	15	25
**10x280	SMBSZ3100280RUS	5902134198613	10	65/85/95	14	55/75/85	225/205/195	15	25
**10x320	SMBSZ3100320RUS	5902134198620	10	65/85/95	14	55/75/85	265/245/235	15	25
**10x360	SMBSZ3100360RUS	5902134198637	10	65/85/95	14	55/75/85	305/285/275	15	25
**10x400	SMBSZ3100400RUS	5902134198644	10	65/85/95	14	55/75/85	345/325/315	15	25
12x80	SMBSZ3120080RUS	5902134198651	12	75/95/110	16	65/85/100	15/-/-	17	25
12x110	SMBSZ3120110RUS	5902134198668	12	75/95/110	16	65/85/100	45/25/10	17	25
12x130	SMBSZ3120130RUS	5902134198675	12	75/95/110	16	65/85/100	65/45/30	17	25
12x150	SMBSZ3120150RUS	5902134198682	12	75/95/110	16	65/85/100	85/65/50	17	25
14x80	SMBSZ3140080RUS	5902134198699	14	85/110/125	18	75/100/115	5/-/-	21	25
14x110	SMBSZ3140110RUS	5902134198705	14	85/110/125	18	75/100/115	35/10/-	21	25
14x130	SMBSZ3140130RUS	5902134198712	14	85/110/125	18	75/100/115	55/30/15	21	20
14x150	SMBSZ3140150RUS	5902134198729	14	85/110/125	18	75/100/115	75/50/35	21	20




Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	SW [mm]	
6x50	SMBSZ3060050A4	5902134198378	6	40/45/-	8	35/40/-	15/10/-	13	100
6x60	SMBSZ3060060A4	5902134198385	6	40/45/60	8	35/40/55	25/20/5	13	100
8x70	SMBSZ3080070A4	5902134198439	8	55/65/75	12	45/55/65	25/15/5	13	50
8x80	SMBSZ3080080A4	5902134198446	8	55/65/75	12	45/55/65	35/25/15	13	50
10x90	SMBSZ3100090A4	5902134198521	10	65/85/95	14	55/75/85	35/15/5	15	50
10x100	SMBSZ3100100A4	5902134198538	10	65/85/95	14	55/75/85	45/25/15	15	25
10x120	SMBSZ3100120A4	5902134198545	10	65/85/95	14	55/75/85	65/45/35	15	25

"TURBO SMART" WITH COUNTERSUNK HEAD "TURBO SMART" MIT SENKKOPF

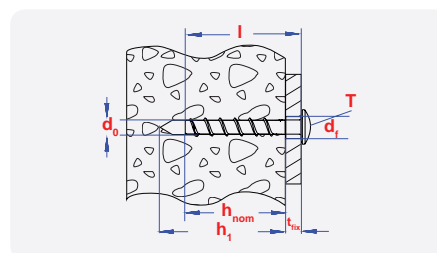



Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	T [mm]	
5x40	SMBSV3050040Z	5902134198804	5	40/-/-	7	35/-/-	5/-/-	T30	100
5x50	SMBSV3050050Z	5902134198811	5	40/-/-	7	35/-/-	15/-/-	T30	100
5x60	SMBSV3050060Z	5902134198828	5	40/-/-	7	35/-/-	25/-/-	T30	100
6x40	SMBSV3060040Z	5902134198835	6	40/-/-	8	35/-/-	5/-/-	T30	100
6x50	SMBSV3060050Z	5902134198842	6	40/45/-	8	35/40/-	15/10/-	T30	100
6x60	SMBSV3060060Z	5902134198859	6	40/45/60	8	35/40/55	25/20/5	T30	100
6x80	SMBSV3060080Z	5902134198866	6	40/45/60	8	35/40/55	45/40/25	T30	100
6x100	SMBSV3060100Z	5902134198873	6	40/45/60	8	35/40/55	65/60/45	T30	100
6x120	SMBSV3060120Z	5902134198880	6	40/45/60	8	35/40/55	85/80/65	T30	100
6x140	SMBSV3060140Z	5902134198897	6	40/45/60	8	35/40/55	105/100/85	T30	100
8x80	SMBSV3080080Z	5902134198903	8	55/65/75	12	45/55/65	35/25/15	T40	50
10x90	SMBSV3100090Z	5902134198910	10	65/85/95	14	55/75/85	35/15/5	T50	50




Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	T [mm]	
6x50	SMBSV3060050A4	5902134198927	6	40/45/-	8	35/40/-	15/10/-	T30	100
6x65	SMBSV3060065A4	5902134198934	6	40/45/60	8	35/40/55	25/20/5	T30	100
6x85	SMBSV3060085A4	5902134198941	6	40/45/60	8	35/40/55	45/40/25	T30	100
6x105	SMBSV3060105A4	5902134198958	6	40/45/60	8	35/40/55	65/60/45	T30	100
8x80	SMBSV3080080A4	5902134198965	8	55/65/75	12	45/55/65	35/25/15	T40	50
10x90	SMBSV3100090A4	5902134198972	10	65/85/95	14	55/75/85	35/15/5	T50	50

"TURBO SMART" WITH PAN HEAD
"TURBO SMART" MIT LINSENKOPF

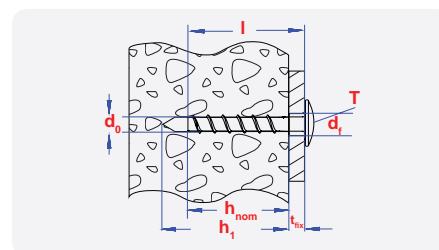



Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	T [mm]	
5x40	SMBSP3050040Z	5902134198989	5	40/-/-	7	35/-/-	5/-/-	T30	100
5x50	SMBSP3050050Z	5902134198996	5	40/-/-	7	35/-/-	15/-/-	T30	100
5x60	SMBSP3050060Z	5902134199009	5	40/-/-	7	35/-/-	25/-/-	T30	100
6x40	SMBSP3060040Z	5902134199016	6	40/-/-	8	35/-/-	5/-/-	T30	100
6x50	SMBSP3060050Z	5902134199023	6	40/45/-	8	35/40/-	15/10/-	T30	100
6x60	SMBSP3060060Z	5902134199030	6	40/45/60	8	35/40/55	25/20/5	T30	100
6x80	SMBSP3060080Z	5902134199047	6	40/45/60	8	35/40/55	45/40/25	T30	100
6x100	SMBSP3060100Z	5902134199054	6	40/45/60	8	35/40/55	65/60/45	T30	100



Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	T [mm]	
6x50	SMBSP3060050A4	5902134199061	6	40/45/-	8	35/40/-	15/10/-	T30	100
6x60	SMBSP3060060A4	5902134199078	6	40/45/60	8	35/40/55	25/20/5	T30	100
6x80	SMBSP3060080A4	5902134199085	6	40/45/60	8	35/40/55	45/40/25	T30	100
6x100	SMBSP3060100A4	5902134199092	6	40/45/60	8	35/40/55	65/60/45	T30	100

"TURBO SMART" WITH LARGE PAN HEAD FOR RAIL CONNECTIONS
"TURBO SMART" MIT TELLERKOPF FÜR MONTAGESCHIENEN

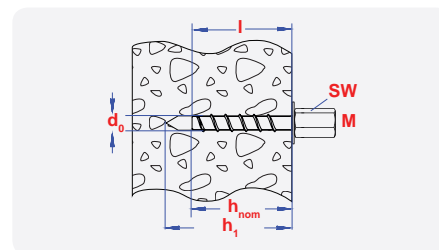


size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	h _{nom} [mm]	t _{fix} [mm]	T [mm]	
6x40	SMBSF3060040Z	5902134199108	6	40/-/-	8	35/-/-	5/-/-	T30	100
6x60	SMBSF3060060Z	5902134199115	6	40/45/60	8	35/40/55	25/20/5	T30	100

"TURBO SMART" WITH METRIC INTERNAL THREAD
"TURBO SMART" MIT METRISCHEM INNENGEWINDE



TYPE BSI

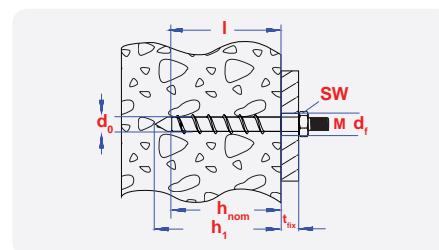


Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	M [mm]	h _{nom} [mm]	SW [mm]	
6x35	SMBSI3060035Z	5902134199245	6	40	8	M8-M10	35	13	50
6x55	SMBSI3060055Z	5902134199252	6	60	8	M8-M10	55	13	50

"TURBO SMART" WITH HEXAGON HEAD WITH METRIC CONNECTION
"TURBO SMART" SECHSKANTKOPF MIT METRISCHEM ANSCHLUSSGEWINDE

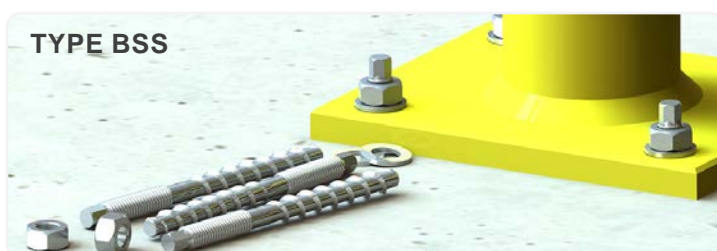


TYPE BSB

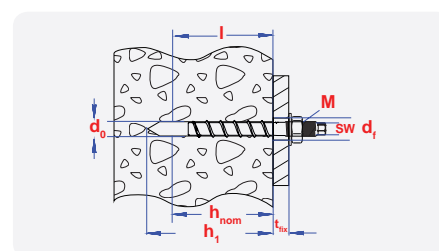


Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	M [mm]	h _{nom} [mm]	t _{fix} [mm]	SW [mm]	
6x35	SMBSB3060035Z	5902134199160	6	40/-/-	8	M8x16	35/-/-	0/-/-	10	100
6x55	SMBSB3060055Z	5902134199177	6	40/45/60	8	M8x16	35/40/55	20/15/-	10	100
6x75	SMBSB3060075Z	5902134199184	6	40/45/60	8	M8x16	35/40/55	40/35/20	10	100
6x95	SMBSB3060095Z	5902134199191	6	40/45/60	8	M8x16	35/40/55	60/55/40	10	100

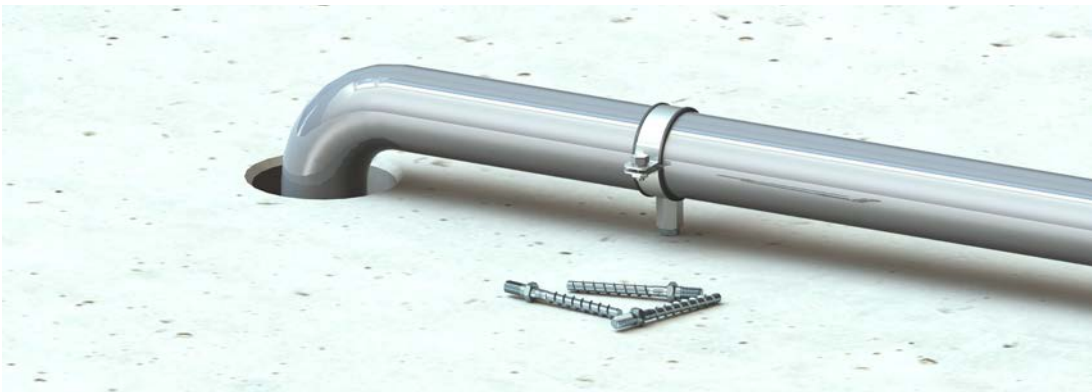
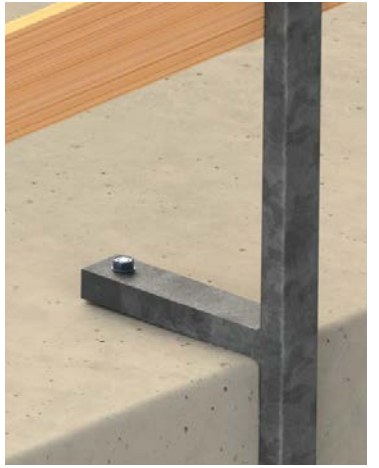
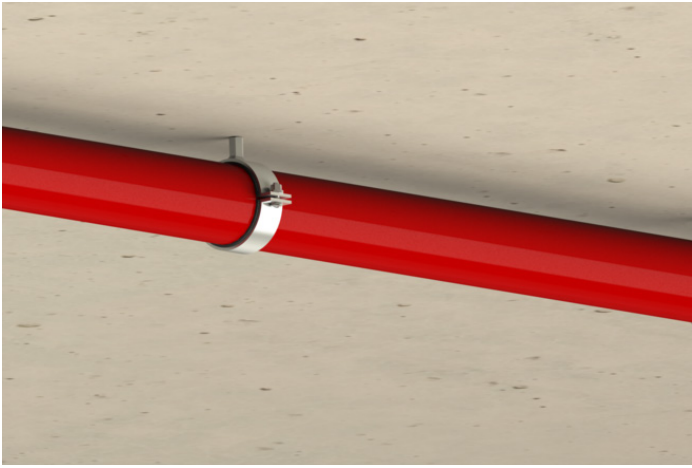
"TURBO SMART" WITH HEXAGON DRIVE AND METRIC CONNECTION
"TURBO SMART" MIT METRISCHEM ANSCHLUSSGEWINDE



TYPE BSS



Size	pgb code	EAN13	d ₀ [mm]	h ₁ [mm]	d _f [mm]	M [mm]	h _{nom} [mm]	t _{fix} [mm]	SW [mm]	
8x105	SMBSS3080105A4	5902134199207	8	55/65/75	12	M10x30	45/55/65	40/30/20	7	50
10x140	SMBSS3100140A4	5902134199214	10	65/85/95	14	M12x20	55/75/85	62/42/32	9	50
10x160	SMBSS3100160A4	5902134199221	10	65/85/95	14	M12x45	55/75/85	82/62/52	9	50



LOADS - LASTEN

1) Recommended loads for a single anchor.

Empfohlene Lasten für einen einzelnen Anker.

TURBO SMART					6		8			10			12			14		
Overall embedment depth / Allgemeine Verankerungstiefe			1	2	1	2	3	1	2	3	1	2	3	1	2	3		
	h_{nom}	[mm]	40	55	45	55	65	55	75	85	65	85	100	75	100	115		
Min spacing / Min. Abstand	s_{min}	[mm]	40	40	40	50	50	50	50	50	50	50	70	50	70	70		
Min. thickness of concrete member / Min. Anbauteil in Beton	h_{min}	[mm]	100	100	100	100	120	100	130	130	120	130	150	130	150	170		
Min. edge distance / Min. Randabstand	C_{min}	[mm]	40	40	40	50	50	50	50	50	50	50	70	50	70	70		
Tension load / Zuglast																		
Cracked concrete / Gerissener Beton C20/25	$N_{rk,p}$	[kN]	0,95	1,9	2,3	4,2	5,7	4,2	pull-out failure is not decisive		5,7	pull-out failure is not decisive		pull-out failure is not decisive				
Uncracked concrete / Ungerissener Beton C20/25	$N_{rk,p}$	[kN]	1,9	4,2	3,5	5,7	7,6	5,7	9,5	11,9	7,6	pull-out failure is not decisive		pull-out failure is not decisive				
Increasing factor for concrete / Erhöhter Faktor für Beton	ψ_C	C30/37	1,22															
	ψ_C	C40/50	1,41															
	ψ_C	C50/60	1,55															
Effective anchorage depth / Effektive Verankerungstiefe	h_{ef}	[mm]	31	44	35	43	52	43	60	68	50	67	80	58	79	92		
Characteristic shear load / Charakteristische Querlast ²⁾	$V_{rk,s}$	[kN]	3,3		8,6			16,2			20,0			30,5				

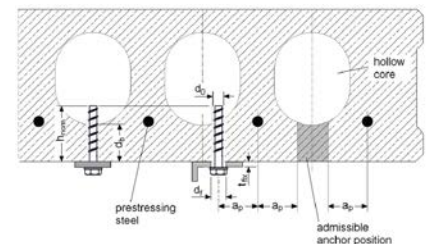
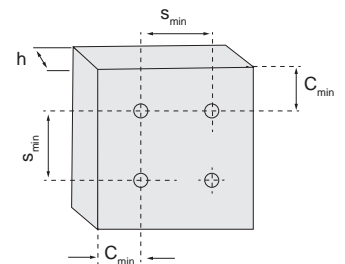
1) The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of $\gamma_F = 1,4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1,5 \times h_{ef}$. Accurate data see approval ETA 16/0308.

2) Shear load figures are valid for cracked and non-cracked concrete C20/25-C50/60 and apply for an anchor without influence of a concrete edge. For shear loads close to an edge ($c \leq 10 \times h_{ef}$), concrete edge failure has to be checked as per ETAG, Annex C, Design Method A.

1) Recommended loads for a single anchor in multiple use.

Empfohlene Lasten für einen einzelnen Anker in Mehrfachnutzung.

TURBO SMART			5		6
Overall embedment depth / Allgemeine Verankerungstiefe	h_{nom}	[mm]	35	35	55
Min. thickness of concrete member / Min. Anbauteil in Beton	h_{min}	[mm]	80	80	100
Min spacing / Min. Abstand	s_{min}	[mm]	35	35	40
Min. edge distance / Min. Randabstand	C_{min}	[mm]	35	35	40
Tension load / Zuglast					
Cracked and uncracked concrete / Gerissener und Ungerissener Beton C20/25	$N_{rk,p}$	[kN]	0,70	0,70	3,6
Increasing factor for concrete / Erhöhter Faktor für Beton	Ψ_C	C30/37	1,22		
	Ψ_C	C40/50	1,41		
	Ψ_C	C50/60	1,55		
Effective anchorage depth / Effektive Verankerungstiefe	h_{ef}	[mm]	27	27	44
TURBO SMART					
Pre-stressed hollow core slabs / Vorgespannte Hohlkernplatten					
bottom flange thickness / Bodenflanschdicke	d_b	[mm]	≥ 25	≥ 30	≥ 35
Overall embedment depth / Allgemeine Verankerungstiefe	h_{nom}	[mm]	35		
Min spacing / Min. Abstand	s_1, s_2	[mm]	100		
Min. edge distance / Min. Randabstand	c_1, c_2	[mm]	100		
Recommended loads / Empfohlene Lasten ²⁾	F_{rec}	[kN]	0,40	0,80	1,20



1) The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of $\gamma_F = 1,4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1,5 \times h_{ef}$. Accurate data see approval ETA 16/0452.

2) Concrete quality C30/37 - C50/60. The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of $\gamma_L = 1,4$ are considered.



pgb-Europe nv | logistics centre
Gontrode Heirweg 170 | 9090 Melle, Belgium
T: +32 (0)9 272 70 70 | F: +32 (0)9 272 70 99
www.pgb-europe.com | info@pgb-europe.com



pgb-Polska sp. z o.o. | production plant
ul. Fryderyka Wilhelma Redena 3 | 41-807 Zabrze, Poland
T: +48 (32) 330 26 10 | F: +48 (32) 330 26 20
www.pgb-polska.com | biuro@pgb-polska.com

