

## PRESTATIEVERKLARING

CONFORM VERORDENING (EU) 305/2011



### DoP SX-BS\_1

1.0	Unieke identificatiecode van het producttype	SPAX betonschroef SX-BS kopvormen HS, SK, RK, RKG, IG, AG	
2.0	Type-, partij- of serienummer conform artikel 11, lid 4	Markering conform ETA-20/0859, artikelnummer en EAN-code zie tabel op pagina 2	
3.0	Beoogd gebruik	Betonschroef voor gebruik in gescheurd en ongescheurd beton Constructies blootgesteld aan een droog binnenmilieu	
4.0	Fabrikant	SPAX International GmbH & Co. KG, Kölner Straße 71 – 77, 58256 Ennepetal, Germany	
5.0	Het systeem voor de beoordeling en verificatie van de prestatiebestendigheid (conform 97/176/EG)	Systeem 1	
6.0	Europees beoordelingsdocument: Europese technische beoordeling: Technische beoordelingsinstantie: Aangemelde instantie(s): Conformiteitscertificaat:	EAD 330232-00-0601 en EAD 330011-00-0601 ETA-20/0859; 2021-02-02 ITB Warschau 1488 – ITB Warschau 1488-CPR-0917/W	
7.0	Aangegeven prestatie		
7.1	Essentiële kenmerken	Prestatie	Technische specificatie
	Karakteristieke waarde van het trekdraagvermogen (statische en quasistatische invloeden)	Zie bijlage, in het bijzonder tabellen C1 en C2	ETA-20/0859
	Karakteristieke waarde van het afschuifdraagvermogen (statische en quasistatische invloeden)	Zie bijlage, in het bijzonder tabellen C1 en C2	
	Verschuivingen (statische en quasistatische invloeden)	Zie bijlage, in het bijzonder tabellen C1 en C2	
	Karakteristieke weerstand en verschuivingen voor seismische prestatiecategorieën C1 en C2	Zie bijlage, in het bijzonder tabellen C3 en C4	
	Brandgedrag	De schroef voldoet aan de eisen van klasse A1	
	Brandveiligheidsprestatie	Zie bijlage, in het bijzonder tabel C5	

De prestaties van het product beschreven in de punten 1 en 2 zijn conform de aangegeven prestaties in punt 6.  
Verantwoordelijk voor het opstellen van deze prestatieverklaring is uitsluitend de vermelde fabrikant.

Ondertekend voor en namens de fabrikant:

Ennepetal, Januari 2023

Christian Abke  
(directeur/COO)

## BIJLAGE

### DoP SX-BS\_1

#### Productlijst

SPAX-nummer	Ø	Lengte	EAN-code
1701010500505	5,0	50	4003530270338
1701010500755	5,0	75	4003530270345
1701010600605	6,0	60	4003530270369
1701010600755	6,0	75	4003530270376
1701010800605	8,0	60	4003530270383
1701010800755	8,0	75	4003530270390
1701010800905	8,0	90	4003530270406
1701010801005	8,0	100	4003530270413
1701010801305	8,0	130	4003530270420
1701010801505	8,0	150	4003530270437
1701011000655	10,0	65	4003530270444
1701011000755	10,0	75	4003530270451
1701011000855	10,0	85	4003530270468
1701011001005	10,0	100	4003530270475
1701011001205	10,0	120	4003530270482
1701011001405	10,0	140	4003530270499
1701011001605	10,0	160	4003530270505
1701011002005	10,0	200	4003530270512
1701011200755	12,0	75	4003530270529
1701011201005	12,0	100	4003530270536
1701011201305	12,0	130	4003530270543
1701011201505	12,0	150	4003530270550

SPAX-nummer	Ø	Lengte	EAN-code
1701011400805	14,0	80	4003530270567
1701011401155	14,0	115	4003530270574
1701011401355	14,0	135	4003530270581
1741010600505	6,0	50	4003530270598
1741010600605	6,0	60	4003530270604
1741010600755	6,0	75	4003530270611
1741010601005	6,0	100	4003530270628
1741010601205	6,0	120	4003530270635
1741010601405	6,0	140	4003530270642
1741010800605	8,0	60	4003530270659
1741010800755	8,0	75	4003530270666
1741010800905	8,0	90	4003530270673
1741011000655	10,0	65	4003530270680
1741011000755	10,0	75	4003530270697
1741011000905	10,0	90	4003530270703
1741011001005	10,0	100	4003530270710
1741011001205	10,0	120	4003530270727
1721010600505	6,0	50	4003530270765
1721010600755	6,0	75	4003530270772
1731010600605	6,0	60	4003530270796
1761010600555	6,0	55	4003530270819
1751010600555	6,0	55	4003530270833

**Table C1:** Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60, design method A

Anchor size			SX-BS-05	SX-BS-06		SX-BS-08		SX-BS-10		SX-BS-12		SX-BS-14		
Nominal embedment depth	$h_{nom}$	[mm]	43	43	55	50	70	55	85	60	100	75	120	
Adjustment														
Total max. thickness of adjustment layers	$t_{adj}$	[mm]	10	-	10	-	10	-	10	-	10	-	10	
Max. number of adjustments	$n_s$	[-]	2	-	2	-	2	-	2	-	2	-	2	
Steel failure														
Characteristic resistance*	$N_{Rk,s}$	[kN]	20,9	28,6		49,5		67,4		92,1		128,3		
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,4	1,4		1,4		1,4		1,4		1,5		
Pull-out failure														
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7,0	-) <sup>2)</sup>	12,0	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	-) <sup>2)</sup>	
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	4,5	-) <sup>2)</sup>	7,0	7,0	13,0	8,0	-) <sup>2)</sup>	7,0	-) <sup>2)</sup>	13,0	-) <sup>2)</sup>	
Installation safety factor	$\gamma_{inst}$	[-]	1,2	1,0		1,0		1,0		1,0		1,0		
Increasing factor	concrete C30/37	$\psi_c$	[-]	1,08		1,08		1,08		1,08		1,08		
	concrete C40/50		[-]	1,15		1,15		1,15		1,15		1,15		
	concrete C50/60		[-]	1,19		1,19		1,19		1,19		1,19		
Concrete cone failure and splitting failure														
Effective embedment depth	$h_{ef}$	[mm]	32	32	42	36	53	40	65	42	76	54	92	
Factor for uncracked concrete	$k_{ucr,N}$	[-]	11,0	11,0		11,0		11,0		11,0		11,0		
Factor for cracked concrete	$k_{cr,N}$	[-]	7,7	7,7		7,7		7,7		7,7		7,7		
Installation safety factor	$\gamma_{inst}$	[-]	1,2	1,0		1,0		1,0		1,0		1,0		
Characteristic spacing	concrete cone failure	$S_{cr,N}$	[mm]	90	90	126	112	160	120	196	126	228	165	276
	splitting failure	$S_{cr,sp}$	[mm]	90	90	126	112	160	136	222	126	228	188	312
Characteristic edge distance	concrete cone failure	$C_{cr,N}$	[mm]	45	45	63	56	80	60	98	63	114	83	138
	splitting failure	$C_{cr,sp}$	[mm]	45	45	63	56	80	68	111	63	114	94	156

<sup>1)</sup> In the absence of other national regulations<sup>2)</sup> Pull-out failure is not decisive

\* Values different from ETA-20/0859

**SPAX concrete screw SX-BS**

**Performances**  
Characteristic resistance for tension loads.

**Annex C1**  
of European  
Technical Assessment  
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**Table C2:** Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60, design method A

Anchor size			SX-BS-05	SX-BS-06		SX-BS-08		SX-BS-10		SX-BS-12		SX-BS-14	
Nominal embedment depth	$h_{nom}$	[mm]	43	43	55	50	70	55	85	60	100	75	120
Steel failure without lever arm													
Characteristic resistance	$V_{Rk,s}$	[kN]	12,7	17,7		30,2		41,2		57,0		78,5	
Factor considering ductility	$k_7$	[-]	0,8	0,8		0,8		0,8		0,8		0,8	
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,5	1,5		1,5		1,5		1,5		1,5	
Steel failure with lever arm													
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	19,0	31,8		72,4		123,6		203,3		329,6	
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,5	1,5		1,5		1,5		1,5		1,5	
Concrete pry-out failure													
Factor	$k_8$	[-]	1,0	1,0		1,0		1,0	2,0	1,0	2,0	1,0	2,0
Installation safety factor	$\gamma_{inst}$	[-]	1,0	1,0		1,0		1,0		1,0		1,0	
Concrete edge failure													
Outside diameter on anchor	$d_{nom}$	[mm]	5	6		8		10		12		14	
Effective length of anchor under shear loads	$l_f$	[mm]	43	43	55	50	70	55	85	60	100	75	120
Installation safety factor	$\gamma_{inst}$	[-]	1,0	1,0		1,0		1,0		1,0		1,0	
Minimum member thickness	$h_{min}$	[mm]	100	100	100	100	110	100	130	110	155	110	190
Displacements													
Tension load in uncracked concrete C20/25 to C50/60													
Tension load	N	[kN]	2,9	5,6		11,0		14,9		18,1		23,1	
Short term tension displacement	$\delta_{N0}$	[mm]	0,3	0,3		0,4		0,4		0,5		0,5	
Long term tension displacement	$\delta_{N\infty}$	[mm]	0,85	0,9		1,0		1,0		1,2		1,25	
Tension load in cracked concrete C20/25 to C50/60													
Tension load	N	[kN]	2,3	4,4		6,7		10,2		12,4		17,7	
Short term tension displacement	$\delta_{N0}$	[mm]	0,4	0,4		0,5		0,5		0,6		0,7	
Long term tension displacement	$\delta_{N\infty}$	[mm]	2,0	2,0		2,0		2,0		2,0		2,0	
Shear load in cracked and uncracked concrete C20/25 to C50/60													
Shear load	V	[kN]	5,6	8,1		11,9		18,7		27,1		35,2	
Short term shear displacement	$\delta_{V0}$	[mm]	1,4	1,5		2,5		2,5		2,5		2,5	
Long term shear displacement	$\delta_{V\infty}$	[mm]	2,1	2,25		3,75		3,75		3,75		3,75	

<sup>1)</sup> In the absence of other national regulations**SPAX concrete screw SX-BS**

**Performances**  
 Characteristic resistance for shear loads. Displacements

**Annex C2**  
 of European  
 Technical Assessment  
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**Table C3:** Characteristic values for seismic performance category C1

Anchor size			SX-BS-08	SX-BS-10	SX-BS-14
Nominal embedment depth	$h_{nom}$	[mm]	70	85	120
Steel failure for tension and shear load					
Characteristic resistance	$N_{Rk,s,eq}$	[kN]	60,4	82,4	157,0
	$V_{Rk,s,eq}$	[kN]	15,1	27,4	52,3
Pullout failure					
Characteristic resistance	$N_{Rk,p,eq}$	[kN]	5,4	13,5	19,2
Concrete cone failure					
Effective embedment depth	$h_{ef}$	[mm]	53	65	92
Characteristic edge distance	$c_{cr,N}$	[mm]	1,5 $h_{ef}$		
Characteristic spacing	$s_{cr,N}$	[mm]	3 $h_{ef}$		
Installation safety factor	$\gamma_{inst}$	[-]	1,0		
Concrete pry-out failure					
Factor	$k_B$	[-]	1,0	2,0	2,0
Concrete edge failure					
Outside diameter on anchor	$d_{nom}$	[mm]	8	10	14
Effective length of anchor under shear loads	$l_f$	[mm]	70	85	120

**SPAX concrete screw SX-BS**

**Performances**  
Characteristic values for seismic performance category C1

**Annex C3**  
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**Table C4:** Characteristic values for seismic performance category C2

Anchor size			SX-BS-08	SX-BS-10	SX-BS-14
Nominal embedment depth	$h_{nom}$	[mm]	70	85	120
Steel failure for tension and shear load					
Characteristic resistance	$N_{Rk,s,eq}$	[kN]	60,4	82,4	157,0
	$V_{Rk,s,eq}$	[kN]	9,9	20,6	35,1
Pullout failure					
Characteristic resistance	$N_{Rk,p,eq}$	[kN]	1,57	4,91	14,87
Concrete cone failure					
Effective embedment depth	$h_{ef}$	[mm]	53	65	92
Characteristic edge distance	$c_{cr,N}$	[mm]	1,5 $h_{ef}$		
Characteristic spacing	$s_{cr,N}$	[mm]	3 $h_{ef}$		
Installation factor	$\gamma_{inst}$	[-]	1,0		
Concrete pry-out failure					
Factor	$k_8$	[-]	1,0	2,0	2,0
Concrete edge failure					
Outside diameter on anchor	$d_{nom}$	[mm]	8	10	14
Effective length of anchor under shear loads	$l_f$	[mm]	70	85	120
Displacements					
Displacements under tension load					
Displacement DLS	$\delta_{N,eq}$	[mm]	0,10	0,20	0,63
Displacement ULS	$\delta_{N,eq}$	[mm]	0,50	0,73	3,94
Displacements under shear load					
Displacement DLS	$\delta_{V,eq}$	[mm]	2,00	3,44	4,22
Displacement ULS	$\delta_{V,eq}$	[mm]	3,04	5,04	7,15

**SPAX concrete screw SX-BS**

**Performances**  
 Characteristic values for seismic performance category C2

**Annex C4**  
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**Table C5:** Characteristic resistance under fire exposure in cracked and uncracked concrete C20/25 to C50/60

Anchor size			SX-BS-05	SX-BS-06		SX-BS-08		SX-BS-10		SX-BS-12		SX-BS-14		
Nominal embedment depth	$h_{nom}$	[mm]	43	43	55	50	70	55	85	60	100	75	120	
Steel failure for tension and shear load $F_{Rk,s,fi} = N_{Rk,s,fi} = V_{Rk,s,fi}$														
Characteristic resistance	R30	$F_{Rk,s,fi}$	[kN]	0,20	0,28	0,28	0,75	0,75	1,57	1,57	2,26	2,26	3,08	3,08
	R60	$F_{Rk,s,fi}$	[kN]	0,18	0,25	0,25	0,65	0,65	1,18	1,18	1,70	1,70	2,31	2,31
	R90	$F_{Rk,s,fi}$	[kN]	0,14	0,20	0,20	0,50	0,50	1,02	1,02	1,47	1,47	2,00	2,00
	R120	$F_{Rk,s,fi}$	[kN]	0,10	0,14	0,14	0,40	0,40	0,79	0,79	1,13	1,13	1,54	1,54
	R30	$M^0_{Rk,s,fi}$	[Nm]	0,15	0,25	0,25	0,90	0,90	2,36	2,36	4,07	4,07	6,47	6,47
	R60	$M^0_{Rk,s,fi}$	[Nm]	0,13	0,23	0,23	0,78	0,78	1,77	1,77	3,05	3,05	4,85	4,85
	R90	$M^0_{Rk,s,fi}$	[Nm]	0,10	0,18	0,18	0,60	0,60	1,53	1,53	2,65	2,65	4,20	4,20
	R120	$M^0_{Rk,s,fi}$	[Nm]	0,07	0,13	0,13	0,48	0,48	1,18	1,18	2,04	2,04	3,23	3,23
Pull-out failure														
Characteristic resistance	R30	$N_{Rk,p,fi}$	[kN]	1,13	1,38	1,75	1,88	3,25	2,00	4,75	1,75	6,50	3,25	8,50
	R60	$N_{Rk,p,fi}$	[kN]	1,13	1,38	1,75	1,88	3,25	2,00	4,75	1,75	6,50	3,25	8,50
	R90	$N_{Rk,p,fi}$	[kN]	1,13	1,38	1,75	1,88	3,25	2,00	4,75	1,75	6,50	3,25	8,50
	R120	$N_{Rk,p,fi}$	[kN]	0,90	1,10	1,40	1,50	2,60	1,60	3,80	1,40	5,20	2,60	6,80
Concrete cone failure														
Characteristic resistance	R30	$N_{Rk,c,fi}$	[kN]	0,89	0,89	2,06	1,50	3,68	1,82	6,13	2,06	9,06	4,04	14,61
	R60	$N_{Rk,c,fi}$	[kN]	0,89	0,89	2,06	1,50	3,68	1,82	6,13	2,06	9,06	4,04	14,61
	R90	$N_{Rk,c,fi}$	[kN]	0,89	0,89	2,06	1,50	3,68	1,82	6,13	2,06	9,06	4,04	14,61
	R120	$N_{Rk,c,fi}$	[kN]	0,71	0,71	1,65	1,20	2,94	1,46	4,91	1,65	7,25	3,23	11,69
Edge distance														
R30 to R120	$C_{cr,fi}$	[mm]	$2 \cdot h_{ef}$											
In case of fire attack from more than one side, the minimum edge distance shall be $\geq 300$ mm.														
Anchor spacing														
R30 to R120	$S_{cr,fi}$	[mm]	$4 \cdot h_{ef}$											
Concrete pry-out failure														
R30 to R120	k	[-]	1,0	1,0	1,0	1,0	1,0	1,0	2,0	1,0	2,0	1,0	2,0	

**SPAX concrete screw SX-BS**

**Performances**  
Characteristic resistance under fire exposure

**Annex C5**  
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