



# S-KA+

ETA  
Option 1

Depth  
marking

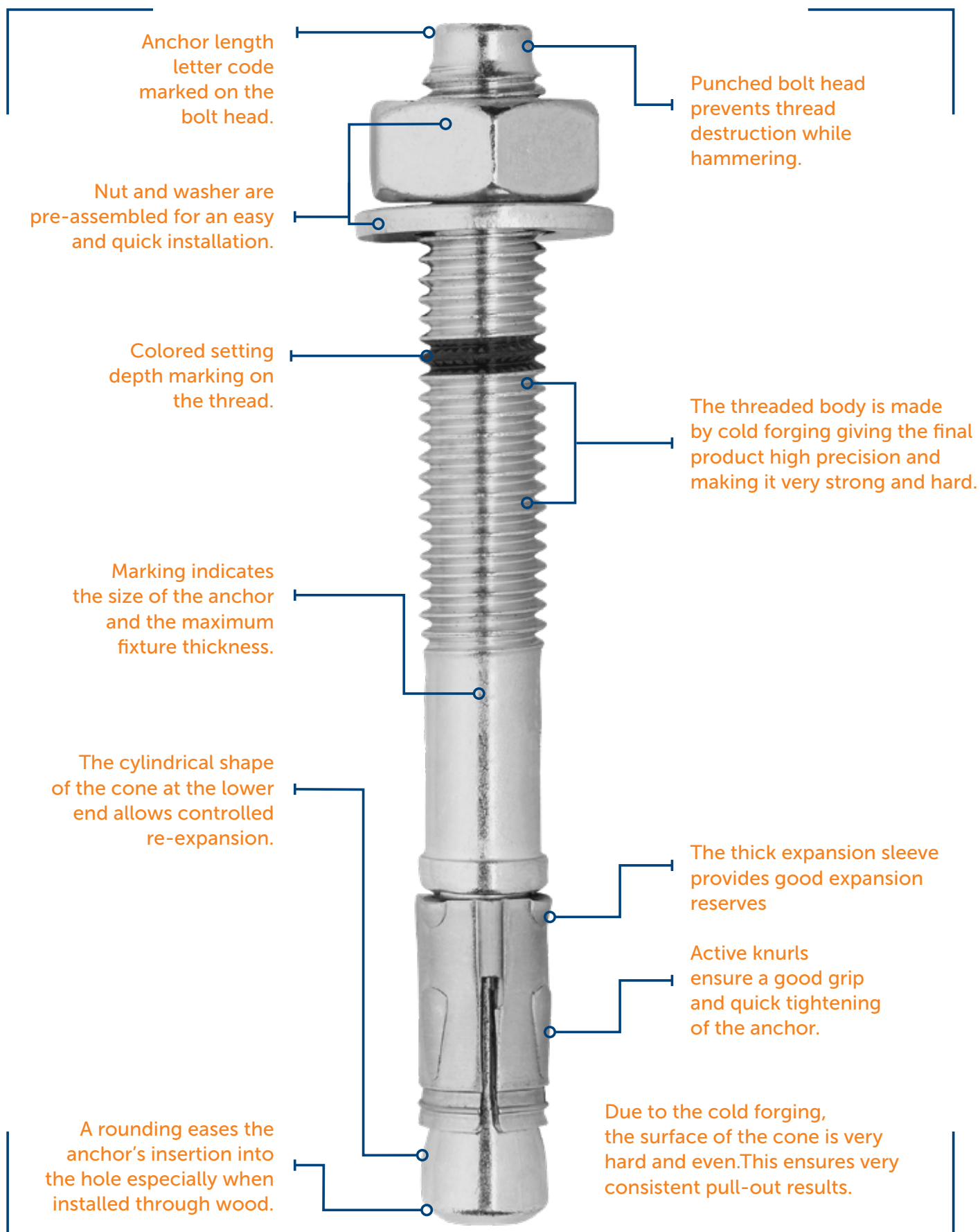
+40%  
more  
performance

Made in  
Finland

COMPLETELY NEW  
**High-performance**  
THROUGH BOLT  
**S-KA+**

# SORMAT







S-KA+



S-KAK+



S-KAH+



S-KAH+  
HCR

## High-performance through bolts for fixing in non-cracked and cracked concrete

### VERSIONS

- S-KA+, Steel, zinc plated
- S-KAK+, Steel, hot dip galvanized
- S-KAH+, Stainless steel, A4
- S-KAH+ HCR, Stainless Steel, HCR

### PRODUCT DESCRIPTION

- Premium quality torque-controlled expansion anchors for pre-, push-through and distance installations.
- When torque is applied the expansion clip expands developing frictional grip with the drill hole walls.
- Anchor size and max. fixture thicknesses marked on the body. Anchor length letter code marked on the bolt head.
- M10 and M12 have two different anchorage depths.

### BASE MATERIALS

- **Approved for:**  
Cracked concrete, Non-cracked concrete
- **Also suitable for:**  
Natural stone

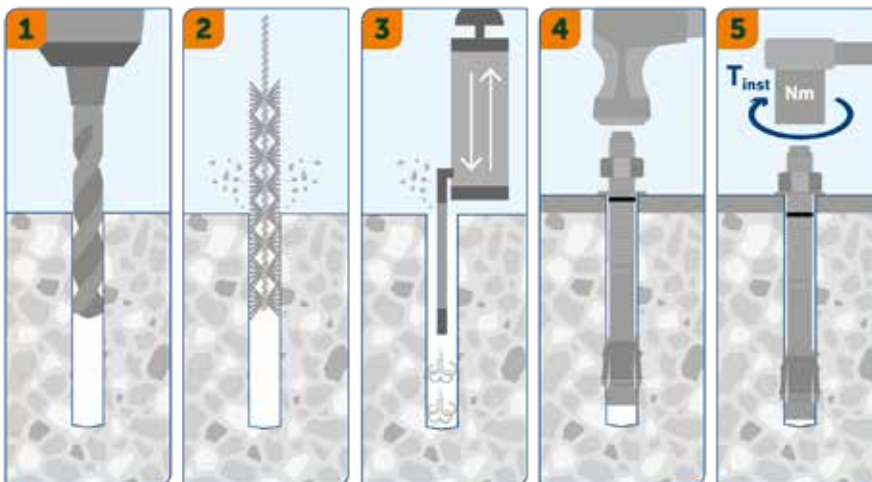
- The use of S-KA setting tool makes serial installation safer and quicker.
- Seismic performance category C1/C2 for S-KA+ and S-KAH+.
- ZP for dry indoor use; HDG for dry and humid indoor use, outdoor rural inland areas only; A4 for indoor, outdoor and industrial use; HCR for extremely corrosive conditions.

### APPROVALS



### APPLICATIONS

- Steel structures
- Column base plates
- Seatings
- Barriers
- Cable racks
- Handrails
- Ladders
- Façade systems

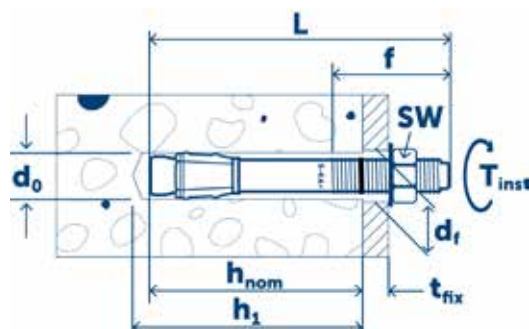


### INSTALLATION




1. Drill a hole according to the product data.
- 2.-3. Clean the hole using a brush and blow-out pump.
4. Install anchor with a hammer or a setting tool.
5. Tighten the anchor to the specified installation torque.



S-KA+, Steel, zinc plated








## TECHNICAL DATA

Type	Code	Approval	Length	 $\emptyset$	Min. hole depth	Max. fixture thickness	Thread		
		ETA	L mm	$d_0$ mm	$h_1$ mm	$t_{fix}$ mm	f mm		
8/10	9640001310	•	75	8	60	10	35	50	250
8/30	9640001312	•	95	8	60	30	55	50	250
8/50	9640001314	•	115	8	60	50	75	40	200
8/85	9640001316	•	150	8	60	85	110	40	200
10/10/-	9640001323	•	72	10	55	10	27	40	200
10/30/10	9640001325	•	92	10	55/75	30/10	47	40	200
10/40/20	9640001326	•	102	10	55/75	40/20	57	25	125
10/50/30	9640001327	•	112	10	55/75	50/30	67	25	125
10/70/50	9640001329	•	132	10	55/75	70/50	87	25	125
10/100/80	9640001331	•	162	10	55/75	100/80	115	25	125
12/10/-	9640001338	•	88	12	70	10	38	20	100
12/25/5	9640001340	•	103	12	70/90	25/5	53	20	100
12/40/20	9640001342	•	118	12	70/90	40/20	68	20	100
12/50/30	9640001343	•	128	12	70/90	50/30	78	20	100
12/70/50	9640001345	•	148	12	70/90	70/50	98	20	100
12/85/65	9640001346	•	163	12	70/90	85/65	113	20	100
12/100/80	9640001347	•	178	12	70/90	100/80	115	20	100
16/5	9640001357	•	123	16	110	5	65	10	50
16/20	9640001359	•	138	16	110	20	80	10	50
16/50	9640001362	•	168	16	110	50	110	10	50
16/60	9640001363	•	178	16	110	60	115	10	50

Visit [sormat.com](http://sormat.com) for more information.

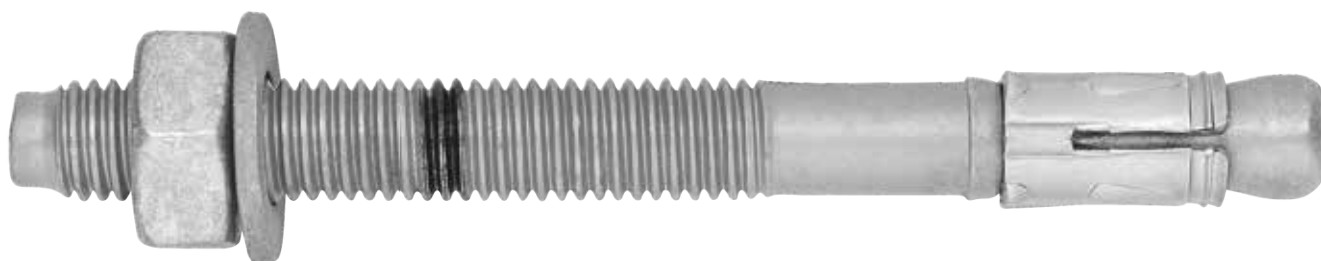
### PERFORMANCE DATA

S-KA+, Steel, zinc plated

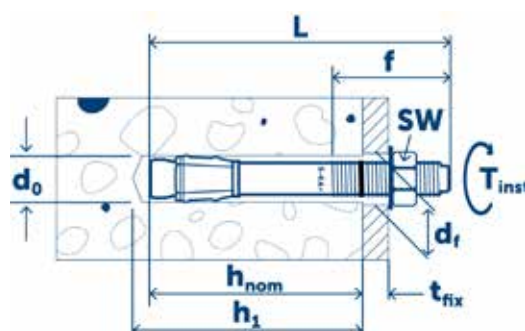
Type	 $\varnothing$	Hole in fixture $\varnothing$		Nominal setting depth	Width across flats	Installation torque	Recommended loads kN tension / shear Non-cracked concrete C20/25		Recommended loads kN tension / shear Cracked concrete C20/25	
		$d_0$ mm	$d_f$ mm	$h_{nom}$ mm	SW mm	$T_{inst}$ Nm				
8/10	8	9	53	13	15	5,2	7,2	4,0	5,7	
8/30	8	9	53	13	15	5,2	7,2	4,0	5,7	
8/50	8	9	53	13	15	5,2	7,2	4,0	5,7	
8/85	8	9	53	13	15	5,2	7,2	4,0	5,7	
10/10/-	10	12	48	17	30	5,7	6,1	4,3	4,3	
10/30/10	10	12	68	17	30	9,0	10,5	5,7	10,5	
10/30/10	10	12	48	17	30	5,7	6,1	4,3	4,3	
10/40/20	10	12	68	17	30	9,0	10,5	5,7	10,5	
10/40/20	10	12	48	17	30	5,7	6,1	4,3	4,3	
10/50/30	10	12	68	17	30	9,0	10,5	5,7	10,5	
10/50/30	10	12	48	17	30	5,7	6,1	4,3	4,3	
10/70/50	10	12	68	17	30	9,0	10,5	5,7	10,5	
10/70/50	10	12	48	17	30	5,7	6,1	4,3	4,3	
10/100/80	10	12	68	17	30	9,0	10,5	5,7	10,5	
10/100/80	10	12	48	17	30	5,7	6,1	4,3	4,3	
12/10/-	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/25/5	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/25/5	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/40/20	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/40/20	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/50/30	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/50/30	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/70/50	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/70/50	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/85/65	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/85/65	12	14	61	19	60	8,5	8,5	6,1	6,1	
12/100/80	12	14	81	19	60	11,9	16,4	7,6	16,4	
12/100/80	12	14	61	19	60	8,5	8,5	6,1	6,1	
16/5	16	18	97	24	110	17,1	30,9	11,4	26,9	
16/20	16	18	97	24	110	17,1	30,9	11,4	26,9	
16/50	16	18	97	24	110	17,1	30,9	11,4	26,9	
16/60	16	18	97	24	110	17,1	30,9	11,4	26,9	

The highest recommended loads (kN) for a single anchor. Visit [sormat.com](http://sormat.com) for European Technical Assessment ETA-16/0934



Load values include the resistances' partial safety factors as per approvals and a partial safety factor on the action of  $\gamma_r = 1.4$ . Load values apply for a rebar spacing  $s \geq 15$  cm or alternatively for a rebar spacing  $s \geq 10$  cm in combination with a rebar diameter of  $d_s \leq 10$  mm. Concrete is considered non-cracked when the value of tension within the concrete is  $\sigma_L + \sigma_R \leq 0$ . In the absence of detailed verification  $\sigma_R = 3$  N/mm<sup>2</sup> can be assumed ( $\sigma_L$  equals the tension within the concrete as a result of external loads, forces on anchor included;  $\sigma_R$  equals the tension coming from shrinkage or creep of the concrete, as well as displacements of supports or temperature variations). Shear load values 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 EOTA TR 055. Visit [sormat.com](http://sormat.com) for more information.



S-KAK+, Steel, hot dip galvanized








## TECHNICAL DATA

Type	Code	Approval	Length	 $\phi$	Min. hole depth	Max. fixture thickness	Thread		
		ETA	L mm	$d_0$ mm	$h_1$ mm	$t_{fix}$ mm	f mm		
8/10	9640003310	•	75	8	60	10	35	50	250
8/30	9640003312	•	95	8	60	30	55	50	250
8/50	9640003314	•	115	8	60	50	75	40	200
8/85	9640003316	•	150	8	60	85	110	40	200
10/10/-	9640003323	•	72	10	55	10	27	40	200
10/30/10	9640003325	•	92	10	55/75	30/10	47	40	200
10/40/20	9640003326	•	102	10	55/75	40/20	57	25	125
10/50/30	9640003327	•	112	10	55/75	50/30	67	25	125
10/70/50	9640003329	•	132	10	55/75	70/50	87	25	125
10/100/80	9640003331	•	162	10	55/75	100/80	115	25	125
12/10/-	9640003338	•	88	12	70	10	38	20	100
12/25/5	9640003340	•	103	12	70/90	25/5	53	20	100
12/40/20	9640003342	•	118	12	70/50	40/20	68	20	100
12/50/30	9640003343	•	128	12	70/50	50/30	78	20	100
12/70/50	9640003345	•	148	12	70/50	70/50	98	20	100
12/85/65	9640003346	•	163	12	70/50	85/65	113	20	100
12/100/80	9640003347	•	178	12	70/50	100/80	115	20	100
16/5	9640003357	•	123	16	110	5	65	10	50
16/20	9640003359	•	138	16	110	20	80	10	50
16/50	9640003362	•	168	16	110	50	110	10	50
16/60	9640003363	•	178	16	110	60	115	10	50

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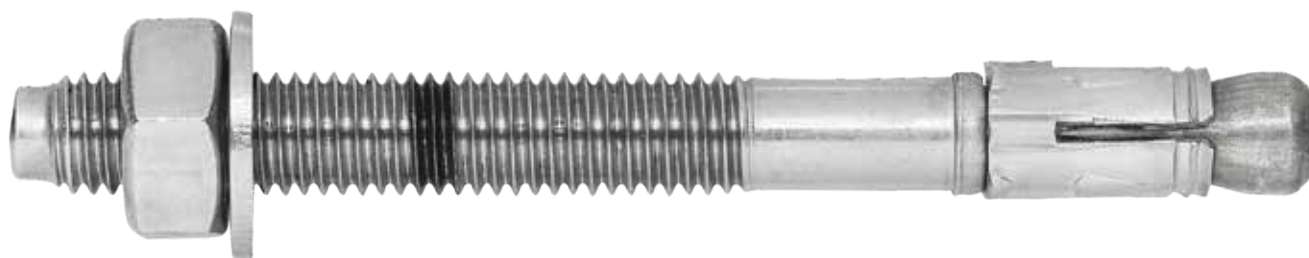
## PERFORMANCE DATA

S-KAK+, Steel, hot dip galvanized

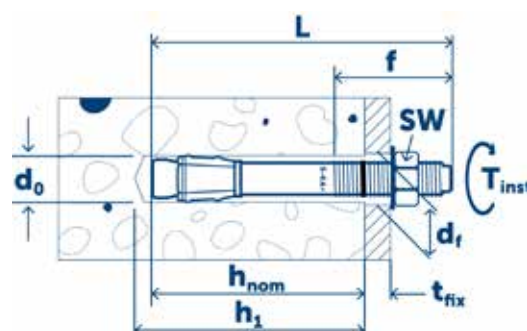
Type	 $\emptyset$	Hole in fixture $\emptyset$	Nominal setting depth	Width across flats	Installation torque	Recommended loads kN		Recommended loads kN	
						tension / shear	Non-cracked concrete C20/25	tension / shear	Cracked concrete C20/25
	$d_0$ mm	$d_f$ mm	$h_{nom}$ mm	SW mm	$T_{inst}$ Nm				
8/10	8	9	53	13	15	5,2	7,2	4,0	5,7
8/30	8	9	53	13	15	5,2	7,2	4,0	5,7
8/50	8	9	53	13	15	5,2	7,2	4,0	5,7
8/85	8	9	53	13	15	5,2	7,2	4,0	5,7
10/10/-	10	12	48	17	30	5,7	6,1	4,3	4,3
10/30/10	10	12	68	17	30	9,0	10,5	5,7	10,5
10/30/10	10	12	48	17	30	5,7	6,1	4,3	4,3
10/40/20	10	12	68	17	30	9,0	10,5	5,7	10,5
10/40/20	10	12	48	17	30	5,7	6,1	4,3	4,3
10/50/30	10	12	68	17	30	9,0	10,5	5,7	10,5
10/50/30	10	12	48	17	30	5,7	6,1	4,3	4,3
10/70/50	10	12	68	17	30	9,0	10,5	5,7	10,5
10/70/50	10	12	48	17	30	5,7	6,1	4,3	4,3
10/100/80	10	12	68	17	30	9,0	10,5	5,7	10,5
10/100/80	10	12	48	17	30	5,7	6,1	4,3	4,3
12/10/-	12	14	61	19	60	8,5	8,5	6,1	6,1
12/25/5	12	14	81	19	60	11,9	16,4	7,6	16,4
12/25/5	12	14	61	19	60	8,5	8,5	6,1	6,1
12/40/20	12	14	81	19	60	11,9	16,4	7,6	16,4
12/40/20	12	14	61	19	60	8,5	8,5	6,1	6,1
12/50/30	12	14	81	19	60	11,9	16,4	7,6	16,4
12/50/30	12	14	61	19	60	8,5	8,5	6,1	6,1
12/70/50	12	14	81	19	60	11,9	16,4	7,6	16,4
12/70/50	12	14	61	19	60	8,5	8,5	6,1	6,1
12/85/65	12	14	81	19	60	11,9	16,4	7,6	16,4
12/85/65	12	14	61	19	60	8,5	8,5	6,1	6,1
12/100/80	12	14	81	19	60	11,9	16,4	7,6	16,4
12/100/80	12	14	61	19	60	8,5	8,5	6,1	6,1
16/5	16	18	97	24	110	17,1	30,9	11,4	26,9
16/20	16	18	97	24	110	17,1	30,9	11,4	26,9
16/50	16	18	97	24	110	17,1	30,9	11,4	26,9
16/60	16	18	97	24	110	17,1	30,9	11,4	26,9

The highest recommended loads (kN) for a single anchor. Visit [sormat.com](http://sormat.com) for European Technical Assessment ETA-16/0934

Load values include the resistances' partial safety factors as per approvals and a partial safety factor on the action of  $\gamma_c = 1.4$ . Load values apply for a rebar spacing  $s \geq 15$  cm or alternatively for a rebar spacing  $s \geq 10$  cm in combination with a rebar diameter of  $d_s \leq 10$  mm. Concrete is considered non-cracked when the value of tension within the concrete is  $\sigma_t + \sigma_k \leq 0$ . In the absence of detailed verification  $\sigma_k = 3$  N/mm<sup>2</sup> can be assumed ( $\sigma_t$  equals the tension within the concrete as a result of external loads, forces on anchor included;  $\sigma_k$  equals the tension coming from shrinkage or creep of the concrete, as well as displacements of supports or temperature variations). Shear load values 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 EOTA TR 055. Visit [sormat.com](http://sormat.com) for more information.



### S-KAH+, Stainless steel, A4



## TECHNICAL DATA






Type	Code	Approval	Length	Ø	Min. hole depth	Max. fixture thickness	Thread	Icons	
								ETA	L mm
8/10	9640005310	•	75	8	60	10	35	50	250
8/30	9640005312	•	95	8	60	30	55	50	250
8/50	9640005314	•	115	8	60	50	75	40	200
8/85	9640005316	•	150	8	60	85	110	40	200
10/10/-	9640005323	•	72	10	55	10	27	40	200
10/30/10	9640005325	•	92	10	55/75	30/10	47	40	200
10/40/20	9640005326	•	102	10	55/75	40/20	57	25	125
10/70/50	9640005329	•	132	10	55/75	70/50	87	25	125
10/100/80	9640005331	•	162	10	55/75	100/80	115	25	125
12/10/-	9640005338	•	88	12	70	10	38	20	100
12/25/5	9640005340	•	103	12	70/90	25/5	53	20	100
12/40/20	9640005342	•	118	12	70/90	40/20	68	20	100
12/50/30	9640005343	•	128	12	70/90	50/30	78	20	100
12/70/50	9640005345	•	148	12	70/90	70/50	98	20	100
12/85/65	9640005346	•	163	12	70/90	85/65	113	20	100
12/100/80	9640005347	•	178	12	70/90	100/80	115	20	100
16/5	9640005357	•	123	16	110	5	65	10	50
16/20	9640005359	•	138	16	110	20	80	10	50
16/50	9640005362	•	168	16	110	50	110	10	50
16/60	9640005363	•	178	16	110	60	115	10	50

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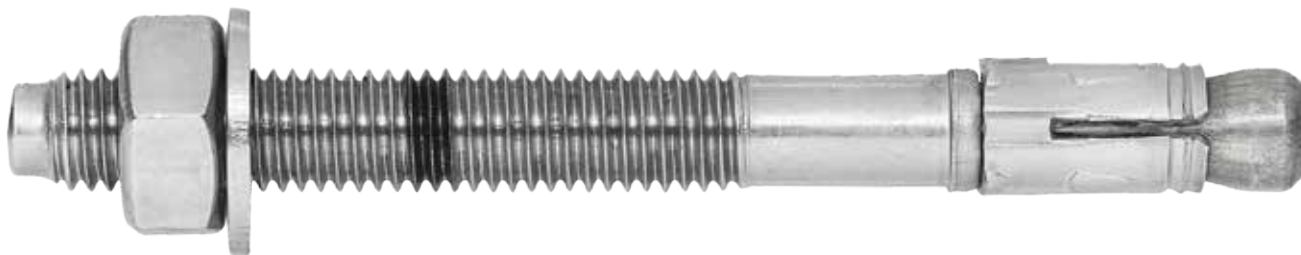
### PERFORMANCE DATA

S-KAH+, Stainless steel, A4

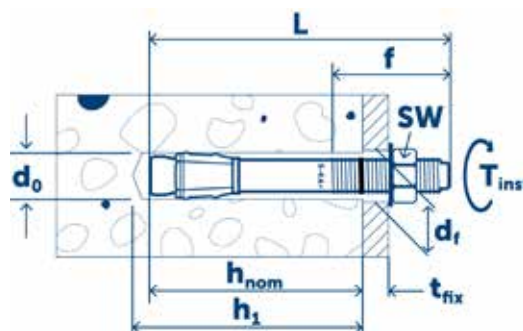
Type	 $\varnothing$	Hole in fixture $\varnothing$	Nominal setting depth	Width across flats	Installation torque	Recommended loads kN		Recommended loads kN	
						Non-cracked concrete C20/25		Cracked concrete C20/25	
	$d_0$ mm	$d_f$ mm	$h_{nom}$ mm	SW mm	$T_{inst}$ Nm				
8/10	8	9	53	13	20	5,2	8,0	4,0	5,7
8/30	8	9	53	13	20	5,2	8,0	4,0	5,7
8/50	8	9	53	13	20	5,2	8,0	4,0	5,7
8/85	8	9	53	13	20	5,2	8,0	4,0	5,7
10/10/-	10	12	48	17	45	5,7	6,1	4,3	4,3
10/30/10	10	12	68	17	45	9,0	10,5	5,7	10,5
10/30/10	10	12	48	17	45	5,7	6,1	4,3	4,3
10/40/20	10	12	68	17	45	9,0	10,5	5,7	10,5
10/40/20	10	12	48	17	45	5,7	6,1	4,3	4,3
10/70/50	10	12	68	17	45	9,0	10,5	5,7	10,5
10/70/50	10	12	48	17	45	5,7	6,1	4,3	4,3
10/100/80	10	12	68	17	45	9,0	10,5	5,7	10,5
10/100/80	10	12	48	17	45	5,7	6,1	4,3	4,3
12/10/-	12	14	61	19	60	8,5	8,5	6,1	6,1
12/25/5	12	14	81	19	60	11,9	16,4	7,6	16,4
12/25/5	12	14	61	19	60	8,5	8,5	6,1	6,1
12/40/20	12	14	81	19	60	11,9	16,4	7,6	16,4
12/40/20	12	14	61	19	60	8,5	8,5	6,1	6,1
12/50/30	12	14	81	19	60	11,9	16,4	7,6	16,4
12/50/30	12	14	61	19	60	8,5	8,5	6,1	6,1
12/70/50	12	14	81	19	60	11,9	16,4	7,6	16,4
12/70/50	12	14	61	19	60	8,5	8,5	6,1	6,1
12/85/65	12	14	81	19	60	11,9	16,4	7,6	16,4
12/85/65	12	14	61	19	60	8,5	8,5	6,1	6,1
12/100/80	12	14	81	19	60	11,9	16,4	7,6	16,4
12/100/80	12	14	61	19	60	8,5	8,5	6,1	6,1
16/5	16	18	97	24	110	17,1	37,7	11,4	26,9
16/20	16	18	97	24	110	17,1	37,7	11,4	26,9
16/50	16	18	97	24	110	17,1	37,7	11,4	26,9
16/60	16	18	97	24	110	17,1	37,7	11,4	26,9

The highest recommended loads (kN) for a single anchor. Visit [sormat.com](http://sormat.com) for European Technical Assessment ETA-16/0934

Load values include the resistances' partial safety factors as per approvals and a partial safety factor on the action of  $\gamma_r = 1.4$ . Load values apply for a rebar spacing  $s \geq 15$  cm or alternatively for a rebar spacing  $s \geq 10$  cm in combination with a rebar diameter of  $d_s \leq 10$  mm. Concrete is considered non-cracked when the value of tension within the concrete is  $\sigma_t + \sigma_r \leq 0$ . In the absence of detailed verification  $\sigma_r = 3$  N/mm<sup>2</sup> can be assumed ( $\sigma_t$  equals the tension within the concrete as a result of external loads, forces on anchor included;  $\sigma_r$  equals the tension coming from shrinkage or creep of the concrete, as well as displacements of supports or temperature variations). Shear load values 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 EOTA TR 055. Visit [sormat.com](http://sormat.com) for more information.



### S-KAH+ HCR, Stainless Steel, HCR



## TECHNICAL DATA

Type	Code	Approval	Length	$\phi$	Min. hole depth	Max. fixture thickness	Thread		
		ETA	L mm	$d_0$ mm	$h_1$ mm	$t_{fix}$ mm	f mm	25	125
10/50/30	9640006327	•	112	10	55/75	50/30	67		

Visit [sormat.com](http://sormat.com) for more information.

## PERFORMANCE DATA

S-KAH+ HCR, Stainless Steel, HCR

Type	$\phi$	Hole in fixture $\phi$	Nominal setting depth	Width across flats	Installation torque	Recommended loads kN tension / shear		Recommended loads kN tension / shear	
						Non-cracked concrete C20/25	Cracked concrete C20/25	Non-cracked concrete C20/25	Cracked concrete C20/25
	$d_0$ mm	$d_f$ mm	$h_{nom}$ mm	SW mm	$T_{inst}$ Nm				
10/50/30	10	12	68	17	45	9,0	10,5	5,7	10,5
10/50/30	10	12	48	17	45	5,7	6,1	4,3	4,3

The highest recommended loads (kN) for a single anchor. Visit [sormat.com](http://sormat.com) for European Technical Assessment ETA-16/0934

Load values include the resistances' partial safety factors as per approvals and a partial safety factor on the action of  $\gamma_c = 1.4$ . Load values apply for a rebar spacing  $s \geq 15$  cm or alternatively for a rebar spacing  $s \geq 10$  cm in combination with a rebar diameter of  $d_s \leq 10$  mm. Concrete is considered non-cracked when the value of tension within the concrete is  $\sigma_c + \sigma_{sh} \leq 0$ . In the absence of detailed verification  $\sigma_{cr} = 3$  N/mm<sup>2</sup> can be assumed ( $\sigma_c$  equals the tension within the concrete as a result of external loads, forces on anchor included;  $\sigma_{sh}$  equals the tension coming from shrinkage or creep of the concrete, as well as displacements of supports or temperature variations). Shear load values 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 EOTA TR 055. Visit [sormat.com](http://sormat.com) for more information.



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## SORMAT OY AT A GLANCE



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RUSKO, FINLAND



**PERSONNEL**  
~80



**TURNOVER**  
~18 M€



**CUSTOMERS**  
IN 50 COUNTRIES



## S-KA+

- ~40% better performance
- Types M10 and M12 have two anchorage depths
- Needs less tightening cycles, can be installed faster
- Smaller edge and mutual distances
- Thanks to the new raw material, the body is stronger
- M8 and M10 works in even thinner concrete : 80 mm and 100 mm
- Sizes M10 and M12 are C2 approved

S-KA+	S-KAK+	S-KAH+ A4	S-KAH+ HCR
			

Size	Type	t <sub>fix</sub>	Length	Zinc electro-plated	Hot dip galvanized	Stainless steel A4	Stainless steel HCR
<b>M8</b>	M8/10	10	75	●	●	●	●
	M8/30	30	95	●	●	●	●
	M8/50	50	115	●	●	●	●
	M8/85	85	150	●	●	●	●
<b>M10</b>	M10/10/-	10	72	●	●	●	●
	M10/30/10	30/10	92	●	●	●	●
	M10/40/20	40/20	102	●	●	●	●
	M10/50/30	50/30	112	●	●	●	●
	M10/70/50	70/50	132	●	●	●	●
	M10/100/80	100/80	162	●	●	●	●
<b>M12</b>	M12/10/-	10	88	●	●	●	●
	M12/25/5	25/5	103	●	●	●	●
	M12/40/20	40/20	118	●	●	●	●
	M12/50/30	50/30	128	●	●	●	●
	M12/70/50	70/50	148	●	●	●	●
	M12/85/65	85/65	163	●	●	●	●
	M12/100/80	100/80	178	●	●	●	●
<b>M16</b>	M16/5	5	123	●	●	●	●
	M16/20	20	138	●	●	●	●
	M16/50	50	168	●	●	●	●
	M16/60	60	178	●	●	●	●

• Made to order