



ZAVOD ZA
GRADBENIŠTVO
SLOVENIJE

SLOVENIAN
NATIONAL BUILDING
AND CIVIL ENGINEERING
INSTITUTE



**Dimičeva 12,
1000 Ljubljana, Slovenija**

Tel.: +386 (0)1 280 44 72, +386 (0)1 280 45 37

Fax: +386 (0)1 280 44 84

e-mail: info.ta@zag.si

<http://www.zag.si>

Member of
www.eota.eu

European Technical Assessment

ETA-17/1009
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English version prepared by ZAG

General Part

**Technical Assessment Body issuing the
European Technical Assessment**

ZAG

Trade name of the construction product

**S-CSA+ / JC2 Plus
S-CSA A4 / JC6**

**Product family to which the construction
product belongs**

**33: Concrete screw of size 6 for multiple
use for non-structural application in
concrete and in pre-stressed hollow
core slabs**

Manufacturer

**EJOT SORMAT OY
Vähäkorventie 10
21250 MASKU
Finland
www.ejot.fi**

Manufacturing plant

EJOT Production Plants

**This European Technical Assessment
contains**

**16 pages including 3 annexes, which form
an integral part of the document**

**This European Technical Assessment is
issued in accordance with Article 95(4) of
Regulation (EU) 2024/3110, on the basis of**

EAD 330747-00-0601, edition May 2018

This version replaces

ETA-17/1009 issued on 16.02.2023

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Specific parts

1 Technical description of the product

S-CSA+ / JC2 Plus is an anchor in size 6 made of carbon steel (galvanised or Multi Layer coated) and S-CSA A4 / JC6 is stainless steel with carbon steel tip and other part made of stainless steel. The anchor is screwed into a predrilled cylindrical hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

For the installed anchor see Figure given in Annex A (1/2).

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

The performances given in Chapter 3 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 manufacturer, 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 Safety in case of fire (BWR 2)

The basic work requirements for safety in case of fire are listed in Annex C (4/5) and C (5/5).

3.2 Safety in use (BWR 4)

The basic work requirements for safety in use are listed in Annexes C (1/5) to C (3/5).

3.3 General aspects relating to fitness for use

Durability and serviceability are only ensured if specifications of intended use according to Annex B are kept.

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

According to the decision 97/161/EC of the European Commission¹ the system of assessment and verification of constancy of performance (see Annex V to regulation (EU) No 305/2011) 2+ apply.

5 Technical details necessary for the implementation of the AVCP system, as provided for on the applicable EAD

5.1 Tasks for the manufacturer

Technical details necessary for the implementation of the AVCP system are laid down in Chapter 3 of EAD 330747-00-0601.

Issued in Ljubljana on 08. 01. 2026

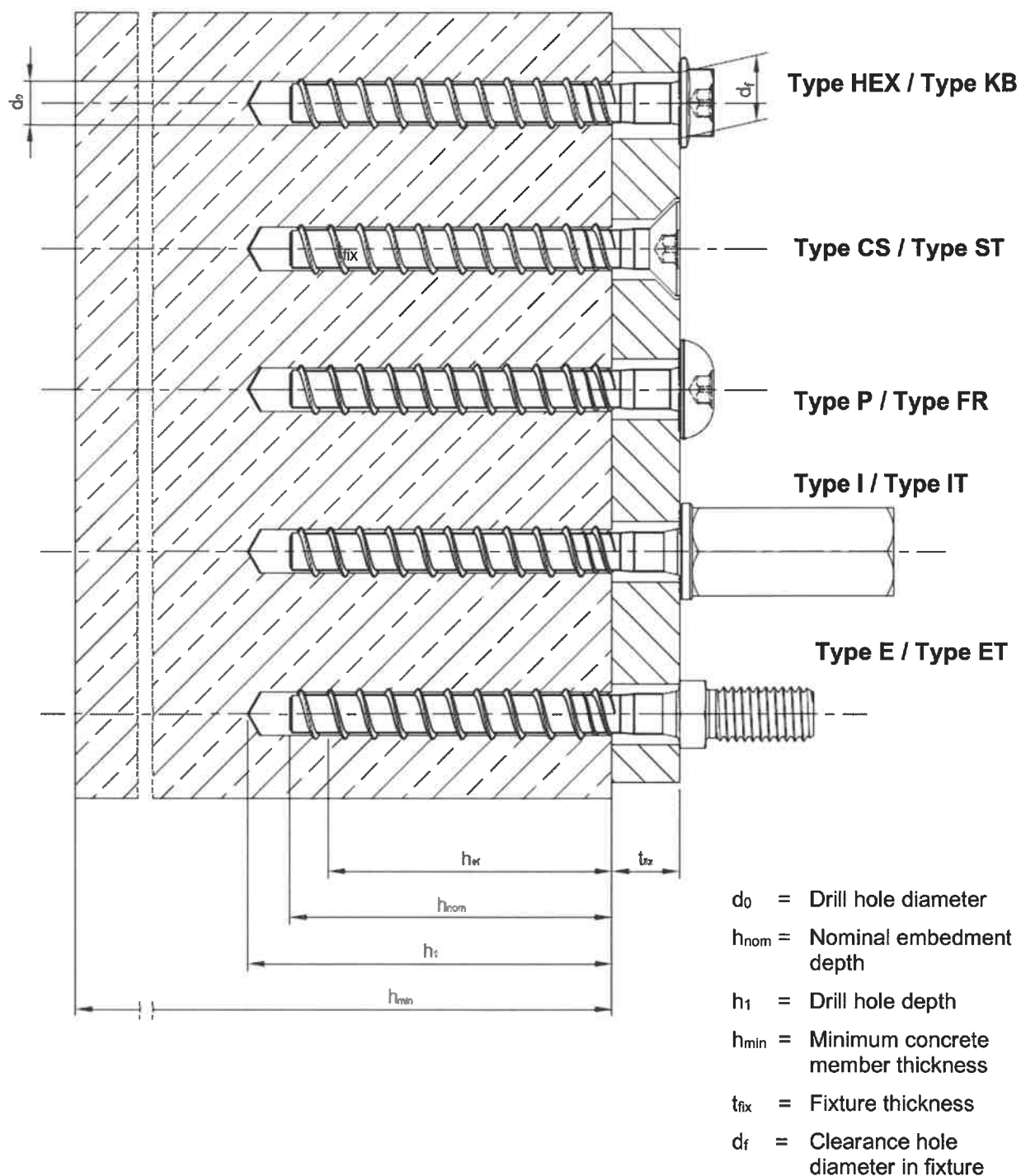
Signed by:

Franc Capuder, M.Sc.

Head of Service of TAB

¹ Official Journal of the European Communities L 254 of 8.10.1996

**S-CSA+ / JC2 Plus / S-CSA A4 / JC6
installed in concrete**

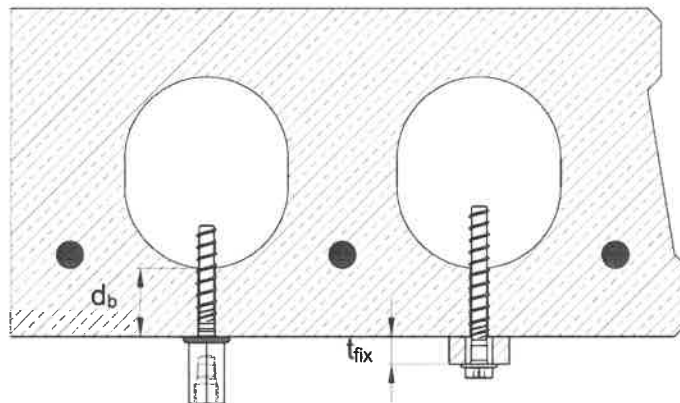


**S-CSA+ / JC2 Plus
S-CSA A4 / JC6**

Product description
Installation condition in concrete

Annex A (1/3)

S-CSA+ / JC2 Plus
S-CSA A4 / JC6
installed in pre-stressed hollow core slab



t_{fix} = Fixture thickness

d_b = flange thickness

S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex A (2/3)
Product description Installation condition in pre-stressed hollow core slabs	

Table A1: Materials and Types

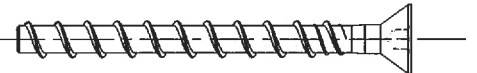
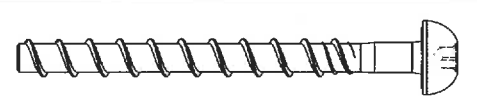
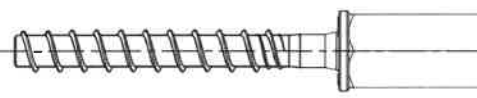
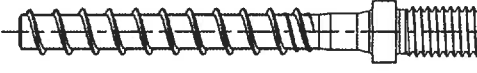
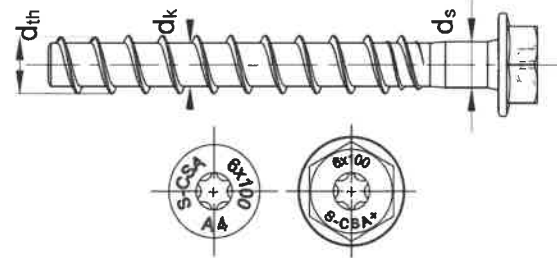
Material			f_{yk} [N/mm ²]	f_{uk} [N/mm ²]
S-CSA+ / JC2 Plus: Cold forged carbon steel, zinc electroplated according to EN ISO 4042 or with Multi Layer Coating $\geq 5\mu\text{m}$			640	800
S-CSA A4 / JC6: Tip, hardened steel; Shaft and head: Stainless steel (A4 grade)			720	800
Part	Designation	Description	Design	
1	S-CSA+ / JC2 Plus S-CSA A4 / JC6 HEX / KB	Hexagonal head version with combined washer and optional T-drive		
2	S-CSA+ / JC2 Plus S-CSA A4 / JC6 CS / ST	Countersunk head version with T-drive		
3	S-CSA+ / JC2 Plus S-CSA A4 / JC6 P / FR	Pan head version with T-drive		
5	S-CSA+ / JC2 Plus S-CSA A4 / JC6 I / IT	Internal thread version with hexagonal drive		
	S-CSA+ / JC2 Plus S-CSA A4 / JC6 E / ET	External thread version with hexagonal drive		

Table A2: Anchor dimensions and head marking

Anchor size			S-CSA+ 6 / JC2 Plus 6		S-CSA A4 6 / JC6 6		Marking: Identifying mark: S or J Anchor identity: CSA+ / C2 Plus / CSA A4 / C6 Nominal diameter: d_{nom} Screw length: L Example: S-CSA+ 6x100 / JC6 6x100 
Nominal diameter	d_{nom}	[mm]	6				
Thread outer diameter	d_{th}	[mm]	7,45				
Core diameter	d_k	[mm]	5,55				
Shaft diameter	d_s	[mm]	5,88	5,90			
Stressed section	A_s	[mm ²]	24,19				

S-CSA+ / JC2 Plus
S-CSA A4 / JC6

Product description
Materials, types and dimensions

Annex A (3/3)

Specifications of intended use

Anchorage subjected to:

- Static, quasi static load.
- Use only for multiple use for non-structural applications according to EAD 330747-00-0601
- Fire exposure.

Base materials:

- Cracked and non-cracked concrete.
- Reinforced and unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according to EN 206:2013+A2:2021.
- Precast pre-stressed hollow core slabs.

Use conditions (Environmental conditions):

- The S-CSA+ / JC2 Plus may be used in structures subject to dry internal conditions.
- The S-CSA A4 / JC6 may be used in concrete subject to dry internal conditions and also in concrete subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist.

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. desulphurization plants or road tunnels where de-icing materials are used).

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Anchorages under static and quasi-static actions are designed in accordance with EN 1992-4:2018.
- For application with resistance under fire exposure the anchorages are designed in accordance with EN 1992-4:2018.
- Verifiable calculation notes and drawings are prepared taking into account of the load to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings 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 for.
- Check of concrete being well compacted, e.g. without significant voids.
- Cleaning of the hole of drilling dust.
- Anchor installation ensuring the specified embedment depth.
- Keeping of the edge distance and spacing to the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength non-shrinkage mortar. No shear or oblique tension loads are allowed in the direction of a not filled aborted hole.
- Application of the torque moment given in Annex B (2/5) using a calibrated torque wrench.

Application of the test specimens given in Annex A (2/5) using a calibrated torque wrench	
S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex B (1/5)
Intended use Specifications	

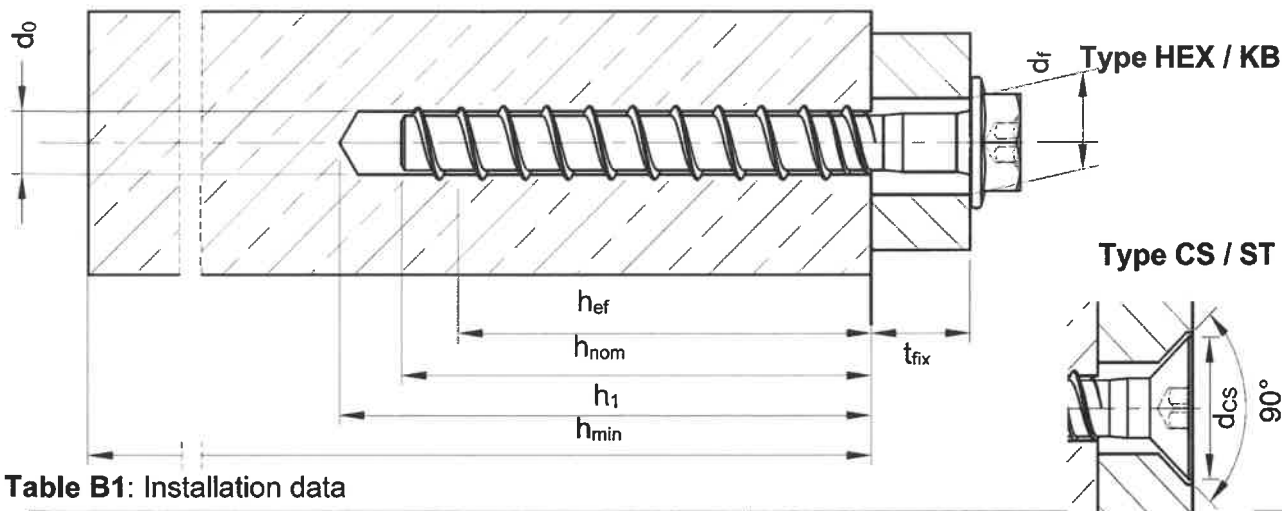


Table B1: Installation data

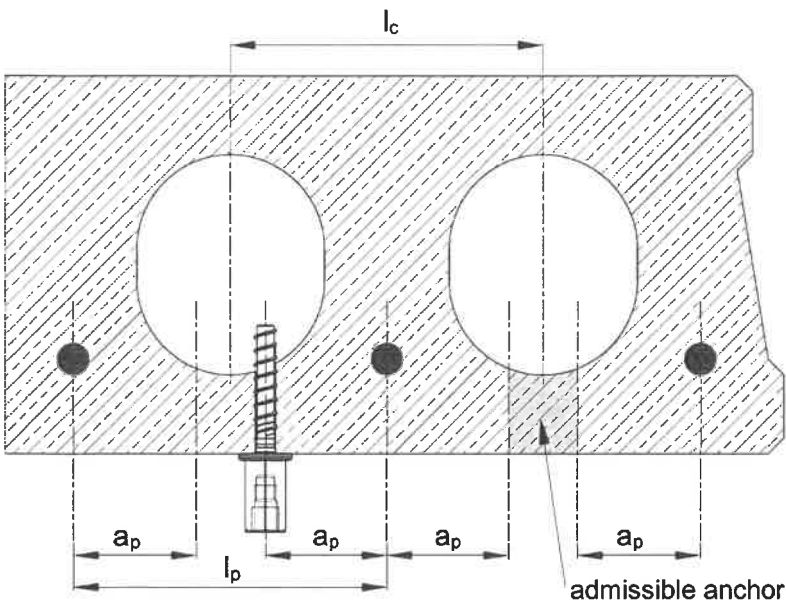
S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size	
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2 S-CSA A4 / JC6 6-2
Nominal embedment depth	h_{nom}	[mm]	35	40
Drill hole diameter	d_0	[mm]	6	6
Cutting diameter at the upper tolerance limit (maximum diameter bit)	$d_{cut,max} \leq$	[mm]	6,40	6,40
Depth of drilled hole to deepest point	$h_1 \geq$	[mm]	45	50
Effective anchorage depth	h_{ef}	[mm]	27,6	31,9
Diameter of clearance hole in the fixture	d_f	[mm]	7,7 – 9,0	7,7 – 9,0
Countersunk head diameter	d_{cs}	[mm]	14	14
Maximum installation torque	T_{inst}	[Nm]	14	14
Max installation torque for impact screw driver	T_{SD}	[Nm]	90	90

Table B2: Minimum thickness of concrete member, spacing and edge distance

			Anchor size	
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2 S-CSA A4 / JC6 6-2
Minimum thickness of concrete member	h_{min}	[mm]	80	80
Minimum spacing	s_{min}	[mm]	35	35
Minimum edge distance	c_{min}	[mm]	30	35

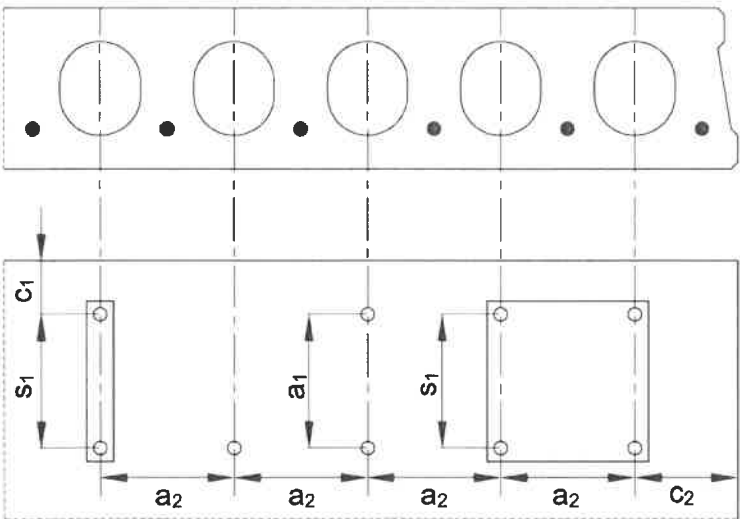
S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex B (2/5)
Intended use Installation data	

Admissible anchor position in pre-stressed hollow core slabs



- Core distance $l_c \geq 100 \text{ mm}$
- Pre-stressing steel distance $l_p \geq 100 \text{ mm}$
- Distance between anchor position and prestressing steel $a_p \geq 50 \text{ mm}$

Minimum spacing and edge distance of anchors and distance between anchor groups in pre-stressed hollow core slabs

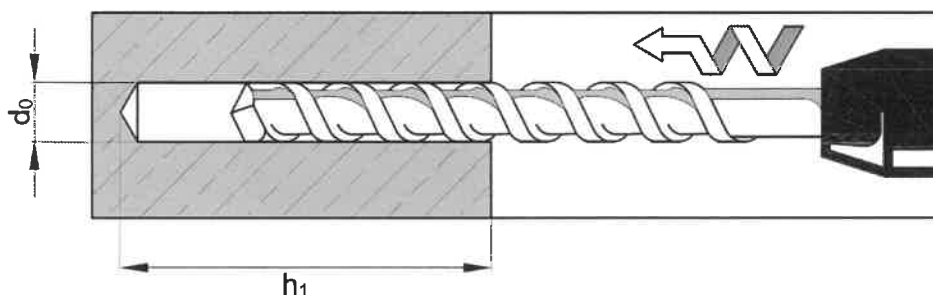


- Minimum edge distance $c_{min} \geq 100 \text{ mm}$
- Minimum anchor spacing $s_{min} \geq 100 \text{ mm}$
- Minimum distance between anchor groups $a_{min} \geq 100 \text{ mm}$

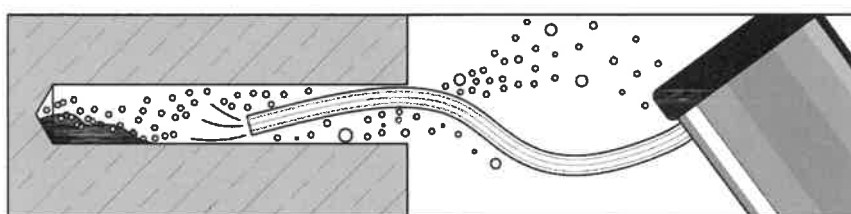
c_1, c_2 edge distance
 s_1, s_2 anchor spacing
 a_1, a_2 distance between anchor groups

S-CSA+ / JC2 Plus S-CSA A4 / JC6	
Intended use Installation data for pre-stressed hollow core slabs	Annex B (3/5)

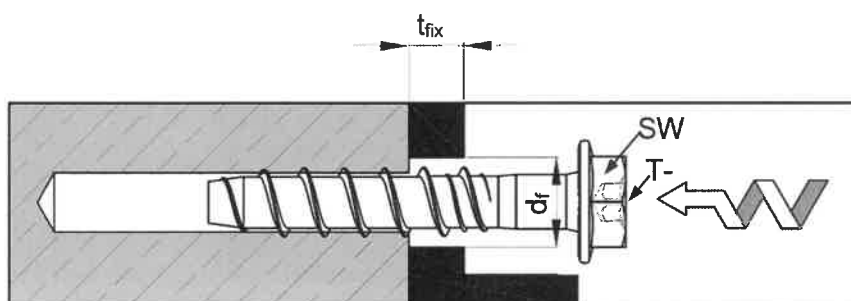
Installation instructions



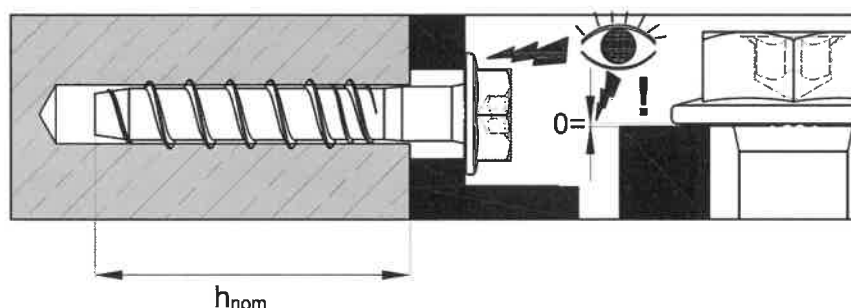
Make a cylindrical hole



Clean the hole



Install the screw anchor by impact screwdriver or torque wrench



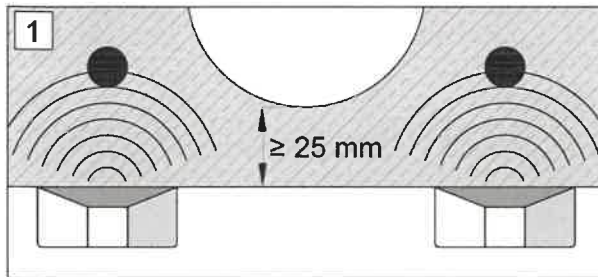
Ensure that the screw anchor head fully rests without any gap on the fixture and is not damaged

S-CSA+ / JC2 Plus
S-CSA A4 / JC6

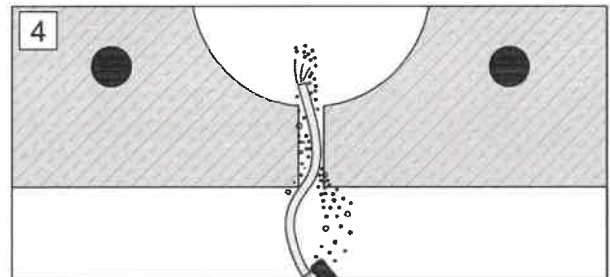
Intended use
Installation instructions in concrete

Annex B (4/5)

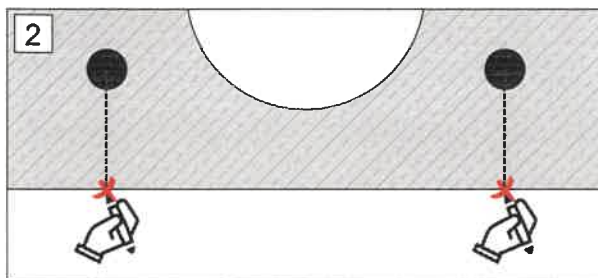
Installation instructions in pre-stressed hollow core slabs



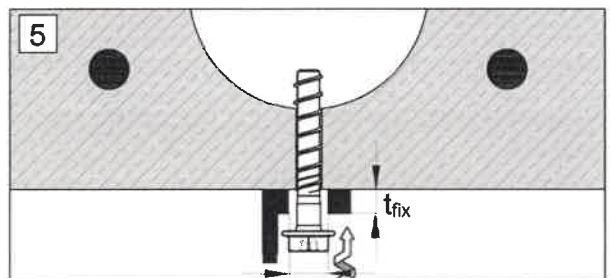
1
Locate rebars by means of suitable detector



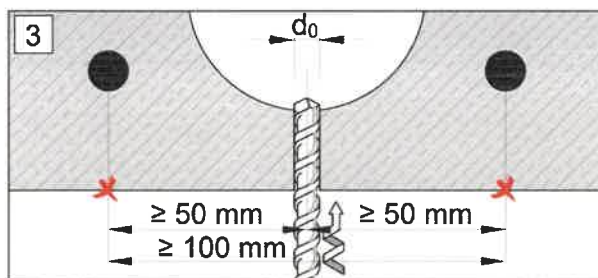
4
Clean the hole



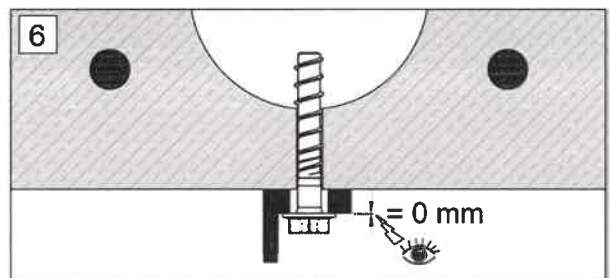
2
Mark rebar location



5
Install the screw anchor by impact screwdriver or torque wrench



3
Make a cylindrical hole



6
Ensure that the screw anchor head fully rests without any gap on the fixture and is not damaged

S-CSA+ / JC2 Plus
S-CSA A4 / JC6

Intended use

Installation instructions in pre-stressed hollow core slabs

Annex B (5/5)

Table C1: Characteristic resistances under tension loads in case of static and quasi-static loading for design according to **EN 1992-4:2018**

S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size		
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2	S-CSA A4 / JC6 6-2
Steel failure					
Characteristic resistance	$N_{Rk,s}$	[kN]	19,4	19,4	19,4
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,5	1,5	1,4
Pull-out failure					
Characteristic resistance in cracked and non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	4,0	4,0	6,0
Increasing factor for $N_{Rk,p}$	ψ_C	C25/30	1,04	1,07	1,12
		C30/37	1,07	1,14	1,22
		C35/45	1,10	1,20	1,32
		C40/50	1,13	1,26	1,41
		C45/55	1,15	1,31	1,50
		C50/60	1,18	1,36	1,58
Partial safety factor	γ_2	[-]	1,0	1,0	1,0
	$\gamma_{Mp}^{1)}$	[-]	1,5 ²⁾	1,5 ²⁾	1,5 ²⁾
Concrete cone and splitting failure					
Effective anchorage depth	h_{ef}	[mm]	27,6	31,9	31,9
Factor for cracked concrete	k_{cr}	[-]	7,7		
Factor for non-cracked concrete	k_{ucr}	[-]	11,0		
Spacing	$s_{cr,N}$	[mm]	83	96	96
Edge distance	$c_{cr,N}$	[mm]	41,5	48	48
Spacing (splitting)	$s_{cr,sp}$	[mm]	110	96	120
Edge distance (splitting)	$c_{cr,sp}$	[mm]	55	48	60
Partial safety factor	$\gamma_{Msp}^{1)}$	[-]	1,5 ²⁾	1,5 ²⁾	1,5 ²⁾

¹⁾ In absence of other national regulations

²⁾ The installation safety factor of $\gamma_2 = 1,0$ is included

S-CSA+ / JC2 Plus S-CSA A4 / JC6		Annex C (1/5)
Performance Characteristic resistance under tension loads		

Table C2: Characteristic resistances under shear loads in case of static and quasi-static loading for design according to **EN 1992-4:2018**

S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size		
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2	S-CSA A4 / JC6 6-2
Steel failure without lever arm					
Characteristic resistance	$V_{Rk,s}$	[kN]	9,4	9,4	13,4
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,25	1,5
Factor for considering ductility	K_7	[-]	0,8		
Steel failure with lever arm					
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	16		
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,25	1,5
Concrete pryout failure					
k-factor	k_8	[-]	2,6	2,6	2,0
Partial safety factor	$\gamma_{Mc}^{1)}$	[-]	1,5	1,5	1,5
Concrete edge failure					
Effective length of anchor under shear load	l_f	[mm]	27,6	31,9	31,9
Outside diameter of anchor	d_{nom}	[mm]	6		
Partial safety factor	$\gamma_{Mc}^{1)}$	[-]	1,5		

¹⁾ In absence of other national regulations

S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex C (2/5)
Performance Characteristic resistance under shear loads	

Table C3: Characteristic resistances for pre-stressed hollow core slabs C30/37 to C50/60

S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size					
			S-CSA+ / JC2 Plus 6-1 S-CSA+ / JC2 Plus 6-2			S-CSA A4 / JC6 6-2		
Installation safety factor	$\gamma_2 = \gamma_{inst}$	[-]	1,0					
Flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 40	≥ 25	≥ 30	≥ 40
Characteristic resistance for all directions	F_{Rk}	[kN]	2,5	3,5	5,0	2,0	3,0	5,5
Characteristic bending moment	$M^{0}_{Rk,s}$	[Nm]	16					
Edge distance	$C_{cr} = C_{min}$	[mm]	100					
Spacing	$S_{cr} = S_{min}$	[mm]	100					

**S-CSA+ / JC2 Plus
S-CSA A4 / JC6**

Performance

Characteristic resistances for precast pre-stressed hollow core slabs

Annex C (3/5)

Table C4: Characteristic resistances under tension loads in case of fire exposure for design according to **EN 1992-4:2018**

S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size		
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2	S-CSA A4 / JC6 6-2
Steel failure					
Characteristic resistance $N_{Rk,s,fi}$	R30	[kN]	0,24		
	R60	[kN]	0,22		
	R90	[kN]	0,17		
	R120	[kN]	0,12		
Pull-out failure					
Characteristic resistance $N_{Rk,p,fi}$	R30	[kN]	0,75	0,88	1,5
	R60	[kN]	0,75	0,88	1,5
	R90	[kN]	0,75	0,88	1,5
	R120	[kN]	0,60	0,70	1,2
Concrete cone and splitting failure ¹⁾					
Characteristic resistance $N^0_{Rk,c,fi}$	R30	[Nm]	0,69	0,99	0,99
	R60	[Nm]	0,69	0,99	0,99
	R90	[Nm]	0,69	0,99	0,99
	R120	[Nm]	0,55	0,79	0,79
Spacing	$S_{cr,N,fi}$	[mm]	4 x h_{ef}		
	S_{min}	[mm]	100		
Edge distance	$C_{cr,N,fi}$	[mm]	2 x h_{ef}		
	$C_{cr,N,fi}$	[mm]	Fire attack from one side: $c_{min} = 2 \times h_{ef}$		
Fire attack from more than one side: $c_{min} \geq 300 \text{ mm and } \geq 2 \times h_{ef}$					

¹⁾ As a rule, splitting failure can be neglected when cracked concrete and reinforcement is assumed

Design under fire exposure is performed according to the design method given in or EN 1992-4:2018.

Under fire exposure usually cracked concrete is assumed. The design equations are given in EN 1992-4:2018 § D.4.2.

In the absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ is recommended.

S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex C (4/5)
Performance Characteristic resistances under fire exposure	

Table C5: Characteristic resistances under shear loads in case of fire exposure for design according to EN 1992-4:2018

S-CSA+ / JC2 Plus S-CSA A4 / JC6			Anchor size		
			S-CSA+ / JC2 Plus 6-1	S-CSA+ / JC2 Plus 6-2	S-CSA A4 / JC6 6-2
Steel failure without lever arm					
Characteristic resistance $V_{Rk,s,fi}$	R30	[kN]	0,24		
	R60	[kN]	0,22		
	R90	[kN]	0,17		
	R120	[kN]	0,12		
Steel failure with lever arm					
Characteristic resistance $M^0_{Rk,s,fi}$	R30	[kN]	0,20		
	R60	[kN]	0,18		
	R90	[kN]	0,14		
	R120	[kN]	0,10		
Concrete pryout failure					
k factor	k_8	[-]	2,6	2,6	2,0
Characteristic resistance $V_{Rk,cp,fi}$	R30	[Nm]	1,79	2,57	1,98
	R60	[Nm]	1,79	2,57	1,98
	R90	[Nm]	1,79	2,57	1,98
	R120	[Nm]	1,43	2,05	1,58
The initial value $V^0_{Rk,c,fi}$ of the characteristic resistance in concrete C20/25 to C50/60 under fire exposure may be determined by:					
$V^0_{Rk,c,fi} = 0,25 \times V^0_{Rk,c} \quad (\leq R90) \qquad V^0_{Rk,c,fi} = 0,20 \times V^0_{Rk,c} \quad (R120)$					
with $V^0_{Rk,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature.					

Design under fire exposure is performed according to the design method given in EN 1992-4:2018.

Under fire exposure usually cracked concrete is assumed. The design equations are given in EN 1992-4:2018 § D.4.3.

EN 1992-4:2018 covers design for fire exposure from one side. For fire attack from more than one side the edge distance must be increased to $c_{min} \geq 300$ mm and $\geq 2 \times h_{ef}$.

In the absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ is recommended.

S-CSA+ / JC2 Plus S-CSA A4 / JC6	Annex C (5/5)
Performance Characteristic resistances under fire exposure	