TECHNICAL DATA SHEET

Concrete screw EUSA4 stainless steel A4

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AREA OF USAGE

ESSVE concrete screw EUSA4 is a high-quality concrete screw designed for installation where high safety assembly is required, e.g. balcony railings, fall protection, steel plates, etc. It is CE-marked through an ETA (Option 1) and approved for use in both cracked and uncracked concrete. The ETA includes resistance to fire (R30-R120). In addition, the ETA permits adjustment of the installation with shims.

HEXAGON HEAD WITH FLANGE

DESCRIPTION

Stainless steel A4 permits installation in aggressive environments, both in industry and near oceans. According to Eurocode guidelines (EN 1992-4), stainless steel fasteners should be used in outdoor environments and permanent moist indoor environments to obtain a minimum working life of 50 years.

The outer thread at the screw tip has welded carbide inserts that easily cuts thread in soft and hard concrete (C20/25 - C50/60).

ASSEMBLY

When assembling, impact screwdrivers are recommended. The concrete screw does not require a preload torque to ensure the fixing (such as e.g. wedge anchors) The final torque applied should not be larger than what is required to mount the detail. Avoid over-tightening. Further information of the installation is included in the ETA.

A 10 mm adjustment of the installation is permitted. The embedment depth of the screw after adjustment needs to be equal to h_{nom} or deeper.

CONCRETE SCREW EUSA4-HF, HEXAGON HEAD WITH FLANGE, STAINLESS STEEL A4

ITEM NO.	OUTER DIA. (MM)	DRILL DIM. (MM)	LENGTH (MM)	FIXTURE THICKNESS (MM)	KEY WIDTH (MM)	ESSBOX	QTY/ PACK.
105810	10.5	8	70	5 / 15 / 25	13	203	25
105815	10.5	8	80	15 / 25 / 35	13	203	25
105820	12.5	10	90	5 / 15 / 35	15	204	25
105825	12.5	10	100	15 / 25 / 45	15	204	25

COUNTERSUNK HEAD

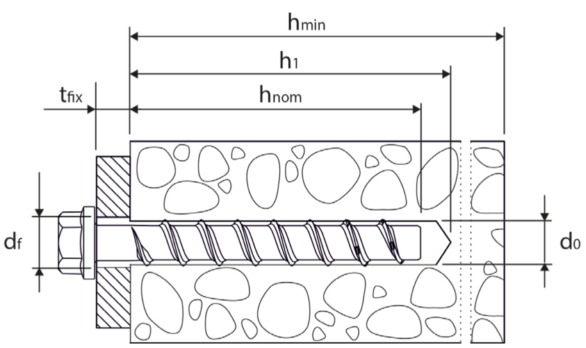
CONCRETE SCREW EUSA4-C, COUNTERSUNK HEAD, STAINLESS STEEL A4

ITEM NO.	OUTER DIA. (MM)	DRILL DIM. (MM)	LENGTH (MM)	FIXTURE THICKNESS (MM)	BIT NO.	ESSBOX	QTY/ PACK.
105830	10.5	8	80	15 / 25 / 35	TX40	203	25
105835	12.5	10	90	5 / 15 / 35	TX50	204	25

TECHNICAL DATA

Basic technical data, more details are given in the ETA-document.

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
MINIMUM CONCRETE THICKNESS	h_{min}	[mm]	100	100	120	100	130	130
DRILL BIT DIAMETER	d_0	[mm]	8			10		
DEPTH OF DRILL HOLE	h_1	[mm]	55	65	75	65	85	95
EMBEDMENT DEPTH (NOMINAL)	h_{nom}	[mm]	45	55	65	55	75	85
FIXTURE THICKNESS	t_{fix}	[mm]	LENGTH - h_{nom}					
DIAMETER OF HOLE IN FIXTURE	d_f	[mm]	12			14		
MINIMUM SPACING DISTANCE	s_{min}	[mm]	40	50		50		
MINIMUM EDGE DISTANCE	c_{min}	[mm]	40	50		50		



LOAD CAPACITY FOR CRAFTSMEN

LOAD CAPACITY - GENERAL CONDITIONS

The load capacity in given below is for a single anchor (without influence of adjacent anchors), that is subjected to a pure tension or shear load, where spacing distance *s* to another anchor, edge distance *c* and concrete thickness *h* is given in the respective tables. For anchor groups or other design conditions it is recommended to use our software ESSVE CS or contacting our technical support.

The recommended loads can be applied directly, all necessary safety factors are included in the tabulated values.

RECOMMENDED TENSION LOAD IN CRACKED AND UNCRACKED CONCRETE

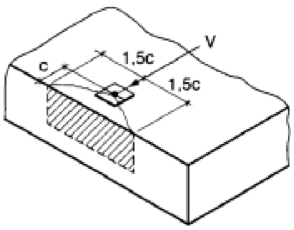
Embedment depth according to Technical data. Calculation of the load capacity is based on the distances $s = s_{cr}$, $c = c_{cr}$ and $h = h_{min}$ according to ETA-18/1138.

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
SPACING DISTANCE TO OTHER ANCHOR	s	[mm]	120	140	150	140	180	210
EDGE DISTANCE	c	[mm]	60	70	75	70	90	105
TENSION, UNCRACKED CONCRETE C20/25	N_{rec}	[kg]	360	580	775	580	970	1210
TENSION, UNCRACKED CONCRETE C50/60	N_{rec}	[kg]	560	900	1200	900	1505	1880
TENSION, CRACKED CONCRETE C20/25	N_{rec}	[kg]	240	290	580	435	810	980
TENSION, CRACKED CONCRETE C50/60	N_{rec}	[kg]	375	450	900	675	1255	1515

RECOMMENDED SHEAR LOAD IN CRACKED AND UNCRACKED CONCRETE

Embedment depth according to Technical data. Calculation of the load capacity is based on the distances $c = c_{min}$ and $h = h_{min}$ according to ETA-18/1138.

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
EDGE DISTANCE	c	[mm]	40	50	50	50	50	50
SHEAR, UNCRACKED CONCRETE C20/25	V_{rec}	[kg]	230	295	330	305	355	365
SHEAR, UNCRACKED CONCRETE C50/60	V_{rec}	[kg]	355	455	515	470	550	565
SHEAR, CRACKED CONCRETE C20/25	V_{rec}	[kg]	160	210	235	215	250	255
SHEAR, CRACKED CONCRETE C50/60	V_{rec}	[kg]	250	325	365	335	390	400



Higher load capacity in the shear-direction is obtained if the anchor can be installed futher from the edge, for example:

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
EDGE DISTANCE	c	[mm]	75	105	125	215	265	265
SHEAR, UNCRACKED CONCRETE C20/25	V_{rec}	[kg]	505	690	915	1380	1980	1980

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LOAD CAPACITY FOR ENGINEERS

LOAD CAPACITY - GENERAL CONDITIONS

The load capacity in given below is for a single anchor (without influence of adjacent anchors), that is subjected to a pure tension or shear load, where spacing distance *s* to another anchor, edge distance *c* and concrete thickness *h* is given in the respective tables. For anchor groups or other design conditions it is recommended to use our software ESSVE CS or contacting our technical support.

The difference between the Design resistance (N_{Rd}, V_{Rd}) and the Recommended loads (N_{rec}, V_{rec}) is that the recommended loads have an assumed load factor of $\gamma = 1.4$. This factor is typically determined by an engineer by using the standard EN 1990.

DESIGN RESISTANCE, TENSION IN CRACKED AND UNCRACKED CONCRETE

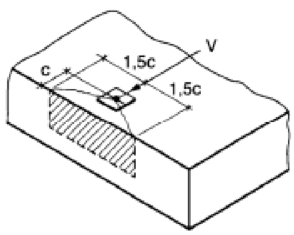
Embedment depth according to Technical data. Calculation of the load capacity is based on the distances $s = s_{cr}$, $c = c_{cr}$ and $h = h_{min}$ according to ETA-18/1138.

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
SPACING DISTANCE TO OTHER ANCHOR	s	[mm]	120	140	150	140	180	210
EDGE DISTANCE	c	[mm]	60	70	75	70	90	105
TENSION, UNCRACKED CONCRETE C20/25	N_{Rd}	[kN]	5.0	8.0	10.7	8.0	13.3	16.7
TENSION, UNCRACKED CONCRETE C50/60	N_{Rd}	[kN]	7.8	12.4	16.5	12.4	20.7	25.8
TENSION, CRACKED CONCRETE C20/25	N_{Rd}	[kN]	3.3	4.0	8.0	6.0	11.2	13.5
TENSION, CRACKED CONCRETE C50/60	N_{Rd}	[kN]	5.2	6.2	12.4	9.3	17.3	20.8

DESIGN RESISTANCE, SHEAR IN CRACKED AND UNCRACKED CONCRETE

Embedment depth according to Technical data. Calculation of the load capacity is based on the distances $c = c_{min}$ and $h = h_{min}$ according to ETA-18/1138.

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
EDGE DISTANCE	c	[mm]	40	50	50	50	50	50
SHEAR, UNCRACKED CONCRETE C20/25	V_{Rd}	[kN]	3.2	4.1	4.6	4.2	4.9	5.0
SHEAR, UNCRACKED CONCRETE C50/60	V_{Rd}	[kN]	4.9	6.3	7.1	6.5	7.6	7.8
SHEAR, CRACKED CONCRETE C20/25	V_{Rd}	[kN]	2.3	2.9	3.3	3.0	3.5	3.6
SHEAR, CRACKED CONCRETE C50/60	V_{Rd}	[kN]	3.5	4.5	5.0	4.6	5.4	5.5



Higher load capacity in the shear-direction is obtained if the anchor can be installed futher from the edge, for example:

PRODUCT DIMENSION			EUSA4 10,5(8)			EUSA4 12,5(10)		
CONCRETE THICKNESS	h	[mm]	100	100	120	100	130	130
EDGE DISTANCE	c	[mm]	75	105	125	215	265	265
SHEAR, UNCRACKED CONCRETE C20/25	V_{Rd}	[kN]	7.0	9.5	12.6	19.0	27.2	27.2

All information in this document is given in accordance with known facts and information at the time of writing. The information is subject to change without further notification. The document is updated continuously in conjunction with regular revision or in the event of major-specific technical changes.

All advice given by ESSVE should only be seen as guidence and does not mean that ESSVE can be held responsible for the advice provided. It is always the customer's own responsibility to decide on the choice of product, usage, application, etc. The supplier's advice is only a part of the customer's basis for decision making.