



Area of usage

ESSVE concrete screw EUS2 A4 is a high-quality concrete screw designed for installation where high safety assembly is required, e.g. balcony railings, fall protection, steel plates, etc. Stainless steel A4 permits installation in aggressive environments, both in industry and near oceans. It is CE-marked through an ETA and approved for use in both cracked and uncracked concrete (ETA Option 1).

Description

ESSVE Concrete screw EUS2 is available either with countersunk head or hexagon head with a flange. The concrete screw is manufactured in stainless steel A4, 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.

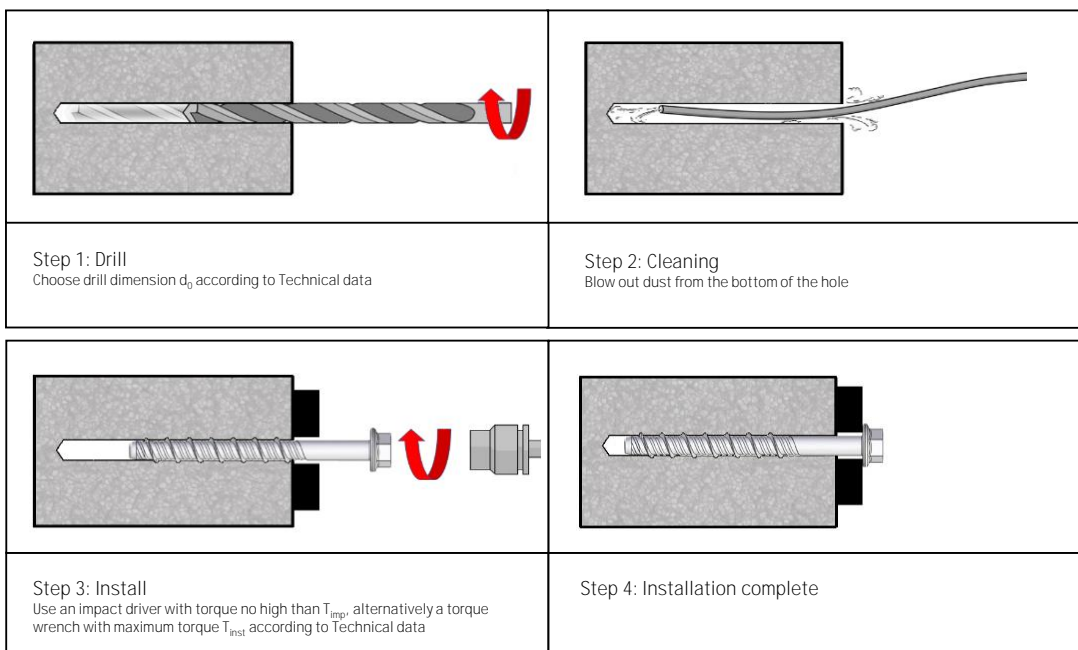
The outer thread at the screw tip has welded carbide inserts that easily cuts thread in soft and hard concrete (C20/25 - C50/60).

The ETA also contains load capacity for fire resistance (R30-R120).

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 EUS2-HF, hexagon head with flange, stainless steel A4

Item no.	Outer dia. [mm]	Drill dim. [mm]	Head dia. [mm]	Length [mm]	Fixture thickness [mm]	Key width [mm]	ESSBOX	Qty/pack.
10003021	10,5	8	16	70	25 / 15 / 5	13	203	25
10003022	10,5	8	16	80	35 / 25 / 15	13	203	25
10003023	12,5	10	20	90	35 / 15 / 5	15	204	25
10003024	12,5	10	20	100	45 / 25 / 15	15	204	25

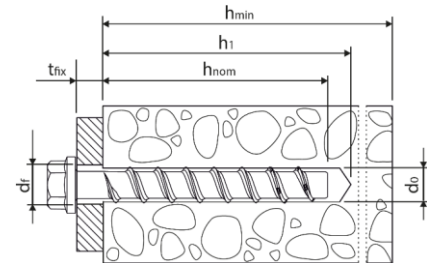
Concrete screw EUS2-C, countersunk head, stainless steel A4

Item no.	Outer dia. [mm]	Drill dim. [mm]	Head dia. [mm]	Length [mm]	Fixture thickness [mm]	Key width	ESSBOX	Qty/pack.
10003015	7,5	6	13	65	20 / 10	TX30	203	60
10003016	7,5	6	13	85	40 / 30	TX30	203	60
10003017	7,5	6	13	105	60 / 50	TX30	203	50
10003025	10,5	8	19,5	80	35 / 25 / 15	TX40	203	25
10003026	12,5	10	21,5	90	35 / 15 / 5	TX50	204	25

Technical data

Basic technical data, more details are given in the ETA-22/0440.

Product dimension	EUS2 A4 7,5(6)			
Minimum concrete thickness	h_{min}	[mm]	80	100
Drill bit diameter	d_0	[mm]	6	
Depth of drill hole	h_1	[mm]	50	60
Embedment depth (nominal)	h_{nom}	[mm]	45	55
Fixture thickness	t_{fix}	[mm]	Length - h_{nom}	
Diameter of hole in fixture	d_f	[mm]	8	
Maximum torque, torque wrench	T_{inst}	[Nm]	10	
Maximum torque, impact screw driver	T_{imp}	[Nm]	160	
Minimum spacing distance	S_{min}	[mm]	35	
Minimum edge distance	C_{min}	[mm]	35	



Product dimension	EUS2 A4 10,5(8)				EUS2 A4 12,5(10)			
Minimum concrete thickness	h_{min}	[mm]	80	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}			Length - h_{nom}		
Diameter of hole in fixture	d_f	[mm]	12			14		
Maximum torque, torque wrench	T_{inst}	[Nm]	20			40		
Maximum torque, impact screw driver	T_{imp}	[Nm]	300			450		
Minimum spacing distance	S_{min}	[mm]	35			40		
Minimum edge distance	C_{min}	[mm]	35			40		

LOAD CAPACITY FOR CRAFTSMEN

Load capacity - general conditions

The load capacity given below is valid for anchors installed according to the installation instructions.

The load capacity is valid for a single anchor without influence of other anchors or influence of edge distance (this means that the design resistance in a proper design case could be lower than what is given in these tables).

The load capacity is valid for an anchor that is subjected to a pure tension or shear load, not a combination of both.

For anchor groups or other design conditions it is recommended to use our software ESSVE CS or contacting our technical support.

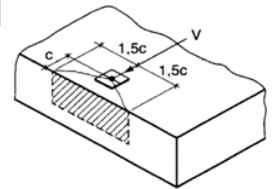
The recommended loads can be applied directly, all necessary safety factors are included in the tabulated values.

Recommended load, tension

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Tension, uncracked concrete C20/25	N_{rec}	[kg]	190	405	430	580	815	530	915	1 205
Tension, uncracked concrete C50/60	N_{rec}	[kg]	305	580	675	915	1 085	835	1 455	1 915
Tension, cracked concrete C20/25	N_{rec}	[kg]	75	145	145	260	385	290	625	820
Tension, cracked concrete C50/60	N_{rec}	[kg]	95	225	225	415	610	460	895	1 180

Recommended load, shear

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Shear, uncracked concrete C20/25	V_{rec}	[kg]	405	405	785	785	990	1 310	1 980	1 980
Shear, uncracked concrete C50/60	V_{rec}	[kg]	405	405	785	785	990	1 310	1 980	1 980
Shear, cracked concrete C20/25	V_{rec}	[kg]	405	405	635	785	990	1 055	1 795	1 980
Shear, cracked concrete C50/60	V_{rec}	[kg]	405	405	785	785	990	1 310	1 980	1 980



Recommended load, shear, at minimum edge distance (c_{min})

Calculation of the load capacity is based on a single anchor installed at edge distance $c = c_{min}$ according to ETA-22/0440. See figure.

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Edge distance	c_{min}	[mm]	35	35	35	35	35	40	40	40
Shear, uncracked concrete C20/25	V_{rec}	[kg]	165	175	175	180	190	225	240	245
Shear, uncracked concrete C50/60	V_{rec}	[kg]	260	275	275	290	300	355	385	395
Shear, cracked concrete C20/25	V_{rec}	[kg]	115	125	125	130	130	160	165	175
Shear, cracked concrete C50/60	V_{rec}	[kg]	190	195	195	205	210	255	270	275

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.

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LOAD CAPACITY FOR ENGINEERS

Load capacity - general conditions

The load capacity given below is valid for anchors installed according to the installation instructions.

The load capacity is valid for a single anchor without influence of other anchors or influence of edge distance (this means that the design resistance in a proper design case could be lower than what is given in these tables).

The load capacity is valid for an anchor that is subjected to a pure tension or shear load, not a combination of both.

For anchor groups or other design conditions it is recommended to use our software ESSVE CS or contacting our technical support.

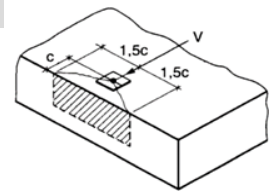
The difference between the Design resistance (N_{Rd} , V_{Rd}) and the Recommended loads (N_{rec} , V_{rec}) is that the recommended loads have an assumed load factor of $\gamma = 1.4$ based on the Ultimate Limit State (ELS) in Eurocode EN 1990.

Design resistance, tension

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Tension, uncracked concrete C20/25	N_{Rd}	[kN]	2,6	5,6	5,9	8,0	11,2	7,3	12,6	16,6
Tension, uncracked concrete C50/60	N_{Rd}	[kN]	4,2	8,0	9,3	12,6	14,9	11,5	20,0	26,3
Tension, cracked concrete C20/25	N_{Rd}	[kN]	1,0	2,0	2,0	3,6	5,3	4,0	8,6	11,3
Tension, cracked concrete C50/60	N_{Rd}	[kN]	1,3	3,1	3,1	5,7	8,4	6,3	12,3	16,2

Design resistance, shear

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Shear, uncracked concrete C20/25	V_{Rd}	[kN]	5,6	5,6	10,8	10,8	13,6	18,0	27,2	27,2
Shear, uncracked concrete C50/60	V_{Rd}	[kN]	5,6	5,6	10,8	10,8	13,6	18,0	27,2	27,2
Shear, cracked concrete C20/25	V_{Rd}	[kN]	5,6	5,6	8,7	10,8	13,6	14,5	24,7	27,2
Shear, cracked concrete C50/60	V_{Rd}	[kN]	5,6	5,6	10,8	10,8	13,6	18,0	27,2	27,2



Design resistance, shear, at minimum edge distance (c_{min})

Calculation of the load capacity is based on a single anchor installed at edge distance $c = c_{min}$ according to ETA-22/0440. See figure.

Product dimension			EUS2 A4 7,5(6)		EUS2 A4 10,5(8)			EUS2 A4 12,5(10)		
Concrete thickness	h_{min}	[mm]	80	100	80	100	120	100	130	130
Embedment depth (nominal)	h_{nom}	[mm]	45	55	45	55	65	55	75	85
Embedment depth (effective)	h_{ef}	[mm]	34	42	32	41	49	40	57	65
Edge distance	c_{min}	[mm]	35	35	35	35	35	40	40	40
Shear, uncracked concrete C20/25	V_{Rd}	[kN]	2,3	2,4	2,4	2,5	2,6	3,1	3,3	3,4
Shear, uncracked concrete C50/60	V_{Rd}	[kN]	3,6	3,8	3,8	4,0	4,1	4,9	5,3	5,4
Shear, cracked concrete C20/25	V_{Rd}	[kN]	1,6	1,7	1,7	1,8	1,8	2,2	2,3	2,4
Shear, cracked concrete C50/60	V_{Rd}	[kN]	2,6	2,7	2,7	2,8	2,9	3,5	3,7	3,8

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