

# Technical Data Sheet

## Concrete screw EUS, carbon steel with surface treatment

**ESSVE**

**GET IT DONE**

### Area of usage

ESSVE concrete screw EUS 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.

### Description

The screw has a strong induction hardened tip that easily cuts thread in soft and hard concrete (C20/25 - C50/60). The body of the screw is more ductile to accommodate for installations that are slightly non-perpendicular. The Hi-Low thread provides very good load values and facilitates the assembly.

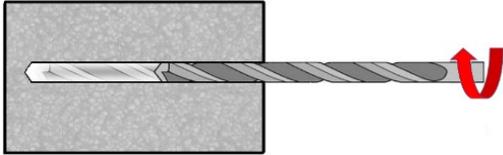
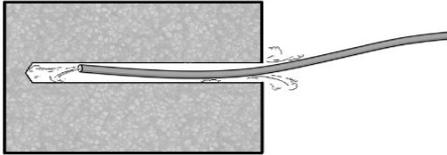
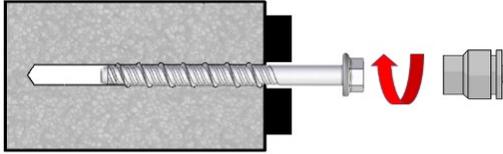
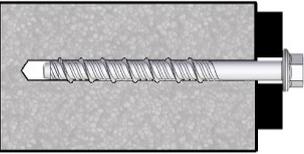
The Ruspert surface treatment gives a minimum of 15 years lifetime in corrosivity category C3. Which corresponds to installation in outdoor areas with moderate amount of air pollutants, such as urban areas and light industrialized areas according to ISO 9223. According to Eurocode-guidelines (EN 1992-4) stainless steel concrete screws should be used in outdoor and permanently damp indoor environments to obtain a minimum 50 year lifetime.

Electroplated zinc surface treatment is suitable for dry indoor environment to obtain a minimum 50 year lifetime.

### 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.



	
<b>Step 1: Drill</b> Choose drill dimension $d_0$ according to to Technical data	<b>Step 2: Clean</b> Clean with a blow-out pump all the way to the bottom of the drill
	
<b>Step 3: Install</b> Use impact screwdriver with maximum torque $T_{imp}$ , alternatively a torque wrench with maximum torque $T_{max}$ according to Technical data	<b>Step 4: Finished</b>

## Technical Data Sheet

Concrete screw EUS, carbon steel with surface treatment

**ESSVE**  
GET IT DONE

### Concrete screw EUS-HF, hexagon head with flange, Ruspert surface treatment

Item no.	Outer dia. [mm]	Drill dim. [mm]	Head dia. [mm]	Length [mm]	Fixture thickness [mm]	Key width [mm]	ESSBOX	Qty/pack.
105701	7,5	6	14,2	60	5	10	204	100
105703	7,5	6	14,2	80	25	10	304	100
105705	7,5	6	14,2	100	45	10	304	100
105707	10,5	8	18	75	15	13	304	50
105709	10,5	8	18	90	30	13	204	25
105711	10,5	8	18	110	50	13	204	25
105713	12,5	10	22	85	15	15	204	25
105715	12,5	10	22	100	30	15	204	25
105717	12,5	10	22	120	50	15	304	25
105719	16,5	14	31	115	5	18	204	10

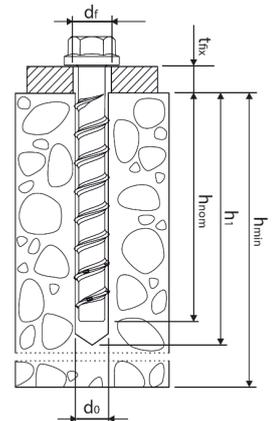
### Concrete screw EUS-HF, hexagon head with flange, electroplated zinc

Item no.	Outer dia. [mm]	Drill dim. [mm]	Head dia. [mm]	Length [mm]	Fixture thickness [mm]	Key width [mm]	ESSBOX	Qty/pack.
105901	10,5	8	18	75	15	13	304	50
105903	10,5	8	18	90	30	13	203	25
105905	10,5	8	18	110	50	13	204	25
105907	10,5	8	18	130	70	13	204	25
105909	12,5	10	22	85	15	15	204	25
105911	12,5	10	22	100	30	15	204	25
105913	12,5	10	22	120	50	15	304	25
105915	16,5	14	31	115	5	18	204	10

## Technical data

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

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Minimum concrete thickness	$h_{min}$	[mm]	100	100	105	175
Drill bit diameter	$d_0$	[mm]	6	8	10	14
Depth of drill hole	$h_1$	[mm]	65	70	85	130
Embedment depth (nominal)	$h_{nom}$	[mm]	55	60	70	110
Fixture thickness	$t_{fix}$	[mm]	Screw length - $h_{nom}$			
Diameter of hole in fixture	$d_f$	[mm]	9	12	14	18
Maximum torque, torque wrench	$T_{inst}$	[Nm]	20	50	80	120
Maximum torque, impact screw driver	$T_{imp}$	[Nm]	250			
Minimum spacing distance	$s_{min}$	[mm]	45	50	60	100
Minimum edge distance	$c_{min}$	[mm]	45	50	60	100



### 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 that you contact 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

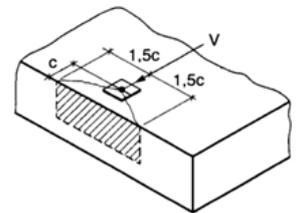
Embedment depth according to Technical data.

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Spacing distance to other anchor	$s$	[mm]	126	135	177	292
Edge distance	$c$	[mm]	63	67	88	146
Tension, uncracked concrete C20/25	$N_{rec}$	[kg]	360	485	645	1395
Tension, uncracked concrete C50/60	$N_{rec}$	[kg]	560	750	880	2160
Tension, cracked concrete C20/25	$N_{rec}$	[kg]	240	360	460	995
Tension, cracked concrete C50/60	$N_{rec}$	[kg]	375	560	525	1540

#### Recommended shear load in cracked and uncracked concrete

Embedment depth according to Technical data.

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Edge distance	$c$	[mm]	45	50	60	100
Shear, uncracked concrete C20/25	$V_{rec}$	[kg]	270	325	440	1005
Shear, uncracked concrete C50/60	$V_{rec}$	[kg]	420	505	685	1 555
Shear, cracked concrete C20/25	$V_{rec}$	[kg]	190	230	310	710
Shear, cracked concrete C50/60	$V_{rec}$	[kg]	295	355	485	1 100



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

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Edge distance	$c$	[mm]	70	110	235	300
Shear, uncracked concrete C20/25	$V_{rec}$	[kg]	455	740	1570	2760

### 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

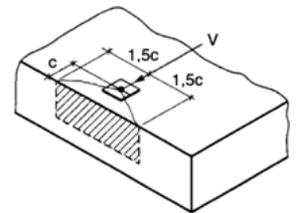
Embedment depth according to Technical data. Calculation of the load capacity is based on the distances  $s = s_{cr}$ ,  $c = c_{cr}$  och  $h = h_{min}$  according to ETA-18/1064.

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Spacing distance to other anchor	$s$	[mm]	126	135	177	292
Edge distance	$c$	[mm]	63	67	88	146
Tension, uncracked concrete C20/25	$N_{Rd}$	[kN]	5.0	6.7	8.9	19.2
Tension, uncracked concrete C50/60	$N_{Rd}$	[kN]	7.8	10.3	12.1	29.7
Tension, cracked concrete C20/25	$N_{Rd}$	[kN]	3.3	5.0	6.4	13.7
Tension, cracked concrete C50/60	$N_{Rd}$	[kN]	5.2	7.8	7.3	21.2

#### Design resistance, shear in cracked and uncracked concrete

Embedment depth according to Technical data. Calculation of the load capacity is based on the distances  $c = c_{min}$  och  $h = h_{min}$  according to ETA-18/1064.

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Edge distance	$c$	[mm]	45	50	60	100
Shear, uncracked concrete C20/25	$V_{Rd}$	[kN]	3.7	4.5	6.1	13.8
Shear, uncracked concrete C50/60	$V_{Rd}$	[kN]	5.8	6.9	9.4	21.4
Shear, cracked concrete C20/25	$V_{Rd}$	[kN]	2.6	3.2	4.3	9.8
Shear, cracked concrete C50/60	$V_{Rd}$	[kN]	4.1	4.9	6.7	15.1



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

Product dimension			EUS 7,5(6)	EUS 10,5(8)	EUS 12,5(10)	EUS 16,5(14)
Concrete thickness	$h$	[mm]	100	100	105	175
Edge distance	$c$	[mm]	70	110	235	300
Shear, uncracked concrete C20/25	$V_{Rd}$	[kN]	6.3	10.2	21.6	37.9

*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 guidance 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.*