



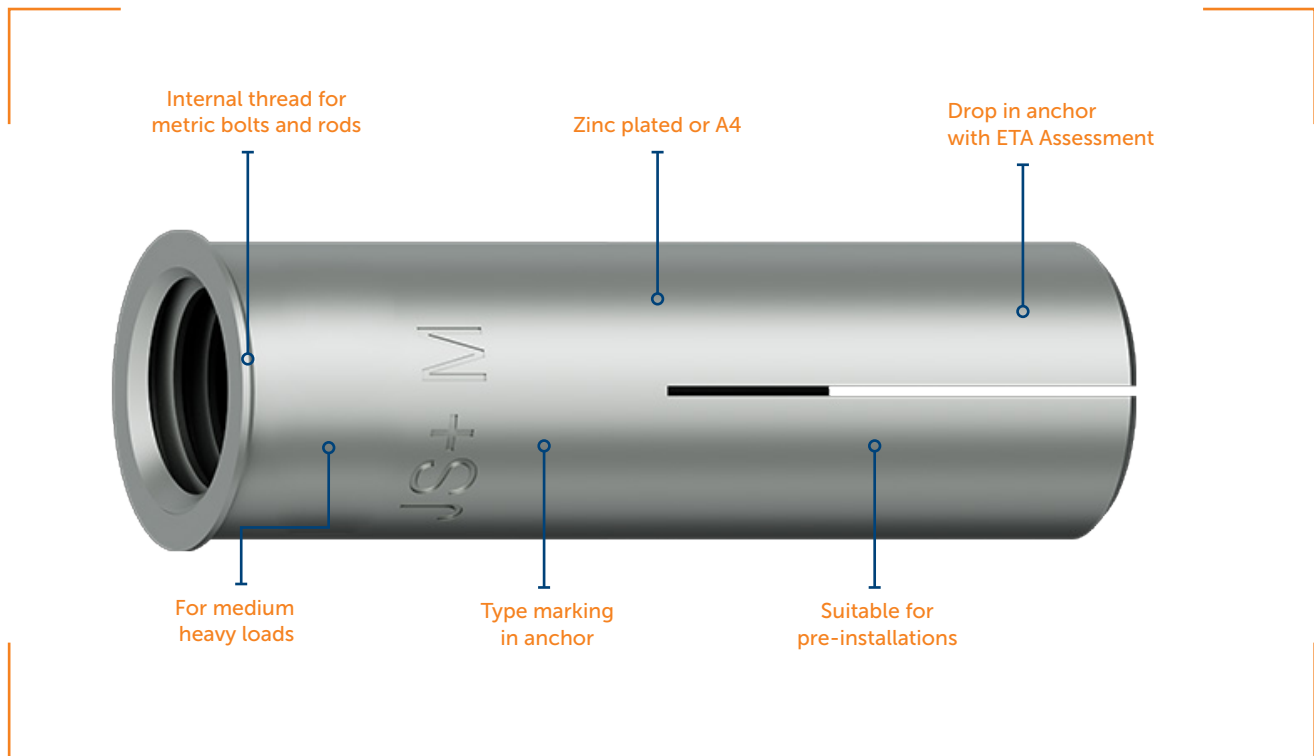
DROP IN ANCHORS

PRODUCT DATA SHEET



ETA-approved drop in anchors ideal for suspension systems

Internal thread for metric bolts and rods



DROP IN ANCHORS J+, JE+, JS+, JSR+

Description

- For multiple use for non-structural applications in cracked and uncracked concrete, hollow core slab
- Deformation controlled expansion anchor
- Drop in anchors for pre-installation with an installation tool
- Internal thread for metric bolts and rods
- Suitable bolt length is 1-1,5 x the nominal size of the anchor + fixture thickness.
- ZP for dry indoor and temporary outdoor use.
- Fixing screws or anchor rods
 - Steel grades categories 4.6, 5.6, 5.8 or 8.8 acc. EN ISO 898-1

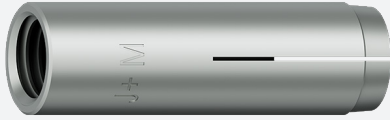
Description

- Drop in anchors for pre-installations with an installation tool
- Internal thread for metric bolts and rods
- Suitable bolt length is 1-1,5 x the nominal size of the anchor + fixture thickness
- Suitable for medium heavy loads
- Displacement controlled expansion anchors
- Fixing screws or anchor rods
 - Steel grade categories 4.6, 5.6, 5.8 or 8.8 acc. EN ISO 898-1
 - Stainless steel A4-50, A4-70, A4-80



J+ carbon steel

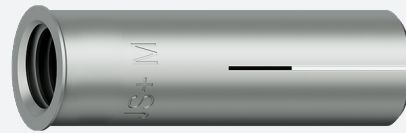
Zinc electroplated acc. EN ISO 4042, $t \geq 5 \mu\text{m}$



Dry indoor conditions, indoor with temporary condensation.

JS+ carbon steel

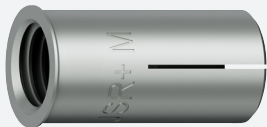
Zinc electroplated acc. EN ISO 4042, $t \geq 5 \mu\text{m}$



Dry indoor conditions, indoor with temporary condensation.

JSR+ carbon steel

Zinc electroplated



Dry indoor conditions, indoor with temporary condensation.

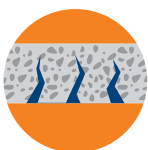
JE+ A4 stainless steel



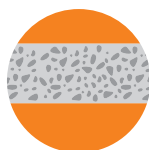
Dry internal conditions, external atmospheric exposure or to permanent internal damp conditions.

Base materials

Approved for



Cracked concrete



Uncracked concrete



Hollow core slab

Also suitable for

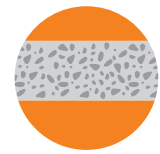


Natural stone

ASSESSMENTS / CERTIFICATIONS / APPLICATIONS

Description of document		Authority/ Laboratory	ID	Additional info
European Technical Assessment		Instituto de ciencias De la construcción Eduardo torroja	ETA-22/0913	EAD 330232-00-0601 "Mechanical Fasteners for use in concrete"
European Technical Assessment		Instituto de ciencias De la construcción Eduardo torroja	ETA-22/0912	EAD 330747-00-0601, "Fasteners for use in concrete for redundant non-structural systems"
Fire resistance		Instituto de ciencias De la construcción Eduardo torroja	ETA-22/0912	EAD 330747-00-0601
Sormat Trustfix anchor calculation software		Sormat Oy / S&P Software Consulting		TrustFIX anchor calculation
CAD-blocks for AutoCAD		EJOT Sormat Oy		Blocks installation instructions for AutoCAD
Drop in anchor components for TEKLA Structures		EJOT Sormat Oy		Tekla structures components + instructions video
YouTube installation videos		EJOT Sormat Oy		Drop in anchor installation video

STATIC AND QUASI-STATIC LOADS FOR REDUNDANT NON-STRUCTURAL SYSTEMS



The data of these tables is based on: ETA-22/0912

- J+ / JS+ / JSR+ / JE+ / JSE+
- Anchors for redundant non-structural applications
- Concrete C20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- Installation has been done correctly (see page 8)
- Edge- and spacing distance's (see page 11)
- Respect of minimum base material thickness (see page 11)
- Load values are based on screw or rod with steel grade ≥ 4.6
- Zinc plated anchors: J+, JS+, JSR+
- A4 Stainless steel: JE+, JSE+

Characteristic resistance

Anchor size		M6	M8	M10	M12	M16	M20		
Assessment		ETA-22/0912							
Effective anchorage depth h_{ef}	J+ / JS+ / JE+ / JSE+	h_{ef} [mm]	25	30	40	50	65	80	
	JSR+	h_{ef} [mm]	-	25	25	25	-	-	
Characteristic resistance in any direction F_{Rk}	J+ / JS+	F_{Rk} [kN]	2,00	3,00	5,00	7,50	12,0	20,0	
	JSR+	F_{Rk} [kN]	-	2,50	4,00	4,00	-	-	
	JE+ / JSE+	F_{Rk} [kN]	2,50	3,50	3,50	6,50	12,5	16,5	

Design resistance

Anchor size		M6	M8	M10	M12	M16	M20		
Assessment		ETA-22/0912							
Effective anchorage depth h_{ef}	J+ / JS+ / JE+ / JSE+	h_{ef} [mm]	25	30	40	50	65	80	
	JSR+	h_{ef} [mm]	-	25	25	25	-	-	
Design resistance in any direction F_{Rd}	J+ / JS+	F_{Rd} [kN]	1,11	1,67	2,38	3,57	5,7	9,5	
	JSR+	F_{Rd} [kN]	-	1,39	2,22	2,22	-	-	
	JE+ / JSE+	F_{Rd} [kN]	1,19	1,67	1,67	3,10	5,95	7,86	

Recommended load

Anchor size		M6	M8	M10	M12	M16	M20		
Assessment		ETA-22/0912							
Effective anchorage depth h_{ef}	J+ / JS+ / JE+ / JSE+	h_{ef} [mm]	25	30	40	50	65	80	
	JSR+	h_{ef} [mm]	-	25	25	25	-	-	
Recommended load in any direction F_{rec}	J+ / JS+	F_{rec} [kN]	0,79	1,19	1,70	2,55	4,08	6,8	
	JSR+	F_{rec} [kN]	-	0,99	1,59	1,59	-	-	
	JE+ / JSE+	F_{rec} [kN]	0,85	1,19	1,19	2,21	4,3	5,6	

The partial safety factor for action is $\gamma = 1.4$.

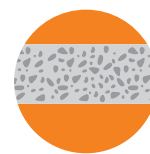
Requirements for multiple anchoring

The definition of member states are included in an annex to the ETAG 001 Part 6, Annex 1

Minimum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action N_{Sd} per fixing point
3	1	2 kN
4	1	3 kN

The value N_{Sd} might be increased if in the design it is shown that the requirements on the strength and stiffness of the fixture in the serviceability and ultimate states after the failure of one anchor are fulfilled.

STATIC AND QUASI-STATIC LOADS FOR USE IN UNCRACKED CONCRETE



The data of these tables is based on: ETA-22/0913

- J+ / JS+
- Anchors for use in uncracked concrete
- Concrete C20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- Installation has been done correctly (p. 8)
- Edge- and spacing distance's acc. page 11.
- Respect of minimum base material thickness (p. 11)
- Load values are based on screw or rod with steel grade ≥ 4.6
- Zinc plated anchors

Characteristic resistance

Anchor size			M6	M8	M10	M12	M16	M20
Assessment			ETA-22/0913					
Effective anchorage depth	h_{ef}	[mm]	25	30	40	50	65	80
Tension	N_{Rk}	[kN]	6,15	8,08	12,4	17,4	25,8	35,2
Shear	V_{Rk}	[kN]	4,00	7,30	11,6	16,8	31,4	49,0

Design resistance

Anchor size			M6	M8	M10	M12	M16	M20
Effective anchorage depth	h_{ef}	[mm]	25	30	40	50	65	80
Tension	N_{Rd}	[kN]	3,42	4,49	5,93	8,28	12,3	16,8
Shear	V_{Rd}	[kN]	2,40	4,37	6,95	10,1	18,8	29,3

Recommended load

Anchor size			M6	M8	M10	M12	M16	M20
Effective anchorage depth	h_{ef}	[mm]	25	30	40	50	65	80
Tension	N_{rec}	[kN]	2,44	3,21	4,23	5,92	8,77	12,0
Shear	V_{rec}	[kN]	1,71	3,12	4,96	7,19	13,4	21,0

The partial safety factor for action is $\gamma = 1.4$.

BASIC LOADING DATA FOR PRECAST PRE-STRESSED HOLLOW CORE SLABS



The data of these tables is based on ETA-22/0912

- Precast prestressed hollow core concrete slabs C30/37 to C50/60:
- Installation has been done correctly (page 8).
- Edge distances and spacings acc. page 11.
- Respect of minimum base material thickness (p. 11)
- Load values are based on screw or rod with steel grade ≥ 4.6
- Zinc plated anchors (JSR+)

Characteristic resistance

Anchor size			M8x25	M10x25
Nominal anchorage depth	h_{nom}	[mm]	25	25
Flange thickness	d_b	[mm]	35	35
Load for all directions	F_{Rk}	[kN]	5,50	6,00

Design resistance

Anchor size			M8x25	M10x25
Nominal anchorage depth	h_{nom}	[mm]	25	25
Flange thickness	d_b	[mm]	35	35
Load for all directions	F_{Rd}	[kN]	3,06	2,86

Recommended load

Anchor size			M8x25	M10x25
Nominal anchorage depth	h_{nom}	[mm]	25	25
Flange thickness	d_b	[mm]	35	35
Load for all directions	F_{rec}	[kN]	2,18	2,04

The partial safety factor for action is $\gamma = 1.4$.

Requirements for multiple anchoring

The definition of multiple use according to the Member States is given in annex of the ETAG 001 Part 6.

Minimum number of fixing points	Minimum number of anchors per fixing point	Maximum design load of action N_{Sd}
3	1	2 kN
4	1	3 kN

The value N_{Sd} might be increased if in the design it is shown that the requirements on the strength and stiffness of the fixture in the serviceability and ultimate states after the failure of one anchor are fulfilled.

FIRE RESISTANCE UNDER FIRE EXPOSURE IN ANY LOAD DIRECTION, ZINC PLATED ANCHORS



The data of these tables is based on: ETA-22/0912

- Anchors for redundant non-structural applications
- Concrete C20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- Installation has been done correctly (see page 8)
- Edge- and spacing distances (see page 11)
- Respect of minimum base material thickness (see page 11)
- Load values are based on screw or rod with steel grade ≥ 4.6

ZINC PLATED ANCHORS

Characteristic resistance

Anchor size		M6	M8x25	M8	M10x25	M10	M12x25	M16	M20
Assessment		ETA-22/0912							
Effective anchorage depth	h_{ef} [mm]	25	25	30	25	40	50	65	80
R30 (\geq Steel 4.6)	$F_{Rk,fi}$ [kN]	0,20	0,31	0,37	0,50	0,87	0,50	3,00	4,90
R120 (\geq Steel 4.6)	$F_{Rk,fi}$ [kN]	0,10	0,18	0,18	0,40	0,46	0,40	1,57	2,45

Design resistances

Anchor size		M6	M8x25	M8	M10x25	M10	M12x25	M16	M20
Assessment		ETA-22/0912							
Effective anchorage depth	h_{ef} [mm]	25	25	30	25	40	50	65	80
R30 (\geq Steel 4.6)	$F_{Rd,fi}$ [kN]	0,20	0,26	0,37	0,42	0,87	0,42	2,14	4,90
R120 (\geq Steel 4.6)	$F_{Rd,fi}$ [kN]	0,10	0,18	0,18	0,33	0,46	0,33	1,57	2,45

Recommended load

Anchor size		M6	M8x25	M8	M10x25	M10	M12x25	M16	M20
Assessment		ETA-22/0912							
Effective anchorage depth	h_{ef} [mm]	25	25	30	25	40	50	65	80
R30 (\geq Steel 4.6)	$F_{rec,fi}$ [kN]	0,14	0,18	0,26	0,30	0,62	0,30	1,53	3,50
R120 (\geq Steel 4.6)	$F_{rec,fi}$ [kN]	0,07	0,13	0,13	0,24	0,33	0,24	1,12	1,75

Spacing and edge distance under fire exposure

Anchor spacing	$S_{cr,fi}$ [mm]	$4 \times h_{ef}$
Edge distance	$C_{cr,fi}$ [mm]	$2 \times h_{ef}$

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

FIRE RESISTANCE UNDER FIRE EXPOSURE IN ANY LOAD DIRECTION, STAINLESS STEEL ANCHORS



The data of these tables is based on: ETA-22/0912

- Anchors for redundant non-structural applications
- Concrete C20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- Installation has been done correctly (see page 8)
- Edge- and spacing distances (see page 11)
- Respect of minimum base material thickness (see page 11)
- Load values are based on screw or rod with steel grade ≥ 4.6

STAINLESS STEEL ANCHORS

Characteristic resistance

Anchor size			M6	M8	M10	M12	M16	M20	
Assessment			ETA-22/0912						
Effective anchorage depth	h_{ef}	[mm]	25	30	40	25	65	80	
R30 (Steel $\geq 500\text{MPa}$)	$F_{Rk, fi}$	[kN]	0,20	0,53	0,70	1,63	3,13	4,13	
R120 (Steel $\geq 500\text{MPa}$)	$F_{Rk, fi}$	[kN]	0,10	0,37	0,56	1,30	2,50	3,30	

Design resistances

Anchor size			M6	M8	M10	M12	M16	M20	
Assessment			ETA-22/0912						
Effective anchorage depth	h_{ef}	[mm]	25	30	40	25	65	80	
R30 (Steel $\geq 500\text{MPa}$)	$F_{Rd, fi}$	[kN]	0,20	0,38	0,50	1,16	2,23	2,95	
R120 (Steel $\geq 500\text{MPa}$)	$F_{Rd, fi}$	[kN]	0,10	0,37	0,56	0,93	1,79	2,36	

Recommended load

Anchor size			M6	M8	M10	M12	M16	M20	
Assessment			ETA-22/0912						
Effective anchorage depth	h_{ef}	[mm]	25	30	40	25	65	80	
R30 (Steel $\geq 500\text{MPa}$)	$F_{rec, fi}$	[kN]	0,14	0,27	0,36	0,83	1,59	2,11	
R120 (Steel $\geq 500\text{MPa}$)	$F_{rec, fi}$	[kN]	0,07	0,26	0,40	0,66	1,28	1,68	

Spacing and edge distance under fire exposure

Anchor spacing	$S_{cr, fi}$	[mm]	4 x h_{ef}				
Edge distance	$C_{cr, fi}$	[mm]	2 x 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.

MATERIALS AND DIMENSIONS

Material quality and coating

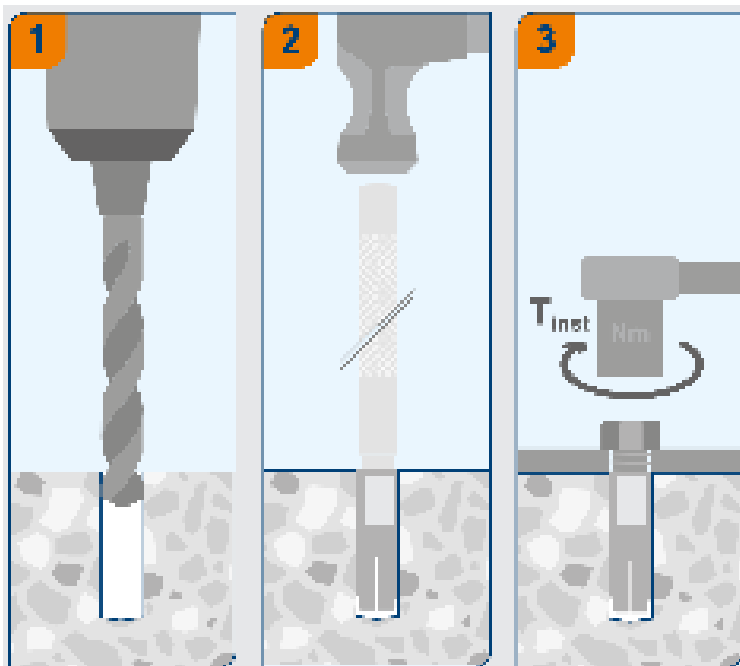
Anchor

Material	Cold formed steel or Stainless steel
Coating	Zinc electroplated min. 5 µm

SETTING INSTRUCTIONS

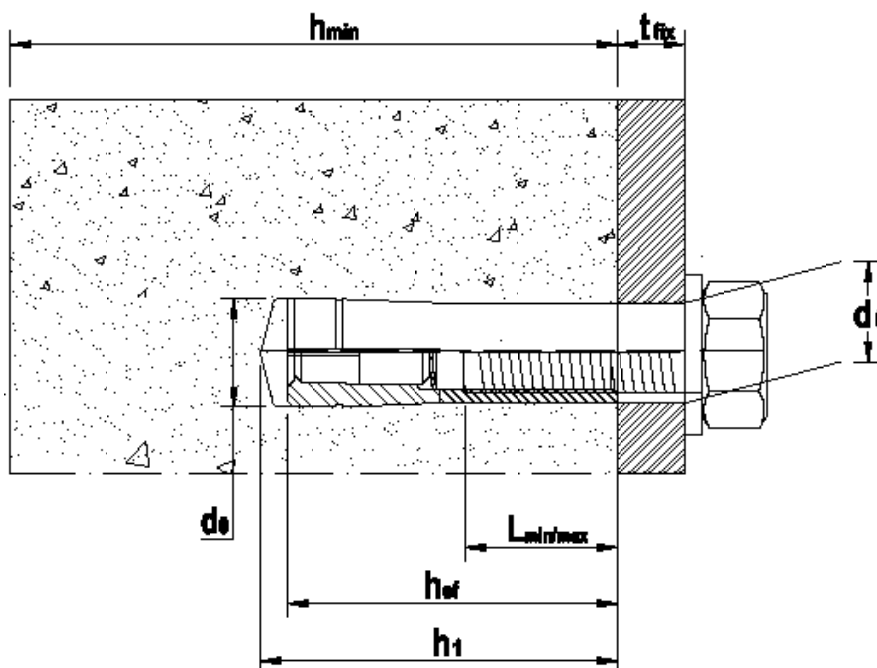
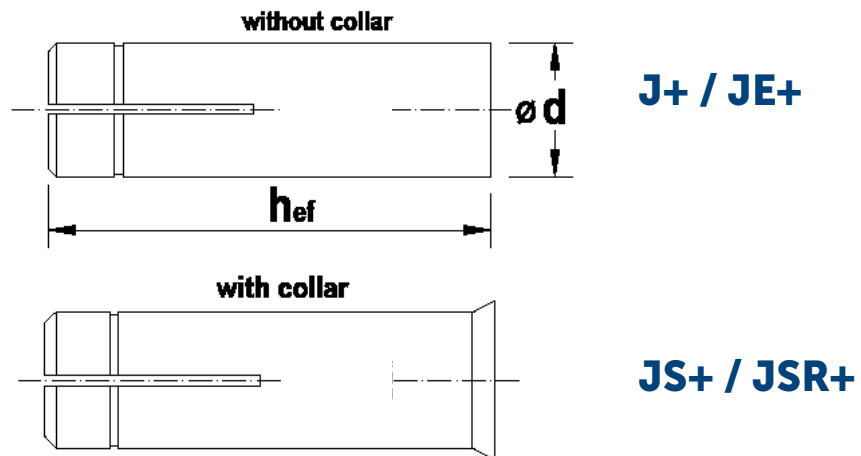
Installation equipment

Specification	M6	M8	M10	M12	M16
Rotary hammer	Hole drilling by rotary plus hammer mode.				
Drill bit	SDS+ 2-CUT or 4-CUT				
	Ø 8 mm	Ø 10 mm	Ø 12 mm	Ø 15 mm	Ø 20 mm
Additional tools	Air pump/compressor, setting tool, hammer, torque wrench				



Installation data and anchor dimensions

Parameters and anchors sizes			M6 x 25	M8 x 25	M8 x 30	M10 x 25	M10 x 40	M12 x 50	M16 x 65	M20 x 80
Anchor outer diameter	d	[mm]	8	10	10	12	12	15	20	25
Drill hole diameter	d ₀	[mm]	8	10	10	12	12	12	20	25
Anchorage depth	h _{ef} / h _{nom}	[mm]	25	25	30	25	40	50	65	80
Depth of drilled hole to deepest point	h ₁ ≥	[mm]	27	28	33	28	43	54	70	86
Diameter of clearance hole in the fixture	d _f ≤	[mm]	7	9	9	12	12	14	18	22
Max installation torque moment	T _{inst}	[Nm]	4	11	11	17	17	38	60	100
Maximum screwing depth J+/JE+/JS+	L _{max}	[mm]	10	12	13	13	17	21	27	34
Minimum screwing depth JSR+	L _{min}	[mm]	6	7	8	8	10	12	16	20



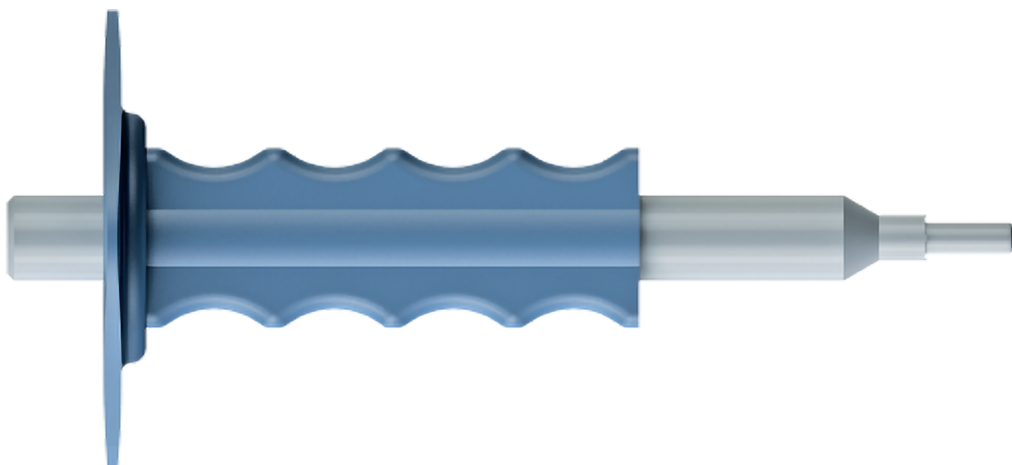
INSTALLATION

Setting tools 2.0

Anchor		M6	M8	M10	M12	M16	M20
Drop in anchors J+ / JS+ / JE+							
D1	[mm]	8,0	10,0	12,0	15,0	20,0	25,0
D2	[mm]	4,9	6,4	8,2	10,0	13,5	17,0
Ls	[mm]	15,0	18,0	21,0	30,0	36,0	48,0
Drop in anchor JSR+							
D1	[mm]	-	10,0	12,0	15,0	-	-
D2	[mm]	-	6,4	8,2	10,0	-	-
Ls	[mm]	-	15,0	16,0	10,4	-	-



Setting tool 2.0 manual with hand protector

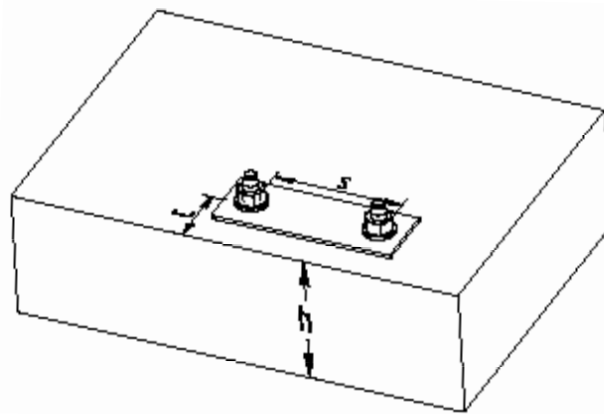


Setting tool 2.0 manual no-grip



Minimum thickness of concrete member, spacing and edge distance

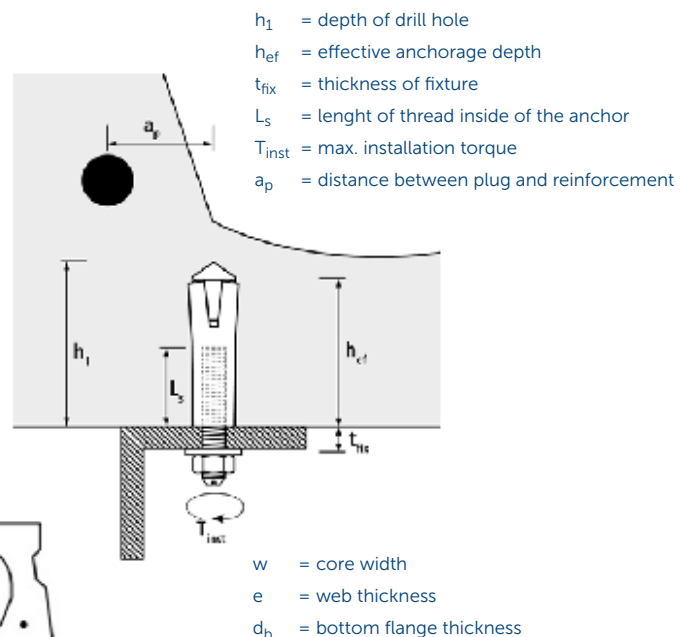
Cracked and uncracked concrete			M6 x 25	M8 x 25	M8 x 30	M10 x 25	M10 x 40	M12 x 50	M16 x 65	M20 x 80	
Assessment			ETA-22/0912 / ETA-22/0913								
Anchorage depth	$h_{ef} = h_{nom}$	[mm]	25	25	30	25	40	50	65	80	
Minimum thickness of base material	h_{min}	[mm]	100	100	100	100	100	100	130	160	
Minimum spacing	s_{min}	[mm]	60	75	60	75	100	100	130	160	
Minimum edge distance	c_{min}	[mm]	105	60	105	60	140	130	230	280	
Characteristic spacing	s_{cr}	[mm]	75	120	90	120	120	150	195	240	
Characteristic edge distance	c_{cr}	[mm]	40	110	60	60	60	75	100	120	



Minimum thickness, spacing and edge distance of precast prestressed hollow core slabs : JSR+

Precast prestressed hollow core slabs flange thickness ≥ 35 mm			M8 x 25	M10 x 25
Assessment			ETA-22/0912	
Anchorage depth	$h_{ef} = h_{nom}$	[mm]	25	25
Minimum thickness of base material	h_{min}	[mm]	200	200
Distance between plug position and prestressing steel	$a_p \geq$	[mm]	50	50
Minimum spacing	s_{min}	[mm]	200	200
Minimum edge distance	c_{min}	[mm]	150	150
Characteristic spacing	s_{cr}	[mm]	200	200
Characteristic edge distance	c_{cr}	[mm]	150	150

JSR+ -intended use in precast prestressed hollow core slabs ($w/e \leq 4,2$) with flange thickness ≥ 35 mm and concrete C45/55 to C50/60



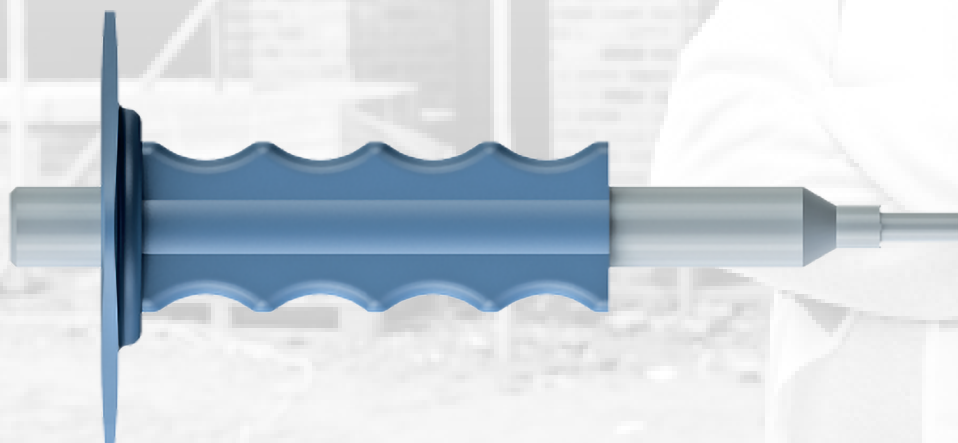
Delivery program



Size	Length	Zinc	A4	Zinc	Zinc
M6 x 25	25	• ■	■	• ■	-
M8 x 25	25	-	-	-	■
M8 x 30	30	• ■	■	• ■	-
M10 X 25	25	-	-	-	■
M10 x 40	40	• ■	■	• ■	-
M12 x 50	50	• ■	■	• ■	-
M16 x 65	65	• ■	■	• ■	-
M20 x 80	80	• ■	■	• ■	-

• ETA-22/0913 (Uncracked concrete) ■ ETA-22/0912 (For redundant non-structural systems)

Setting tool 2.0 manual with hand protector



Setting tool 2.0 manual no-grip

