reid™

CHARTERED VERIFIED ENGINEER

June | 2024 NZ

Edge Lift Anchors with feet

Compliance Document

Reid™ Edge Lift Anchors with feet comply with NZ Good Practice Guidelines: safe work with precast concrete 2018

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Reid™ Edge Lift Anchors with Feet

Reid's Edge lift ELAWF series of anchors feature a built-in shear foot which eliminates the requirement for separate shear reinforcement.

Specifically designed for edge lifting, the edge lift anchors are suitable for thin panels and low strength concrete lifts. The design incorporates a large slot enabling the use of one or two trimmer bars, minimizing clashing with reinforcement during set-up. **This product meets the building code requirements for durability B2 Durability, B2.3.1**

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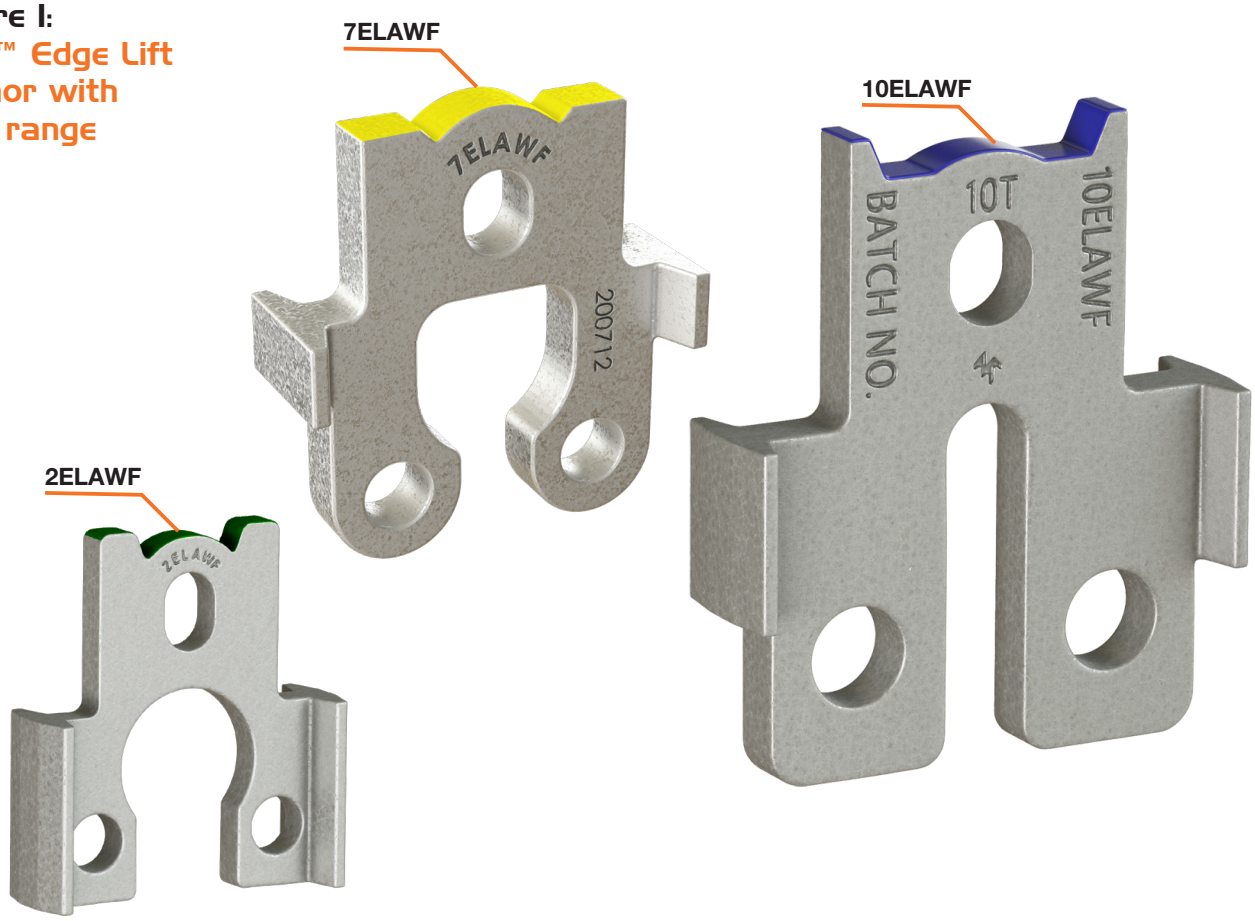
NZ GPG 2018 Compliant

Figure 1:
Reid™ Edge Lift Anchor with Feet range



Features and Compliance

Edge Lift Anchor Features

- Designed for thin panels and low strength concrete lifts.
- The new design now has a larger slot for one or two trimmer bars, assisting the precaster during set up (2.5 & 7t only).
- Concealed anchorage so that the face of the panel has no patching or tilt covers.
- Special feet forged onto the side of the anchor removes the requirement of installing shear bars.
- Anchors manufactured from forged high strength steel for added strength and manufacturing accuracy.
- Hot dipped galvanised for corrosion protection, beneficial in thin panels where concrete cover is minimal.
- Used in conjunction with the Reid Edge Lifting Clutch (2ELALE, 7ELALE) and Recess Former (2ELARRF, 7ELARRF & 10ELARRF).

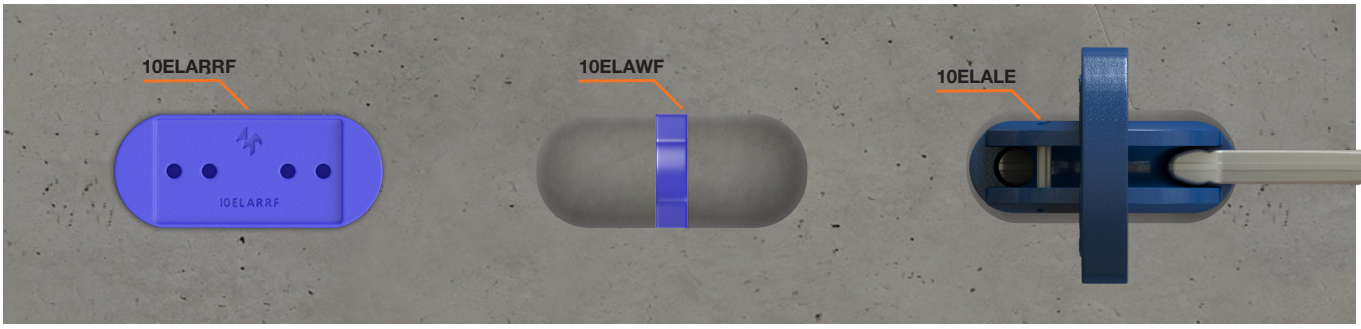
Edge Lift Anchor Compliance

- Every individual item of lifting equipment should be clearly marked with its working load limit (WLL), the manufacturer's identifier, and a unique numbering system
- Lifting anchors that are used for lifting and handling during all stages of manufacture, delivery and installation should be designed to a minimum factor of 3.0.
- As with lifting clutches, lifting anchors should be manufactured and tested in accordance with a valid international standard or technical reference.
- Development, production, testing, inspection and application of lifting anchors and lifting anchor systems should meet acceptably high and consistent standards to ensure that they are fit for purpose.

NZ GPG 2018 Compliant

Table 1: NZ GPG 2018 Compliance Details

Clause	Requirement	Compliant
6.6	The minimum FOS for general lifting needs to be 3 and for repetitive lifting needs to be 5.0.	✓
6.6	The design of the Lifting anchor shall include the ductile behavior and robustness of the anchor.	✓
10.11	Lifting clutches are to be made in accordance with a valid international standard or technical reference.	✓
10.11	Every item of lifting equipment should be clearly and permanently marked with its WLL. A unique numbering system to clearly identify individual items should be used.	✓
10.11	Lifting clutches are to be tested for loads in all directions and initially tested by the supplier to a factor of safety of 2.0	✓
10.11	Inspected at least every 12 months by a competent person, and a record kept of those inspections.	✓



Description and Markings

The Reid Edge Lift Anchor is a forged steel anchor for use with Reid Edge Lift clutch (ELALE) for edge lifting precast concrete panels.

The edge lift anchors require hanger bars for tension loads. Use with Reid ELARRF series recess formers. Designed for thin pannels, the ELAWF anchors contatin intergrated shear feet, a slot for a perimeter bar and is hot dipped galvinised to AS/NZS 4680 for corrosion resistance.

NZ GPG 2018 Compliant

Part Number & Pack Quantity's

Part No.	Description	Length (mm)	Pack Qty
2ELAWF	2.5 tonne	100mm	25
7ELAWF	7 tonne	114mm	10
10ELAWF	10 tonne	161mm	5

Reid™ Hairpin Anchor markings

1

Working Load Limit

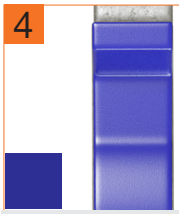
2

Reid name & symbol

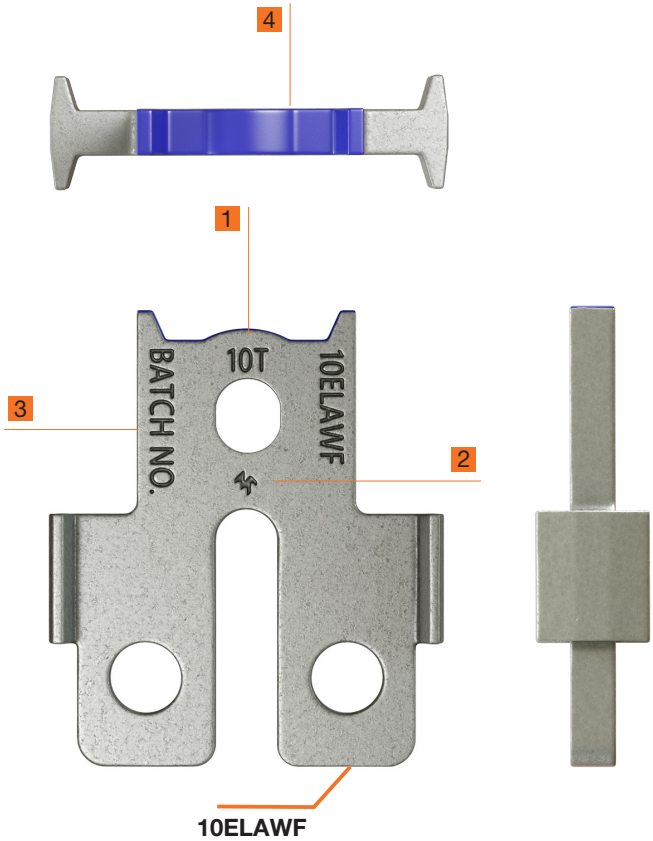
3

Unique identifying serial number

4



Colour coded to ensure system compatibility



Reid™ Edge Lift Anchor with Feet

Product Specifications (mm)

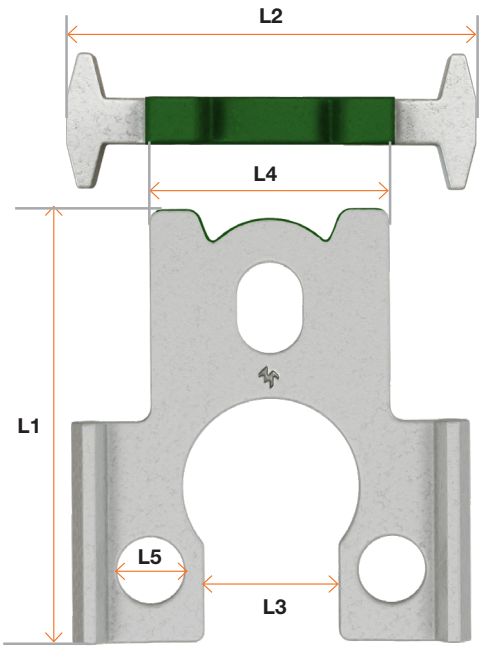


Table 2: ELAWFP – Edge Lift Anchors with Feet Product Dimensions

Load Group (t)	Nominal Dimensions (mm)				
	L1	L2	L3	L4	L5
2.5	98	90	30	54	15
7.0	114	110	20	72	15
10.0	161	140	22	78	24

Note: Ramsetreid reserve the right to change the above specifications.

The above Nominal dimensions are based on manufacture at 2019. Anchors supplied prior to 2019 may vary from these dimensions and in this instance, please contact ramsetreid® for the appropriate Nominal & Critical dimensions for those particular clutches.

Reid™ Edge Lift Anchor with Feet

Product Specifications (mm)

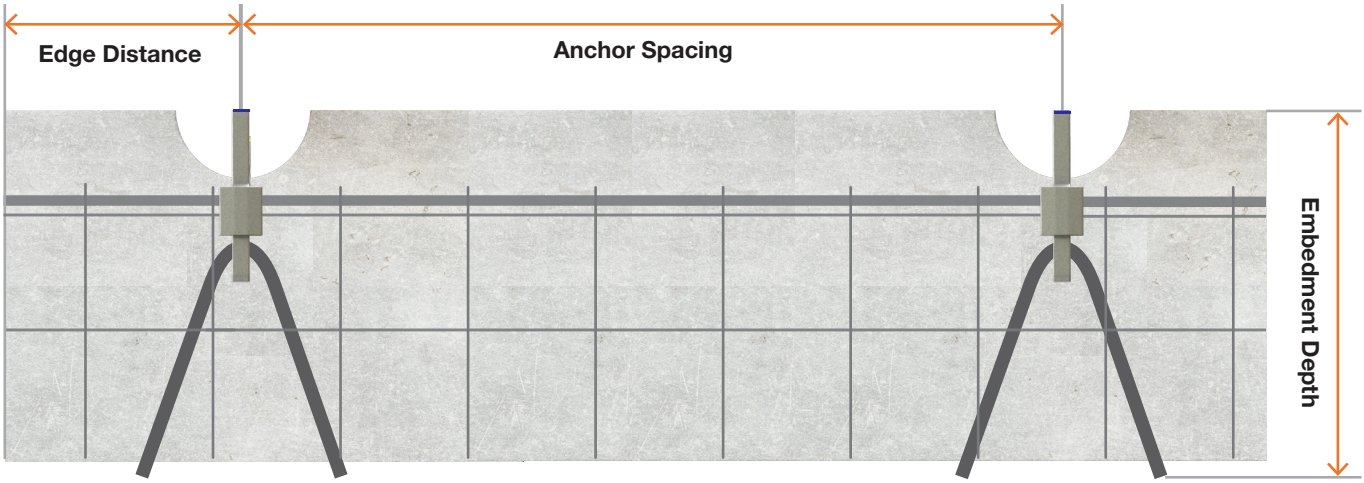
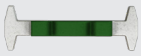


Table 3:
Minimum edge and spacing distances required to achieve performances in Table 4.

Minimum Edge and Spacing Limits			
Anchor Part Number	Minimum Edge Distance em (mm)	Minimum Anchor Spacing am (mm)	Embedment Depth (mm)
2ELAWF 	300	700	**
7ELAWF 	420	840	**
10ELAWF 	450	900	**

**Embedment depth is the effective depth of whole system (Recess former, Edge Lift Anchor and the tension bars).

Note: Ramsetreid reserve the right to change the above specifications.

The ELAWF System

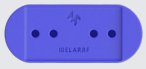
2.5 Tonne Edge Lift Anchor with Feet System:

Part	Part No.	NZGPG2018 Compliant
Anchor	 2ELAWF	✓
Lifting Clutch	 2ELALE	✓
Void Former	 2ELARRF	✓

7 Tonne Edge Lift Anchor with Feet System:

Part	Part No.	NZGPG2018 Compliant
Anchor	 7ELAWF	✓
Lifting Clutch	 7ELALE  3DX7NLC	✓
Void Former	 7ELARRF	✓

10 Tonne Edge Lift Anchor with Feet System:

Part	Part No.	NZGPG2018 Compliant
Anchor	 10ELAWF	✓
Lifting Clutch	 10ELALE	✓
Void Former	 10ELARRF	✓

note: Required supplementary reinforcement not shown. Refer table 4 for further information.

Figure 2:
2ELAWF
Clutch, Anchor & Void former

Figure 3:
7ELAWF
Clutch, Anchor & Void former

Figure 4:
10ELAWF
Clutch, Anchor & Void former

note: Required supplementary reinforcement not shown. Refer table 4 for further information.

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Performance Data

Table 4: Performance Data

Panel Thickness (mm)	Part #	Max WLL (tonne)	Stripping		Placement (WLL)			Tension bar overall length L (mm)	Minimum Precast Panel Reinforcement**
			15 MPa	20MPa	25 MPa	30 MPa	40 MPa		
			Tensile/Shear*	Tensile/Shear*	Tension	Tension	Tension		
100	2ELAWF	2.5	2.50/0.92	2.50/1.06	2.50	2.50	2.50	2xHD12x550	HD12 @ 250 CTS central
120			2.50/1.92	2.50/2.22					Minimal Reinforcement***
150			2.50/2.44	2.50/2.82					HD12 @ 250 CTS central
150	7ELAWF	7.0	7.00/2.60	7.00/3.00	7.00	7.00	7.00	2xHD12x1380	Minimal Reinforcement***
175			7.00/3.25	7.00/3.76					HD16 @ 300 CTS 2 layer
200			7.00/3.88	7.00/4.48					HD16 @ 300 CTS 2 layer
175	10ELAWF	10.0	10.00/4.11	10.00/4.74	10.00	10.00	10.00	2xHD16x1500	HD16 @ 300 CTS 2 layer
200			10.00/3.57	10.00/4.12					Minimal Reinforcement***
			10.00/4.40	10.00/5.08					HD16 @ 300 CTS 2 layer
250			10.00/5.28	10.00/6.09					HD16 @ 300 CTS 2 layer

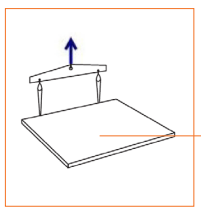
Notes: Data is based on concrete panel with vertical reinforcement detail as noted in table and satisfies the minimum requirement stipulated in clause 11.4.4.2 of NZS3101 2006 A3 for 500E grade. If reinforcement detail is less, contact your local Reid representative for advice.

* Shear data is based on avoiding hairline cracking around lifter during the stripping process. This process assumes one edge of the panel is still on the bed whilst tilting it up untill vertical. If the panel were to be flat lifted after stripping or tilted up in mid-air rotation, all Shear capacities need to be multipled by a capacity reduction factor of φ= 0.47 for WLL - refer to figure 5 for detail.

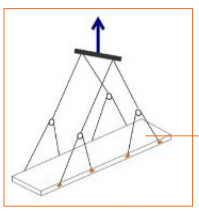
**Mln. precast panel reinforcement is required when ELAWF anchors are loaded in out-of-plane shear, not when they are loaded in tension.

***Shear testing was conducted in unreinforced concrete and capacities derived accordingly. It is strongly advised that the minimum panel reinforcement complies with NZS3101 2006 (A3).

Figure 5:



Stripping utilising edge lifters



Flat lift utilising edge lifters

Mid-air rotation utilising edge lifters

Stripping Capacity

WLL(Shear) = φ x Shear Stripping Capacity

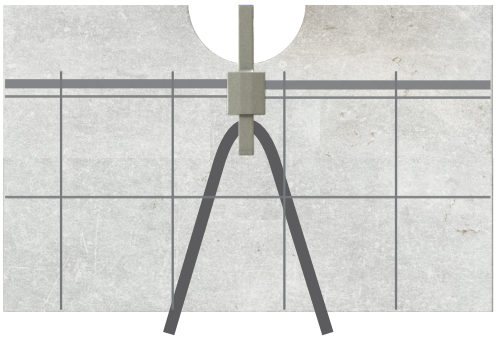
TESTED TO LOCAL CONDITIONS

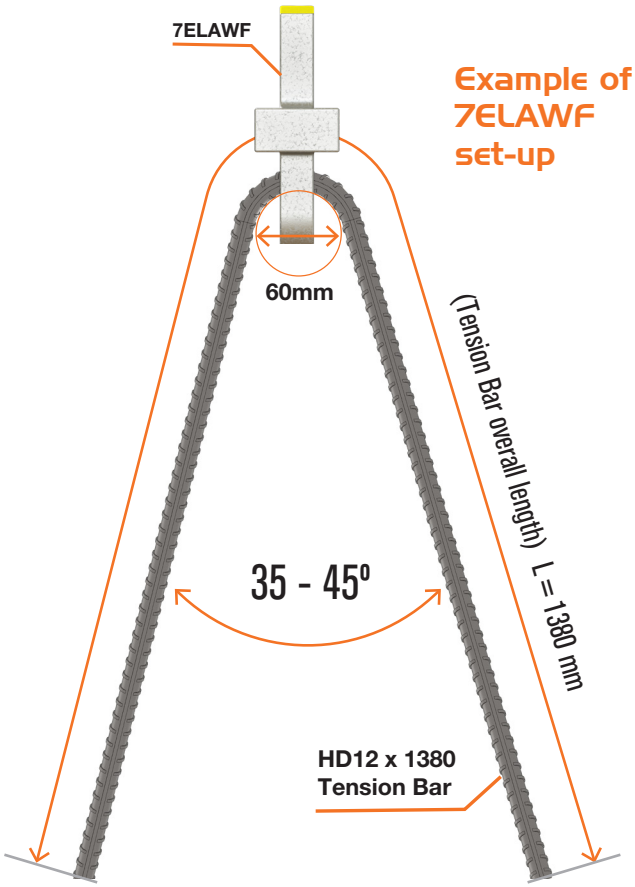
Installation support details

Installation Support Details

- The anchor must always be used with two HD grade reinforcing bars fitted through the eyes at the base of the anchor. This is to ensure that the anchor lifts to its ultimate strength
- The anchor must be orientated at right angles to the edge of the panel, and have the appropriate two reinforcing bars fitted through the pair of eyes at the base of the anchors.

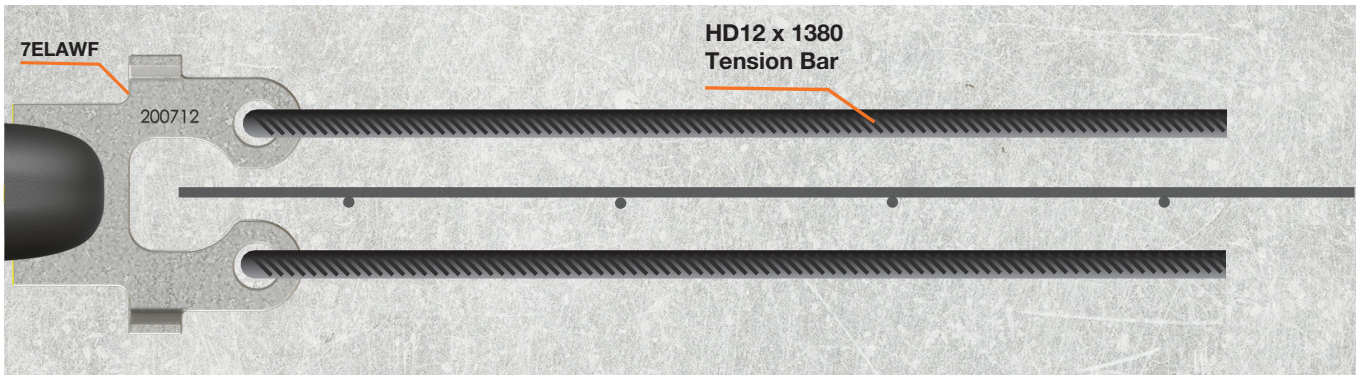
These bars must be bent down into the panel at an included angle of 35 - 45° and with a bend diameter of 5 bar diameters.





Example of 7ELAWF set-up

Figure 6: Hanger bar Installation



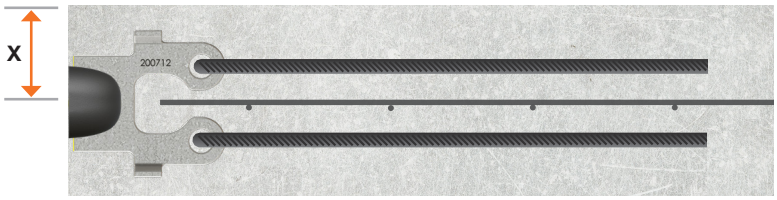
Anchor Tolerance

Allowable tolerance for Edge Lifters Perpendicular to Precast Face

Anchor Type	Allowable Tolerance (X)
2ELAWF	+ 5mm *
7ELAWF	+ 5mm *
10ELAWF	+ 5mm *

* for thicknesses less the 150mm allowable tolerance must be taken as + 2.5mm

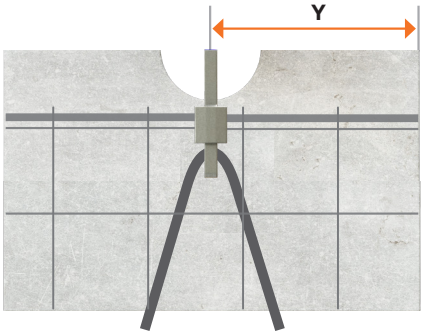
Allowable tolerance (X) on edge distance to precast face



Allowable tolerance for Edge Lifters Parallel to Precast Face

Anchor Type	Allowable Tolerance (Y)
2ELAWF	+ 20mm
7ELAWF	+ 20mm
10ELAWF	+ 20mm

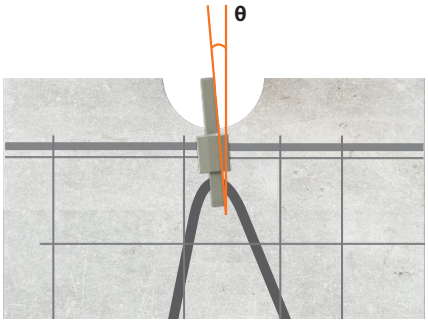
* edge and spacing distance must not go below minimum requirements stated in table 3



Allowable tolerance (Y) on edge/spacing distance

Allowable tolerance for Edge Lifters Angle

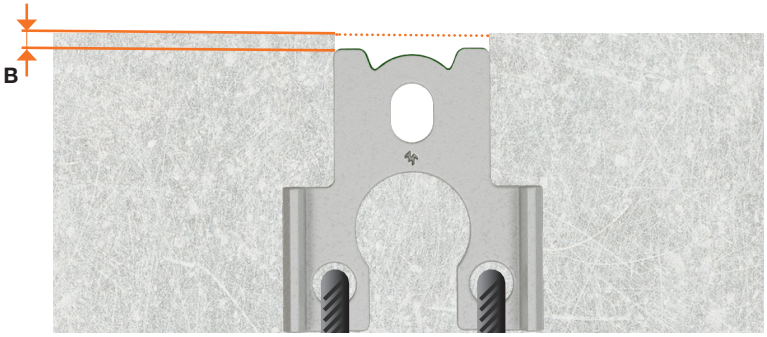
Anchor Type	Allowable Tolerance (θ)
2ELAWF	+ 5 degrees
7ELAWF	+ 5 degrees
10ELAWF	+ 5 degrees



Minimum and Maximum Depth of Edge Lifters

Anchor	B Max (mm)	B Min (mm)
2ELAWF	9.7	3.7
7ELAWF	8.0	1.6
10ELAWF	10.9	0

Note measurement should be taken at the highest point of lifting anchor head



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