

HPAWF - EDGE LIFT HAIRPIN ANCHORS WITH FEET

HAIRPIN ANCHORS WITH FEET FOR EDGELIFTING

Reid's new Edge Lift Hairpin Anchor with feet eliminates the requirement of a shear bar and removes the risk of hanger bars being left out during installation.

The HPAWF new generation anchor available in two sizes, is now forged for added strength and its thick, long hairpin legs provide secure lifting in both shear and tension applications, even in thin concrete panels.

Used in conjunction with a Reid Edge Lift Ring Clutch (2ELALE, 7ELALE), this anchor can now be remote released as an added safety feature.

FEATURES

- Special feet forged onto the side of the anchor removes the requirement of installing shear bars.
- Can be remote released as an added safety feature.
- Forged for added strength and manufacturing accuracy.
- Hot dipped galvanised for corrosion protection, beneficial in thin panels where concrete cover is minimal.
- Designed for thin panels, minimum panel thickness is 100mm (2HPAWF).
- Simple and easy installation.
- Used in conjunction with the Reid Ring Clutch (2ELALE, 7ELALE) and Recess Former (2ELARRF, 7ELARRF).

PRODUCT IDENTIFICATION

The Reid's HPAWF is instantly recognisable by the distinctive appearance of its long hairpin legs with head markers to identify its clutch rating. The head dimensions allow them to be used with the same clutches and recess formers as other Reid edge lift anchors.

APPLICATION

Maximum possible Working Load Limit (WLL) is 2.5 tonne (2HPAWF) and 7 tonne (7HPAWF). The lifting capacity will depend upon the specific application (refer to lifting tables). Reid offers a free lifting design service to their customers to ensure the safe lifting of concrete panels and precast components. Please e-mail CLS@reids.co.nz.

The Reid HPAWF is used and installed in a similar manner as other Reid edge lift or hairpin anchors but vastly improves the ease of installation with no shear bar or hanger bar requirements for most applications.

The HPAWF complies with the NZ Code of Practice for the Safe Handling and Erection of Precast Concrete.

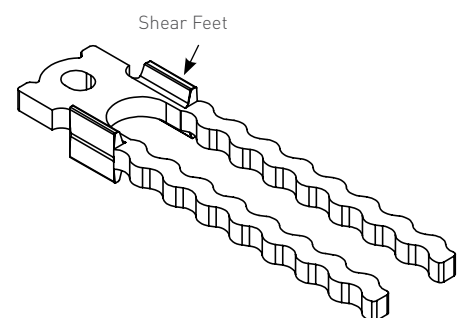
MATERIAL

Anchor – Fully forged from ductile steel, hot dipped galvanised

Sizes: 2HPAWF - 60.5mm O/A x 264 mm
7HPAWF - 72mm O/A x 340mm



DETAIL 1.1:
HPAWF Anchor Product Codes
2HPAWF (2.5 tonne)
7HPAWF (7 tonne)

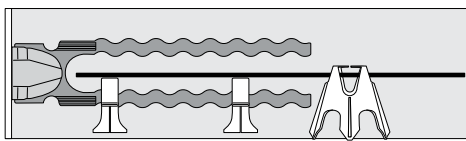


DETAIL 1.2:
Forged shear feet on the HPAWF remove the need for a shear bar during installation.

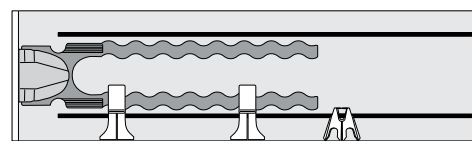
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TABLE 1.1: INSTALLATION SUPPORT DETAILS

Anchor	Panel Thickness (mm)	Anchor Chair		Mesh Chair - Single	Mesh Chair - Double
		2HPAWF	7HPAWF		
2HPAWF	100			BCPANEL50/60	-
2HPAWF 7HPAWF	120	FCB30	FCB25	BCPANEL50/60	-
2HPAWF 7HPAWF	150	FCB40	FCB40	BCPANEL65/75	CP25/40
2HPAWF 7HPAWF	175	FCB60	FCB50	CP85/110	CP25/40
2HPAWF 7HPAWF	200	FCB60	FCB60	CP85/110	CP25/40



DETAIL 1.3: Installation with single layer reinforcing



DETAIL 1.4: Installation with double layer reinforcing

TABLE 1.2: CAPACITY IN TENSION AND SHEAR FOR ANCHOR INSTALLED IN EDGE OF CONCRETE PANEL

Values shown below are the Working Load Limit (WLL) in Tonnes (t) for this anchor without any edge or spacing restrictions at minimum safety factor of 3.0 for tension capacity and 2.0 for shear capacity for various concrete strengths at the time of lift.

Panel Thickness (mm)	Lifting Types		Concrete Strength at lift (MPa)							
			2HPAWF				7HPAWF			
			15	20	25	30	15	20	25	30
100	Tension	Unreinforced Section	1.47	1.78	2.06	2.33				
		Reinforced Section (d =10mm @ 325 crs)*	2.12	2.50	2.50	2.50				
	Shear		1.37	1.66	1.93	2.18				
120	Tension	Unreinforced Section	1.76	2.13	2.48	2.50	2.26	2.74	3.18	3.59
		Reinforced Section (d =10mm @ 275 crs)*	2.44	2.50	2.50	2.50	3.88	4.61	5.27	5.89
	Shear		1.64	1.99	2.31	2.50	1.95	2.36	2.74	3.09
150	Tension	Unreinforced Section	2.20	2.50	2.50	2.50	2.83	3.42	3.97	4.49
		Reinforced Section (d =12mm @ 300 crs)*	2.50	2.50	2.50	2.50	4.69	5.58	6.38	7.00
	Shear		2.08	2.50	2.50	2.50	2.41	2.92	3.39	3.83
175	Tension	Unreinforced Section	2.50	2.50	2.50	2.50	3.30	3.99	4.64	5.23
		Reinforced Section (d =12mm @ 275 crs)*	2.50	2.50	2.50	2.50	5.25	6.24	7.00	7.00
	Shear		2.47	2.50	2.50	2.50	2.83	3.42	3.97	4.49
200	Tension	Unreinforced Section	2.50	2.50	2.50	2.50	3.77	4.57	5.30	5.98
		Reinforced Section (d =12mm @ 225 crs)*	2.50	2.50	2.50	2.50	5.88	7.00	7.00	7.00
	Shear		2.50	2.50	2.50	2.50	3.26	3.95	4.58	5.18

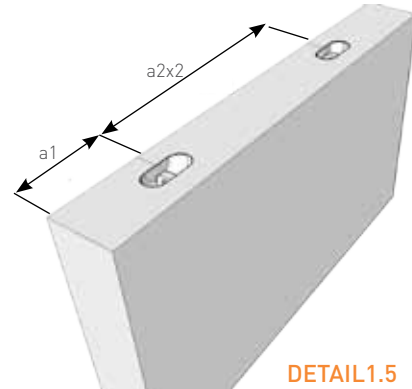
*Minimum area of vertical reinforcement = 0.00233 times the cross-sectional area of the wall in accordance with Clause 11.3, 11.3 (C) of NZS 3101:2006 for 300E grade reinforcement. (Diameter of reinforcement and centres to meet minimum requirement.)

Anchor develops to full strength in tension.

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WLL CAPACITY TABLES IN TENSION WITH EDGE AND SPACING RESTRICTIONS

Values shown below are the WLL in tension considering the influence of anchor distances to an edge (a1) or half distance to another anchor (a2). The concrete strength at lift is 15MPa. All values are based on the minimum reinforcing requirement for NZ.



2HPAWF WORKING LOAD LIMITS IN TENSION, (minimum edge distances at ≥ 15 MPa concrete strength)

TABLE 1.3:

100 mm thick wall (Min. reinf. d=10mm @ 275 c/c or equivalent)

a2 (mm)	a1 (mm)			
	200	400	600	≥ 800
200	1.20	1.40	1.51	1.55
400	1.40	1.67	1.82	1.87
600	1.51	1.82	1.99	2.05
≥ 800	1.55	1.87	2.05	2.12

TABLE 1.4:

150 mm thick wall (Min. reinf. d=10mm @ 300 c/c or equivalent)

a2 (mm)	a1 (mm)			
	200	400	600	≥ 800
200	1.63	1.93	2.09	2.15
400	1.93	2.34	2.50	2.50
600	2.09	2.50	2.50	2.50
≥ 800	2.15	2.50	2.50	2.50

7HPAWF WORKING LOAD LIMITS IN TENSION, (minimum edge distances at ≥ 15 MPa concrete strength)

TABLE 1.5:

100 mm thick wall (Min. reinf. d=10mm @ 275 c/c or equivalent)

a2 (mm)	a1 (mm)				
	200	400	600	800	≥ 1000
200	1.67	1.93	2.40	2.50	2.54
400	1.93	2.28	2.82	2.96	3.01
600	2.40	2.82	3.40	3.56	3.62
800	2.50	2.96	3.56	3.73	3.81
≥ 1000	2.54	3.01	3.62	3.81	3.88

TABLE 1.6:

175 mm thick wall (Min. reinf. d=12mm @ 275 c/c or equivalent)

a2 (mm)	a1 (mm)				
	200	400	600	800	≥ 1000
200	2.18	2.55	3.17	3.31	3.37
400	2.55	3.07	3.77	3.97	4.05
600	3.17	3.77	4.54	4.77	4.87
800	3.31	3.97	4.77	5.03	5.13
≥ 1000	3.37	4.05	4.87	5.13	5.24

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ACHIEVING HIGHER WORKING LOAD LIMIT CAPACITIES IN TENSION

To achieve a higher capacity in tension, Reid have developed a plastic clip which is inserted into the anchor to position a hanger bar for casting into the precast concrete unit. The clip is sold as a separate component. See detail 1.6 below for an example of installation.

TABLE 1.7: 7HPAWF WORKING LOAD LIMITS IN TENSION LIFT with Hanger Bar Lengths in reinforced concrete

WLL. (tonnes)	HD Bar Dia (mm)	Bar cut and bend length, L (mm)				
		10MPa	15MPa	20MPa	25MPa	30MPa
7	16	2840	2350	2050	1850	1700
6		2460	2030	1770	1600	1470
5		2070	1710	1500	1350	1250
4		1540	1390	1220	1110	1020

Minimum reinforcement as shown in Capacity in Tension and Shear Table 1.2.

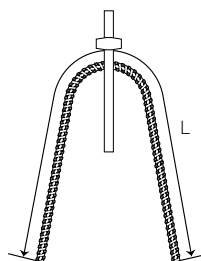


DETAIL 1.6:
Cut and bend length for hanger bars installed into the anchor

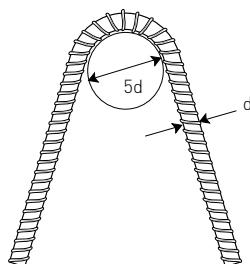


DETAIL 1.7:
HPAWF Clip used to hold the hanger bar inside the anchor.

DETAIL 1.8:
Cut and Bend Length as per Table 1.7



DETAIL 1.9:
Minimum Bend Diameter of grade HD16 (500E) reinforcing bar



DETAIL 1.10:
Minimum Bend Diameter of grade HD16 (500E) GALVANISED reinforcing bar

