

EcoBrace

Portal Frame System



 **MULTINAIL**
Advance

About Multinail

Multinail is an Australian family-owned business established for over 40 years with all its products engineered, tested and manufactured at our industry-leading facility in Queensland, Australia.

The company specialises in the provision of quality metal connectors, software and engineering services to our partner network of licensed timber fabricators. Together, we offer an industry-wide service supplying prefabricated structural systems designed and engineered for optimising the efficiency and quality of timber construction.

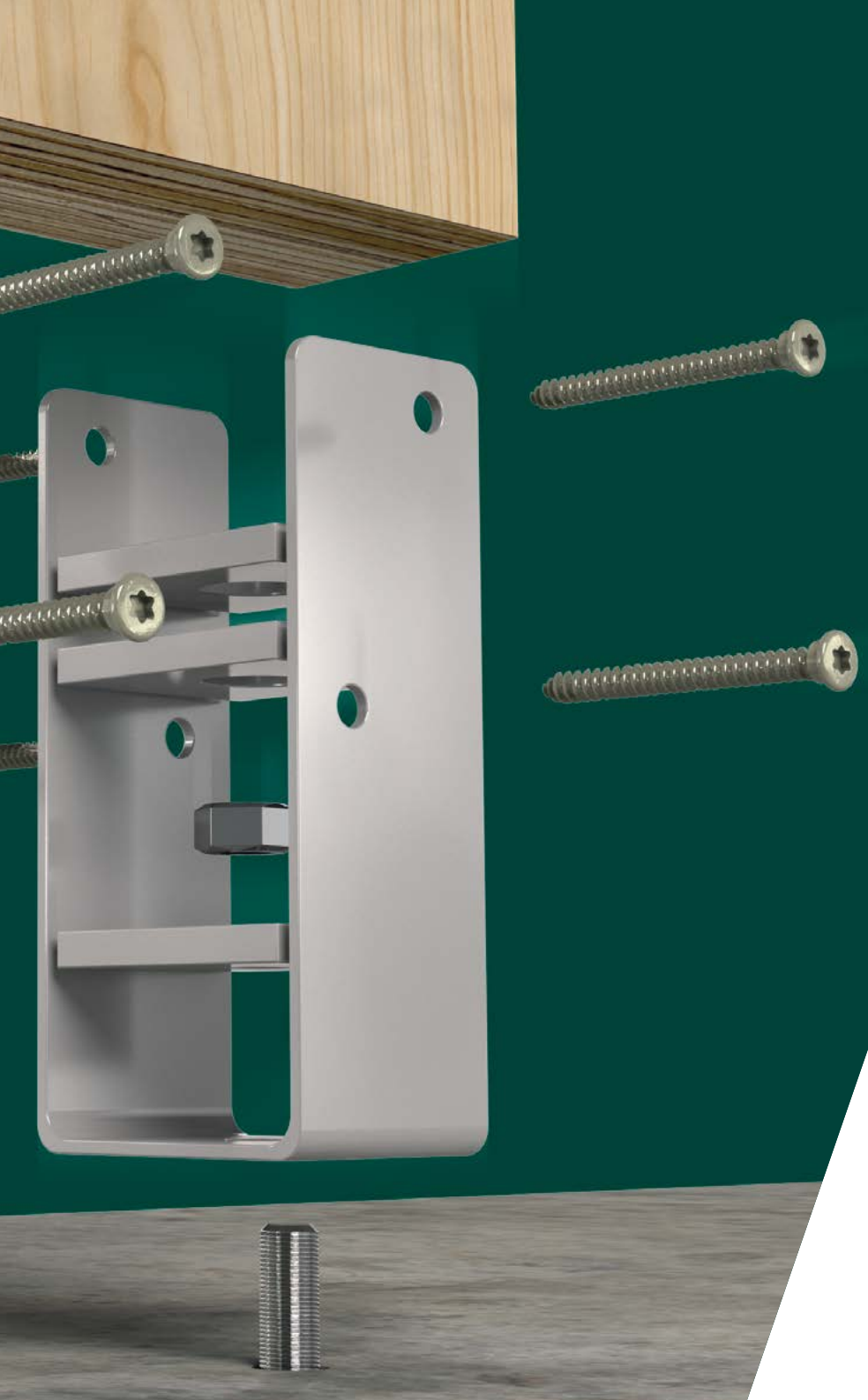
About Multinail Advance

Multinail Advance is an exciting addition to the Multinail Brand. Our core focus is to introduce Multinail's extensive range of products and services to new markets while innovating and developing solutions tailored to both existing and emerging sectors.

Our primary focus includes multi-residential projects, mid-rise buildings, and mass timber construction.

Multinail Advance is committed to enhancing the competitive edge of our fabricators by expanding timber construction into new markets and contributing to the growth of the Australian timber industry.





Benefits of EcoBrace

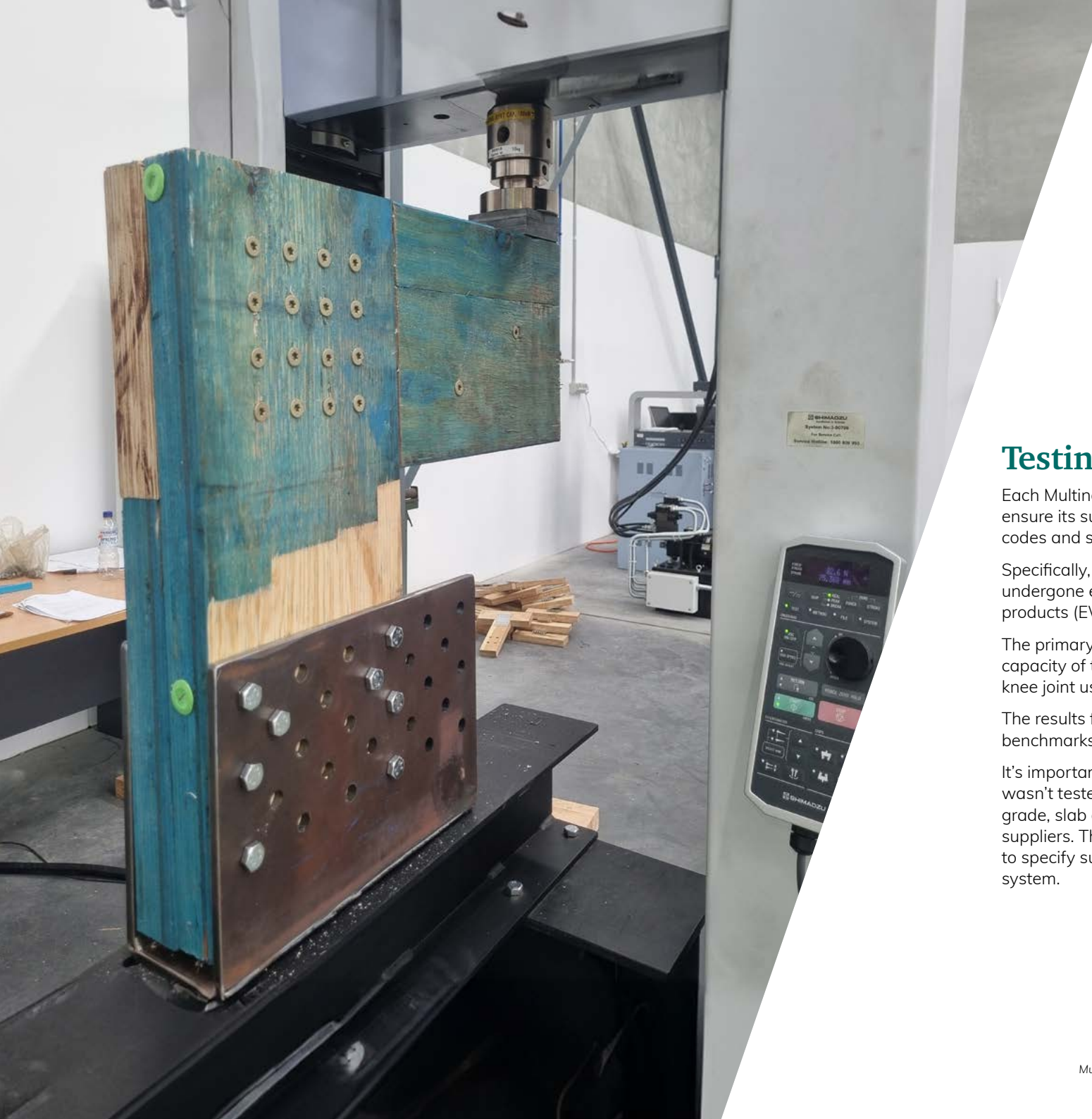
Simple and effective site-built portal for achieving loading bearing and/or wall bracing requirements in residential construction with superior capability for withstanding lateral loads.

- Timber portal solution for a large range of opening sizes, heights, and applications
- Rigid frame provides high lateral capacities
- Enables maximum portal openings in standard wall framing
- Lighter and easier to handle than steel braced wall frames
- More economical solution for concrete anchors
- Certification provided



EcoBrace Installation Guide

Scan or click the QR code to access our online installation guide for quick and easy instructions.



Testing

Each Multinail Advance product undergoes rigorous testing to ensure its suitability and compliance with Australian engineering codes and standards.

Specifically, the EcoBrace portal frame system connections have undergone extensive in-house testing using engineered wood products (EWP) samples from various Australian suppliers.

The primary objective of this testing was to validate the tie-down capacity of the steel brackets and the moment capacity of the knee joint using Multinail Advance screws.

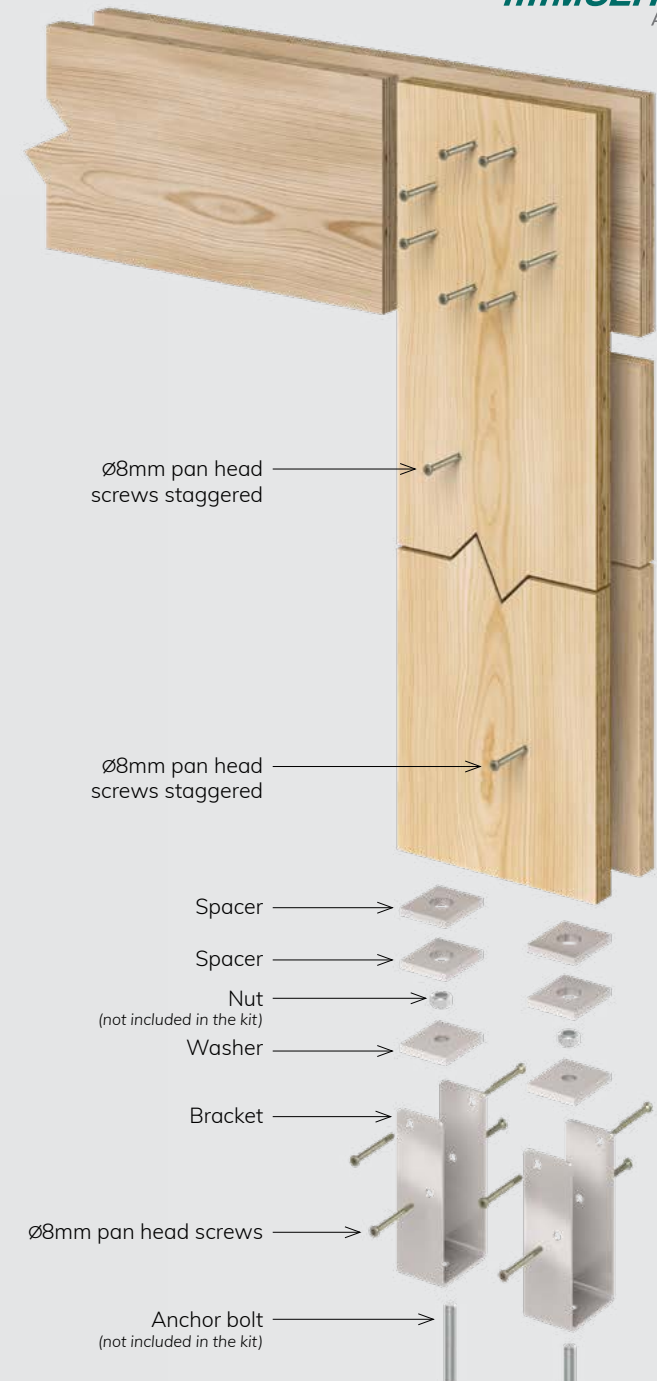
The results from these tests exceeded the theoretical benchmarks established in accordance with AS1720.1.

It's important to note that the concrete anchor tie-down capacity wasn't tested due to varying governing factors such as concrete grade, slab depth, and specifications from different anchor suppliers. Therefore, it becomes the designer's responsibility to specify suitable concrete anchors for the short wall bracing system.

General assembly details

EcoBrace features easy assembling with only one type of screws needed – Multinail advance Ø8mm pan head screws.

The screw pattern shown on the general assembly details are for illustration purpose only. Different screw patterns are designed and optimised for different timber sizes and applications.



Contact Multinail for MultiLam or Glulam options

Lateral bracing

This application is specifically designed for internal non-load bearing bracing walls, intended for lateral wind loading scenarios.

Table 1 provides pre-calculated maximum allowable lateral loads for standard EcoBrace column heights up to 2700mm, accommodating various openings. This is based on the following design assumptions:

- Each EcoBrace component is classified as a Category 1 element according AS1720.1.
- The LVL used in EcoBrace must have a minimum Modulus of Elasticity (MOE) of 13,200 MPa.
- Timber joint group should be JD4 or better.
- Each M16 concrete anchor must offer a minimum tie-down capacity of 18kN.
- The maximum allowable horizontal deflection at the top edge of the EcoBrace column is set at 12mm.
- No floor or roof loads are considered for the EcoBrace beam element in this application.



Scan or click for **Bracing Capacities**

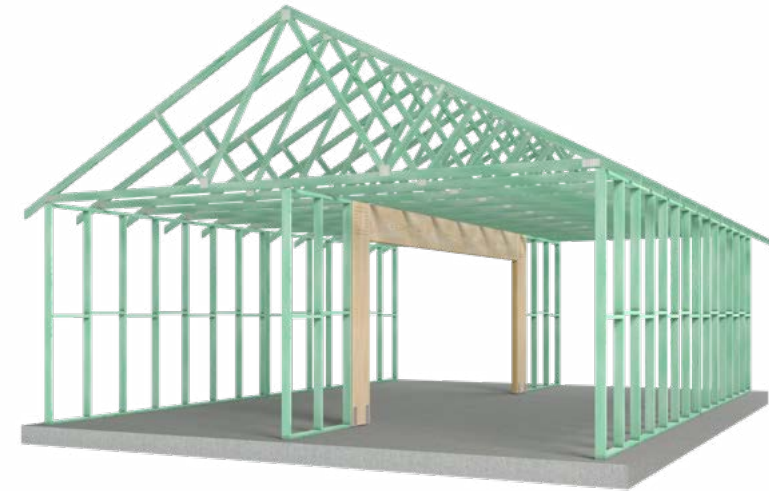
Table 1: Lateral bracing

Overall width of EcoBrace (mm)	Overall height of EcoBrace (mm)	Ultimate bracing capacity (kN)			
		2/240x45	2/300x45	2/360x45	2/400x45
2000	2700	3.2 - 21.3 ¹			
2500					
3000					
3500					
4000					
4500					
5000					
5500					
6000					

Note: ¹Please refer to the website for the exact ultimate bracing capacity value for specific LVL brands and dimensions. Values may be updated subject to ongoing testing with more LVL brands and dimensions.

Applications – lateral bracing

An example of EcoBrace used in internal non-load bearing bracing wall.



Bracing with floor load

This application is specifically designed for load-bearing bracing walls, intended to handle lateral racking and floor loads, particularly under scenarios involving floor loads combined with lateral wind loading.

Pre-calculated maximum allowable lateral loads for standard EcoBrace column heights up to 2700mm, accommodating various openings. This is based on the following design assumptions:

- Each EcoBrace component is classified as a Category 1 element according AS1720.1.
- The LVL used in EcoBrace must have a minimum Modulus of Elasticity (MOE) of 13,200 MPa.
- The timber joint group should be JD4 or better.
- Each M16 concrete anchor is required to have a minimum tie-down capacity of 18kN.
- The maximum allowable horizontal deflection at the top edge of the EcoBrace column is capped at 12mm.
- The maximum floor load width is 3600mm, accommodating a floor live load of 1.5kPa and a concentrated live load of 1.8kN. No roof load is considered for the EcoBrace beam element in this application.



Scan or click for
Bracing Capacities



Applications

– lateral bracing with floor load

An example of EcoBrace used in external wall of a townhouse near stairs.

Bracing with roof load

This application is specifically designed for load-bearing walls, capable of handling lateral racking and roof loads. It is ideal for situations involving a combination of roof loads and lateral wind loading scenarios.

Pre-calculated maximum allowable lateral loads for standard EcoBrace column heights up to 2700mm, accommodating various openings. This is based on the following design assumptions:

- Each EcoBrace component is classified as a Category 1 element according AS1720.1.
- The LVL used in EcoBrace must have a minimum Modulus of Elasticity (MOE) of 13,200 MPa.
- The timber joint group should be JD4 or better.
- Each M16 concrete anchor should have a minimum tie-down capacity of 18kN.
- The maximum allowable horizontal deflection at the top edge of the EcoBrace column is set at 12mm.
- The maximum roof load width is limited to 3600mm. This is under a wind classification of N2, with a maximum roof pitch of 30 degrees, a sheet roof weight of 20kg/m², and a 13mm particle board ceiling weight of 20kg/m².
- Floor or snow loads are not considered for the EcoBrace beam element in this application.



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Bracing Capacities

Bracing with roof load – heavy duty

This application, designed for load-bearing walls, handles increased lateral racking and roof loads, requiring stronger concrete anchor tie-downs. Unlike the previous scenario, it addresses a combined roof and heavier lateral wind load. For enhanced bracing capacity, U-shape brackets are substituted with Multinail Advance Stronghold tie-down brackets in the EcoBrace portal frame.

Pre-calculated maximum allowable lateral loads for standard EcoBrace column heights up to 2700mm, accommodating various openings. This is based on the following design assumptions:

- Each EcoBrace component is classified as a Category 1 element according AS1720.1.
- The LVL used in EcoBrace must have a minimum Modulus of Elasticity (MOE) of 13,200 MPa.
- Timber joint group should be JD4 or better.
- Each M20 concrete anchor must offer a minimum tie-down capacity of 36kN.
- The maximum allowable horizontal deflection at the top edge of the EcoBrace column is set at 12mm.
- The roof load limit includes a width of 3600mm, N3 wind classification, a maximum roof pitch of 30 degrees, a sheet roof weight of 20kg/m², and a 13mm particle board ceiling weight of 20kg/m².
- Floor or snow loads are not considered for the EcoBrace beam element in this application.



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Bracing Capacities

Applications

– lateral bracing with roof load

This is an example of how EcoBrace is utilised in the external wall of a garage, specifically at the lintel location.



Customised EcoBrace portal system – Roof and Floor loads combined

When the standard EcoBrace cannot meet the combined load-bearing and bracing requirements, Multinail Advance provides a customised EcoBrace portal system service tailored to customers' needs. Customised EcoBrace may require higher timber grades, larger sections, additional laminations, or a slight change in layout.

Please contact Multinail Advance for customised products.



Customised EcoBrace portal system – Cathedral ceiling

In some regions, houses with vaulted or cathedral ceilings are becoming increasingly popular. The EcoBrace portal frame system can be modified or customised to meet the specific needs of these homes. Multinail Advance offers a range of services, including connection design and the provision of steel plates and brackets.

Please contact Multinail Advance for customised products.



Kit Content

Typical kit content:

- 4 U bracket column shoes
- 4 square washers to go with the U bracket
- 8 square spacers to go with the U bracket
- 5 bags of screws
- Installation guide
- Pre-drilling templates

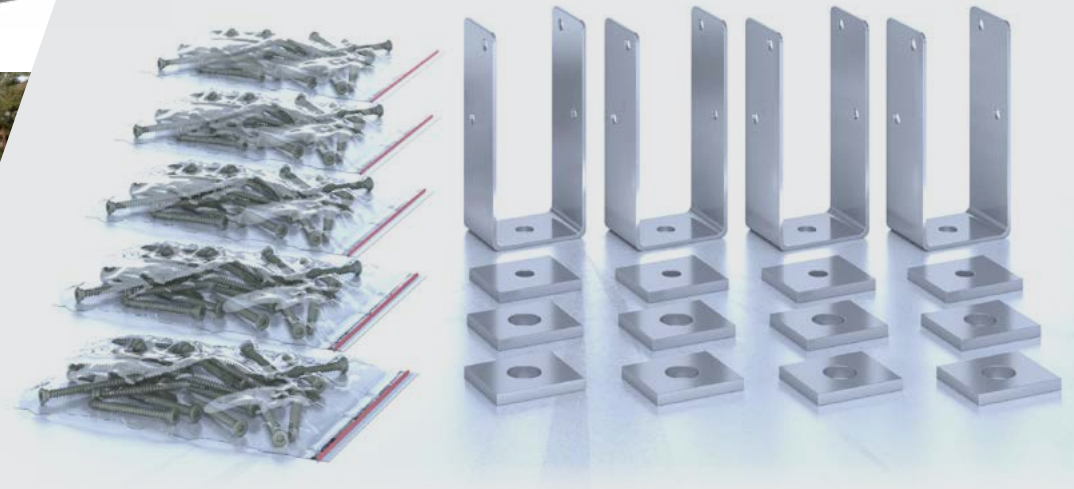


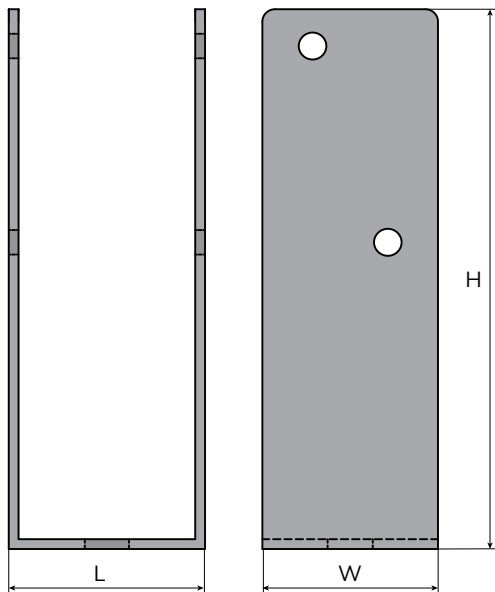
Table 2: Kit Content

Kit code	U bracket	Washers	Spacer	Screws	Installation guide	Pre-drilling templates
E90LVL1	4	4	8	125	1	8

Technical Specifications

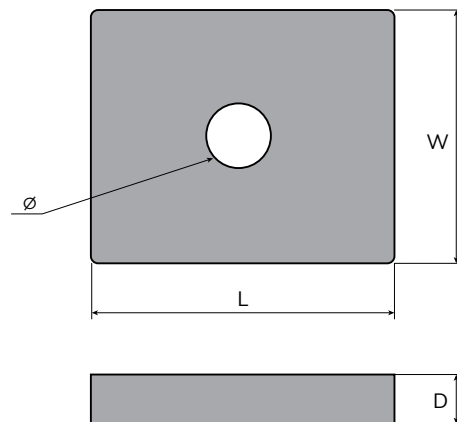
U-shape bracket

Steel
G350 Steel, Powder Coated, 4mm Thickness



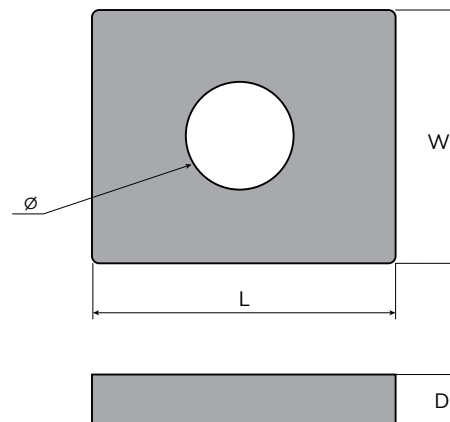
Washer

Steel
G250 Steel, Powder Coated, 10mm Thickness



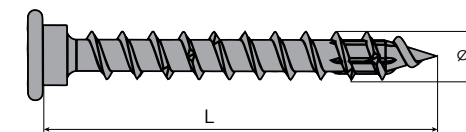
Spacer

Steel
G250 Steel, Powder Coated, 10mm Thickness



Screws

Steel
Hardened carbon steel, Electrocoated



Description and Packing

Product Code	Description H x W x L
ECB90-P	210mm x 70mm x 100mm

Product Code	Description W x L x D x Ø
ECB90W-P	70mm x 84mm x 10mm x Ø18mm

Product Code	Description W x L x D x Ø
ECB90S-P	70mm x 84mm x 10mm x Ø30mm

Product Code	Description Ø x L	Carton Qty
CF08085-25	Ø8x85mm	25



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