

Greetings all. Today's Bulletin is about the importance of clutch and anchor compatibility when lifting precast concrete elements.

Introduction

Using precast concrete elements in construction has played a pivotal role in accelerating construction timelines and ensuring structural integrity.

Precast concrete elements, such as panels, beams, and columns are used to build many things, including bridges and buildings - they offer numerous advantages, including quality control and reduced construction time. But on the flip side, greater care and attention to safety is necessary when handling and lifting precast concrete elements as they can weigh more than 10 tonnes.

Unfortunately, there have been far too many incidents and near misses. When lifting precast concrete elements, the stakes are high, as even minor errors can lead to catastrophic consequences. In other words, there is no room for complacency when lifting and working with precast concrete, so understanding the following principles may mean the difference between getting you or your staff home to loved ones at the end of the workday.

One critical aspect often overlooked is the compatibility between lifting anchors and clutches. Ensuring that the lifting components are compatible is of paramount importance to guarantee the safe and efficient lifting of precast concrete elements.



The role of lifting anchors and clutches

Lifting anchors and clutches are essential components in the precast concrete industry. They serve as the primary means of securing and lifting precast concrete elements during construction.

Lifting anchors are embedded into the concrete during the manufacturing process and are used to connect with lifting clutches, which are attached to the lifting equipment.

The compatibility between these two components ensures the proper distribution of forces, which is critical for safely lifting precast concrete elements.

Compliance with Australian Standards

Australia has stringent regulations and standards governing the construction industry, including those related to precast concrete element lifting. These standards are in place to ensure the highest level of safety and quality in construction projects. Non-compliance with these standards can result in legal repercussions and jeopardise project success.

Precast concrete manufacturers and construction companies must adhere to Australian Standards AS 3850 series, which provide guidelines for the design, manufacturing, and lifting of precast concrete elements. Ensuring compatibility between lifting anchors and clutches is a key aspect of compliance with these standards.

Proper Selection and Testing

Selecting the right lifting anchors and clutches for precast concrete elements is a critical decision that should be made during the design phase.

Compatibility should be verified through the equipment manufacturer's documentation to ensure that the components can withstand the expected loads and forces during lifting.

Precast concrete manufacturers should work closely with engineers and lifting equipment suppliers to make informed choices and avoid potential issues down the line.

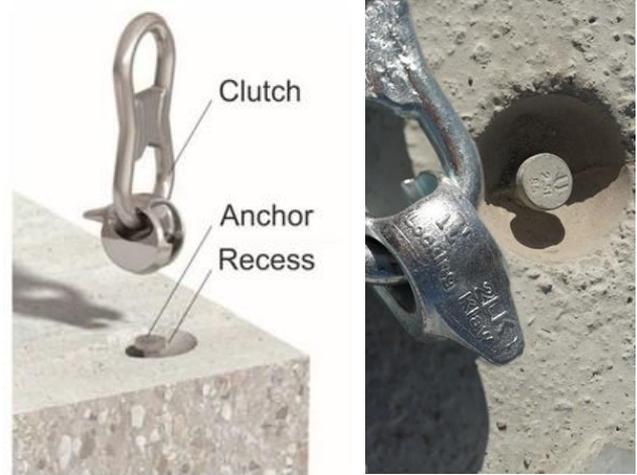
Lifting anchors

Lifting anchors are referred to by their working load limit (WLL).

The actual WLL of all/any lifting anchors should be calculated by a competent person.

The actual safe load may be less because the loading of lifting anchors may be affected by:

- proximity to edges
- proximity to openings,
- recesses or edge rebates
- proximity to other lifting devices that are loaded concurrently
- concrete thickness
- strength of the concrete the anchor is embedded in at the time it is loaded
- direction and type of load: shear, compression, or tension – embedment depth – load angles (especially for edge-lifters)
- the presence of cracks



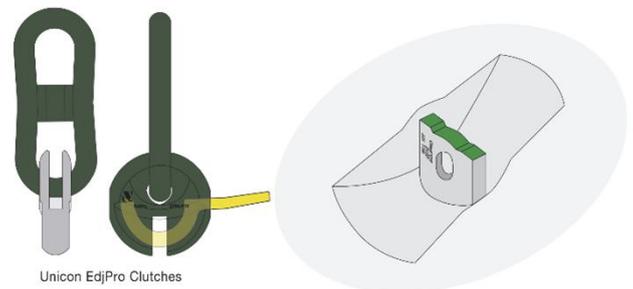
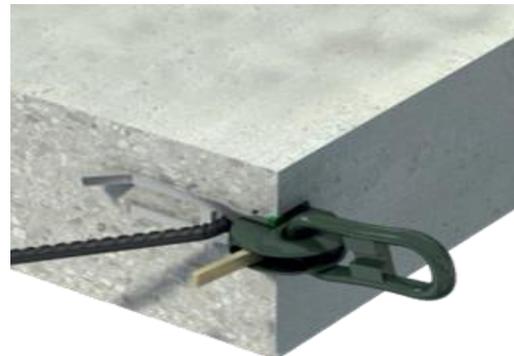
Face-lift clutches should only be used on recessed anchors.

Lifting clutches

Lifting clutches are to be:

1. Designed, manufactured and tested in accordance with the requirements of AS3850.1:2015 Cl. 2.6 and that written confirmation of all aspects of conformance is available from the clutch manufacturer.
 2. Checked to ensure the clutch has a valid proof test tag, is undamaged, not modified and in good working order.
 3. Identified and inspected before lifting and proof-loaded annually to 1.2 x WLL (AS3850.1 Cl. 2.6 requirement)
- Visually inspected for damage or wear prior to use

2. Ring Clutches compatible with a Plate Anchor System



No attempt should be made to lift with a clutch, which does not have valid certification.

Compatibility and interchangeability

Clutches and anchors are not universally interchangeable.

Compatibility and interchangeability can depend on the lifting application.

Two common lifting anchor systems are available in Australia for the lifting of Precast Concrete elements:

1. Facelift Clutches compatible with Recessed Anchor Systems.

This ring clutch is commonly referred to in the industry as a “donut”. This edge clutch attaches to an insert on the edge of the concrete element.

Ring or donut clutches should only be used on plate anchors.



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For more information

CICA is currently producing three videos that cover various aspects of pre-cast safety, these will be available in the next couple of months and we will advise when they are.

Reid has a helpful guide on compatibility available for [download here](#).

Ancon also has a helpful guide on compatibility available for [download here](#).

More information on the *CICA Lift Supervisor Program* is available [here](#). If you are interested in registering for the next intake, you can do so [here](#).

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