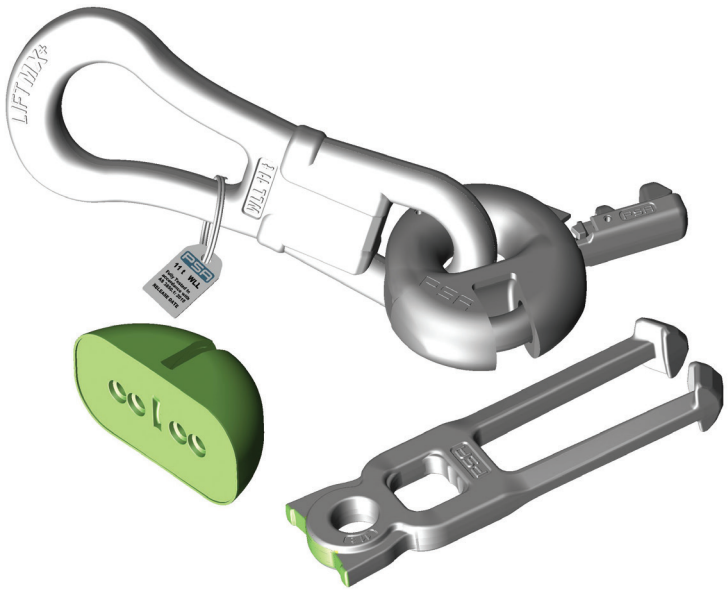
PSA

DESIGN GUIDE

PSA LIFTMX15 LIFTING SYSTEM

PSALIFTMX15

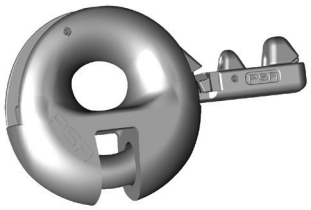
PSA LIFTMX15 COMPONENTS



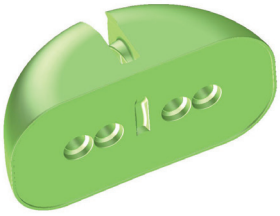
A REVOLUTIONARY 15 TONNE WLL LIFTER

15 TONNE EDGE LIFTER

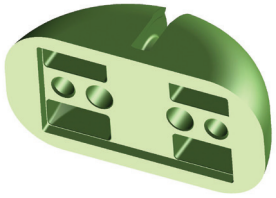
15 TONNE CLUTCH
WITH SAFETY LOCKING RING



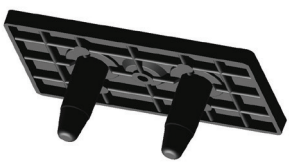
15 TONNE TORUS
WITH SAFETY LOCKING RING



VOID FORMER



VOID FORMER WITH PLATE
RECESS



VOID FORMER PLASTIC
LOCATOR PLATE

PSA LIFTMX15

THE PERFECT SYNERGY BETWEEN STRENGTH, SAFETY AND PERFORMANCE

Introducing PSA LiftMX15, an innovative 15 onne edge lifting system accommodating panels upwards of 175mm thickness.

With a revolutionary patent pending design, PSA LiftMX15 is proven through vigorous testing to perform when lifting your larger elements.

Suitable for commercial, residential and civil applications, PSA LiftMX15 is engineered for strength, versatility and easy use, from factory to site. Its cutting-edge design, reduces visual cracking and spalling, and maximises smooth engagement and .

Combined with the safety clutch or torus only, this is a high capacity lifter and also provides ease of use on site for more robust and safer lifting.

PSA LIFTMX® FEATURES

- Compliant with AS 3850 Prefabricated Concrete Elements, Australian National Code of Practice for Precast, Tilt-up and Concrete Elements in Building Construction and independently tested by a NATA accredited testing company.
- 15 tonne working load limit, within a compact, versatile, and easy to use system.
- Excellent ductility for added safety.
- Compact, light-weight design for ease of use in various precast element types, even in congested areas.
- Structural components are batch coded with clutches uniquely identifiable per AS 3850.
- Suitable for use in most precast elements, including columns, beams and thin precast units.
- Clutch allows for secure engagement and smooth manoeuvring, and extra safety features with lock.
- Void Former engineered to minimise concrete ingress.
- Constructed from quality ductile, forged and cast steel, to ensure optimum load capability between the varying parts.
- Lifters are hot-dip galvanised for durability to inhibit the effects of oxidation or corrosion.

PSA LiftMX15 lifters are compatible with PSA LiftMX15 Clutches and PSA LiftMX15 Void Formers only. Substitution with any alternative components or products other than the designated PSA range is not permitted in accordance with AS 3850.

PSA LIFTMX15 PERFORMANCE DATA (WLL)

15 TONNE EDGE LIFTER - FLURO GREEN

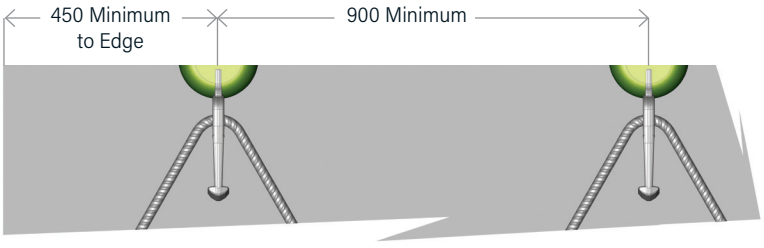
PANEL THICKNESS (mm)	PART #	MAX WLL (t)	IN-YARD STRIPPING			PLACEMENT			TENSION BAR
			12MPa	15MPa	20MPa	25MPa	32MPa	40MPa	Ø AND LEG LENGTH (mm)
			TENSILE*/ SHEAR** (t)	TENSILE*/ SHEAR** (t)	TENSILE*/ SHEAR** (t)	TENSILE (t)	TENSILE (t)	TENSILE (t)	
175	LME15	15	10.9/3.1	12.2/3.4	14.0/3.5	15	15	15	N20 x 750
200	LME15	15	10.9/3.2	12.2/3.4	14.0/3.5	15	15	15	N20 x 750
250	LME15	15	10.9/3.3	12.2/3.4	14.0/3.5	15	15	15	N20 x 750
300	LME15	15	10.9/3.75	12.2/4.0	14.0/4.0	15	15	15	N20 x 750

Compliant with AS 3850.
WLL capacities include minimum panel reinforcement: Minimum SL82 mesh each face and N16 perimeter bar each face. N16 continuous perimeter bar is placed on top and bottom of the lifter as per LiftMX15 Edge Lifter installation Instructions. Full 15 tonne WLL may be achieved in panels 175mm and above, based on applicable concrete strengths at time of lifting. Shear spalling ispossible if the recommended loads are exceeded. Stripping and placement concrete strengths are noted as a guide only. Please refer to the PSA Engineering Department for any additional information.

PSA LIFTMX15 LIFTER SPACING + CRITICAL EDGE DISTANCE SPECIFICATION

MINIMUM REQUIRED EDGE AND SPACING PARAMETERS

MIN. PANEL THICKNESS (mm)	EDGE DISTANCE (mm)	LIFTER SPACING (mm)
175	450	900



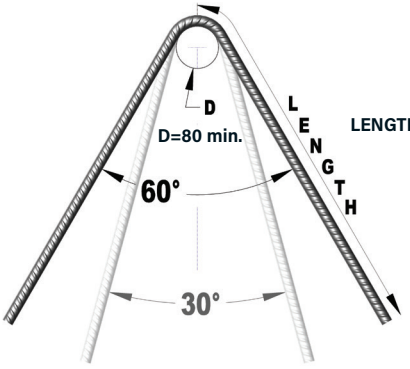
Refer to PSA engineering department for lifting solutions if edge distances and spacings are less than the above.
The above is based on steel reinforced elements, with standard concrete mix.

ADDITIONAL COMPULSORY REINFORCEMENT
N20 TENSION BAR (500 GRADE)

BAR DIAMETER (mm)	LENGTH (mm) (AS PER DIAGRAM)	D (mm)
20	750	80 min

Please note that a 12mm tension bar may be used on 100mm thick panels as determined by the erection design engineer. Cover around lifters needs to be approved by structural engineer.

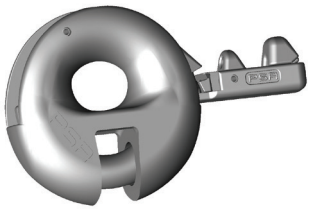
N20 TENSION BAR



LENGTH - 750MIN

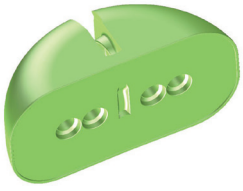
PSA LIFTMX15 COMPONENTS

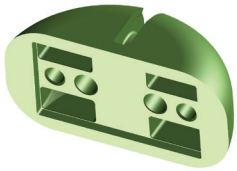
PSA LIFTMX15 EDGE LIFTER AND CLUTCHES			
PART	**EDGE LIFTER**	**LIFTING CLUTCH**	**LIFTING CLUTCH (TORUS ONLY)**
WLL (t)	15	15	15
PSA PART NUMBER	LME15	LMC15-SAF	LMC15-SAFTOR
DIMENSIONS(TxWxL)(MM)	24 x 80 x 300	130 x 150 x 400	130 x 210 x 50
WEIGHT (KG)	2.1	8.0	3.1
MATERIAL	Alloy Steel	Alloy Steel	Alloy Steel
FINISH	Galvanised	Plated	Plated
LIFTER COLOUR CODE	Fluro green		



PSA LIFTMX15 VOID FORMERS			
PART	15T Vold Former	15T Void Former with Plate Recess	Void Former Plastic Locator Plate
PSA PART NUMBER	LMV15	LMVP15	LMPLP
DIMENSIONS (MM)	67 x 82 x 159	67 x 82 x 159	24 x 51 x 96
WEIGHT (KG)	0.505	0.440	0.024
STIFFNESS	Flexible	Flexible	Rigid
COLOUR CODE	Fluro Green	Fluro Green	Black

Note: The Void Former Plastic Locator Plate is also compatible with the LiftMX range.

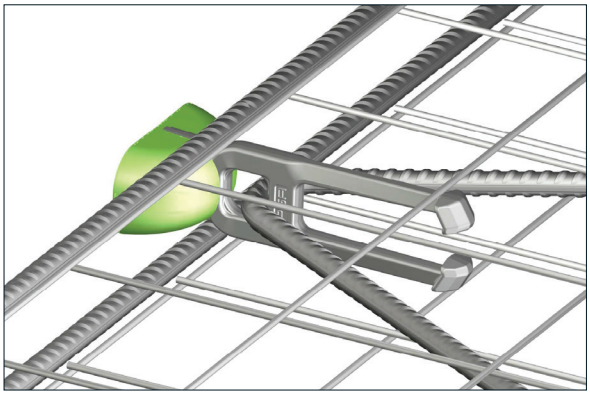


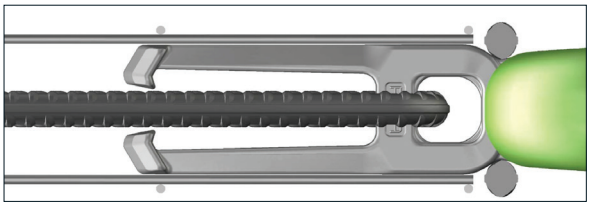


PSA LIFTMX15 EDGE LIFTER INSTALLATION INSTRUCTIONS

1. Insert lifter into void former and position the lifter centrally to the panel formwork width and hard up against the edge. Ensure lifter is fully enclosed by the void former and void former is clear of any concrete residue.
2. N16 continuous bar ("perimeter bar") must be placed above and below of the lifter.
3. Position the tension bar within the LiftMX15 tension bar opening, sitting firmly against the solid inner cross member (lifter bridge) and tie onto the reinforcement mesh.

DOUBLE MESH APPLICATION MINIMUM





DOUBLE MESH

Tension bar placed inside of the LiftMX15 tension bar opening.
Perimeter bars rest in the neck of the lifter, top and bottom.
Tie up the tension bar to the lifter bridge. Alternative placement of bar should be confirmed with erection design engineer.

CONCRETE COVER

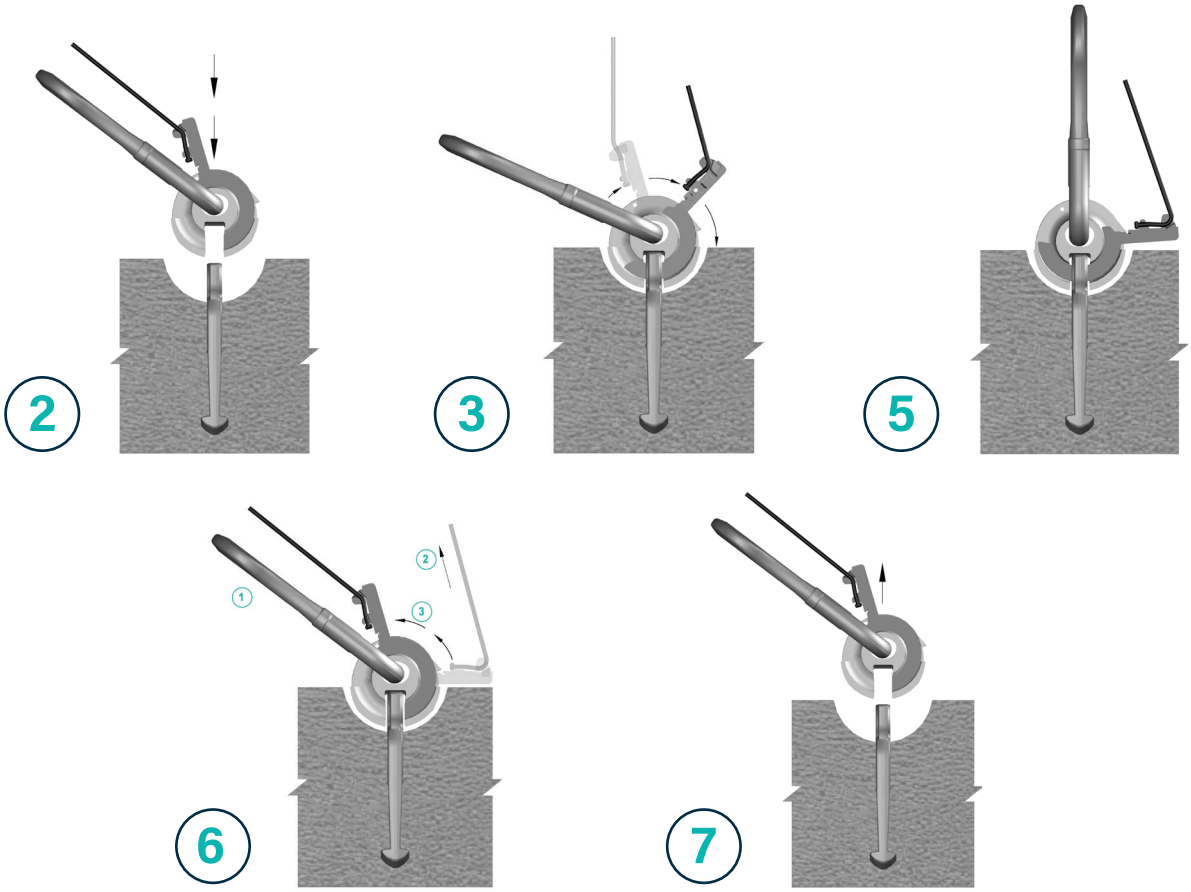
PART NUMBER	MIN. PANEL THICKNESS (mm)	PERIMETER BAR CONFIGURATION	SL82 MESH CONFIGURATION	CONCRETE COVER (mm)
LME15	175	N16 Each Face	Each Face	45mm to edge of lifter

Please note that lifter must be installed as per specifications above. Welding around lifters is not permitted. Please refer to PSA Engineering Department for additional information.

PSA LIFTMX5 SAFETY CLUTCH - RIGGER SAFE HANDLING GUIDE

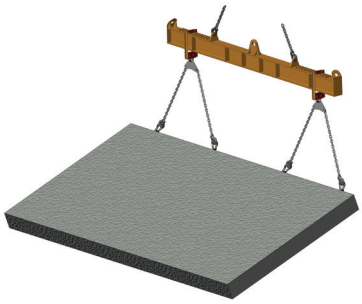
1. Carefully check the head of the LiftMX Anchor as well as the LiftMX Clutch for visible damage or deformations.
2. Install the LiftMX Safety Clutch over the head of the lifter. The handle of the Locking Ring should be orientated outwards (away from the centre of lift).
3. Fully rotate the handle of the locking ring towards the panel. Once the clutch is fully engaged, the handle will be automatically locked against the torus.
4. For ease of release feed a rope connected to the locking ring handle loosely through a lifting chain link or an additional ring connected to the chain. This is ideally done 500 to 800 mm above the shackle. It is beneficial to use an additional ring that is connected to the chain instead of feeding the rope through the chain link as this will avoid the rope getting stuck between two chain links.
5. Ensure the clutch is fully engaged with the handle of the locking against the concrete surface and proceed with the lift as per lifting certification. Monitor the clutch handle and the release rope during the entire lift. Should there be an entanglement of the handle or the release rope stop the lifting process, re-adjust the rigging and start again.
6. After the concrete element has been safely installed and was secured (1) release the load on the shackle, (2) pull the release rope to unlock the locking ring handle until (3) the locking ring rotates and disengages.
7. Remove the clutch from the panel.

Note: The Clutch will not disengage; until the full load has been released and until the lock handle is rotated sufficiently for the lock ring to be out of the anchors lifting hole.

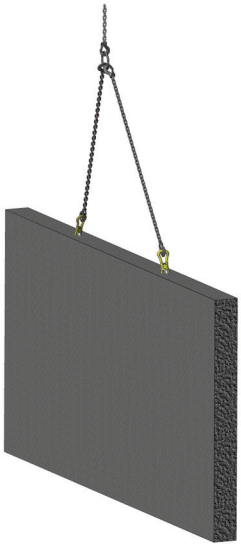


Refer to AS 3850 Guidelines for the various application of safe lifting techniques.

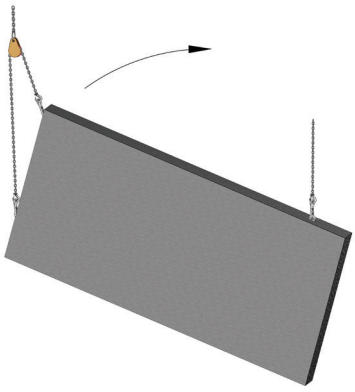
PSA LIFTMX15 TYPICAL RIGGING DIAGRAMS



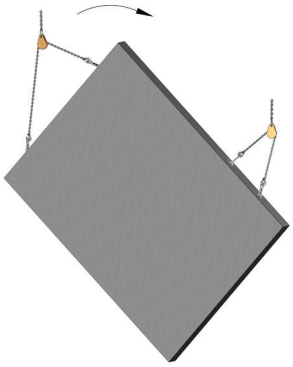
LIFT FROM AN EDGE



VERTICAL LIFT FOR TRANSPORT



ROTATION WITH ONE TAILING ANCHOR



ROTATION WITH TWO TAILING ANCHORS

Refer to AS 3850 Guidelines for the various application of safe lifting techniques.

PSALIFTMX15

PSA

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