

The image shows several Ancon LinkPro Lifting Loops, which are U-shaped lifting devices made of twisted steel wire. Some are purple and some are black. They are shown in various positions: some are draped over concrete beams, some are attached to rebar structures, and one is shown in a close-up view at the bottom. The background is a concrete structure with beams and rebar.

# LinkPro

## Lifting Loops

Safe, efficient, precast concrete handling.  
Ideal for the civil engineering sector.

**Ancon**<sup>®</sup>  
BUILDING PRODUCTS

The latest addition to our comprehensive LIFTING SYSTEM range

# Ancon LinkPro

Fibre-cored/steel-cored lifting loops to facilitate the safe and efficient handling of precast and prestressed reinforced concrete units, including bridge and shell beams

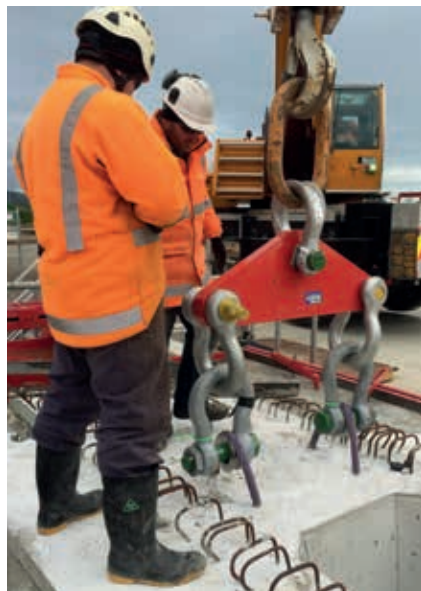
- ✓ Safe, reliable, fully engineered solution
- ✓ Suitable for axial and diagonal lifting
- ✓ Colour-coded for WLL visual check
- ✓ Manufactured from corrosion resistant galvanised steel
- ✓ No specialist lifting clutches or equipment required
- ✓ No recess formers required
- ✓ Suitable for use with standard lifting hooks/shackles

### System Components

Each LinkPro loop is manufactured from galvanized, high strength, 1770MPa grade fibre-cored/steel-cored steel wire rope, joined with a swaged ferrule and fitted with a colour-coded tag detailing the product code, working load limit (WLL) and batch number. A colour-coded painted section, designed to be left exposed after installation, provides a visual check that the correct embedment depth has been achieved.

### Design Considerations

LinkPro applications should be engineered to meet the requirements of relevant standards, e.g. AS3600, AS3850 for building elements, AS5100 for bridge elements and TMR MTRS73 for prestressed concrete members, taking into consideration the rigging, element dimensions, weight, concrete strength, reinforcing etc.



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### System Benefits

Ancon LinkPro provides a safe, reliable, fully engineered solution to the issues of handling the size and scale of precast concrete units used in the civil engineering sector. LinkPro is easily installed, without recess formers, ready for direct connection to standard lifting hooks and shackles. Refer to Figure 1.

LinkPro is suitable for axial and diagonal lifting, with a maximum sling angle of 60°, from manufacture until final installation of the precast concrete element.

The multi-stranded, fibre-cored/steel-cored construction of LinkPro features small diameter outer wires (see table for details) which generate low bending stresses when loaded.

When shackle pins are used in high load designed applications we recommend a diameter not less than 3.5 times diameter rope thickness. For further information, please refer to Ancon for engineered lifting design guidance.

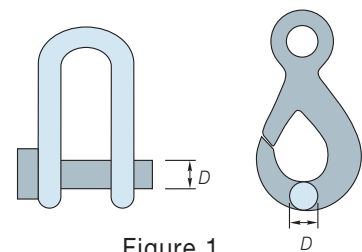


Figure 1

## LinkPro Range, Colour Codes and Dimensions

Product Code	Tag Colour Code	Rope Diameter (d) mm	Overall Height (H) mm	Embedment Depth ( $h_{ef}$ ) mm	Installation Depth ( $h_{inst}$ ) mm	Exposed Insert Height (e) mm	Min. Width ( $w_{min}$ ) mm	Max. Width ( $w_{max}$ ) mm	Approx. Weight kg
LP04	Dark Green	12	370	269	275	95	100	160	0.6
LP06	Blue	16	425	312	320	105	145	200	1.2
LP08	Silver	18	480	331	340	140	170	235	1.8
LP10	Pink	20	525	380	390	135	185	255	2.4
LP12	Yellow	22	590	424	435	155	200	285	3.5
LP16	Lilac	24	670	478	490	180	260	330	4.5
LP20	Ochre	28	750	531	545	205	280	325	6.8
LP25	Brown	32	850	599	615	235	300	400	9.8
LP32	Black	36	885	632	650	235	310	425	12.9
LP37	Bright Orange	40	950	670	690	260	340	470	17.5
LP42	Bright Orange	44	1000	698	720	280	350	545	22.2
LP47	Bright Orange	44	1100	748	770	330	390	545	24.3
LP52	Bright Orange	48	1200	846	870	330	420	580	31.5
LP57	Bright Orange	48	1350	946	970	380	480	590	35.4

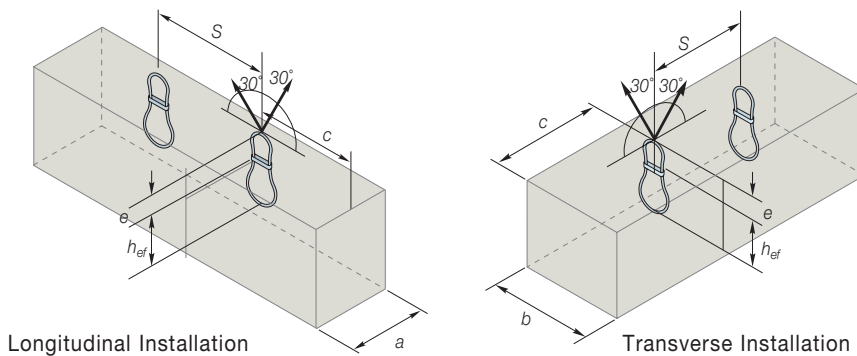
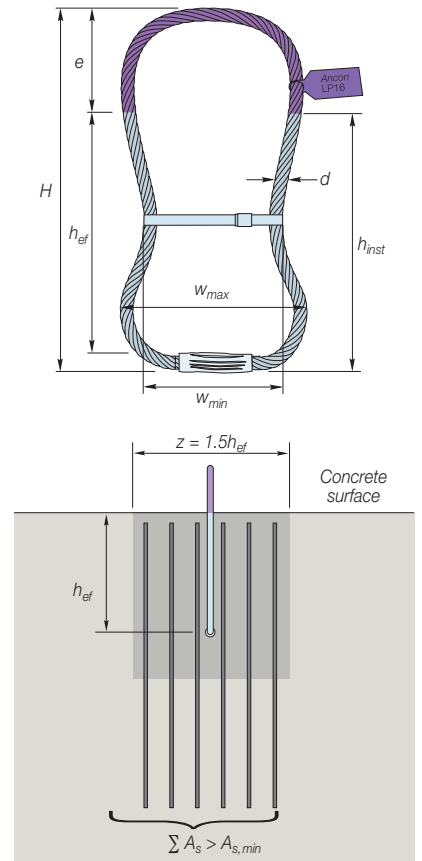


Figure 2



Reinforcement Details

Figure 3

### Minimum precast element dimensions and reinforcement requirements

The recommended concrete compressive strength for lifting  $f_{cm} = 30\text{MPa}$ .

Factor of Safety for Lifting = 3.

The minimum precast element dimensions and required reinforcement at  $f_{cm} = 30\text{MPa}$  is shown in the table below.

The minimum spacing  $s$  between any two LinkPro loops is  $2c$ . Refer to Figure 2.

The reinforcement should be evenly distributed in the critical zone either side of a loop over a width  $z = 1.5h_{ef}$ . Refer to Figure 3.

If the design shear reinforcing of the precast element  $A_s$  is less than  $A_{s,min}$  shown in the tables, then additional reinforcement e.g. hairpins, stirrups or hooked bars should be added to increase the area to  $A_{s,min}$ . The ties should be evenly and closely spaced around the LinkPro loop at approximately 50mm spacing while complying with bar spacing requirements of relevant design standards.

Reinforcement should be designed by the lifting design engineer, detailed on the shop drawings and placed in accordance with the approved lifting design. Where additional reinforcement is required, ensure it is not in contact with the swaged ferrule.

LinkPro has been designed to be used in conjunction with reinforcement details from relevant design standards.

In the transverse installation, if any bars need to be cut to install the loop, they should be replaced by bars of the same size and lapped in accordance with the relevant design standard.

For applications which fall outside the scope of the table, please contact Ancon for design guidance.

### Minimum Precast Element Dimensions and Shear Reinforcement Requirements for Lifting at 30MPa

Product Code	WLL tonnes FOS=3	WLL tonnes FOS=4*	End Distance (c) mm	Minimum Precast Element Width	Minimum Precast Element Width	Critical Zone Width ( $1.5h_{ef}$ ) (z) mm	Minimum Area Reinforcement ( $A_{s,min}$ ) in Critical Zone $\text{mm}^2$
				Longitudinal Installation (a) mm	Transverse Installation (b) mm		
LP04	4.0	3.0	460	140	200	404	205
LP06	6.5	4.9	550	210	245	468	332
LP08	8.0	6.0	590	220	270	497	409
LP10	10.0	7.5	670	280	285	570	511
LP12	12.5	9.4	640	290	300	636	639
LP16	16.0	12.0	850	400	400	717	818
LP20	20.0	15.0	940	470	470	797	1023
LP25	25.0	18.8	1050	530	530	899	1278
LP32	32.0	24.0	1110	610	610	948	1636
LP37	37.0	27.8	1180	640	640	1005	1892
LP42	42.0	31.5	1230	680	680	1047	2147
LP47	47.0	35.3	1320	680	680	1122	2403
LP52	52.0	39.0	1480	630	630	1269	2659
LP57	57.0	42.75	1660	590	590	1419	2914

\*Transport and Main Roads (QLD) require a minimum factor of safety of 4 for lifting; refer to Technical Standard MRTS73: 2014

## Installation, Lifting and Handling

### Pre-Installation

Store to avoid any damage to loops. Check LinkPro for defects prior to casting. Loops with evidence of mechanical damage, kinking, broken or unravelling wires, crushing, wear, corrosion or other serious damage should be discarded. If in doubt, contact Ancon.

### Installation

Carefully place LinkPro in its correctly measured position between the reinforcement, with the swaged ferrule at the bottom and the coloured section and WLL tag left exposed at the top, and tie to the reinforcement to minimise movement during casting. Ensure the swaged ferrule does not come into contact with the reinforcing bars or prestressing strand.

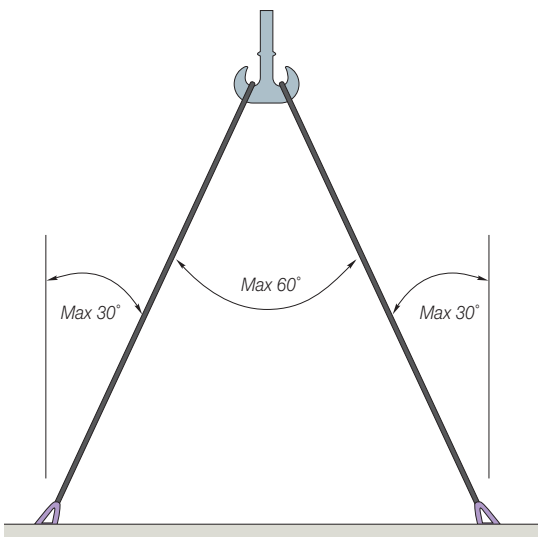
LinkPro should be placed and aligned either parallel (longitudinal installation) or perpendicular (transverse installation) to the direction of the expected load in accordance with the shop drawings, as approved by the lifting design engineer. The specified loop capacities, embedment depths, spacing and edge distances should be strictly adhered to.

During installation, take care not to damage the exposed lifting section of the loops.

When installing LinkPro ensure the band around the loop is not removed, for guidance please contact the Ancon Engineering Team.

### Lifting and Handling

LinkPro may be diagonally loaded at an inclination of 30° (Sling angle 60°), see Maximum Sling Angle drawing. The rigging design shall be provided by the lifting design engineer and shown on the erection shop drawings. Refer to Figure 4.



Maximum Sling Angle

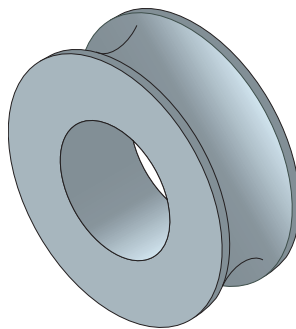
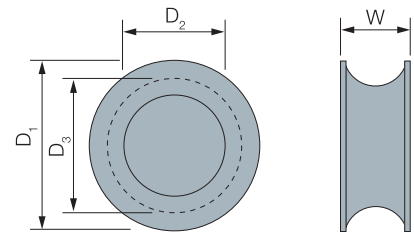
Figure 4

### Notes:

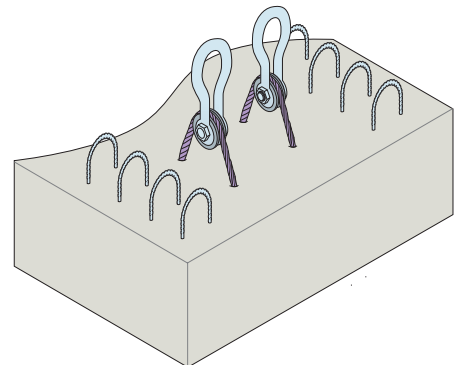
- Ensure that the rigging configuration does not result in a lever arm or bending moment during hook up
- When using crane hooks, Ancon recommends lifting with  $D/d = 3.5$ . In addition, when lifting with large LinkPro sizes (LP20 and above) Ancon recommends lifting with Ancon Thimbles so the correct radius is on the loop to ensure safe lifting
- Do not bend LinkPro to an angle greater than 30° during any lifting, handling or storage of the precast elements prior to the final installation of the precast element
- Where precast elements are to be stacked, sufficient separators must be used between the precast elements to prevent damage to LinkPro by bending beyond 30°, mechanical damage, crushing or abrasion
- After installation/use, the exposed loop may be cut off as required. Consideration should be given to corrosion protection of the cut ends if they are to remain exposed

### Ancon Thimbles for LinkPro Lifting Loops

Product Code	Lifting Loops	D <sub>1</sub> (mm)	D <sub>2</sub> (mm)	D <sub>3</sub> (mm)	W (mm)
LPT20-25T	LP20-LP25	150	85	117	48
LPT32-37T	LP32-LP37	185	100	140	56
LPT42-57T	LP42-LP57	230	135	179	64



Ancon Thimble



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