PHILIPPGROUP

PHILIPP Polypropylene lifting loop

VB3-T-042-en - 09/16

Installation and Application Instruction

Transport and mounting systems for prefabricated building

Technical department

Our staff will be pleased to support your planning phase with suggestions for the installation and use of our transport and mounting systems for precast concrete construction.

Special designs

Customized to your particular needs.

Practical tests on site

We ensure that our concepts are tailored precisely to your requirements.

Inspection reports

For documentation purposes and your safety.

On-site service

Our engineers will be pleased to instruct your technicians and production personnel at your plant, to advise on the installation of precast concrete parts and to assist you in the optimisation of your production processes.

High safety level when using our products

Close cooperation with federal materials testing institutes (MTIs), and official approvals for the use of our products and solutions whenever necessary.

Software solutions

The latest design software, animated videos and CAD libraries can always be found under www.philipp-gruppe.de.

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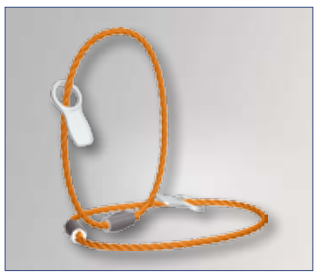
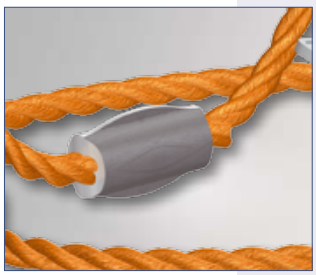
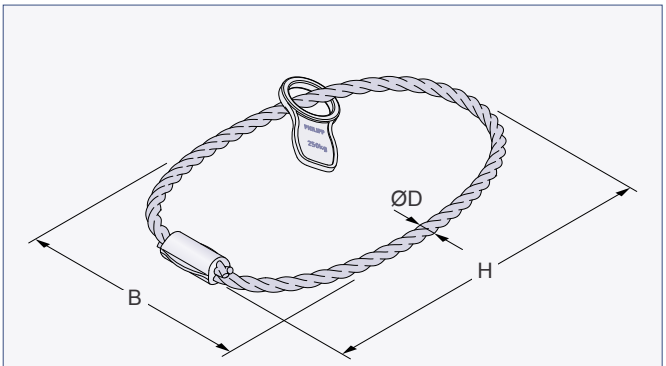
Content



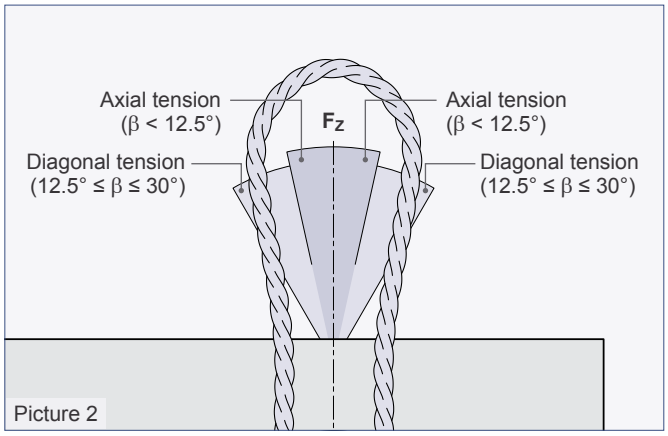



PHILIPP Polypropylene lifting loop

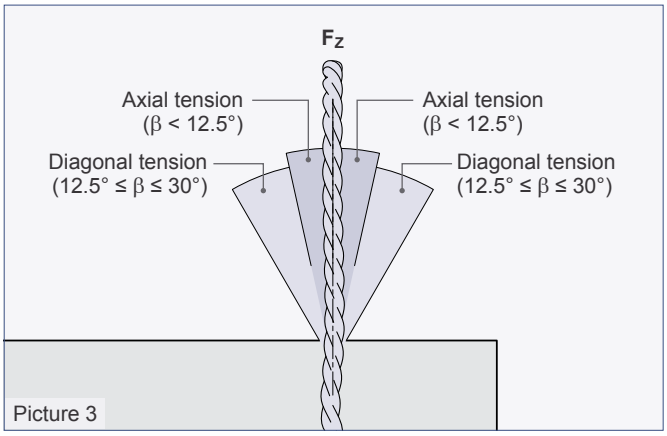
The Polypropylene lifting loop is part of the PHILIPP transport anchor systems. The use of the Polypropylene lifting loop requires the compliance with this Installation and Application Instruction as well as the General Installation Instruction.
Polypropylene lifting loops are designed for the transport of precast concrete units only. Multiple use within the transport chain (from production to installation of the unit) means no repeated usage. A repeated use (e.g. ballasts for cranes) is not allowed.



Picture 1



Picture 2



Picture 3

Table 1: Types and Dimensions

Ref.-No.	Type	Colour code (Marking label)	H ① [mm]	B ① [mm]	ØD ② [mm]	Weight [kg/100 pcs.]
43P06	150	Light blue	220	100	6.0	1.9
43P08	250	Pure white	220	100	8.0	3.2
43P10	360	Pastel green	260	120	10.0	5.6
43P12	500	Pastel orange	290	140	12.0	10.0
43P14	875	Sulfur yellow	330	160	14.0	15.5
43P16	1200	Flame red	370	180	16.0	22.0

① Dimensions H and B are standard values and can vary.
② Rope diameter ØD is a standard value and can vary depending on the rope construction.

Permissible load directions

Polypropylene lifting loops can only be used for axial and diagonal tension up to 30°. A lateral tension is not allowed.

Lateral tension is not allowed within the whole transport chain. This also applies to a diagonal tension with angle β more than 30°!

General information

Materials

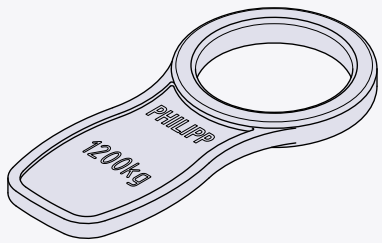
Polypropylene lifting loops are made of a polypropylene rope. Both ends of the rope are bonded together by a ferrule and form a loop.

Marking

In order to identify the types of the Polypropylene lifting loops visually they are marked with a coloured tag. This tag must also be visible at the segment sticking out after concreting.

The tag of the Polypropylene lifting loop includes the following data:

- Producer PHILIPP
- Bearing capacity e.g. 1200 kg



Picture 4

Corrosion

For concrete or mortar with an increased chlorine equivalent use of a Polypropylene lifting loop with an aluminium ferrule is not recommended. For this application a Polypropylene lifting loop with a steel ferrule is more suitable and can be delivered by PHILIPP on request.
An increased chlorine equivalent exists if the values given in the German standards DIN EN 206-1 and DIN 1045-2 are exceeded.

The aluminium ferrule used with Polypropylene lifting loops must not be placed near-surface of the concrete element. The concrete cover for the ferrule has to be determined using following equation.

$$c_{Ferrule} \geq 1.\text{-}2 * c_{min}$$

(DIN EN 1992-1-1 part 4 and Tab. 4.4N)
(DIN EN 1992-1-1/NA Tab. NA.4.4)

Storage of the Polypropylene lifting loops

Polypropylene lifting loops shall be stored in a shelf with clean, dry and aerated conditions, away from high thermal influences, without contact to chemicals, flue gas, corroding surfaces, direct sun light or other ultraviolet radiation.

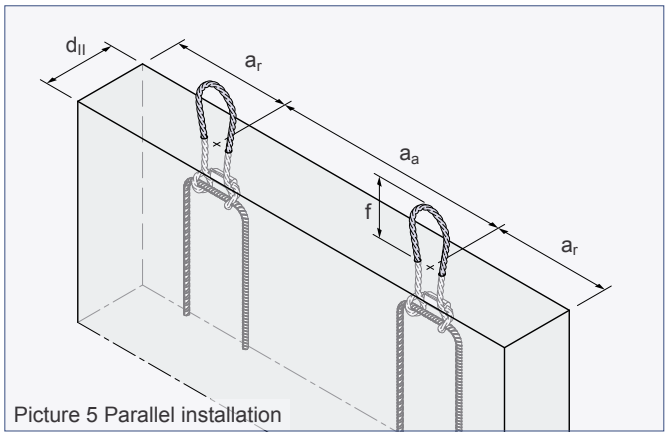
Concrete

Concrete strengths f_{cc} given in table 2 are cube strengths at the time of the first lifting.

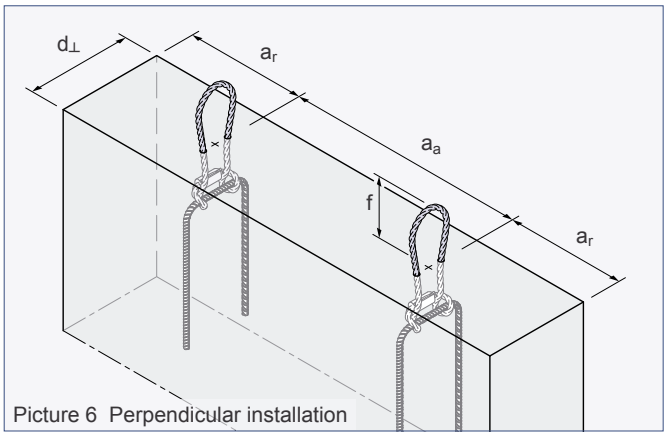
Distances / reinforcement

Centre and edge distances, element thicknesses

The installation and position of Polypropylene lifting loops in precast concrete elements require minimum dimensions and centre/edge distances for a safe load transfer.
Given unit thickness d in table 2 cover axial and diagonal loading and are valid for a parallel and also perpendicular installation of the Polypropylene lifting loops. When the Polypropylene lifting loop is installed it must be considered that the value f complies with picture 5 resp. 6.



Picture 5 Parallel installation



Picture 6 Perpendicular installation

Table 2: Permissible load bearing capacities

Type	Element thicknesses		Distances		Mounting dimension	perm. F_Z 0° - 30°
	d_{II} [mm]	$d_{\perp}$ [mm]	a_a [mm]	a_r [mm]	f [mm]	if f_{cc} **15 N/mm²** [kN]
150	100	200	440	220	65	1.50
250	100	200	440	220	65	2.50
360	100	200	440	250	80	3.60
500	120	240	640	300	90	5.00
875	120	240	640	350	100	8.75
1200	120	240	640	350	110	12.00

To determine the correct type please refer also to our General Installation Instruction.
The weight of 1.0 t corresponds to 10.0 kN.

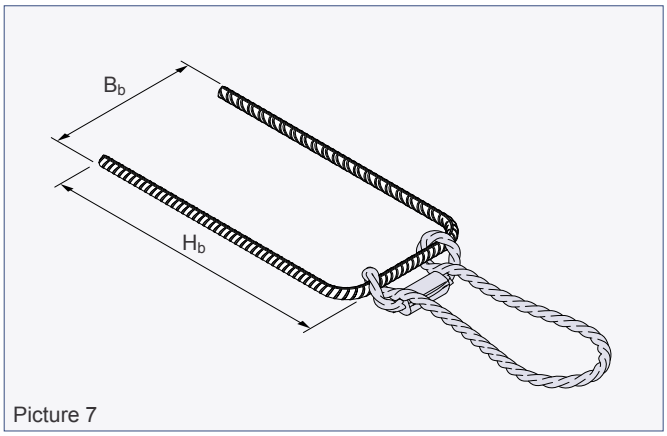
Reinforcement

The stirrups specified in table 3 ensure the local load application via the Polypropylene lifting loop. Reinforcement required by a static calculation is not replaced by these additional stirrups. The user is personally responsible for further transmission of load into the concrete unit.

At the first time of lifting the concrete must have a minimum strength f_{cc} of **15 N/mm²**.

Table 3: Required stirrups

Type	Required stirrup	H_b [mm]	B_b [mm]
150	1 × Ø6	300	100
250	1 × Ø6	300	100
360	1 × Ø6	300	100
500	1 × Ø6	300	100
875	1 × Ø6	300	100
1200	1 × Ø8	400	100

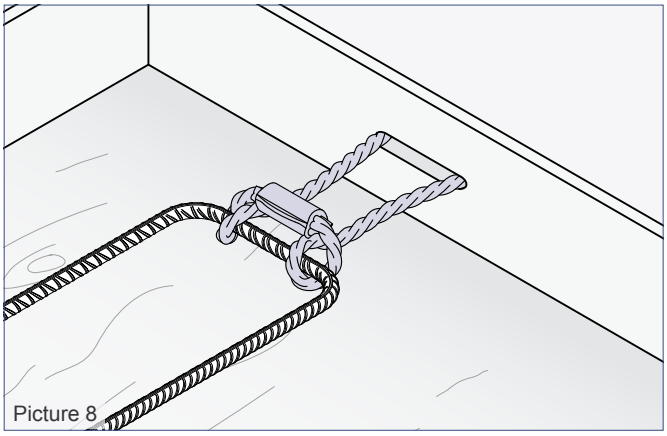


Picture 7

Installation / Safety

Installation

Prior concreting the precast element the Polypropylene lifting loops are installed to the mould. The installation of Polypropylene lifting loops through the formed surface of a precast element requires a subsequent and careful sealing of the mould. This is necessary to avoid defects in the anchorage area of the Polypropylene lifting loop.
In order to guarantee the position of the Polypropylene lifting loop during concreting and compacting it must be fixed to the reinforcement. It might be necessary to add some more steel bars.

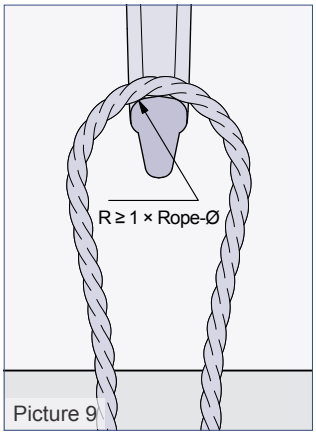

Picture 8

Safety notices

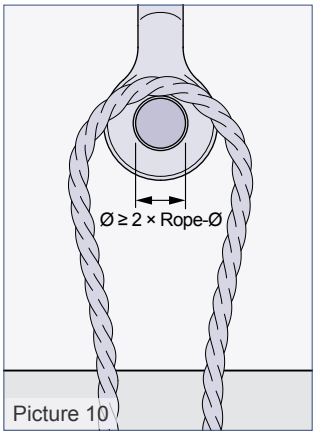
The transition radii of used hooks must be the same or larger than the actual rope diameter of the Polypropylene lifting loop (Picture 9). By using too small, too large or sharp-edged hooks the lifetime of the Polypropylene lifting loop will be reduced.

During use of Polypropylene lifting loops the following must be considered:

- The use of damaged Polypropylene lifting loops with broken strands, contusions, kinks or embrittlement (e.g. caused by solar radiation) is not allowed.
- Contact of Polypropylene lifting loops with acids and alkalis must be avoided.
- Lever arms caused by rotating, tilting or swinging which result in local blow-out failures in the concrete or broken ropes are inadmissible!
- The Polypropylene lifting loops can only be used with a diagonal tension β of max. 30°. A lateral tension of Polypropylene lifting loops is not allowed!



Picture 9



Picture 10

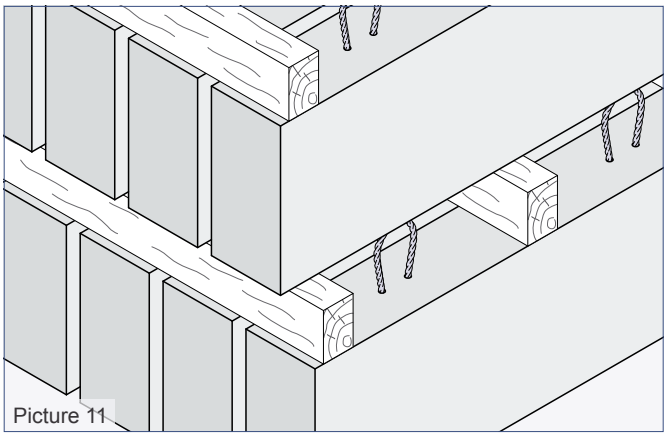
Using a shackle the pin must be at least two times of the rope diameter of the Polypropylene lifting loop.

Welding or other strong heat influences (sparks) which can damage the Polypropylene lifting loops are not allowed.

Storage of the precast units

During storage of the concrete units please make sure that the Polypropylene lifting loops are not bent in any way. This can be guaranteed by using a spacer (e.g. a squared timber) between the concrete elements. The storage of concrete elements outside with direct sun light to the polypropylene loops causes an embrittlement of the rope and thus to the reduction of the load bearing capacity.

In case of a visible change to the polypropylene loops (bleaching caused by ultraviolet radiation) the transport with these loops is not allowed anymore.


Picture 11

Our customers trust us to deliver. We do everything in our power to reward their faith and we start each day intending to do better than the last. We provide strength and stability in an ever-changing world.

Welcome to the PHILIPP Group

Sustainable solutions

PHILIPP GROUP

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