

# PHILIPP GROUP

## PHILIPP Transport loop system



VB3-T-046-en - 03/17

## Installation and Application Instruction

## Transport and mounting systems for prefabricated building

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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.

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**Content**

- PHILIPP Transport loop system ..... Page 4
  - System description ..... Page 4
- Transport loop anchor ..... Page 5
  - Description ..... Page 5
  - Materials ..... Page 5
  - Corrosion ..... Page 5
  - Marking ..... Page 5
  - Unit dimensions, centre and edge distances ..... Page 6
  - Main reinforcement ..... Page 6
  - Additional reinforcement ..... Page 7
  - Concrete ..... Page 7
  - Installation ..... Page 7
- Transport loop ..... Page 8
  - Description ..... Page 8
  - Materials ..... Page 8
  - Marking ..... Page 8
  - Connection device ..... Page 9
  - Safety notices ..... Page 9
  - Replacement criteria and inspection service ..... Page 10
- Application ..... Page 11
  - Application notes for container lifting ..... Page 11



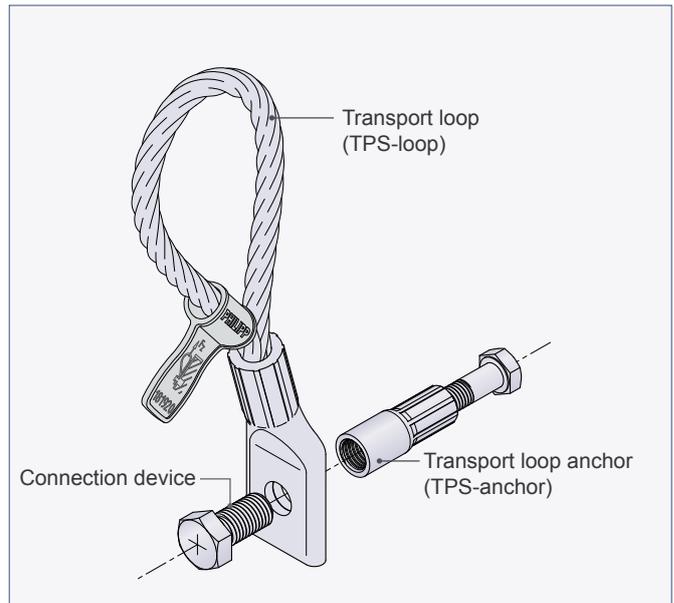
## PHILIPP Transport loop system (TPS-system)

### System description

The Transport loop system is suitable for the transport of tubes or shaft elements, containers, septic tanks, wells, drains and manholes.

It consists of a Transport loop anchor, corresponding Transport loop and a machine screw (grade 8.8) as connection device (picture 1). All Transport loop anchors may only be used in combination with the mentioned PHILIPP Transport loop.

The use of the Transport loop system requires the compliance with this Installation and Application Instruction as well as the General Installation Instruction.



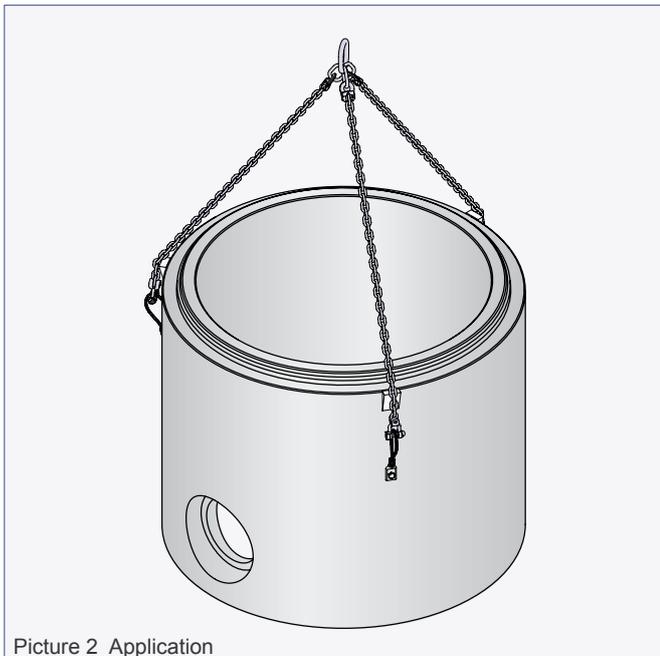
Picture 1 Transport loop system (TPS-system)



A usage of the Transport loop system as a load securing element during the transport is not allowed.

Table 1: Transport loop system (set)

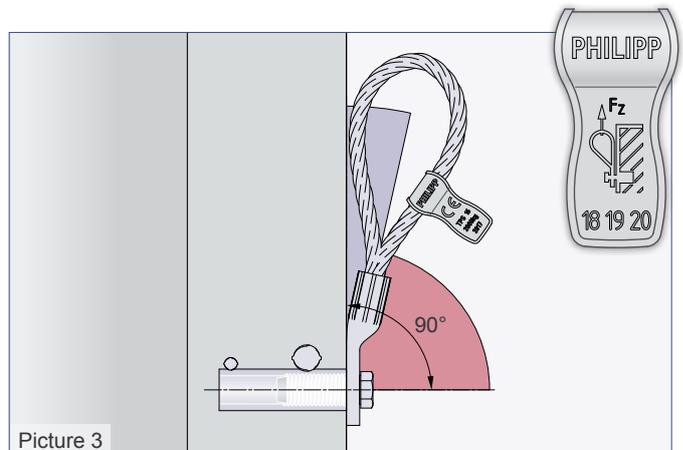
Ref.-No.	Type	consists of			Weight [kg/100 pcs.]
		TPS-anchor [Ref.-No.]	TPS-loop [Ref.-No.]	Connection device [Ref.-No.]	
67TPSS122000	TPS 16	67TPSA16	67TPS122000	670S1630	79.0
67TPSS154000	TPS 24	67TPSA24	67TPS154000	670S2440	172.0
67TPSS185200	TPS 30	67TPSA30	67TPS185200	670S3060	343.0
67TPSS206300	TPS 36	71FL36	67TPS206300	670S36080V	434.0



Picture 2 Application



The Transport loop system may only be used for lateral tension, that means vertical (90°) to the longitudinal axis of the connection device (screw - as in picture 3). An axial or diagonal loading is not allowed.

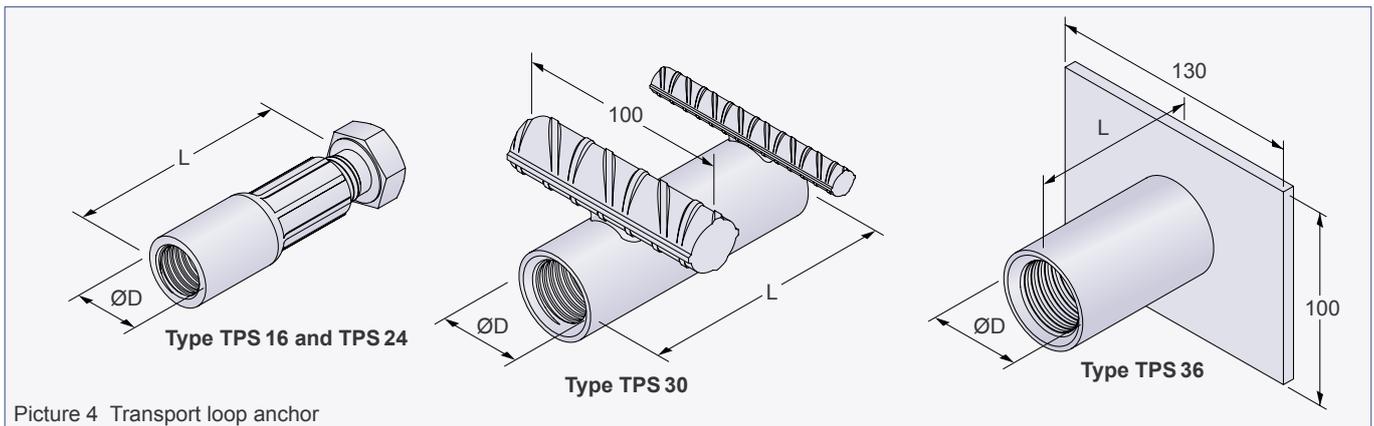


Picture 3

### Storage of Transport loop anchors and Transport loops

During storage the Transport loop anchors and Transport loops must be protected against weathering, aggressive substances and high temperatures.

### Transport loop anchor (TPS-anchor)



Picture 4 Transport loop anchor

#### Description

The TPS-anchor is part of the Transport loop system and complies with the “Safety rules for Transport anchors and systems for Precast Concrete Units” (DGV 101-001). It is suitable for the transport of tubes or shaft elements, containers, septic tanks, wells, drains and manholes. Multiple use within the transport chain (from production to installation of the unit) means no repeated usage. A repeated usage of the TPS-anchor or the TPS-loop is only allowed (e.g. ballasts for cranes) if it complies with the German approval (DIBt No.: Z-30.3-6).

#### Materials

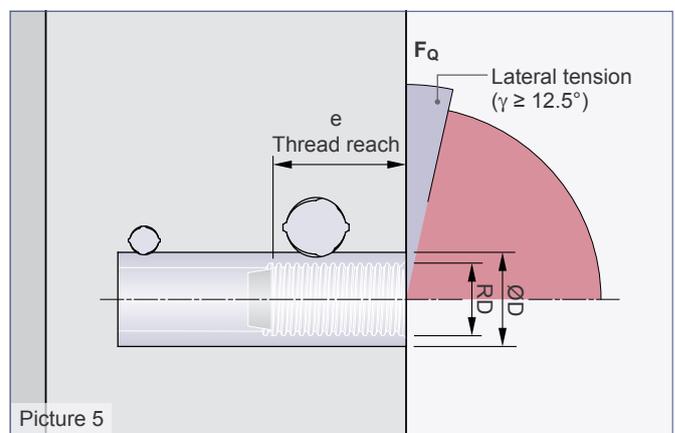
On the one hand type 16 and 24 of the TPS-anchors consist of a machine screw with crimped-on insert. On the other hand TPS-anchor type 30 consist of a threaded insert with weld-on rebars and type 36 of a steel plate with weld-on threaded insert.

#### Corrosion

All types of the TPS-anchors are electro-galvanised conforming to standards. This galvanisation protects the anchor temporarily from the storage at the producer site to the final installation in the concrete element.

#### Marking

- Manufacturer (PHILIPP)
- Type (system / load class)
- Maximum load (e.g. 2000 KG)

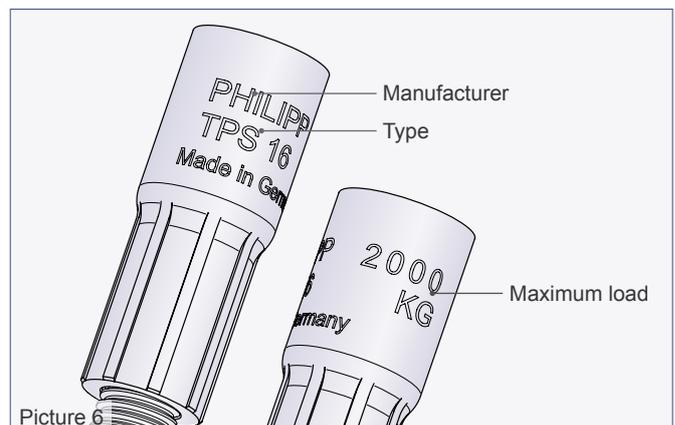


Picture 5

**!** Axial and diagonal tension are not allowed within the whole transport chain!

**Table 2: Dimensions of Transport loop anchor**

Ref.-No.	Type	RD	L	ØD	e	Weight
bright zinc plated						
			[mm]	[mm]	[mm]	[kg/100 pcs.]
67TPSA16	TPS 16	16	95.0	21.0	27.0	13.7
67TPSA24	TPS 24	24	110.0	31.0	43.0	42.0
67TPSA30	TPS 30	30	120.0	39.5	52.0	102.3
71FL36	TPS 36	36	84.0	47.0	68.0	111.2



Picture 6

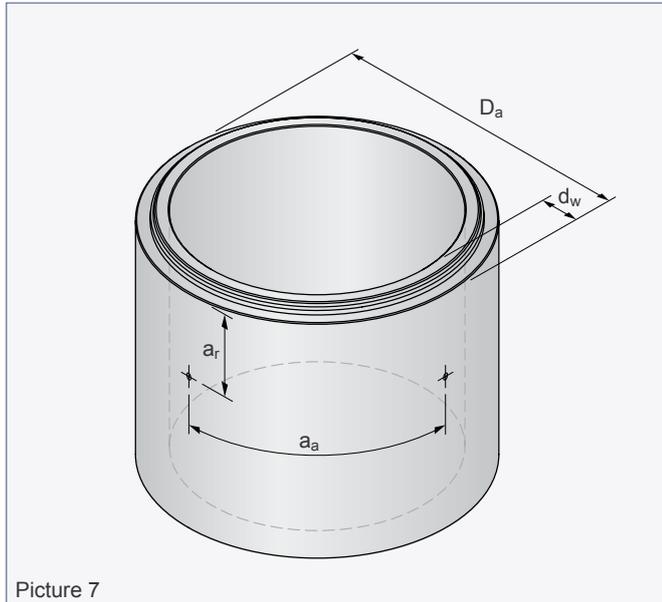
## Transport loop anchor (TPS-anchor)

### Unit dimensions, centre and edge distances

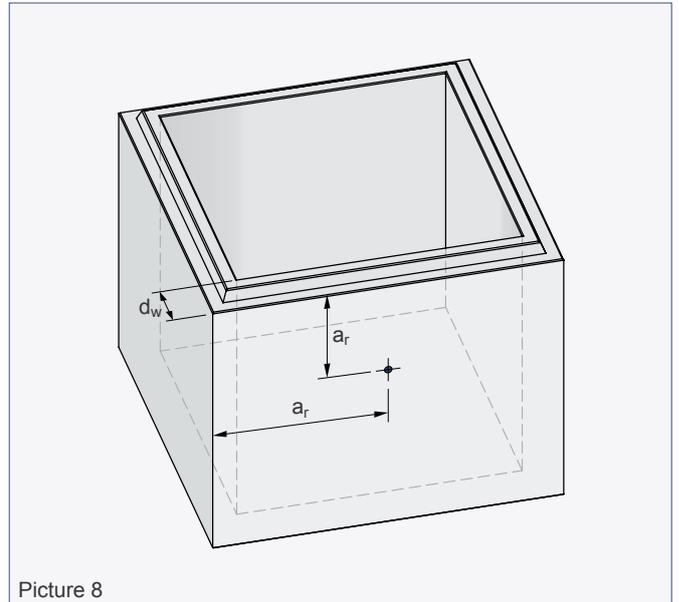
The installation and position of TPS-anchors in precast concrete units require minimum element dimensions as well as minimum centre and edge distances according to table 3.



For elements with only two lifting points, the both anchors must be placed above the centre of gravity, in order to avoid a tipping-over of the concrete units.



Picture 7



Picture 8

**Table 3: Permissible load bearing capacities**

Load class	Minimal diameter $D_a$ [mm]	$d_w$ [mm]	$a_r$ [mm]	$a_a$ [mm]	perm. F	
					if $f_{cc} \geq 25 \text{ N/mm}^2$ perm. $F_Q$ [kN]	if $f_{cc} \geq 35 \text{ N/mm}^2$ perm. $F_Q$ [kN]
16	Ø 1000	120	500	1000	20.0	-
24	Ø 2000	150	1100	2200	40.0	-
30	Ø 2000	150	1100	2200	52.0	-
36	Ø 2000	120	1400	2800	-	63.0

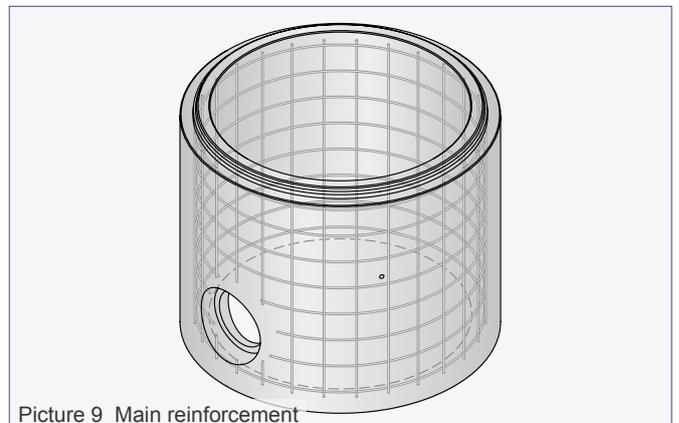
To determine the correct type please refer also to our General Installation Instruction.  
The weight of 1.0 t corresponds to 10.0 kN.

### Main reinforcement

On use of the TPS-anchors precast units must be reinforced with a minimum reinforcement according to table 4. This minimum reinforcement can be replaced by a comparable steel bar reinforcement. At the first time of lifting the concrete must have a minimum strength  $f_{cc}$  acc. to table 3. The user is personally responsible for further transmission of load into the concrete unit.

**Table 4: Minimum reinforcement**

Load class	Mesh reinforcement (square) [mm <sup>2</sup> /m]
16	221 on-centre
24	221 on-centre
30	221 on-centre
36	503 on-centre



Picture 9 Main reinforcement



Existing static or constructive reinforcement can be taken into account for the minimum reinforcement according to table 4.

## Transport loop anchor (TPS-Anchor)

### Additional reinforcement

When using of the TPS-anchor type 36 precast units must be reinforced with a minimum reinforcement according to table 5.

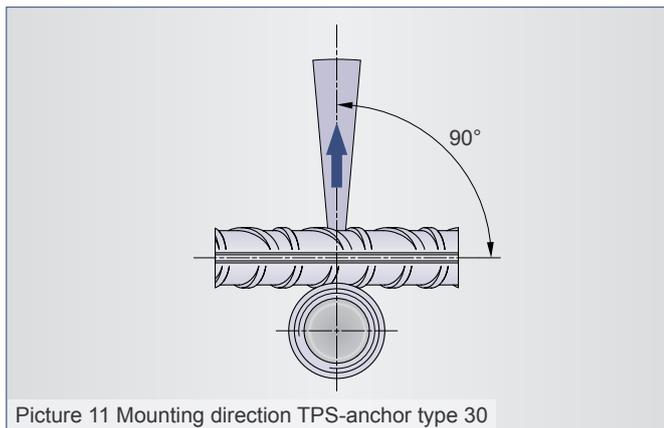
Table 5: Anchorage reinforcement (only for type 36)			
Load class	L [mm]	$\varnothing d_s$ [mm]	$\varnothing d_{br}$ [mm]
36	600	14	56

### Concrete

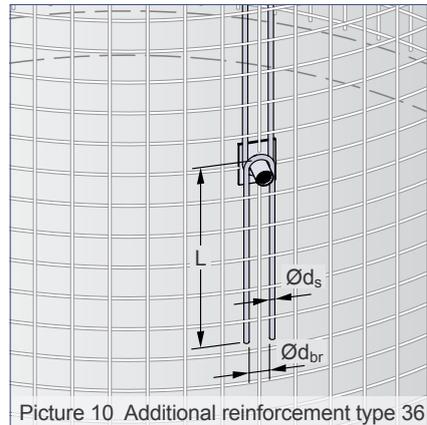
Concrete strengths  $f_{cc}$  given in table 3 are cube strengths at the time of the first lifting.

### Installation

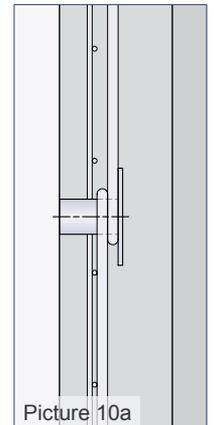
The installation of the TPS-anchor type 30 must be done in a way that the weld-on rebars are in the compressive zone (right-angled to the tensile force) of the anchor (picture 11).



Picture 11 Mounting direction TPS-anchor type 30

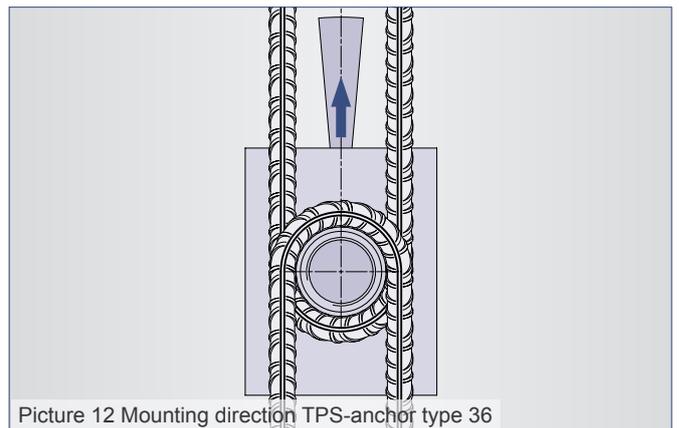


Picture 10 Additional reinforcement type 36



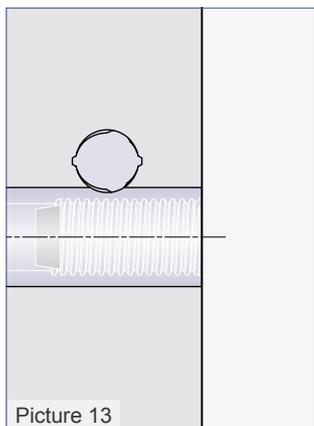
Picture 10a

Type 36 of the TPS-anchors has to be installed with the long plate side pointing to the tensile direction of the anchor (picture 12).

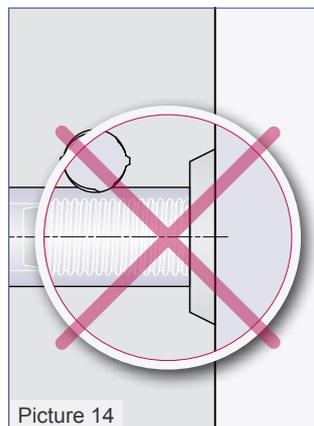


Picture 12 Mounting direction TPS-anchor type 36

All TPS-anchors must be installed always flush to the concrete element surface (picture 13). An installation in a recessed position (e.g. by using nailing plates) is not allowed (picture 14).

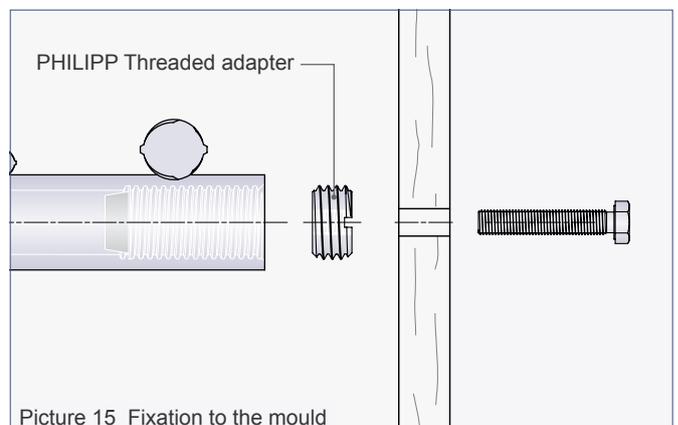


Picture 13



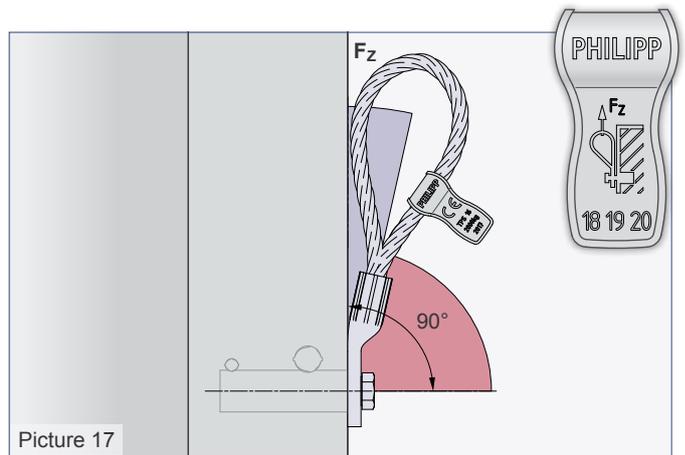
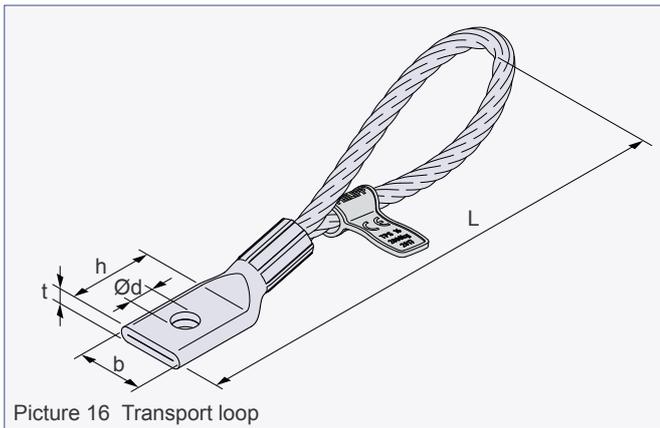
Picture 14

For the fixation of the TPS-anchors to the mould the special PHILIPP Threaded adapter can be used. This ensures a correct installation of the anchor flush to the element's concrete surface.



Picture 15 Fixation to the mould

## Transport loop (TPS-loop)



### Description

The TPS-loop is part of the PHILIPP Transport loop system and complies with the VDI/BV-BS Guideline "Lifting inserts and lifting insert systems for precast concrete elements" (VDI/BV-BS 6205).

When using the TPS-loop this Installation and Application Instruction as well as the General Installation Instruction has to be paid attention to.

TPS-loops are designed for a repeated use!



Only for axial tension the TPS-loop is designed for. Lateral tension is not allowed within the whole transport chain!

**Table 6: Permissible load bearing capacities and dimensions (Transport loop)**

Ref.-No.	Type	perm. load F <sub>z</sub> [kN]	Ød [mm]	Dimensions				Weight [kg/100 pcs.]
				L [mm]	b [mm]	h [mm]	t [mm]	
67TPS122000	TPS 16	20.0	16.5	280	44.0	57.0	8.6	59.0
67TPS154000	TPS 24	40.0	24.5	310	56.0	60.0	11.0	107.0
67TPS185200	TPS 30	52.0	30.5	390	67.0	85.0	13.0	189.0
67TPS206300	TPS 36	63.0	37.0	525	77.0	90.0	14.5	321.0

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

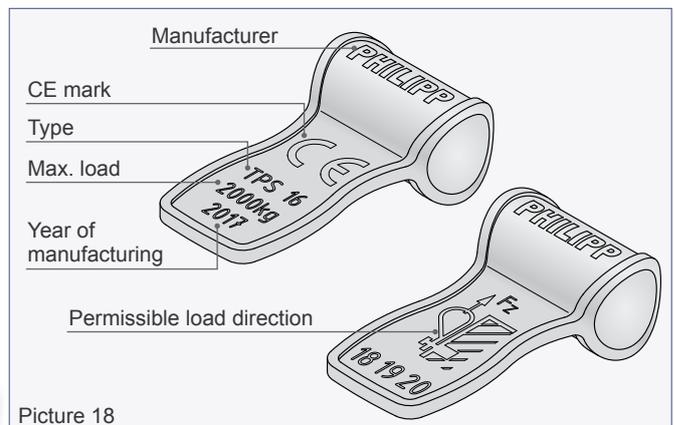
### Materials

The TPS-loop consists of a steel wire rope with a crimped-on and shaped tube socket with a drill-hole.

### Marking

All TPS-loops are labelled with a colour-coded tag. This labelling includes the following information:

- Manufacturer (PHILIPP)
- CE mark ①
- Type (system / load class)
- Maximum load (e.g. 2000 kg)
- Year of manufacturing
- Illustration of the permissible load direction



① The EC Declaration of Conformity (DoC) of the Transport loop is available on request or can be downloaded from our website [www.philipp-group.de](http://www.philipp-group.de).



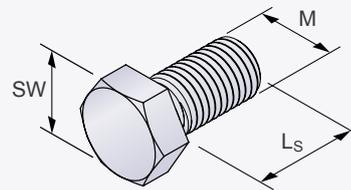
## Transport loop (TPS-loop)

### Connection device

A standard machine screw according to table 7 is the connection device between the installed TPS-anchor and the corresponding TPS-loop.

**Table 7: Connection device (grade 8.8)**

Ref.-No.	Type	M	L <sub>S</sub> [mm]	SW [mm]
670S1630	TPS 16	16	30	24
670S2440	TPS 24	24	40	36
670S3060	TPS 30	30	60	46
670S36080V	TPS 36	36	80	55

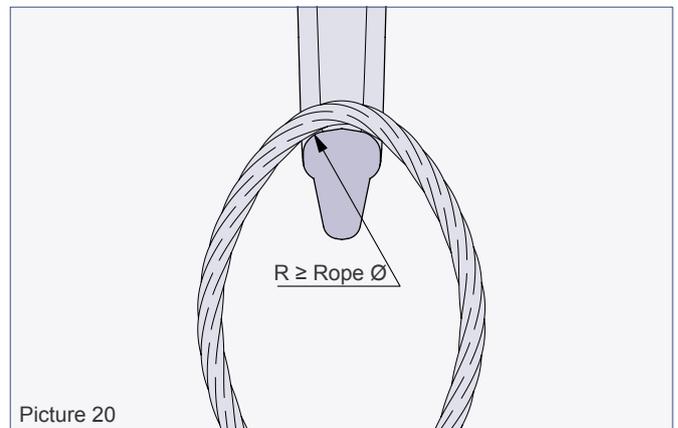


Picture 19

### Safety notice

As the TPS-loop represents a lifting device it is subject to an annual inspection according to DGUV 100-500 chapter 2.8. paragraph 3.15.4. This inspection has to be done by an expert and lies within the responsibility of the owner. Depending on the working conditions inspections might be necessary in a shorter interval instead of only once a year. This might be caused by frequent use, increased wear, corrosion or heat treatment. In general, the current accident prevention regulations must be observed.

By using the right hook size and shape an optimum service lifetime can be achieved.



Picture 20



The rounding radius of the load hooks must be at least the rope diameter of the TPS-loop (Picture 20). The use of too small, too large or sharp-edged hooks leads to a reduced lifetime of the lifting device (replacement criteria).



Welding or other strong heat influences on the TPS-loop are not allowed.

If the TPS-loop is loaded with extreme forces (e.g. by an event causing damage) it must be examined extraordinarily by an expert. The criteria are listed in section "Replacement criteria and inspection service" (page 10).



The continued use of damaged lifting devices or equipment already met the discard criteria is not permitted!

## Transport loop (TPS-loop)

### Replacement criteria and inspection service

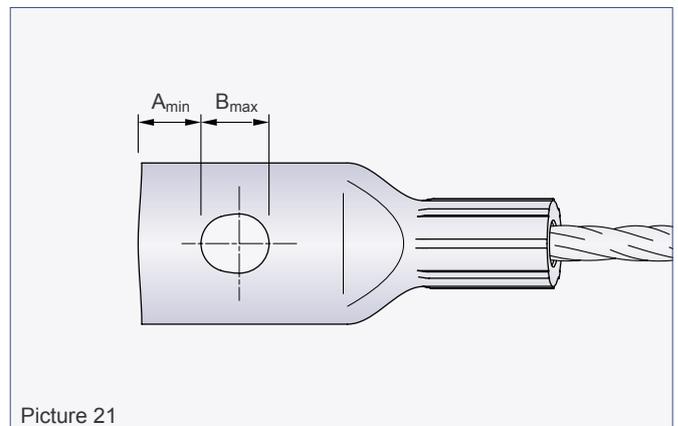
All replacement criteria of the TPS-loop follow the DGUV regulation 100-500 chapter 2.8 paragraph 3.15.4.

Prior inspection of a TPS-loop it must be cleaned. During an inspection the following criteria have to be observed. If one of the following points is fulfilled the TPS-loop has reached its replacement state and must not be used any more.

- Broken strand
- Kinks and bends
- Loosening of external layer
- Contusion in free lengths
- Contusion in the support area of the eye with more than 4 broken wire
- 4 broken wire on a length of the threefold of the wire rope diameter
- 6 broken wire on a length of the sixfold of the wire rope diameter
- 16 broken wire on a length of the thirtyfold of the wire rope diameter
- Corrosion pits
- Damages, deformation or strong wear and tear of the wire connection
- Welding or other strong heat influences
- Pull-out of wire rope from crimped part
- Unreadable or missing tag
- Deformed screw / damaged thread
- Grade of screw: min. 8.8
- Exceeding of upper or lower wear measurements (Table 8)

**Table 8: Wear measurements**

Load class	$A_{min}$ [mm]	$B_{max}$ [mm]
16	27.0	18.5
24	32.0	26.0
30	38.0	31.5
36	54.0	38.0



Picture 21

Application

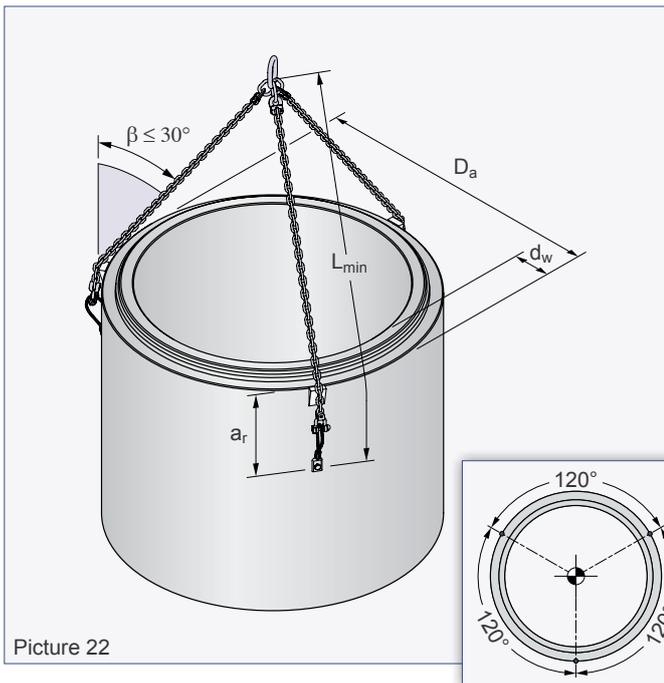
Application notes for container lifting

When using the Transport loop system it is recommended to keep the inclination  $\beta$  of the used chains or wire rope rigging equipment as small as possible. Basically, the chain or wire rope based rigging equipment must have equal legs. According to the following formula the minimum length of the legs  $L_{min}$  must be calculated.

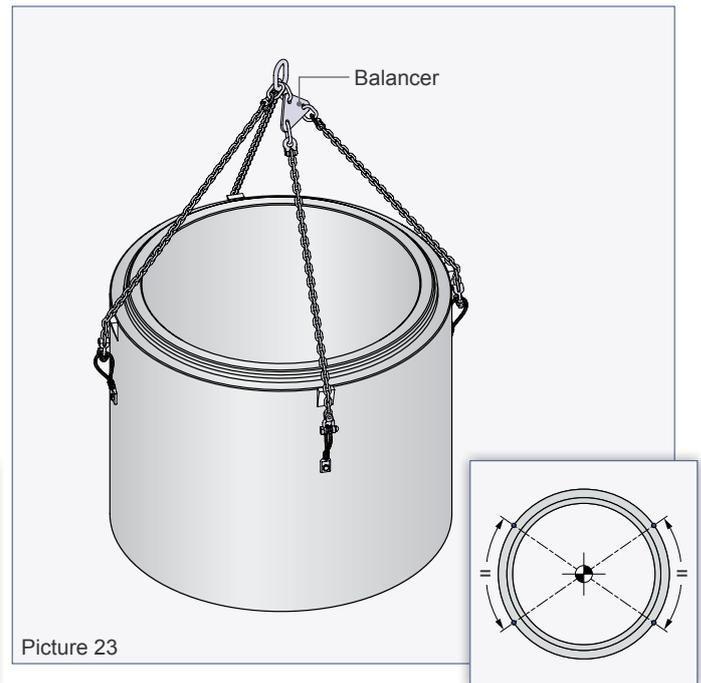
$$L_{min} \geq D_a + a_r$$

Furthermore, a balanced load distribution has to be ensured by the correct positioning of the anchors in the concrete unit. When using 4 load bearing anchors a compensation rig must be used (picture 23).

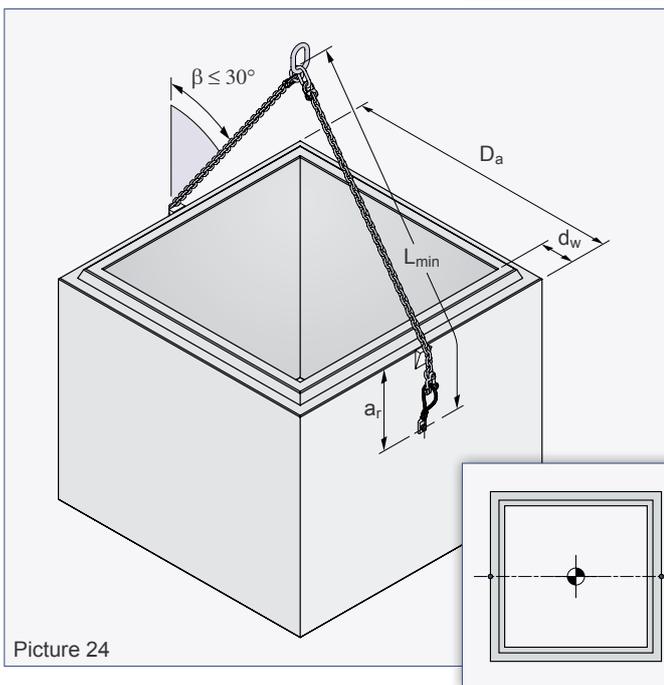
To prevent damages from the upper concrete edge an inclination angle of  $\beta \leq 30^\circ$  must not be exceeded (Picture 22 and 24). In order to protect the edges of the concrete unit as well as the lifting device suitable corner guards shall be used.



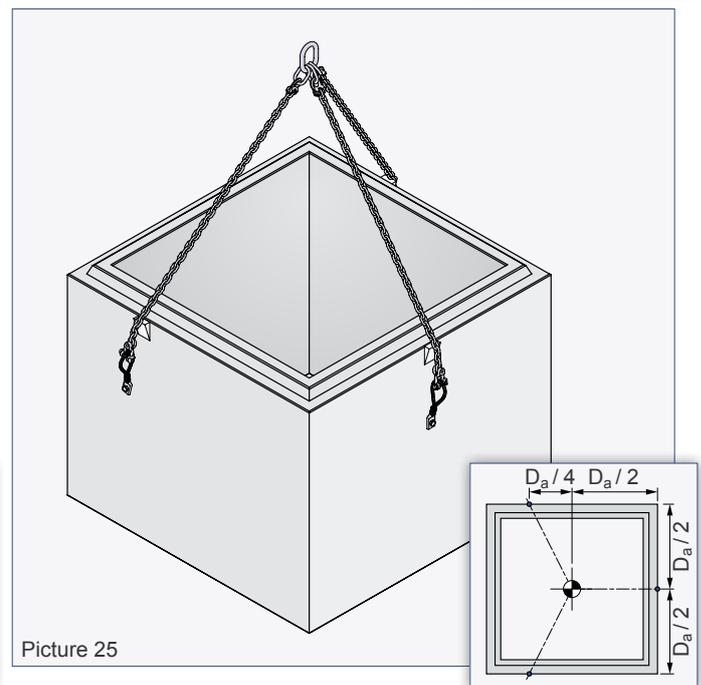
Picture 22



Picture 23



Picture 24



Picture 25

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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