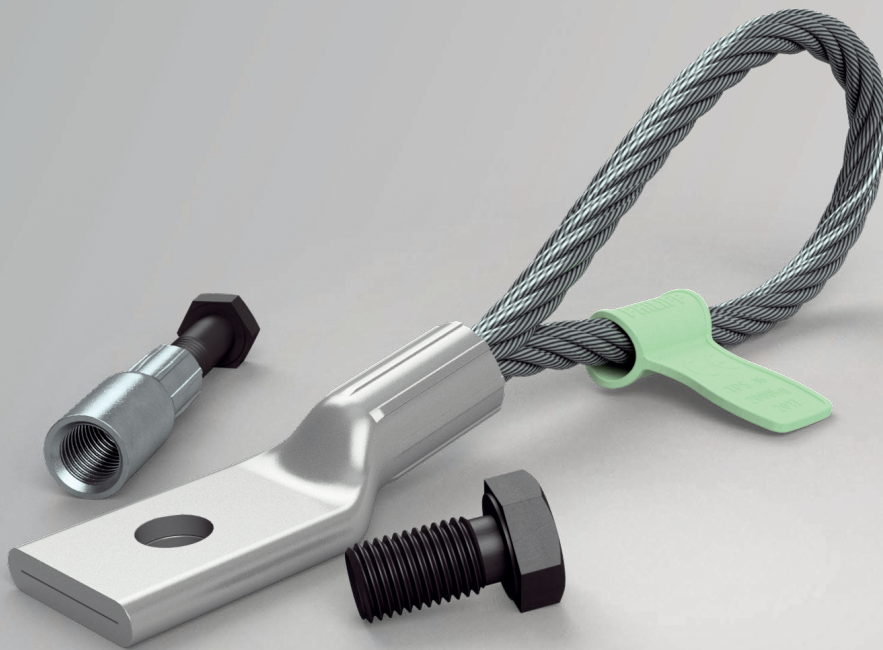


Transport loop system



Installation and Application Instruction

Our products from the division BUILDING SOLUTIONS

SERVICES

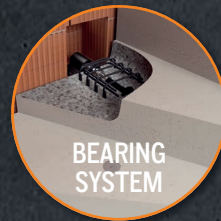
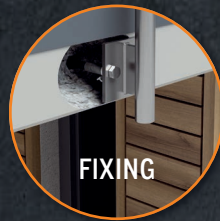
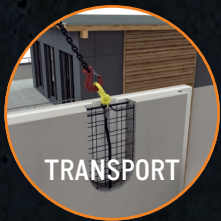
- » On-site tests -> we ensure that your requirements are properly covered by our planning.
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PHILIPP Transport loop system

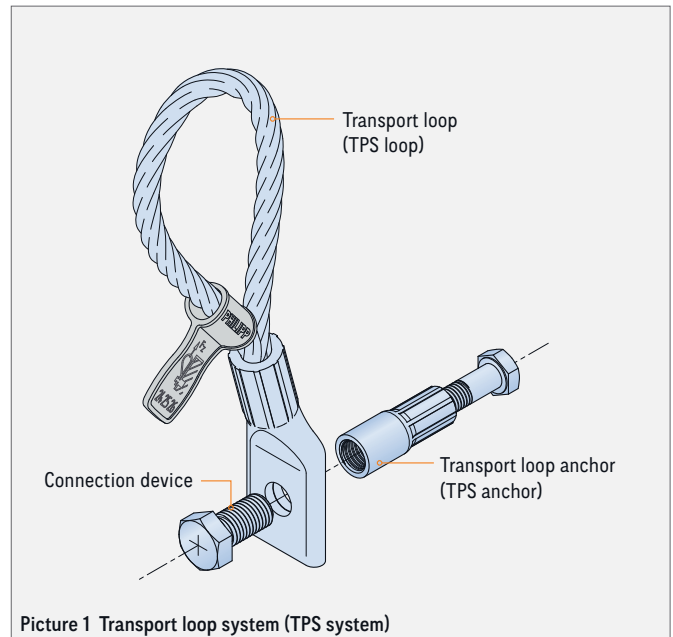
THE TRANSPORT LOOP SYSTEM (TPS-SYSTEM)

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 and Application Instruction



Picture 1 Transport loop system (TPS system)

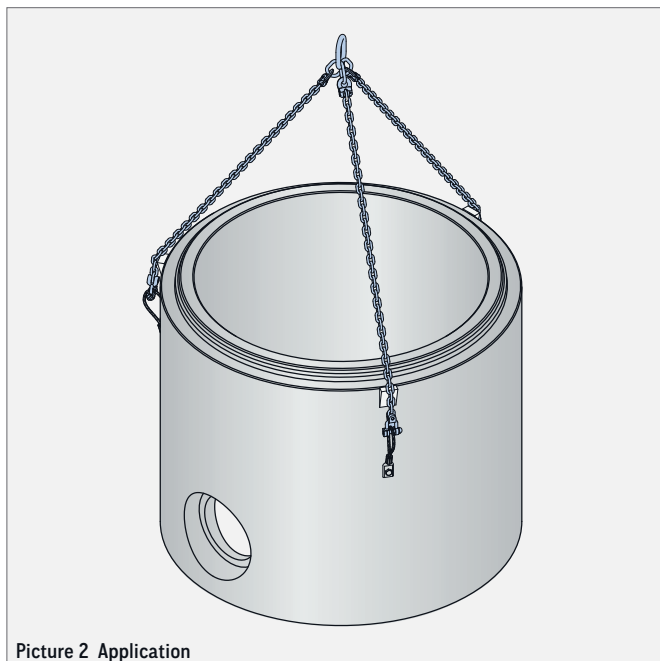


PLEASE NOTE!

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	TPS anchor (Ref. no.)	Consists of TPS loop (ref. no.)	Connection device (ref. no.)	Weight (kg/100 pcs.)
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

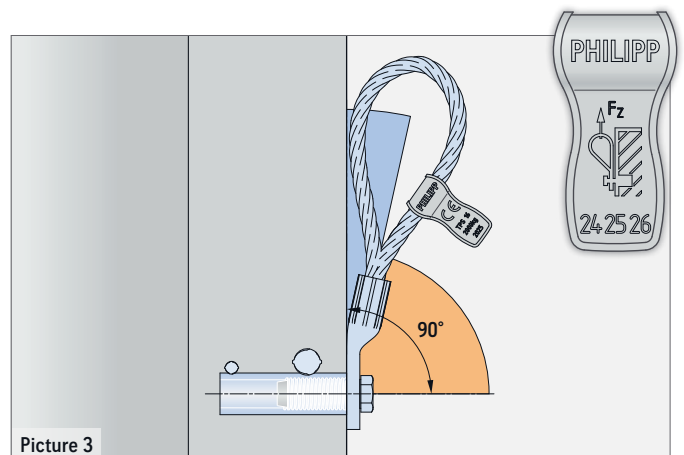


Picture 2 Application



NOTE!

The Transport loop system shall be used for lateral tension only, 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.

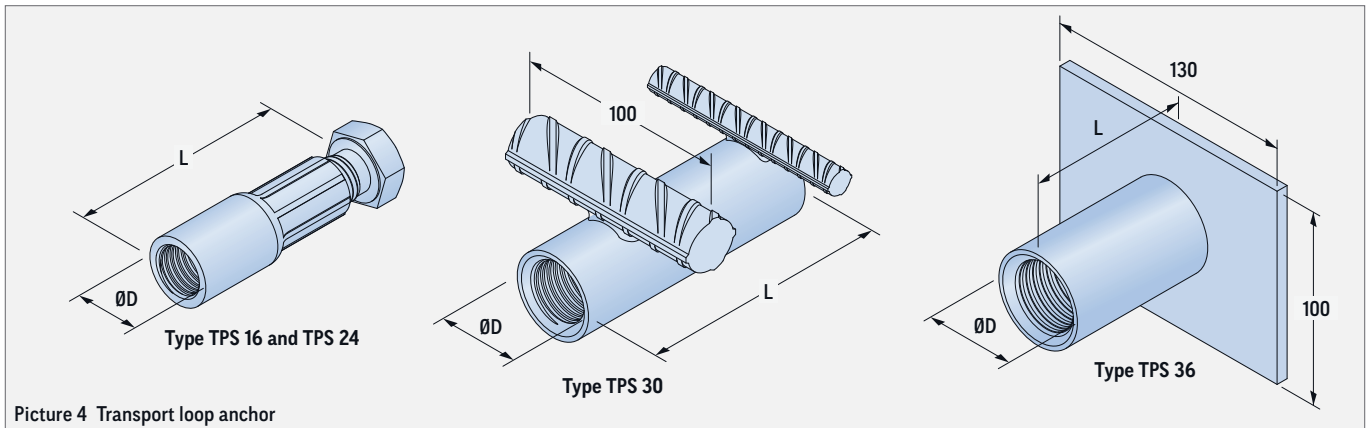


Picture 3

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 German "Safety rules for Transport anchors and systems for Precast Concrete Units" (DGUV 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 is made of stainless steel and complies with the German approval (DIBt no.: Z-30.3-6).

MATERIALS

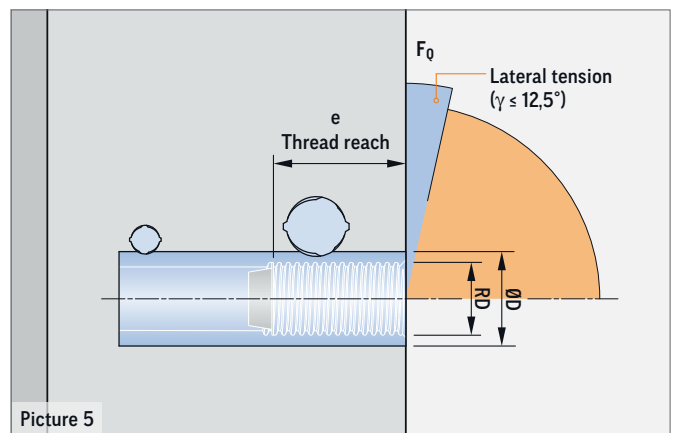
On the one hand type 16 and 24 of the TPS anchors consist of a machine screw with crimped-on insert. On the other hand TPS anchor type 30 consist of a threaded insert with weld-on rebars and type 36 of a steel plate with weld-on threaded insert.

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 / thread size)
- » Maximum load (e.g. 2000 KG)



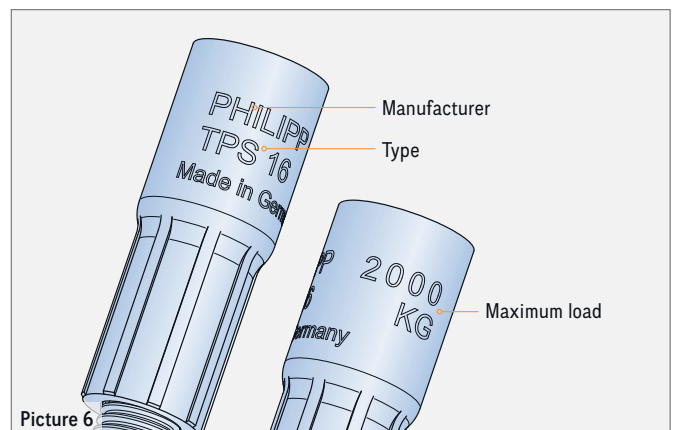
Picture 5

NOTE!

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

TABLE 2: DIMENSIONS OF TRANSPORT LOOP ANCHOR

Ref. no. bright zinc plated	Type	RD	L (mm)	ØD (mm)	e (mm)	Weight (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)

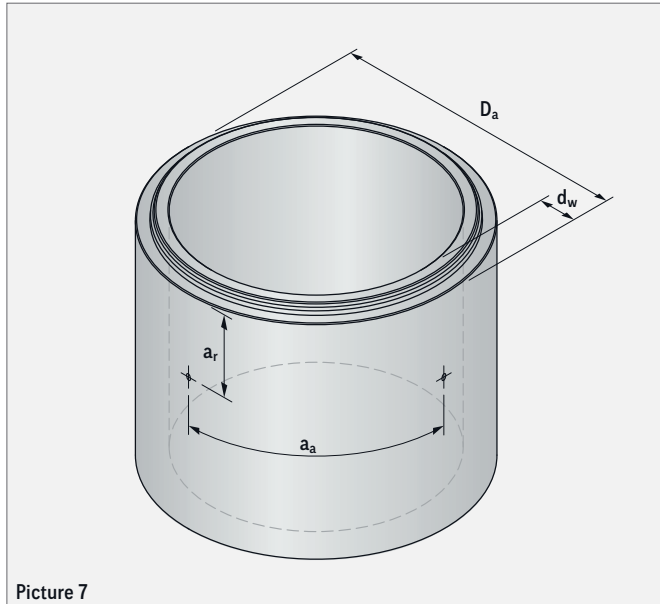
UNIT DIMENSIONS, CENTRE AND EDGE DISTANCES

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.

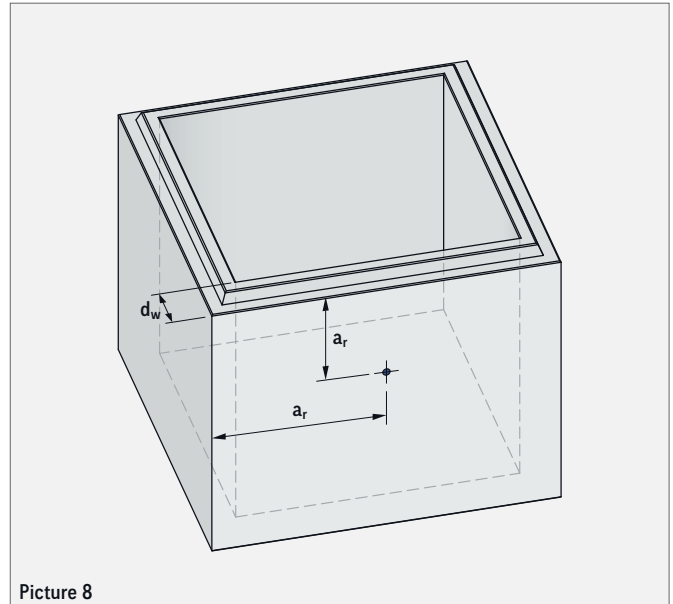


PLEASE NOTE!

For elements with only two lifting points, 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

Type	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_0 (kN)	if $f_{cc} \geq 35 \text{ N/mm}^2$ perm. F_0 (kN)
TPS 16	Ø 1000	120	500	1000	20.0	-
TPS 24	Ø 2000	150	1100	2200	40.0	-
TPS 30	Ø 2000	150	1100	2200	52.0	-
TPS 36	Ø 2000	120	1400	2800	-	63.0

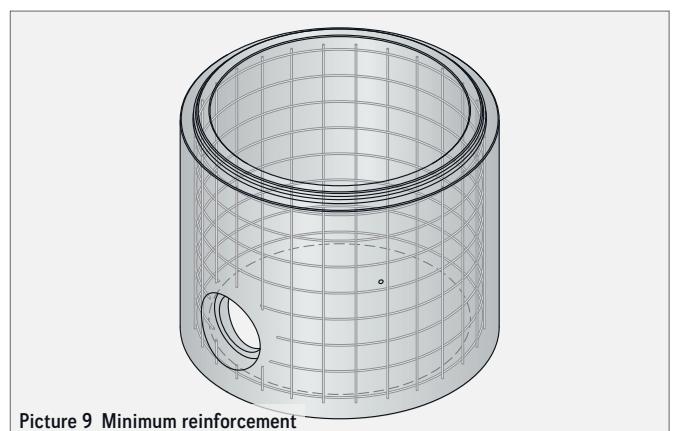
To determine the correct type please refer also to our General Installation and Application Instruction.
The weight of 1.0 t corresponds to 10.0 kN.

MINIMUM REINFORCEMENT

On use of the TPS anchors precast units must be reinforced with a minimum reinforcement according to table 4. This 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

Type	Mesh reinforcement (square, centred) (mm^2/m)
TPS 16	221
TPS 24	221
TPS 30	221
TPS 36	503



Picture 9 Minimum reinforcement



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)

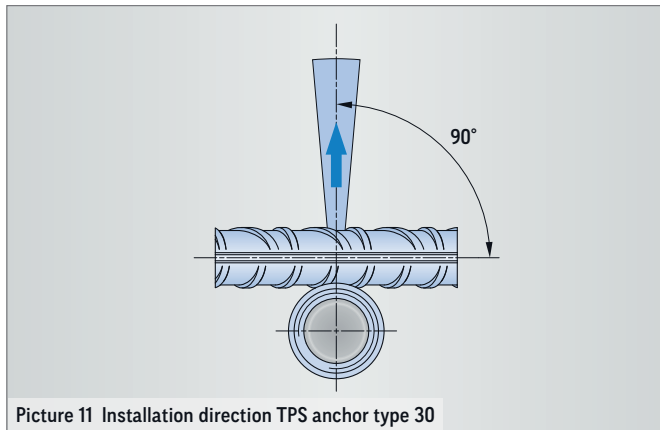
Type	L (mm)	$\varnothing d_s$ (mm)	$\varnothing d_{br}$ (mm)
TPS 36	600	14	56

CONCRETE

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

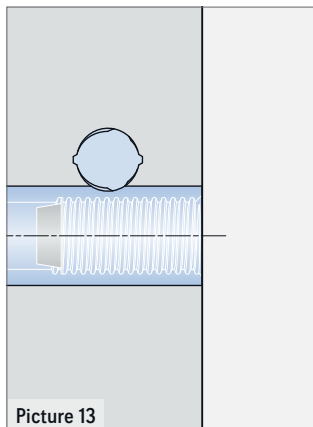
INSTALLATION

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).

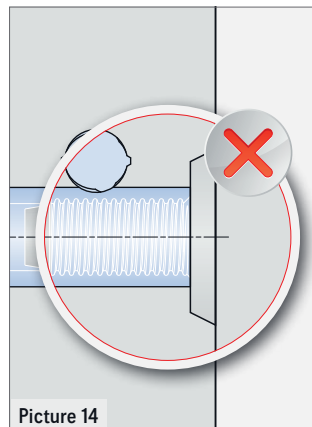


Picture 11 Installation direction TPS anchor type 30

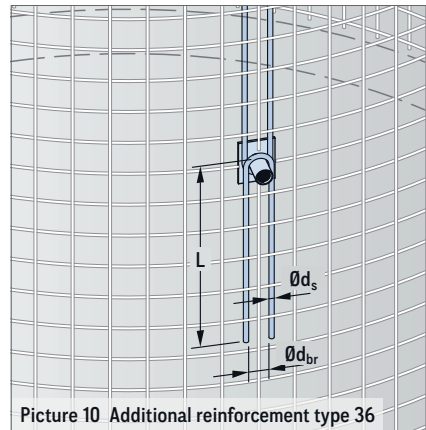
All TPS anchors must be installed always flush to the concrete element surface (picture 13). An installation in a recessed position (e.g. by using recess formers) is not allowed (picture 14).



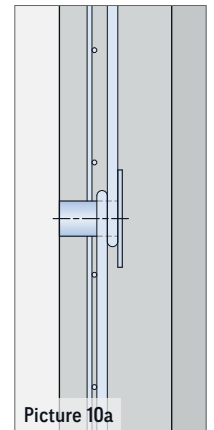
Picture 13



Picture 14

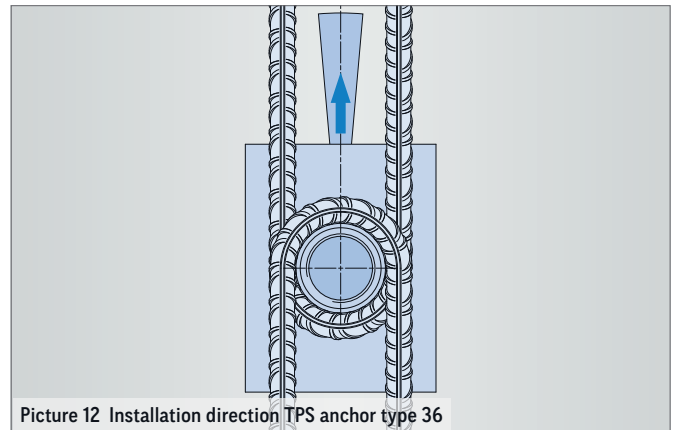


Picture 10 Additional reinforcement type 36



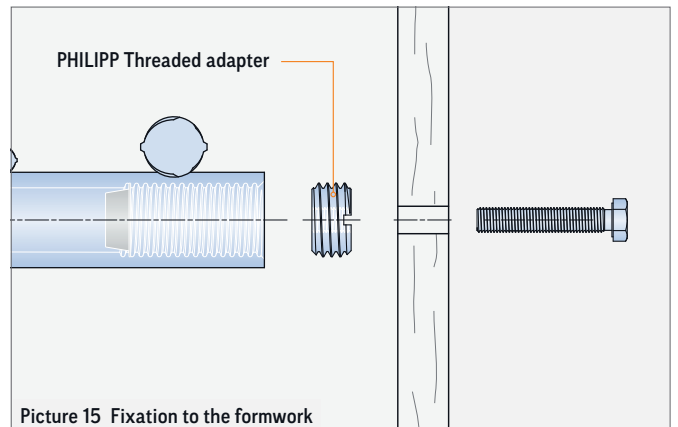
Picture 10a

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 Installation direction TPS anchor type 36

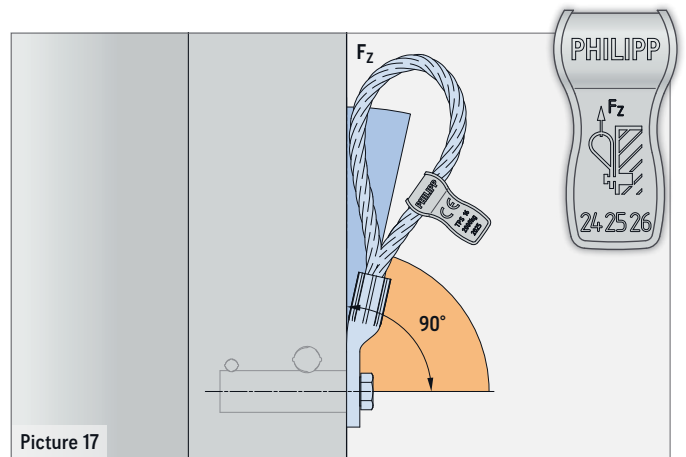
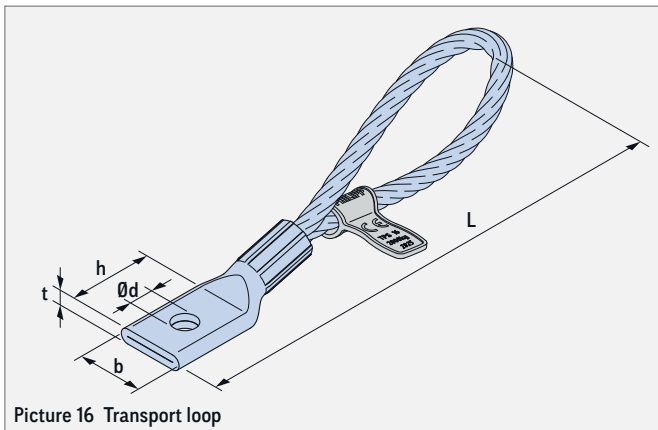
For the fixation of the TPS anchors to the formwork the special PHILIPP Threaded adapter can be used. This ensures a correct installation of the anchor flush to the element's concrete surface.



Picture 15 Fixation to the formwork

PHILIPP Transport loop system

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 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 and Application Instruction has to be paid attention to.

TPS loops are lifting devices and are designed for a repeated use!



NOTE!

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_z (kN)	$\varnothing d$ (mm)	L (mm)	Dimensions b (mm)	h (mm)	t (mm)	Weight (kg/100 pcs.)
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 and Application Instruction. The weight of 1.0 t corresponds to 10.0 kN.

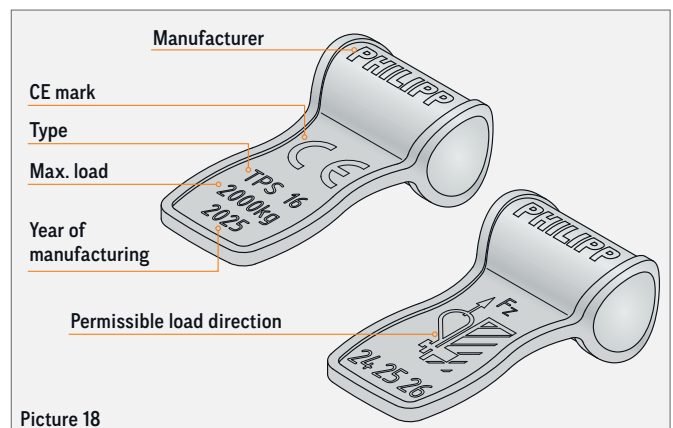
MATERIALS

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
- » Type (system / thread size)
- » Maximum load (e.g. 2000 kg)
- » Year of manufacturing
- » Illustration of the permissible load direction



EC DECLARATION OF CONFORMITY (DOC)

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



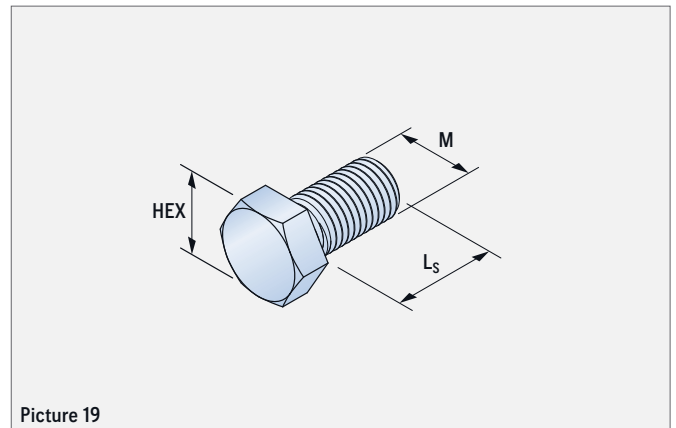
TRANSPORT LOOP (TPS LOOP)

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)

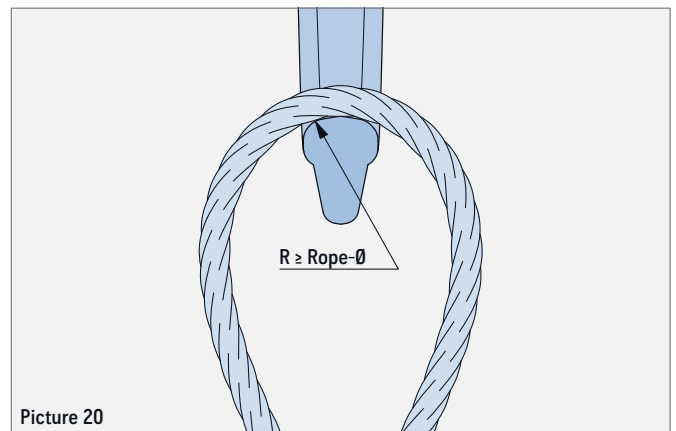
Ref. no.	Type	M	L _S (mm)	HEX (mm)
670S1630	TPS 16	16	30	24
670S2440	TPS 24	24	40	36
670S3060	TPS 30	30	60	46
670S36080V	TPS 36	36	80	55



SAFETY NOTICE

As the TPS loop represents a lifting device it is subject to an annual inspection (acc. to German DGUV regulation 109-017. para. 8.2). 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 life-time can be achieved.



ROUNDING RADII

The rounding radii 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).

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).

WELDING

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

NOT PERMITTED!

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

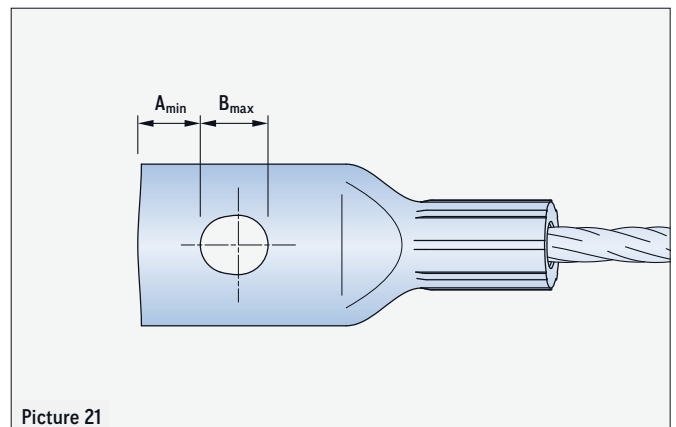
All replacement criteria of the TPS loop follow the (acc. to German DGUV regulation 109-017. para. 8.4).

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

Type	A _{min} (mm)	B _{max} (mm)
TPS 16	27.0	18.5
TPS 24	32.0	26.0
TPS 30	38.0	31.5
TPS 36	54.0	38.0



APPLICATION

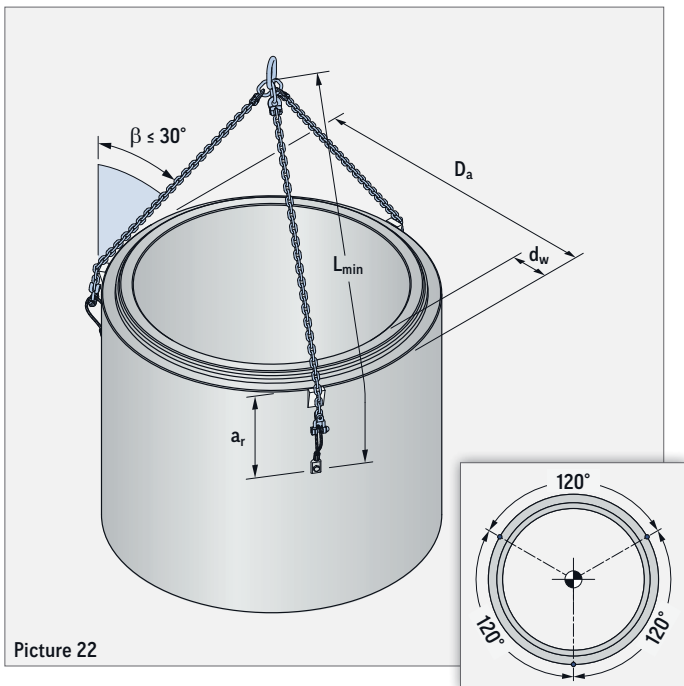
APPLICATION NOTES FOR CONTAINER LIFTING

When using the Transport loop system it is recommended to keep the inclination β 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.

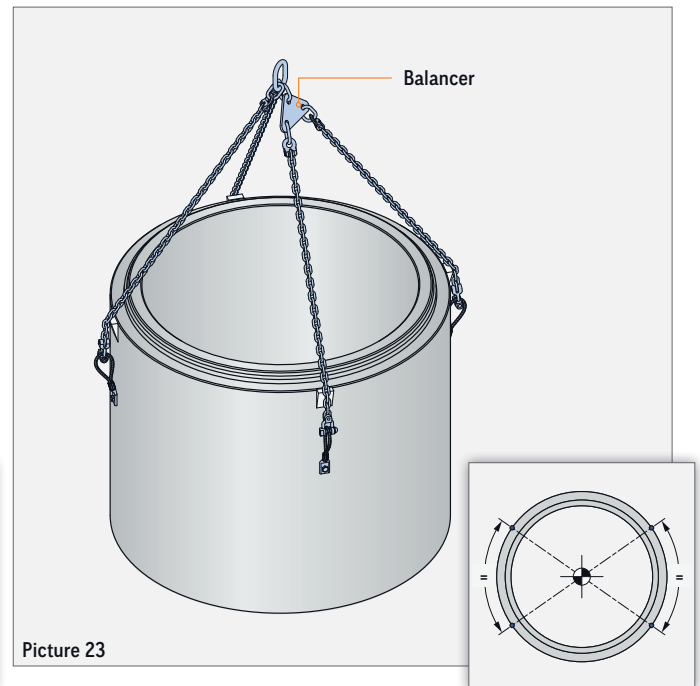
$$L_{min} \geq D_a + a_r$$

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

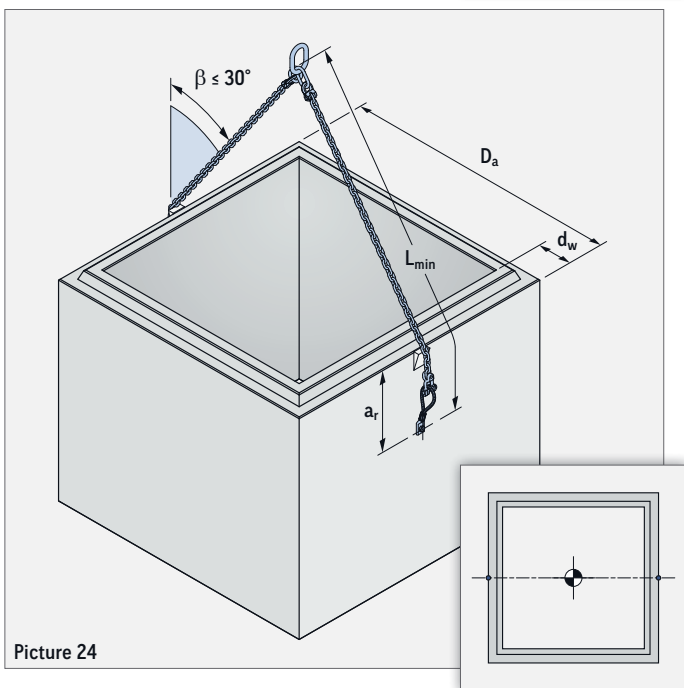
To prevent damages from the upper concrete edge an inclination angle of $\beta \leq 30^\circ$ must not be exceeded (picture 22 and 24). In order to protect the edges of the concrete unit as well as the lifting device suitable corner guards shall be used.



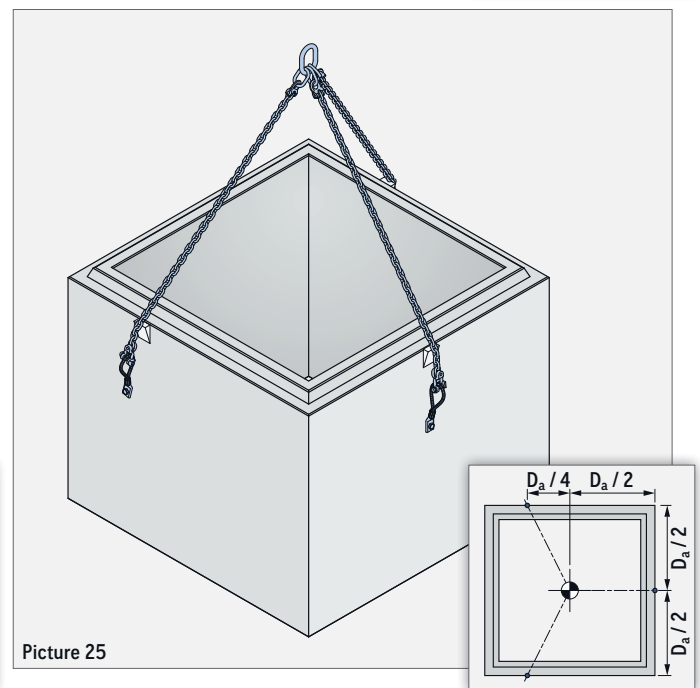
Picture 22



Picture 23



Picture 24



Picture 25

HEADQUARTERS

Lilienthalstraße 7-9
63741 Aschaffenburg
☎ +49 6021 40 27-0
✉ info@philipp-gruppe.de

PRODUCTION AND LOGISTICS

Hauptstraße 204
63814 Mainaschaff
☎ +49 6021 40 27-0
✉ info@philipp-gruppe.de

OFFICE COSWIG

Roßlauer Straße 70
06869 Coswig /Anhalt
☎ +49 34903 6 94-0
✉ info@philipp-gruppe.de

OFFICE NEUSS

Sperberweg 37
41468 Neuss
☎ +49 2131 3 59 18-0
✉ info@philipp-gruppe.de

OFFICE TANNHEIM

Robert-Bosch-Weg 12
88459 Tannheim /Allgäu
☎ +49 8395 8 13 35-0
✉ info@philipp-gruppe.de

PHILIPP VERTRIEBS GMBH

Pfaffing 36
5760 Saalfelden / Salzburg
☎ +43 6582 7 04 01
✉ info@philipp-gruppe.at



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