PHILIPPGROUP

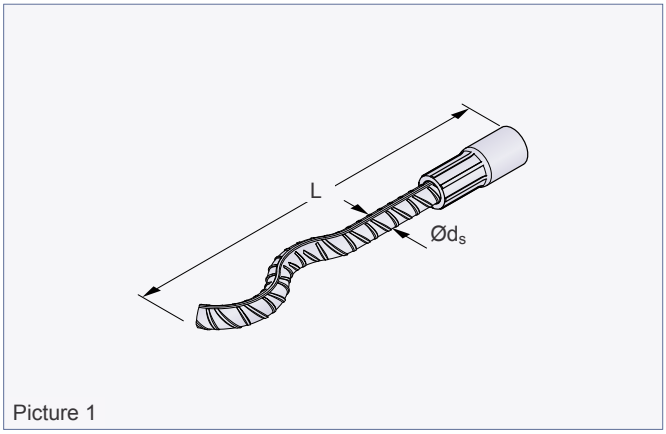
PHILIPP Threaded transport anchor

VB3-T-003-en - 06/16

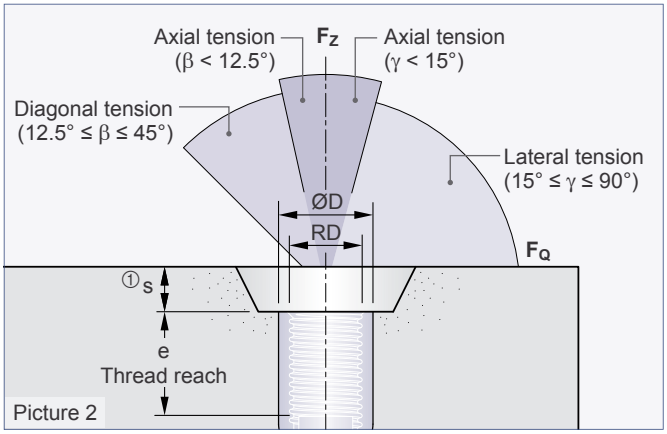
Version: long wavy tail

Installation and Application Instruction

PHILIPP Threaded transport anchor - long wavy tail



Picture 1



Picture 2

The Threaded transport anchor is part of the PHILIPP Transport anchor system and complies with the VDI/BV-BS-Guideline "Lifting inserts and lifting insert systems for precast concrete elements" (VDI/BV-BS 6205). The use of Threaded transport anchors requires the compliance with this Installation and Application Instruction as well as the General Installation Instruction. The Installation and Application Instructions for the belonging PHILIPP lifting devices (Lifting loop with threaded end, Adapter for lateral tension, “Wirbelstar”, “Lifty”) as well as the data sheets of the belonging PHILIPP accessories (Plastic nailing plates, Retaining caps KH etc.) must be followed also. The anchor may only be used in combination with the mentioned PHILIPP lifting devices. Threaded transport anchors 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. This Installation and Application Instruction does not specify a repeated usage (e.g. ballasts for cranes) or a permanent fixation.

Table 1: Dimensions

Ref.-No. **bright zinc plated**	Ref.-No. **stainless steel**	Type	Dimensions					Weight
			RD	ØD [mm]	L [mm]	e [mm]	Ød$_s$ [mm]	[kg/100 pcs.]
67M12WE	75M12VAWE	RD 12	12	15.0	137	22	8	7.0
67M14WE	75M14VAWE	RD 14	14	18.0	170	25	10	14.0
67M16WE	75M16VAWE	RD 16	16	21.0	216	27	12	24.0
67M18WE	75M18VAWE	RD 18	18	24.0	235	34	14	35.0
67M20WE	75M20VAWE	RD 20	20	27.0	257	35	16	49.0
67M24WE	75M24VAWE	RD 24	24	31.0	350	43	16	68.0
67M30WE	75M30VAWE	RD 30	30	39.5	450	56	20	140.0
67M36WE	75M36VAWE	RD 36	36	47.0	570	68	25	250.0
67M42WE	75M42VAWE	RD 42	42	54.0	620	75	28	370.0
67M52WE	75M52VAWE	RD 52	52	67.0	880	100	32	720.0

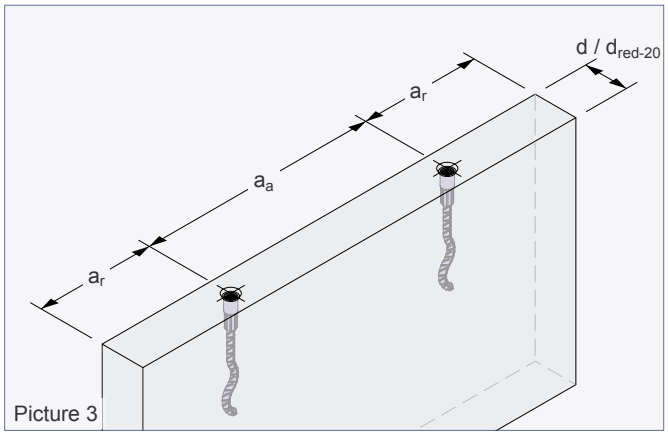
① Mind the embedding depth of the corresponding nailing plate and retaining cap (Picture 2).

Materials

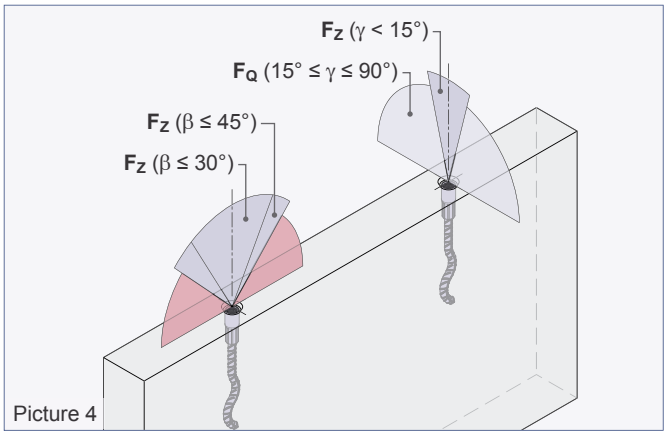
The Threaded transport anchors consist of a straight reinforcement bar B500B with crimped-on insert. The threaded inserts are made of special high precision steel tubes and are galvanised conforming to standards. This galvanisation protects the anchor temporarily, from the storage at the producer site to the final installation in the concrete element.

If the surface of a concrete element has to fulfil special conditions (e.g. no stream of rust) the insert can be delivered in stainless steel alternatively. Here the cut surface of the reinforcement bar is protected by a special sealing against corrosion.

Bearing capacities



Picture 3



Picture 4

Element thicknesses, centre and edge distances

The installation and position of threaded anchors in precast concrete units require minimum dimensions and centre distances for a safe load transfer. Table 2 shows the minimum thickness d of a unit to cover all load directions (axial, diagonal and lateral). For units with reduced thickness d_{red-20} only diagonal tension $\beta \leq 30°$ is permitted.

Lateral tension on anchors in concrete units with thickness d_{red-20} is not permitted within the whole transport chain!
This also applies to a diagonal tension with angle β more than 30°!

Table 2: Permissible load bearing capacities

Load class	Element thicknesses and edge distances				perm.F if f_{cc} **15 N/mm²**		perm.F if f_{cc} **20 N/mm²**
	d [mm]	② d_{red-20} [mm]	a_a [mm]	a_r [mm]	**Axial tension / diagonal tension** perm. F_Z 0°- 45° [kN]	**Lateral tension** perm. F_Q [kN]	**Axial tension / diagonal tension** perm. F_Z 0°- 30° [kN]
12	60	-	300	150	5.0	2.5	-
14	60	-	400	200	8.0	4.0	-
16	80	-	400	200	12.0	6.0	-
18	100	-	500	250	16.0	8.0	-
20	100	-	550	275	20.0	10.0	-
24	120	-	600	300	25.0	12.5	-
30	140	-	650	350	40.0	20.0	-
36	200	130	800	400	63.0	31.5	63.0
42	240	140	1000	500	80.0	40.0	80.0
52	275	150	1200	600	125.0	62.5	125.0

② Thickness d_{red-20} is only possible at f_{cc} 20 N/mm²!
- To determine the correct type please refer also to our General Installation Instruction.
- The weight of 1.0 t corresponds to 10.0 kN.

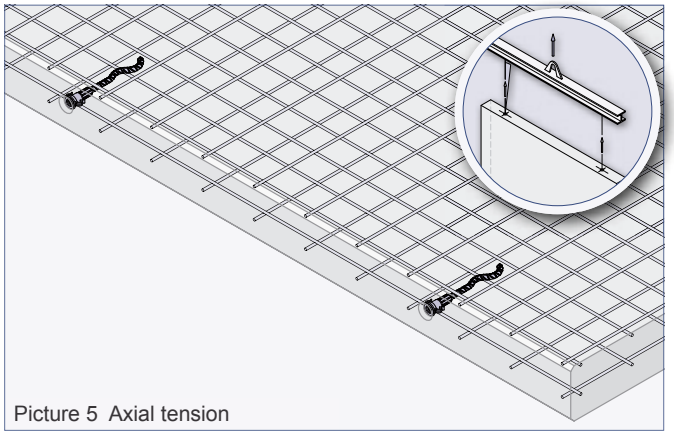
On lateral tension the Threaded transport anchors have only half of the capacity compared to axial loading. However, this is not a limitation as during tilt-up only half of the weight has to be lifted (please refer to the General Installation Instruction).

Reinforcement

Main reinforcement / Axial tension

On use of Threaded transport anchors precast units must be reinforced with a minimum reinforcement (Table 3). 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} according to Table 2. The user is personally responsible for further transmission of load into the concrete unit.

Existing static or constructive reinforcement can be taken into account for the minimum reinforcement according to Table 3.



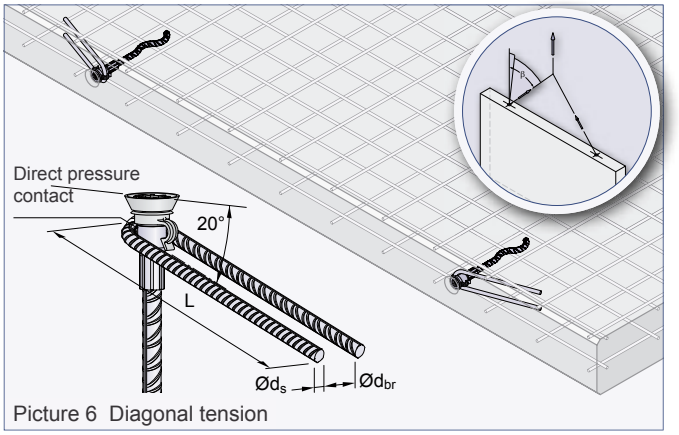
Picture 5 Axial tension

Table 3: Minimum reinforcement

Load class	Mesh reinforcement (square) [mm²/m]
12	131
14	131
16	131
18	188
20	188
24	188
30	188
36	188
42	188
52	188

Additional reinforcement for diagonal tension

If the Threaded transport anchor is used under diagonal tension $\beta > 12.5°$ an additional reinforcement according to Table 4 is required. Here the reinforcement for diagonal tension is placed contrarily to the tensile direction (Picture 6) and must have direct pressure contact to the anchor insert in the peak of its bending.



Picture 6 Diagonal tension

Position of the direct pressure contact between insert and additional reinforcement must be within the thread reach of the insert. This is guaranteed by using the Marking ring with clip (74KR__CLIP or 74__CLIPVA).

Table 4 shows possibilities to use appropriate steel diameters if the inclination is less than 30°. Decisive for the choice of the stirrups are the existing diagonal inclinations within the transport chain until the final mounting of the precast element.

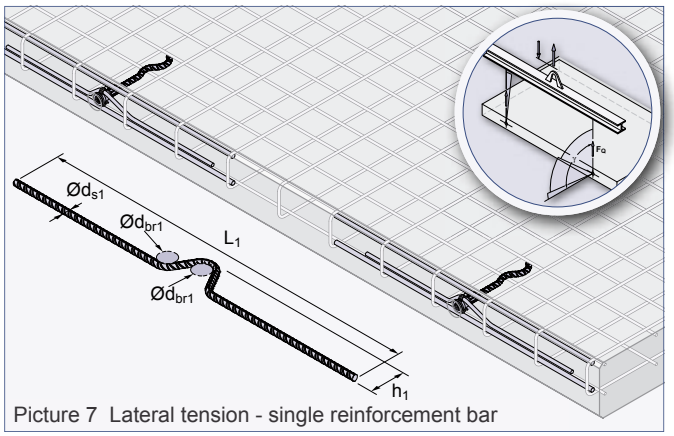
Table 4: Additional reinforcement for diagonal tension (B500B) (required if $\beta > 12.5°$)

Load class	Element thickness d if $12.5° \le \beta \le 45°$			Element thickness d / d_{red-20} if $12.5° \le \beta \le 30°$		
	Ød$_s$ [mm]	L [mm]	Ød$_{br}$ [mm]	Ød$_s$ [mm]	L [mm]	Ød$_{br}$ [mm]
12	6	150	24	6	150	24
14	6	200	24	6	200	24
16	8	200	32	6	250	24
18	8	250	32	8	200	32
20	8	300	32	8	250	32
24	10	300	40	8	300	32
30	12	400	48	10	350	40
36	14	550	56	12	450	48
42	16	600	64	14	600	56
52	20	750	140	16	700	67

Reinforcement

Additional reinforcement for lateral tension

If an anchor is loaded by lateral tension and the inclination is $\gamma \geq 15°$ an additional reinforcement is required (Table 5 or Table 6). The reinforcement for lateral tension can be done as a single reinforcement bar (Picture 7), double reinforcement bar (Picture 8) or reverse reinforcement for lateral tension (Picture 9). There must be direct pressure contact between the insert of the transport anchor and the reinforcement in the peak of the bending. Lateral forces on threaded transport anchors are only possible with wall thicknesses d according to Table 2. The reinforcement for lateral tension is installed in the front side of the wall contrary to the load direction. Tilting of walls can cause diagonal and lateral tension at the same time (Picture 8 and 9). In this case only the reinforcement for lateral tension is required (reverse reinforcement or double reinforcement bar). The diagonal tension is already covered by using this reinforcement. During mounting the tilt-up or turn-over of a unit requires lateral reinforcement (single reinforcement bar according to Picture 7 or reverse reinforcement for lateral tension according to Picture 9). The double reinforcement bar for lateral tension (Picture 8) covers standard lifting directions. With lateral tension the mesh reinforcement (Table 2) must be applied as a mesh cap. In addition to the mesh cap longitudinal reinforcement must be installed as shown in Table 5 or 6.

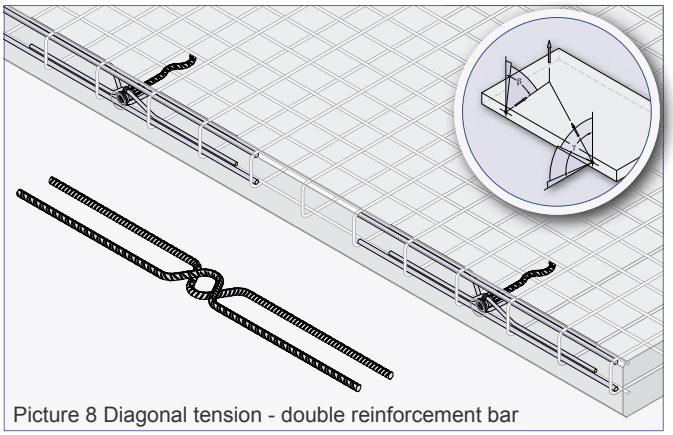


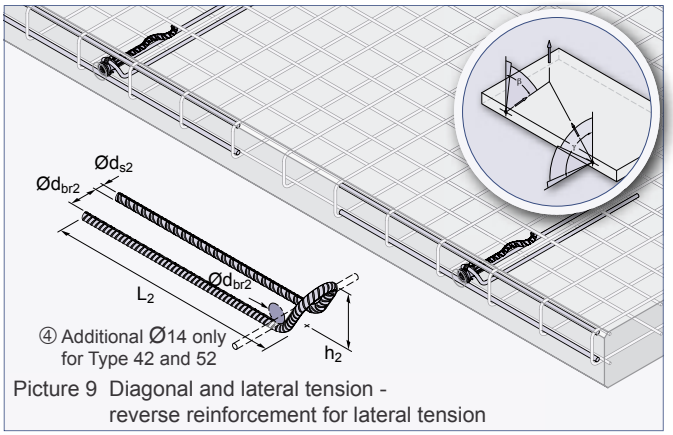
Picture 7 Lateral tension - single reinforcement bar

Table 5: Single reinforcement for lateral tension (B500B) (required if $\gamma \geq 15°$)

Load class	Ød$_{s1}$ [mm]	h$_1$ [mm]	L$_1$ [mm]	Ød$_{br1}$ [mm]	Longitudinal reinforcement Ø × length [mm]
12 ③	6	49	500	24	Ø10 × 850
14 ③	6	49	700	24	Ø10 × 850
16	8	49	600	32	Ø10 × 850
18	8	55	750	32	Ø12 × 850
20	10	64	800	40	Ø12 × 850
24	12	75	800	48	Ø12 × 850
30	12	92	1000	48	Ø16 × 1000
36	14	118	1000	56	Ø16 × 1000
42	16	143	1200	64	Ø16 × 1000
52	20	174	1500	140	Ø20 × 1200

③ Minimum element thickness of 80 mm is required.


Picture 8 Diagonal tension - double reinforcement bar



Picture 9 Diagonal and lateral tension - reverse reinforcement for lateral tension

Table 6: Reverse reinforcement for lateral tension (B500B) (required if $\gamma \geq 15°$)

Load class	Ød$_{S2}$ [mm]	L$_2$ [mm]	h$_2$ [mm]	Ød$_{br2}$ [mm]	Longitudinal reinforcement Ø × length [mm]
12	6	270	35	24	Ø10 × 850
14	6	350	42	24	Ø10 × 850
16	8	420	49	32	Ø10 × 850
18	8	460	55	32	Ø12 × 850
20	10	490	64	40	Ø12 × 850
24	12	520	75	48	Ø12 × 850
30	12	570	92	48	Ø16 × 1000
36	14	690	118	56	Ø16 × 1000
42 ④	16	830	143	64	Ø16 × 1000
52 ④	20	930	174	140	Ø20 × 1200

④ Additional Ø14, length = 600 mm (see Picture 9)

Notes: