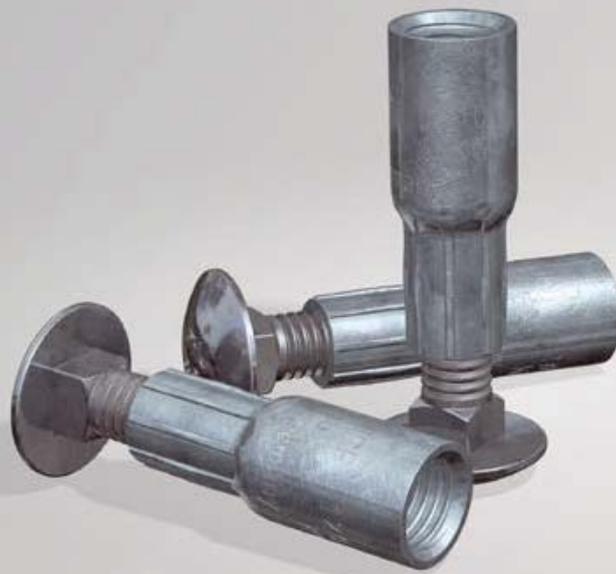


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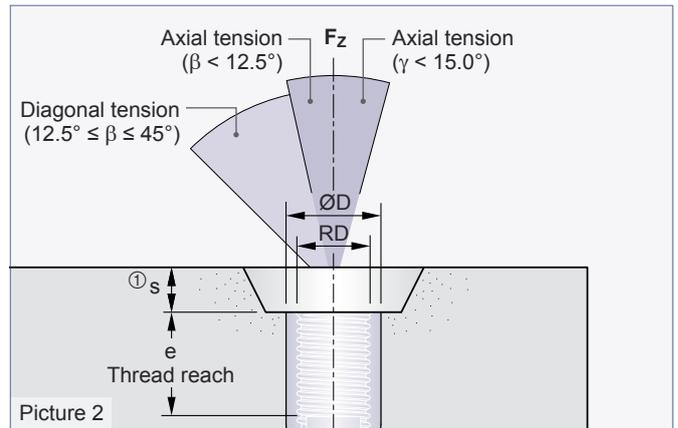
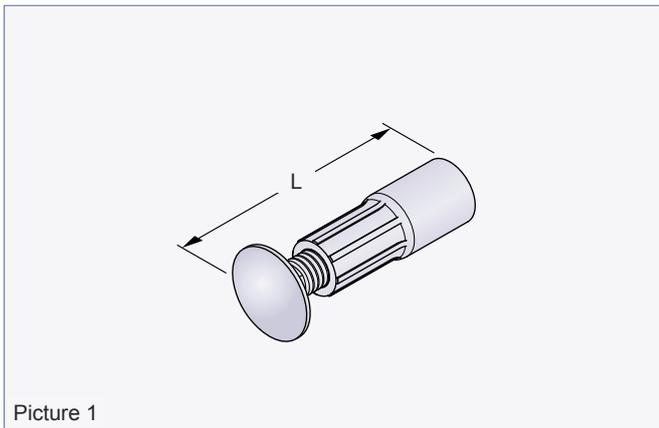
PHILIPP Screw anchor



VB3-T-007-en - 01/16

Installation and Application Instruction

PHILIPP Screw anchor



The Screw anchor is part of the PHILIPP Transport anchor system and complies with the "Safety rules for transport anchors and systems for precast concrete units" (German Regulation BGR 106).

The use of Screw anchors requires the compliance with this Installation 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 etc.) must be followed also.

The anchor may only be used in combination with the mentioned PHILIPP lifting devices.

Screw 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.

A repeated usage is only allowed (e.g. ballasts for cranes) if it complies with the German approval (DIBt No.: Z-30.3-6).

Table 1: Dimensions

Ref.-No. bright zinc plated	Ref.-No. stainless steel	Type	Dimensions				Weight [kg/100 pcs.]
			RD	ØD [mm]	L [mm]	e [mm]	
67SA12	75SA12VA	RD 12	12	15.0	60	22	4.0
67SA14	75SA14VA	RD 14	14	18.0	70	25	7.0
67SA16	75SA16VA	RD 16	16	21.0	80	27	12.0
67SA18	75SA18VA	RD 18	18	24.0	90	34	22.0
67SA20	75SA20VA	RD 20	20	27.0	100	35	26.0
67SA24	75SA24VA	RD 24	24	31.0	115	43	41.0
67SA30	75SA30VA	RD 30	30	39.5	150	56	72.0

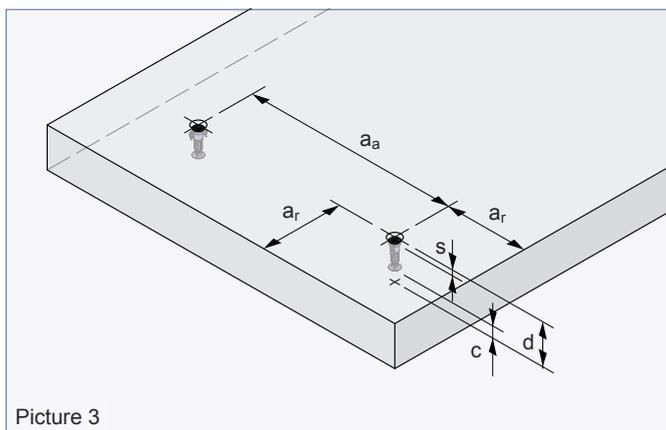
① Mind the embedding depth of the corresponding nailing plate and retaining cap (Picture 2).

Materials

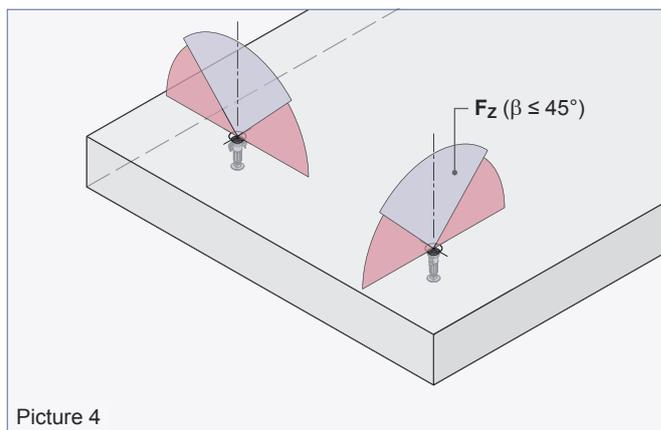
Screw anchors consist of an electro galvanised flat-head bolt with crimped-on insert. The threaded inserts are made of special high precision steel tubes and are galvanised according to common standards. This galvanisation protects the anchor temporarily, from the storage at the producer site to the 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 Screw anchors in precast concrete units require minimum element 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).

Screw anchors can only be used for axial and diagonal tension exclusively. Lateral tension is not allowed.

If the Screw anchor is recessed installed in the concrete element (e.g. by a plastic nailing plate) the dimension d must be increased by the amount s (Picture 3).

$$c \geq c_{nom} \text{ acc. to DIN EN 1992-1-1}$$

Table 2: Permissible load bearing capacities

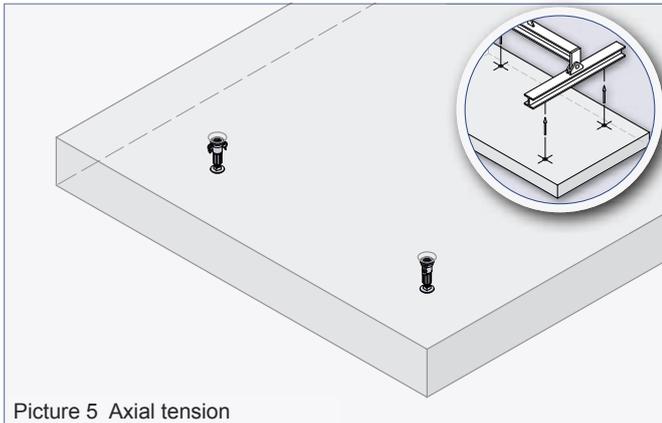
Load class	Element thicknesses, centre and edge distances			perm. F if $f_{cc} \geq 15 \text{ N/mm}^2$ Axial tension / diagonal tension perm. F_z $0^\circ - 45^\circ$
	d [mm]	a_a [mm]	a_r [mm]	
12	80	360	180	5.0
14	90	420	210	8.0
16	100	480	240	12.0
18	110	540	270	16.0
20	120	600	300	20.0
24	135	690	345	25.0
30	170	900	450	40.0

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

Reinforcement

Reinforcement / axial tension

On use of Screw anchors no minimum reinforcement near the surface is required. At the first time of lifting the concrete must have a minimum strength f_{cc} of **15 N/mm²**. The user is personally responsible for further transmission of load into the concrete unit.



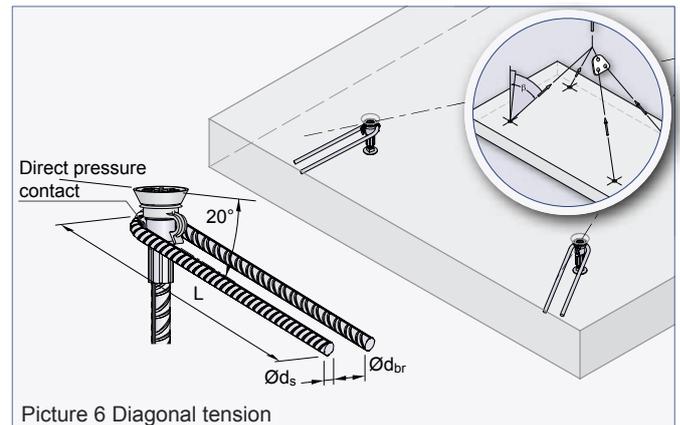
Picture 5 Axial tension



Lateral tension is not allowed within the whole transport chain. This also applies to a diagonal tension with angle β more than 45°!

Additional reinforcement for diagonal tension

If the Screw anchor is used under diagonal tension $\beta > 12.5^\circ$ an additional reinforcement according to Table 3 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.

Table 3 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 during the transport chain until the final mounting of the precast element.

Table 3: Additional reinforcement for diagonal tension (material B500B) (required if $\beta > 12,5^\circ$)

Load class	if $12.5^\circ \leq \beta \leq 45^\circ$			if $12.5^\circ \leq \beta \leq 30^\circ$		
	$\text{Ø}d_s$ [mm]	L [mm]	$\text{Ø}d_{br}$ [mm]	$\text{Ø}d_s$ [mm]	L [mm]	$\text{Ø}d_{br}$ [mm]
12	6	150	24	6	150	24
14	6	200	24	6	200	24
16	8	200	32	6	250	24 ①
18	8	250	32	8	200	32 ①
20	8	300	32	8	250	32 ①
24	10	300	40	8	300	32 ②
30	12	400	48	10	350	40 ②

① In case of diagonal tension $\beta \leq 30^\circ$ the reinforcement for diagonal tension is not necessary if:
 - there is a single mesh reinforcement Q188A.
 - the Screw anchor is recessed installed by a nailing plate (Ref.-No. 72KHN___, 72KHN___STK, 72MAXKHN___).

② In case of diagonal tension $\beta \leq 30^\circ$ the reinforcement for diagonal tension is not necessary if:
 - there is a double mesh reinforcement Q188A.
 - the Screw anchor is recessed installed by a nailing plate (Ref.-No. 72KHN___, 72KHN___STK, 72MAXKHN___).