

PHILIPPGROUP

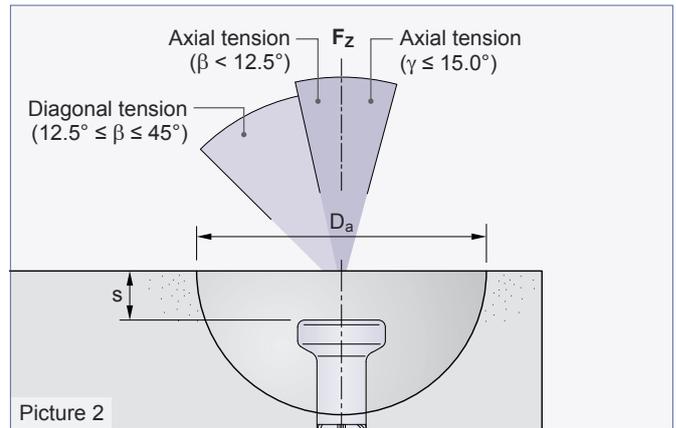
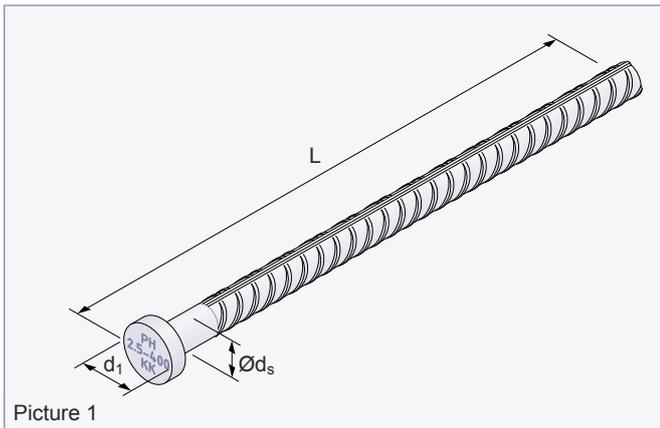
PHILIPP Spherical head rod anchor



VB3-T-035-en - 01/16

Installation and Application Instruction

PHILIPP Spherical head rod anchor



The Spherical head rod 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 DGUV 101-001).

The use of Spherical head rod anchors requires the compliance with this Installation Instruction as well as the General Installation Instruction. The installation instruction for the belonging lifting device (Lifting clutch) must be considered also. The anchor may only be used in combination with the mentioned PHILIPP lifting devices.

Spherical head rod 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.

In order to distinguish the different sizes of Spherical head rod anchors a marking with load class and length is given on the head of the anchor. Picture 1 and Table 1 show the dimensions and load classes of the Spherical head rod anchor.

Table 1: Load classes and dimensions

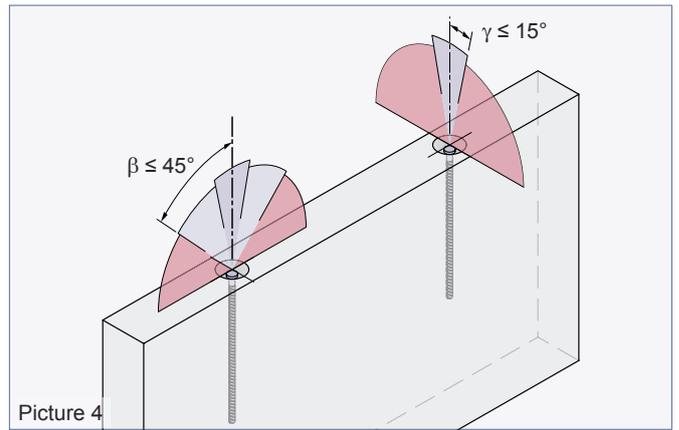
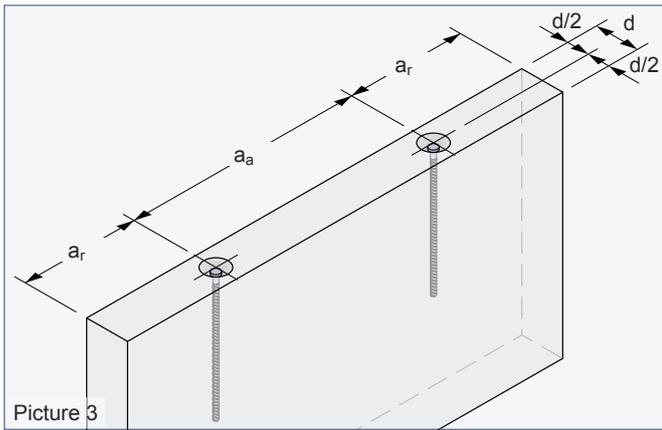
Ref.-No.	Load class	Dimensions					Weight [kg/100 pcs.]
		L [mm]	Ød _s [mm]	Ød ₁ [mm]	s [mm]	D _a [mm]	
81-013-270ST	1.3	270	10	18	10	60	21.0
81-025-400ST	2.5	400	14	25	11	74	51.0
81-025-520ST	2.5	520	14	25	11	74	66.0
81-040-510ST	4.0	510	20	36	15	94	108.0
81-050-580ST	5.0	580	20	36	15	94	151.0
81-050-900ST	5.0	900	20	36	15	94	230.0
81-075-750ST	7.5	750	25	46	15	118	265.0
81-075-1150ST	7.5	1150	25	46	15	118	419.0
81-100-870ST	10.0	870	28	46	15	118	442.0
81-100-1300ST	10.0	1300	28	46	15	118	650.0
81-150-1080ST	15.0	1080	36	69	15	160	940.0
81-150-1550ST	15.0	1550	36	69	15	160	1280.0

To determine the correct type please refer also to our General Installation Instruction.

Materials

The Spherical head rod anchor is made of a reinforcement bar with a forged head.

Application / reinforcement



Centre and edge distances and element thicknesses

The position and installation of Spherical head rod anchors in precast concrete units require minimum element dimensions and centre distances for a safe load transfer. Table 3 shows the minimum thickness d of a unit to cover the load directions axial and diagonal tension ($\beta = 0^\circ - 45^\circ$). Lateral tension is not allowed.

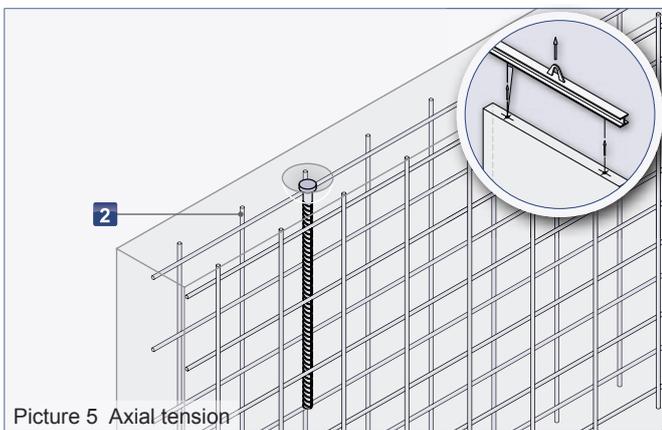
Load class	Thicknesses and edge distances			perm.F if $f_{cc} \ 15 \text{ N/mm}^2$ Axial and diagonal tension $0^\circ - 45^\circ$ [kN]
	d [mm]	a_r [mm]	a_a [mm]	
1.3	100	250	500	13
2.5	120	300	600	25
4.0	140	325	650	40
5.0	200	400	800	50
7.5	240	500	1000	75
10.0	275	600	1200	100
15.0	285	1200	2000	150

The weight of 1,0 t corresponds to 10.0 kN.

Basic reinforcement

For the usage of Spherical head rod anchors a minimum surface reinforcement of the concrete elements is required (Picture 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 of $f_{cc} \ 15 \text{ N/mm}^2$. 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.



Load class	Mesh reinforcement (square) ² [mm ² /m]
1.3	131 ^①
2.5	188
4.0	188
5.0	188
7.5	188
10.0	188
15.0	188

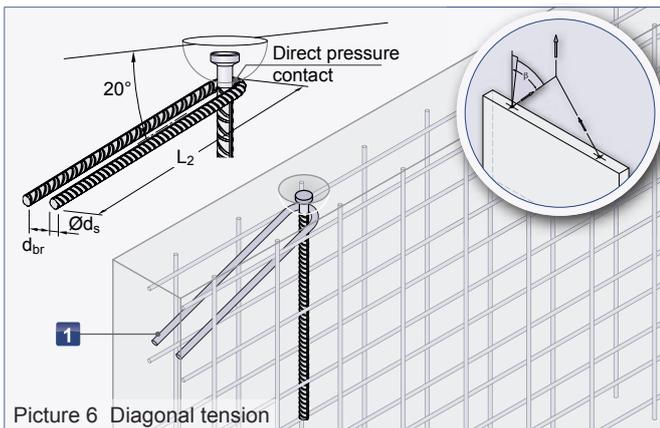
^① For axial tension only the given reinforcement can be replaced by a single mesh reinforcement Q188A placed centrally in the element.

! This procedure requires for all subsequent loads only axial tension (e.g. within a transport chain).

Reinforcement / corrosion

Additional reinforcement for diagonal tension

If the Spherical head transport anchor is used under diagonal tension $\beta \geq 12.5^\circ$ an additional reinforcement according to Table 4 is required. The reinforcement for diagonal tension is placed contrarily to the tensile direction and must have direct pressure contact to the anchor shaft in the peak of its bending (Picture 6).



Picture 6 Diagonal tension

Table 4: Additional reinforcement for diagonal tension (B500B) (required if $\beta \geq 12.5^\circ$)

Load class	Reinforcement for diagonal tension 1		
	Øds [mm]	L ₂ [mm]	Ød _{br} [mm]
1.3	Ø8	250	32
2.5	Ø10	300	40
4.0	Ø12	400	48
5.0	Ø14	550	56
7.5	Ø14	655	56
10.0	Ø16	800	64
15.0	Ø20	950	140

Corrosion

If the concrete elements with installed Spherical head rod anchors are stored outside for a longer time (contact with rain or humidity causes moisture insight the recesses) corrosion may reduce the bearing capacity of the Spherical head anchor. Therefore the anchor may fail under load. In addition, marks on the concrete surface caused by corrosion may appear.