PHILIPPGROUP

Spherical head double-head anchor

VB3-T-065-en - 07/25 - PDF

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.
- Test reports -> for your safety and documentation.
- Trainings -> the knowledge of your employees from planning and production is enhanced by our experts on site, online or via webinar.
- Planning support -> latest design software, planning documents, CAD data and much more can be downloaded any time from www.philipp-group.de.

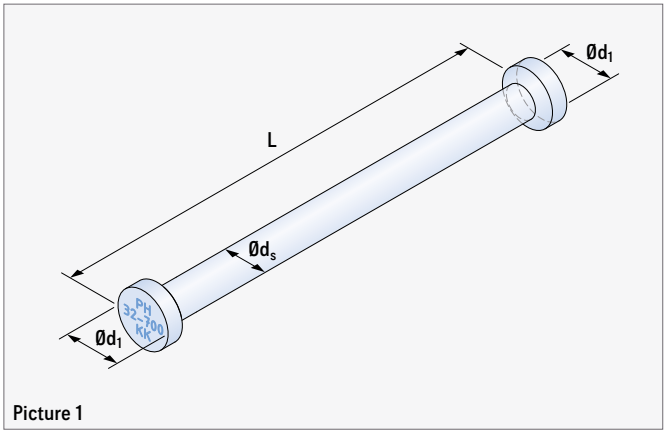
HIGH DEMANDS ON PRODUCT SAFETY AND PRACTICALITY

- Close cooperation with notified bodies and - if necessary - approval of our solutions.

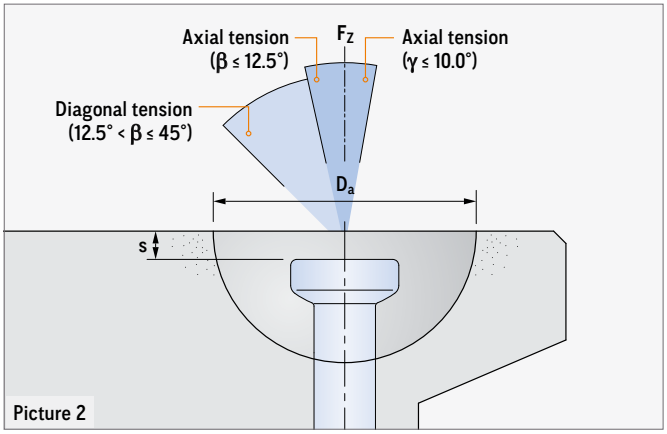
TECHNICAL DEPARTMENT

- Our expert-team will support you at any time during your planning phase with detailed advice.

GENERAL PRODUCT INFORMATION



Picture 1



Picture 2

The Spherical head double-head anchor is part of the PHILIPP Transport anchor system and complies with the VDI/BV-BS Guideline "Lifting inserts and lifting systems for precast concrete elements" (VDI/BV-BS 6205). The use of Spherical head double-head anchor requires the compliance with this Installation and Application Instruction as well as the General Installation and Application Instruction. The Application Instruction for the belonging PHILIPP lifting device (Spherical head Lifting clutch) as well as the data sheet of the belonging PHILIPP accessories (rubber, steel or magnetic recess formers) must be followed also.

The anchor may only be used in combination with the mentioned PHILIPP lifting devices. Spherical head double-head 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. In order to distinguish the different sizes of Spherical head double-head anchors a marking with load class and anchor length is given on the head of the anchor.

TABLE 1: DIMENSIONS

Ref. no.	Type	Dimensions				
		L (mm)	$Ød_s$ (mm)	$Ød_1$ (mm)	s (mm)	D_a (mm)
81-200-500D	KK 20.0	500	38	69	15	160
81-320-700D	KK 32.0	700	50	88	23	214

MATERIALS

Spherical head double-head anchors consist of a conforming to standards round steel with a forged head at both ends. The anchor can be supplied also in an electro-galvanised, hot-dip galvanised or stainless steel version.

APPLICATION

A Spherical head double-head anchor is especially designed for the transport of concrete beams with a very narrow thickness. Table 2 shows the corresponding bearing capacities.

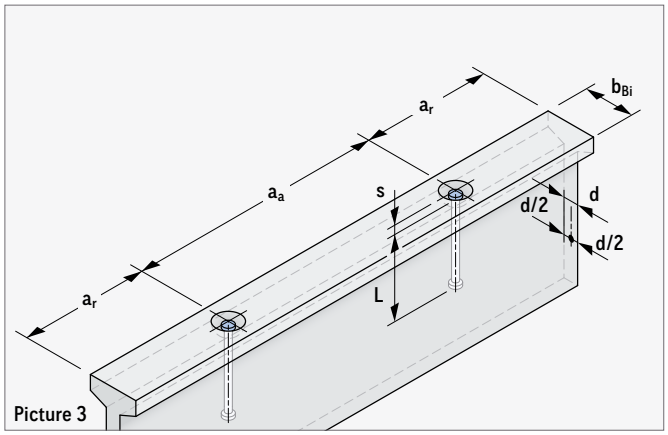
CORROSION

If the concrete elements with installed Spherical head double-head anchors will be stored outside for a longer time (i. e. contact with rain or humidity causes moisture insight the recesses) an upcoming corrosion may reduce the bearing capacity of the Spherical head double-head anchor. Therefore the anchors may fail under load. In addition, marks on the concrete surface caused by corrosion cannot be avoided totally.

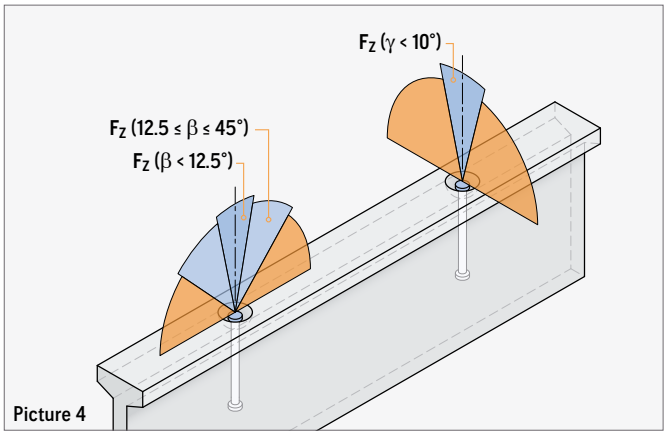
CONCRETE

Given concrete strengths f_{cc} in table 2 are cube strengths at the time of the first lifting.

BEARING CAPACITIES



Picture 3



Picture 4

ELEMENT THICKNESSES, CENTRE AND EDGE DISTANCES

The position and installation of Spherical head double-head anchors in concrete units require minimum dimensions of precast concrete elements and minimum distances for a safe lifting and mounting. Minimum thicknesses d of a unit given in table 2 cover the load directions axial and diagonal tension.

NO LATERAL TENSION!

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

TABLE 2: PERMISSIBLE LOAD BEARING CAPACITIES

Load class	Thicknesses and distances				perm. F if f_{cc} is 25 N/mm²		perm. F if f_{cc} is 35 N/mm²		perm. F if f_{cc} is 45 N/mm²	
					Axial tension perm. F_Z 0°- 12.5°	Diagonal tension perm. F_Z 12.5°- 45°	Axial tension perm. F_Z 0°- 12.5°	Diagonal tension perm. F_Z 12.5°- 45°	Axial tension perm. F_Z 0°- 12.5°	Diagonal tension perm. F_Z 12.5°- 45°
	d (mm)	b_{Bi} (mm)	a_r (mm)	a_a (mm)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)
20.0	120	≥ 400	1400	2000	134.5	121.1	159.2	143.3	180.5	162.4
	140				140.0	126.0	165.7	149.1	187.9	169.1
	160				145.6	131.0	172.2	155.0	195.3	175.8
	180				151.1	136.0	178.8	160.9	200.0	182.4
	200				156.6	140.9	185.3	166.7	200.0	189.1
	220				162.1	145.9	191.8	172.6	200.0	195.7
	240				167.6	150.9	198.3	178.5	200.0	200.0
	260				173.1	155.8	200.0	184.4	200.0	200.0
	280				178.6	160.8	200.0	190.2	200.0	200.0
32.0	120	≥ 500	1400	2000	169.1	152.2	200.1	180.1	226.9	204.2
	140				178.7	160.8	211.4	190.3	239.7	215.7
	160				188.2	169.4	222.7	200.4	252.5	227.3
	180				197.8	178.0	234.0	210.6	265.3	238.8
	200				207.3	186.6	245.3	220.8	278.2	250.4
	220				216.9	195.2	256.6	231.0	291.0	261.9
	240				226.4	203.8	267.9	241.1	303.8	273.4
	260				236.0	212.4	279.2	251.3	316.6	285.0
	280				245.6	221.0	290.5	261.5	320.0	296.5

The weight of 1.0 t corresponds to 10.0 kN.

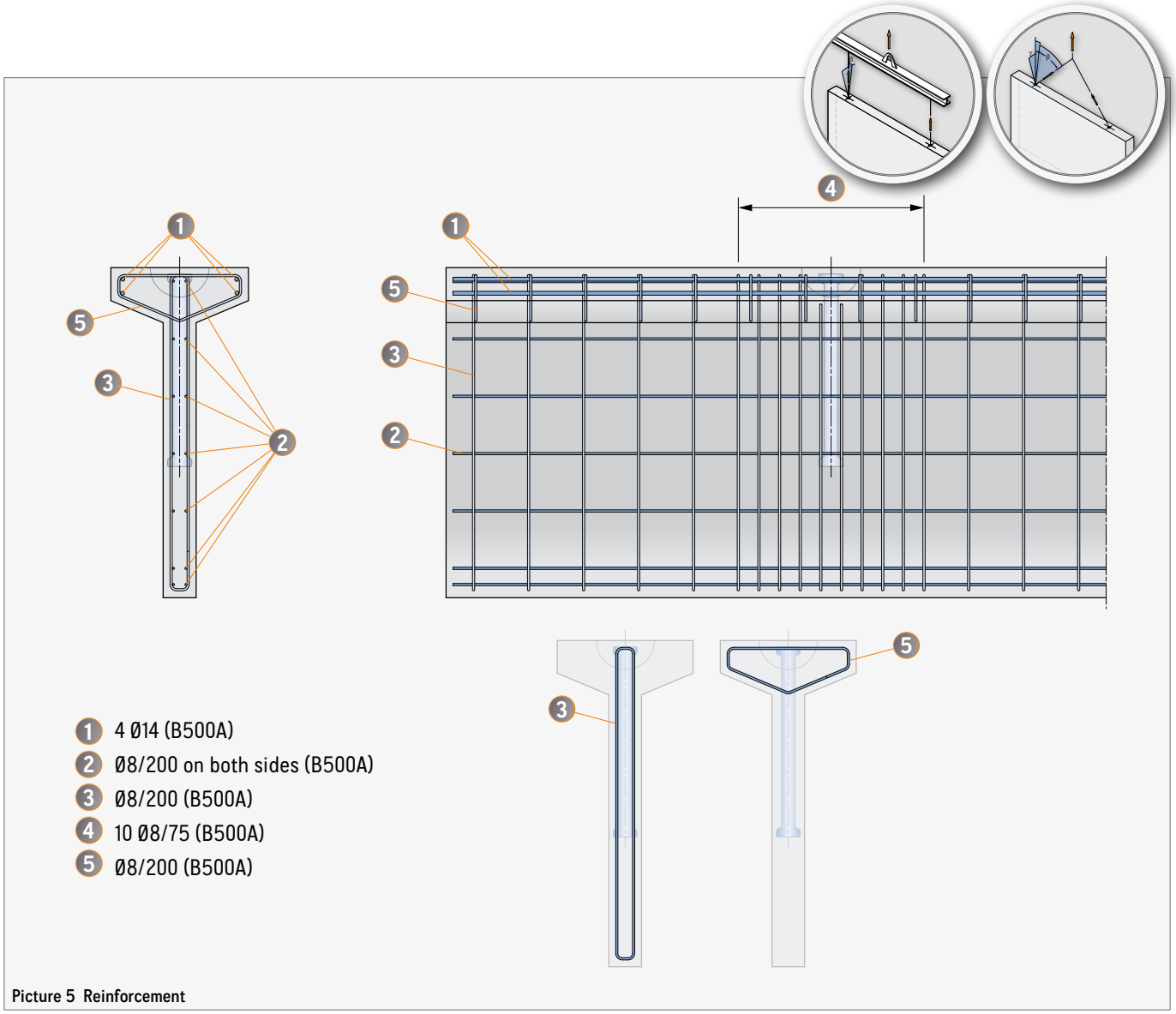
REINFORCEMENT

The use of Spherical head double-head anchors requires a minimum reinforcement in the concrete element (picture 5). At the first time of lifting the concrete must have a minimum strength f_{cc} of 25 N/mm².
If it is necessary to cut single bars for the installation of Spherical head double-head anchors these have to be replaced by bars of the same diameter, strength and enough lap length according to EC 2.

The user is responsible for further transmission of load into the concrete unit personally.

CONSIDERATION OF EXISTING REINFORCEMENT

Existing static or constructive reinforcement can be taken into account for the minimum reinforcement according to picture 5.



Picture 5 Reinforcement

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