TÜV CERT
DIN EN ISO 9001
Reg.-Nr. 73 100 1561

PHILIPP GROUP

PHILIPP Spherical Head Transport Anchor

Installation Instruction

PHILIPP GROUP
QUALITY MADE IN GERMANY

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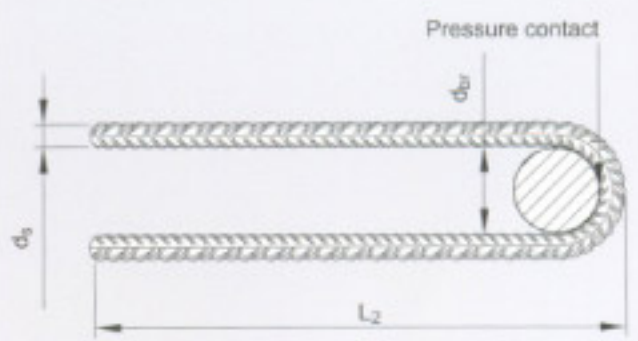
Table 3: Minimum Reinforcement for Precast Walls and Beams

Load Group	Mesh Reinforcement (square) ① [mm²/m]	Stirrup ② Number and dia. d_s [mm]	Stirrup ② Lenght L [mm]	Edge Distance e [mm]	Longitudinal Bar ③ Number and dia. [mm]
1.3	131	6 dia. 8	600	100	2 dia. 10
2.0	131	6 dia. 8	600	100	2 dia. 10
2.5	131	6 dia. 8	600	100	2 dia. 10
4.0	131	6 dia. 8	600	100	2 dia. 10
5.0	131	6 dia. 8	600	125	2 dia. 10
7.5	221	6 dia. 8	600	125	2 dia. 10
10.0	257	6 dia. 10	1000	125	2 dia. 14
15.0	378	6 dia. 10	1000	125	2 dia. 14
20.0	513	6 dia. 10	1000	125	2 dia. 14

5. Additional Reinforcement for Diagonal Tension

Diagonal tension ($\beta \geq 12.5°$) of **PHILIPP Spherical Head Transport Anchors** requests additional reinforcement according to Table 4. The reinforcement for diagonal tension is installed contrary to the tensile force direction (Picture 2) and has in the bending pressure contact with the shaft of the anchor (Picture 4). The existing diagonal reinforcement is decisive for the choice of stirrups within the transport chain till the installation of the unit.



Picture 4

Table 4: Additional Reinforcement for Diagonal Tension (necessary, if $\beta \geq 12,5°$)

Load Group	Rebar ④ Diameter d_s [mm]	Rebar ④ Side Length L_2 [mm]	Rebar ④ Bending Radius d_{br} [mm]
1.3	8	200	32
2.0	10	250	40
2.5	10	320	40
4.0	14	350	56
5.0	16	400	64
7.5	20	500	140
10.0	20	650	140
15.0	25	750	175
20.0	25	950	175

6. Corrosion

If precast concrete units with installed **PHILIPP Spherical Head Transport Anchors** are left outside for a longer time (e.g. the units are stored outside and wetness or rain can get into the recess), the steel of **PHILIPP Spherical Head Transport Anchors** can be destroyed by chemical processes. Thus the anchors can fail under loading. Furthermore, because of outside storing rust can occur on the surface.

INSTALLATION INSTRUCTION OF PHILIPP SPHERICAL HEAD TRANSPORT ANCHOR

1. Material

PHILIPP Spherical Head Transport Anchors consist of round steel (according to the German standard) where a spherical head and a foot are forged on. Alternatively the anchor can be produced in galvanized, hot-dipped quality or stainless steel.

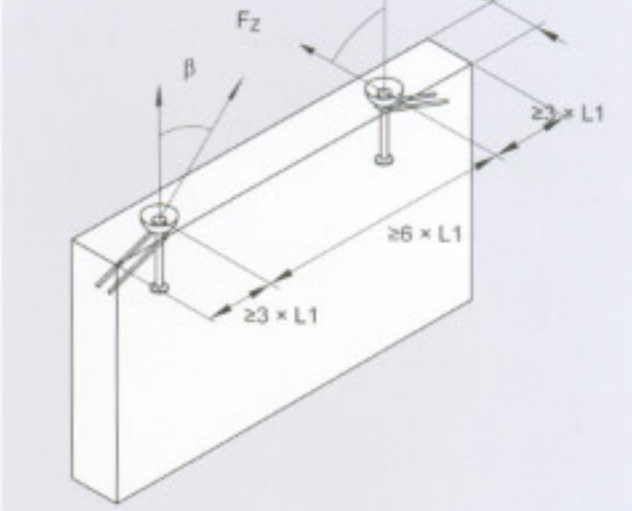
2. Application

PHILIPP Spherical Head Transport Anchors can be used to lift walls or beams. Table 2 includes the load bearing capacities of the **PHILIPP Spherical Head Transport Anchors** in walls and beams.

Changes and welding at **PHILIPP Spherical Head Transport Anchors** are inadmissible.

Table 2: Permissible Load Bearing Capacities in Walls and Beams for Axial Tension and Diagonal Tension (0°- 45°)

Load Group	Wall Thickness d [mm]	Permissible Load Bearing Capacity F_z [kN]	Length of Anchor h [mm]
1.3	100	13	120
2.0	120	20	140
2.5	120	25	170
4.0	160	40	210
5.0	180	50	240
7.5	240	75	300
10.0	260	100	340
15.0	280	150	400
20.0	280	200	500



Picture 2

The weight of 1.0ton results in 10kN.

3. Center Distances, Edge Distances, Unit Thicknesses

To ensure a safe load transfer, the installation and positioning requires minimum dimensions and minimum center distances. The values for d in Table 2 cover axial and diagonal tension (β = 0°- 45°). **Lateral loading is inadmissible**.

The minimum edge distance for the **PHILIPP Spherical Head Transport Anchor** is 3 × L_1 (L_1 = h + S, Picture 1) and the minimum distances between **PHILIPP Spherical Head Transport Anchors** is 6 × L_1.

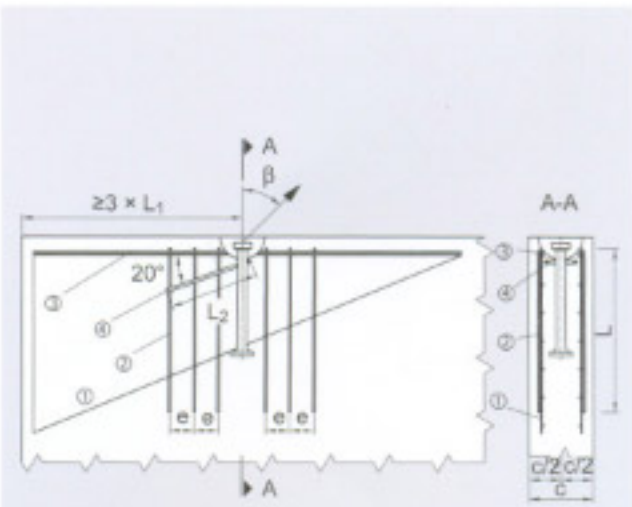
4. Reinforcement

For installation of **PHILIPP Spherical Head Transport Anchors** concrete units need to have a minimum surface reinforcement (Table 3).

An already existing static-structural reinforcement may be taken into account on requested minimum reinforcement acc. to Table 3.

This minimum reinforcement can be replaced by comparable stirrups with longitudinal reinforcement. At first time of lifting the concrete strength must be **15 N/mm²**.

Should it be necessary to cut out single bars for installation of **PHILIPP Spherical Head Transport Anchors**, they have to be replaced by bars with equal diameter, strength and sufficient overlapping length according to DIN 1045-1. The user is personally responsible for further transmission of load into the unit.



Picture 3

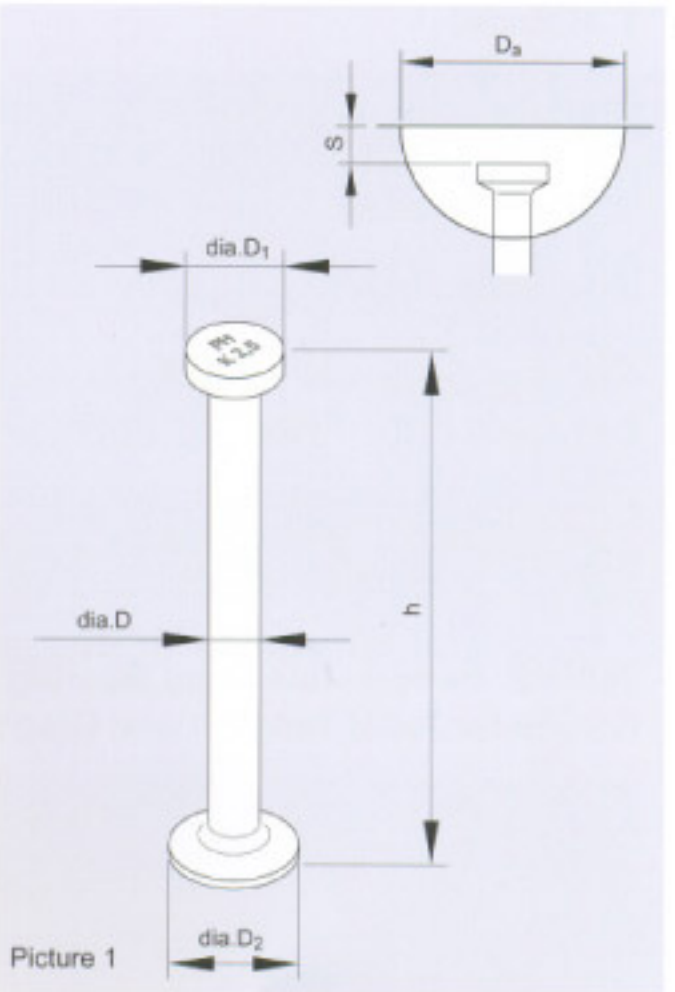
INSTALLATION INSTRUCTION OF PHILIPP SPHERICAL HEAD TRANSPORT ANCHOR

The **PHILIPP Spherical Head Transport 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).

On use of **PHILIPP Spherical Head Transport Anchor** attention must be paid to this installation instruction, the using instruction of the lifting device (**PHILIPP Spherical Head Lifting Clutch**) as well as the general installation instruction. The anchor may only be used in combination with the original **PHILIPP Spherical Head Lifting Clutch**.

PHILIPP Spherical Head Transport Anchors are designed for transport of precast concrete units. Multiple uses within the transport chain (from production to installation of the unit) are no repeated uses. Repeated use is only allowed if it complies with the German Approval (DIBt, Berlin No. Z-30.3-6 stainless steel).

To differentiate between the sizes, **PHILIPP Spherical Head Transport Anchors** have a marking on their anchor head, showing the groups. Picture 1 and Table 1 include details about dimensions and load groups of **PHILIPP Spherical Head Transport Anchors**.



Picture 1

Table 1: Load Groups and Dimensions

Art.-No.	Load Group	Dimensions [mm]						Weight	PU
		h	dia.D	dia.D_1	dia.D_2	S	D_a	[kg/100pcs.]	[pcs.]
81-013-120	1.3	120	10	18	25	10	60	10.0	100
81-013-240	1.3	240	10	18	25	10	60	17.0	100
81-020-140	2.0	140	14	26	35	11	74	23.0	100
81-020-170	2.0	170	14	26	35	11	74	26.0	100
81-020-280	2.0	280	14	26	35	11	74	40.0	50
81-025-170	2.5	170	14	26	35	11	74	26.0	100
81-025-280	2.5	280	14	26	35	11	74	40.0	50
81-040-210	4.0	210	18	36	45	15	94	54.0	50
81-040-240	4.0	240	18	36	45	15	94	61.0	25
81-040-340	4.0	340	18	36	45	15	94	81.0	20
81-040-420	4.0	420	18	36	45	15	94	108.0	20
81-050-240	5.0	240	20	36	50	15	94	75.0	25
81-050-340	5.0	340	20	36	50	15	94	99.0	20
81-050-480	5.0	480	20	36	50	15	94	135.0	1
81-075-300	7.5	300	24	47	60	15	118	136.0	20
81-075-540	7.5	540	24	47	60	15	118	221.0	1
81-075-680	7.5	680	24	47	60	15	118	273.0	1
81-100-340	10.0	340	28	47	70	15	118	201.0	10
81-100-680	10.0	680	28	47	70	15	118	365.0	1
81-150-400	15.0	400	34	70	85	15	160	369.0	1
81-150-840	15.0	840	34	70	85	15	160	700.0	1
81-200-500	20.0	500	39	70	98	15	160	548.0	1
81-200-1000	20.0	1000	39	70	98	15	160	1092.0	1

To determine the right type please take notice of our general installation instruction.