



PHILIPP Power System

Installation Instruction



07/07 - EN

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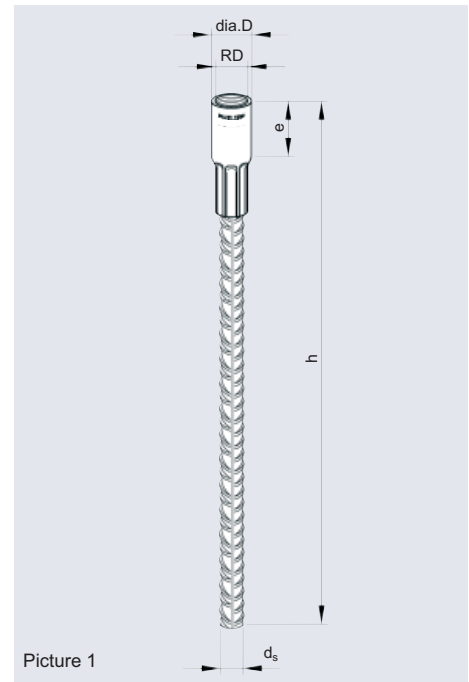
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INSTALLATION INSTRUCTION OF PHILIPP POWER SYSTEM

The **PHILIPP Power System** 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). It consists of the system elements **PHILIPP Power Anchor**, **PHILIPP Power Wirbelstar** and **PHILIPP Power Nailing Plate**.

On use of **PHILIPP Power System** attention must be paid to this installation instructions and us and the general part. The using instructions of **PHILIPP Wirbelstar** may also be considered. The anchor may only be used in combination with the original **PHILIPP Lifting Devices**.

PHILIPP Power System is used 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).



Picture 1

Version: straight tail
Socket: galvanized

Table 1: Load Bearing Capacities and Dimensions

Art.-No. galvanized	Type RD	Load Bearing Capacity allow. F_z [kN] 0°- 30°	Dimensions [mm]				Weight [kg/PU]	PU [pcs.]
			dia.D	h	e	ds		
67M56	56	150.0	70.0	1200	75	36	11.01	1
67M60	60	200.0	76.0	1400	80	40	16.36	1

For ascertainment of the right load bearing capacity please follow our general installation instruction and technical advice. The weight of 1.0ton results in 10.0kN.

The **PHILIPP Power System** can only be used for axial and diagonal tension. **Lateral tension is inadmissible.**

1. Material

The **PHILIPP Threaded Transport Anchor** consists of a straight reinforcement bar (BSt500S) with crimped-on insert. The insert is made of special high-precision, galvanized steel according to DIN 50961.

2. Reinforcement

On use of **PHILIPP Power System** precast units must be reinforced with a minimum surface reinforcement (Table 2).

This minimum reinforcement can be replaced by comparable single reinforcement bars. The concrete must have a minimum strength of **15 N/mm²** at first time of lifting. The user is personally responsible for further transmission of load into the unit.

Existing static-structural reinforcement may be taken into account when determining requested minimum reinforcement according to Table 2.

Table 2: Minimum Reinforcement

Type	Longitudinal Reinforcement BSt 500 S [mm]		Mesh Reinforcement (quadratic) [mm ² /m]	Stirrups in the Anchorage Area L = 60 cm
56	dia.14	1500	378	6 dia.10 / 12.5 cm
60	dia.14	1500	513	6 dia.10 / 12.5 cm

3. Center Distances, Edge Distances and Unit Thicknesses

To ensure a safe load transfer the installation and positioning of **PHILIPP Threaded Transport Anchors** require minimum dimensions and minimum center distances. The unit thickness d covers axial and diagonal loading (Table 3). A lateral loading of the anchor is not permitted within the whole transport chain! This also applies for a diagonal loading of β larger than 30° !

Table 3: Minimum Center Distance (a_a), Edge Distance (a_r), Minimum Thickness of Unit (d)

Type	a_a [mm]	a_r [mm]	d [mm]
56	2000	1200	280
60	2000	1200	280

4. Additional Reinforcement for Diagonal Loading

The use of **PHILIPP Threaded Transport Anchors** under diagonal tension with $\beta \geq 12.5^\circ$ requires additional reinforcement according to Table 4. The diagonal reinforcement is placed contrary to the tensile direction (also picture 2) and has pressure contact with the threaded insert of the transport anchor in the summit of the bending (Picture 2).

Table 4: Additional Reinforcement at Diagonal Tension
(required, if $\beta \geq 12.5^\circ$)

Type	at $12.5^\circ \leq \beta \leq 30^\circ$		
	d_s [mm]	L [mm]	d_{br} [mm]
56	25	750	175
60	25	900	175

5. Lifting Device

The lifting device within the **PHILIPP Power System** is the **PHILIPP Power Wirbelstar**. It is available with a special round thread (with metric pitch).

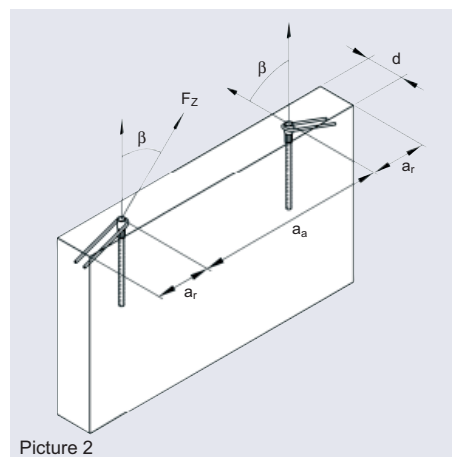
Table 5: Allowed Loads and Dimensions

Art.-No. RD- Thread	Type	Load Bearing Capacity allow. F_z [kN] 0° - 30°	Dimensions			
			dia.D [mm]	b [mm]	h [mm]	c [mm]
62WS56	56	150.0	150	140	350	72
62WS60	60	200.0	150	140	350	78

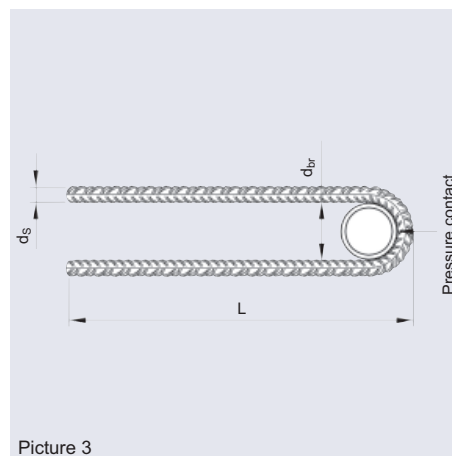
The weight of 1.0ton results in 10kN.

6. Material

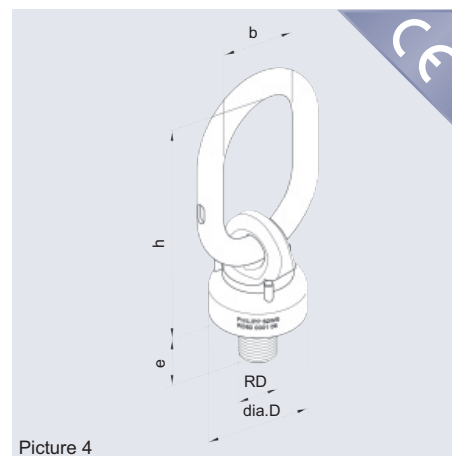
PHILIPP Wirbelstar consists of a forged ring bolt with a chain link and a bottom plate made of special hardened steel. The inside construction consists of a ball bearing.



Picture 2



Picture 3

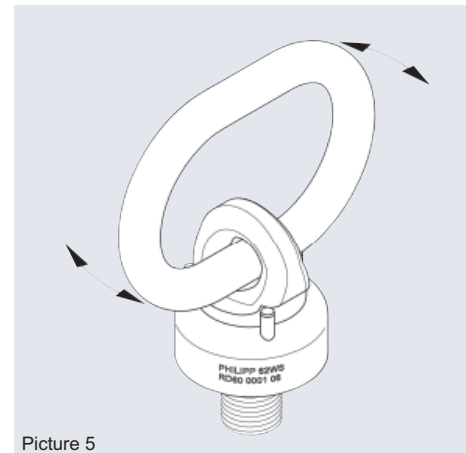


Picture 4

7. Application

The **PHILIPP Power Wirbelstar** is used as a lifting device within the **PHILIPP Threaded Anchor System**. The chain link is used to tighten or loosen **PHILIPP Power Wirbelstar**. To do that the chain link must be pulled through the ring bolt so that its recesses (Picture 5) fits to the three pins located at the circumference of the **PHILIPP Power Wirbelstar**. This efficient lever-arm enables convenient tightening and removing without any tool. The **PHILIPP Power Wirbelstar** must be driven in a way that the bottom plate has throughout contact with the concrete surface. This is particularly important because on lifting the **PHILIPP Power Wirbelstar** a deviation is initiated and spelling is largely prevented. Due to that bending and damage to the thread can be avoided. The use of products of the **PHILIPP Power Wirbelstar System** requires **PHILIPP Recess Former** (72SAT56K to 72SAT60K, Table 8). Thus the vertical location of **PHILIPP Power Wirbelstar** is guaranteed. The **PHILIPP Power Wirbelstar** is only applicable for the load cases axial and diagonal tension.

Because of its ball-bearing, the hanger moves into the right diagonal force direction after achievement of the nominal load bearing without removing the bottom plate of the **PHILIPP Power Wirbelstar**.



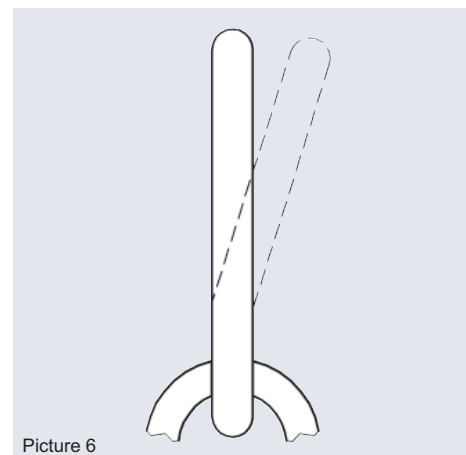
Picture 5

8. Safety Advice

The **PHILIPP Power Wirbelstar** counts as lifting device and is therefore subject of an annual inspection (BGR 500 Section 2.8). This inspection must be executed by an expert and is the responsibility of the user. The **PHILIPP Power Wirbelstar** is maintenance-free. Because of its ball-bearing, penetration of dirt can be largely excluded.

In general the particular accident prevention regulations must be taken into account.

The right hook size and form should be considered because thus the durability can be extended.



Picture 6

The component parts of the **PHILIPP Power Wirbelstar** are manufactured with a special thermal procedure. Welding and other strong heating influences on the **PHILIPP Power Wirbelstar** are inadmissible.

If it occurs during use or inspection that chain link and bottom plate heavily twist against each other, the **PHILIPP Power Wirbelstar** must be repaired by **PHILIPP GmbH**.

Exceptional loads (e.g. failure) that may cause negative influence on the **PHILIPP Power Wirbelstar** load bearing capacity shall be subject of an extraordinary inspection by and expert (BGR 500 Section 2.8).

The inspection should be undertaken according to the below mentioned criterions.

The use of damaged load equipment or items which are already in replacement state is inadmissible. The replacement state of the **PHILIPP Power Wirbelstar** is determined according to the German regulation (BGR 500 Section 2.8).

9. Replacement State and Inspection

Prior inspection the **PHILIPP Power Wirbelstar** must be cleaned and the following points must be taken account.

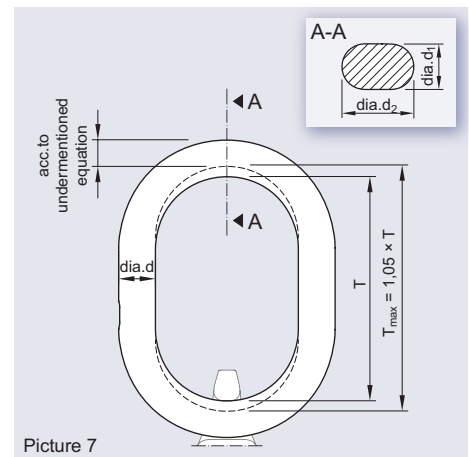
- if there are plastic deformations replacement state of the **PHILIPP Power Wirbelstar** is reached. Those deformations can be:
 - deformed chain link (Picture 6)
 - deformed thread
 - caused by overload (= overload, Picture 7 and Table 6)
- on exceeding of permissible wear measures, replacement state of wear is also reached.

If you wish a proper and documented inspection please don't hesitate to contact our PHILIPP Inspection Service under the following telephone number: +49 (0) 6021/ 4027-0

Table 6: Inspection Measures of the Chainlink

Type	Pitch T [mm]	$T_{max}=1.05 \times T$ [mm]	dia.d [mm]	$0.9 \times \text{dia.d}$ [mm]
56	220	231	36	32.4
60	220	231	36	32.4

Furthermore the radius of the chain link diameter should be observed during inspection. The replacement state for this part is reached, if the chain link has a diminution by 10% (Picture 7 and Table 6).



Picture 7

$$\frac{\text{dia.d}_1 + \text{dia.d}_2}{2} > 0,9 \times \text{dia.d}$$

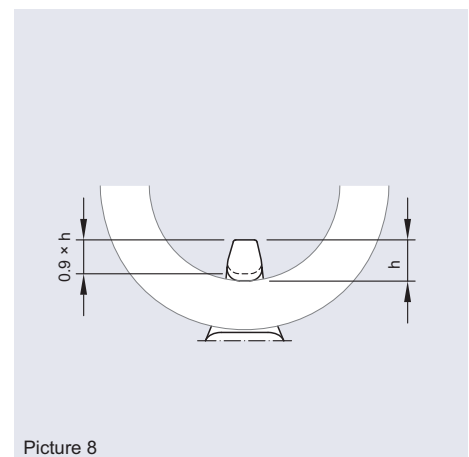
Table 7: Inspection Measures of the Ring Bolt

Type	h [mm]	$h \times 0.9$ [mm]
56	30.0	27.0
60	30.0	27.0

5. Marking

The **PHILIPP Wirbelstar** is marked as follows:

- manufacturer
- year of manufacturing
- load bearing capacity
- type / thread size
- CE marking



Picture 8

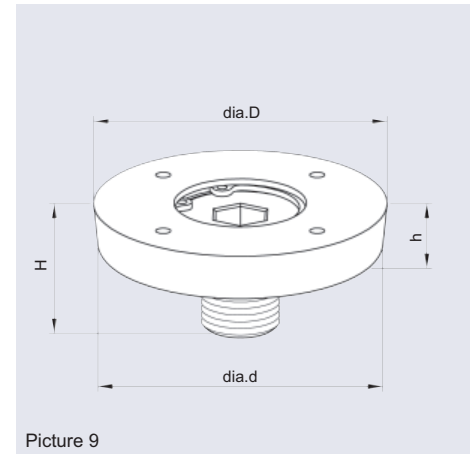
11. Nailing Plate

The **PHILIPP Power Recess Formers** are used to fix **PHILIPP Power Anchors** onto the mould. The existing nail holes allow a fixation with nails. The application of **PHILIPP Power Recess Former** ensures an even contact area for the compression plate of **PHILIPP Power Wirbelstar** which must be rectangular to the **PHILIPP Power Anchor**.

The **PHILIPP Power Recess Formers** made from steel (Table 8) can be combined with the **PHILIPP Power Wirbelstar**.

Table 8: Dimensions of PHILIPP Power Recess Former

Art.-No.	Type	dia.D [mm]	dia.d [mm]	H [mm]	h [mm]	PU [pcs.]	Weight [kg/pcs.]
72SAT56K	56	155	152	76	18	1	3.29
72SAT60K	60	155	152	76	18	1	3.44



Picture 9

Version: with Nail Holes