

PHILIPPGROUP

PHILIPP Wirbelstar KH



VB3-T-016-en - 01/16

Application Instruction

PHILIPP Wirbelstar KH

The Wirbelstar KH is part of the PHILIPP Transport anchor system and complies with the VDI/BV-BS Guideline "Lifting inserts and lifting insert systems for pre-cast concrete elements" (VDI/BV-BS 6205).

The use of the Wirbelstar KH requires the compliance with this Installation Instruction, the installation instructions for threaded anchor systems as well as the General Installation Instruction. The Wirbelstar KH is suitable for axial, diagonal and lateral tension.

Table 1: Permissible load bearing capacities and dimensions

Ref.-No. RD thread ①	Type	perm. F 0°- 90° [kN]	Dimensions							Weight [kg/pc.]
			ØD ₁ [mm]	RD ₂ [mm]	b [mm]	h [mm]	e ₁ [mm]	e ₂ [mm]	h ₁ [mm]	
62WS12KH	RD 12	5.0	47	24	35	125	14	16	52	0.64
62WS14KH	RD 14	8.0	52	24	35	126	14	18	53	0.73
62WS16KH	RD 16	12.0	56	24	35	151	14	21	53	0.88
62WS18KH	RD 18	16.0	59	24	60	152	14	23	77	1.61
62WS20KH	RD 20	20.0	70	24	60	158	14	26	76	1.91
62WS24KH	RD 24	25.0	74	24	75	186	14	31	81	2.52
62WS30KH	RD 30	40.0	90	42	90	219	14	44	96	4.28
62WS36KH	RD 36	63.0	101	42	100	255	14	52	124	7.03
62WS42KH	RD 42	80.0	110	42	100	256	18	60	125	8.30
62WS52KH	RD 52	125.0	130	52	140	344	22	68	157	16.35

① Also available with M thread (Ref.-No. 62WS___MKH).
- The weight of 1.0 t corresponds to 10.0 kN.

Material

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

Marking

Wirbelstars KH are marked as follows:

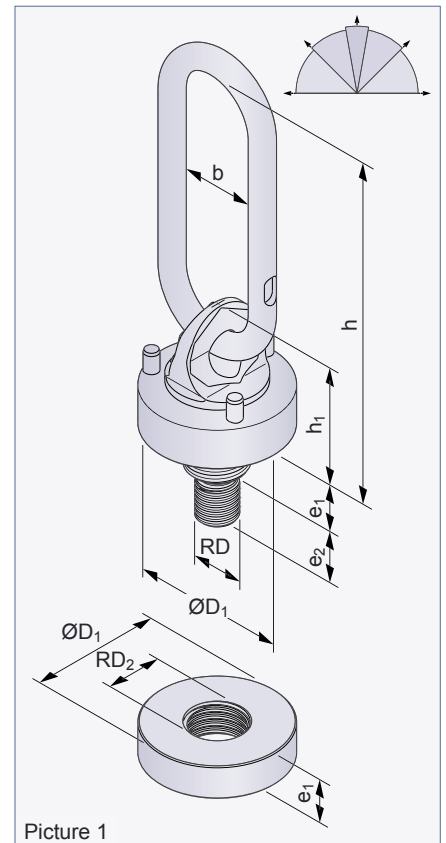
- Manufacturer
- Type (system / load class)
- CE mark ②
- Serial number
- Year of manufacturing

② The EC Declaration of Conformity (DoC) of the Wirbelstar KH is available on request or can be downloaded from our website www.philipp-group.de.

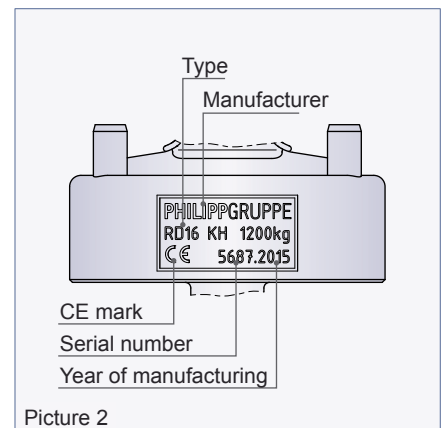


Application

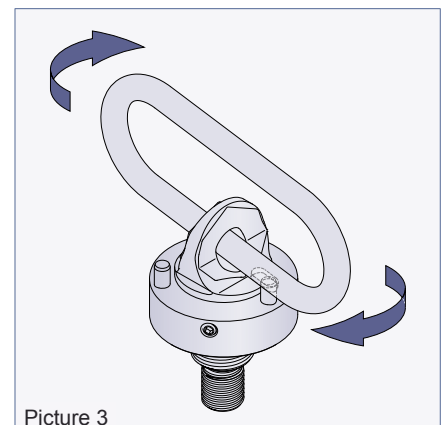
The Wirbelstar KH is a lifting device of the threaded transport anchor system and is supplied with a round thread (with metric pitch) or metric thread. The Wirbelstar KH must be screwed in until the bottom part of the Wirbelstar KH has continuous contact with concrete surface. This is very important because during lifting the Wirbelstar KH is supported by this concrete area and a spalling is largely prevented (Picture 4). Thus, a bending and damage of the thread can be avoided. The chain link is used to tighten or loose the Wirbelstar KH. For this the chain link must be pulled through the ring bolt that its recess fits in 90° to one of the three pins located at the circumference of the Wirbelstar KH (Picture 3). This creates an efficient lever arm which enables a convenient tightening and removing (without a tool).



Picture 1



Picture 2

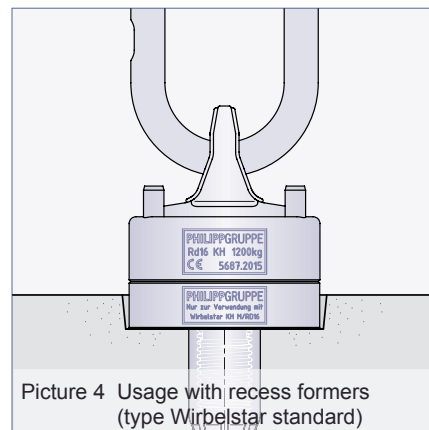


Picture 3

Application / safety

Due to its double-thread construction the Wirbelstar KH can be used as a standard Wirbelstar (Picture 4) as well as the special Wirbelstar KH (Picture 5) in a recessed position. Then a threaded anchor must be installed by using the special fixing device KH in plastic: 72KH12 to 72KH24, made of steel: 72KH12STAHL to 72KH52STAHL or magnetic: 72MAXKH12ST to 72MAXKH52ST or 72MAXKH12SO to 72MAXKH52SO).

The usage of Wirbelstar KH with an adapter plate requires full-surface contact with the concrete surface or recess formers like 72SAT12K to 72SAT60K, 72SATM12K to 72SATM60K or 72KHN36WS or 72KHN52WS.



Picture 4 Usage with recess formers (type Wirbelstar standard)



The usage of Wirbelstar as KH version requires special recess formers.



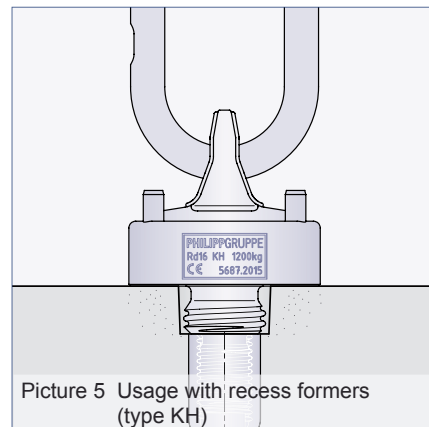
Because of its ball-bearing the hanger moves, after achievement of the nominal load bearing, itself into the right force direction without removing of the bottom part of the Wirbelstar KH. Therefore the Wirbelstar is a perfect solution for tilt-up of horizontal manufactured panels.



Using only one Wirbelstar KH in order to lift concrete elements attention must be paid that the Wirbelstar KH is protected against unscrewing.

Safety notice

As each other lifting equipment and lifting device the Wirbelstar KH is subject to an annual inspection according DGUV regulation 100-500 chapter 2.8. Part 3.15.4 once a year. This inspection has to be done by an expert and lies within the responsibility of the owner. Depending on the working conditions the inspections might be necessary in a shorter interval instead of only once a year. This might be caused by frequent use, increased wear, corrosion or heat treatment. The Wirbelstar KH is designed in a special way that no maintenance is necessary. Because of its ball-bearing a penetration of dirt can be largely excluded. In general, attention must be paid to the current accident prevention regulations. The correct hook size and form should be considered in order to extend the durability.



Picture 5 Usage with recess formers (type KH)



Welding or other strong heat influences on the Wirbelstar KH are not allowed.

If it is determined during application or an inspection, that the chain link and the bottom part twist heavily against each other, the Wirbelstar KH must be repaired by PHILIPP. If the Wirbelstar KH is loaded with extreme loads (e.g. by an event causing damage) which may have influenced the bearing capacity it must be examined extraordinarily by an expert. The criteria listed in section „Replacement criteria and inspection” are the basis for the following check.



The continued use of damaged lifting devices or equipment already met the discard criteria is not permitted!

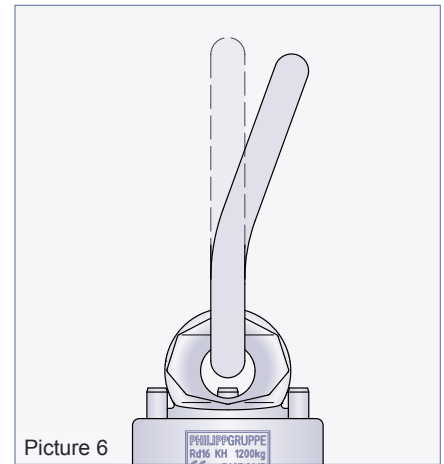
Inspection

Replacement criteria and inspection

The replacement state of the Wirbelstar KH is determined according to the German regulation 100-500 chapter 2.8 section 3.15.4.

Prior inspection the Wirbelstar KH must be cleaned. During inspection the following points have to be considered: If one of the following points are fulfilled the Wirbelstar has reached its replacement state and must not be used any more.

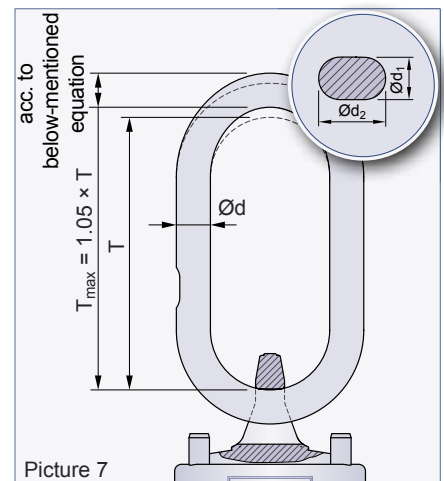
- Breakage of chain link
- Deformation of chain link (Picture 6)
- Pressure marks on chain link caused by rigging hardware
- Cracks or corrosion scarves reducing capacity
- Deformation of the threaded bolt
- Deformation of the thread
- Welding or other strong heating influences
- Marking not readable anymore
- Exceeding of upper or lower wear measurements (Table 2 and 3)



Picture 6

Table 2: Check dimensions of the chain link

Load class	Pitch T [mm]	$T_{max} = 1.05 \times T$ [mm]	$\varnothing d$ [mm]	$0.9 \times \varnothing d$ [mm]
12	85	89	10	9.0
14	85	89	10	9.0
16	110	116	10	9.0
18	95	100	16	14.4
20	102	107	16	14.4
24	125	131	18	16.2
30	148	155	22	19.8
36	160	168	26	23.4
42	160	168	26	23.4
52	220	231	36	32.4



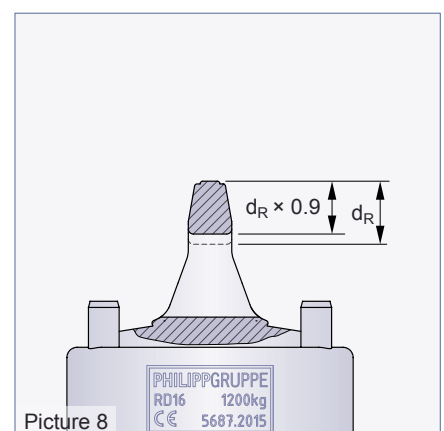
Picture 7

Furthermore the radius of the chain link must be observed during inspection. The replacement state for this part is reached if the chain link has a diminution of 10% (Picture 8 and Table 3).

$$\frac{\varnothing d_1 + \varnothing d_2}{2} > 0.9 \times \varnothing d$$

Table 3: Check dimensions of the ring bolt

Load class	d_R [mm]	$d_R \times 0.9$ [mm]
12	10.0	9.0
14	10.0	9.0
16	10.0	9.0
18	17.0	15.3
20	17.0	15.3
24	17.0	15.3
30	22.0	19.8
36	28.0	25.2
42	28.0	25.2
52	30.0	27.0



Picture 8