

Wirbelstar KH



Application Instruction

Our products from the division BUILDING SOLUTIONS

SERVICES

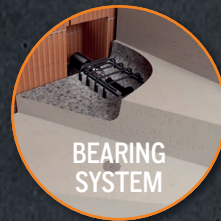
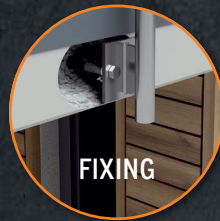
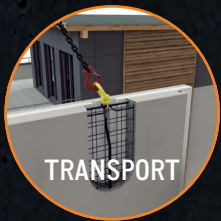
- » On-site tests -> we ensure that your requirements are properly covered by our planning.
- » Test reports -> for your safety and documentation.
- » Trainings -> the knowledge of your employees from planning and production is enhanced by our experts on site, online or via webinar.
- » Planning support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

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- » 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.



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THE 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 systems for precast concrete elements" (VDI/BV-BS 6205).

The use of the Wirbelstar KH requires the compliance with this Application Instruction, the Installation and Application Instruction of the particular threaded anchor 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. ①	Type	perm. F 0° - 90° (kN)	Dimensions								Weight (kg/pc.)
			RD (mm)	RD ₂ (mm)	ØD ₁ (mm)	b (mm)	h (mm)	e ₁ (mm)	e ₂ (mm)	h ₁ (mm)	
62WS12KH	RD 12	5.0	12	24	47	35	125	14	18	52	0.64
62WS16KH	RD 16	12.0	16	24	56	35	151	14	23	53	0.88
62WS20KH	RD 20	20.0	20	24	70	60	158	14	29	76	1.91
62WS24KH	RD 24	25.0	24	24	74	75	186	14	34	81	2.52
62WS30KH	RD 30	40.0	30	30	90	90	219	18	46	96	4.28
62WS36KH	RD 36	63.0	36	42	101	100	255	18	55	124	7.03
62WS42KH	RD 42	80.0	42	42	110	100	256	18	64	125	8.30
62WS52KH	RD 52	125.0	52	52	130	140	344	22	78	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

The Wirbelstar KH consists of a forged ring bolt with a chain link, a rotatable hinged bottom part and a screw-on pressure plate.

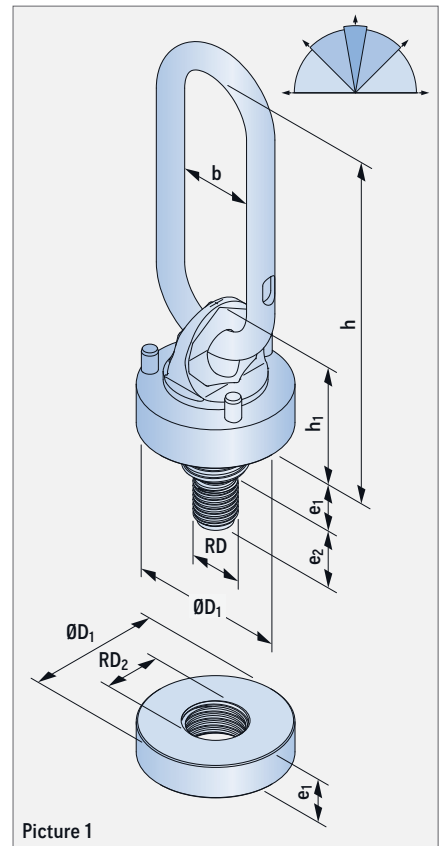
MARKING

Each Wirbelstar KH is marked as follows:

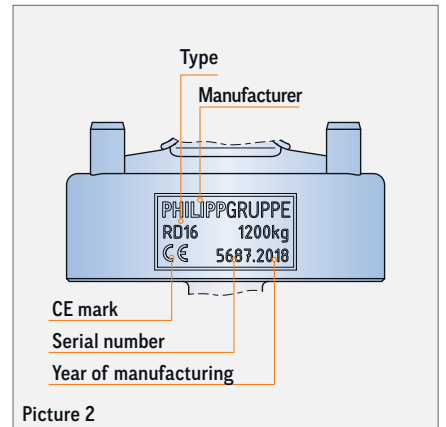
- » Manufacturer
- » Type (system / load class)
- » CE mark
- » Serial number
- » Year of manufacturing

EC DECLARATION OF CONFORMITY (DOC)

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



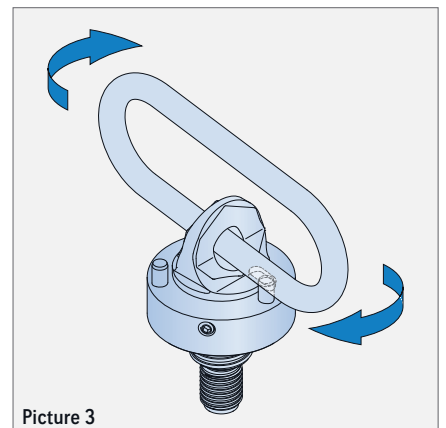
Picture 1



Picture 2

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 the 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 also used to tighten or loose the Wirbelstar KH. For this, the chain link must be pulled through the ring bolt so 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 3

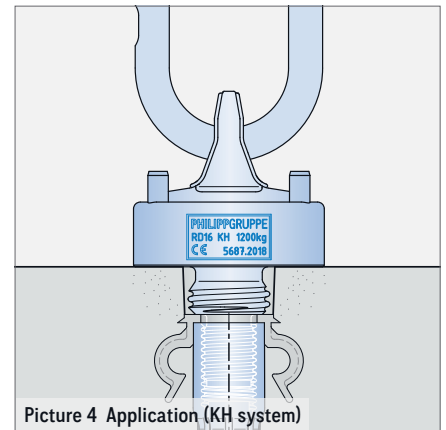
APPLICATION / SAFETY

Due to its double-thread construction the Wirbelstar KH (KH system, picture 4) can be used as a KH Wirbelstar as well as a standard Wirbelstar (WS system with pressure plate, picture 5). If the Wirbestar KH is used without the pressure plate (KH system) the transport anchor must be installed with one of the following recess formers:

- » Plastic: 72KH12 – 72KH24
- » Steel: 72KH12STAHL – 72KH52STAHL
- » Magnetic: 72MAXKH12ST – 72MAXKH52ST

If the Wirbelstar KH is used with the pressure plate (WS system) the anchor can be installed flush to the surface of the concrete element or with one of the following recess formers:

- » Plastic: 72KHN36WS – 72KHN52WS
- » Steel: 72SAT12K – 72SAT60K
- » Magnetic: 72SATM12K – 72SATM60K

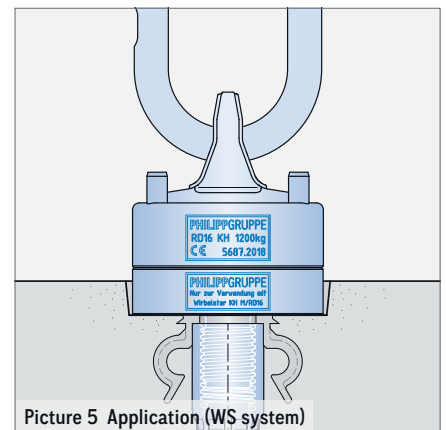


Picture 4 Application (KH system)



PLEASE NOTE!

A use of inadmissible recess formers can lead to a reduction of the bearing capacity and to the failure of the Wirbelstar KH or the transport anchor.



Picture 5 Application (WS system)



WELDING

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



PLEASE NOTE!

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



APPLICATION INSTRUCTIONS

The Application Instructions for the KH and WS system is to be considered!



PLEASE NOTE!

Because of its ball-bearing the hanger moves, even 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 KH is a perfect solution for tilt-up of horizontal manufactured panels.

SAFETY NOTICES

As each other lifting equipment and lifting device the Wirbelstar KH is subject to an annual inspection (acc. to German DGUV regulation 109-017. para. 8.2). 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.

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 are given in section "Replacement criteria" and "Inspection".



USE OF ONLY ONE LIFTING DEVICE

Using only one Wirbelstar KH in order to lift concrete elements attention must be paid that the Wirbelstar KH is protected against unscrewing (e.g. by using a guy or guide rope at the concrete element).

REPLACEMENT CRITERIA

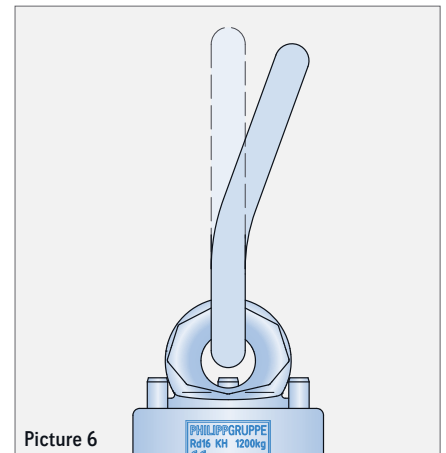
The replacement state of the Wirbelstar KH follows the German regulation DGUV 109-017, para. 8.4. Prior inspection the Wirbelstar KH must be cleaned. During inspection the following points have to be considered. If one is fulfilled the Wirbelstar KH has reached its replacement state and must not be used any more.

- » Breakage of chain link
- » Deformation of chain link (picture 6)
- » Pressure marks on chain link caused by rigging hardware
- » Cracks or the capacity reducing corrosion pits
- » Deformation of the threaded bolt
- » Damaged thread
- » Welding or other strong heat influences
- » Marking not readable anymore
- » Exceeding of upper or lower test dimensions (table 2 and 3)

The chain link shall be checked both for any elongation and taper of the diameter (picture 7). The replacement state is reached if the elongation of the chain link reached 5 % or the diameter of the link is reduced by 10 % (table 2).

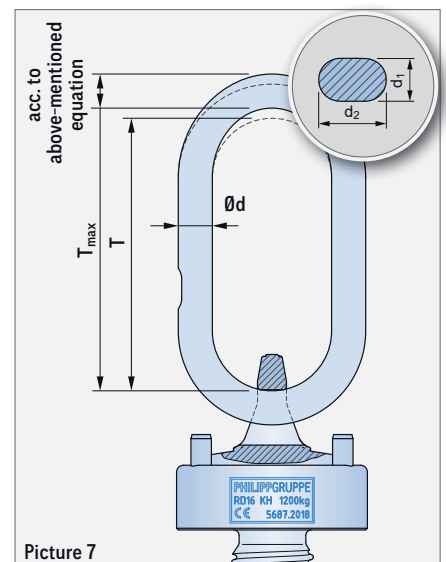
TABLE 2: TEST DIMENSIONS OF THE CHAIN LINK

Load class	T (mm)	T _{max} (mm)	Ød (mm)	d _{min} (mm)
12	85	89	10	9.0
16	110	116	10	9.0
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 6

$$\frac{d_1 + d_2}{2} > d_{\min}$$



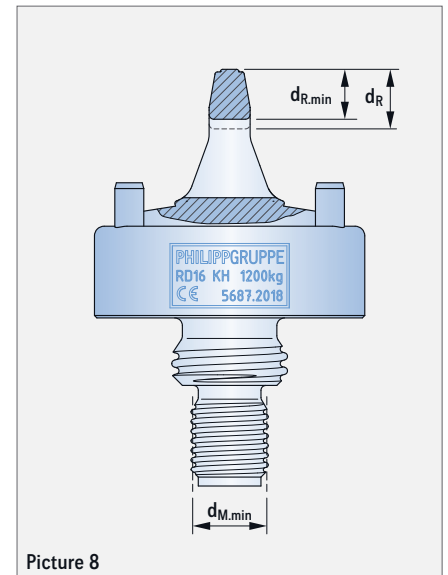
Picture 7

INSPECTION

During the inspection of the ring bolt, the wear of the bolt diameter shall be checked. The replacement state for this part is reached when the forged ring bolt has a diminution of 10 % (picture 8 and table 3). The outer diameter of the thread must also be checked acc. to picture 8 and table 3.

TABLE 3: TEST DIMENSIONS OF THE RING BOLT

Load class	$d_{M,min}$ (mm)	d_R (mm)	$d_{R,min}$ (mm)
12	11.50	10.0	9.0
16	15.45	10.0	9.0
20	19.40	17.0	15.3
24	23.40	17.0	15.3
30	29.40	22.0	19.8
36	35.40	28.0	25.2
42	41.20	28.0	25.2
52	51.20	30.0	27.0



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