PHILIPPGROUP

PHILIPP Wirbelstar

VB3-V-015-en - 07/19 - PDF

Application Instruction

Transport and mounting systems for prefabricated building

Technical department

Our staff will be pleased to support your planning phase with suggestions for the installation and use of our transport and mounting systems for precast concrete construction.

Special designs

Customized to your particular needs.

Practical tests on site

We ensure that our concepts are tailored precisely to your requirements.

Inspection reports

For documentation purposes and your safety.

On-site service

Our engineers will be pleased to instruct your technicians and production personnel at your plant, to advise on the installation of precast concrete parts and to assist you in the optimisation of your production processes.

High safety level when using our products

Close cooperation with federal materials testing institutes (MTIs), and official approvals for the use of our products and solutions whenever necessary.

Software solutions

The latest design software, animated videos and CAD libraries can always be found under www.philipp-gruppe.de.

Engineering contact

Phone: +49 (0) 6021 / 40 27-318
Fax: +49 (0) 6021 / 40 27-340
E-mail: technik@philipp-gruppe.de

Sales contact

Phone: +49 (0) 6021 / 40 27-300
Fax: +49 (0) 6021 / 40 27-340
E-mail: vertrieb@philipp-gruppe.de

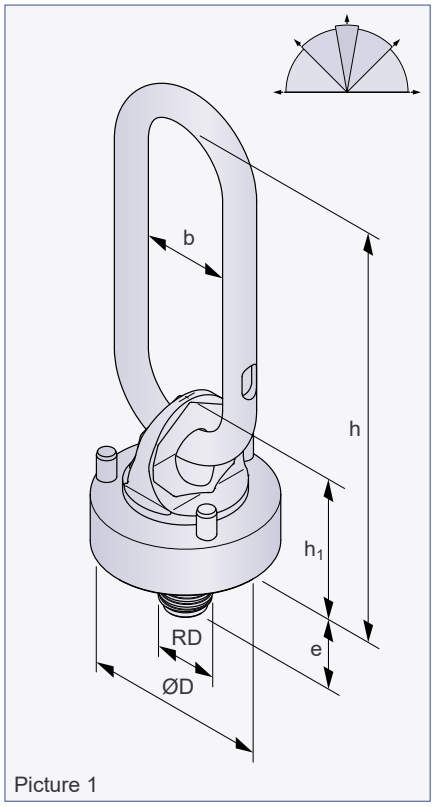



Content

PHILPP Wirbelstar

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

The use of the Wirbelstar 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 is suitable for axial, diagonal and lateral tension.



Picture 1

Table 1: Permissible load bearing capacities and dimensions

Ref.-no. ①	Type	perm. F		Dimensions						Weight
		0°- 30° [kN]	0°- 90° [kN]	RD	ØD [mm]	b [mm]	h [mm]	e [mm]	h_1 [mm]	[kg/pc.]
62WS12	RD 12	5.0	5.0	12	47	35	125	18	52	0.50
62WS14	RD 14	8.0	8.0	14	52	35	126	20	53	0.55
62WS16	RD 16	12.0	12.0	16	56	35	151	23	53	0.66
62WS18	RD 18	16.0	16.0	18	59	60	152	26	77	1.38
62WS20	RD 20	20.0	20.0	20	70	60	158	29	76	1.54
62WS24	RD 24	25.0	25.0	24	74	75	186	34	81	2.10
62WS30	RD 30	40.0	40.0	30	90	90	219	46	96	3.73
62WS36	RD 36	63.0	63.0	36	101	100	255	55	124	6.29
62WS42	RD 42	80.0	80.0	42	110	100	256	64	125	7.12
62WS52	RD 52	125.0	125.0	52	130	140	344	78	157	15.30
62WS56	RD 56	150.0	125.0	56	150	140	350	72	162	17.30
62WS60	RD 60	200.0	125.0	60	150	140	350	78	162	17.43

① Load classes 12 up to 52 also available with M thread (ref.-no. 62WS__M)
- The weight of 1.0 t corresponds to 10.0 kN.

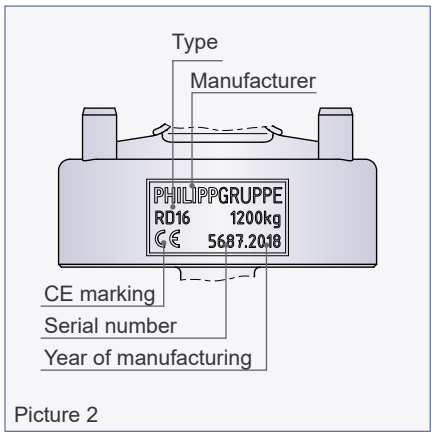
Material

The Wirbelstar consists of a forged ring bolt with a chain link and a rotatable hinged bottom part.

Marking

Wirbelstars are marked as follows:

- Manufacturer
- Type (system / load class)
- CE mark ①
- Serial number
- Year of manufacturing



Picture 2

① The EC Declaration of Conformity (DoC) of the Wirbelstar is available on request or can be downloaded from our website www.philipp-gruppe.de.

Application / safety

Application

The Wirbelstar 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 must be screwed in until the bottom part of the Wirbelstar has continous contact with the concrete surface. This is very important because during lifting the Wirbelstar is supported by this concrete area and a spalling is largely prevented (picture 3). The chain link is used to tighten or loose the Wirbelstar. 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 (picture 4). This creates an efficient lever arm which enables a convenient tightening and removing (without a tool).

The Wirbelstar can only be used with full-surface contact to the concrete surface or with the appropriate recess formers:

- Plastic: 72KHN36WS - 72KHN52WS
- Steel: 72SAT12K - 72SA60K
- Magnetic: 72SATM12K - 72SATM52K

The Application Instruction for the WS system is to be considered!

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. Therefore, the Wirbelstar is a perfect solution for tilt-up of horizontal manufactured panels.

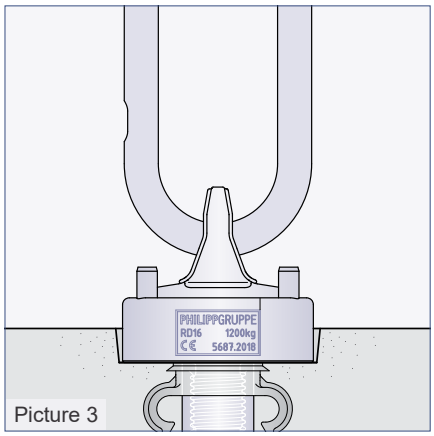
Safety notice

As each other lifting equipment and lifting device the Wirbelstar is subject to an annual inspection according to DGUV regulation 100-500, chapter 2.8. par. 3.15.4. 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 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.

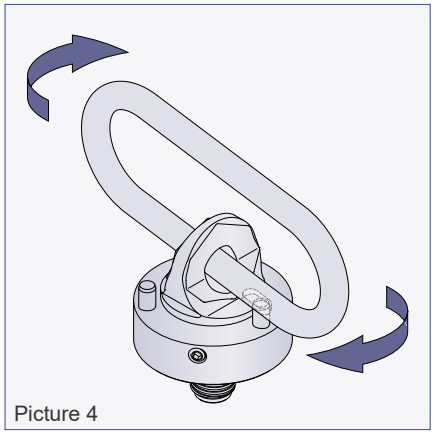
If it is determined during application or an inspection, that the chain link and the bottom part twist heavily against each other, the Wirbelstar must be repaired by PHILIPP.

If the Wirbelstar 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 service“.



Picture 3

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


Picture 4

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

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

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

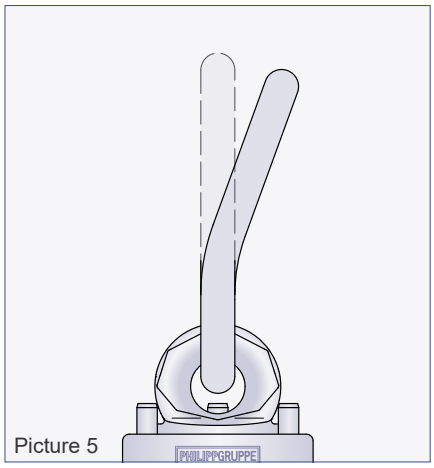
Inspection

Replacement criteria and inspection service

The replacement state of the Wirbelstar is determined according to the German regulation DGUV 100-500, chapter 2.8 par. 3.15.4.

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

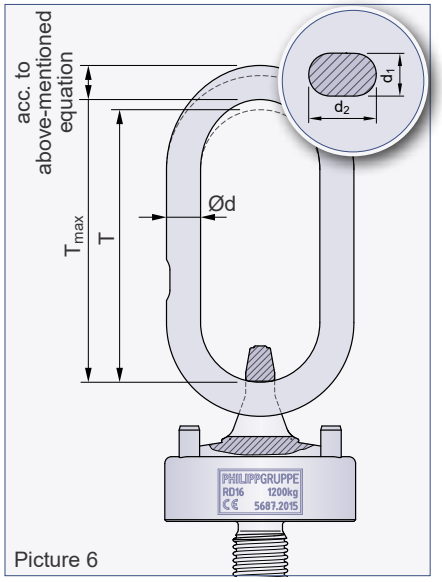
- Breakage of chain link
- Deformation of chain link (picture 5)
- Pressure marks on chain link caused by rigging hardware
- Cracks or the capacity reducing corrosion pits
- Deformation of the threaded bolt
- Damaged thread
- Welding or other strong heat influences
- Marking not readable anymore
- Exceeding of upper or lower test dimensions (table 2 and 3)



Picture 5

The chain link shall be checked both for any elongation and taper of the diameter (picture 6). 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).

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



Picture 6

Table 2: Test dimensions of the chain link

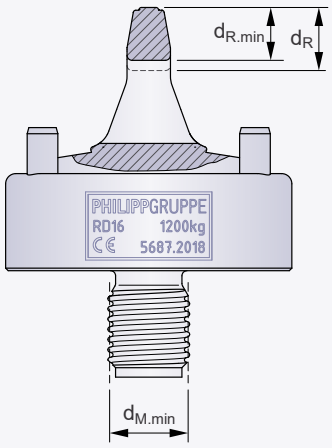
Load class	Pitch T [mm]	T_{max} [mm]	Ød [mm]	d_{min} [mm]
12	85	89	10	9.0
14	85	89	10	9.0
16	110	116	10	9.0
18	95	100	16	14.4
20	102	107	16	14.4
24	125	131	18	16.2
30	148	155	22	19.8
36	160	168	26	23.4
42	160	168	26	23.4
52	220	231	36	32.4
56	220	231	36	32.4
60	220	231	36	32.4

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 7 and table 3). The outer diameter of the thread must also be checked acc. to picture 7 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
14	13.50	10.0	9.0
16	15.45	10.0	9.0
18	17.40	17.0	15.3
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
56	55.20	30.0	27.0
60	59.20	30.0	27.0



Picture 7

Our customers trust us to deliver. We do everything in our power to reward their faith and we start each day intending to do better than the last. We provide strength and stability in an ever-changing world.

Welcome to the PHILIPP Group

Sustainable
solutions

PHILIPPGROUP

PHILIPP GmbH
Lilienthalstrasse 7-9
D-63741 Aschaffenburg
Phone: +49 (0) 6021 / 40 27-0
Fax: +49 (0) 6021 / 40 27-440
info@philipp-group.de

PHILIPP GmbH
Roßlauer Strasse 70
D-06869 Coswig/Anhalt
Phone: +49 (0) 34903 / 6 94-0
Fax: +49 (0) 34903 / 6 94-20
info@philipp-group.de

PHILIPP GmbH
Sperberweg 37
D-41468 Neuss
Phone: +49 (0) 2131 / 3 59 18-0
Fax: +49 (0) 2131 / 3 59 18-10
info@philipp-group.de

PHILIPP ACON Hydraulic GmbH
Hinter dem grünen Jäger 3
D-38836 Dardesheim
Phone: +49 (0) 39422 / 95 68-0
Fax: +49 (0) 39422 / 95 68-29
info@philipp-group.de

PHILIPP Vertriebs GmbH
Leogangerstraße 21
A-5760 Saalfelden / Salzburg
Phone +43 (0) 6582 / 7 04 01
Fax +43 (0) 6582 / 7 04 01 20
info@philipp-gruppe.at

07/19

For more information visit our website: www.philipp-gruppe.de