Hoist ring boltable on plate

> WBPG <

EN

Safety instructions

This safety instruction/declaration of the manufacturer has to be kept on file for the whole lifetime of the product.

– Translation of the Original instructions –

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Lifting points bolted
WBPG

EG-Konformitätserklärung

entsprechend der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A und ihren Änderungen

Hersteller: **RUD Ketten**
Rieger & Dietz GmbH u. Co. KG
Friedensinsel
73432 Aalen

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzipierung und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Maschinenrichtlinie 2006/42/EG sowie den unten aufgeführten harmonisierten und nationalen Normen sowie technischen Spezifikationen entspricht.
Bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Produktbezeichnung: Wirbelbock WBPG

Folgende harmonisierten Normen wurden angewandt:

DIN EN 1677-1 : 2009-03	DIN EN ISO 12100 : 2011-03

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

BGR 500, KAP2.8 : 2008-04

Für die Zusammenstellung der Konformitätsdokumentation bevollmächtigte Person:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 26.09.2016 Dr.-Ing. Arne Kriegsmann,(Prokurist/QMB)
Name, Funktion und Unterschrift Verantwortlicher

EC-Declaration of conformity

According to the EC-Machinery Directive 2006/42/EC, annex II A and amendments

Manufacturer: **RUD Ketten**
Rieger & Dietz GmbH u. Co. KG
Friedensinsel
73432 Aalen

We hereby declare that the equipment sold by us because of its design and construction, as mentioned below, corresponds to the appropriate, basic requirements of safety and health of the corresponding EC-Machinery Directive 2006/42/EC as well as to the below mentioned harmonized and national norms as well as technical specifications.
In case of any modification of the equipment, not being agreed upon with us, this declaration becomes invalid.

Product name: Load ring WBPG

The following harmonized norms were applied:

DIN EN 1677-1 : 2009-03	DIN EN ISO 12100 : 2011-03

The following national norms and technical specifications were applied:

BGR 500, KAP2.8 : 2008-04

Authorized person for the configuration of the declaration documents:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 26.09.2016 Dr.-Ing. Arne Kriegsmann,(Prokurist/QMB)
Name, function and signature of the responsible person

Please read user instruction before initial operation of the Hoist ring boltable on plate (WBPG). Make sure that you have comprehended all subjected matters.
Non observance can lead to serious personal injuries and material damage and eliminates warranty.

1 Safety instructions

WARNUNG
Wrong assembled or damaged WBPG as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all WBPG before each use.

- Remove all body parts (fingers, hands, arms, etc.) out of the hazard area (danger of crushing or squeezing) during the lifting process.
- The WBPG must be used only by authorised and trained people in adherence to BGR/DGUV regulations 100-500, Chapter 2.8 and, outside Germany, when observing the relevant specific national regulations.
- Do not exceed the working load limit (WLL) indicated on the lifting point.
- WBPG must be able to pivot by 180° and should swivel 360°, in the tightened condition.
- No technical alterations must be implemented on the WBPG.
- No people may stay in the danger zone.
- Jerky lifting (strong impacts) should be prevented.
- Always ensure a stable position of the load when lifting. Swinging must be prevented.
- Damaged or worn WBPG must never be utilised.

2 Intended use

- WBPG must only be used for the assembly of the load or at load accepting means
- Their usage is intended to be used as lifting means.
- WBPG lifting points are only suitable for loading in the pivoting direction of the suspension ring.
- The WBPG can also be used as lashing points for the fixture of lashing means.
- The WBPG must only be used in the here described usage purpose.

3 Assembly- and instruction manual

3.1 General information

- Effects of temperature:
  WBPG hoist rings can be used in temperature areas from -10°C up to 100°C
  Temperatures above 100°C are not permitted!
- RUD-Lifting points must not be used under chemical influences such as acids, alkaline solutions and vapours e.g. in pickling baths or hot dip galvanising plants. If this cannot avoided, please contact the manufacturer indicating the concentration, period of penetration and temperature of use.
- The places where the lifting points are fixed should be marked with colour.
- WPBG are supplied by RUD with crack detected hexagon resp. cap screws:
  WBPG 85 t - 120 t: **10.9 bolts**
  WBPG 150 t - 250 t: **12.9 bolts**
  ATTENTION
  Use only the appropriate strength class of bolt, for each specific size!
- Original bolts are available as a spare part from RUD.
- When using 10.9/12.9 bolts of the size M42-M48 from other suppliers, make sure that they have been 100 % inspected in regards of cracks. A written confirmation of the absence of cracks must be added to the documentation.
  The middle notch toughness at the lowest approved use temperature must be at least 36 J. This is required for the test principles for GS OA 15-04 lifting points.
- If the WBPG is used exclusively for lashing, the value of the working load limit can be doubled.
  LC = permissible lashing capacity = 2 x WLL

HINT
If the WBPG is/was used as a lashing point, with a force higher than the WLL, it must not be used as a lifting point afterwards.
If the WBPG is/was used as a lashing point, up to the WLL only, it can still be used afterwards as a lifting point.

3.2 Hints for the assembly

Basically essential:

- The material construction to which the lifting point will be attached should be of adequate strength to withstand forces during lifting without deformation. The German testing authority BG, recommends the following minimum for bolt lengths:
  1 x M in steel (minimum quality S235JR [1.0037])
  1.25 x M in cast iron (for example GG 25)
  (M = diameter of RUD lifting point bolt, for ex. M 20)
- When lifting light metals, nonferrous heavy metals and gray cast iron the thread has to be chosen in such a way that the working load limit of the thread corresponds to the requirements of the respective base material.
- Determine the position of the lifting point in such a way that prohibited loading, like bending forces at the suspension ring or tip over of the load will be avoided.
  - **For single leg lifts:** WBPG vertically above the center of gravity of the load.
  - **For two leg lifts:** the lifting points must be equidistant to/or above the center of gravity of the load
  - **For three and four leg lifts:** Positioning equally in one level around the center of gravity (COG).
- Load symmetry:
  Determine the required load-bearing capacity of the individual lifting point for both symmetrical and asymmetrical loading according to the physical relationship described by the following formula:

$$W_{LL} = \frac{G}{n \times \cos ß}$$

W_{LL} = Required load-bearing capacity of the lifting point/single strand (kg)
G = load weight (kg)
n = umber of load bearing legs
ß = angle of inclination of the chain to the vertical

The calculation of load bearing legs is as follows:

	symmetrical	asymmetrical
two leg	2	1
three / four leg	3	1

Table 1: Load bearing strands (see table 2)

HINT
With unsymmetrical loads, the WLL of each Lifting Point must be at least as high as the weight of the load.

- The following values/tolerances must be adhered:
  - For the mounting surface, especially at the bearing surface diameter, the flatness tolerance acc. to DIN ISO 2768-H must be applied.
  - The roughness should lie between Rz 100 and Rz 400.
  - The position tolerance of the threaded holes should be ± 0.3 mm.
  - A plane bolt-on surface (ØD, Tab. 3) with a perpendicular thread hole must be guaranteed.
  - The thread must be carried out acc. to DIN 76 (countersink max. 1.05xd). Tapped holes must be machined deep enough so that the bearing surface of the lifting point will be supported.
  - Machine through holes up to DIN EN 20273-middle.
  - All other tolerances correspond to DIN ISO 2768-m.
  - Metric, internal threads must be machined acc. to DIN 13-6H.
- At installation positions without form closure sliding protection, contact surfaces must be free of lubrication, coatings, tinder and loose component parts.

  The provided bolts must always be tightened with the torque (± 10 %) acc. to chart 3. Bolts with internal and external hexagon must be tightened at the external hexagon.
- When shocks or vibrating loads occur, especially at through hole bolt contructions, unintentional opening of the bolt connection may occur.
  Securing options: Observing the required torque. Use of a liquid bolt securing glue, f.e. Loctite (adapted to the usage, observe user instruction of manufacturer) or a form closure bolts securing, fe. a crown nut with a split pin, or a lock nut, etc. For through hole connections RUD bolts with RUD lock nuts must be used.

  Secure always the boltable connections of the lifting points which stay permanently at the connection point, f.e. with glue.
- **Hint for the shackle bow**
  - **Type WBPG-85 t/400 mm and 100 t/400 mm:**
    In the delivered condition the shackles are preassembled. Ring of shackle must be dismantled before WBPG will be attached. Assemble after bolt tightening the shackle ring and secure the nut with the split-pin. When round slings or ropes are directly attached it might be necessary that an adapter shakle with a deviation radius must be used to reach the full WLL.
  - **Additional-WBPG-Types:**
    For the installation of the other sizes, disassembly of the shackle bow for the assembly of the WBPG at the load is not necessary.
- Finally check the proper assembly (see chapter 4 *Inspection / repair*).

3.3 User instructions

3.3.1 General information for the usage

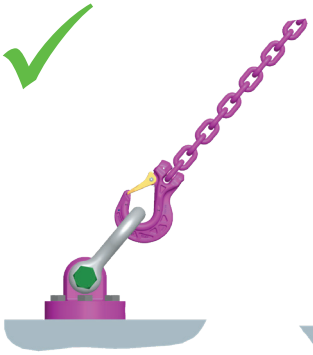
- Always regularly observe the appearance of the whole lifting point (e.g. fixed lifting point/slings) before using it (secured bolt seat, strong corrosion, cracks on load-bearing parts, deformations). Refer to chapter 4 *Inspection / repair*.

ATTENTION
Wrong assembled or damaged WBPG as well as improper use can lead to injuries of persons and damage of objects when load drops. Please inspect all WBPG before each use.

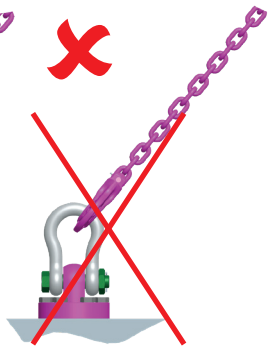
- RUD components are designed according to DIN EN 818 and DIN EN 1677 for a dynamic load of 20,000 load cycles.
  - Keep in mind that several load cycles can occur with a lifting procedure
  - Keep in mind that, due to the high dynamic stress with high numbers of load cycles, that there is a danger that the product will be damaged
  - The BG/DGUV recommends: For higher dynamic loading with a high number of load cycles (continuous operation), the working load stress must be reduced according to the driving mechanism group 1Bm (M3 in accordance with DIN EN 818-7). Use a lifting point with a higher working load limit.
- When attaching and removing the lifting means (e.g. lifting chains), crushing, shearing, trapping and impact spots must be prevented.
- Prevent damage being caused to the lifting means by loading at sharp edged.

- Prior to loading adjust the WBPG lifting point towards the direction of the load force.

WARNUNG
WBPG lifting points are only suitable for loading in the pivoting direction of the suspension ring.

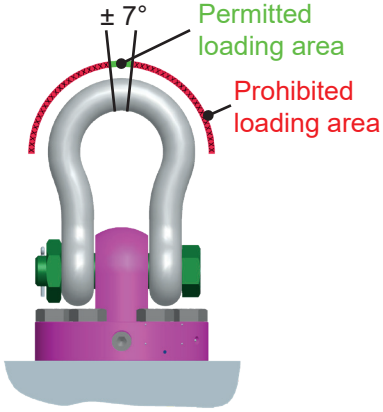


Pic. 1: Correct!
Adjusted to the load direction



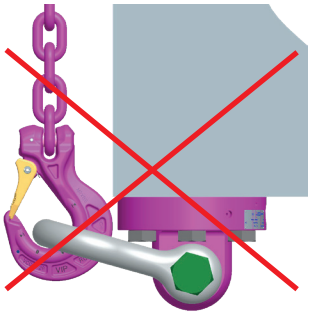
Pic. 2: Forbidden!
Not adjusted!

Due to the ball bearing of the swivelling bolt, the suspension ring will adjust generally itself into this position during lifting of the load. Influences which avoid the adjustment of the suspension ring into the permissible direction, must to be eliminated.

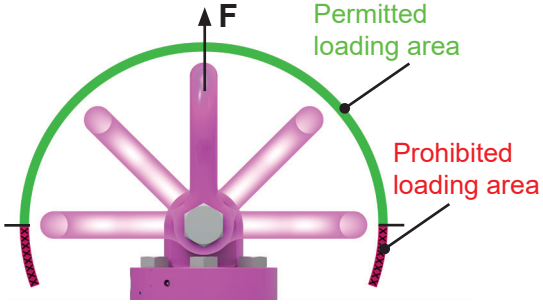


Pic. 3: Permitted loading area ± 7°

- The shackle must be free moveable and should not be supported at edges!

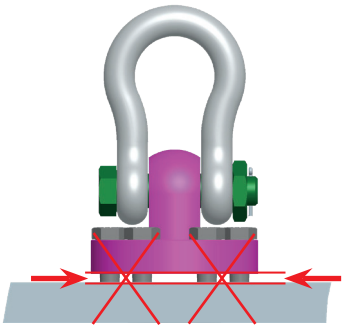


Pic. 4: The shackle must not touch objects



Pic. 5: Pivoting area
(green = permitted loading direction)

- Keep in mind that the lifting means in the WBPG must be freely movable.
- For direct attachment of round slings, wire rope or chain, it might be necessary to use an adapter shackle to achieve the requested minimum radius of deflection.
- Always completely engage the lifting point



Pic. 6: The lifting point must be completely screwed in

4 Inspection / repair

4.1 Hints for periodical inspections

The operator must determine and specify the nature and scope of the required tests as well as the periods of repeating tests by means of a risk assessment

The continuing suitability of the anchor point must be checked at least 1x year by an expert.

Depending on the usage conditions, f.e. frequent usage, increased wear or corrosion, it might be necessary to check in shorter periods than one year. The inspection has also to be carried out after accidents and special incidents.

The operator must specify the test cycles.

4.2 Test criteria for the regular visual inspection by the user

- Correct bolt sizes and nut sizes, bolt quality and screw-in lengths
- Always observe tightness of the bolts
  → inspect the torque
- Comprehensiveness of the lifting point.
- The bearing surface of the lifting point must lie plane and with the full surface at the mounting surface.
- Comprehensive, legible load-bearing information as well as the manufacturer's identification mark.
- Deformations on load-bearing parts such as basic body, shackle and bolts
- Mechanical damage such as significant notches, particularly in areas subject to tensile stress.
- Easy turning of the swivelling pin must be guaranteed
- Easy pivoting of shackle bow / suspension ring must be guaranteed.

4.3 Additional test criteria for the competent person / repair worker

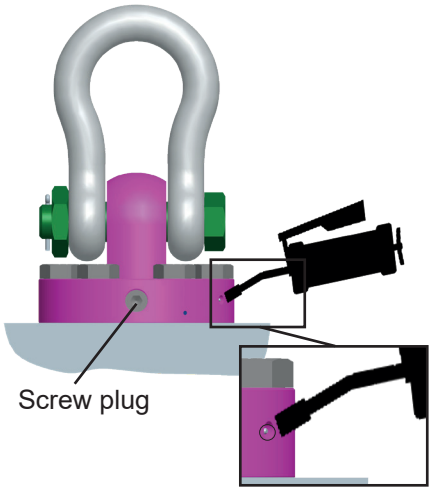
- Cross-section alterations caused by wear > 10 %.
- Strong corrosion
- function of and damage to the bolts, nut as well a the screw thread
- further checks may be required, depending on the result of the risk assessment (e.g. testing for cracks in load-bearing parts).

5 Maintenance / storage

Lifting points must be stored protected from weather influences and agressive materials.

For the regularly maintaining and lubrication of the WBPG bearing use all-purpose grease, f.e. AVIALITH 2EP or comparable products.

For this use a grease gun with a nozzle for conical grease nipples (see Pic. 7).



Pic. 7: Lubrication

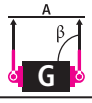
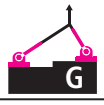
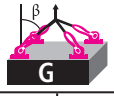
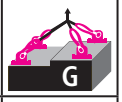
Method of lift										
Number of legs	1	1	2	2	2	2	2	3 & 4	3 & 4	3 & 4
Angle of inclination <ß	0-7°	90°	0°-7°	90°	0-45°	>45-60°	Un-symm.	0-45°	>45-60°	Un-symm.
factor	1	1	2	2	1.4	1	1	2.1	1.5	1
Type	**WLL in tonnes**, bolted and adjusted to the direction of pull									
WBPG - 85 t	85	85	170	170	119	85	85	178	127	85
WBPG-100 t	100	100	200	200	140	100	100	210	150	100
WBPG-120 t	120	120	240	240	168	120	120	252	180	120
WBPG-150 t	150	150	300	300	210	150	150	315	225	150
WBPG-200 t	200	200	400	400	280	200	200	420	300	200
WBPG-250 t	250	250	500	500	350	250	250	525	375	250
	At a lift with one strand and two parallel strands where the inclination angles are at the max. ± 7°, the lifting methode can be assumed as a vertical lift.				When lifting with two, three or four leg lifting means, inclination angles of less than 15° shall be avoided, if possible (Risk of instability).					

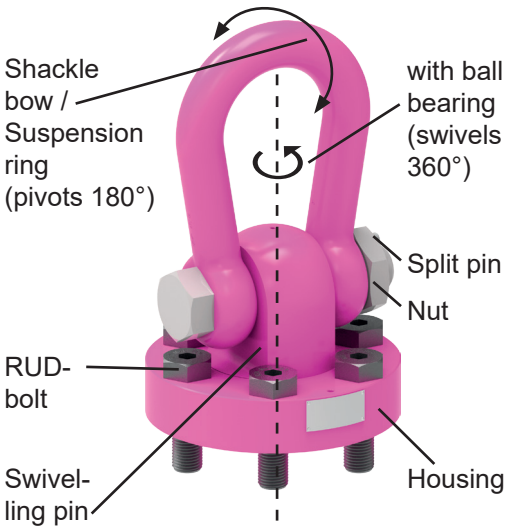
Table 2: WLL in tons
WLL values, depending on the lifting methode at loading of the WBPG, in the pivoting area of the suspension ring

Type	WLL [t]	weight [kg]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	J [mm]	K [mm]	M	N [mm]	Angular pitch	bolts	torque	Ref.-No.
WBPG 85 t/ 400 mm **Standard**	85	170	400	75	577	190	89	304	273	310	73	71	48	83	60°	6x RUD - Kombikopf (multiple head) M48x160 - 10.9	6000 Nm	7993712
WBPG 100 t/ 400 mm **Standard**	100	170	400	83	577	190	89	304	273	310	73	71	48	83	60°	6x RUD - Kombikopf (multiple head) M48x160 - 10.9	6000 Nm	7993245
WBPG 120 t/ 570 mm **Standard**	120	360	571	95	651	238	110	344	307	445	77	75	48	95	60°	6x RUD - Kombikopf (multiple head) M48x160 - 10.9	6000 Nm	7900917
WBPG 150 t/ 570 mm Sling **	150	400	570	100	663	253	110	350	313	420	65	63	42	95	36°	ISO 4762 (DIN 912) (Hexagon Socket Head) 10x M42x130 - 12.9	4000 Nm	7904088
WBPG 200 t/ 650 mm **Standard**	200	680	650	120	880	290	100	460	426	500	73	71	48	130	36°	ISO 4762 (DIN 912) (Hexagon Socket Head) 10x M48x160 - 12.9	6000 Nm	7900383
WBPG 250 t/ 730 mm **Standard**	250	992	730	130	920	305	138	496	424	580	74	72	48	140	30°	ISO 4762 (DIN 912) (Hexagon Socket Head) 12x M48x160 - 12.9	6000 Nm	7905690
WBPG 250 t/ 730 mm Sling **	250	844.3	730	126	894	300	138	452	442	580	74	72	48	120	30°	ISO 4762 (DIN 912) (Hexagon Socket Head) 12x M48x160 - 12.9	6000 Nm	7908891

Table 3: Dimensioning

Subject to technical modifications

*** with Sling-Shackle*



WBPG-85 t/400 mm &100 t/400 mm