ICE-Load Ring for bolting
>ICE-LBG-SR<
SuperRotation®

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

EN

SUPER ROTATION®

Load Ring in ICE-Pink - for bolting
ICE-LBG-SR

DGUV Test
OA 1651054
Sicherheit geprüft
tested safety

RUD Ketten
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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: Lastbock Super-Rotation
ICE-LBG-SR

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 Super-Rotation
ICE-LBG-SR

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 bolt-on lifting point ICE-LBG-SR. Make sure that you have comprehend all subjected matters.
Non observance can lead to serious personal injuries and material damage and eliminates warranty.
In doubt or in misconception please note that the German version of this document is decisive.

1 Safety instructions

ATTENTION
Wrong assembled or damaged ICE-LBG-SR as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all ICE-LBG-SR 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 ICE-LBG-SR 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.
- Only original ICE-Bolts from RUD must be used.
- ICE-LBG-SR must be rotatable in the screwed tight status through 360 °.
- No technical alterations must be implemented on the ICE-LBG-SR.
- 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 ICE-LBG-SR must never be utilised.

2 Intended use

ICE-LBG-SR lifting points must only be attached at a load or used at load accepting means.

Their usage is intended to be used as lifting means.

ICE-LBG-SR are suitable to turn and flip loads. Please observe to this the permissible load directions.

RUD ICE-LBG-SR lifting points can also be used as lashing points for fixing lashing means.

ICE-LBG-SR lifting points must only be used in the here described operation purpose.

3 Assembly- and instruction manual

3.1 General information

- ICE-LBG-SR can be used for flipping and turning of loads. Please observe the hints at chapter 3.2 *Hints for the assembly*.
- Effects of temperature:
  The WLL of the ICE-LBG-SR lifting points must be reduced as follows:
  -40°C up to 100°C ➔ no reduction
  100°C up to 200°C minus 15 % (212 up to 392°F)
  200°C up to 250°C minus 20 % (392 up to 482°F)
  250°C up to 300°C minus 25 % (482 up to 572°F)
  Temperatures above 300°C (572°F) are not permitted!

  Please observe the maximum usage temperature of the supplied nuts (optionally):
  - Lock nuts acc. to DIN EN ISO 7042 (DIN 980) must be used to max. +150° C (302°F)
  - Collar nuts acc. to DIN 6331 can be used up to +300°C (572°F). In addition to that observe the reduction factor
- 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 be avoided, please contact the manufacturer, indicating the concentration, period of penetration and temperature of use.
- The place where the ICE-LBG-SR lifting points are fixed should be clearly marked with colour.
- RUD ICE-LBG-SR lifting points from RUD are supplied with a crack test inspected hexagon bolt (length up to Lmax, see table 3).

  M8-M24: ICE-Bolt
  M30: 10.9 bolt

  ATTENTION

  Use only the appropriate strength class of bolt, for each specific size. For sizes M8-M24, only original RUD-ICE-Bolt must be used.
- Original bolts (ICE bolt and 10.9 bolts) are available as a spare part from RUD.
- When using 10.9 bolts of the size M30 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.

HINT
The dismantling / assembling for the exchange or inspecting of the bolt may only be executed by a competent person (compare with Section 3.4 Dismantling / Assembling the RUD bolt).

- **Versions**
  - The metric vario length can either be equipped with a washer and a crack detected nut acc. to DIN EN ISO 7042 or with a collar nut acc. to DIN 6331.

- If the VLBG 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 ICE-LBG-SR is or was used as a lashing point, it must not be used for lifting later on!

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/DGUV, recommends the following minimum for bolt lengths:
  1x M in steel (minimum quality S235JR [1.0037])
  1.25x M in cast iron (however when castings of lower strength (<200 MPa) are used the thread engagement has to be at least 1.5 x d)
  2x M in aluminum alloys
  2.5x M in light metals of low strength
  (M = thread size, e.g. M20)
- 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.
- ICE-LBG-SR lifting points must be positioned at the load in such a way that improper loading like turning or twisting of the load will be avoided:
  - **For single leg lifts:** Load ring should be positioned vertically above the centre of gravity.
  - **For two leg lifts:** Lifting points must be positioned on both sides and above the centre of gravity.
  - **For three and four leg lifts:** Lifting points should be arranged equally in a plain level around centre of gravity.
- Symmetry of loading:

  Determine the working load limit of each individual RUD lifting point for symmetrical and unsymmetrical loading according to the following physical formula:

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

W_{LL} = working load limit (kg)
G = load weight (kg)
n = number of load bearing legs
ß = angle of inclination of the chain to the vertical

  Number of load bearing strands

	Symetrical	Unsymetrical
Double leg	2	1
Three/four leg	3	1

Table 1: Load bearing strands (compare also with Table 2)

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

- A plane bolt-on surface (ØD, table 3) with a perpendicular thread hole must be guaranteed. The thread must be carried out acc. to DIN 76 (countersink max. 1.05xd).
  The holes must be drilled with a sufficient depth in order to guarantee compatibility with the supporting surface. Machine through holes up to DIN EN 20273-middle.
- The ICE-LBG-SR must be rotatable by 360° when installed. Please observe the following:
  - For a **one-time transport, or a turning action and flipping of a load**, tightening by hand with a spanner is sufficient. Lifting point must be fully engaged into thread hole and the bearing surface must sit properly at the bolt-on area of the load.
  - For **long term application** the ICE-LBG-SR must be tightened with torque according to table 3 (+/- 10 %).
  - If used **multiple times for transporting, turning or flipping under load**, it is necessary to tighten the ICE-LBG-SR with a torque moment (+/- 10 %) according to table 3.
- With shock loading or vibrations, especially at through hole fixtures with a nut at the end of the bolt, accidential release can occure.
  Securing possibilities: Observe torque moment, use liquid securing glue f.e. Loctite (can be adapted to the usage, observe manufacturer hints) or assemble a form closure bolt locking device f.e. a castle nut with cotter pin, locknut etc.
- Finally check the proper assembly (see chapter 4 *Inspection / repair*).

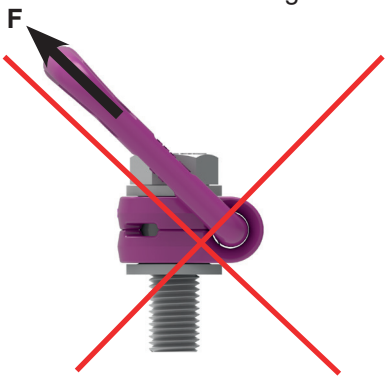
3.3 Hints for the usage

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.*

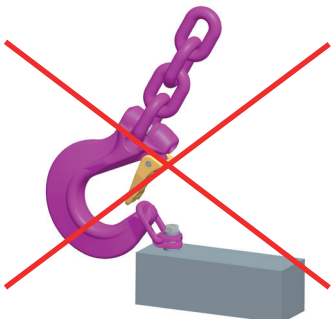
ATTENTION
Wrong assembled or damaged ICE-LBG-SR as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all ICE-LBG-SR carefully before each use.

- 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.
- Set the suspension ring of the ICE-LBG-SR in the direction of force before attaching the lifting means.



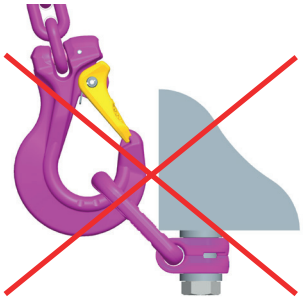
Pic. 1: Forbidden loading direction

- Keep in mind that the lifting means in the ICE-LBG-SR must be freely movable.



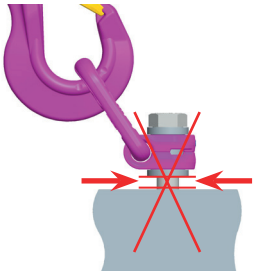
Pic. 2: Use only suitable lifting means for hanging or hooking into the ICE-LBG-SR

- A bending load of the suspension ring is not permitted!



Pic. 3: The load must move freely and must not be loaded at edges

- Always completely engage the lifting point.

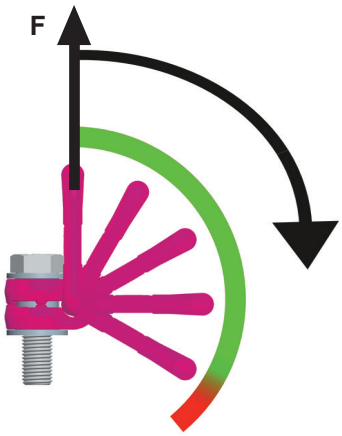


Pic. 4: The lifting point must be completely screwed in.

3.3.2 Allowed lifting and turning operations

- Turning operations where the load ring will be turned into the load direction.

WARNING
The load ring must not support itself at edges or other attachments.
Also the attached lifting mean must not touch the head of the bolt.



Pic. 5: Pivoting in load direction

- Turning operations where the ICE-LBG-SR will be turned around the bolt axle.

WARNING
Observe the requested torque value before each lifting or turning operation.

3.4 Dismantling / Assembling the RUD bolt

HINT
The dismantling / assembling and/or the exchange of the RUD bolt must only be executed by a competent person!

3.4.1 Dismantling the bolt of the ICE-LBG-SR M8-M30

1. Position ICE-LBG-SR with the thread end upwards at the bushing on the top of the bench vice without clamping the hexagon head of the bolt.
2. Slightly hit the bolt from the top to drive it out from the bushing (Pic. 6).

Pic. 6: Dismantling position of the ICE-LBG-SR

3.4.2 Assembling the bolt of the ICE-LBG-SR M8-M10

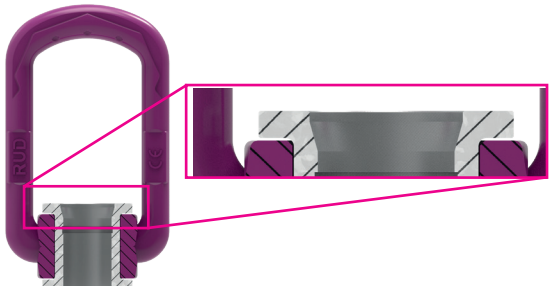
HINT
Only the appropriate strength class of bolt for each specific size must be used!
M8-M10: ICE-Bolt only!

1. Insert the bolt into the drill hole in the socket until the retaining ring is positioned on the socket.
2. Squeeze the retaining ring together with flat pliers so that it sits deeply in the groove of the nut.
3. Now insert the bolt with light hits with a hammer fully into the socket.
4. Finally, control the tightness of the bolt. The bolt must be easily rotatable by 360°.

3.4.3 Assembling the bolt for ICE-LBG-SR M12-M30

HINT
Only the stated strength of class for the respective size of the bolts must be used!
M12-M24: ICE-Bolt | M30: 10.9

1. Insert the bolt into the bushing at the tapered end, where the chamfer is (refer to Pic. 7).



Pic. 7: ICE-LBG-SR in sectional view.
The insertion chamfer is visible on top of the bushing

2. Insert the bolt into the socket in such a way that the retaining ring is circumferential deepened in the socket and seated (refer to Pic. 8).

TIP
Turn the bolt a few times under slight pressure so that it is centered in the retaining ring!

Pic. 8: Retaining ring positioned as circumferential in the recess

3. Use a light tap on the head of the bolt so that the bolt can be assembled up to the end stop of the bolt head on the socket.
4. Finally, control the tightness and seating of the bolt. The bolt must be easily rotatable by 360°.

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 (see sections 4.2 and 4.3).

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.

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.
- Comprehensive, legible load-bearing information as well as the manufacturer‘s identification mark.
- Deformations on load-bearing parts such as basic body, hanging or hooking in suspension ring and bolt
- Mechanical damage such as significant notches, particularly in areas subject to tensile stress.
- Easy rotation of the ICE-LBG-SR must be ensured

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 (disassembly / assembly of the bolt see section 3.4).
- further checks may be required, depending on the result of the risk assessment (e.g. testing for cracks in load-bearing parts).

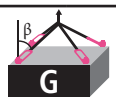
Method of lift											
Number of legs		1	1	2	2	2	2	2	3/4	3/4	3/4
Angle of inclination		0°	90°	0°	90°	0-45°	45-60°	un-sym.	0-45°	45-60°	un-sym.
Factor		1	1	2	2	1.4	1	1	2.1	1.5	1
Type	Th-read	For the max. total load weight >G< in metric tons [t], tightened and adjusted to force direction									
ICE-LBG-SR 0.6 t	M8	0.6	0.6	1.2	1.2	0.84	0.6	0.6	1.26	0.9	0.6
ICE-LBG-SR 0.9 t	M10	0.9	0.9	1.8	1.8	1.3	0.9	0.9	1.9	1.35	0.9
ICE-LBG-SR 1.35 t	M12	1.35	1.35	2.7	2.7	1.9	1.35	1.35	2.84	2	1.35
ICE-LBG-SR 2.5 t	M16	2.5	2.5	5	5	3.5	2.5	2.5	5.25	3.75	2.5
ICE-LBG-SR 3.5 t	M20	3.5	3.5	7	7	4.9	3.5	3.5	7.35	5.25	3.5
ICE-LBG-SR 4.5 t	M24	4.5	4.5	9	9	6.3	4.5	4.5	9.5	6.75	4.5
ICE-LBG-SR 6.7 t	M30	6.7	6.7	13.4	13.4	9.5	6.7	6.7	14.0	10	6.7

Table 2: WLL in [t]

Type	WLL [t]	weight [kg/pc.]	T [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	K [mm]	L [mm]	M	N [mm]	SW [mm]	ISK [mm]	Torque [Nm]	Ref. No.
ICE-LBG-SR Load ring for bolting Super Rotation® – metric																				
ICE-LBG-SR 0.6 t M8	0.6	0.3	75	30	52	34	24	40	10	29	11	75	43	40	M8	32	13	5	30	8504284
ICE-LBG-SR 0.9 t M10	0.9	0.31	75	30	52	34	24	39	10	29	15	75	43	44	M10	32	17	6	60	8504285
ICE-LBG-SR 1.35 t M12	1.35	0.34	75	32	52	34	26	38	10	29	18	75	43	47	M12	32	19	8	150	8504286
ICE-LBG-SR 2.5 t M16	2.5	0.52	85	34.5	56	40	30	39	13.5	36	22	86	46	58	M16	38	24	10	150	8504287
ICE-LBG-SR 3.5 t M20	3.5	1.3	110	54	82	60	45	53	17	43	32	113	61	75	M20	48	30	12	400	8504288
ICE-LBG-SR 4.5 t M24	4.5	1.4	125	54	82	60	45	66	17	43	37	130	76	80	M24	48	36	14	760	8504289
ICE-LBG-SR 6.7 t M30**	6.7	3.2	147	63	102	69	55	66	22.5	61	49	151	79	110	M30	66	46	17	1000	8504290

Type	WLL	weight	T	A	B	C	D	E	F	G	H	I	K	L	M	N	SW	ISK	Torque	Ref. No.
ICE-LBG-SR – metr., Länge nach Wunsch // metr., longer vario bolt																				
ICE-LBG-SR 0.6 t M8	0.6	*	75	30	52	34	24	40	10	29	8-76	75	43	37-105	M8	32	13	5	30	8600500
ICE-LBG-SR 0.9 t M10	0.9	*	75	30	52	34	24	39	10	29	10-96	75	43	39-125	M10	32	17	6	60	8600501
ICE-LBG-SR 1.35 t M12	1.35	*	75	32	52	34	26	38	10	29	12-116	75	43	41-145	M12	32	19	8	150	8600502
ICE-LBG-SR 2.5 t M16	2.5	*	85	34.5	56	40	30	39	13.5	36	16-149	86	46	50-185	M16	38	24	10	150	8600504
ICE-LBG-SR 3.5 t M20	3.5	*	110	54	82	60	45	53	17	43	20-187	113	61	65-230	M20	48	30	12	400	8600506
ICE-LBG-SR 4.5 t M24	4.5	*	125	54	82	60	45	66	17	43	24-222	130	76	69-265	M24	48	36	14	760	8600508
ICE-LBG-SR 6.7 t M30**	6.7	*	147	63	102	69	55	66	22.5	61	30-279	151	79	90-340	M30	66	46	17	1000	8600510

Table 3: Dimensioning (SW = wrench size / ISK = internal hexagon) * = weight depends on design specifics / ** = bolt with quality grade 10.9
Subject to technical alterations

N
K
I

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