

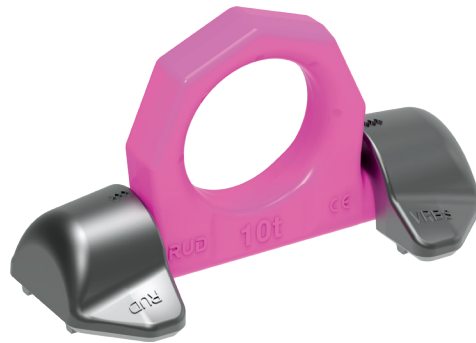
Lifting ring weldable > VRBS <



Safety instructions

This safety instruction has to be kept on file for the whole lifetime of the product and forwarded with the product.

TRANSLATION OF THE ORIGINAL INSTRUCTION



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RUD-Art.-Nr.: 8502954-EN V03 - 03.025

VRBS - Lifting ring weldable in pink



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: Ringbock
VRBS-FIX / VRBK-FIX / VRBG / VRBS / VRBK

Folgende harmonisierten Normen wurden angewandt:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

<u>DGUV-R 109-017 : 2020-12</u>	_____
_____	_____
_____	_____

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

Aalen, den 15.04.2021 Hermann Kolb, Bereichsleitung MA *Hermann Kolb*
 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
VRBS-FIX / VRBK-FIX / VRBG / VRBS / VRBK

The following harmonized norms were applied:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____

The following national norms and technical specifications were applied:

<u>DGUV-R 109-017 : 2020-12</u>	_____
_____	_____
_____	_____

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

Aalen, den 15.04.2021 Hermann Kolb, Bereichsleitung MA *Hermann Kolb*
 Name, function and signature of the responsible person



Before initial usage of the RUD VRBS please read carefully the safety instructions. Make sure that you have understood all subjected matters. Non-observance can lead to serious personal injuries and material damage and eliminates warranty.

1 Safety instructions



ATTENTION

Wrong assembled or damaged lifting points as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all lifting points 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.
- Attention: When suspension ring pivots there is a risk of pinching.
- RUD Lifting points VRBS must only be used by instructed and competent persons considering DGUV 109-017 and outside Germany noticing the country specific statutory regulations.
- Do not exceed the working load limit (WLL) indicated on the lifting point.
- No technical alterations must be implemented on the VRBS.
- No people may stay in the danger zone.
- Detention under a floating load is forbidden.
- Jerky lifting (strong impacts) should be prevented.
- Always ensure a stable position of the load when lifting. Swinging must be prevented.
- Damaged or worn VRBS must never be utilised.

2 Intended use of the VRBS

RUD Lifting points VRBS must only be used for the assembly at the load or at lifting means. They are designed and intended to attach lifting means.

RUD Lifting points can also be used as lashing points to attach lashing means.

RUD lifting points must only be used for the hereby described usage and operation purpose.

3 Assembly- and instruction manual

3.1 General information

- Capability of temperature usage:
As of 07/2019: RUD Lifting points VRBS are suitable for the temperature range from -40°C up to 400°C.
Up to 07/2019: RUD Lifting points VRBS are suitable for the temperature range from -20°C up to 400°C.

For the use within the following temperature range, the WLL must be reduced by the following factors:

-40°C/-20°C	up to 200°C	no reduction
200°C	up to 300°C	minus 10 %
300°C	up to 400°C	minus 25 %

Temperatures exceeding 400°C are prohibited!

In the unloaded state, VRBS lifting point together with the load can be stress relieved by heat treating (e.g. welded construction) once.

Temperature: < 600°C (one hour maximum).

- RUD lifting points VRBS must not be used with aggressive chemicals such as acids, alkaline solutions and their vapours.
- Please mark mounting position of lifting point with a coloured contrast paint for better visibility.
- VRBS will be delivered with a pink powder coated lifting ring.

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 weld-on material must be suitable for welding and the contact areas must be free from dirt, oil, colour, ect.
The material of the forged welding block is S355J2+N (1.0577+N (St52-3))
- The position of the lifting points must be carried out in such a way that unintended movement like turning or flipping will be avoided.
 - **For single leg lifts**, the lifting point should be vertically above the centre of gravity of the load.
 - **For two leg lifts**, the lifting points must be equidistant to/or above the centre of gravity of the load.
 - **For three and four leg lifts**, the lifting points should be arranged symmetrical around the centre of gravity, in the same plane if possible.

- Load symmetry:

Determine the necessary WLL of each lifting point for a symmetrical load by using the following physical calculation formula:

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

W_{LL} = necessary WLL of lifting point / single strand (kg)
 G = weight of load (kg)
 n = number of load bearing strands
 β = inclination angle of single strand

Number of load bearing strands:

	Symmetric
two leg	2
three / four leg	3

Table 1: Load bearing strands (compare to Table 4)



HINT

At unsymmetrical loads, even if several lifting points are used, the WLL of a single lifting point must be at least equal to the load weight or ask the manufacturer.

- Check finally the correct assembly (see chapter 4 *Inspection / Repair / Disposal*).

3.3 Hints for the welding

The welding should only be carried out according to DIN EN ISO 9606-1 or AWS Standards by an authorized and certified welder.

Verification of the used weld-on material must be checked with the supplier of the welding electrodes.



HINT

The **pre-heating temperature** for the welding of the VRBS 31,5 t and 50 t must be between 150°C and 170°C.

1. Weld on welding block 1.



HINTS

- The described welding sequences must be observed compulsive.
- Weld all seams at the same temperature.
- Keep the area of gap for escape of water clear.
- The distance lugs assist in achieving the correct root weld (approx. 3 mm = 0.1 inch). They may not be removed.
- Never weld at the quenched and tempered ring!
- Remove any welding mistakes and dirt at the root weld before applying the cover weld seams.
- Avoid end craters.

Begin at starting point S* and weld the root and cover weld seams (Pic. 1).

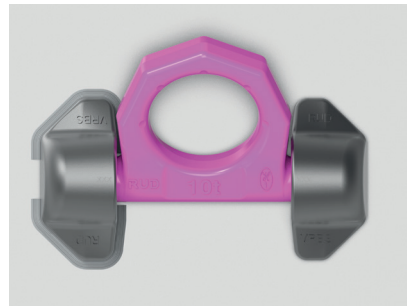
Append fillet weld (measurement „a“) acc. Table 2.

Choose type of weld seam and size according to Pic. 6 and Table 2.



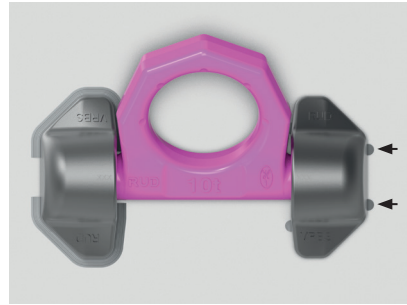
Pic. 1: Weld on welding block 1

2. Insert the pink powder coated lifting ring into the welded-on welding block 1.
3. Attach welding block 2 as tight as possible to the ring, in order to still guarantee moveability of ring.



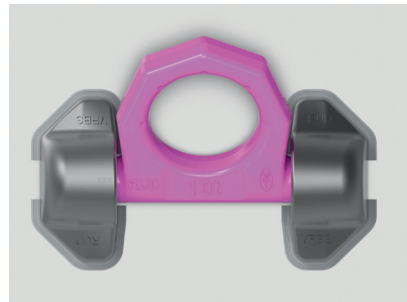
Pic. 2: Align ring and check mobility

4. Tack weld-on block 2 in the area of the distance lugs (only fasten provisionally).



Pic. 3: Attachment in the area of the distance lugs.

5. Check function of the ring. The ring must be able to pivot 180°. If necessary please correct.
6. Weld on the welding block 2 according to steps 1 and 2.



Pic. 4: Weld on welding block 2

7. Please check by a competent person after welding the ongoing usage of the weld-on lifting point (see chapter 4 *Inspection / Repair / Disposal*).

3.4 User instructions

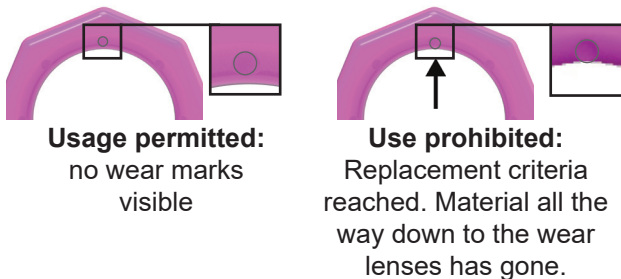
- Check frequently and before each initial operation the whole lifting point in regard of linger ability as a lifting mean, regarding corrosion, wear, deformation etc. (see chapter 4 *Inspection / Repair / Disposal*).



ATTENTION

Wrong positioned or damaged weld-on lifting points as well as improper use can lead to injuries of persons and damage at property, when load falls down. Please check all lifting points carefully before every usage.

- 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.
- Please check carefully the wear indicator markings of the weld-on lifting point (see picture 1):



Pic. 5: Wear indicators

- Please note that the lifting mean must be free moveable within the weld-on lifting point VRBS. When lifting means (sling chains) are hinged or unhinged, no pinching, shearing or joint spots must occur during the handling.
- Avoid damage of lifting means resulting from sharp edges.
- If RUD VRBS lifting points are used solely for lashing, the value of the working load limit can be doubled. $LC = \text{permissible lashing force} = 2 \times \text{working load limit (WLL)}$



HINT

*If the VRBS 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 VRBS is/was used as a lashing point, up to the WLL only, it can still be used afterwards as a lifting point.*

4 Inspection / Repair / Disposal

4.1 Hints for the regularly inspection

The operator has to determine and dictate the necessary inspection periods and the deadlines by a risk assessment (see sections 4.2 and 4.3).

The persisting appropriateness of the lifting point must be checked by a competent person (auditor) at least once per year.

Depending on the conditions of use e.g. frequent use, increased wear or corrosion, it may be necessary to carry out inspections at shorter intervals than once per year. A verification is also required following damage and after special events. The operator must specify the test cycles.

4.2 Inspection criteria for the regularly examination carried out by the operator

- Completeness of the lifting point
- Complete, readable WLL statements as well as manufacturer sign.
- Deformation on load bearing parts like base body and ring.
- Mechanical damage, like strong notches, especially in areas where tensile stress occurs.

4.3 Additional inspection criteria for the competent person resp. auditor

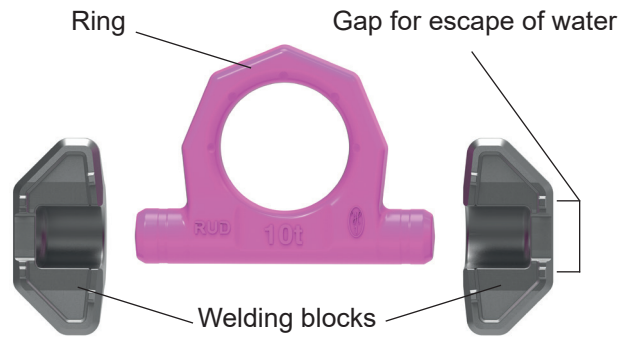
- Reduction of cross-section due to wear > 10 %
- Evidence of corrosion (pitting)
- Additional inspections may be necessary depending on the result of the risk assessment (e.g. incipient cracks at load bearing parts).

4.4 Disposal

Dispose worn out components / attachments or packaging according to the local waste removal requirements.

	weld		
	size	length	volume
VRBS 4 t	HY 4 + a 3	2 x 130 mm	ca. 4.5 cm ³
VRBS 6,7 t	HY 5.5 + a 3	2 x 170 mm	ca. 9 cm ³
VRBS 10 t	HY 6 + a 4	2 x 190 mm	ca. 11 cm ³
VRBS 16 t	HY 8.5 + a 4	2 x 250 mm	ca. 26 cm ³
VRBS 31.5 t	HY 18 + a 4	2 x 365 mm	ca. 88 cm ³
VRBS 50 t	HY 25 + a 8	2 x 655 mm	ca. 450 cm ³

Table 2: weld size (per welding block)



Pic. 7: components VLBS

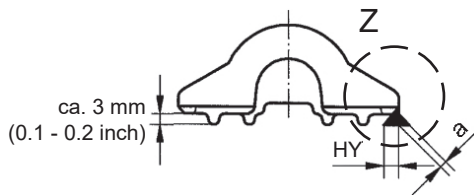
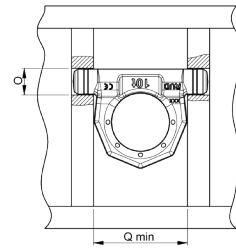
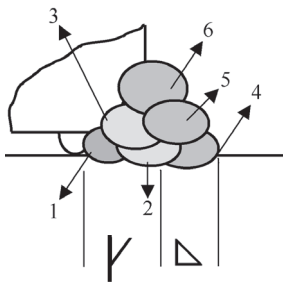


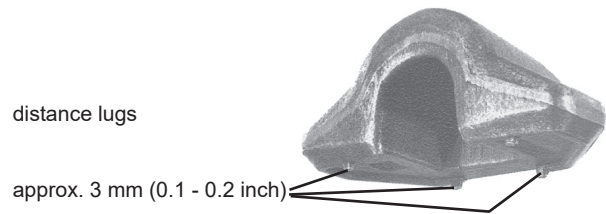
Table 3: Seam welding definition



Pic. 8: Ring integrated in the construction:



Pic. 6: Schematic diagram item „Z“ Welding position PB



Pic. 9: distance lugs

	Europe, USA, Asia, Australia, Africa
	Baustähle, niedrig legierte Stähle EN 10025 Mild steels, low alloyed steel
MIG / MAG (135) Gas shielded wire welding (135)	DIN EN ISO 14341: G4Si1 (G3Si1) z.B. PEGO G4Si1
E-Hand Gleichstrom (111, =) Stick Electrode direct current	DIN EN ISO 2560-A: E 42 6 B 3 2 H10 DIN EN ISO 2560-A: E 38 2 B 1 2 H10 z.B. PEGO B Spezial*/ PEGO BR Spezial*
E-Hand (Wechselstrom 111, ~) Stick Electrode alternating current	DIN EN ISO 2560-A: E 38 2 RB 1 2 DIN EN ISO 2560-A: E 42 0 RC 1 1 z.B. PEGO RC 3 / PEGO RR B 7 Alternativ: DIN EN ISO 3581: E 23 12 2 L R 3 2 z.B. PEGO 309 MoL
WIG (141) TIG Tungsten arc welding	DIN EN ISO 636-A: W 3 Si 1 (W2 Si 1) DIN EN ISO 636-A: W 2 Ni 2 z.B. PEGO WSG 2 / PEGO WSG2Ni2

Table 4: Welding procedure + Welding filler metals



HINT

Please note the corresponding user hint in regard of the welding filler materials and the drying requirements*. The pre-heating temperature for the welding of the VRBS 31,5 t und 50 t must be between 150°C and 170°C.

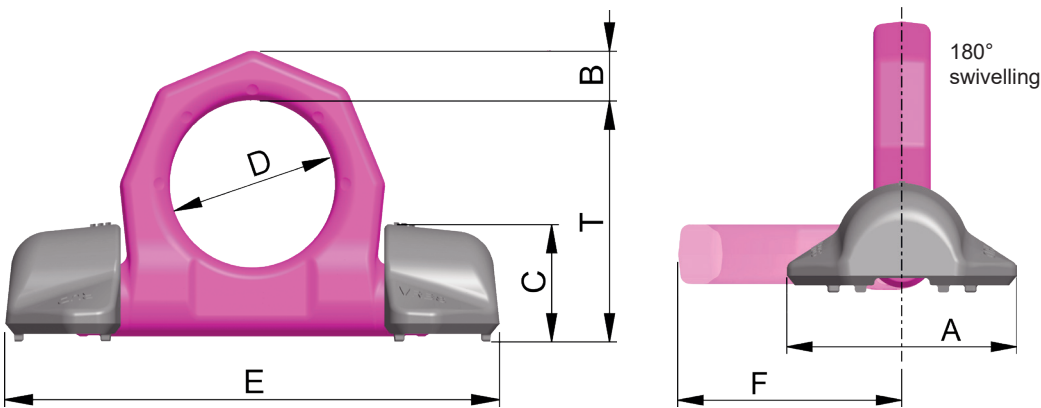
Method of lift										
Number of legs	1	1	2	2	2	2	2	3 / 4	3 / 4	3 / 4
Angle of inclination β	0°	90°	0°	90°	0-45°	>45-60°	Un-symm.	0-45°	>45-60°	Un-symm.
Factor	1	1	2	2	1.4	1	1	2.1	1.5	1
Type	For the max. total load weight >G< in metric tons									
VRBS 4 t	4 t	4 t	8 t	8 t	5.6 t	4 t	4 t	8.4 t	6 t	4 t
VRBS 6.7 t	6.7 t	6.7 t	13.4 t	13.4 t	9.4 t	6.7 t	6.7 t	14.1 t	10 t	6.7 t
VRBS 10 t	10 t	10 t	20 t	20 t	14 t	10 t	10 t	21.2 t	15 t	10 t
VRBS 16 t	16 t	16 t	32 t	32 t	22.4 t	16 t	16 t	33.6 t	24 t	16 t
VRBS 31.5 t	31.5 t	31.5 t	63 t	63 t	45 t	31.5 t	31.5 t	67 t	47.5 t	31.5 t
VRBS 50 t	50 t	50 t	100 t	100 t	70 t	50 t	50 t	105 t	75 t	50 t

Table 5: WLL overview

Type	WLL [t]	weight [kg/pc]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	T [mm]	O [mm]	Q [mm]	Ref-no		
												VRBS	Ring	Welding block
VRBS 4 t	4	0,9	62	14	28	48	135	71	65	19 ^{+0,5}	77 ⁺¹	7992826	7906890	7992004
VRBS 6.7 t	6.7	2.1	88	20	39	60	170	92	84	25 ^{+0,5}	101 ⁺¹	7992827	7906891	7992005
VRBS 10 t	10	3.0	100	22	46	65	195	100	95	30 ^{+0,5}	106 ⁺¹	7992828	7906892	7992007
VRBS 16 t	16	6.9	130	30	57	90	263	134	127	38 ^{+0,5}	147 ⁺²	7992491	7906893	7992008
VRBS 31.5 t	31.5	15.6	160	42	79	130	375	195	178	50 ^{+0,5}	222 ⁺²	60267	7906894	7987160
VRBS 50 t	50	54	240	70	120	230	620	340	313	65 ^{+0,5}	375 ⁺²	56834	7907412	7987161

Table 6: Dimensioning

Subject to technical alterations



Pic. 10: Dimensioning