

Load ring weldable suits 90°-corners

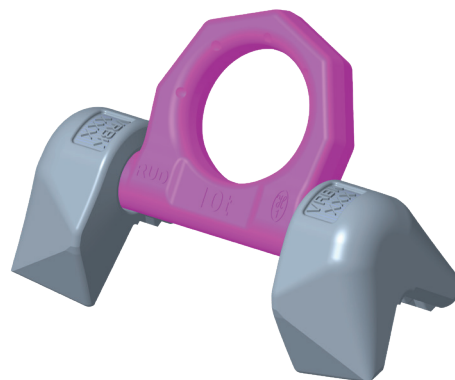
> VRBK-FIX <



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 safety instruction



RUD

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RUD-Art.-Nr.: 7902520-EN -V05 / 04.025

Load ring for 90°-corners
(weldable)
VRBK-FIX
octagonal

RUD

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:

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

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

DGUV-R 109-017 : 2020-12	

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

RUD

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
Germany**

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:

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

The following national norms and technical specifications were applied:

DGUV-R 109-017 : 2020-12	

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

Aalen, 15.04.2021 Hermann Kolb, Head of division MA *Hermann Kolb*
Name, function and signature of the responsible person



Before initial usage of the RUD-VRBK-FIX, 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 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.

- Remove all body parts (fingers, hands, arms, etc.) out of the hazard area (danger of crushing or squeezing) during the lifting process.
- RUD-Lifting points VRBK-FIX 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 VRBK-FIX.
- 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 VRBK-FIX must never be utilised.

2 Intended use of the VRBK-FIX

RUD-Lifting points VRBK-FIX must only be used for the assembly at the load or at lifting means.

They are designed and intended to attach lifting means.

A full working load in all directions is allowed.

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

RUD-lifting points must only be used in the hereby specified case of operation.

3 Assembly- and instruction manual

3.1 General information

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

For the use within the following temperature range, the working load limit (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, VRBK-FIX anchor points together with the load can be stress relieved by heat treating (e.g. welded construction) once. Temperature: < 600°C (one hour maximum). After stress-relieving heat treatment (< 600°C), however, the spring force is no longer usable.

- RUD-lifting points VRBK-FIX 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.
- VRBK-FIX will be delivered with a pink powder coated lifting ring.
- VRBK-FIX includes a protected positioned clamping spring, inside the weld-on block. The spring holds the weld-on blocks together with the ring and creates at the same time a radial clamping function.
- VRBK-FIX will be delivered as a complete assembled unit.

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 2)



NOTE

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.

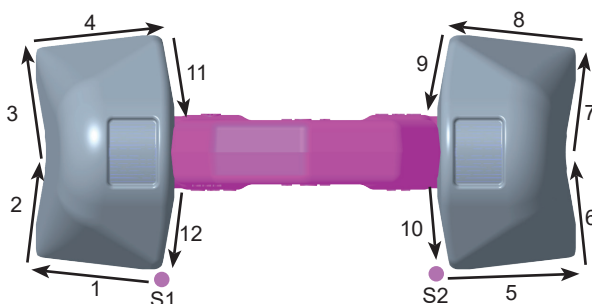
Verification of the used weld-on material must be checked with the supplier of the welding electrodes.



HINTS

- Never weld at the quenched and tempered ring!
- Weld all seams at the same temperature.

- 1 Check before initial appending of the VRBK-FIX, the position of the weld-on blocks to each other, that means the base area must be at the same level.
- 2 Append weld-on blocks.
- 3 Check function of the ring.
The ring must be able to pivot 270°. If necessary please correct.
- 4 Once appending and checking of the function have been carried please finish the root run. The outside positioned weld layers must be carried out first. The described welding sequences must be observed compulsive.
- 5 Begin at starting point S1 and weld subsequently the sections 1-4 (Pic. 1).
- 6 Then weld the opposite side identically (starting point S2 and chapter 5-8).
- 7 Afterwards close the root pass at the inside areas (chapter 9-10 and 11-12).



Pic. 1: Welding sequence of the root run (S=Starting point)

8 Finally please let the parts cool down.

9 Remove any welding mistakes and dirt at the root weld before applying the cover weld seams.

10 Subsequently please weld the closure welds. Start at the inside. The described welding sequences must be observed compulsive. Chose type and dimension of weld seam from Pic. 3 and Table 5.

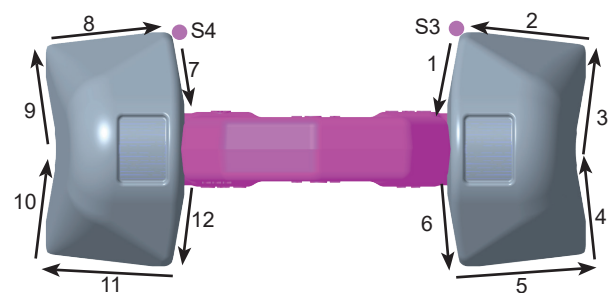
11 Begin at starting point S3 and weld subsequently the chapters 1-6 (Pic. 2)

12 Please weld then the opposite side identically (starting point S4 and chapter 7-12).



HINT

Please adhere the requested weld seam thickness in any cases. Any change can result in a malfunction of the ring latch.



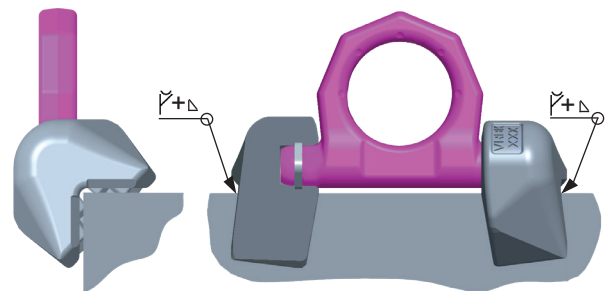
Pic. 2: Sequence of closure welding (S=Starting point)

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



HINT

By the position of the weld-seam (HY-weld circumferential) the following requirements will be observed: DIN 18800 steel constructions requires: at outdoor buildings or when strong corrosion must be expected weld seams must be carried out as continuous fillet weld seams.



Pic. 3: Weld seam

3.4 User instruction

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

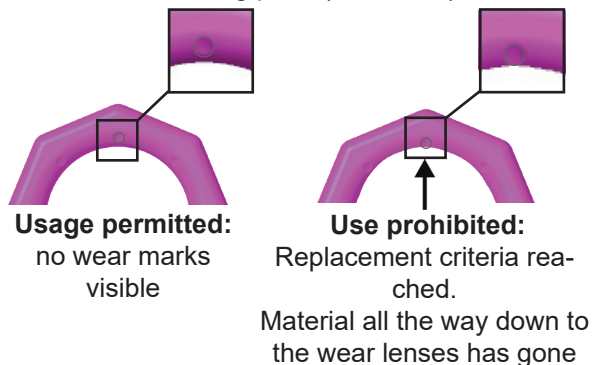


ATTENTION

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 *Pic. 4*):



Pic. 4: Wear indicators

- Please note that the lifting mean must be free moveable in the VRBK-FIX. When lifting means (f.e. lifting chain) 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-VRBK-FIX 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 VRBK-FIX 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 VRBK-FIX 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 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. The operator must specify the test cycles.

4.2 Test criteria for the regular visual inspection by the user

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

4.3 Additional test criteria for the competent person / repair worker

- Reduction of cross-section due to wear >10 %
- Evidence of corrosion (pittings)
- Any other damage
- Further checks may be required, depending on the result of the risk assessment (e.g. testing for cracks in load-bearing parts / at weld seam).

4.4 Disposal

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

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°	Unsymmetrisch	0-45°	45-60°	Unsymmetrisch
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									
VRBK-FIX 4 t	4	4	8	8	5.6	4	4	8.4	6	4
VRBK-FIX 6.7 t	6.7	6.7	13.4	13.4	9.4	6.7	6.7	14.1	10	6.7
VRBK-FIX 10 t	10	10	20	20	14	10	10	21.2	15	10
VRBK-FIX 16 t	16	16	32	32	22.4	16	16	33.6	24	16
VRBK-FIX 31.5 t	31.5	31.5	63	63	45	31.5	31.5	67	47.5	31.5
VRBK 50 t	50	50	100	100	70	50	50	105	75	50

Table 2: WLL overview

	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



HINT

Please note the corresponding user hint in regard of the welding filler materials and the drying requirements*.

Table 3: Welding procedure + Welding filler metals

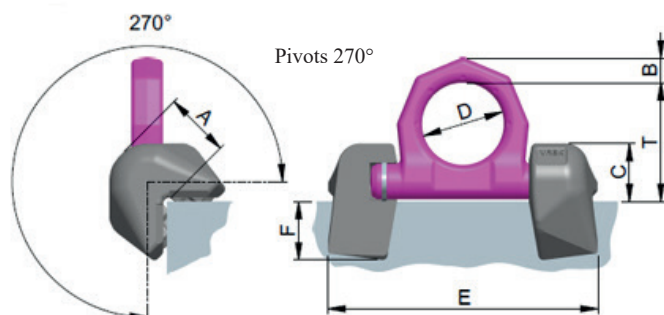
Type	WLL [t]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	T [mm]	weight [kg/pc.]	Art.-Nr. Ref.no.
VRBK-FIX 4 t	4	32	14	28	48	140	29	65	1.0	7902149
VRBK-FIX 6,7 t	6,7	40	20	35	60	180	33	84	2.1	7902150
VRBK-FIX 10 t	10	52	22	46	65	212	46	94	4.4	7902256
VRBK-FIX 16 t	16	66	30	57	90	284	64	126	9.75	7909845
VRBK-FIX 31.5 t	31,5	89	42	78	130	394	70	177	24.84	7906225
VRBK 50 t	50	133	70	118	230	626	96	303	76.35	7904653

Table 4: Dimensioning

Subject to technical alterations

Type	size	length	volume
VRBK-FIX 4 t	HY 4 + a3	ca. 124 mm	ca. 3.1 cm³
VRBK-FIX 6.7 t	HY 5 + a3	ca. 144 mm	ca. 4.9 cm³
VRBK-FIX 10 t	HY 8 + a3	ca. 184 mm	ca. 13.4 cm³
VRBK-FIX 16 t	HY 10	ca. 231 mm	ca. 23.1 cm³
VRBK-FIX 31.5 t	HY 17	ca. 355 mm	ca. 73.7 cm³
VRBK 50 t	HY 25	ca. 373 mm	ca. 233.1 cm³

Table 5: Weld seam (weld-on block)



Pic. 5: Dimensioning