

VRBG / VRBG-FIX / VRBS on plate

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 Ketten
Rieger & Dietz GmbH u. Co. KG
73423 Aalen
Tel. +49 7361 504-1370
sling@rud.com
www.rud.com

RUD-Art.-Nr.: 8502250 - EN / V02 / 04.023



lifting points welded on
bolttable plates

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: Anschlagpunkt auf Platte
VRBG-FIX/VRBG / VRBS-FIX/VRBS/VLBS/ABA auf Platte

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 01.03.2023 Hermann Kolb, Bereichsleitung MA

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
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: Lifting point
VRBG-FIX/VRBG/VRBS-FIX/VRBS/VLBS/ABA welded on bolttable plates

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 01.03.2023 Hermann Kolb, Bereichsleitung MA

Name, function and signature of the responsible person

CONTENT

1	Safety instructions	2
2	Intended use	2
3	Assembly- and instruction manual	2
3.1	General information	2
3.2	Hints for the assembly	2
3.3	User instructions	3
4	Inspection / Repair / Disposal	4
4.1	Hints for periodical inspections	4
4.2	Test criteria for the regular visual inspection by the user	4
4.3	Additional test criteria for the competent person / repair worker	4
4.4	Disposal	4



Before initial usage of the RUD weld-on lifting points on plate, 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



WARNING

Wrong positioned or damaged weld-on lifting points on plate as well as improper use can lead to injuries of persons and damage at property, when load falls down. Please check all lifting points on plate 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 on plate 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 lifting points on plate.
- 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 lifting points on plate must never be utilised.

2 Intended use

- RUD Lifting points on plate 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 on plate can also be used as lashing points to attach lashing means.
- A full working load in all directions is allowed.
- RUD Lifting points on plate 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 on plate are suitable for the temperature range from -40°C up to 350°C.
 - Up to 07/2019: RUD Lifting points on plate are suitable for the temperature range from -20°C up to 350°C.

For the lifting points on plate, the WLLs have to be reduced according to the strength class of the bolts as follows, due to the DIN/EN bolts used:

-40°C/-20°C up to 100°C → no reduction

100°C up to 200°C → minus 15 % (212°F up to 392°F)

200°C up to 250°C → minus 20 % (392°F up to 482°F)

250°C up to 350°C → minus 25 % (482°F up to 662°F)

Temperatures exceeding 350°C (662°F) are prohibited!

- The lifting points will be supplied by RUD with a crack-detected connecting bolt. In case of using own bolts, these have to be tested for being 100 % crack-free.



ATTENTION

At minimum, a bolt has to be used having the quality mentioned on the connecting plate and the prescribed diameter.

- RUD Lifting points on plate 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.

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 the bolt lengths:
 - 1 x M in steel (min. quality S235JR [1.0037])
 - 1.25 x M in cast iron (e.g. GG 25)
 - 2 x M in aluminium
 - 2.5 x M in aluminium-magnesium alloys (M = thread Ø, e.g. M 20)
- When lifting light metals, nonferrous metals and cast iron the thread has to be chosen in such a way that the WLL of the thread corresponds to the requirements of the corresponding base material.

- 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 or an unsymmetrical 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	Unsymmetric
two leg	2	1
three / four leg	3	1

Table 1: Load bearing strands (compare to Table 2)

- A plane bolt-on surface with a perpendicular thread hole must be guaranteed.
The thread must be carried out acc. to DIN 76 (counterbore diameter at the 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
- Consider the type of load:



HINT

The permissible weight of load for the different loading methods has to be defined by the user (authorised and trained person) according to the WLL indication on the mounting plate and the factors mentioned in Table 2.



WARNING

With turning processes and in permanent operation, the bolts have to regularly be examined with regard to their torque prescribed (for turning processes, we recommend to use the RUD Lifting Point WBPG).

- Always tighten the supplied bolts with the torque ($\pm 10\%$) according to the specifications on the mounting plate.
- Impulsive loading or vibration, especially at through hole connections with nuts, can lead to unintentional loosening.

Securing possibilities: Observing the required torque. Use of a liquid bolt securing glue, f.e. Loctite (adapted to the usage, observe user instruction of manufacturer) or use a form closure bolts securing, fe. a crown nut with a split pin, or a lock nut, etc.

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

3.3 User instructions

- The whole lifting point must be inspected regularly before use (f.e. by a competent person) in regard of correct secured bolt seat, strong corrosion, cracks on load-bearing parts, deformations). See chapter 4 *Inspection / Repair / Disposal*.



WARNING

Wrong positioned or damaged weld-on lifting points on plate as well as improper use can lead to injuries of persons and damage at property, when load falls down. Please check all lifting points on plate 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 note that the lifting mean must be free moveable within the lifting point on plate. 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 lifting point on plate are used solely for lashing, the value of the working load limit can be doubled. LC = permissible lashing force = 2 x working load limit (WLL)



HINT

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

- Leave direct danger zone as far as possible.
- Watch always your hinged loads.

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 lifting 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.

Only RUD original spare parts must be used and all repairing and overhauling operations must be documented in the chain card file (of the complete lifting mean) or use the AYE-D.NET-System.

4.2 Test criteria for the regular visual inspection by the user

- Ensure correct bolt size, quality and length
- Observe proper tightening of bolt. Check torque value (see plate)
- The Lifting point should be complete
- Complete, readable WLL statements as well as manufacturer sign.
- Deformations at bearing parts such as connecting plate, suspension bracket and bolts.
- 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)
- Damage to the bolt and/or thread
- 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 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
WLL stamped in plate	For the max. total load weight >G< in [t]									
VRBG / VRBG-FIX / VRBS 31.5 t	31.5	31.5	63	63	45	31.5	31.5	67	47.5	31.5
VRBG-FIX 50 t	50	50	100	100	70	50	50	105	75	50
VRBG-FIX 100 t	100	100	200	200	140	100	100	210	150	100

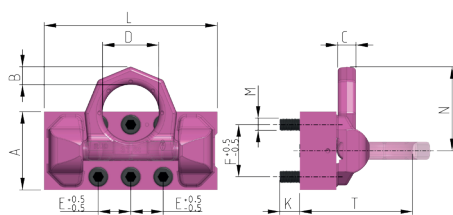
Table 2: WLL [t]

Subject to technical alterations

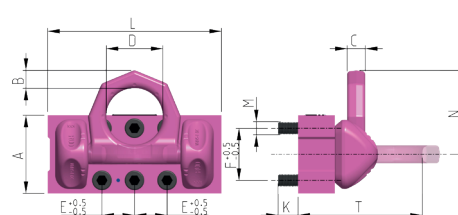
Type	WLL [t]	weight [kg]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	K [mm]	L [mm]	M [mm]	N [mm]	T [mm]	torque [Nm]	bolts / nuts	Ref.-No.
Variante Standard (Pic. 1)																	
VRBG 31.5 t	31.5	71.42	180	41	42	130	75	120	--	46	400	30	193	261	900	Zyl.-Schr. ISO 4762 6x M30x100-12.9	7910387
Varianten FIX (Pic. 3 + Pic. 4)																	
VRBG-FIX 31.5 t	31.5	66.35	180	41	42	130	75	120	--	46	400	30	195	288	900	Zyl.-Schr. ISO 4762 6x M30x100-12.9	7910591
VRBG-FIX 31.5 t K = 106 mm	31.5	69.21	180	41	42	130	75	120	--	106	400	30	195	288	900	Zyl.-Schr. ISO 4762 6x M30x160-12.9 Bundmutter M30	7911260
VRBG-FIX 31.5 t K = 120 mm	31.5	69.23	180	41	42	130	75	120	--	120	400	30	195	288	900	Zyl.-Schr. DIN 912 6x M30x180-12.9	7911926
VRBG-FIX 50 t	50	203.62	270	70	54	230	100	200	--	59	650	36	335	500	1000	Zyl.-Schr. DIN 912 8x M36x120-12.9	7909951
VRBG-FIX 100 t	100	441.96	380	97	77	250	100	240	--	79	825	48	392	510	2000	Zyl.-Schr. DIN 912 8x M48x150-10.9	7912696
Special components (Pic. 2)																	
VRBS 31.5 t on plate	31.5	58.87	310	41	42	130	147.5	250	140	--	450	30	192	226	1700	without bolt	7984923
VRBS 31.5 t on plate - complete with screw	31.5	63.57	310	41	42	130	147.5	250	140	60	450	30	192	226	1700	7995510 6Kant-Schr. 6x M30x110-10.9	7989831

Table 3: Dimensioning

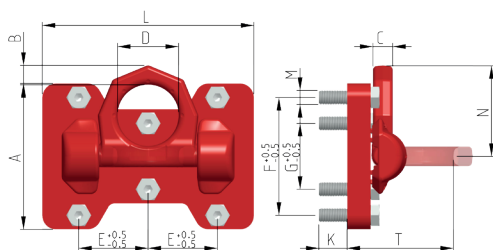
Subject to technical alterations



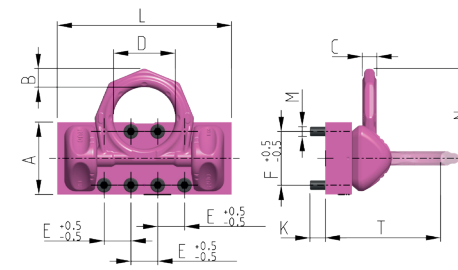
Pic. 1: VRBG 31,5 t



Pic. 3: VRBG-FIX 31,5 t



Pic. 2: VRBS 31,5 t on bolttable plates



Pic. 4: VRBG-FIX 50 t / VRBG-FIX 100 t