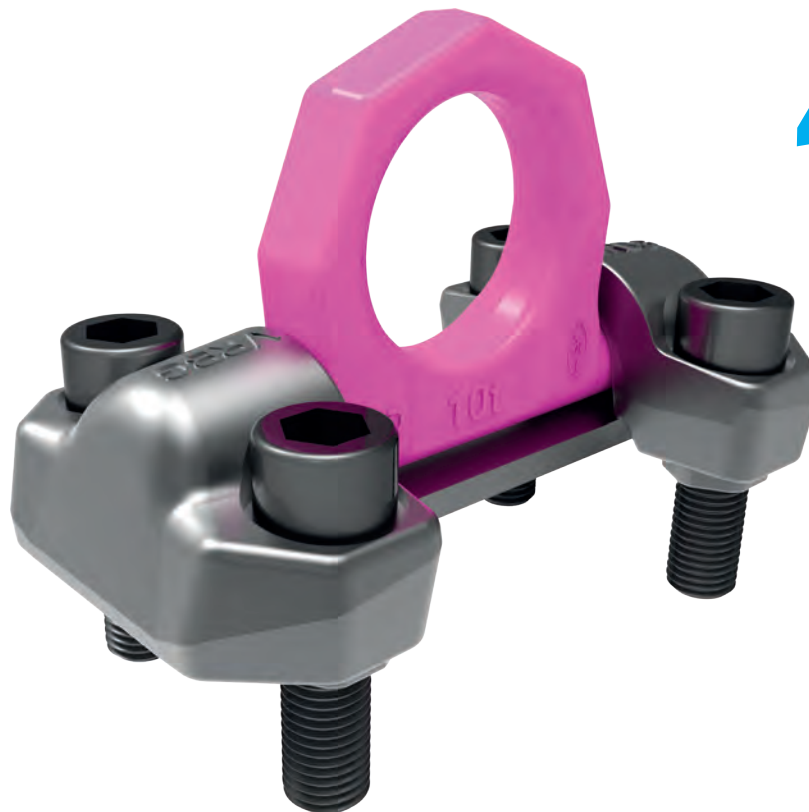


Complies with the machinery directives 2006/42/EC



4 better lifting



NB: Please ensure that the safety instructions have been fully read and understood before initial use of the RBG/VRBG bolt-on lifting point. Failure to do so may result in serious injuries and/or material damage and eliminates manufacturers warranty.

User Instructions - Part 1

Safety instructions

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

ATTENTION: Please inspect all lifting points prior to use. Damage, incorrect assembly or improper use may result in serious injuries and/or material damage.

EC-Declaration of the manufacturer

According to the Machinery Directive 2006/42/EC, annex II B and amendments.

We hereby declare that the design and construction of the equipment detailed within this document, adheres to the appropriate level of health and safety of the corresponding EC regulation.

Any un-authorized modification and/or any incorrect use of the equipment not adhered to within these user instructions waives this declaration invalid.

The equipment must be regularly tested and inspected as per BGR 500. Failure to carry out the recommended maintenance and testing waives this declaration invalid.

Designation of the equipment:

Type: **RBG/VRBG bolt-on lifting point**

Manufacturer's mark:

Drawings (iges, dxf and step), product information and other support material can be downloaded from www.rud.com.au.

EG-Declaration of the manufacturer

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

Manufacturer: **RUD Ketten Rieger & Dietz GmbH u. Co. KG**
Friedenstraße
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 EG-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 / VRBG / VRBK / VRBSS

The following harmonized norms were applied:

| | |
|-------------------|-------------------|
| <u>EN 12100-1</u> | <u>EN 12100-2</u> |
| <u>EN 14121-1</u> | <u>EN 1677-1</u> |
| _____ | _____ |
| _____ | _____ |

The following national norms and technical specifications were applied:

BGR 500_KAP2.8

Authorized person for the configuration of the declaration documents:
Reinhard Smetz, RUD Ketten, 73432 Aalen

Aalen, 17.12.2009

Dr.-Ing. Reif Simz (Prokurist/QMB)

Name, function and signature of the responsible person

User Instructions - Part 2

1. Reference should be made to relevant standards and other statutory regulations. Inspections should be carried out by competent persons only.

2. Before installation and every use, visually inspect RUD lifting points, with particular attention to any evidence of corrosion, wear, weld cracks and deformations. Please ensure compatibility of bolt thread and tapped hole.

3. The material construction to which the lifting point will be attached, should be of adequate strength to withstand forces during lifting without deformation. RUD, with reference to the German testing authority BG, recommends the following minimum for bolt lengths:

- 1.5 x M in steel (minimum quality S235JR [1.0037] ≈ AS3678 GR250).
- 1.5 x M in cast iron (for example GG 25)
- 2 x M in aluminium alloys
- 2.5 x M in aluminium-magnesium alloys
- (M = diameter of RUD lifting point bolt, 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.

4. The lifting points must be positioned on the work piece in such a way that improper strain due to twisting or turning is avoided.

a.) For single leg lift, the lifting point should be vertically above the centre of gravity of the work piece.

b.) For two leg lifts, the lifting points must be on both sides and above the centre of gravity of the work piece.

c.) For three and four leg lifts, the lifting points should be arranged symmetrically around the centre of gravity in the same plane.

5. Load symmetry: The required WLL of the individual lifting point has to be calculated based on the following physical formulas for symmetrical and unsymmetrical loading:

| | |
|--|--|
| $W_{LL} = \frac{G}{n \times \cos \beta}$ | WLL = required of lifting point/individual leg (kg) G = load weight (kg) n = number of load bearing legs β = angle of inclination of the individual leg |
|--|--|

NOTE: For WLL Calculations

- β angle is taken from the vertical plane.
- Included angle is the angle between the sling legs.



6. Safety: When lifting points are used in a multileg assembly, care should be taken to calculate the WLL (Working Load Limit) due to the deration caused by forces acting in multiple directions. The reduction in WLL (Working Load Limit) for multileg assemblies should be checked with relevant Standards e.g. AS 3775-2004 - Chain Slings-Gr t (8)

The lifting points should be mounted in such a way that they may easily be accessed for inspection and assembly/disassembly of the sling.

7. A plane bolting surface must be guaranteed to ensure correct mating of the lift component.

Drilling sequence for the RBG 3:

a) Mark the pocket hole (Dim F) then drill and countersink the dimensions H,G,K.

b) After fitting and adjustment of the welding blocks the bore for the tapped hole can be drilled.

c) The bore hole and thread can be machined. For through holes drill only the dimension "H".

8. The VRBG/RBG-Ring must be able to pivot 180° after assembly. For single use just tighten with spanner. For long term application the VRBG/RBG should be tightened with torque according to relevant table (+/- 10 %) inclusive using the locking washer.

9. To prevent unintended dismounting through shock loading, rotation or vibration, thread locking fluid such as Loctite (depending on the application, please refer to the manufacturer's instruction) should be used to secure the bolts.

10. If the lifting points are used exclusively for lashing, the value of the working load can be doubled. LC (lashing capacity) = 2 x WLL.

11. Effects of temperature: Due to the DIN/EN bolts that are used with the VRBG/RBG the working load limit should be reduced accordingly:

| | | |
|---------------|--------------|----------------|
| -10° to 100°C | no reduction | 14°F to 212°F |
| 100° to 200°C | minus 15% | 212°F to 392°F |
| 200° to 250°C | minus 20% | 392°F to 482°F |
| 250° to 350°C | minus 25% | 482°F to 662°F |

Temperatures above 350°C (662°F) are not permitted.

12. 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.

13. After fitting, an annual inspection or sooner if conditions dictate should be undertaken by a competent person examining the continued suitability. Also inspect after damage and special occurrences.

Inspection criteria regarding paragraphs 2 and 13:

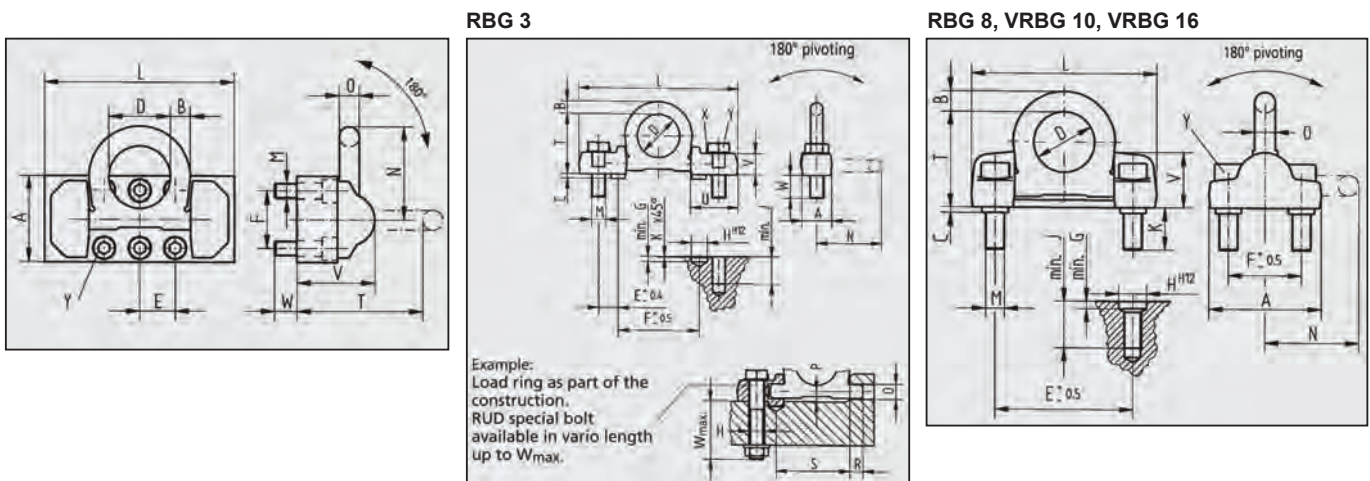
- Ensure correct bolt and nut size, quality and length.
- Ensure compatibility of bolt thread and tapped hole - control of the torque
- The lifting point should be complete.
- The working load limit and manufacturers stamp should be clearly visible.
- Deformation of the component parts such as body, load ring and bolt.
- Mechanical damage, such as notches, particularly in high stress areas.
- Wear should be no more than 10% of cross sectional diameter.
- Evidence of corrosion.
- Evidence of cracks.
- Damage to the bolt, nut and/or thread.

Any non-adherence to this advice may result in damages of persons and/or materials!

User Instructions - Part 3

| WORKING LOAD LIMITS (G - in tonnes) | | | | |
|-------------------------------------|------------|--|------|----|
| PRODUCT DESCRIPTION | Single Leg | 2, 3 or 4 Legs | | |
| | | | | |
| | | 60° 90° 120° Maximum Included Angle (Degrees) | | |
| RBG 3 | 3 | 5.2 | 4.2 | 3 |
| RBG 8 | 8 | 13.8 | 11.3 | 8 |
| VRBG 10 | 10 | 17.3 | 14.1 | 10 |
| VRBG 16 | 16 | 27.7 | 22.6 | 16 |
| VRBG 30 | 30 | 52.0 | 42.4 | 30 |
| VRBG 50 | 50 | 86.6 | 70.7 | 50 |

Table 1



| Type | WLL (t) | Weight (kg) | A | B | C | D | E | F | G | H | J | K | L | M | N | T | Screw | Torque | Reference |
|---------|---------|-------------|-----|----|---|----|-----|-----|----|----|----|----|-----|----|-----|-----|--------------------------------|--------|-----------|
| RBG 3 | 3 | 0.9 | 34 | 16 | 5 | 48 | 22 | 92 | 6 | 18 | 30 | 1 | 178 | 16 | 71 | 67 | ISO 4014 (DIN 931) M16x50-10.9 | 120 Nm | 0051817 |
| RBG 8 | 8 | 4.1 | 120 | 22 | 6 | 65 | 143 | 78 | 8 | 30 | 50 | 45 | 194 | 20 | 100 | 102 | ISO 4762 (DIN 912) M20x70-12.9 | 200 Nm | 0059971* |
| VRBG 10 | 10 | 4.2 | 120 | 22 | 6 | 65 | 143 | 78 | 8 | 30 | 50 | 45 | 213 | 20 | 100 | 102 | ISO 4762 (DIN 912) M20x70-12.9 | 300 Nm | 7994537 |
| VRBG 16 | 16 | 7.8 | 170 | 30 | 8 | 90 | 198 | 104 | 10 | 46 | 70 | 75 | 270 | 30 | 134 | 131 | ISO 4762 (DIN 912) M30x90-12.9 | 600 Nm | 7993255 |

Table 2

* until stock is cleared

| Type | WLL (t) | A | B | D | E ±0.5 | F ±0.5 | L | M | N | O | T | V | W | Y ISO 4762 | Weight (kg) | Torque | Reference (with bolts) |
|---------|---------|-----|----|-----|--------|--------|-----|----|-----|----|-----|-----|----|----------------|-------------|---------|------------------------|
| VRBG 30 | 30 | 180 | 42 | 130 | 75 | 120 | 400 | 30 | 195 | 42 | 262 | 163 | 46 | 6xM30x100-12.9 | 67 | 900 Nm | 7985866 |
| VRBG 50 | 50 | 270 | 70 | 230 | 100 | 200 | 650 | 36 | 340 | 60 | 406 | 220 | 58 | 8xM36x120-12.9 | 206 | 1000 Nm | 7985867 |

Table 3