



- Reference should be used in compliance with statutory regulations ( BGR 500) and installation to be carried out by competent and skilled persons only.
- Before installing and use, visually inspect the lifting points in regular intervals, paying special attention to the points, corrosion, wear, weld cracks, deformations, etc.
- The installation points should be chosen in such a way that the induced forces are accommodated by the work piece without being deformed.
- The lifting points must be positioned on the work piece in such a way that improper strain due to twisting or turning is avoided.
  - For single leg lift, the lifting point should be vertically above the centre of gravity of the work piece.
  - For two leg lifts, the lifting points must be on both sides and above the centre of gravity of the work piece.
  - For three and four leg lifts, the lifting points should be arranged symmetrically around the centre of gravity in the same plane.

- 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:

$$WLL = \frac{G}{n \times \cos \beta}$$

WLL = required of lifting point/individual leg (kg)  
G = load weight (kg)  
n = number of load bearing legs  
 $\beta$  = angle of inclination of the individual leg

- Keep the RUD - lifting / lashing points away from aggressive chemicals, acids and their vapours.



The number of bearing legs is:

	symmetrical	unsymmetrical
Two leg	2	1
Three or four leg	3	2

- Valuation of suitability respective to temperature.  
The lifting / lashing points for weld on, types LBS, RBS and RBK can be several times, stress free, annealed together with the work piece without reduction of WLL. Temperatures  $\leq 600^{\circ}\text{C}$

With lifting points for bolt on, the WLLs have to be reduced acc. to the following table:

Reduction of WLL:			
VLBG/WBG-V/VRS/VRBG		RS/WBG/PP	
100° to 200° C	minus 15 %	200° bis 300° C	minus 10 %
200° to 250° C	minus 20 %	300° bis 400° C	minus 25 %
250° to 350° C	minus 25 %		

- The welding positions for the lifting / lashing points should be marked in colour for easy identification.
- When handling the lifting means (sling chain), no squeezing, shearing, catching and impact spots must occur. Damaging of the lifting means and lifting points by sharp corners must be avoided.
- For the assembly of the lifting points, please follow the user instructions enclosed.

### For welding

**Pay attention to the following points during welding:**

- The welding should be carried out by a qualified welder acc. to DIN EN 287-1.
- Material of welding block is St 52-3 (1.0570).
- The connecting surfaces must be free from dirt, oil, colour, etc.
- Do not weld the powder coated tempered load ring.
- The complete construction can be annealed stress-free for several times at  $\leq 600^{\circ}\text{C}$  without reduction of WLL.
- The welding area has to be suitable for the corresponding force introduction.
- The distance lugs assist in achieving the required root weld (approx. 3 mm).

#### **Important:**

By the arrangement of weld (continuous HV), the following requirements are fulfilled:

#### **DIN 18800 for steel building prescribes:**

At outdoor sites or in case of special danger of corrosion, the welds should only be designed as continuous, fillet welds. The HV weld at the VLBS assures a connection via the whole cross section of the material. This corresponds to the closed weld showing no signs of corrosion.



**For bolting:**

● The bolting position is to be designed in such way that the introduced forces are accommodated by the work piece without being deformed.

- 1 x M in steel (M = thread size, e.g. M 20)
- 1,25 x M in cast iron
- 2 x M in aluminium

● In case of shock loadings, twisting or vibrations, especially with through bolts and nuts, an unintentional dismounting may occur. Possibilities of securing: Liquid means e.g. loctite (refer to the user instructions) or use form - closed securing bolts e.g. crown nuts with a key, counter nut, etc.

● With light metals, non ferrous heavy metals and grey cast, the thread arrangement has to be chosen in such a way that the WLL of the thread corresponds with that of the respective work piece material.

● RUD will not accept any warranty for the use of any bolts not supplied by RUD! Minimum quality for the base material "steel" must be 1.0037 (St 37).

**Inspection criteria for items 2 and 10**

- Ensure a tight bolt seat (possibly examine torque)
- Ensure that lifting point is complete
- Complete indications of WLL and manufacturer
- Deformations at bearing parts such as body, suspension bracket or latch
- Mechanical damages such as serious notches, especially in high stress areas
- Reductions of cross section by wear > 10%
- Strong corrosion (pitting)
- Cracks at bearing parts
- Cracks or other damages at the weld (with lifting points for weld on)
- Correct bolt size, bolting quality and bolting length
- Function and damage of bolts as well as bolt thread
- For lifting / lashing points which swivel, a smooth swivelling of the upper and lower part must be assured.

**Tensile Test**



Production control at RUD. Breaking test of a RUD RBS 50t lifting point with a minimum breaking strength of 2000 kN.

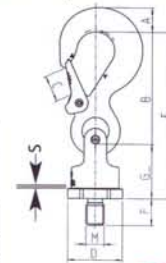


**Warning!**  
Respect the user instructions for the corresponding lifting points!

Refer to the user instructions for the corresponding lifting points!

- Assembly or fitting of the different bolt lengths with types WBG-V only to be carried out by the manufacturer.
- With types PP, WBG-V and WBG check maximum Gap between upper part and part below, size "s" – refer to table. In case the maximum Gap has been exceeded, WBG and WBG-V must not be used any more. These parts must not be loaded to proof load.

Type	Gap „s“
WPP/PP...-0,63t – 2,5t	max. 1,5 mm
WPP/PP...-4t – 8t	max. 2,5 mm
WBG-V 0,3 – 0,45	max. 1,2 mm
WBG-V 0,6 – 2,0	max. 1,5 mm
WBG-V 3,5 – 5,0	max. 3,0 mm
WBG 8 – 35	max. 4,0 mm



**Warning!**  
\*Use original RUD bolts only! \*

**Correct storage of lifting points**



Correct storage of lifting points and sling chains BGR 500