Lifting Points for bolt and weld on

- User Instructions -

Respect the user instructions for the corresponding lifting points!

Before every use, please read the User Instruction of the Lifting Points carefully and make sure that you understand all substance. Improper use or care of this eyebolt can result in bodily injury or property damage and eliminates any warranty!

1 Application and warning information

Reference should be made to country specific statutory regulations and installation to be carried out by competent skilled persons only.

2 General information

- 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 galvanizing plants.
- The material construction to which the lifting point will be attached should be of adequate strength to withstand forces during lifting without deformations.
- The lifting points must be positioned on the load in such a way that non- permitted loads such as twisting or turnings will be avoided.
  - **For single leg lift,** the lifting point should be vertically above the center of gravity of the load.
  - **For two leg lifts,** the lifting points must be equidistant to/or above the center of gravity of the load.
  - **For three and four leg lifts,** the lifting points should be arranged symmetrically around the center of gravity in the same plane.
- Load symmetry
  The required WLL of the individual lifting point has to be calculated based on the following formula

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

WLL = Working load limit (kg)
G = load weight (kg)
n = number of load bearing legs
b = angle of inclination of the individual leg to the vertical

The number of bearing legs is:

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

- The places where the lifting points are fixed should be marked with colour.
- 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 has to be avoided.
- For the assembly of the lifting points, please follow the user instructions enclosed.
- Before installation and every use, inspect visually RUD lifting points, paying particular attention to any evidence of corrosion, wear, weld cracks and deformations. Please ensure compatibility of bolt thread and tapped hole (see *chapter 5 Inspection criteria*).

3 Lifting Points for weld on

- The welding should be carried out by an authorised welder acc. to EN 287-1.
- Effects of temperature
  The lifting points **for weld on**, types VLBS, LBS, VRBS, RBS, VRBK and RBK can together with the load (e.g. weld construction) be annealed stress-free without reduction of WLL. Temperature < 600° C.
- Material of the welding block is S355J2+N (1.0577+N, St 52-3N, B.S. 4360.50D, AISI 1019)
- The connecting surfaces must be free from dirt, oil, colour, etc.
- Do not weld at the red or pink powder coated tempered load ring.
- The complete construction can be annealed stress free at <600°C without reduction of WLL.
- The welding spot has to be suitable for the corresponding force.
- The distance lugs assist in achieving the required root weld (approx. 3 mm).

ATTENTION:
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 spezial danger of corrosion,the weld should only be designed as continuous, fillet welds. The HV weld at the VLBS, WPP, WPPH, VABH-W, VRBK assures a connection via the whole cross section of the material. This corresponds to a closed weld showing no signs of corrosion.

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4 Lifting Points for bolt on

- With lifting points **for bolt on**, the WLL's have to be reduced acc. to the following table:

  -40° upt to 200°C --> minus 0 %
  200° upt to 300°C --> minus 10 %
  300° upt to 400°C --> minus 25 %
  Temperatures above 400°C are not permitted.

- The position to be designed in such a way that the introduced forces can be accepted by the basic material without deformations. German authorities recommend the following minimum bolting lengths:

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

HINT:
With shock loadings, twisting or vibrations, especially with through bolts and nuts, an unintentional dismounting may occur. Possibilities of securing: liquid means such as Loctite (respect manufacturer's prescriptions) or form closed bolt securing such as crown nut with key, counter nut, etc.

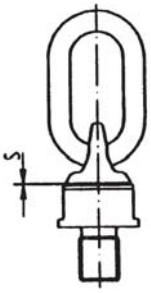
- With shock loadings, twisting or vibrations, especially with through bolts and nuts, an unintentional dismounting may occur. Possibilities of securing: liquid means such as Loctite or WEICONLOCK (respect manufacturer's prescriptions) or form closed bolt securing such as crown nut with key, counter nut, etc.
- Secure in general all lifting points which are installed permanently, e.g. with glue.
- 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 the respective basic material.
- RUD will not accept any warranty for the use of any bolts not supplied by RUD! Minimum quality for the base material "steel" has to be 1.0037 (St 37).

5 Inspection criteria

After fitting, an annual inspection or sooner if conditions dicate should be undertaken by a competent person examining the continued suitability (at least once a year). Also after damage and special occurrences.

- 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, bolt quality and thread length**
- Function and damage of bolts as well as bolt thread
- With rotating lifting points: easy, jerk free turning between upper and lower part must be assured
- Assembly or fitting of different bolt lengths with types WBG-V only to be carried out by the manufacturer. **For the user it is forbidden to disassemble the ball bearing of WBG-V, WBG, PP and WPP.**
- With types PP, WPP, WBG-V and WBG check maximum slackness between upper and lower part below, size „s" – refer to table. In case the maximum slackness has been exceeded, these types must be taken out for service or replacement. These parts must not be loaded to proof load.

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



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