WELD ON LIFTING POINT - VLBS LOAD RING

Complies with the machinery directives 2006/42/EC

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
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-authorised 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: VLBS weld-on lifting point
Manufacturer’s mark: [RUD]

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

NB: Please ensure that the safety instructions have been fully read and understood before initial use of the VLBS weld-on lifting point. Failure to do so may result in serious injuries and/or material damage and eliminates manufacturers warranty.
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 installing and at every use, visually inspect RUD lifting points, with particular attention to any evidence of weld cracks, corrosion, wear, deformations, etc.

3. The material construction to which the lifting point will be attached should be of adequate strength to withstand forces during lifting without deformation. The contact areas must be free from inpurities, oil, colour, etc. Preheat the structure according to AS 1554 if required.

The material of the forged welding block is S355J2+N, St52-3, B.S. 4360.50 D or AISI 1019 (=AS3678 GR350).

4. The lifting points must be positioned on the load in such a way that movement is avoided during lifting.
   a.) For single leg lifts, the lifting point should be vertically above the centre of gravity of the load.
   b.) For two leg lifts, the lifting points must be equidistant to/or above the centre of gravity of the load.
   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 working load limits of individual RUD lifting points are calculated using the following formula and are based on symmetrical 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

**NOTE:** For WLL Calculations
- \( \beta \) 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 must be mounted in such a way that they may easily be accessed for inspection and assembly/disassembly of the sling.

7. The lifting point is suitable for use within temperature range -20°C up to 400°C. For use within the following temperature ranges the WLL must be reduced by the following factors:
   - 200°C up to 300°C by -10% / 300°C up to 400°C by -25%
   - 400°C up to 1000°C by -50%

8. All fittings connected to the VLBS should be free moving. When connecting and disconnecting the lifting means (sling chain) pinches and impacts should be avoided. Damage of the lifting means caused by sharp edges should also be avoided.

9. The complete design can be stress relieved once in the unloaded condition to <600°C (1100°F) without reduction of WLL.

10. 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 guarantees a connection via the whole cross section of the material. This corresponds to a closed weld showing no signs of corrosion.

11. The distance lugs assist in achieving the correct root weld (approx. 3 mm = 0.1 inch). They should not be removed.

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. If the lifting points are used exclusively for lashing the value of the working load limit can be doubled. LC = 2 x WLL

14. After welding, an annual inspection or sooner if conditions dictate should be undertaken by a competent person. Also inspect after damage and special occurrences.

**Inspection criteria regarding paragraphs 2 and 13:**
- The lifting point should be complete.
- The WLL and manufacturers stamp should be clearly visible.
- Deformation of the component parts (body, load ring etc.).
- Mechanical damage, (eg. notches) particulary in high stress areas.
- Wear should be no more than 10% of cross sectional diameter.
- Evidence of corrosion.
- Evidence of cracks.
- Cracks or other damages to the welding.

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

<table>
<thead>
<tr>
<th>Type</th>
<th>WLL (t)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>T</th>
<th>Weld</th>
<th>Weight (kg)</th>
<th>Ref. No. captive complete</th>
<th>Ref. No. without spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLBS 1.5</td>
<td>1.5</td>
<td>32</td>
<td>66</td>
<td>38</td>
<td>25</td>
<td>40</td>
<td>13.5</td>
<td>33</td>
<td>87</td>
<td>14</td>
<td>65</td>
<td>HV 5 + 3</td>
<td>0.35</td>
<td>7993035</td>
<td>7993115</td>
</tr>
<tr>
<td>VLBS 2.5</td>
<td>2.5</td>
<td>36</td>
<td>77</td>
<td>45</td>
<td>27</td>
<td>48</td>
<td>13.5</td>
<td>40</td>
<td>97</td>
<td>16</td>
<td>75</td>
<td>HV 7 + 3</td>
<td>0.5</td>
<td>794830</td>
<td>7995346</td>
</tr>
<tr>
<td>VLBS 4</td>
<td>4</td>
<td>42</td>
<td>87</td>
<td>51</td>
<td>32</td>
<td>52</td>
<td>16.5</td>
<td>46</td>
<td>112</td>
<td>18</td>
<td>84</td>
<td>HV 8 + 3</td>
<td>0.8</td>
<td>7993036</td>
<td>7993116</td>
</tr>
<tr>
<td>VLBS 6.7</td>
<td>6.7</td>
<td>61</td>
<td>115</td>
<td>67</td>
<td>44</td>
<td>73</td>
<td>22.5</td>
<td>60</td>
<td>157</td>
<td>24</td>
<td>117</td>
<td>HV 12 + 4</td>
<td>1.9</td>
<td>7993037</td>
<td>7993117</td>
</tr>
<tr>
<td>VLBS 10</td>
<td>10</td>
<td>75</td>
<td>129</td>
<td>67</td>
<td>55</td>
<td>71</td>
<td>26.5</td>
<td>60</td>
<td>173</td>
<td>26.5</td>
<td>126</td>
<td>HV 16 + 4</td>
<td>2.9</td>
<td>7993040</td>
<td>7993118</td>
</tr>
<tr>
<td>VLBS 16</td>
<td>16</td>
<td>95</td>
<td>190</td>
<td>100</td>
<td>69</td>
<td>105</td>
<td>26</td>
<td>90</td>
<td>243</td>
<td>40</td>
<td>174</td>
<td>HV 25 + 6</td>
<td>6.8</td>
<td>-</td>
<td>7993041</td>
</tr>
</tbody>
</table>

Table 1
### User Instructions - Part 3

#### WORKING LOAD LIMITS (G - in tonnes)

<table>
<thead>
<tr>
<th>PRODUCT DESCRIPTION</th>
<th>Single Leg</th>
<th>2, 3 or 4 Legs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td></td>
<td>60°</td>
<td>90°</td>
</tr>
<tr>
<td>VLBS - 1.5</td>
<td>1.5</td>
<td>2.6</td>
</tr>
<tr>
<td>VLBS - 2.5</td>
<td>2.5</td>
<td>4.3</td>
</tr>
<tr>
<td>VLBS - 4</td>
<td>4.0</td>
<td>6.9</td>
</tr>
<tr>
<td>VLBS - 6.7</td>
<td>6.7</td>
<td>11.6</td>
</tr>
<tr>
<td>VLBS - 10</td>
<td>10.0</td>
<td>17.3</td>
</tr>
<tr>
<td>VLBS - 16</td>
<td>16.0</td>
<td>27.7</td>
</tr>
</tbody>
</table>

#### WELD SIZE (per welding block)

<table>
<thead>
<tr>
<th>Size</th>
<th>Approximate Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLBS 1.5t</td>
<td>HV 5 + a 3</td>
</tr>
<tr>
<td>VLBS 2.5t</td>
<td>HV 7 + a 3</td>
</tr>
<tr>
<td>VLBS 4t</td>
<td>HV 8 + a 3</td>
</tr>
<tr>
<td>VLBS 6.7t</td>
<td>HV 12 + a 4</td>
</tr>
<tr>
<td>VLBS 10t</td>
<td>HV 16 + a 4</td>
</tr>
<tr>
<td>VLBS 16t</td>
<td>HV 25 + a 6</td>
</tr>
</tbody>
</table>

Note: Dim (a) refers to throat size

Table 2

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#### WELDING PROCESS

**MILD STEEL / LOW ALLOYED STEEL**

**MIG**

GAS SHIELDED WIRE WELDING

AWS A5.18 eg: WIA - Austmig ES6 or Hobart XL 525) or equivalent.
(Flush Cored for material >24mm).

**MMA**

MANUAL ELECTRIC WELDING

AWS A5.5 : E8018-G. AWS A5.1 : E7018, eg: WIA - Austarc 16TC or Weldwell PH77 or equivalent.

NB. Please refer to the consumables manufacturer for user instructions and further information.

Table 3

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#### TYPICAL GMAW SETTINGS (welding VLBS to AS3678 GR350)

<table>
<thead>
<tr>
<th>RUN</th>
<th>TYPE/POSITION</th>
<th>POWER SUPPLY</th>
<th>FLUX GAS</th>
<th>WELDING CONSUMABLE</th>
<th>ELEC.</th>
<th>WELDING PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>SINGLE BEVEL PARTIAL PEN. BUTT. FLAT OR HORD. (1G/2G)</td>
<td>D.C.</td>
<td>+VE</td>
<td>AS.SG - AC/18 SUPAGAS SUPASHIELD 18</td>
<td>ES6-GC/ M-503AH AWS.ER70S-6 “CIGWELD” AUTOCRAFT LWI-6</td>
<td>1.2 mm</td>
</tr>
</tbody>
</table>

Table 5
Welding Sequence

*The welding should only be carried out by an authorised welder, according to AS1554 or EN287 or relevant AWS Standards.*

1. Prepare surface and ensure all contact areas are clean. Check preparation and welding consumables for conformance.
2. Carefully clean the root run before carrying out subsequent runs.
3. Apply fillet weld (see above table 3). The welding process must not be interrupted for such a time that the welding blocks lose the welding temperature.

Attention: Do not weld at the pink powder coated, heat treated load ring.