

Complies with the machinery directives 2006/42/EC

**4** better  
lifting



## User Instructions - Part 1

### Safety instructions

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

### 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 of the equipment and/or any incorrect usage 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 of the equipment waives this declaration invalid.

### Designation of the equipment:

#### LIFTING POINT

Type: **Load ring - VRBS - for welding**

Manufacturer's sign: 

Drawings are available on request as hard copies or DXF files. Drawings can also be downloaded from our website: [www.rud.com.au](http://www.rud.com.au).

Check the RUD website: [www.rud.com.au](http://www.rud.com.au) for product information.

Workshop wall charts available upon request for working load limits (WLL).

Please visit our website at [www.rud.com.au](http://www.rud.com.au) to register for your FREE CD with CAD Files

## 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 impurities, 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/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:

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

$W_{LL}$  = 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 should be mounted in such a way that they may easily be accessed for inspection and assembly/disassembly of the sling.

7. 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.

8. The complete design can be annealed stress-free several times up to <600°C (1100°F) without reduction of WLL.

9. 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.

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

11. 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.

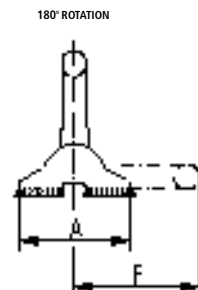
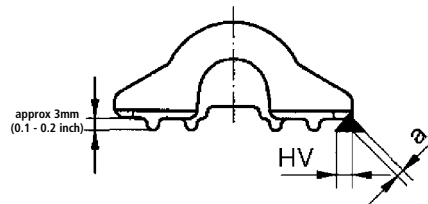
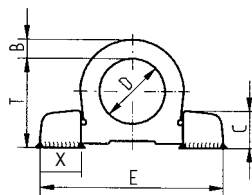
12. If the lifting points are used **exclusively** for lashing the value of the working load limit can be doubled.  $LC = 2 \times WLL$

13. After welding, 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:**

- 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 and load ring.
- 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.
- Cracks or other damages to the welding.

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



Type	WLL (t)	A	B	C	D	E	F	X	T	Weld HV + Δa	Weight (kg)	Reference Number
VRBS 4	4	62	14	28	48	135	71	14	65	HV 4 + Δ3	0.8	7992488
VRBS 6.7	6.7	88	20	39	60	170	91	15	84	HV 5.5 + Δ3	2.1	7992489
VRBS 10	10	100	22	46	65	195	100	22	95	HV 6 + Δ4	2.8	7992490
VRBS 16	16	130	30	57	90	263	134	28	127	HV 8.5 + Δ4	6.6	7992491
VRBS 30	30	160	42	78	130	373	195	37	178	HV 15 + Δ4	19.0	60267
VRBS 50	50	240	70	120	230	620	340	-	313	HV 25 + Δ8	85.0	56834

Table 1

## 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	
VRBS - 4	4.0	6.9	5.6	4.0
VRBS - 6.7	6.7	11.6	9.4	6.7
VRBS - 10	10.0	17.3	14.1	10.0
VRBS - 16	16.0	27.7	22.6	16.0
VRBS - 30	30.0	51.9	42.3	30.0
VRBS - 50	50.0	86.5	70.5	50.0

Table 2

WELD SIZE (per welding block)		
PRODUCT DESCRIPTION	Size	Approximate Volume
VRBS 4t	HV 4 + a 3	4.5cm <sup>3</sup>
VRBS 6.7t	HV 5.5 + a 3	9 cm <sup>3</sup>
VRBS 10t	HV 6 + a 4	11 cm <sup>3</sup>
VRBS 16t	HV 8.5 + a 4	26 cm <sup>3</sup>
VRBS 30t	HV 15 + a 4	88 cm <sup>3</sup>
VRBS 50t	HV 25 + a 8	450 cm <sup>3</sup>

Table 3

WELDING PROCESS	
MILD STEEL / LOW ALLOYED STEEL	
<b>MIG</b> GAS SHIELDED WIRE WELDING	AWS A5.18 eg: WIA - Austmig ES6 or Hobart XL 525) or equivalent. (Flux Cored for material >24mm).
<b>MMA</b> MANUAL ELECTRIC WELDING	AWS A5.5 : E8018-G. AWS A5.1 : E7018. eg: WIA - Austarc 16TC or Weldwell PH77 or equivalent.
<b>NB. Please refer to the consumables manufacturer for user instructions and further information.</b>	

Table 4

## 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 Position both blocks and check the clearance. The distance lugs assist in achieving the correct gap for the root run. Lugs must not be removed! Welding of the block: Tac weld blocks into position with minimum clearance to the load ring. Check for full rotation of the load ring before moving onto point 3.
- 3 Start welding the root run and subsequent runs at point 'S' (see indication above). Carefully clean the root run before carrying out subsequent runs.
- 4 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.**

**NB: When welding VRBS 30 or VRBS 50 the preheat temperature must be between 120°C & 150°C**