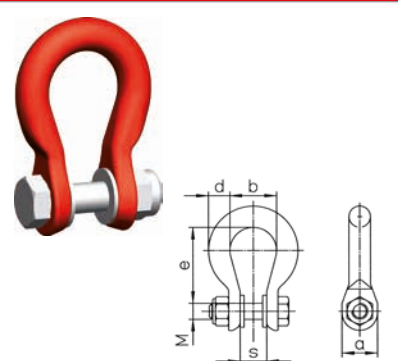


Original operating manual for Omega Shackle VU

Omega Shackle VU											
	Chain		Code	Measurements						Weight	Working Load Limit
	mm	inch		e	b	d	s	a	M		
		6	1/4	VU 06.8	34	21	9	11	16	7	0.07
	7	9/32	VU 07.8	49	28	13	16	22	8	0.2	1,500
	8	5/16	VU 08.8	48	28	13	16	22	10	0.22	2,000
	10	3/8	VU 10.8	60	35	16	20	27	12	0.38	3,150
	13	1/2	VU 13.8	72	39	18	24	34	16	0.67	5,300
	16	5/8	VU 16.8	80	47	23	32	44	20	1.21	8,000
	20	3/4	VU 20.8	96	56	26	36	52	24	1.97	12,500
	26	1	VU 26.8	132	77	33	49	66	30	4.06	21,200

Static test coefficient = 2.5; Safety factor = 4

These Omega Shackles VU are designed for the assembly of KWB chain slings and after reading the operating manual as well as the current national norms for lifting and transporting purposes. They are combined with other components like lifting chains, connecting links and rings to build chain slings. This product meets the requirements of the EU Machinery Directive 2006/42/EC and is only to be used when taking into consideration the declaration of incorporation and after reading and understanding the operating manual. The operating manual must always be available to the user until the Omega Shackles VU are discarded. It is updated continuously and is only valid in its latest version, which can be downloaded from the following link www.kwb-ketten.at.

Conditions of use

Purpose of use: Omega Shackles VU serve as a linking element of KWB chain sling components for welded and connecting link system when assembling chain slings.

Load: the load must only act in the longitudinal direction, in the center of the radius on the bow, in the middle of the bolt, or equally distributed over the whole free length of the bolt with a maximum working load limit given in the table above. Omega Shackles VU must be completely aligned in the direction of the load.

Admissible operating temperature: -40 °C – 100 °C.

Impacts: the load must be applied without any impact or shock loading.

- Omega Shackles VU must only be used by competent personnel
- Omega Shackles VU must be checked before each use for visible signs of damage

Restrictions of use

Under certain conditions, the use of Omega Shackles VU is restricted (see table below). The table below describes certain loads with their corresponding reduction factors. Safe working load values are calculated by multiplying the working load limit with the reduction factor defined in the table. If more restrictions of use are applicable during a lifting process, all corresponding reduction factors must be taken into account.

Reduction factors			
Temperature*	below -40 °C	-40 °C to 100 °C	above 100 °C
Reduction factor	impermissible	1	impermissible
Impact Load	Slight impacts created, for example, when accelerating during the lifting or lowering movement	Medium impacts created, for example, when the chain is loaded but it slips while adjusting to the shape of the load	Strong impacts created, for example, when the load falls onto an unloaded chain
Reduction factor	1	0.7	impermissible

* The use at temperatures below -40 °C and above 100 °C is forbidden!

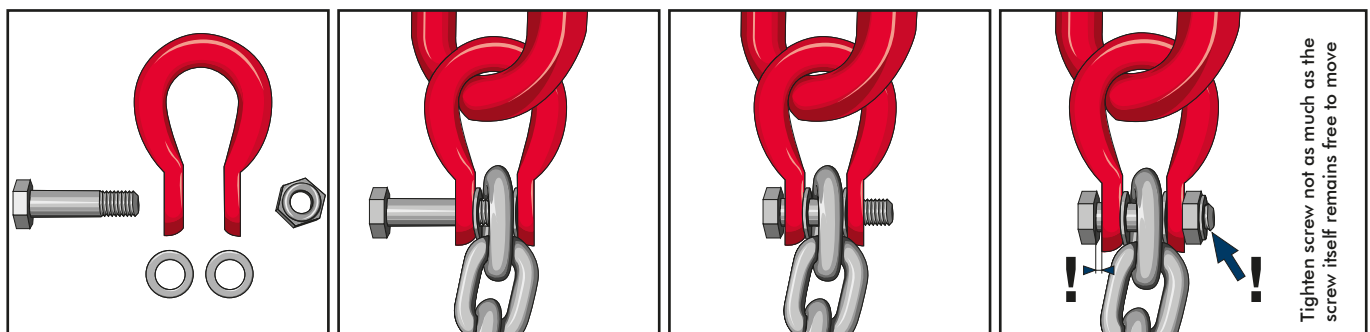
All instructions given in this operating manual assume the absence of extremely dangerous conditions. Such extremely dangerous conditions include offshore activities, lifting of people and potentially dangerous loads, such as liquid metals or nuclear material. In these cases, the admissibility and extent of the risks are to be assessed by KWB.

Reasonably foreseeable misuse

Omega Shackles VU are not designed to be used with food, cosmetics or pharmaceutical products, and must not be subjected to severe corrosive influences (e.g. acids, sewage, ...). They must not be used in explosion-protected areas or exposed to the fumes released by acids or chemicals. They also must not be used under other circumstances as the one described in Conditions of use and Restrictions of use – e.g. transverse, flexural loading or tilting. Do not apply any surface coating procedure with damaging effects on the materials (e.g. hot galvanizing or electrogalvanizing) and do not subject them to heat, welding or drilling processes.

Assembly instructions

The assembly may only be executed by a qualified person. KWB Super Alloy Omega Shackles VU are designed for the attachment of chains to master links/master link assemblies or chains to hooks. After the assembly process, the Omega Shackle VU itself must also have sufficient mobility in order to be aligned to the direction of the load. The assignment of the right chain dimension is determined by the product code (e.g. VU 13.8) and the grade (8), with which the parts are also marked.



For example, VU 13.8 must be used with Super Alloy 13 mm chains and their accessories. 13 indicates the diameter of the material which the chains are made of, 8 points out the grade. ATTENTION! Since these Omega Shackles VU correspond to grade 8, the WLL and the marking of the lifting assembly on the identification tag must be adjusted according grade 8 when used with G10 KWB Star Alloy chains and components. A grade 8 identification tag is to be used. Omega Shackles VU are only to be assembled with the original accessories provided by KWB. When repairing KWB Star Alloy chain slings (G10), Omega Shackles VU can also be used as long as a misinterpretation of the right WLL by the user is excluded – e.g. by means of a unified coloration and correct identification. Moreover, it is important to pay attention to the same length of the chain legs in multi-leg chain slings.

Possibly, all Omega Shackles VU are to be replaced. It is also vital to pay attention to the right working load limit marking of the whole system (WLL on identification tag). The weakest part will determine the working load limit. Only non-damaged parts must be assembled. Defective Omega Shackles VU must not be assembled and used Omega Shackles VU must be inspected before the assembly process as described below under the section Maintenance, Inspections and Repairs. The lifting accessory into which the Omega Shackle VU is to be incorporated must be declared in conformity with the provisions of the Directive 2006/42/EC.

Replacement part

VU bolt + washer + nut type UBMS.

Safety precautions to be taken by the user

Safety glasses must be worn during the assembly process and gloves must always be worn when using Omega Shackles VU. When conditions with restrictions of use take place, working load limit values must be reduced by the above reduction factors in order to assure the required security level.

How to act in case of accidents or damages

After deformation of individual parts of the shackle because of overloading or other extraordinary events, take the lifting assembly out of service for inspection or repair by a qualified person. If a shackle is not aligned in the direction of the load, under no circumstances shall force be used in order to avoid damages. In this case, remove the load and eliminate the fault by means of hand force.

Residual risks

Overloading because of exceeding the working load limit or not reducing the working load limit when influences under severe conditions such as temperature, asymmetry, edge load or impact occur, can lead to failure of the shackle. Other factors are unsatisfactory adjustment, transgression of the permitted angle of inclination, strong vibrations with heavy load, transverse loading, and the use of uninspected Omega Shackles VU or no original accessories. In such cases, the load could fall causing injuries or fatalities among the workers who operate and work in the danger zone of the lifting equipment.

Maintenance, Inspections and Repairs

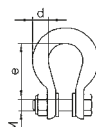
Maintenance: Omega Shackles VU shall be cleaned regularly, dried when exposed to wet atmospheres and protected from corrosion, e.g. lightly oiled.

Inspections: Omega Shackles VU including their bolts and nuts need to be in a clean condition when inspected – they must not contain oil, dirt or rust. Painting is only permissible if an evaluation of the Omega shackle condition is possible. When cleaning, do not subject Omega Shackles VU to processes which cause material embrittlement (e.g. pickling), overheating (e.g. flame cleaning), material abrasion (e.g. sand blasting), etc. Surface cracks or other defects must not be covered. Omega Shackles VU must be checked before each use for visible signs of damage. Once a year an inspection of the connecting link – including of the thread locking – must be carried out by a competent person. However, this period must be shortened in view of the conditions of use – e.g. because of frequent use with maximum load capacity or under conditions with restrictions of use, wear or corrosion. It is recommended to subject Omega Shackles VU links every two years to a crack test. There are different ways of crack testing: subjecting the Omega Shackle VU to a load test with 2 times the working load limit, followed by a visual inspection, a magnetic crack test or a dye-penetration method.

Withdrawal:

- Broken parts, deformation, notches, cracks of all types
- Signs of heat (e.g. discoloration, coating-burn off; or a melted or missing nylon insert of the nut)
- In the case of doubts about the safety and correct functioning of the Omega Shackle VU
- Unrecognizable identification marking
- If wear or excessive corrosion occurs and the tolerable change of measurement is transgressed (see following table)

Measure	Max. permitted change
bolt must be free to move	changes are not permitted
e	+5 %
d and M	-10 %



Repair: Omega Shackles VU are only to be repaired by a qualified person. Damaged accessories must be replaced by new, original replacement parts. Welding, heat treatments, as well as the straightening of bent Omega Shackles VU are not permitted. Inspections and repairs have to be documented and the corresponding reports have to be retained during the service life of the Omega Shackles VU.

Storage

KWB Super Alloy Omega Shackles VU shall be stored cleaned, dried, protected from corrosion, e.g. lightly oiled. While stored, they must not be exposed to corrosive, mechanical or thermal influences.

Declaration of incorporation

In accordance with the requirements established in Annex II, part B, of the EU Machinery Directive 2006/42/EC for components in lifting accessories:

This is to inform you that the product mentioned in this original operating manual is designed to be incorporated in lifting accessories complying with all essential requirements of the EU Machinery Directive 2006/42/EC. This product must not be put into service until the final lifting accessory into which it is to be incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC. Moreover, it is a precondition that this operating manual has been read and understood. This declaration has no legal effect if any changes to the product are introduced without KWB's approval.

Following essential safety and health requirements of Annex I of the Directive are applied and fulfilled: 1.1.3, 1.3.4, 1.5.4, 4.1.2.3, 4.1.2.5, 4.3, 4.4.1.

Additionally, we declare that the relevant technical documentation is compiled in accordance with part B of Annex VII and will be transmitted electronically due to a well-founded request by the national competent authority.

The person authorised to compile the technical documentation:
DI Bernhard Oswald; Mariazeller Straße 143; A-8605 Kapfenberg

Klagenfurt, 2013-10-01

KWB Ketten Austria GmbH
Stefan Duller

KWB Ketten Austria GmbH

A-9020 Klagenfurt, Schleppe-Platz 8

Phone: +43 (0) 463 / 48 80-355

Fax: +43 (0) 463 / 48 80-350

kwb@kwb-ketten.at, www.kwb-ketten.at

Subject to technical modification and printing errors.