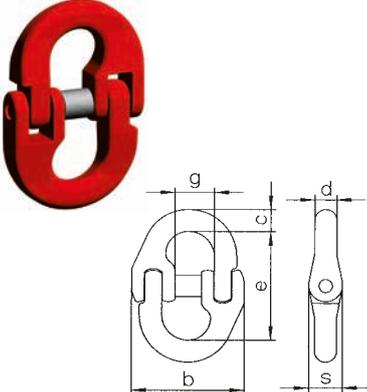


Original operating manual for Connecting Link V

Connecting Link V											
	Chain		Code	Measurements						Weight	Working Load Limit
	mm	inch		g	s	b	e	c	d	kg	kg
	6	1/4	V 06.8 U	14.1	11	39	44.4	7.8	7.6	0.06	1,120
7	9/32	V 07.8 U	17	13	47	51	10	9	0.12	1,500	
8	5/16	V 08.8 U	18.35	14	55	61.5	11.5	10	0.18	2,000	
10	3/8	V 10.8 U	23	18	64	72	12.6	12.6	0.33	3,150	
13	1/2	V 13.8 U	27.6	22	79	88	19	16.7	0.7	5,300	
16	5/8	V 16.8 U	33	29	106	103	21	21	1.14	8,000	
20	3/4	V 20.8 U	41.7	35	123	115	29.5	23.5	2.1	12,500	
22	7/8	V 22.8	48	39	150	133	27	27	2.2	15,000	
26	1	V 26.8 U	61	46	159	164	32	30	5.1	21,200	
32	1 1/4	V 32.8 U	80	50	195	194	40	32	8.5	31,500	

Static test coefficient = 2.5; Safety factor = 4

These Connecting Links V are designed for the assembly of chain slings and after reading the operating manual as well as the current national norms for lifting and transporting purposes. Connecting Links V serve as an attachment between KWB Super Alloy chains and other accessories like hooks 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 Connecting Links V 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: Connecting Links V serve as a linking element of chain sling components for welded and connecting link systems with each other, or with chains of the same nominal size.

Load: the load must only act in the longitudinal direction and in the center of the radius on the bow with a maximum working load limit described in the table above. Connecting Links V must be completely aligned to the load direction. If 2 parts are mounted on one half of the connecting link, only one of the parts shall be loaded during the lifting process. This part must be free to move to the center of the radius on the bow when loaded.

Admissible operating temperature: -40 °C to 200 °C

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

- Connecting Links V must only be used by competent personnel
- Connecting Links V must be checked before each use for visible signs of damage

Restrictions of use

Under certain conditions, the use of Connecting Links V 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*	-40 °C to 200 °C	above 200 °C to 300 °C	above 300 °C to 400 °C
Reduction factor	1	0.9	0.75
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 400 °C is forbidden!

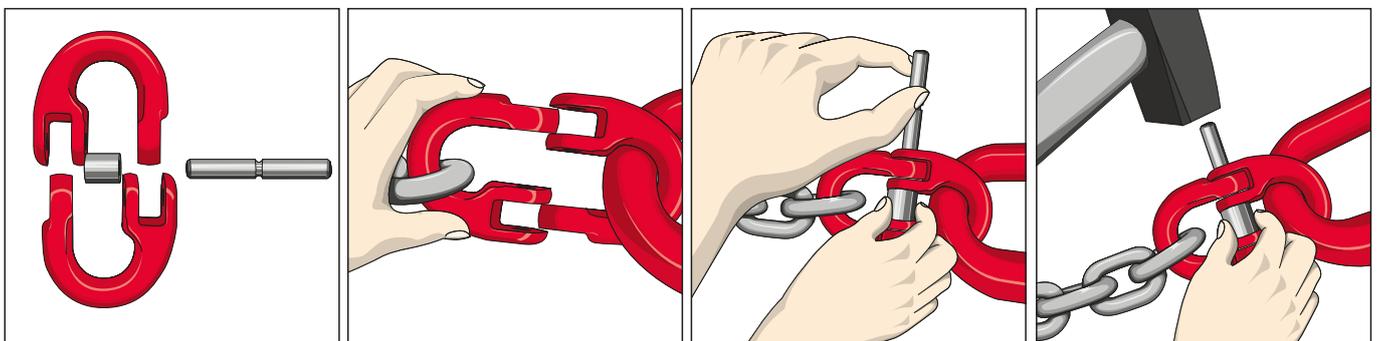
All instructions given in this operating manual assume the absence of extremely dangerous conditions. Such extremely dangerous conditions include offshore activities, lifting of people and potentially dangerous loads, such as liquid metals or nuclear material. In these cases, the admissibility and extent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

Reasonably foreseeable misuse

Connecting Links V 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. A maximum of 2 parts per connecting link-half can be assembled. Both parts must not be loaded or used for the lifting process at the same time. If these adjusted parts were incorrectly chosen or assembled, there will not be enough space in the connecting link and they could hinder each other simultaneously or not move alternatively to the center of the radius on the bow when loaded. 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 process may only be executed by a qualified person. KWB Super Alloy Connecting Links V are designed for the attachment of chains to chains, chains to master links/sub-assemblies, chains to hooks, or master links/sub-assemblies to hooks. More than one component can be assembled on a connecting link-half as long as there is sufficient space for each component to move freely to the center of the radius on the connecting link (highest or lowest point on the bow, respectively) when loaded. After the assembly process, the connecting link itself must also have sufficient mobility in order to be aligned in the load direction.



The assignment of the right chain dimension is determined by the product code (e.g. V 13.8) and the grade (8), with which the parts are also marked. For example, V 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. Connecting Links V are only to be assembled with original accessories provided by KWB. When repairing Star Alloy (G10) chain slings, Connecting Links V 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 Connecting Links V 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. The lifting accessory into which the connecting link is to be incorporated must be declared in conformity with the provisions of the Directive 2006/42/EC. Only non-damaged parts must be assembled. Defective Connecting Links V must not be assembled and used Connecting Links V must be inspected before the assembly process as described below under the section Maintenance, Inspections and Repairs.

Replacement part

BG-V Bolts and Safety Bush.

Safety precautions to be taken by the user

Safety glasses must be worn during the whole assembly process and gloves must always be worn when using this product. 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 connecting link because of overloading or other extraordinary events, take the lifting assembly out of service for inspection or repair by a qualified person. If one connecting link is not aligned in the load direction, 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 connecting link. Other factors are unsatisfactory adjustment, transgression of the permitted angle of inclination, high vibrations with heavy loads, transverse loading, and the use of uninspected Connecting Links V 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

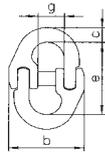
Maintenance: Connecting Links V shall be cleaned regularly, dried when exposed to wet atmospheres and protected from corrosion, e.g. lightly oiled.

Inspections: Connecting Links V including their bolts and safety bushes need to be inspected in a clean condition – they must not contain oil, dirt or rust. Painting is only permissible if an evaluation of the connecting link condition is possible. When cleaning, do not subject Connecting Links V 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. Connecting Links V must be checked before each use for visible signs of damage. Once a year an inspection of the connecting link – including its bolts – 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 Connecting Links V every two years to a crack test. There are different ways of crack testing: subjecting the connecting link 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 or coating-burn off)
- In the case of doubts about the safety and correct functioning of the Connecting Links V
- Unrecognizable identification marking
- If wear or excessive corrosion occurs and the tolerable change of measurement is transgressed (see following table)
- Bolts that are not completely assembled or secured by the bush

Measure	Max. permitted change
Halbs must move freely	Shall be provided
Diameter bolts	-10 %
e	+5 %
c	-10 %



Repair: Connecting Links V are only to be repaired by a qualified person. Damaged accessories can be replaced by new, original replacement parts. Welding, heat treatments, as well as the straightening of bent connecting links are not permitted. Inspections and repairs have to be documented and the corresponding reports have to be retained during the service life of the Connecting Link V.

Storage

KWB Super Alloy Connecting Links V 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

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