



## Content

### Sun Alloy Grade 120

5

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## Advantages of Sun Alloy G 120

**Durability:** higher wear resistance due to increased hardness

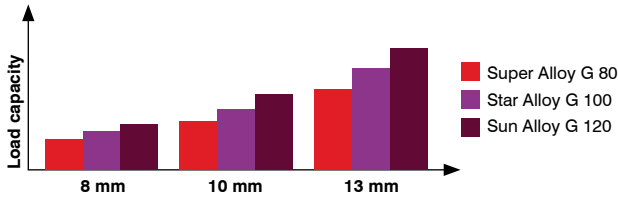
**Simple:** smart and easy assembling of chain slings

**Traceability:** appropriate marking on chains & components

**Quality:** ISO 9001 certified company

**Reliability:** Decades of experience

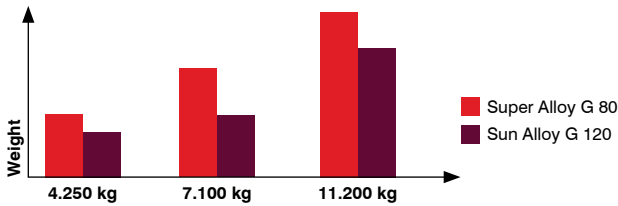
**Strong:** 50 % higher load capacity compared to G 80, 20 % higher load capacity compared to G 100



e.g. 2-leg chain slings

Working Load Limit kg	Previous Chain – Ø G 80 mm	Sun Alloy-Chain – Ø mm
4,250	10	8
7,100	13	10
11,200	16	13

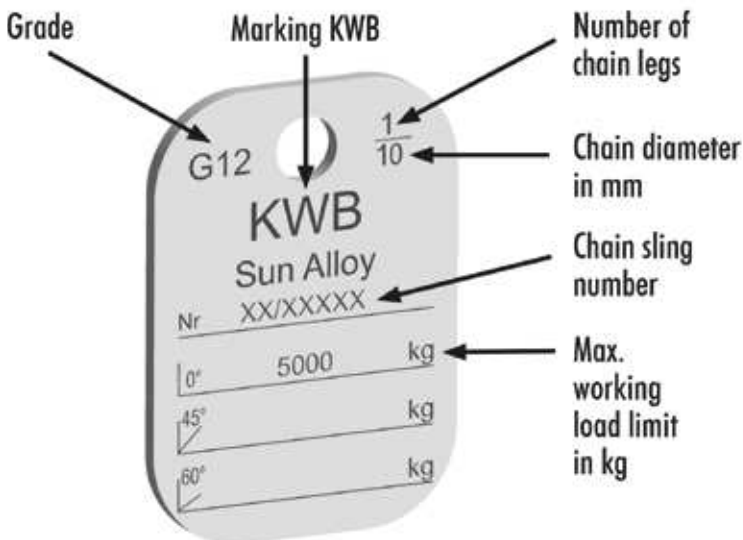
**Light:** Obvious weight reduction and consequently easier handling



e.g. with 2-leg chain slings 3 m length

Working Load Limit kg	Previous Chain Weight G 80 mm	Sun Alloy-Chain Weight kg
4,250	11	7.5
7,100	19.6	12.9
11,200	31.2	22.4

## Clear Identification



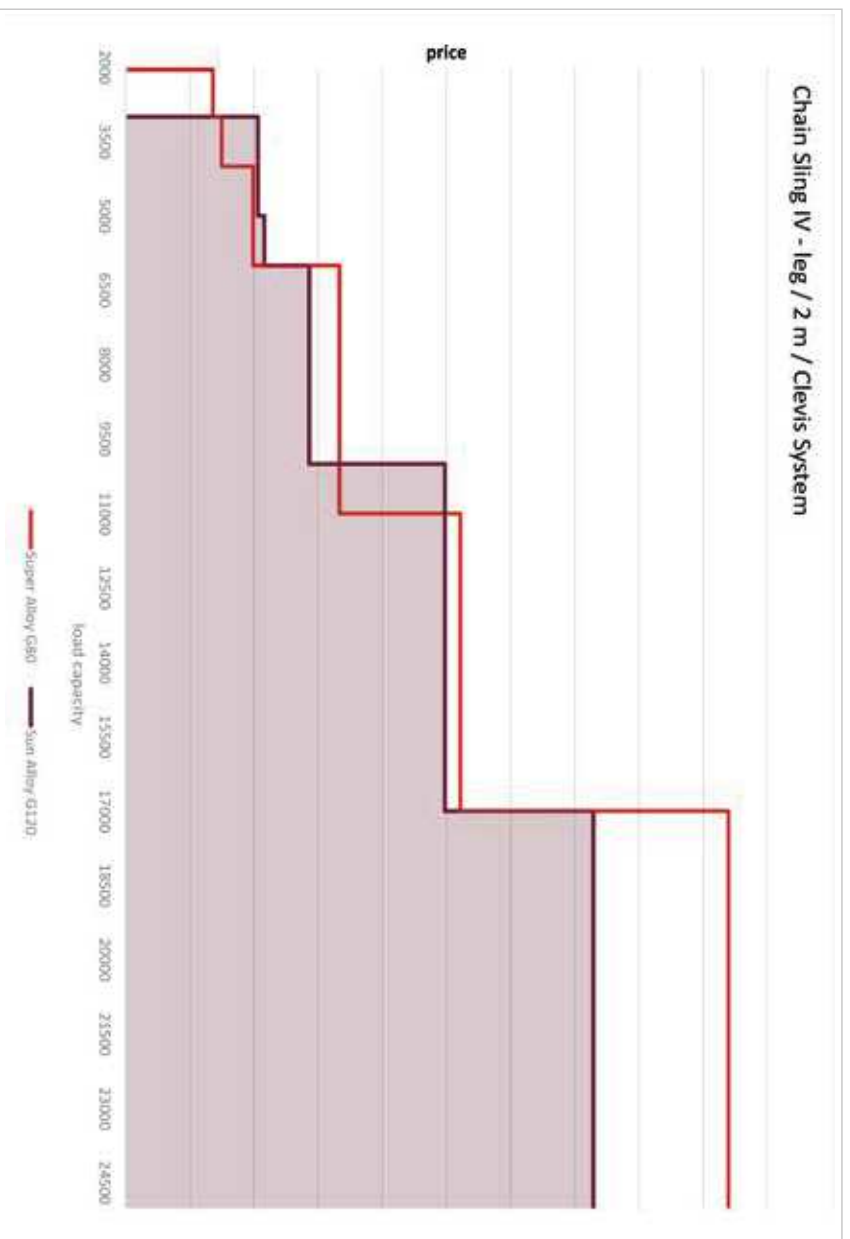
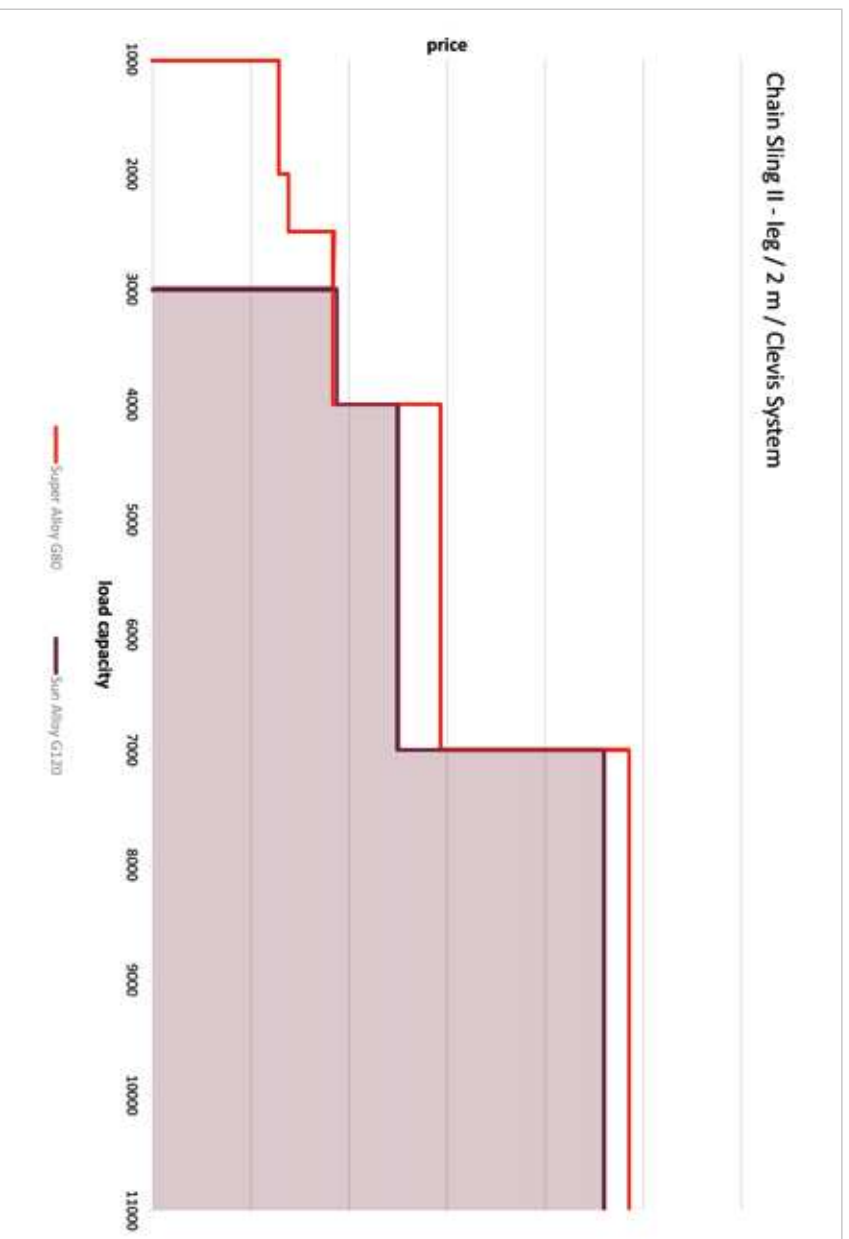
Sample of tag for ready made chain sling

## Certificate

A test certificate is issued for all our products which certifies all the specified characteristics.



## Economic: cheaper compared to G 80



## Sun Alloy G 120 – Characteristics




<b>Chain Quality:</b>	<b>Sun Alloy Chain</b>	<b>SUN</b>	Corresponds with EN 818-2 & machinery directive 2006/42/EC
<b>Stress at Load Capacity Limit:</b>			300 N/mm <sup>2</sup>
<b>Test Stress:</b>			750 N/mm <sup>2</sup> – corresponds to 2.5 times the load capacity
<b>Breaking Stress:</b>			1.200 N/mm <sup>2</sup> – corresponds to 4 times the load capacity
<b>Breaking Elongation:</b>			min. 20 %
<b>Bending acc. to EN 818-2:</b>			0.8 x nominal diameter
<b>Permissible Working Temperature:</b>	<b>Sun Alloy Chain</b>	<b>SUN</b>	max. 200 °C
	<b>Components</b>		max. 200 °C
<b>Grade marking:</b>	<b>Sun Alloy Chain</b>	<b>SUN</b>	12
	<b>Components</b>		12
<b>Surface:</b>	<b>Sun Alloy Chain</b>	<b>SUN</b>	Bordeaux Violet painted
	<b>Components</b>		Bordeaux Violet powder coated

**Working Load Tag:**



**All the required data is shown on the working load tag.**

Note: Working load tags should only be assembled acc. EN 818-4 and by competent persons. Working load tags should be used, solely when the respective chain & KWB components are assembled in the chain sling. Should alternative Working load limits arise in the chain sling through the use of special parts, the tags are impermissible. Disregard of these instructions can lead to material damage and personal injury. KWB will not assume liability.

<b>Temperature</b>	-40° to 200 °C		
<b>Load Factor Sun Alloy</b>	1		
<b>Asymmetric Load Distribution</b>	In this case the working load limit must be reduced by at least one chain leg, for example a 3-leg or 4-leg sling is to be classified as a 2-leg chain sling. In case of doubt, it must be supposed that only one of the chain legs carries the entire load.		
<b>Edge Loads</b>	R = larger than 2x chain Ø 	R = larger than chain Ø 	R = chain Ø or smaller 
<b>Load Factor</b>	1	0.7	0.5
<b>Impact Load</b>	slight impact	medium impact	strong impact
<b>Load Factor</b>	1	0.7	impermissible

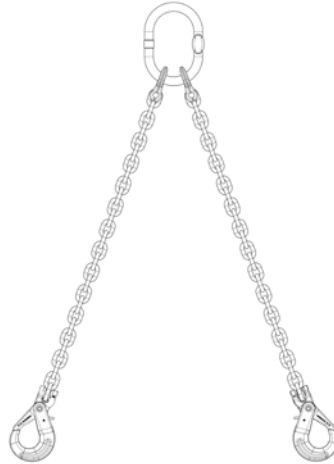
## Sling Examples



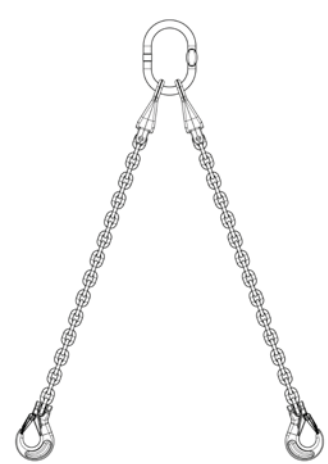
I GTKR/SUN - HKS/SUN



I GTVK/SUN - HKS/SUN



II GTKR/SUN - HKS/SUN



II GTVK/SUN - HKS/SUN



IV GTKR/SUN - HKS/SUN






IV GTVK/SUN - HKS/SUN




### Example of Order Text:




Chain Sun Alloy SUN 10 mm, 2 legs with Special Clevis Sub-Assembly GTKR/SUN and Clevis Sling Hook HKS/SUN, length 2,000 mm.

**SUN 10 II GTKR/SUN - HKS/SUN 2000**

Chain      Nominal diameter      Number of legs      Special Clevis Sub-Assembly      Hook      Length

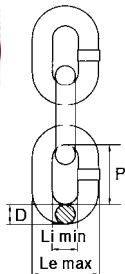
Sub-Assemblies					
		1-leg		2-leg	
					
Sun Alloy Chain Ø SUN		Special Clevis Sub-Assembly GTVK/SUN 1		Special Clevis Sub-Assembly GTVK/SUN 2	
mm	inch	Code		Code	
7	9/32	GTVK/SUN 1-7		GTVK/SUN 2-7	
8	5/16	GTVK/SUN 1-8		GTVK/SUN 2-8	
10	3/8	GTVK/SUN 1-10		GTVK/SUN 2-10	
13	1/2	GTVK/SUN 1-13		GTVK/SUN 2-13	
16	5/8	GTVK/SUN 1-16		GTVK/SUN 2-16	
Page 11		Page 12		Page 13	

Sub-Assemblies					
		3 & 4-leg			
					
Sun Alloy Chain Ø SUN		Special Clevis Sub-Assembly GTVK/SUN 4		Special Clevis Sub-Assembly GTKR/SUN 4	
mm	inch	Code		Code	
7	9/32	GTVK/SUN 4-7		GTKR/SUN 4-7	
8	5/16	GTVK/SUN 4-8		GTKR/SUN 4-8	
10	3/8	GTVK/SUN 4-10		GTKR/SUN 4-10	
13	1/2	GTVK/SUN 4-13		GTKR/SUN 4-13	
16	5/8	GTVK/SUN 4-16		GTKR/SUN 4-16	
Page 11		Page 12		Page 13	

Sling Hooks					
					
Sun Alloy Chain Ø SUN		Clevis Self Locking Hook HKSB/SUN		Clevis Sling Hook with forged Safety Latch HKS/SUN	
mm	inch	Code		Code	
7	9/32	HKSB/SUN 7		HKS/SUN 7	
8	5/16	HKSB/SUN 8		HKS/SUN 8	
10	3/8	HKSB/SUN 10		HKS/SUN 10	
13	1/2	HKSB/SUN 13		HKS/SUN 13	
16	5/8	HKSB/SUN 16		HKS/SUN 16	
Page 11		Page 13		Page 13	

# Sun Alloy Chain

## Chain Sun Alloy SUN – Measurements, Load Values, Weights



Chain		Pitch	Li/min.	Le/max.	Weight	Working Load limit	Breaking Load
D		P					
mm	inch	mm	mm	mm	kg/m	kg	kN
7	9/32	21	9.8	26.0	1.33	2,360	92.6
8	5/16	24	11.0	30.5	1.59	3,000	118
10	3/8	30	14.3	38.0	2.66	5,000	196
13	1/2	39	18.0	48.5	4.43	8,000	319
16	5/8	48	21.5	59.0	6.73	12,200	479

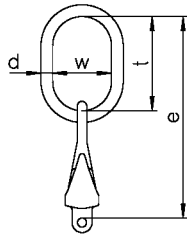
## Maximum Working Load Limit for Sun Alloy Chains

Safety factor	1-leg Chains		2-leg Chains		3- and 4-leg Chains			
4								
	-	-	up to 45°	45°-60°	up to 45°	45°-60°		
Load Factor	1	0.8	1.4	1	1.12	0.8	2.1	1.5
Ø	Load Capacity [kg]							
7	2,360	1,900	3,350	2,360	2,650	1,900	5,000	3,550
8	3,000	2,360	4,250	3,000	3,350	2,360	6,300	4,500
10	5,000	4,000	7,100	5,000	5,600	4,000	10,600	7,500
13	8,000	6,300	11,200	8,000	9,000	6,300	17,000	11,800
16	12,200	9,700	17,000	12,200	13,600	9,700	25,600	18,300

If the chain slings are used in more demanding conditions (e.g. high temperature, asymmetric load distribution, edge loads, impacts) the maximum load capacities in the table must be reduced. Please use the load factors on page 8 and refer to the specification in the user information.

## Sub-Assemblies

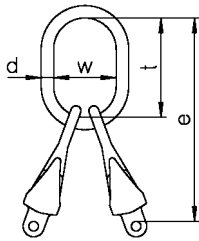
### 1 Special Clevis Sub-Assembly GTVK/SUN



For 1-leg slings with shortening element.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit	
⊥				d	t	w	e		kg	kg
mm	inch		mm				kg	kg		
7	9/32	GTKV/SUN 1-7		4	14	120	70	244	1.22	2,360
8	5/16	GTKV/SUN 1-8		5	17	140	80	264	1.48	3,000
10	3/8	GTKV/SUN 1-10		6	19	160	95	318	2.63	5,000
13	1/2	GTKV/SUN 1-13		10	27	190	110	391	6.11	8,000
16	5/8	GTKV/SUN 1-16		12	30	190	110	423	8.90	12,200

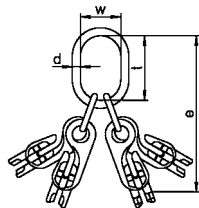
### 2 Special Clevis Sub-Assembly GTVK/SUN



For 2-leg slings with shortening element.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit B		
∧				d	t	w	e		kg	up to 45°	45°-60°
mm	inch		mm				kg	kg		kg	
7	9/32	GTKV/SUN 2-7		6	19	160	95	284	2.62	3,350	2,360
8	5/16	GTKV/SUN 2-8		6	19	160	95	284	2.64	4,250	3,000
10	3/8	GTKV/SUN 2-10		10	23	170	105	328	4.83	7,100	5,000
13	1/2	GTKV/SUN 2-13		10	30	190	110	391	10.54	11,200	8,000
16	5/8	GTKV/SUN 2-16		12	38	275	150	508	18.33	17,000	12,200

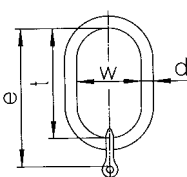
### 4 Special Clevis Sub-Assembly GTVK/SUN



For 3 and 4-leg slings with shortening element.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit B		
∧				d	t	w	e		kg	up to 45°	45°-60°
mm	inch		mm				kg	kg		kg	
7	9/32	GTKV/SUN 4-7		10	27	190	110	368	6.35	5,000	3,550
8	5/16	GTKV/SUN 4-8		10	27	190	110	368	6.39	6,300	4,500
10	3/8	GTKV/SUN 4-10		12	30	190	110	433	10.94	10,600	7,500
13	1/2	GTKV/SUN 4-13		12	38	275	150	616	25.35	17,000	11,800
16	5/8	GTKV/SUN 4-16		12	38	275	150	658	37.17	25,600	18,300

### 1 Special Clevis Sub-Assembly GTKR/SUN

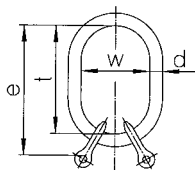


For 1-leg slings.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit	
⊥				d	t	w	e		kg	kg
mm	inch		mm				kg	kg		
7	9/32	GTKR/SUN 1-7		4	14	120	70	163	0.66	2,360
8	5/16	GTKR/SUN 1-8		5	17	140	80	183	0.92	3,000
10	3/8	GTKR/SUN 1-10		6	19	160	95	211	1.55	5,000
13	1/2	GTKR/SUN 1-13		10	27	190	110	254	3.34	8,000
16	5/8	GTKR/SUN 1-16		12	30	190	110	268	4.92	12,200



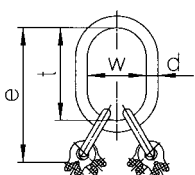
## 2 Special Clevis Sub-Assembly GTKR/SUN



For 2-leg slings.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit β	
mm	inch			d	t	w	e		up to 45°	45°-60°
7	9/32	GTKR/SUN 2-7	6	19	160	95	203	1.50	3,350	2,360
8	5/16	GTKR/SUN 2-8	6	19	160	95	203	1.52	4,250	3,000
10	3/8	GTKR/SUN 2-10	10	23	170	105	221	2.67	7,100	5,000
13	1/2	GTKR/SUN 2-13	10	30	190	110	257	5.00	11,200	8,000
16	5/8	GTKR/SUN 2-16	12	38	275	150	353	10.37	17,000	12,200

## 4 Special Clevis Sub-Assembly GTKR/SUN

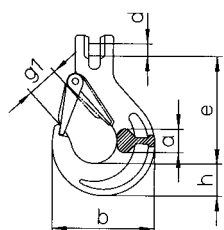


For 3 and 4-leg slings.

Chain Ø		Code	Can be used to single hook acc. to DIN15401 no.	Dimensions				Weight	Working Load Limit β	
mm	inch			d	t	w	e		up to 45°	45°-60°
7	9/32	GTKR/SUN 4-7	10	27	190	110	287	4.11	5,000	3,550
8	5/16	GTKR/SUN 4-8	10	27	190	110	287	4.15	6,300	4,500
10	3/8	GTKR/SUN 4-10	12	30	190	110	326	6.62	10,600	7,500
13	1/2	GTKR/SUN 4-13	12	38	275	150	479	14.27	17,000	11,800
16	5/8	GTKR/SUN 4-16	12	38	275	150	503	21.25	25,600	18,300

## Sling Hooks

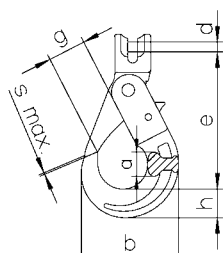
### Clevis Sling Hook with Forged Safety Latch HKS/SUN



General purpose hook.

Chain		Code	Dimensions						Weight	Working Load Limit
mm	inch		e	h	a	b	d	g1		
7	9/32	HKS/SUN 7	93	27	21	89	9,5	26	0.67	2,360
8	5/16	HKS/SUN 8	92	27	21	89	11	26	0.67	3,000
10	3/8	HKS/SUN 10	108	33	25	110	14	31	1.23	5,000
13	1/2	HKS/SUN 13	130	41	34	132	17,5	38	2.42	8,000
16	5/8	HKS/SUN 16	158	49	37	160	21	45	4.22	12,200

### Clevis Self Locking Hook HKSB/SUN

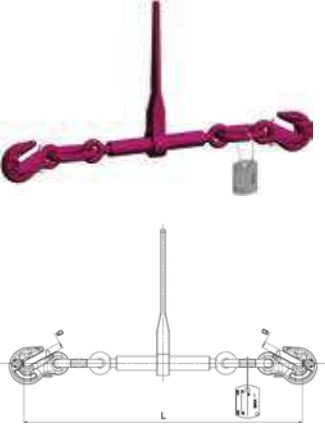


Closes and locks automatically.

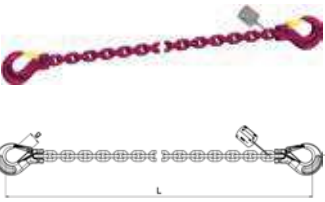
Chain		Code	Dimensions							Weight	Working Load Limit
mm	inch		e	h	a	b	d	g	s max.		
7	9/32	HKSB/SUN 7	125	26	21	92	9,5	32	1	0.94	2,360
8	5/16	HKSB/SUN 8	124	26	21	92	11	32	1	0.95	3,000
10	3/8	HKSB/SUN 10	143	31	26	115	14	45	1	1.91	5,000
13	1/2	HKSB/SUN 13	183	42	35	145	17,5	54	2	3.66	8,000
16	5/8	HKSB/SUN 16	218	51	41	169	21	60	2	6.80	12,200

## SUN Alloy lashing

### Load Binder RLSP/SUN


	Code	Marking/ Stamping	LC Lashing capacity [kN]	STF Standard tension force [daN]	Length L closed [mm]	Length L opened [mm]	Tension distance [mm]	Lever length l [mm]	Jaw opening g [mm]	Weight [kg/pc.]
	RLSP/SUN 8	Type A	60	1.900	473	615	140	237	10	4,30
RLSP/SUN 10	Type B	100	3.000	504	657	140	355	13	6,20	
RLSP/SUN 13	Type C	160	2.500	765	1.054	290	359	16	13,30	

### Lashing chain ZK/SUN


	Code	LC Lashing capacity [kN]	Length L [mm]	Jaw opening g [mm]	Weight [kg/pc.]
	ZK/SUN 8	60	3.500	26	6,90
ZK/SUN 10	100	3.500	31	11,10	
ZK/SUN 13	160	3.500	38	19,10	

## Spare Parts


### Forged Safety Latch Kits for Clevis Sling Hooks

	Dimension		Code	Spare Part for
	mm	inch		
	7+8	9/32+5/16	FG/SUN 7/8	HKS/SUN 7, HKS/SUN 8
	10	3/8	FG/SUN 10	HKS/SUN 10
	13	1/2	FG/SUN 13	HKS/SUN 13
	16	5/8	FG/SUN 16	HKS/SUN 16


### Pin Kit for Clevis Self Locking Hook & Special Clevis Sub Assembly

	Dimension		Code	Accessory for use
	mm	inch		
	7	9/32	KBG/SUN 7	HKS/SUN 7, HKS/SUN 7, GTVK/SUN ...-7, GTKR/SUN ...-7
	8	5/16	KBG/SUN 8	HKS/SUN 8, HKS/SUN 8, GTVK/SUN ...-8, GTKR/SUN ...-8
	10	3/8	KBG/SUN 10	HKS/SUN 10, HKS/SUN 10, GTVK/SUN ...-10, GTKR/SUN ...-10
	13	1/2	KBG/SUN 13	HKS/SUN 13, HKS/SUN 13, GTVK/SUN ...-13, GTKR/SUN ...-13
	16	5/8	KBG/SUN 16	HKS/SUN 16, HKS/SUN 16, GTVK/SUN ...-16, GTKR/SUN ...-16


### Trigger Kit for Clevis Self Locking Hooks

	Dimension		Code	Spare Part for
	mm	inch		
	7+8	9/32+5/16	HBG/SUN 7/8	HKS/SUN 7 + HKS/SUN 8
	10	3/8	HBG/SUN 10	HKS/SUN 10
	13	1/2	HBG/SUN 13	HKS/SUN 13
	16	5/8	HBG/SUN 16	HKS/SUN 16

### Working Load Tag with Wire Rope Binder and Fastener

	Code	
	ID-Set	1/2/3/4-legs

### Safety Catch Kit for Eye Grab Hook with Safety Pin PGS/SUN

	Chain		Code	Spare Part for
	mm	inch		
	7+8	9/32+5/16	PGS/SUN 7/8	PS/SUN 7/8
	10	3/8	PGS/SUN 10	PS/SUN 10
	13	1/2	PGS/SUN 13	PS/SUN 13

## User Information G12, G10, G8

### General

KWB sling chains and accessories can be used for general lifting purposes acc. EN 818-4. Chains should only be used by trained personnel, who have read and understood the instructions for use. KWB sling chains and components should not be altered e.g. twisting, grinding, removing of parts and drilling. The surface of the chains and accessories should not be subjected to acids or caustic solutions. If necessary please contact the KWB technical department.

Only use the KWB chains and accessories up to the indicated temperature. Should the temperature be exceeded the reduction of the load capacity must be taken into consideration (see pages 8, 19, 38). In the event of temperatures outside this range, do not use the chain slings.

Do not use KWB lifting chains and accessories in acids, alkalines or chemicals or expose them to their fumes. Important: Certain production procedures release acids and or fumes. If necessary please contact KWB. In especially dangerous conditions (e.g. offshore applications, lifting of persons or potentially dangerous loads i.e. molten metals, corrosive materials, nuclear substances) the working load limit must be adjusted according to the risk level by an expert.

### Inspection & Maintenance

Before using any lifting equipment for the first time please check the following:

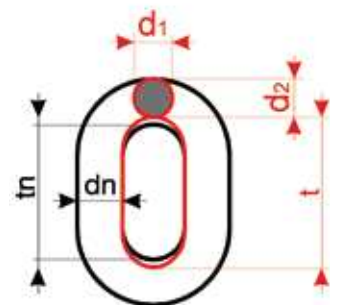
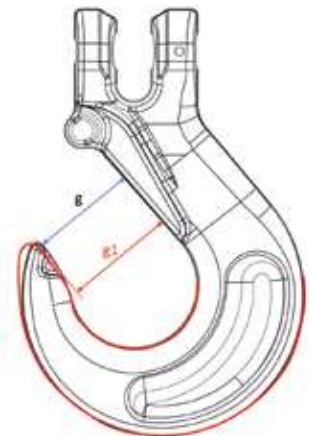
- The sling chain corresponds exactly to the order.
- The test certificate or certificate of conformity have been supplied.
- Marking & working load limit of the chain correspond with the information on the test certificate or certificate of conformity.
- All the data regarding the sling chain has been entered in a register for lifting equipment, if required.
- Before use check the chains for visible damage or signs of wear. In case of damage do not use the chains. In case of doubt likewise.
- Sling chains depending on use should be inspected by an expert once a year i.e. after unusual events that could cause impairment of the chain sling.
- Every two years it is recommended that the chain be subjected to a load test 1.5 times the working load limit, followed by a visual inspection.

When one or more of the following criteria is fulfilled, the chain must be taken out of use:

- Broken link.
- Missing working load tag on the chain sling or illegible marking on the tag.
- Elongation of the chain. The chain must be discarded if  $t > 1.05 t_n$  (see catalogue).
- Wear: Wear is determined as the mean value of two measurements of diameters  $d_1$  and  $d_2$  carried out at a right angle (see drawing). The chain must be discarded.

$$dm = \frac{d_1 + d_2}{2} \leq 0.9 dn$$

- Cuts, notches, grooves, surface cracks, excessive corrosion, discoloration due to heat, signs of additional welding, twisted links or other faults.
- Missing i.e. non-functioning safety device or signs of widening of the hook i.e. noticeable enlargement of the opening or other forms of deformation.



Some of the imagery featured in the catalog are artistic depictions and do not show the actual application of the products.

Designation	Dimensions	Max. Change Permitted
Chain	D	-10 %
	P	+5 %
Rings	d	-10 %
	t	+10 %
Hooks *)	e	+5 %
	h, d2	-10 %
	g, g1	+10 %
V, RSK	Both halves must be free to move	No change permitted
	e	+5 %
	c	-10 %
Connecting link VU	Bolts must be free to move	No change permitted
	e	+5 %
	d and M	-10 %
Clevis Bolts and Bolts for Connecting Links + Webbing Coupling Links	d	-10 %
HSB, HKSB, WSB	Tip opening	2 x s max.

\*) HKSB/SUN, HKS/SUN  
 VK/S, P/S, PS/S, PK/S, HKS/S, VHKS/S, HKSB/S, GHK/S, HS/S, HSB/S, WSB/S, GH/S, BH/S,  
 HS, GH, P, HKS, PK, VHKS, VKL, WSB, HKSB, HSB

KWB chain slings should only be repaired by qualified personnel.  
 Records of the inspections and repairs must be kept on file for the entire service life of the chain sling.  
 KWB chain slings should be stored in dry condition & protected from corrosion (preferably oiled).

## Correct Use of Chain Slings

KWB chain slings should only be used with the angle of inclination indicated on the working load tag.  
 Avoid angles of inclination under 15°. Never use the chain slings with an angle of inclination exceeding 60°.  
 If KWB chains are guided over edges protective padding should be used to avoid damage or the load capacity reduced (see pages 8, 19, 38). But if chains looped at a beam or other round shaped loads the diameter should be minimum thrice the chain pitch. For smaller diameters the WLL of the chain must be reduced by 50 %.

In cases of possible impact load the working load limit of the KWB chains should be scaled down acc. to the table on pages 8, 19, 38. Impact/shock can be defined as follows:

- Slight impact: arises e.g. when the lifting or lowering movement is accelerated.
- Medium impact: occurs e.g. when the chain slips during adjustment to the shape of the load.
- Strong impact: arises e.g. when the load falls into the unloaded chain.

KWB lifting chains and components are rated according to regulations for 20,000 load cycles. At high dynamic forces there may nevertheless be a risk of damage to the chain and accessories. According to the employer's liability insurance association Metall Nord Süd this risk may be prevented if the stress at load capacity limit is reduced by using a larger chain dimension.

The load capacities of KWB chain slings are defined with the assumption that the load of the individual chain legs is distributed symmetrically. The load can still be considered symmetrical when all the following conditions are complied with:

- The load is smaller than 80 % of the indicated working load limit.
- The angle of inclination of all chain legs is not less than 15°.
- The angle of inclination of all chain legs are equal or deviate max. 15° from each other.
- In the case of 3- and 4-leg chain slings, the corresponding angles in the sling level deviate max. 15° from each other.

Should these parameters not be met, then the load is considered asymmetric and an expert must be called to evaluate the lifting process. In case of doubt the load capacity must be reduced to that of a single-leg chain sling. Individual chain legs which are not in use must be hung back into the master link and the working load limit reduced accordingly.