

## **Bucket Elevator Chains** and Components

**Conveying – Moving** 





## Content

## Bucket Elevator Chains and Components

Customer satisfaction is our primary operating principle. Our customers benefit from our metallurgical expertise, our many years of experience in a wide variety of industries, and our unfailing commitment to the highest quality standards.

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## Welcome to the pewag group

We are an internationally operating group of companies. Our track record goes back to the year 1479.

## Mission Statement pewag group's Mission Statement expresses the goals of our actions as follows:

With our joy for innovation, we strive to make all products of the pewag group the best in the respective markets. The high quality of our products and services as well as our employees' passionate dedication are the foundation to our pursuit of outstanding services and complete customer satisfaction.

## Principles of pewag group

### Leading in Quality

The values of our product brands are demonstrated by our first-class quality and innovations and are communicated consistently and coherently.

We anticipate market demands and changes in the environment and adapt our strategies, organizations and actions accordingly to satisfy our customers' needs through providing an optimal price-performance ratio: timely delivery, efficient and obliging service.

### Leading in Responsibility

We commit ourselves to careful treatment of the environment, by reducing the use of energy and raw materials, ensuring the longevity of our products and making them recyclable.

We value an open, honest and team-oriented work-style, which is based on transparent communication honoring ideas, opinions and experience of our employees as valuable inputs for our decision making process.

We strive for stable and fair partnerships with our employees, customers, suppliers and other business partners and take social aspects into consideration when making business decisions.

### Leading in Technology

We secure our technological strength by striving for product quality, constant improvements and innovations of products, as well as manufacturing processes.

We strive to be the best in product technology. This ensures that our customers always have optimal solutions available and that we expand and protect our market position.

### Leading in Economics

In all our processes we use due diligent business practices and efficiency and strive to improve these continuously.

In the long-term, we will continuously increase our economic performance to raise corporate value, achieve sustained growth and thus secure a successful future of the organization.



We are a modern group of companies which looks back to a tradition and experience of more than 500 years. Since our founding years, a lot has changed, but the values that made our success possible from the beginning remain.

## pewag group – Innovation. Quality. Partnership.

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# History of the pewag group

## Advantage through tradition

The history of pewag group goes back to the 15<sup>th</sup> century and therefore makes us one of the oldest chain manufacturer worldwide. With our experience we are ready for the future.

#### Timetable of important events

- 1479 First documented references of a forging plant in Brückl
- 1787 Foundation of a chain forge in Kapfenberg
- 1803 Foundation of a chain forge in Graz
- 1836 Establishment of an iron casting plant in Brückl
- 1912 Production of the first pewag snow chain
- **1923** Merger of plants in Graz and Kapfenberg Creation of the name "pewag"
- 1972 Foundation of a sales company in Germany
- **1975** Foundation of a sales company in the USA
- **1993** Foundation of pewag austria GmbH
- 1994 Foundation of the first subsidiary in Czech Republic
- **1999** Acquisition of the Weissenfels Group
- **2003** Separation from the Weissenfels Group
- 2005 Reorganization into 2 groups: Schneeketten Beteiligungs AG Group – Snow Chains pewag austria GmbH Group – Technical Chains
- 2009 Acquisition of Chaineries Limousines S.A.S.
- 2012 Foundation of the first manufacturing company in the USA
- 2013/Foundation of various international sales
- 2014 companies



Lithography forging plant Brückl 1855



Anchor chain forge 1878



Chain forgers 1956

## Our main goal is customer satisfaction.

management

Quality

In this instance, quality means that only those products and services are developed, manufactured and delivered which completely and without compromise satisfy the customer.

The pewag group's quality policy, is underlined by the following basic principle: "we supply high-end products and services to our customers that conform to the technical standards and requirements", can be summarised in the subsequent four points.

#### **Market-oriented Quality**

In order to maintain and to widen the competitive position of the pewag group, the quality of finished goods and services must be consistent with the specifications of the customer and also with their expectations of one of the leading companies. No product should ever pose a danger to people or the environment.

#### **Economic Quality**

As a profit-oriented company, quality is achieved by taking into consideration the material, personnel and financial resources; this means that we establish an appropriate best price/performance ratio for the customer within the acknowledged framework.

#### **Quality Responsibility**

Stringent demands are placed on all employees to ensure high standards of quality. No matter what hierarchical level, all managers are in charge of managing quality. Every employee within the pewag group should be educated, motivated and instructed by the management team. It is important for promoting high quality awareness that the education and training of employees is at the forefront, as each employee is responsible for the quality of his/her own work.

For each of our employees, the statement "QUALITY STARTS WITH ME" must be true!

#### **Process-oriented Quality**

The close interaction between sales, product development, production and customer service is regulated within the individual companies by fixed processes and activities, as well as responsibilities with the aim to reach and maintain the defined quality standards.



## Business areas

## Working with pewag products

The pewag group has a substantial and diverse spectrum of products and services.

Our range of products varies from traction chains for tires (snow chains for passenger cars, trucks and special-purpose vehicles, tire protection chains for mining vehicles) over different industrial chains to products for the do-it-yourself sector (light chains, belts, etc.)



Segment A Snow and forestry chains

Segment B Hoist and conveyor chains



Segment C Do-it-yourself



Segment D Engineering



Segment F Lifting and lashing chains and accessories



Segment G Tire protection chains

# Environment – we take responsibility

## Ecological awareness in all areas



Our company's manufacturing location in Kapfenberg, Austria, has been used for iron and steel production for over 270 years. A second facility located in Brückl, Austria, was first documented in records dating back to 1479. Based on this long manufacturing tradition,

we take serious responsibility for our products, employees and the environment at all our international locations. Hence, one of our major concerns is to improve energy efficiency and, in doing so, to minimise energy consumption over a long period of time with the development of new production technologies. An important goal is to increase energy efficiency and consequently lower energy demand. Consequently, we develop our products to achieve longer product life-cycles and lower weight but simultaneously, increasing their working load capacities and the safety for our customers. We are committed to upholding all relevant energy and environmental standards by setting clearly defined goals and continually improving our performance. To achieve this goal, we use modern manufacturing technologies. An important step is to provide the necessary resources and to include our employees in the process. We are convinced that well-informed and motivated employees can actively participate in environmental conservation.

Wherever we are unable to avoid an environmental impact, we have set ourselves the goal to continually reduce our energy consumption, waste and environmentally harmful emissions. When purchasing new equipment, we strive to find the best and most efficient technical solution possible. It is important for us to promote the purchase of energy efficient products and services.

Our process-oriented management system regulates the documentation concerning all environmental relevant procedures. It also encompasses preventative measures for possible failures, as well as behavioural instructions for regular and/or extraordinary operational procedures. By systematically monitoring and assessing our environmental activities, we are quickly able to resolve deviances and to take corrective action. This process extends throughout the whole organisation to optimise all business processes. We strive to engage in an open dialogue with our customers, neighbours and authorities to inform them of our energy and environmental

engagements.

Through specific communication we want to inform our customers about the environmental aspects of our products – specifically inform them about the longevity of our products. Through meaningful communication, we strive to motivate our suppliers and customers to think – in turn – about their environmental footprint and to put into practice similar environmental standards in their businesses.

## Customer proximity

## International presence

In the ambitious five-hundred year history pewag has evolved from a small and modest company to a global organization with several subgroups.

With 12 production and 39 sales and other locations on all five continents, pewag documented its claim as one of the world's leading chain manufacturers.

In addition to the numerous locations pewag as an international company relies on his capillary, strong, and professional partner network. These collaborations provide optimal customer service in currently more than 100 countries around the world.

## Production and sales locations

Europe	
Austria	pewag austria GmbH, Graz pewag austria GmbH, Kapfenberg pewag Schneeketten GmbH & Co KG, Graz pewag Schneeketten GmbH & Co KG, Brückl pewag engineering GmbH, Kapfenberg pewag austria Vertriebsgesellschaft mbH, Graz pewag Ketten GmbH, Klagenfurt pewag International GmbH, Klagenfurt
Germany	pewag Deutschland GmbH, Unna pewag Schneeketten Deutschland GmbH, Unna
France	pewag france SAS, Echirolles / Grenoble Chaineries Limousines SAS, Bellac
Italy	pewag italia srl, Andrian
Croatia	pewag d.o.o, Kroatien, Zagreb
The Netherlands	pewag nederland BV, Hillegom APEX International BV, Hillegom APEX Automotive BV, Hillegom
Poland	pewag polska Sp z.o.o., Buczkowice
Portugal	pewag Portugal – Comercio de Produtos e Eqibamentos Industrials, Lda, Santo Antão do Tojal
Romania	pewag Romania SRL, Sibiu County
Russia	OOO "PEWAG", Moscow
Sweden	pewag sweden AB, Emmaboda
Slovakia	pewag Slovakia sro, Nitra
Czech Republic	pewag Czech sro, Vamberk pewag Snow Chains sro, Vamberk pewag sro, Vamberk pewag Czech sro, Česká Trebová peform Chrudim sro, Chrudim

#### Europe

Ukraine	TOV pewag Ukraine GmbH, Lviv
onnunio	

#### **North America**

USA	pewag Inc, Bolingbrook, Illinois pewag Inc, Rocklin, California pewag Traction Chain Inc, Pueblo, Colorado
Mexico	pewag Mexico SA de CV, Mexico

### South America

Brazil	pewag Brasil Comércio de Correntes Ltda., São Paulo
Colombia	pewag Columbia S.A.S, Medellin

### Africa

South Africa pewag chain south africa (pty) ltd., Rivonia

#### Australia

Australia pewag australia Pty Limited, Barrack Heights

### Asia

India pewag India Private Limited, Bangalore



pewag group presents itself on the internet. More ... www.pewag-group.com www.pewag.com

## pewag group – Innovation. Quality. Partnership.

## Bucket Elevator Chain Systems

## Overview







## pewag Bucket Elevator Chains

## pewag – high quality Bucket Elevator Chains

pewag conveyor chains are made from fine – grained, non – ageing special CrNi-, CrNiMo-, MnCr - alloyed steel. By ensuring optimum heat treatment pewag maintain high quality standards.

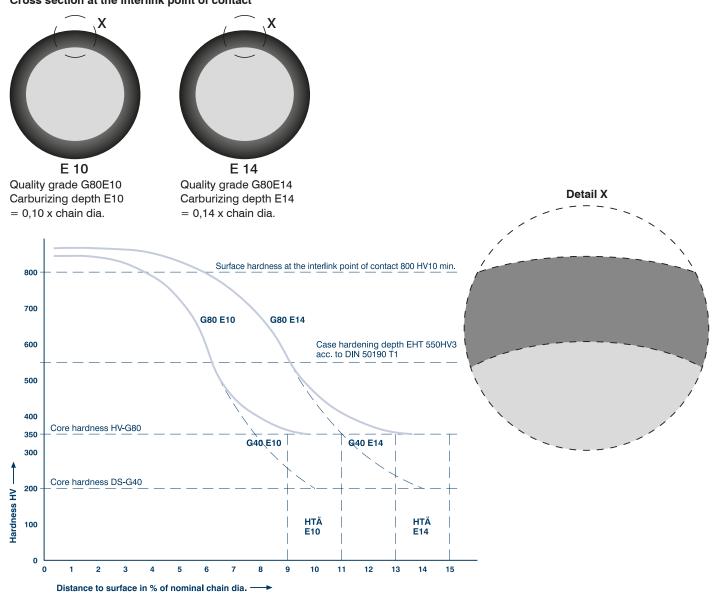
pewag conveyor chains have consistently high core quality which gives resistance to shock loadings and ensures maximum breaking loads and excellent fatigue strength can be achieved.

Case hardened conveyor chains can be used for operating temperatures of up to 200  $^\circ\text{C}$  (392 $^\circ\text{F})$  without loss of surface hardness.

#### Cross section at the interlink point of contact

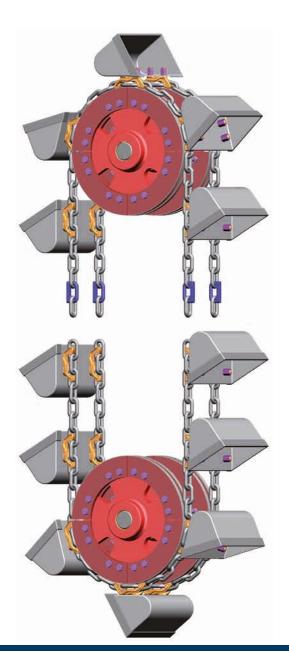
The chains are manufactured with very close production tolerances to ensure a smooth, parallel run over the sprockets. All round steel chains and components are matched regarding to strength and uniform hardness, to minimize the wear and provide the greatest possible wear life and maximum chain life, to guarantee a long lasting chain system.

Extensive range of pewag conveyor chains up to 38 mm, chain couplings, bucket attachments chain sprockets, chain wheels and buckets provide the optimum design for bucket elevators in the bulk industry.



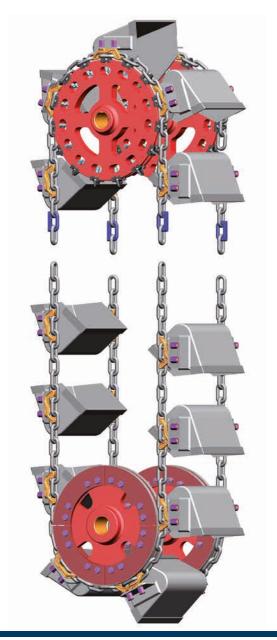


## **Bucket Elevators with BDD-S-system**



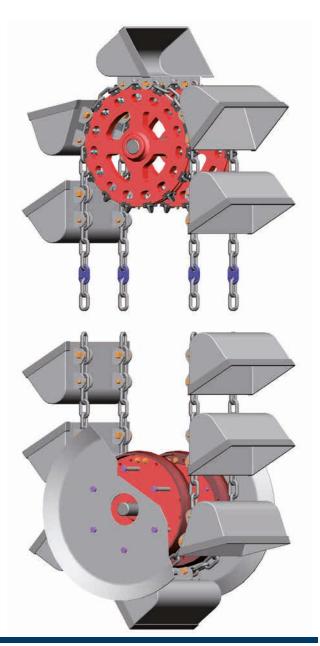
**Conventional bucket elevator** Mixed discharge Bucket back wall attachment

Chain system for heavy duty, high capacity- and gravity discharge with centre discharge bucket elevators to elevate a wide range of bulk materials, with highly wear resistant, long round steel chains, high chains speeds result in max. capacities with high capacity buckets, for chain sprockets with replaceable, adjustable individual teeth and plain segmented chain wheels, bucket attachment over 2-chain link pitches ensure optimised bucket support during filling and discharge, chains and buckets are assembled separately, bucket spacing can be changed, simple assembly and disassembly of the bucket attachment BDD-S.



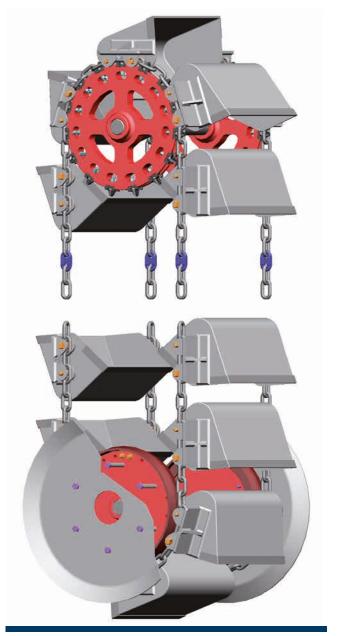
Centre discharge bucket elevator Gravity discharge Bucket side wall attachment

## **Bucket Elevators with BHV-system**



**Conventional bucket elevator** Mixed discharge Bucket back wall attachment

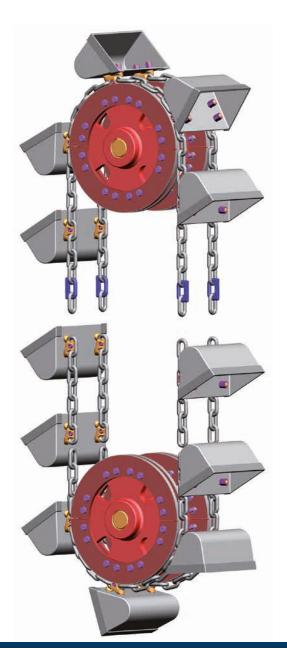
Chain system for heavy duty, high capacity- and gravity discharge with centre discharge bucket elevators to elevate a wide range of bulk materials, with highly wear resistant, long round steel chains, high chains speeds result in max. capacities with high capacity buckets, for chain sprockets with replaceable, adjustable individual teeth and tension free tail section, bucket attachment over 2-chain link pitches ensure optimised bucket support during filling and discharge, chains and buckets are assembled separately, bucket spacing can be changed, simple assembly and disassembly of the bucket attachment BHV.



**Centre discharge bucket elevator** Gravity discharge Bucket side wall attachment

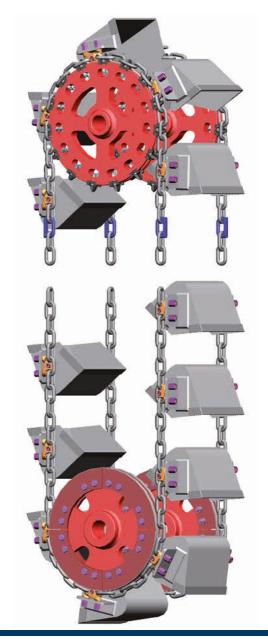


## **Bucket Elevators with BDS-S/BDS-system**



**Conventional bucket elevator** Mixed discharge Bucket back wall attachment

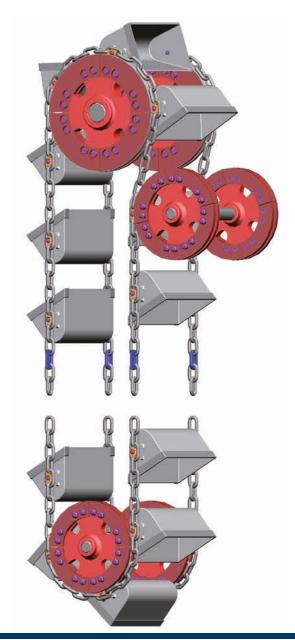
Chain system for heavy duty, high capacity- and gravity discharge with centre discharge bucket elevators to elevate a wide range of bulk materials, with highly wear resistant, long round steel chains, high chains speeds result in max. capacities with DIN – buckets, for chain sprockets with replaceable, adjustable individual teeth and plain segmented chain wheels, BDS stud dimensions are designed to match DIN standard shackles – existing chain end and shackle systems can be converted, chains and buckets are assembled separately, bucket spacing can be changed, simple assembly and disassembly of the bucket attachment BDS-S / BDS.



Centre discharge bucket elevator Gravity discharge Bucket side wall attachment

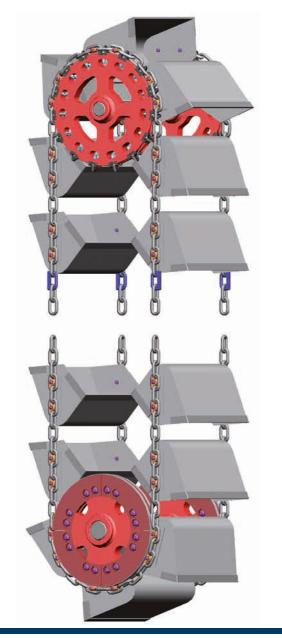
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## Bucket Elevators with SDS, SDD and DOB-system



**Positive discharge bucket elevator with snub wheels** Gravity discharge Bucket side wall attachment

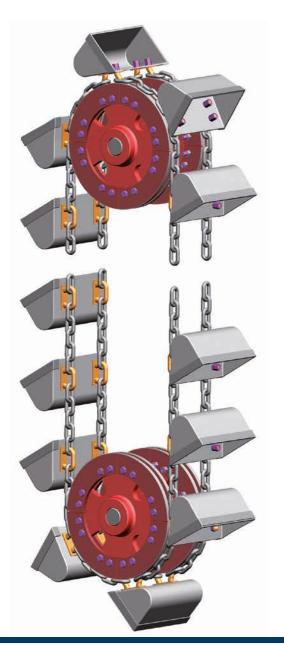
Chain systems for bucket elevators with gravity discharge, to elevate a wide range of bulk materials, which are difficult to discharge, with highly wear resistant, long round steel chains, for chain sprockets with replaceable, adjustable individual teeth and plain segmented chain wheels, existing chain end and shackle systems can be converted, chains and buckets are assembled separately, bucket spacing can be changed, depending on the bucket size the bucket attachment is selected by means of one-link attachments SDS, DOB-chain or two-link attachment SDD, simple assembly and disassembly of the bucket attachments.



**Centre discharge bucket elevator** Gravity discharge Bucket side wall attachment



## Bucket Elevators with chain ends and chain shackles



**Conventional bucket elevator** Mixed discharge Bucket back wall attachment

Traditional design for bucket elevators acc. to DIN – Standard 15251, chain ends and chain shackles are connected to form an endless chain loop, DIN recommends to use the next size up pitch chain shackle in comparison with the chain pitch, for drive and tail sections are used plain segmented chain wheels.



**Positive discharge bucket elevator with snub wheels** Gravity discharge Bucket side wall attachment

## Chains and Components

## Overview

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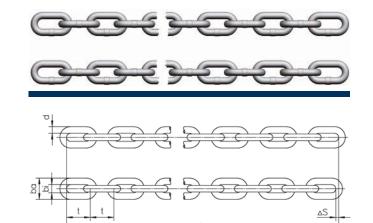




## **HV Round steel chains**

HV-chains made from CrNi- or CrNiMo-special alloyed steel are suitable for high capacity bucket elevators with high dynamic and static loads. Supplied as matched pairs – for an exact parallel run of the chain links.

Surface finish: polished and waxed



Chain d x t	Chain with bi min.	Chain with ba max.	Weight	Standard length Links	Standard length L*	G80 E10 Proof load	G80 E10 Breaking- load	G80 E14 Proof load	G80 E14 Breaking- load
[mm]	[mm]	[mm]	[kg/m]		[mm]	[kN]	[kN]	[kN]	[kN]
14 x 50	16,3	47	4,10	215	10.750	74	128	65	110
16 x 64	20	55	5,30	167	10.688	96	160	84	140
19 x 75	22	63	7,40	143	10.725	135	227	117	198
22 x 86	26	74	9,90	119	10.234	182	304	160	266
26 x 100	31	87	13,80	83	8.300	255	425	220	370
30 x 120	36	102	18,70	47	5.640	340	566	300	500
34 x 136	39	113	23,80	35	4.760	425	710	375	630
38 x 144	44	127	30,00	29	4.176	530	910	480	800

\* Further dimensions and qualities on request.

#### **Technical Datas**

Chain length L production tolerance = +0.3 / -0.15% = 0.45% total; this means that the difference between chain lengths of 10 m is max. 45 mm.

Chain length production tolerance  $\bigtriangleup$  S of matched chain lengths is 0,05% or max. 3 mm for two or multiple chain strand conveyors

#### Example of the order

16 pcs. HV-chains 22 x 86 G80E10 L = 119 links = 10.234 mm each, supplied as matched pairs

Quality grade	G80 E10	G80 E14
Breaking stress [N/mm <sup>2</sup> ]	400	350
Proof stress [N/mm <sup>2</sup> ]	240	210
Breaking elongation apprx. [%]	2	2
Surface hardness at interlink HV 10	800	800
Carburizing depth HTÄ d +/- 0,01d	0,10 <sup>1)</sup>	0,14 <sup>2)</sup>
Case hardening depth EHT 550 HV 3 d min.	0,06 3)	0,09 4)
Material incl. $d = 22 \text{ mm}$ : CrNi-alloyed Material from $d=26 \text{ mm}$ : CrNiMo-alloyed		

Proof/Breaking load tolerance -10% permissible depending on the batches.

Carburizing depth HTÄ after macroetching: <sup>1)</sup> 30 Ø u. 34 Ø - 0,09 d; 38 Ø - 0,08 d <sup>2)</sup> 30 Ø - 0,12 d; 34 Ø - 0,11 d; 38 Ø - 0,09 d

Case hardening depth EHT 550 HV 3: <sup>3)</sup> 30 Ø u. 34 Ø - 0,05 d; 38 Ø - 0,04 d <sup>4)</sup> 30 Ø - 0,08 d; 34 Ø - 0,07 d; 38 Ø - 0,05 d

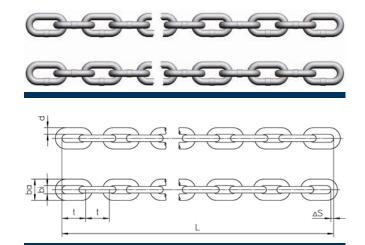
## pewag

## **DS Round steel chains**

DS-chains made from MnCr-special alloyed steel for bucket elevators with medium dynamic and static loads. Supplied as matched pairs – for an exact parallel run of the chain links.

DSU-chains for plain chain wheels DSZ-chains for toothed chain sprockets

Surface finish: polished and waxed



Chain d x t	Chain with bi min.	Chain with ba max.	Weight	Standard length Links	Standard length L*	G40 E10 Proof load	G40 E10 Breaking- load	G40 E14 Proof load	G40 E14 Breaking- load
[mm]	[mm]	[mm]	[kg/m]	Linko	[mm]	[kN]	[kN]	[kN]	[kN]
14 x 50	16,3	47	4,10	215	10.750	39	78	32	64
16 x 64	20	55	5,30	167	10.688	50	100	42	84
19 x 75	22	63	7,40	143	10.725	71	142	60	120
22 x 86	26	74	9,90	119	10.234	95	190	80	160
26 x 100	31	87	13,80	83	8.300	128	255	110	220
30 x 120	36	102	18,70	47	5.640	171	342	148	296
34 x 136	39	113	23,80	35	4.760	250	500	190	380

\* Further dimensions and qualities on request.

### **Technical Datas**

Chain length L production tolerance = +0.3 / -0.15% = 0.45% total; this means that the difference between chain lengths of 10 m is max. 45 mm.

Chain length production tolerance  $\bigtriangleup$  S of matched chain lengths is 0,05% or max. 3 mm for two or multiple chain strand conveyors

#### Example of the order

16 pcs. DSU-chains 22 x 86 G40E10 L = 119 links = 10.234 mm each, supplied as matched pairs

Quality grade	G40 E10	G40 E14
Breaking stress [N/mm <sup>2</sup> ]	250	210
Proof stress [N/mm <sup>2</sup> ]	125	105
Breaking elongation apprx. [%]	2	2
Surface hardness at interlink HV 10	800	800
Carburizing depth HTÄ d +/- 0,01d	0,10 <sup>1)</sup>	0,14 <sup>2)</sup>
Case hardening depth EHT 550 HV 3 d min.	0,063 <sup>3)</sup>	0,09 4)
Material: MnCr-alloyed		

Proof/Breaking load tolerance -10% permissible depending on the batches.

Carburizing depth HTÄ after macroetching:  $^{1)}$  30 ø u. 34 ø – 0,09 d  $^{2)}$  30 ø – 0,12 d; 34 ø – 0,11 d

Case hardening depth EHT 550 HV 3  $^{3)}$  30 ø u. 34 ø - 0,05 d  $^{4)}$  30 ø - 0,08 d; 34 ø - 0,07 d

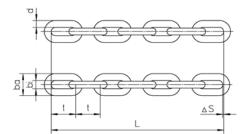
## Chain ends acc. to DIN 764 and DIN 766

Chain ends made from Mn-, MnCr- or CrNi-alloyed steel for DIN-bucket elevators with chain shackles. The chain ends are connected with the next size up pitch chain shackle for friction drive systems.

Surface finish: polished and waxed







#### Dimensions acc. to DIN 764

Chain d x t	Chain width bi min.	Chain width ba max.	Weight	G40 E10 Proof load	G40 E10 Breaking-	G80 E10 Proof load	G80 E10 Breaking-	Chain shackle	Chain shackle
[mm]	[mm]	[mm]	[kg/m]	[kN]	load [kN]	[kN]	load [kN]	plain <sup>1)</sup> [mm]	toothed <sup>1)</sup> [mm]
10 x 35	14	36	2,00	20	40	33	55	45	35
13 x 45	18	47	3,50	31,5	63	55,8	93	56	45
16 x 56	22	58	5,20	50	100	84	140	63	56
18 x 63	24	65	6,50	63	125	107	178	70	63
20 x 70	27	72	8,20	80	160	132	220	80	70
23 x 80	31	83	11,00	100	200	174	290	91	80
26 x 91	35	94	14,00	125	250	223	371	105	91
30 x 105	39	108	19,00	170	340	296	494	126	105
33 x 115	43	119	22,50	200	400	359	599	126	-
36 x 126	47	130	26,50	250	500	427	712	147	126

Further qualities on request.

<sup>1)</sup> Recommended chain shackle acc. to DIN for wheels.

### Dimensions acc. to DIN 766

Chain d x t	Chain width bi min.	Chain width ba max.	Weight	G40 E10 Proof-	G40 E10 Breaking-	G80 E10 Proof-	G80 E10 Breaking-	Chain shackle plain <sup>1)</sup>	Chain shackle
[mm]	[mm]	[mm]	[kg/m]	load [kN]	load [kN]	load [kN]	load [kN]	[mm]	toothed <sup>1)</sup> [mm]
10 x 28	12,0	36	2,30	20	40	33	55	45	-
13 x 36	15,6	47	3,80	31,5	63	55,8	93	56	-
16 x 45	19,2	58	5,80	50	100	84	140	63	-
18 x 50	21,6	65	7,30	63	125	107	178	70	-
20 x 56	24,0	72	9,00	80	160	132	220	80	-
23 x 64	27,6	83	12,00	100	200	174	290	91	-
26 x 73	31,2	94	15,00	125	250	223	371	105	-
30 x 84	36,0	108	20,00	170	340	296	494	126	-
33 x 92	39,6	119	25,00	200	400	359	599	126	-
36 x 101	43,2	130	29,00	250	500	427	712	147	-

Further qualities on request

<sup>1)</sup> Recommended chain shackle acc. to DIN for wheels



### **Technical Datas**

Tolerance type A: calibrated, as matched chain ends, for chain sprockets Tolerance type B: non-calibrated, as matched chain ends, for plain chain wheels Chain length tolerance  $\triangle$  S of matched chain ends max. 0,5 mm

#### Example of the order

60 pcs. chain ends A 23 x 80 G40E10 L = 7 links each, supplied as matched pairs

	1	
Quality grade	G40 E10	G80 E10
Breaking stress [N/mm <sup>2</sup> ]	250	350
Proof stress [N/mm <sup>2</sup> ]	125	210
Breaking elongation apprx. [%]	2	2
Surface hardness at interlink HV 10	750	750
Carburizing depth HTÄ d +/- 0,01d	0,10 <sup>1)</sup>	0,10 <sup>1)</sup>
Case hardening depth EHT 550 HV 3 d min.	0,06 2)	0,06 2)
Material	MnCr	CrNi/ CrNiMo

Proof/Breaking load tolerance -10% permissible depending on the batches.

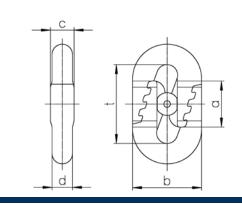
Carburizing depth HTÄ after macroetching: <sup>1)</sup> 30  $\emptyset$  –36  $\emptyset$  – 0,09 d

Case hardening depth EHT 550 HV 3:  $^{2)}$  30 – 36 ø – 0,05 d

## **KHV Chain couplings**

Chain coupling for individual chain lengths HV and DS. The chain couplings have the same technological characteristics as the corresponding highly wear resistant chains. Pay attention that the couplings should be assembled and installed according to the instructions included in the packaging. These couplings can only be mounted as vertical links. Run as vertical links over sprockets, plain and grooved wheels.

Surface finish: shotblasted and waxed



KHV Chain couplings	Туре	d [mm]	t [mm]	a [mm]	b [mm]	c [mm]	Weight [kg/pc.]
$\cap$	KHV 22 x 86	22	86	58	74	27	1,70
(n)	KHV 26 x 100	26	100	62	87	30	2,20
	KHV 30 x 120	30	120	70	105	36	3,00
50251.2.	KHV 34 x 136	34	136	82	117	40	4,70
	KHV 38 x 144	38	144	95	134	47	5,50

#### Scope of delivery

2 pcs. KHV-halves, 2 pcs. safety pins and safety screw or 1 pc. locking pin and safety pin DIN 1481

#### Example of the order

20 pcs. chain couplings KHV 22 x 86

24



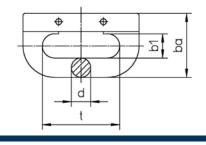
## **VHV Connecting links**

Connecting link for individual chain lengths HV and DS.

The connecting links have the same technological characteristics as the corresponding highly wear resistant chains.

Pay attention that the connecting links should be assembled and ins-

talled according to the instructions. These connecting links are mounted as vertical links in bucket elevators with back mounted buckets. For positive discharge bucket elevators the connecting links have to be installed as horizontal links.



Surface finish: shotblasted and waxed

/HV Connecting links	Туре	d [mm]	t [mm]	bi [mm]	ba [mm]	Pin D x L	Weight [kg/pc.]
	VHV 14 x 50	14	50	16	46	4 x 14	0,25
	VHV 16 x 64	16	64	20	54	5 x 16	0,40
	VHV 19 x 75	19	75	22	65	5 x 20	0,65
	VHV 19 x 120	19	120	22	65	5 x 20	0,85
	VHV 22 x 86	22	86	26	76,5	6 x 22	1,00
	VHV 26 x 100	26	100	31	87	8 x 26	1,50
	VHV 30 x 120	30	120	36	102	10 x 32	2,55
	VHV 34 x 136	34	136	39,5	112	12 x 36	3,70

### Scope of delivery

Scope of delivery: connecting link, locking plate and 2 pcs. safety pins DIN 1481

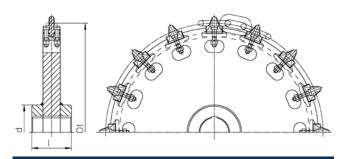
### Example of the order

20 pcs. connecting links VHV 22 x 86 G40E10

RHV

## **RHV Drive sprockets**

Sprockets for use with HV and DSZ - round steel chains with replaceable and adjustable individual teeth, made from MnCr alloyed steel, case hardened – highly wear resistant. Sprockets are welded steel fabrications, any number of teeth or hub design is available. Keyways are machined in the hubs of matched wheels to ensure precise alignment of the teeth. Hub design, bore diameter and key size can be specified by the customer. Shimplates can be fitted to adapt the pitch circle dia. of the sprocket to a chain lengthened due to wear in the interlink points of contact. This ensures continued smooth running of the chain over the sprocket and the maximum use of the case hardened layer in the chain. Shimplates and new teeth can be mounted without disassembly the chain.



/ Drive sprockets	Туре	Chain d x t	No. of teeth Z*	Pitch circle-ø Dt [mm]	Standard values d**	Standard values I**	Weight [kg/pc.]
Drive sprockets	RHV 14/16-50	14 x 50	16	510	150	110	53,00
A	RHV 14/10-50		20	637	150	120	,
S	· · · · · · · · · · · · · · · · · · ·	14 x 50			180	120	79,00
	RHV 16/15-64	16 x 64	15	612			84,00
	RHV 16/17-64	16 x 64	17	694	180	140	107,00
	RHV 16/18-64	16 x 64	18	734	180	140	123,00
	RHV 16/20-64	16 x 64	20	816	180	140	151,00
	RHV 19/15-75	19 x 75	15	717	200	150	134,00
	RHV 19/17-75	19 x 75	17	813	200	150	170,00
🔪 💿 💿 🥳	RHV 19/19-75	19 x 75	19	908	200	150	214,00
P 9	RHV 22/15-86	22 x 86	15	823	220	170	200,00
	RHV 22/16-86	22 x 86	16	878	220	170	224,00
	RHV 22/17-86	22 x 86	17	932	250	170	245,00
	RHV 22/18-86	22 x 86	18	986	250	170	280,00
	RHV 26/15-100	26 x 100	15	956	270	200	294,00
	RHV 26/16-100	26 x 100	16	1.020	270	200	330,00
	RHV 26/17-100	26 x 100	17	1.084	270	200	355,00
	RHV 26/19-100	26 x 100	19	1.211	300	220	468,00
	RHV 30/14-120	30 x 120	14	1.072	300	220	424,00
	RHV 30/16-120	30 x 120	16	1.225	300	220	572,00
	RHV 30/17-120	30 x 120	17	1.300	320	240	648,00
	RHV 34/14-136	34 x 136	14	1.214	350	240	640,00
	RHV 34/15-136	34 x 136	15	1.301	350	240	760,00
	RHV 34/16-136	34 x 136	16	1.387	350	240	900,00
	RHV 38/14-144	38 x 144	14	1.286	350	280	930,00
	RHV 38/15-144	38 x 144	15	1.378	400	280	1.100,00
	RHV 38/16-144	38 x 144	16	1.469	400	280	1.280,00
		00 / 1 / 1	10	1.100		200	

\* Any other number of teeth on request.

\*\* Hub length and hub diameter can be specified by the customer.

#### Example of the order

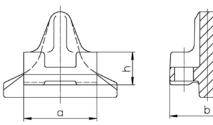
2 pcs. drive sprockets RHV 22/15-86 – ready to install for chain 22 x 86, No. of teeth z = 15Hub length central I = 170 mm (85 + 85) Hub bore dia. = 140 H7 and keyway acc. to DIN 6885

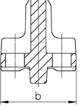


## **EHV Individual teeth**

Individual EHV made from MnCr - alloyed steel, case hardened highly wear resistant; surface hardness 800 HV10. The individual teeth can be adjusted with shimplates to adapt the pitch circle diameter of the RHV - sprocket to a chain lengthened due to wear in the interlink points of contact. This ensures continued smooth running of the chain.

Surface finish: shotblasted and waxed





EHV Individual teeth	Туре	a [mm]	b [mm]	h [mm]	Srew*	Weight apprx. [kg/pc.]
	EHV 14 x 50	40	40	19	M 8 x 40	0,22
	EHV 16 x 64	48	48	23	M 10 x 50	0,40
	EHV 19 x 75	58	58	26	M 14 x 60	0,60
	EHV 22 x 86	68	70	30	M 16 x 70	1,10
	EHV 26 x 100	76	78	36	M 18 x 70	1,50
	EHV 30 x 120	90	90	42	M 20 x 90	2,50
	EHV 34 x 136	105	105	48	M 24 x 100	4,00
	EHV 38 x 144	110	110	54	M 24 x 110	5,50

\* Mounting parts: hex. socket head cap screw DIN 7984 - 8.8; spring washer DIN 127 and hex. nut DIN 934 - 8. Individual teeth with shimplates the screw length has to be advised.



#### Scope of delivery

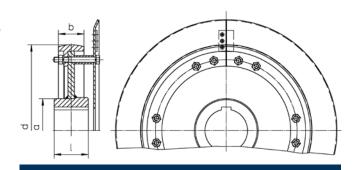
Individual teeth EHV with or without mounting screws and nuts

### Example of the order

30 pcs. individual teeth EHV 22 x 86 - without mounting screws and nuts

## **UHV-G Tail wheels**

Tail wheels for use with HV and DSZ - round steel chains with BHV bucket attachment. The hubs and segmented rims are fabricated and machined, allowing dimensional flexibility for the outside diameter. Hub design, bore diameter and key size can be specified by the customer. The guide disc diameter is adapted to the wheel- and bucket size. With this system no additional loading is required at the tail section and the chain runs freely over the tail wheels. This reduces the chain pull and the pressure on the interlink points of contact thereby reducing chain wear and increasing chain life.



	Туре	Chain	d	b	а	1	No. of teeth	Weight
HV-G Tail wheels		dxt	[mm]	[mm]	[mm]	[mm]	driving sprocket	[kg/pc.]
	UHV-G 14/465	14 x 50	465	90	120	100	16	56,00
	UHV-G 14/590	14 x 50	590	90	120	100	20	83,00
	UHV-G 16/560	16 x 64	560	110	120	100	15	84,00
	UHV-G 16/640	16 x 64	640	110	150	120	17	106,00
	UHV-G 16/680	16 x 64	680	110	150	120	18	117,00
· · · /	UHV-G 16/760	16 x 64	760	110	150	120	20	140,00
1.5° 📕	UHV-G 19/655	19 x 75	655	110	150	120	15	124,00
	UHV-G 19/750	19 x 75	750	110	150	120	17	156,00
	UHV-G 19/850	19 x 75	850	110	150	120	19	194,00
	UHV-G 22/750	22 x 86	750	140	150	120	15	189,00
	UHV-G 22/805	22 x 86	805	140	150	120	16	212,00
	UHV-G 22/860	22 x 86	860	140	150	120	17	236,00
	UHV-G 22/915	22 x 86	915	140	180	140	18	265,00
	UHV-G 26/870	26 x 100	870	170	180	140	15	280,00
	UHV-G 26/935	26 x 100	935	170	180	140	16	316,00
	UHV-G 26/1000	26 x 100	1000	170	200	150	17	355,00
	UHV-G 26/1125	26 x 100	1125	170	220	170	19	433,00
	UHV-G 30/970	30 x 120	970	190	180	140	14	354,00
	UHV-G 30/1125	30 x 120	1125	190	220	170	16	454,00
	UHV-G 30/1200	30 x 120	1200	190	220	170	17	505,00
	UHV-G 34/1100	34 x 136	1100	190	220	170	14	488,00
	UHV-G 34/1185	34 x 136	1185	190	220	170	15	551,00
	UHV-G 34/1278	34 x 136	1275	190	220	170	16	625,00
	UHV-G 38/1160	38 x 144	1160	210	250	200	14	590,00
	UHV-G 38/1250	38 x 144	1250	210	250	200	15	665,00
	UHV-G 38/1340	38 x 144	1340	210	250	200	16	755,00

Any other sizes on request.

Hub length and hub diameter can be specified by the customer.

#### Scope of delivery

Tail wheel UHV-G with or without guide disc

#### Example of the order

2 pcs. tail wheels UHV-G 22/750 with guide disc – ready to install for chain 22 x 86, outside diameter = 750 mm Hub length central I = 170 mm (85 + 85) Hub bore dia. = 140 H7 and keyway acc. to DIN 6885



## SEG-A, SEG-E and SEG Plain segmented chain wheels

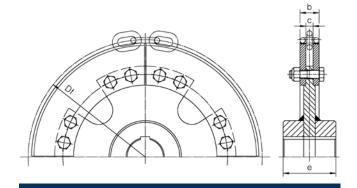
Plain segmented chain wheels for use with HV and DS - round steel chains resp. chain ends acc. to DIN 764 and DIN 766 for back mounted buckets. Plain segmented chain wheels SEG-A, SEG-E and SEG with steel hub and cleaning slots, are welded steel fabrications. Bore diameter and key size as specified by the customer.

SEG-A with replaceable hardfaced steel segments - highly wear resistant, surface hardness min. 55 HRC.

SEG-E with replaceable case hardened steel segments - highly wear resistant, surface hardness min. 700 HV10.

SEG with replaceable steel segments

Plain segmented chain wheels SEG-A and SEG-E especially suitable for the drive- and SEG-E resp. SEG for the tail unit.



SEG-A, SEG-E and SEG	Туре	Chain diameter	Pitch circle	e	b	c	No. of segments	Weight
Plain segmented chain wheels			diameter	[mm]	[mm]	[mm]	, in the second	[kg/pc.]
	SEG 13/500	13 + 14	500	100	48	18	8	50,00
	SEG 16/500	16	500	100	58	22	8	52,00
	SEG 16/630	16	630	160	58	22	8	115,00
	SEG 16/710	16	710	160	58	22	8	165,00
	SEG 16/800	16	800	190	58	22	8	290,00
	SEG 20/500	19 + 20	500	100	68	28	8	56,00
	SEG 20/630	19 + 20	630	160	68	28	8	120,00
	SEG 20/710	19 + 20	710	160	68	28	8	170,00
	SEG 23/630	22 + 23	630	160	80	30	8	125,00
	SEG 23/710	22 + 23	710	160	80	30	8	170,00
	SEG 23/800	22 + 23	800	160	80	30	8	225,00
	SEG 23/900	22 + 23	900	190	80	30	8	280,00
	SEG 23/1000	22 + 23	1000	200	80	30	8	350,00
	SEG 26/710	26	710	160	94	34	8	180,00
	SEG 26/800	26	800	160	94	34	8	240,00
	SEG 26/900	26	900	190	94	34	8	310,00
	SEG 26/1000	26	1000	200	94	34	8	375,00
	SEG 30/900	30	900	190	110	40	8	300,00
	SEG 30/1000	30	1000	200	110	40	8	395,00
	SEG 30/1250	30	1250	220	110	40	8	640,00
	SEG 36/1250	34 + 36	1250	220	116	46	8	680,00

Any other sizes on request.

#### Example of the order

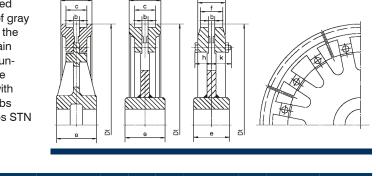
2 pcs. drive-plain segmented chain wheels SEG-A 23/800 STN for chain 22 x 86, pitch circle dia. = 800 mmHub length central e = 160 mm (80 + 80)Hub bore dia. = 150 H7 and keyway acc. to DIN 6885

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## SR and SUR Plain segmented chain wheels

Plain segmented chain wheels for use with HV and DS - round steel chains resp. chain ends acc. to DIN 764 and DIN 766. Drive - and tail wheels with replaceable segments made from high resistant chilled cast iron; hardness 400 - 450 HB30; many times the service life of gray cast wheels. The segments can be replaced without demounting the chain. Chain wheels SR are used for back mounted buckets; Chain wheels SUR are used for back mounted buckets as well side mounted buckets with chain shackles acc. to DIN 5699. Hubs are made from gray cast GGN without cleaning slots resp. steel hub STN with cleaning slots. The max. bore diameter is limited for gray cast hubs GGN and has to be specified; for larger bore diameters steel hubs STN must be used.

Bore diameter and key size as specified by the customer.



	Туре	Chain	Pitch circle diame-	No. of seg- ments	b	с	в	e	f	g	h	k	Weight without cleaning	Weight with cleaning
SR and SUR Plain segmented chain wheels		d	ter Dt*		[mm]								slots [kg/pc.]	slots [kg/pc.]
	SR 13/500*	13 + 14	500	8 **	18	52	90	100	56	60	31	59	62,00	54,00
	SR 16/500*	16	500	8 **	22	62	100	100	62	66	34	66	62,00	54,00
	SR 16/630*	16	630	12	22	62	120	160	62	66	34	66	135,00	120,00
	SR 16/710	16	710	12	22	62	130	160					195,00	175,00
	SR 16/800	16	800	12	22	96	132	160					260,00	240,00
	SR 20/500*	19 + 20	500	8 **	28	80	118	100	74	80	44	70	70,00	60,00
	SR 20/630*	19 + 20	630	12	28	80	130	160	74	80	44	81	140,00	125,00
	SR 20/710*	19 + 20	710	12	28	80	130	160	74	80	44	81	200,00	180,00
	SR 23/630	22 + 23	630	12	30	90	140	160					145,00	130,00
	SR 23/710*	22 + 23	710	12	30	90	140	160	84	90	49	86	200,00	180,00
	SR 23/800*	22 + 23	800	12	30	90	140	160	84	90	49	86	265,00	245,00
	SR 23/900	22 + 23	900	16	30	95	145	190					340,00	325,00
	SR 23/1000	22 + 23	1000	16	30	104	140	200					430,00	415,00
	SR 26/710	26	710	12	34	114	164	160					220,00	200,00
	SR 26/800*	26	800	12	34	110	160	160	94	100	54	91	270,00	250,00
	SR 26/900*	26	900	16	34	110	170	190	94	100	54	91	350,00	335,00
	SR 26/1000	26	1000	16	36	120	180	200					445,00	430,00
	SR 30/900*	30	900	16	40	116	176	190	114	120	63	102	360,00	345,00
	SR 30/1000*	30	1000	16	40	125	185	200	114	120	63	102	450,00	435,00
	SR 30/1250*	30	1250	16	40	125	185	220	114	120	63	102	710,00	700,00
	SR 36/1250*	34 + 36	1250	16	46	135	200	220		135	68	106	740,00	730,00

Any other sizes on request.

\* For this wheel sizes, type SUR segments without flange can be supplied with gray cast hub GGN or steel hub STN

\*\* Dimensions for SR wheels; for SUR 13/500, SUR 16/500 and SUR 20/500: number of segments = 12 pcs.

#### Example of the order

2 pcs. drive-plain segmented chain wheel SR 23/800 STN for chain 23 x 80, pitch circle dia. = 800 mm Hub length central e = 160 mm (80 + 80)Hub bore dia. = 150 H7 and keyway acc. to DIN 6885



## SES-A, SES-E and SES Plain segmented chain wheels

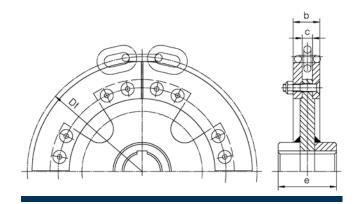
Plain segmented chain wheels for use with HV and DS - round steel chains resp. chain ends acc. to DIN 764 and DIN 766 for side mounted buckets. Plain segmented chain wheels SES-A, SES-E and SES with steel hub and cleaning slots, are welded steel fabrications. Bore diameter and key size as specified by the customer.

SES-A with replaceable hardfaced steel segments - highly wear resistant, surface hardness min. 55 HRC.

SES-E with replaceable case hardened steel segments - highly wear resistant, surface hardness min. 700 HV10.

SES with replaceable steel segments.

Plain segmented chain wheels SES-A and SES-E especially suitable for the drive- and SES-E resp. SES for the snub wheels and tail unit.



	Туре	Chain diameter	Pitch circle	е	b	c	No. of segments	Weight
ES-A, SES-E, SES		alameter	diameter				ocymento	
ain segmented chain wheels			Dt*	[mm]	[mm]	[mm]		[kg/pc.]
	SES 13/500	13 + 14	500	100	47	17	8	50,00
	SES 16/500	16	500	100	56	20	8	52,00
0000	SES 16/630	16	630	160	56	20	8	115,00
	SES 16/710	16	710	160	56	20	8	165,00
	SES 16/800	16	800	190	56	20	8	290,00
	SES 18/500	18	500	100	62	22	8	56,00
	SES 18/630	18	630	160	62	22	8	120,00
	SES 18/710	18	710	160	62	22	8	170,00
0000	SES 20/500	18 + 20	500	100	65	25	8	56,00
	SES 20/630	18 + 20	630	160	65	25	8	120,00
	SES 20/710	18 + 20	710	160	65	25	8	170,00
	SES 23/630	22 + 23	630	160	78	28	8	125,00
	SES 23/710	22 + 23	710	160	78	28	8	170,00
	SES 23/800	22 + 23	800	160	78	28	8	225,00
	SES 23/900	22 + 23	900	190	78	28	8	280,00
	SES 23/1000	22 + 23	1000	200	78	28	8	350,00
	SES 26/710	26	710	160	91	31	8	180,00
	SES 26/800	26	800	160	91	31	8	240,00
	SES 26/900	26	900	190	91	31	8	310,00
	SES 26/1000	26	1000	200	91	31	8	375,00
	SES 30/900	30	9000	190	106	36	8	300,00
	SES 30/1000	30	1000	200	106	36	8	395,00
	SES 30/1250	30	1250	220	106	36	8	640,00
	SES 36/1250	34 + 36	1250	220	116	46	8	680,00

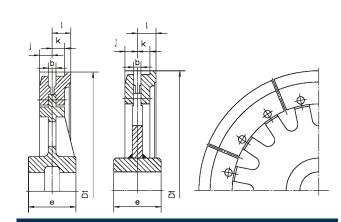
Any other sizes on request.

#### Example of the order

2 pcs. drive-plain segmented chain wheels SES-A 23/800 STN for chain 22 x 86, pitch circle dia. = 800 mm Hub length central e = 160 mm (80 + 80)Hub bore dia. = 150 H7 and keyway acc. to DIN 6885

## **BR Plain segmented chain wheels**

Plain segmented chain wheels for use with HV and DS - round steel chains resp. chain ends acc. to DIN 764 and DIN 766. Drive-, tail- and snub wheels with replaceable segments made from high resistant chilled cast iron; hardness 400 - 450 HB30; many times the service life of gray cast wheels. The segments can be replaced without demounting the chain. Chain wheels BR are used for side mounted buckets; Hubs are made from gray cast GGN without cleaning slots resp. steel hub STN with cleaning slots. The max. bore diameter is limited for gray cast hubs GGN and has to be specified; for larger bore diameters steel hubs STN must be used. Bore diameter and key size as specified by the customer.



R Plain segmented chain rheels	Туре	Chain d	Pitch circle diameter Dt*	No. of seg- ments	b [mm]	e	j	k	I	Weight with steel hub [kg/pc.]	Weight with cast hub [kg/pc.]
	BR 13/500	13 + 14	500	8	17	100	23	27	42	56,00	50,00
	BR 16/500	16	500	8	20	100	28	33	47	58,00	52,00
	BR 16/630	16	630	12	20	160	28	32	47	130,00	115,00
	BR 16/710	16	710	12	21	160	32	45	65	185,00	165,00
	BR 16/900	16	900	16	20	190	28	32	47	310,00	290,00
	BR 20/500	19 + 20	500	8	25	100	33	39	58	62,00	56,00
	BR 20/630	19 + 20	630	12	26	160	35	47	62	135,00	120,00
	BR 20/710	19 + 20	710	12	26	160	35	47	67	190,00	170,00
	BR 20/900	19 + 20	900	16	26	190	35	47	67	315,00	300,00
	BR 20/1000	19 + 20	1000	16	26	200	32	50	68	350,00	330,00
	BR 23/630	22 + 23	630	12	30	160	40	50	70	140,00	125,00
	BR 23/710	22 + 23	710	12	30	160	40	52	70	190,00	170,00
	BR 23/800	22 + 23	800	12	30	160	40	52	70	245,00	225,00
	BR 23/1000	22 + 23	1000	16	30	200	40	52	70	370,00	350,00
	BR 26/630	26	630	12	32	160	45	55	80	145,00	130,00
	BR 26/710	26	710	12	32	160	45	55	80	200,00	180,00
	BR 26/900	26	900	16	32	190	45	54	84	325,00	310,00
	BR 26/1000	26	1000	16	32	200	45	58	88	390,00	375,00
	BR 26/1250	26	1250	16	32	220	46	62	92	630,00	620,00
	BR 30/710	30	710	12	36	160	50	65	80	205,00	185,00
	BR 30/800	30	800	12	36	160	50	65	80	260,00	240,00
	BR 30/1000	30	1000	16	36	200	53	65	80	415,00	395,00
	BR 30/1250	30	1250	16	36	220	53	65	80	650,00	640,00
	BR 36/1250	34 + 36	1250	16	44	220	63	78	98	690,00	680,00

Any other sizes on request.

#### Example of the order

2 pcs. drive-plain segmented chain wheel BR 23/800 STN for chain 22 x 86, pitch circle dia. = 800 mm

Hub length central e = 160 mm (80 + 80)

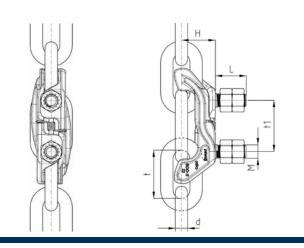
Hub bore dia. = 150 H7 and keyway acc. to DIN 6885



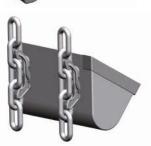
## **BDD-S Bucket attachments**

Bucket attachment suitable for HV- and DS- round steel chains with chain sprockets RHV and plain segmented chain wheels, suitable for back mounted buckets, simple assembly and disassembly on the chain, pre-assembled bucket attachment BDD-S ready for the installation on the chain, no additional connecting screw – self locking, two identical halves, complete forged incl. the bolts and highly wear resistant hardened at the chain contact areas. Mounting dimensions of the BDD-S attachment correspond to the standard shackles, existing chain end and shackle system can be converted. The same buckets and chain wheels can usually be used. Higher service safety because the BDD-S attachment don't have to transmit any chain pull.

Surface finish: natural black and waxed



	Туре	Chain	t1	м	L	н	Weight
DD-S Bucket attachments		d x t	[mm]	[mm]	[mm]	[mm]	[kg/pc.]
0	BDD-S 19x75	19 x 75	80	20	45	53	1,60
0	BDD-S 22x86	22 x 86	91	24	55	60	2,60
3377	BDD-S 26x100	26 x 100	105	24	55	71	4,10
	BDD-S 30x120	30 x 120	126	30	65	84	7,00
	BDD-S 34x136	34 x 136	147	36	75	96	9,00



### Scope of delivery

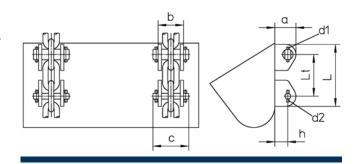
2 pcs. pre-assembled BDD-S clamp halves and 4 pcs. hex nuts DIN 934-8.

### Example of the order

80 pcs. bucket attachments BDD-S 22 x 86

## **BHV Bucket attachments**

Bucket attachment suitable for HV and DSZ – chain with sprockets RHV and tail wheels UHV-G; for back mounted buckets; strong two – link attachment with weld-on plates and pins for high capacity bucket elevators – highly wear resistant, simple bucket assembly on the chain. Weld-on plates made from material C45 with inductive hardened bore holes, case hardened pins made from MnCr- alloyed steel, with safety pins. Use welding jig to tack on and weld the plates on the buckets acc. to the assembly instructions.



HV Bucket attachments	Туре	Chain d x t	Lt [mm]	L [mm]	a [mm]	b [mm]	c [mm]	h [mm]	d1 d x l	d2 d x l	Weight [kg/pc.]
	BHV 14 x 50	14 x 50	100	150	55	66	93	33	6 x 40	6 x 30	2,40
	BHV 16 x 64	16 x 64	128	190	65	78	110	40	8 x 45	8 x 36	4,10
	BHV 19 x 75	19 x 75	150	230	75	92	130	45	10 x 55	10 x 40	6,60
	BHV 22 x 86	22 x 86	172	260	85	110	158	50	13 x 60	13 x 45	10,00
	BHV 26 x 100	26 x 100	200	290	100	123	170	61	13 x 70	13 x 45	13,20
	BHV 30 x 120	30 x 120	240	340	125	139	185	75	13 x 80	13 x 60	16,20
0	BHV 34 x 136	34 x 136	272	392	140	153	210	82	16 x 90	16 x 60	21,70
	BHV 38 x 144	38 x 144	288	418	155	182	245	90	16 x 90	16 x 65	29,50

#### Scope of delivery for one bucket

4 pcs. weld-on plates with large bore hole

4 pcs. weld-on plates with small bore hole

2 pcs. flat pins with 2 pcs. safety pins DIN 1481

2 pcs. round pins with 2 pcs. safety pins DIN 1481

(only as individual parts also available)

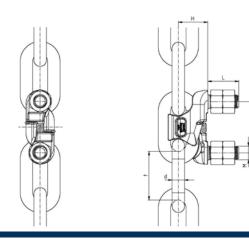
#### Example of the order

80 pcs. bucket attachments BHV 22 x 86



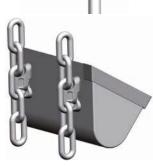
## BDS-S and BDS Bucket attachments

Bucket attachment suitable for HV- and DS- round steel chains with chain sprockets RHV and plain segmented chain wheels, suitable for back mounted buckets, simple assembly and disassembly on the chain, pre-assembled bucket attachment BDS-S ready for the installation on the chain, no additional connecting screw – self locking or as usual BDS – halves with connecting bolt and safety nut. Two identical halves, complete forged incl. the bolts and heat treated. Mounting dimensions of the BDS-S and BDS attachment correspond to the standard shackles, existing chain end and shackle system can be converted. The same buckets and chain wheels can usually be used. Higher service safety because the BDS-S/BDS attachment don't have to transmit any chain pull. No wear part – can be reused.



Surface finish: natural black and waxed

BDS-S and BDS Bucket attachments	Туре	Chain d x t	t1 [mm]	M [mm]	L [mm]	H [mm]	Attach- ment screw	Weight [kg/pc.]
	BDS 14 x 50	14 x 50	56	14	35	34	M 10 x 30	0,50
	BDS 16 x 64	16 x 64	63	16	40	37	M 12 x 30	0,70
	BDS 19 x 75	19 x 75	80	20	45	47	M 14 x 40	1,20
	BDS 22 x 86	22 x 86	91	24	55	52	M 16 x 45	2,00
	BDS 26 x 100	26 x 100	105	24	55	60	M 16 x 45	2,50
	BDS 30 x 120	30 x 120	126	30	65	70	M 20 x 55	4,20
	BDS 34 x 136	34 x 136	147	36	75	81	M 20 x 60	6,50



#### Scope of delivery

2 pcs. pre-assembled BDS-S clamp halves and 4 pcs. hex nuts DIN 934-8

2 pcs. BDS clamp halves, hex. socket head cap screw DIN 912-8.8, locking nut DIN 980-8 and 4 pcs. hex. nuts DIN 934-8

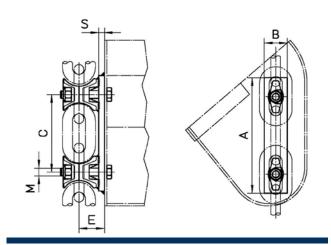
### Example of the order

80 pcs. bucket attachments BDS 22 x 86

## **SDD Bucket attachments**

Bucket attachment suitable for HV and DS - round steel chains and for side mounted buckets, runs over sprockets RHV and plain segmented chain wheels; simple assembly and disassembly on the chain; 4 halves, forged and case hardened, 2 halves welded to plate, existing chain end and shackle system can be converted, same chain wheels and buckets can usually be used. Higher service safety because the SDD attachment don't have to transmit any chain pull.

Surface finish: shotblasted and waxed



SDD Bucket attachments	Туре	Chain d x t	E [mm]	A [mm]	B [mm]	C [mm]	S [mm]	Bolt M	Weight [kg/pc.]
	SDD 16 x 64	16 x 64	52	200	50	126	15	M 12	2,50
	SDD 19 x 75	19 x 75	67	230	60	148	20	M 14	3,50
	SDD 22 x 86	22 x 86	72	265	70	170	20	M 16	5,50
	SDD 26 x 100	26 x 100	80	300	80	196	20	M 20	7,00
	SDD 30 x 120	30 x 120	96	365	90	235	25	M 20	10,00
	SDD 34 x 136	34 x 136	111	410	100	268	30	M 24	14,00

\* Any other sizes and dimensions E on request.



#### Scope of delivery

2 pcs. SDD-halves welded to plate, 2 pcs. locking SDD-halves, 2 pcs. hex. bolts DIN 931-8.8, 2 pcs. locking nuts DIN 980-8. Bolt length has to be specified

#### Example of the order

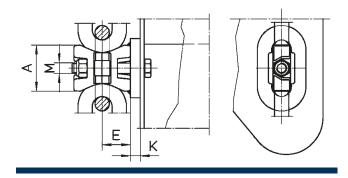
80 pcs. bucket attachments SDD 22 x 86 with mounting bolts and nuts



## **SDS Bucket attachments**

Bucket attachment suitable for HV and DS - round steel chains and for side mounted buckets, runs over sprockets RHV and plain segmented chain wheels; simple assembly and disassembly on the chain; two halves, forged and case hardened, alternativ one half welded to distance plate, existing chain end and shackle system can be converted, same chain wheels and buckets can usually be used. Higher service safety because the SDS attachment don't have to transmit any chain pull.

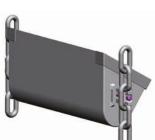
Surface finish: shotblasted and waxed



SDS Bucket attachments	Туре	Chain d x t	E* [mm]	A [mm]	M [mm]	K** [mm]	Weight [kg/pc.]
	SDS 14 x 50	14 x 50	34	40	10	10	0,20
and the second	SDS 14 x 64	14 x 64	23,5	53	10	10	0,30
h.	SDS 16 x 64	16 x 64	37	51	12	10	0,50
1 .4	SDS 19 x 75	19 x 75	33,5	61	14	10	0,70
	SDS 22 x 86	22 x 86	52	70	16	15	1,00
	SDS 26 x 100	26 x 100	60	80	20	15	1,30
	SDS 30 x 120	30 x 120	71	100	20	15	1,80

\* Any other sizes and dimensions E on request.

\*\* Recommended plate thickness.



#### Scope of delivery

2 pcs. SDS-halves, 1 pc. hex. bolt DIN 931-8.8, 1 pc. locking nut DIN 980-8. Size of the distance plate and bolt length has to be specified

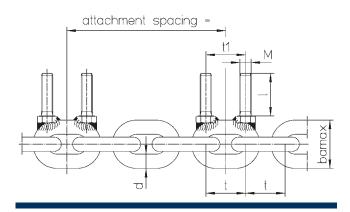
#### Example of the order

80 pcs. bucket attachments SDS 22 x 86 with mounting bolt and nut

### **DOB Round steel chains**

Round steels chains DOB with HV and DS - round steel chains or chains acc. to DIN 764 and 766 with welded bolts; technical characteristics for the qualities see corresponding pages of the chain types. Bucket spacing and bolt size as specified by the customer, existing chain end and shackle system can be simple converted; for back and side mounted buckets, the same buckets and chain wheels can usually be used.

Surface finish: natural black and waxed



	Chain	Chain width	Standard length		Quality grade G40 E10	Bucket s	pacing		Weld on b		bolt	
	dxt	ba [mm]	Number of links	Length	Breaking load	Number of links	Leng- th	Starting on	М	I	t1	
DOB Round steel chains		[]		[mm]	[kN]	[mm]	[mm]		[kn]	[kn]	[kn]	
	20 x 56	72	151	8456	160	8	448	4 <sup>th</sup> link	M 20	40	70	



#### Scope of delivery

Round steel chain DOB with 2 pcs. locking nuts DIN 980-8 each DOB-link

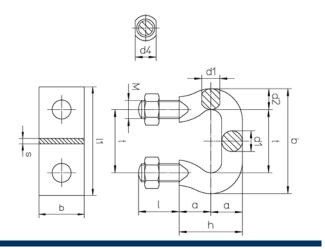
#### Example of the order

16 pcs. DOB-chains A 20 x 56 G40E10 L = 151 links = 8456 mm each, supplied as matched pairs – M20x40x70/8



### **Chain shackles DIN 745**

Suitable for connecting chain ends acc. to DIN 764 and DIN 766 and the attachment of the buckets for bucket elevators acc. to DIN 15251. For friction drive systems DIN standard recommends to use the next size up pitch chain shackle; chain shackles should only be used in connection with distance plates; drop forged, thread and collar machined; Material: made from heat treatable steel C45 and CrNi - alloyed steel, shackles C45vi are through hardened up to a strength of apprx. 1100 N/mm<sup>2</sup>, the interlink points of contact are inductive hardened, surface hardness min. 600 HV10. Shackles G80E10vi are additional carburized, the interlink points of contact are inductive hardened, surface hardness min. 750 HV10.



#### Surface finish: oiled

	t	a	b	d1	d2	d4	м	h	I	Weight*	Min. bre	eaking load	Distan	ce plate		Weight
Chain shackles DIN 745	[mm]									[kg/pc.]	C45 vi [kN]	G80 E10 vi **[kN]	l1 [mm]	b [mm]	s [mm]	[kg/pc.]
- 0	45	20	73	11,5	14	12,5	M 10	40	25	0,15	76	80	75	30	5	0,08
	56	25	92	15	18	16,5	M 12	50	32	0,32	112	125	95	40	6	0,17
	63	30	105	18	21	20	M 16	60	40	0,55	142	150	110	40	6	0,18
	70	34	116	20	23	23	M 20	68	45	0,86	176	200	120	50	6	0,25
	80	37	132	23	26	25	M 20	74	45	1,08	230	250	130	50	6	0,27
	91	43	149	26	29	29	M 24	86	55	1,65	300	315	150	60	8	0,50
	105	50	173	30	34	31	M 24	100	55	2,20	395	425	165	60	8	0,56
	126	59	206	36	40	37	M 30	118	70	3,95	570	600	200	70	10	0,97
	147	68	239	42	46	42	M 30	136	70	5,50	775	850	230	80	12	1,15

\* Incl. 2 pcs. hex. nuts without distance plate.

\*\* Quality G80 E10 vi on request.

#### Scope of delivery

Chain shackle and 2 pcs. hex. nuts acc. to DIN 934

#### Example of the order

100 pcs. chain shackles 91 DIN 745 C45 vi

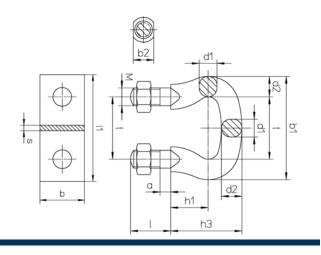
Quality grade	C45 vi	G80 E10 vi
Proof stress [N/mm <sup>2</sup> ]	125	125
Breaking stress [N/mm <sup>2</sup> ]	280	300
Surface hardness HV 10 min.	600	750
Hardening depth HTÄd min.	0,1 x d*	0,1 x d*
Hardening depth at interlink EHT 550 d min.	0,06 x d*	0,06 x d*
Hardening depth EHT 550 HV 3 d min.	0,06	0,06

\* Chain shackle dia. d1.

## Chain shackles acc. to DIN 5699

Higher breaking loads in comparison with chain shackles acc. to DIN 745, which ensures the service safety. When replacing chain shackles DIN 745 with chain shackles DIN 5699 in existing bucket elevators with side mounted buckets pay attention that the chain center distance will increase.

Surface finish: oiled



	t	а	b1	b2	d1	d2	м	h1	h3	I	Weight *	Min. breaking load		Distance plate			Weight
Chain shackles DIN 5699	[mm]										[kg/ pc.]	C45 vi [kN]	G80 E10 vi [kN]	l1 [mm]	b [mm]	s [mm]	[kg/ pc.]
	35	8	59	11	10	12	M10	23	43	25	0,14	50	56	65	30	5	0,07
	45	8	75	13	13	15	M12	28	53	30	0,26	85	95	75	30	5	0,08
	56	10	92	17	16	18	M14	34	64	35	0,34	125	140	95	40	6	0,17
	63	10	105	20	18	21	M16	37	71	40	0,60	160	180	110	40	6	0,21
	70	12	116	23	20	23	M20	42	80	45	0,87	200	224	120	50	6	0,25
$\sim$	80	12	132	25	23	26	M20	47	89	45	1,12	265	280	130	50	6	0,27
	91	14	149	29	26	29	M24	52	99	55	1,86	335	355	150	60	8	0,56
	105	14	173	31	30	34	M24	60	114	55	2,56	450	500	165	60	8	0,62
	126	18	206	37	36	40	M30	71	134	65	4,40	630	700	200	70	10	0,97
	147	22	241	42	42	47	M36	81	157	75	7,30	850	950	230	80	12	1,73

\* Incl. 2 pcs. hex. nuts without distance plate.

\*\* Quality G80 E10 vi on request.

#### Scope of delivery

Chain shackle and 2 pcs. hex. nuts acc. to DIN 934

#### Example of the order

100 pcs. chain shackles 91 DIN 5699 C45vi

Quality grade	C45 vi	G80 E10 vi
Proof stress [N/mm <sup>2</sup> ]	125	125
Breaking stress [N/mm <sup>2</sup> ]	280	300
Surface hardness HV 10 min.	600	750
Hardening depth HTÄd min.	0,1 x d*	0,1 x d*
Hardening depth at interlink EHT 550 d min.	0,06 x d*	0,06 x d*
Hardening depth EHT 550 HV 3 d min.	0,06	0,06

\* Chain shackle dia. d1.



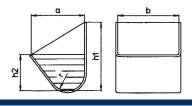
### Buckets acc. to DIN 15234

Steel elevator buckets of welded construction can be manufactured acc. to DIN - standards and any style specified by the customer, for heavy powder, coarse grain - and lumpy material. E.g. sand, cement, gravel, coal, etc. Buckets made from cast polymeric material are also available for medium operating conditions.

#### Bucket attachment with shackles (DIN 15236-4)

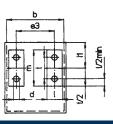
Style A without reinforced

Style B with reinforced front edges



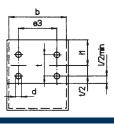
hatched aera = bucket capacity

Style L with rear wall strips

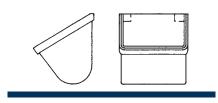




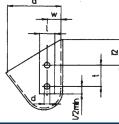
Style M with rear wall plate



Style C with reinforced edges on 3 sides



Style N with side mounted attachment



•						ucket style A etal gauge				Bucket attachment: dimensions DIN 15236-4										
b	а	h1	h2	r							F x b litre	t	<b>d</b> 1)	<b>e</b> <sub>3</sub>	i,	m	L <sub>min.</sub>	w	V <sup>2)</sup>	i <sub>2</sub>
		[mm]			2	3	4	5	6	8						[mm]				
160	140	180	95	45	1,38	2,08					1,5	56	15	100	67	95	40	36	6	67
160	160	200	106	50	1,59	2,39	3,18				1,9	56	15	100	75	95	40	40	6	75
200	160	200	106	50	1,85	2,80	3,76				2,4	63	17	125	75	110	40	40	6	75
250	180	224	118	56	2,49	3,77	4,96				3,7	63	17	160	85	110	40	45	8	85
250	200	250	132	63		4,36	5,82	7,27			4,6	63	17	160	95	110	40	50	8	95
315	200	250	132	63		5,09	6,82	8,59			5,8	70	21	200	95	120	50	50	8	95
400	224	280	150	71		7,03	9,40	11,80			9,4	80	21	250	106	130	50	56	10	106
500	250	315	170	80			12,80	16,10	19,40		14,9	91	25	315	118	150	60	63	10	118
630	280	355	190	90			17,60	22,10	26,60		23,5	105	25	400	132	165	60	70	10	132
800	315	400	212	100				30,60	36,90	49,60	37,3	126	31	500	150	200	70	80	10	150
1000	355	450	236	112				42,00	50,30	67,00	58,3	126	31	630	170	200	70	90	10	170
1250	400	500	265	125					68,50	91,90	92,0	147	37	800	190	230	80	100	12	190

 $^{\scriptscriptstyle 1)}$  Bore hole dia. for chain shackle acc. to DIN 5699 and BDS bucket attachment.

 $^{\scriptscriptstyle 2)}$  Max. thickness of rear wall strips L or rear wall plate M.

#### Example of the order

50 pcs. buckets C630 x 280 x 5 L91 DIN 15234

## Assembly- and Maintainance Instructions







# Assembly of the drive and tail wheels

Pay attention to maintaining the correct chain center distance. Head and tail shafts must be installed parallel and all the wheels must be in line.

# Recommended assembly of the chain lengths

- Connect individual chain lengths with connecting links
- Install the connected chain lengths into the elevator casing
- Connect into an endless loopAssemble the bucket
- attachments and buckets
- Tension the assembled system

The chain lengths are supplied bundled in pairs. In order to avoid mixing up of the chain lengths, the wire for the bundling should only

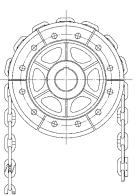
be opened in the course of the assembly; the chain lengths must be assembled in the conveyor lying parallel, this is the only way to guarantee that chain loops will be of the same length; if the chain lengths are mixed before installation the final links of every chain lengths are marked with the chain lengths number and are colour coded; it is possible to get the chain lengths perfectly matched with the chain length numbers resp. the colour marking; during the assembly of the chain lengths please take care that the welds of the vertikal chain links point to the wheel center.

## Pay attention that the chain couplings are installed in the correct position

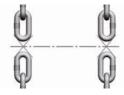
Chain couplings KHV can only be mounted as vertical links for all bucket elevator systems. Connecting links VHV are installed as vertical links but for positive discharge bucket elevators only as horizontal links.

Shortening of the chain may be necessary to shorten the chain in order to obtain the exact required chain length of the make - up lengths, or if the chain lengthens

due to wear. If chain shortening is necessary an even number of



chain links (2, 4, 6, and so on) must be cut out from both chain loops. Links must be cut out with a cutting disc or a burner. Pay attention not damage or overheat the neighboring links.

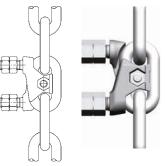


# Assembly of the bucket attachments and buckets

Install on the vertical chain links in the required bucket spacing the pre-assembled BDD-S-

and BDS-S- attachments, ensure parallel threaded studs and thighten with nuts and counternuts the buckets.

Locate and tighten with bolt and nut the BDS-halves on the vertical chain links in the required bucket spacing, Tighten the attachment screw which connects the BDS clamp halves to the specified

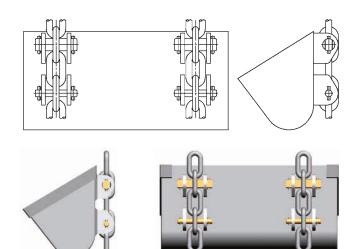


torque. Assembly the buckets only when the BDS attachment is centrally snd securely fitted, tighten with nuts and counternuts.

Tack on BHV- weld on plates by means of welding jig, pay attention to correct distances between the plates and aligned bore holes. Install the buckets on the chain in the required bucket spacing with flat and round pins and secure the pins with the safety pins.

Stick electrode:

ISO 2560: E 51 5 B110 20 (H) EN 499: E 42 5B4 2 H5 AWS A5.1-ASME II/C, SFA5.1: E 7018-1



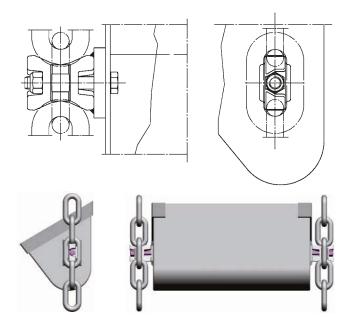
Bucket Elevator Chains and Components



Weld on SDS/SDD with distance plate on bucket side wall, pay attention to correct position and alignment. Install the buckets on the vertical chain links in the required bucket spacing, insert 2nd SDS/SDD-locking halves and tighten the attachment bolts to the specified torque.

Stick electrode:

ISO 2560: E 51 5 B110 20 (H) EN 499: E 42 5B4 2 H5 AWS A5.1-ASME II/C. SFA5.1: E 7018-1



Chain shackles are connected with the chain ends to form an endless chain loop. Chain shackles should be used together with distance plates. All nuts must be tighten to the enclosed specified torque and secured with safety plates, spring washers or counter nuts to reduce the possibility of loose nuts.

The chain tension must be checked regularly. The BDS and the chain end + chain shackle system require a weight pretensioned tail station. Basically, the chain tension should only be as high as it really necessary for trouble-free operation. Both chain loops must be equally tensioned.

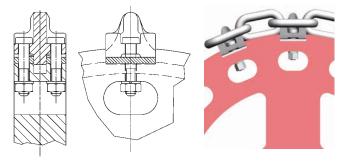
Thread size	Nm	Lbf/ft.
M 6	10	7
M 8	25	18
M 10	49	35
M 12	85	62
M 14	135	98
M 16	210	152
M 18	300	217
M 20	425	307
M 22	580	420
M 24	730	528
M 27	1.100	796
M 30	1.450	1.049
M 33	1.900	1.136
M 36	2.450	1.772

Excessive tensioning will increase the chain wear and reduce the chain life time.

The BHV-system requires basically no pretensioned tail station. The tail wheels can be raised from the chain loops with threaded rods but the tail wheels should still slightly sit on the chain loops. Guide discs or guide rails are necessary in the elevator boot.

The pitch circle dia. of the sprocket RHV is adapted with shimplates to the individual teeth. Shimplates and new teeth can be installed without disassembly the chain. The thickness of the shimplates can only be determined by measuring the chain lengthened due to wear. As soon as the case hardened layer is worn off the wear will increase rapidly. Chains and sprocket teeth will wear out under normal operating condition at the same time.

Shimplates should be fitted when the chain is lengthened due to wear by apprx. 2,5%. The replacement of chain with quality grade E10 is recommended by a chain wear of apprx. 3,5% and E14 by 5%. For friction drive systems the chain replacement should be carried out by an interlink wear of apprx. 5%. If both chain loops wear out equally the max. chain wear per link dia. of apprx. 1/5 of the new link dia. is admissible. As soon as the vertical links run onto the groove base of the chain wheels the segments should be replaced.



Pay attention to a uniform charging over the full width of the buckets. Both chain loops must be equally loaded due to conveying material and chain tractive forces. Asymetric loading on the chain loops lead sooner or later of an increase in pitch due to wear and to slanting buckets.

Round steel chains should be protected against overloading or blocking against coarse material by means of suitable safety clutches, shear pins etc. At specific intervals the chains, connecting links, attachments and chain wheels should be checked for damage, corrosion or unusual wear.

All screw connections should be checked for tight fit and retightened as necessary. When the round steel chain is replaced, the chain couplings must also be replaced.

No welding should be carried out on chains, connecting links or case hardened components.



## Questionnaire Bucket Elevators

## Fax to: +43 316 6070-100

Co	mpany	Date
Fre	om	
Ph	one	Fax
E-I	Mail	
Na	me and No. of units	
ING		
1.	Material Handled	
	Specific weight [kg/dm³] Grain size [mm]	
	Temperature [°C] Moisture content	
	Abrasiveness Iow I normal high I	
	Corrosiveness	
	Chemical influences	
2.	Capacity [t/h] or [m <sup>3</sup> /h]	
	Chain speed [m/s]	
3.	Shaft centers [m]	
4.	Position of the bucket elevator	
	vertical  inclined [°]	
5.	Type of the bucket elevator	
	Centrifugal discharge  Center discharge by gravity  with s	nub wheel
6.	New installation  Replacement component  Modification	
	Reasons for the modification	
7.	Service hours per year	
8.	Power [kW]	
9.	Dimension of the casing [mm] $A = \_\_B = \_\_C =$	



## Questionnaire Bucket Elevators

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10. Chain centers [mm] _		X1 =		X2 =
x1	×2			
11. Bucket Elevator Syste	m			
BDS System	BDD-S System 🗌 🛛 BH	V System □	Chain ends and shackles	SDD-/SDS System
Shackle pitch [mm] _	Thread [m	ım]	Shackle standard	
12. Bucket size standard				
Back mounted		Side mounted		
Width [mm]		Projection a1 [mn	n]	
Projection a [mm]		Height h1 [mm] _		
Height h2 [mm]		Height h3 [mm] $_{-}$		
Thickness s [mm]		Radius r [mm]		
Weight [kg]		Capacity [I]		
Bucket filling degree [	%]	Number of Bucke	ts	
Bucket spacing [mm]		b		
13. Drive sprockets		toothed		
No. of teeth		Pitch circle dia. [n	nm]	
14. Chain diameter [mm]		Pitch [mm]		
Quality grade		Number of links p	per chain end	
15. Notes				

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