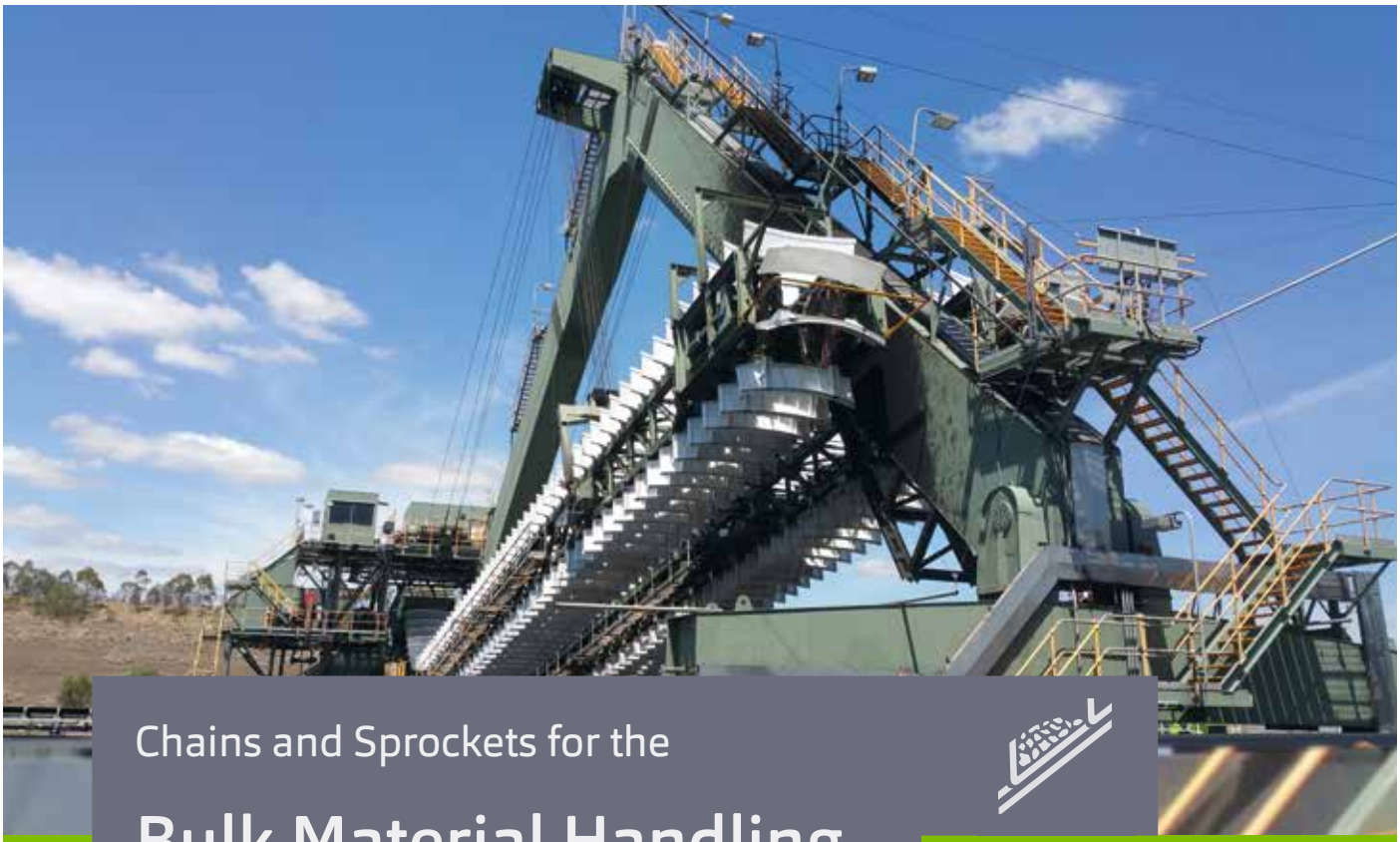
EN

KettenWulf



Chains and Sprockets for the

Bulk Material Handling Industry

Product Catalogue

- **» Product catalogue**
- **» Special solutions**
- **» Accessories**
- **» Spare parts**

The Global KettenWulf Group

The core factory in Kückelheim, corporate headquarters and KettenWulf competence centre

Figure top left:
Warehouse in Kückelheim, Germany

Figure top right:
Production and sales site in Ferlach, Austria

Figure bottom left:
Production and sales site in Hangzhou, China

Figure bottom right:
Warehouse and sales site near Atlanta, USA

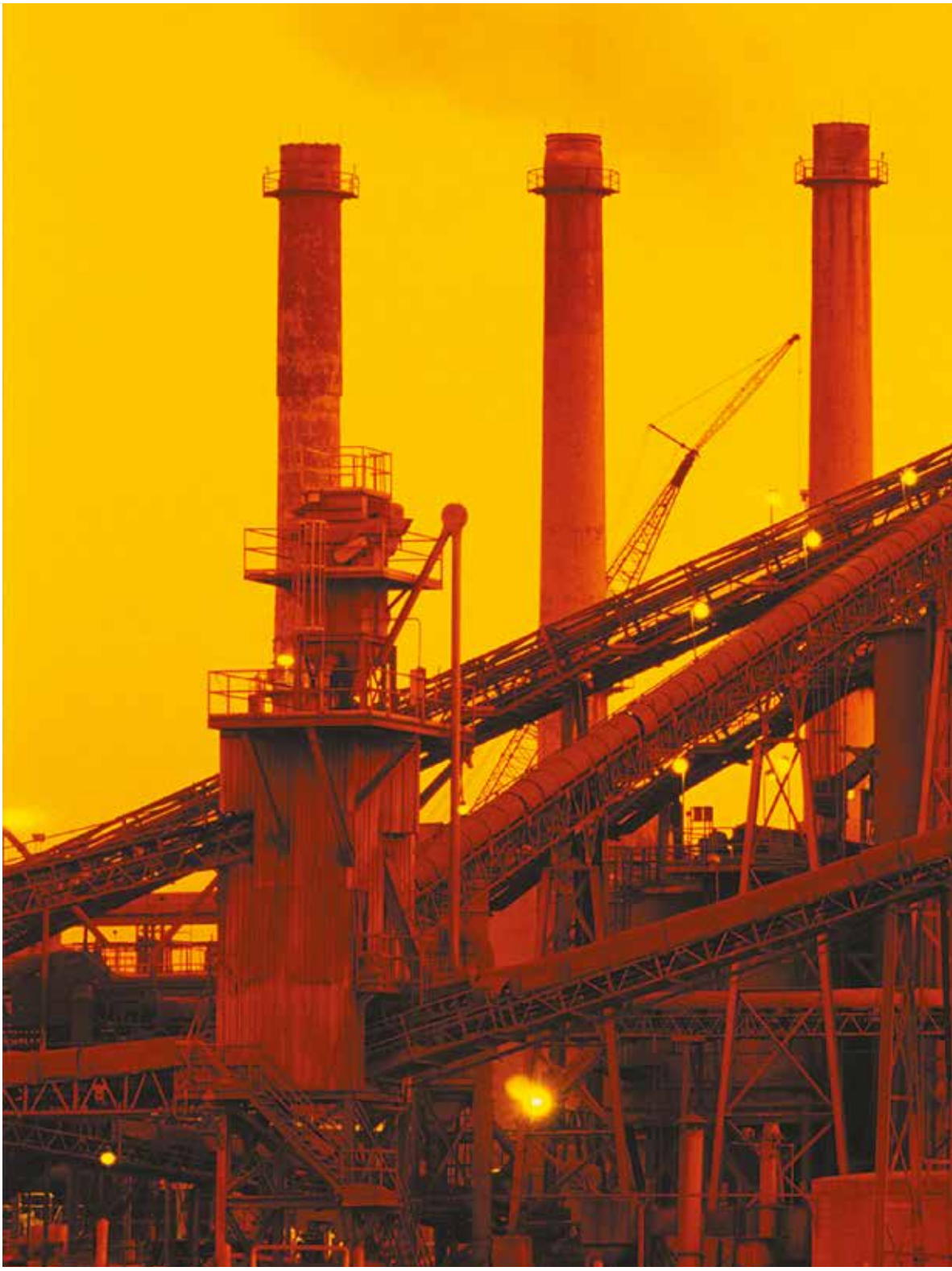
KettenWulf has been synonymous for quality, reliability and flexibility for more than 90 years. Founded in 1925 by the brothers Josef and Johannes Wulf the family-owned business developed into an internationally operating and highly-recognized manufacturer in the chain industry.

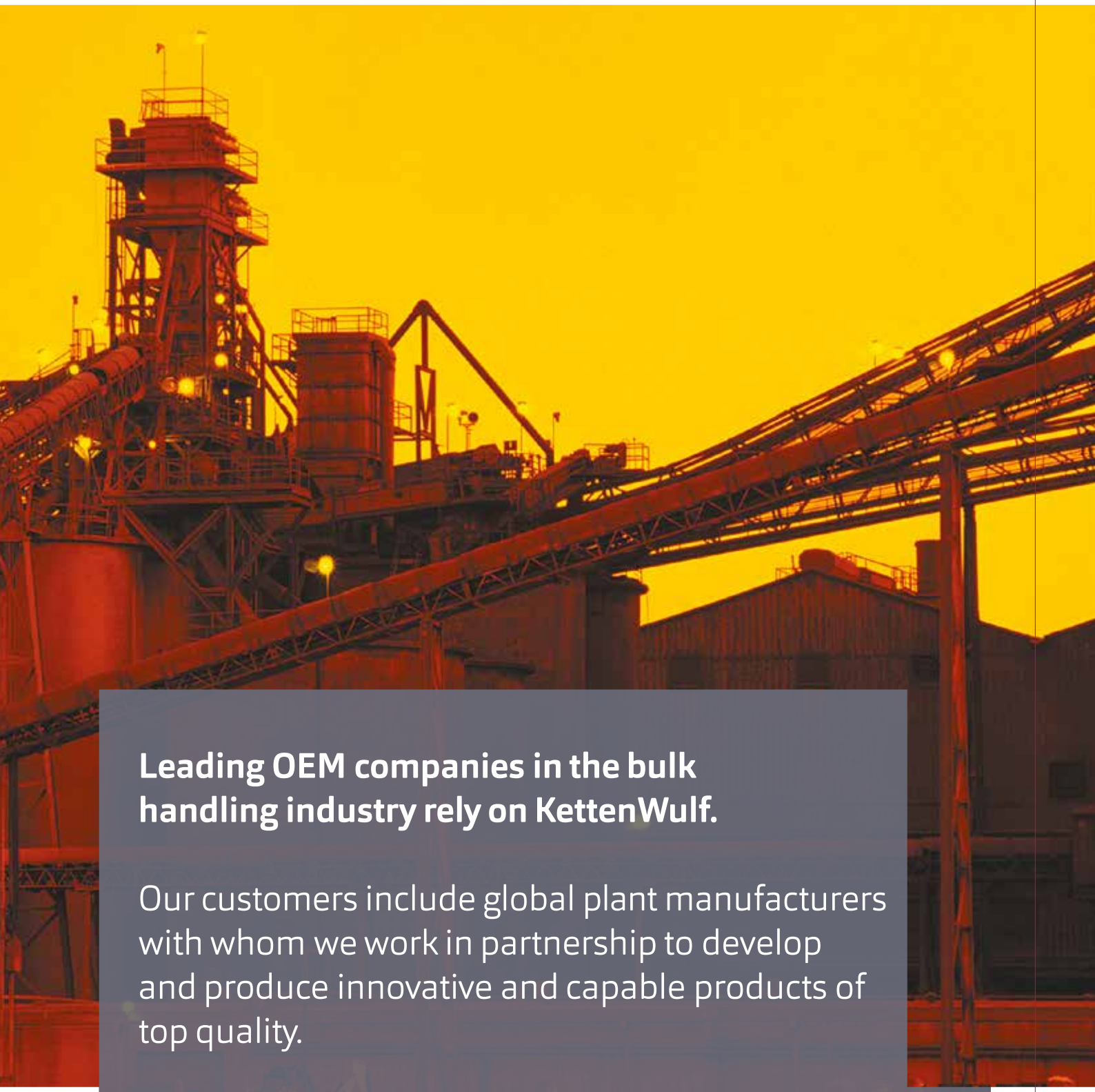
From its beginning as a small, local fabricator, KettenWulf's focus over the past nine decades has evolved to the development, manufacturing and distribution of custom-made conveyor and drive chain systems and technology. Today, more than 1400 employees at ten locations all across Europe, North America, Asia and Australia guarantee to serve our international customer's needs.

The headquarters in Kückelheim is also home to the KettenWulf competence center. Here we address, investigate and answer technical inquiries from all over the world in order to provide our customers with the best possible support. With 550 employees and a production area of 30.000 m^2 / 320.000 ft^2, this is the largest production site of the worldwide KettenWulf Group.

KettenWulf is your number one strategic partner. Whether you are located in Europe, Asia, Australia or the Americas, KettenWulf's global network allows us to respond to all your needs in just a short matter of time.

Trust, commitment and loyalty are the key values of our family-owned business. As a medium-sized enterprise our corporate structure is based on trust and strong personal relationships with both our customers and suppliers.





Leading OEM companies in the bulk handling industry rely on KettenWulf.

Our customers include global plant manufacturers with whom we work in partnership to develop and produce innovative and capable products of top quality.

KettenWulf – The partner of the bulk material handling industry

As developer, designer and manufacturer of engineered chains and sprockets, KettenWulf's deep experience allows us to meet our customers' specific conveyor and drive technology needs.

Every customer has unique needs and requirements. Therefore Kettenwulf's engineers and technicians take pride in tailoring customized solutions for every individual customer and application.

The high quality of our products is the result of our DIN EN ISO 9001 certified production and quality management processes. Highly trained and experienced engineers at the Kückelheim headquarters share their expertise with our employees all over the world, ensuring we develop and supply a first-class product at every production facility.

Almost every industry can benefit from our know-how. Wherever conveying or drive technology is required, KettenWulf is your specialist.

We constantly strive to improve the technology of our products to achieve longer service life, and higher performance under the most extreme conditions.

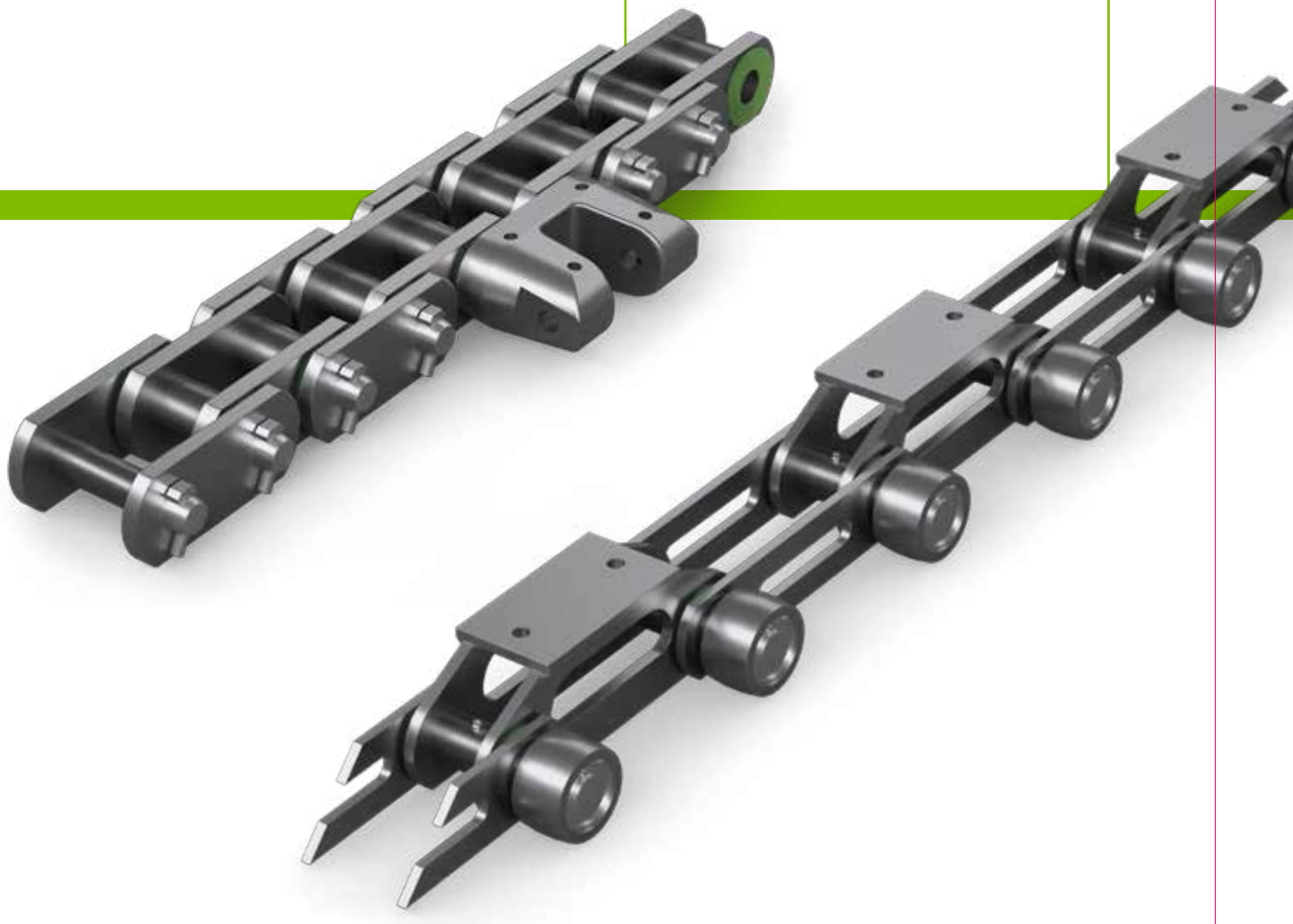
New developments

(extract)

Bucket Elevator Chain with Forged Link Plates

Feeder chains

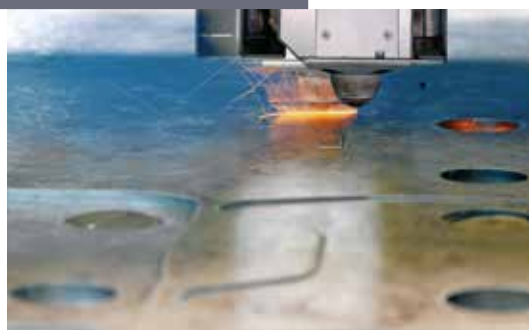
Reclaimer chains with Sealed Chain System



Development, production, installation & after sales: What we can do for you.

Competence, experience, efficiency and a high level of commitment are the basis of our work. We offer you individual consultation and the support of your development and production process from start to finish. Through an optimal selection process we guarantee our products and your long term and sustainable success.

KettenWulf establishes a number of highly specialised competences to support your projects. We have linked all individual services efficiently to obtain optimum results for your product solutions. This makes us your competent and reliable conveying and drive technology partner.



We support you as a competent partner: Both during initial consultation and an intensive support of the value creation process and during the review of existing resources.

Development:
In line with your requirements and preferences we design optimum solutions for conveying and drive technology.

Production:
Using the latest technologies we manufacture conveyor chains, drive chains and sprockets for you.

Assembly:
We know our products best. Together with reliable partners we take care of assembly on site if required.

After sales:
Upon request we inspect and evaluate the condition of your chains and sprockets for functionality and future service life.

The production process on the basis of guaranteed quality & innovation

Guaranteeing the highest levels of quality creates satisfaction and trust. On this basis our products can be developed continuously and ideas be developed for the future.

Quality as the basis of success DIN EN ISO 9001

The quality products of KettenWulf are continuously reviewed and developed in our research and development department.

We supply the highest quality! To achieve this, we only use the latest machines and production methods. With a high manufacturing depth over many years we can guarantee the consistent quality of our products and materials at all levels. In addition, the quality management and our R&D department ensure the continuous improvement of our products.

The following fundamental inspections/tests are carried out regularly in our extensive test lab:

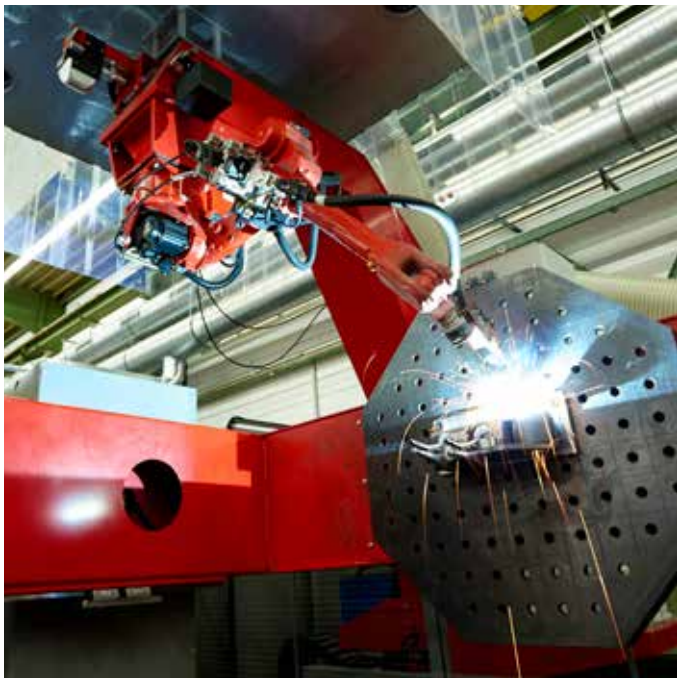
- **Endurance tests for chain components**
- **Media resistance tests**
- **Roller wear tests**
- **High temperature tests**
- **Fatigue strength tests for chain components**

The satisfaction and trust of our customers are a cornerstone of the corporate philosophy of the KettenWulf Group. To guarantee the consistent high quality of our products, KettenWulf has been certified in accordance with the strict DIN EN ISO 9001 guidelines. The quality management has been implemented in all production and management processes to ensure highest quality from incoming goods to final inspection.

Production technology overview

Laser cutting
For the production of link plates, requiring highest precision, KettenWulf uses laser cutting technology. This also allows for the manufacture of plate components with more complex contours.

Heat treatment
In the heat treatment of the components for our chains and sprockets we use two different methods: case hardening and inductive hardening. We thereby achieve a very high wear resistance for the chain links and thus an increase service life of the chain. Inductive hardening of sprockets reduces the wear in the tooth gaps, ensuring a long operating life between chain and sprocket.



Machining
In the field of machining KettenWulf uses the latest CNC technology. This not only permits the turning of bushings, pins and rollers, but also the milling of link plates, sprocket teeth and pitch borings with highest precision. The manufacture of variable designs is possible without problems in order to implement also specific customer preferences quickly and precisely. In addition, all bushings, pins and rollers for our chains can be be polished after heat treatment to narrow tolerances using precise grinding machines to guarantee an absolute perfect fit.

Welding technology
All welding is carried out in our own welding shop. The production uses the latest MIG and MAG methods. To guarantee consistent high quality, we use partly and fully robotic welding systems in the manufacture of our chains.

Punching
Modern die cutting technology permits the effective serial production of chain link plates and lugs. The required die cutting tools are manufactured by KettenWulf directly. This ensures a very high pitch accuracy for our chains. All link plates and lugs are shot blast after die cutting to further improve their quality.

Forming technology
To produce lug plates or attachment brackets at chain links in a bent design, the bending zones of all work pieces are first inductively heated. This prevents bending fractures and significantly increases the service life of the chain link.

Final assembly
In a last step the chain components are assembled in hydraulic presses into complete chain strands. Only after the subsequent final inspection will the products be released for dispatch to our customers.

EcoEvolution
Technologies

Product development in harmony with our environment.

KettenWulf lives environmental protection

Our attachment to nature does not only stem from our headquarters being at the green heart of the Sauerland region, but our demand for sustainable action determines our daily work. We promote this principle globally at all our locations by meeting not only statutory requirements but in addition adhering to further standards defined by ourselves. The standards in Germany and China are also certified in accordance with ISO 14001.

The environment as a resource also plays an important part in our investment considerations and we always take our decisions with an awareness of sustainable commerce. The results of this approach are ultimately also reflected in our product developments. Here are some examples:

» Energy-efficient chain technology
» Lubrication-free and therefore environmentally friendly and maintenance-efficient technology
» High noise attenuation for people and the environment

Continued development, specialisation & innovation

Absolute high-tech: the new high-frequency pulsator in our main plant

In order to meet the ever greater demands of bulk-materials conveying technology, KettenWulf is turning to the systematic, technical enhancement of its products. Maximum conveying speeds and large conveying heights, in particular, push the products ever more to their limits. It is therefore all the more important to know the individual products' maximum loads and to thereby achieve a corresponding level of operating safety.

In order to overcome these challenges, KettenWulf deploys state-of-the-art FEM tools, which can be used to expose and eliminate weak points in the chain system.

In order to test the theoretically determined potential for improvement in practice, KettenWulf has recently acquired one of the world's most modern high-frequency pulsators. This enables us to dynamically sample both individual components as well as entire chain strands of up to several hundred kilonewtons.

Reducing maintenance while maintaining a high level of plant availability is also a key aim in the further development of the products. KettenWulf has therefore developed a new sealing system which can permanently eliminate the need to re-lubricate the chain joint.

Sealed Chain System Permanently Oiled

EcoEvolution Technologies

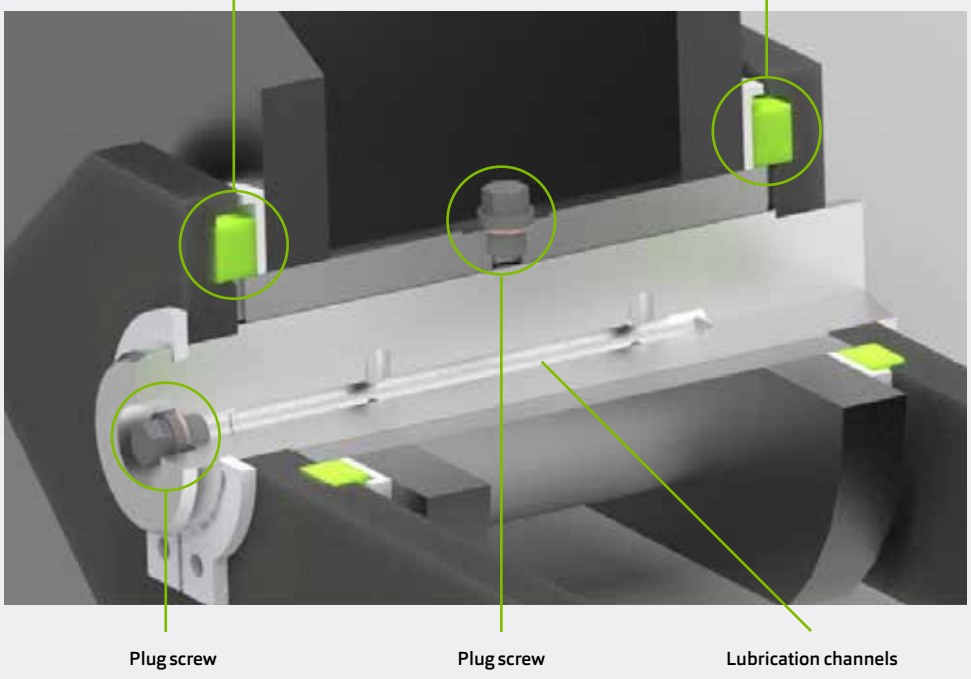
Deployment in the toughest conditions – alongside a large number of flexures, the ingress of abrasive material into the joint area, in particular, has an impact on chain wear. This adversely affects the chain elongation, which determines the service life of a conveyor chain. In order to better protect the chain joint, it is usually sealed with special components.

Targeted operational lubrication of the chain joint is also indispensable for maximising conveyor chains' service life. Strongly adhering material and heavy contamination often prevents the lubricant from being applied to the friction points accordingly. Greasing nipples, through which lubricant can be inserted into the joint area, have therefore proven themselves suitable in practice. The regular re-lubrication of each individual greasing nipple is often done manually and therefore entails long downtime for the plants and greater manpower requirements.

An important key aim in the further development of the products is to reduce maintenance while maintaining a high level of plant availability. In order to achieve this goal, KettenWulf has developed the new SCS PO sealing system in cooperation with renowned plant manufacturers and has successfully brought it to market. This system permanently eliminates the need to re-lubricate the chain joint.

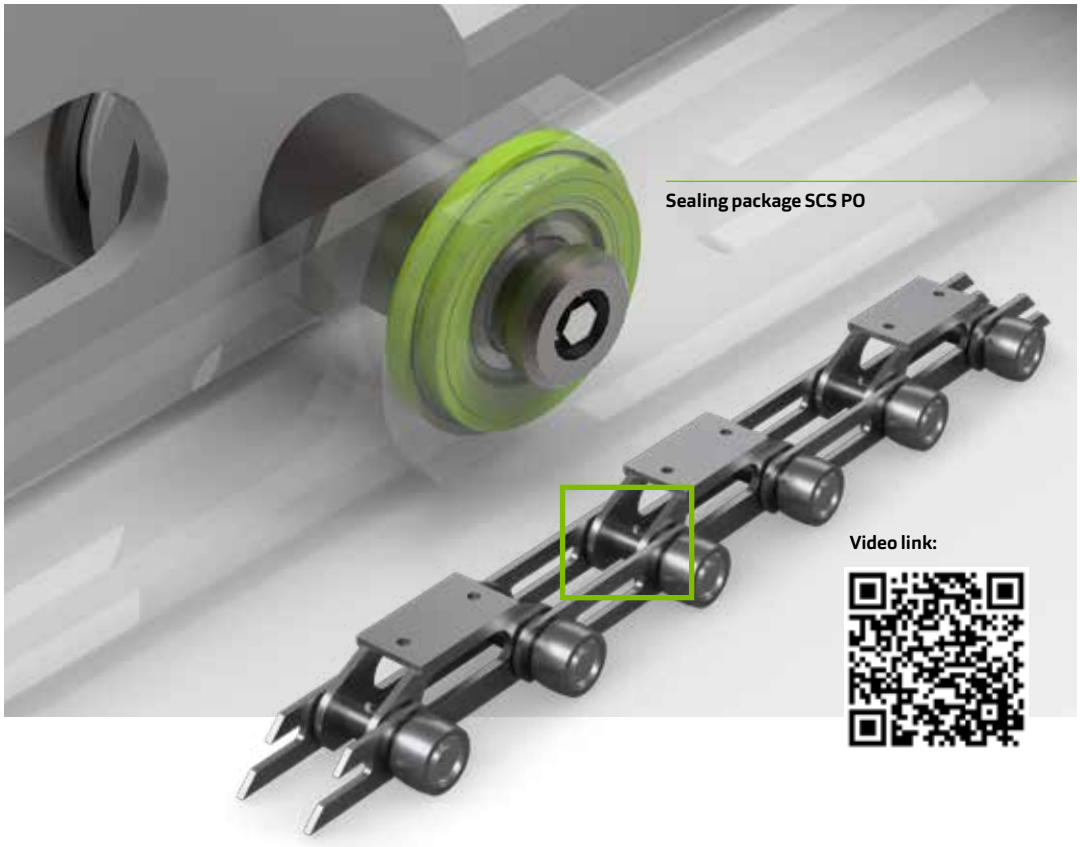
Using this system enables the chain to be operated almost maintenance-free. In addition, the use of lubricants is significantly lower. Alongside the reduced expenditure for operating resources, this technology thereby enables the plant to be operated sustainably and in a way that conserves resources.

The SCS PO technology has already proven very successful in practice. *(See the comparison of wear on the following page)*



Example of application and areas of use

Reclaimer chain with Sealed Chain System Permanently Oiled



Overview
» Maintenance-free chain system for conveying bulk materials
» Individual design of the bush conveyor chain
» Detailed selection of sealing components
» Application-related selection of lubricants
» Easy replaceability of highly stressed components
» Emergency lubrication (optional)

Benefits
» Oil-filled chain link
» Contacting sealing elements
» Permanent lubrication
» Protection from external influences
» Maintenance-free

Applications in bulk-material conveying
» Reclaimer systems
» Apron feeders
» Feeder breakers
» Continuous ship unloaders
» Pan conveyors (selective)
» Bucket elevators (selective)

Technological limits SCS PO
» Temperature range: -25 °C to +80 °C
» Chain speed: max. 2.5 m/sec
» Pin diameter: 26 mm to 60 mm
» Link plate height: min. 70 mm
» Total width: 12 mm to 16 mm

Comparison of wear of the pins: KW SCS CR vs KW SCS PO

The comparison of wear once again very clearly shows the benefits of the new sealing system. Even after a high stress of over 18,000 operating hours, the chain pin of the new SCS PO system shows no measurable wear. Installing the new system has therefore paid off very quickly, as the maintenance times and repair costs have been considerably reduced and the availability of the plant significantly increased.

Heavy Environment Roller (HE-Roller)

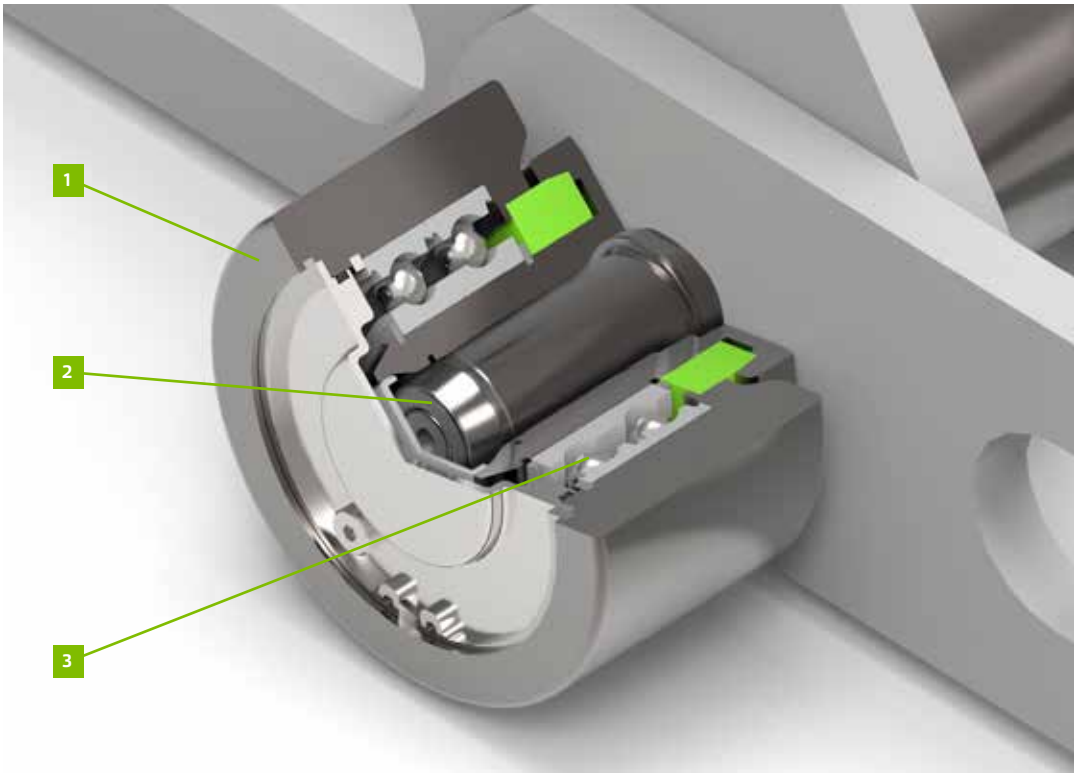
EcoEvolution Technologies

In order to meet the continuously increasing demands on outboard rollers in the bulk material handling sector, KettenWulf has further developed the proven technology of these rollers. This has resulted in a significantly improved product that can withstand the most difficult environmental conditions.

Thanks to innovative sealing concepts, KettenWulf now offers a lifetime-lubricated outboard roller for use in highly abrasive and corrosive materials.

The design of the rollers is flexible: depending on the load and the environment, different ball bearings and specific lubricants can be selected.

In conjunction with the new Click-On Mounting System, fast and error-free installation on site is also guaranteed. This reduces maintenance and mounting costs to a minimum.



1 Roller body with induction hardened outer diameter
2 Special shafts with Click-On technology
3 Roller bearing individually matched to the particular load case

Click-On Mounting System

EcoEvolution Technologies

To conserve resources and to save energy as well as maintenance costs, almost all modern reclaimer chains are equipped with outboard and maintenance-free rollers. However, the initial installation of these rollers on site is often time-consuming and can only be carried out with specific tools.

For this reason, KettenWulf has developed the new Click-On Mounting System. Whereas up to five steps were required to mount the roller in the past this can now be done with just one click. In particular, it is no longer necessary to lubricate and seal the rollers on site as this is already done at the factory.

Assembly times are thus reduced by 80%, which means time savings of several days in the case of a complete replacement of rollers for medium-sized systems. Besides, the new Click-On System helps prevent problems arising from wrong installation or lubrication, which ensures optimized machine availability from the start.

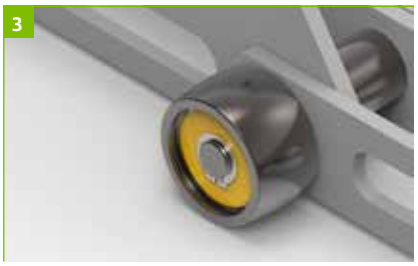
Assembly time

Maintenance-free roller with standard mounting system

Initial state:
Pin and roller without seal, cover and retaining ring

Step 1:
Slide the pre assembled roller onto the pin

Step 2:
Secure roller with circlip



Step 3:
Fill with special lubricant

Step 4:
Assemble seal, cover and retaining ring

Step 5:
Final state

Assembly time

Maintenance-free roller with Click-On mounting system

80% Time savings

Initial state:
Extended pin and pre assembled Click-On roller

Step 1:
Roller completely assembled by simply sliding the roller on until it "clicks"

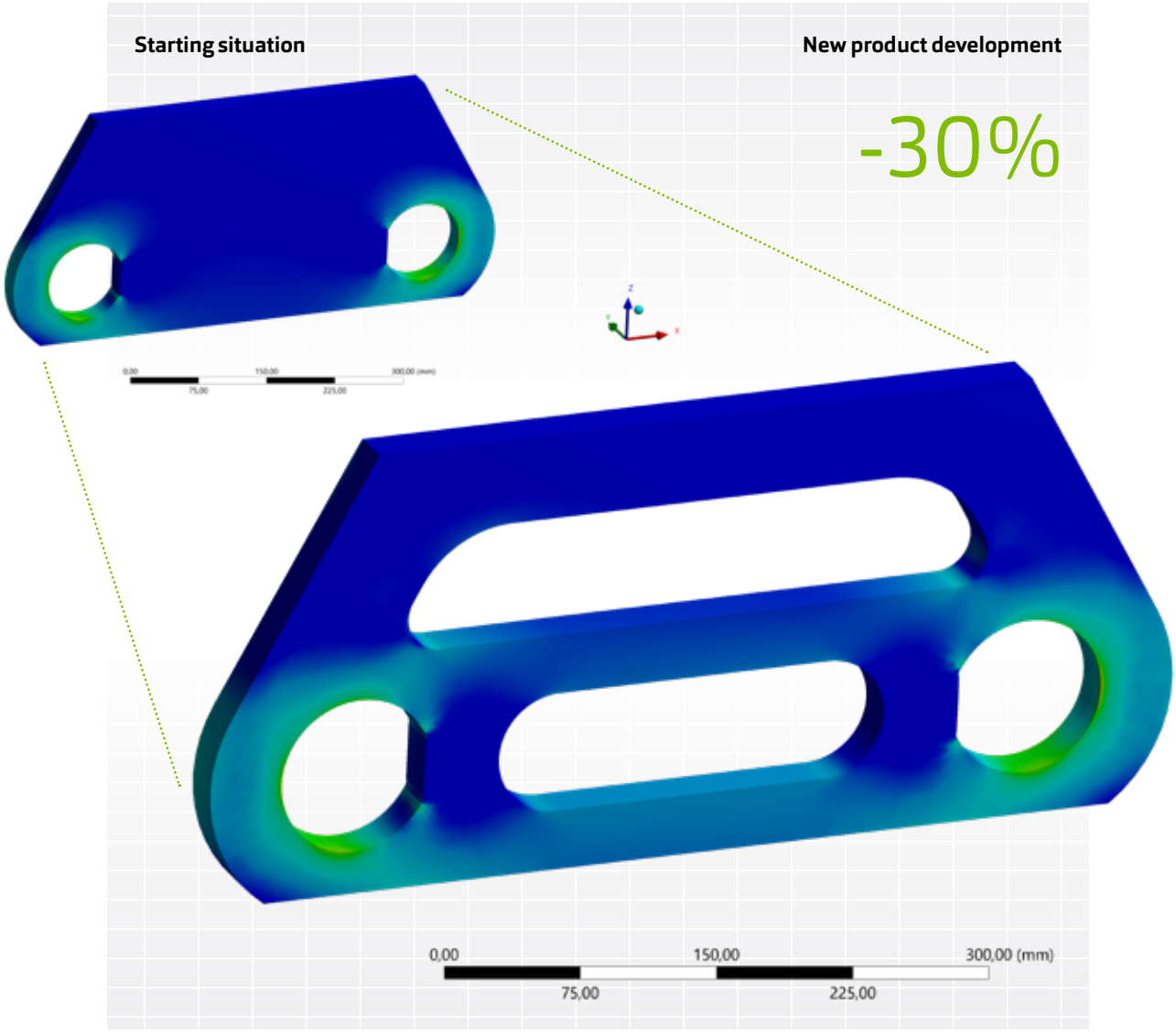
FEM

EcoEvolution Technologies

In order to know the individual products' maximum loads and to thereby achieve a corresponding level of operating safety, KettenWulf uses state-of-the-art FEM tools.

The use of modern FEM tools also allows us to calculate and simulate stresses and deformation in chains and other components as early as their development stage, meaning that possible constructional faults can be identified and avoided before series production starts.

As well as eliminating weak points, the products can also be weight-optimised using FEM analyses. This targeted geometry optimisation means that the products' operational weights can be reduced by up to 30%. In addition to lower handling requirements, the reduction in weight also means that energy consumption is significantly lower and that the plant can be operated in a sustainable manner over the long term.



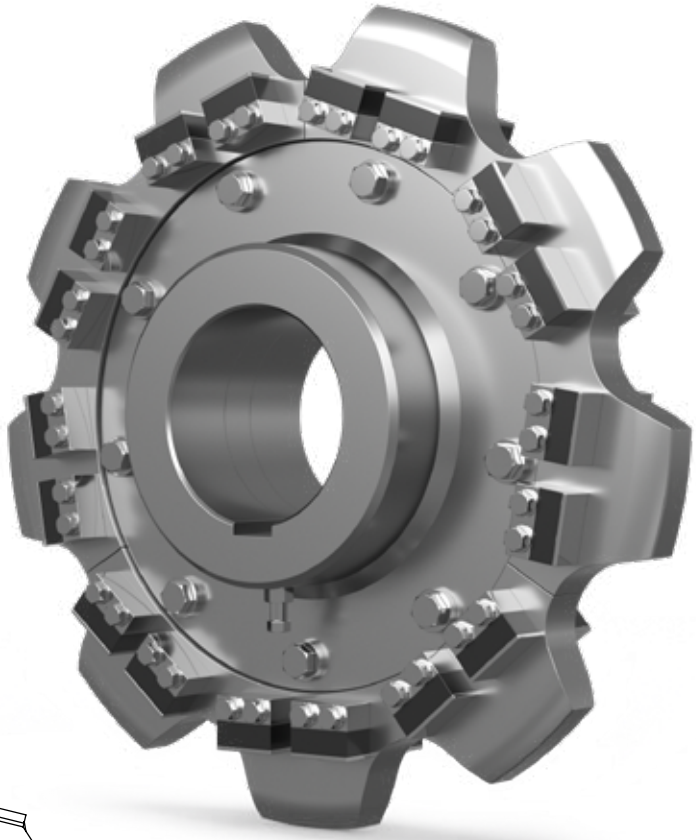
Noise Reduction Technology

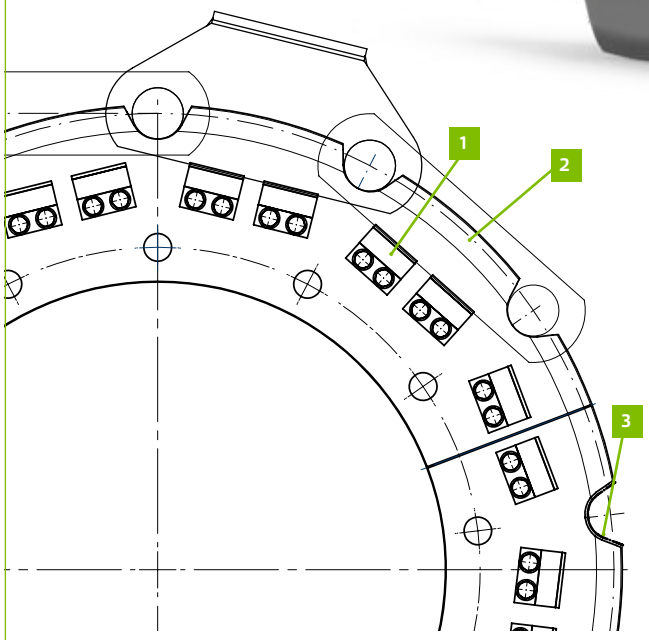
EcoEvolution Technologies

During the operation of plant in the bulk material handling industry annoying noise can often arise when the chain enters the sprocket. To reduce this operational noise and improve the working conditions, KettenWulf has developed a special Noise Reduction Technology coping with the demands and ambient conditions of this industry.

The Noise Reduction Technology developed by KettenWulf ensures that the chain links no longer knock against the gaps in the sprocket but are guided into the tooth gap in defined manner. The infeed noise of the chain is greatly reduced.

Sprocket with Noise Reduction Technology

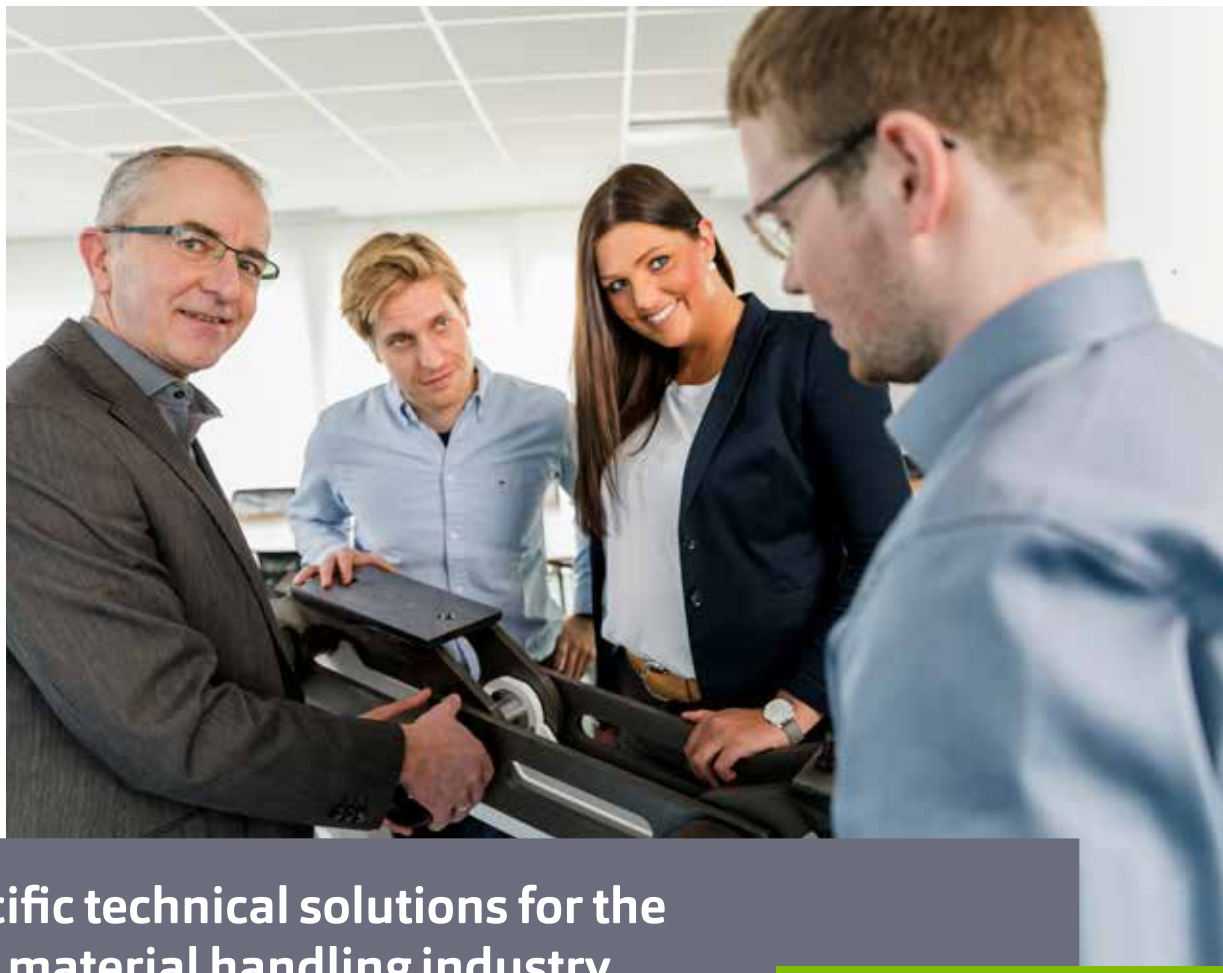




1 KettenWulf Noise Reduction Technology
2 Sprocket in divided design, prepared for assembly on an individual hub flange body
3 Optimised tooth gap geometry in accordance with KettenWulf standard, inductively hardened for high wear resistance (chain - sprocket)

Specific technical solutions for every area of the bulk material handling industry

Transporting bulk material with the aid of special chains is one of the most efficient transport solutions. For a multitude of applications in the bulk material industry KettenWulf offers groundbreaking chain technologies.



KettenWulf offers innovative chain technologies for various conveyor systems in the bulk material handling industry.

Specific technical solutions for the bulk material handling industry

For almost any conveying process in the bulk material handling industry, KettenWulf offers optimal chain designs. Jointly with our customers we develop the right solution, whether to transport coarse or fine grain bulk material or material with corrosive or abrasive properties

KettenWulf develops and produces special chains and sprockets for conveying almost any type of bulk material:

» clinker, gypsum, marl and clay for cement production
» granulate in fertiliser production
» coal, coarse-grained ore, crushed stone, limestone and slate in the mining industry
» biomass, coal, slag and quartzite in power stations

Asphalt

» Bucket elevators

Port technology

» Reclaimer systems

» Continuous ship unloaders

Mining

» Feeder Breaker

» Reclaimer systems

» Bucket wheel reclaimers/
Rotary Breakers

Cement

» Feeder Breaker

» Reclaimer systems

» Pan conveyors

» Bucket elevators

» Bucket wheel reclaimers/
Rotary Breakers

Fertilisers

» Reclaimer systems

» Bucket elevators

Coal fired plants

» Reclaimer systems

» Continuous ship unloaders

For every application the perfect solution

Transporting bulk material with the aid of special special chains is one of the most efficient transport solutions. For a multitude of applications in the bulk material handling industry, such as pan conveyors, slat-band chain conveyors, trough chain conveyors, reclaimer conveyors in mixing bed technology to high performance bucket elevators, KettenWulf offers groundbreaking chain technology.

In accordance with the plant-specific framework conditions, i.e. the local conditions and the transport task, KettenWulf offers optimum consultation for the selection and specification of the chain and sprocket as well as technical support on site.

Since every customer's requirements are basically different, KettenWulf offers mainly individual product solutions for the bulk material handling industry. Our engineers and technicians develop special chain systems customised to the specific application environments.

On the next page is an overview of the transport solutions we offer for various bulk materials together with an indication of possible applications in the individual industries.

Feeder Breaker/ Apron Conveyor

Bucket wheel reclaimers/
Rotary Breakers

Reclaimer systems

Pan conveyors

Bucket elevators

Continuous
ship unloaders

Roller units

Sprocket wheels/ Shafts

Service & Accessories

Chains for feeder breakers

KettenWulf chains for feeder breakers are specifically designed for the high demands of the mining industry. Shock loads, abrasive media, moisture and at times corrosive media place highest demands on the products used.

KettenWulf uses high quality materials which guarantees performance under these extreme conditions together with high service life.

Asphalt

Port technology


Mining


Cement

Fertilisers

Coal fired plants

Specific designs for various mining and energy industry applications

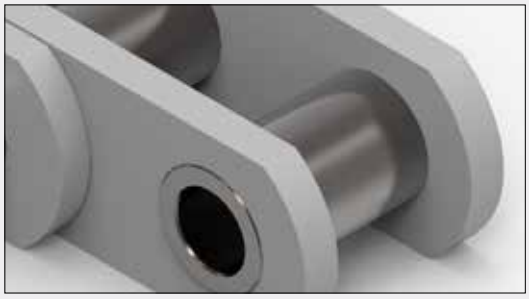
The processing and crushing of ores and minerals often takes place in mobile or stationary breaker plants. The raw materials removed in quarries or mines is fed to the breaker unit using chain conveyors for the material to be processed and crushed. KettenWulf supplies direct transport chains both for underground and surface mining.

Feeder breakers

Feeder chains with extended pins

Advantages

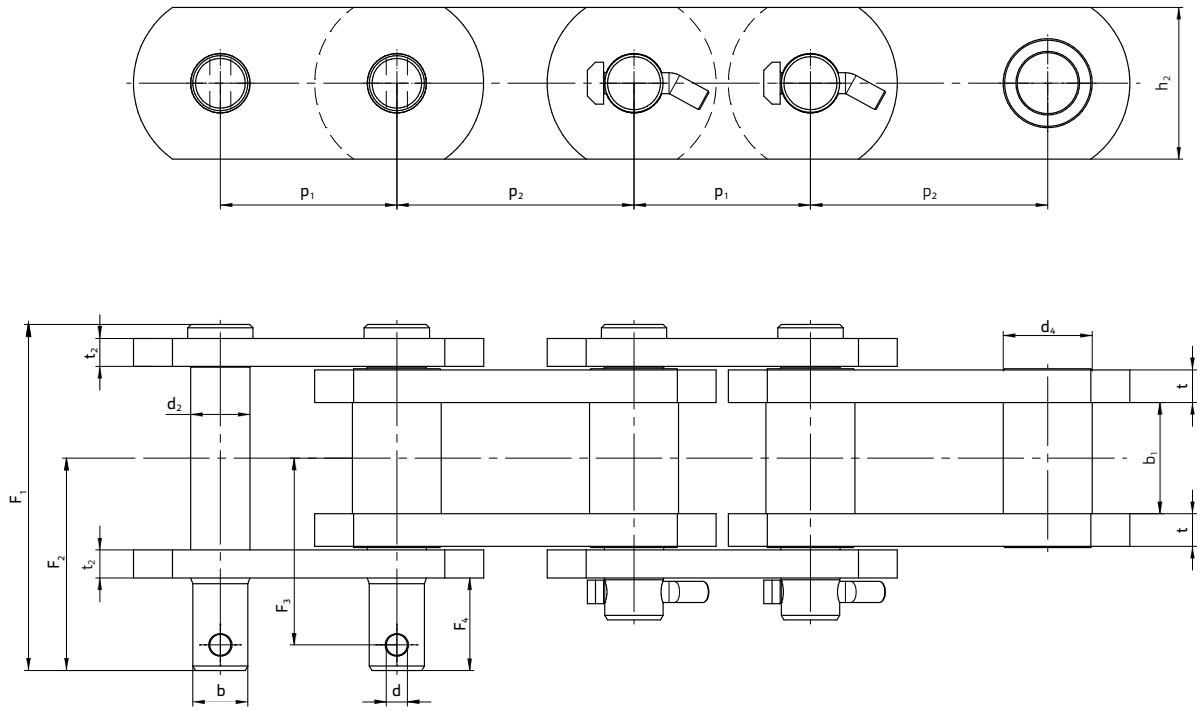
Extended pins
These are used to hold and connect the reclaimer bars on the conveyor chain.



Thick-walled bushings
Thick-walled bushings guarantee a high resistance to shock loads. The high surface hardness and ductile core significantly increase the service life of the conveyor chain.

Head pin design
To reduce assembly effort our chains are designed with head pins.

Drawings / product data



Feeder chain with extended pins

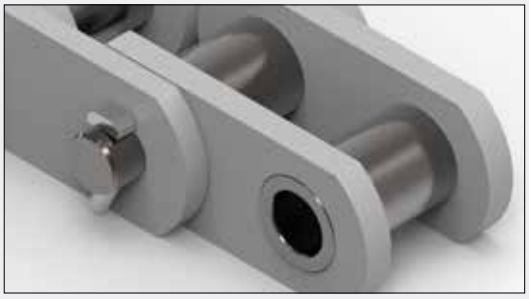
Type of chain	Calculated braking load	Unit	Pitch 1	Pitch 2	Inner width	Bush diameter	Pin diameter	Height of linkplate	Thickness of inner linkplate	Thickness of outer linkplate	Attachment part dimensions					
	F_B		p_1	p_2	b_1	d_4	d_2	h_2	t	t_2	F_1	F_2	F_3	b	d	F_4
KWFBE764738	610 kN	inch	3	4	1,87	1,5	1	2,56	0,55	0,47	5,84	3,58	3,15	0,93	0,35	1,56
		mm	76,2	101,6	47,50	38,1	25,4	65	14	12	148,30	90,90	80,00	23,60	9,00	39,60
KWFBE885744	770 kN	inch	3,5		2,25	1,75	1,125	2,76	0,55	0,47	6,25	3,84	3,45	1,06	0,35	1,63
		mm	88,90		57,15	44,45	28,58	70	14	12	158,75	97,60	87,70	27,00	8,75	41,30
KWFBE1146950	1060 kN	inch	4,5		2,75	2	1,37	3,54	0,63	0,63	7,51			1,31		2,00
		mm	114,30		69,85	50,80	34,87	90	16	16	190,70			33,30		50,80
KWFBE1396962	1050 kN	inch	5,5		2,75	2,476	1,36	3,74	0,79	0,71	8,57	5,44		1.3		1.75
		mm	139,70		69,85	62,89	34,62	95	20	18	217,70	138,10		34,1		44,45

Other designs are possible upon request

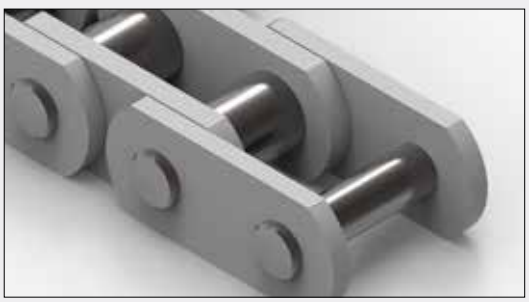
Feeder chains with forged lugs

Advantages

Lug as forging blank
These are used to hold and connect the reclaimer bars on the conveyor chain. The design in a special forged shape improves the transmission of forces between the medium and chain.

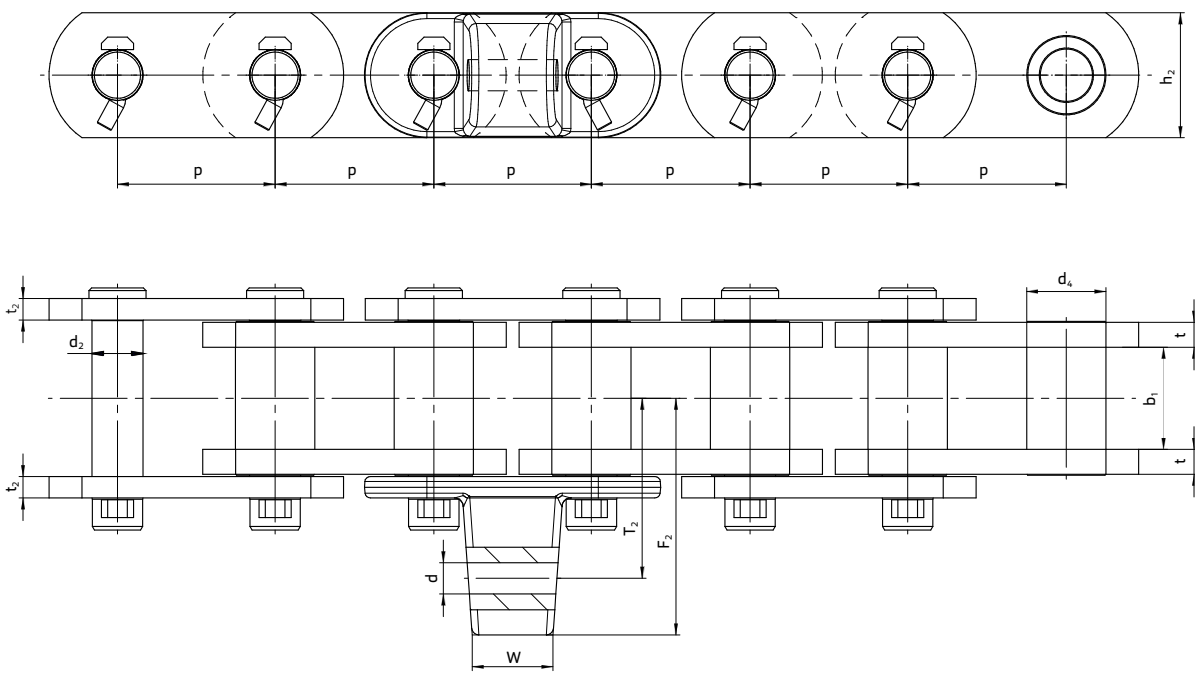


Thick-walled bushings
Thick-walled bushings guarantee a high resistance to shock loads. The high surface hardness and ductile core significantly increase the service life of the conveyor chain.



Head pin design
To reduce assembly effort our chains are designed with head pins.

Drawings/ product data



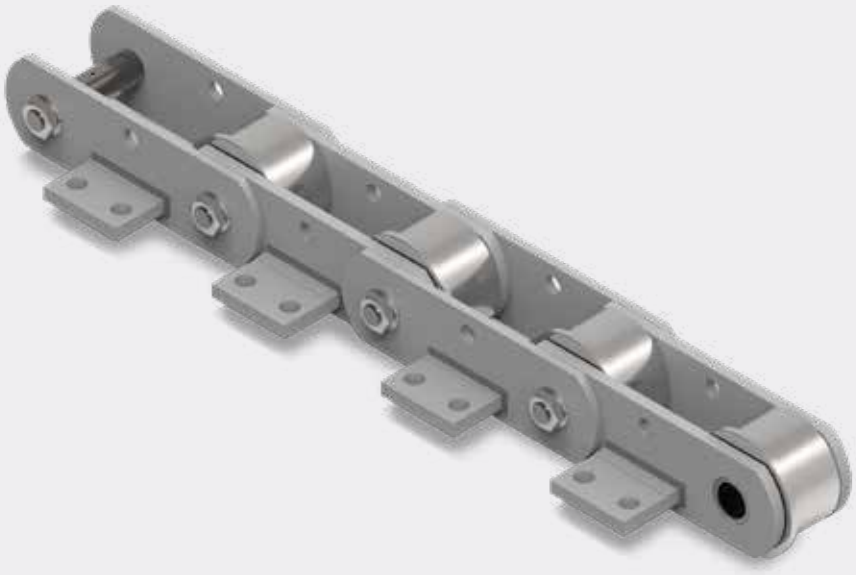
Feeder chains with forged lugs

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Bush diameter	Pin diameter	Height of linkplate	Thickness of inner linkplate	Thickness of outer linkplate	Attachment part dimensions			
	F_B		p	b_1	d_4	d_2	h_2	t	t_2	W	F_2	T_2	d
KWFBF885744	770 kN	inch	3,50	2,25	1,75	1,13	2,75	0,55	0,47	1,82	5,22	3,97	0,69
		mm	88,90	57,20	44,45	28,60	70	14	12	46,20	132,60	100,80	17,50
KWFBF1529269	1600 kN	inch	6,00	3,63	2,74	1,75	4,50	0,88	0,75	2,75	8,63	7,38	1,25
		mm	152,40	92,10	69,60	44,45	115	22	20	69,90	219,10	187,30	31,75

Other designs are possible upon request

Chains for apron feeders

Advantages



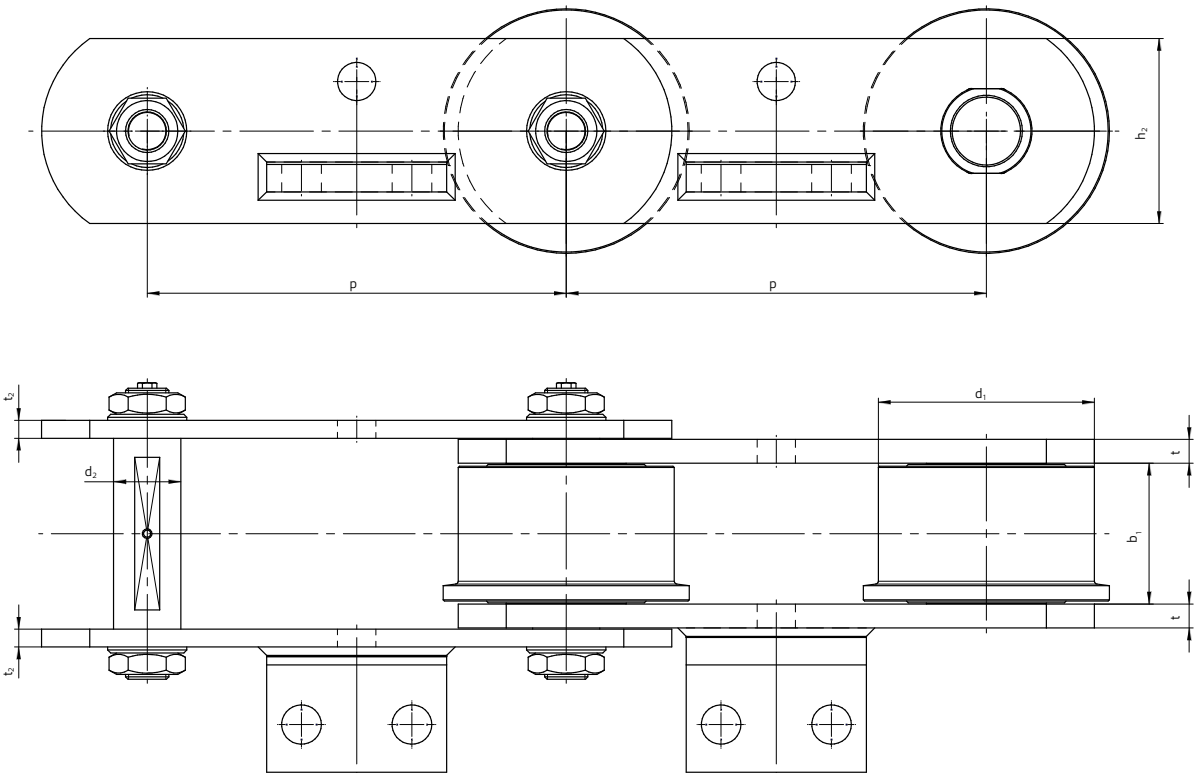
Welded bar
The bar is welded with attachment holes to one side and used to connect the transport links laterally.

Flanged rollers
Flanged rollers transfer the vertical material load to the guide rail. The tapered flange also guarantees optimum lateral guidance of the conveyor chain in the guiding system.

Bolted pins
Bolted pins with hexagonal nuts facilitate chain assembly on site.

Relubrication option
Screw-in lubrication nipples in the link pins provide a relubrication option. Special porting channels in the pin and bushing allow penetration of the grease at the bearing points (pin/ bush) of the track roller.

Drawings/ product data



Chains for apron feeders

Type of chain	Calculated breaking load	Unit	Pitch 1	Inner width	Roller diameter	Pin diameter	Height of linkplate	Thickness of inner linkplate	Thickness of outer linkplate
	F_B		p_1	b_1	d_1	d_2	h_2	t	t_2
KWAP35087150	600 kN	mm	350	87	150	36	100	12	10
KWAP35087150H	900 kN	mm	350	87	150	44	100	20	15
KWAP350118180	2000 kN	mm	350	118	180	56	155	20	15

Other designs are possible upon request

KettenWulf offers a wide selection of special drive chains for bucket wheel reclaimers and crusher systems.

Chains for bucket wheel reclaimers and rotary breakers

Large bucket wheel reclaimers move 240,000 tons cubic metres of excavated material daily. To guarantee the smooth conveying of these enormous volumes, roller chains and rotary chains must meet the highest quality requirements to prevent down-times.

The design, processing and storage of the most varied bulk materials takes place using e.g. bucket wheel reclaimers and crusher systems. For these extreme environmental conditions KettenWulf offers a wide selection of conveyor and drive chains designed for high shock loads and abrasive and corrosive media.

Asphalt

Port technology


Mining


Cement

Fertilisers

Coal fired plants

Application examples for chain systems in bucket wheel reclaimers and rotary breakers

Whether the wheel arm is designed with or without forward feed, whether moving clockwise or anti-clockwise: KettenWulf products for bucket wheel reclaimers and Rotary Breakers achieve highest quality levels – long service life, lowest maintenance intervals and functional solutions for your plant.

KettenWulf chains and sprockets are designed to operate in the highest demanding and extreme working/ environmental conditions to facilitate trouble-free operation in your plant.
Especially when used as drive chains in bucket wheel reclaimers and crusher systems, maximum force transmission and fatigue strength are required.

Bucket wheel reclaimer

Rotary Breakers

Bucket wheel reclaimers/ rotary breakers

Roller chains

Advantages

Tapered link plates
To optimise the dynamic running characteristics and reduce weight the link plates are scalloped in the centre section of the link plate.

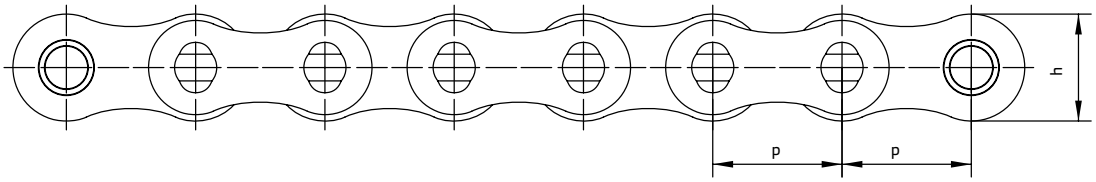
Small roller
To protect the chain sprockets against excessive wear the chains are designed with small rollers. The small rollers are surface-treated to increase their dynamic load capacity.

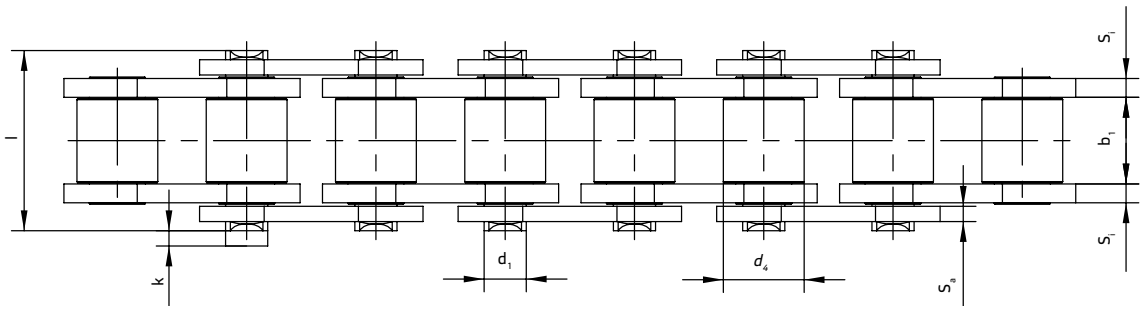
High-strength materials
The selection and heat treatment of materials is geared towards maximum power transmission.

Bucket wheel reclaimers/ rotary breakers

Roller chains in simplex design

Drawings/ product data





Basic dimensions of the roller chains according to ISO 606 in simplex design

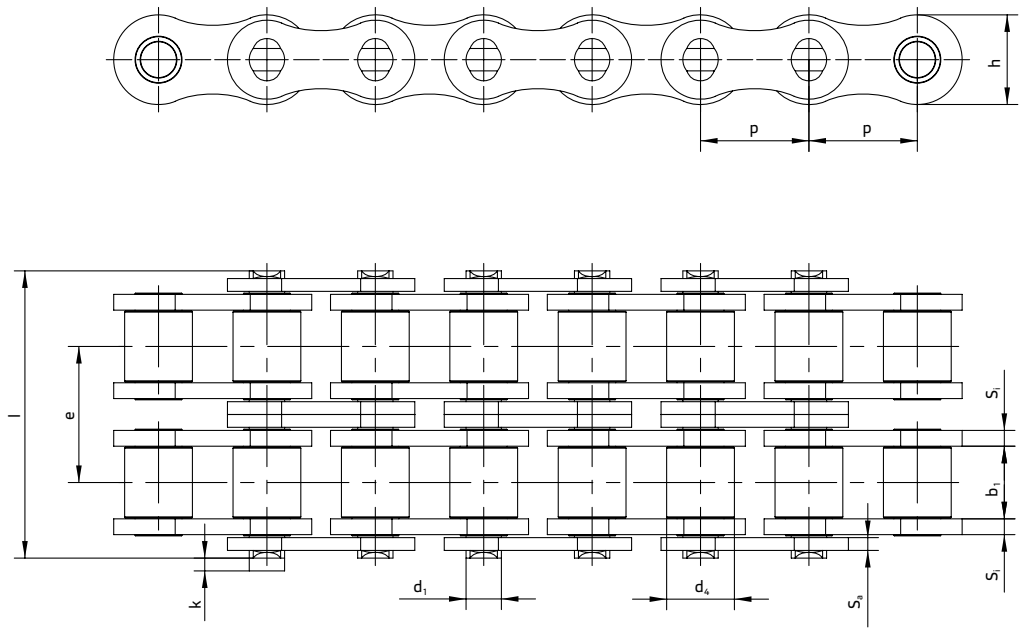
Type of chain	Calculated breaking load	Unit	Pitch	Min. clearance width	Max. protective roller Ø	Max. pin Ø	Max. pin length	Max. connecting pin overhang	Internal plate thickness	External plate thickness	Plate height	Link surface [cm²]	Weight [kg/ m]
	F_B		p	b_1	d_4	d_1	l	k	S_i	S_a	h	f	≈q
KW 16B HFS	72,5 kN	mm	25,40	17,02	15,88	8,28	36,1	3,1	4,00	3,20	21,00	2,10	2,83
KW 20B HFS	109,9 kN	mm	31,75	19,56	19,05	10,19	43,2	4,4	4,50	3,50	26,40	2,96	3,94
KW 24B HFS	178,3 kN	mm	38,10	25,40	25,40	14,63	53,4	5,5	6,00	4,70	33,40	5,54	7,21
KW 28B HFS	245 kN	mm	44,45	30,99	27,94	15,90	65,1	4,8	7,40	6,00	37,00	7,39	9,58
KW 32B HFS	272,4 kN	mm	50,80	30,99	29,21	17,81	67,4	3,9	6,90	6,00	42,20	8,10	9,97
KW 40B HFS	400 kN	mm	63,50	38,10	39,37	22,89	81,5	7,0	8,50	8,00	52,90	12,75	17,00
KW 48B HFS	600 kN	mm	76,20	45,72	48,20	29,20	99,1	6,9	12,00	10,00	64,00	20,61	27,00
KW 56B HFS	850 kN	mm	88,90	53,34	54,00	34,30	113,0	12,0	14,00	12,00	78,00	27,90	38,00
KW 64B HFS	1120 kN	mm	101,60	60,96	63,50	39,40	129,0	19,0	15,00	14,00	93,30	36,25	49,50
KW 72B HFS	1400 kN	mm	114,30	68,58	72,39	44,50	147,0	14,0	18,00	15,00	103,63	46,19	64,50

Other designs are possible upon request

Bucket wheel reclaimers/ rotary breakers

Roller chains in duplex design

Drawings/ product data



Basic dimensions of the roller chains according to ISO 606 in duplex design

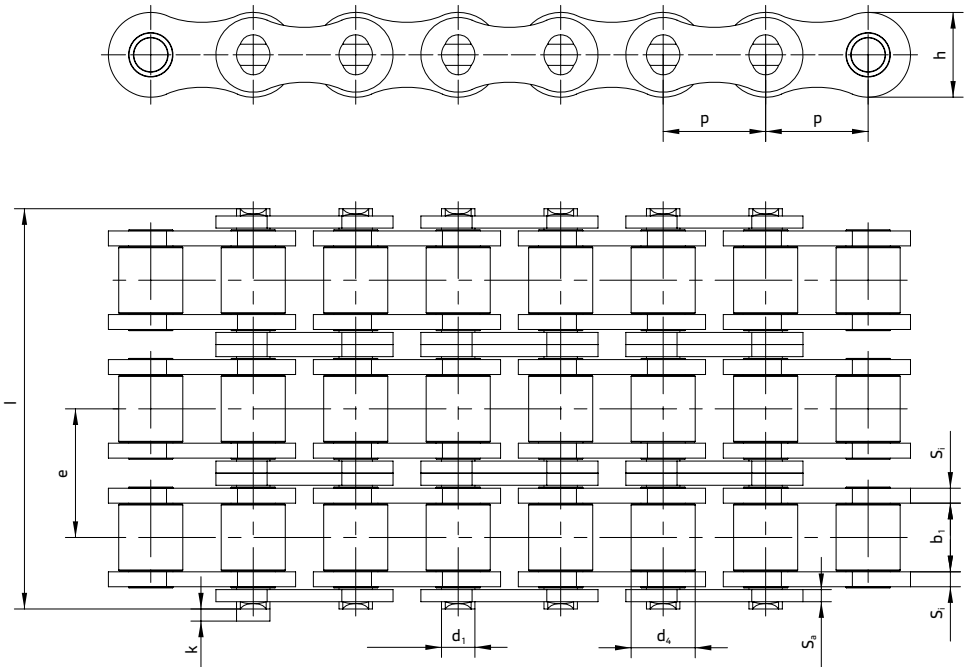
Type of chain	Calculated breaking load	Unit	Pitch	Min. clearance width	Max. protective roller Ø	Max. pin Ø	Max. pin length	Max. connecting pin overhang	Internal plate thickness	External plate thickness	Plate height	Transverse pitch	Link surface [cm²]	Weight [kg/ m]
	F_B		p	b_1	d^4	d_1	l	k	S_i	S_a	h	e	f	≈q
KW 16B-2 HFS	145 kN	mm	25,40	17,02	15,88	8,28	68,0	3,4	4,00	3,20	21,00	31,88	4,21	5,28
KW 20B-2 HFS	219,8 kN	mm	31,75	19,56	19,05	10,19	79,0	5,1	4,50	3,50	26,40	36,45	5,91	7,78
KW 24B-2 HFS	356,6 kN	mm	38,10	25,40	25,40	14,63	101,0	6,7	6,00	4,70	33,40	48,36	11,08	14,31
KW 28B-2 HFS	490 kN	mm	44,45	30,99	27,94	15,90	124,0	5,5	7,40	6,00	37,00	59,56	14,79	19,00
KW 32B-2 HFS	544,8 kN	mm	50,80	30,99	29,21	17,81	126,0	3,8	6,90	6,00	42,20	58,55	16,21	19,59
KW 40B-2 HFS	800 kN	mm	63,50	38,10	39,37	22,85	153,0	7,4	8,50	8,00	52,96	72,29	25,50	33,00
KW 48B-2 HFS	1200 kN	mm	76,20	45,72	48,20	29,20	190,4	7,6	12,00	10,00	64,00	91,21	41,23	54,00
KW 56B-2 HFS	1600 kN	mm	88,90	53,34	54,00	34,30	221,5	11,5	14,00	12,00	78,00	106,6	55,80	75,00
KW 64B-2 HFS	2100 kN	mm	101,60	60,96	63,50	39,40	250,0	10,0	15,00	14,00	93,30	119,89	72,50	100,00
KW 72B-2 HFS	2700 kN	mm	114,30	68,58	72,39	44,50	282,8	10,7	18,00	15,00	103,63	136,27	92,40	129,00

Other designs are possible upon request

Bucket wheel reclaimers/ rotary breakers

Roller chains in triplex design

Drawings/ product data



Basic dimensions of the roller chains according to ISO 606 in triplex design

Type of chain	Calculated breaking load	Unit	Pitch	Min. clearance width	Max. protective roller Ø	Max. pin Ø	Max. pin length	Max. connecting pin overhang	Internal plate thickness	External plate thickness	Plate height	Transverse pitch	Link surface [cm²]	Weight [kg/ m]
	F_B		p	b_1	d4	d_1	l	k	S_i	S_a	h	e	f	≈q
KW 16B-3 HFS	217,5 kN	mm	25,40	17,02	15,88	8,28	99,9	3,6	4,00	3,20	21,00	31,88	6,31	7,88
KW 20B-3 HFS	329,7 kN	mm	31,75	19,56	19,05	10,19	116,0	4,6	4,50	3,50	26,40	36,45	8,87	11,66
KW 24B-3 HFS	534,9 kN	mm	38,10	25,40	25,40	14,63	150,0	5,8	6,00	4,70	33,40	48,36	16,63	21,10
KW 28B-3 HFS	735 kN	mm	44,45	30,99	27,94	15,90	184,0	5,1	7,40	6,00	37,00	59,56	22,18	28,34
KW 32B-3 HFS	817,2 kN	mm	50,80	30,99	29,21	17,81	184,0	4,4	6,90	6,00	42,20	58,55	24,31	29,30
KW 40B-3 HFS	1200 kN	mm	63,50	38,10	39,37	22,89	226,0	7,0	8,50	8,00	52,90	72,29	38,25	50,00
KW 48B-3 HFS	1800 kN	mm	76,20	45,72	48,20	29,20	281,0	8,0	12,00	10,00	64,00	91,21	61,84	80,00
KW 56B-3 HFS	2310 kN	mm	88,90	53,34	54,00	34,30	330,0	12,0	14,00	12,00	78,00	106,60	83,71	111,50
KW 64B-3 HFS	3050 kN	mm	101,60	60,96	63,50	39,40	370,0	10,0	15,00	14,00	90,17	119,89	108,74	150,00
KW 72B-3 HFS	3930 kN	mm	114,30	68,58	72,39	44,50	420,0	14,0	18,00	15,00	103,63	136,27	135,57	194,00

Other designs are possible upon request

Bucket wheel reclaimers/ rotary breakers

Rotary chains

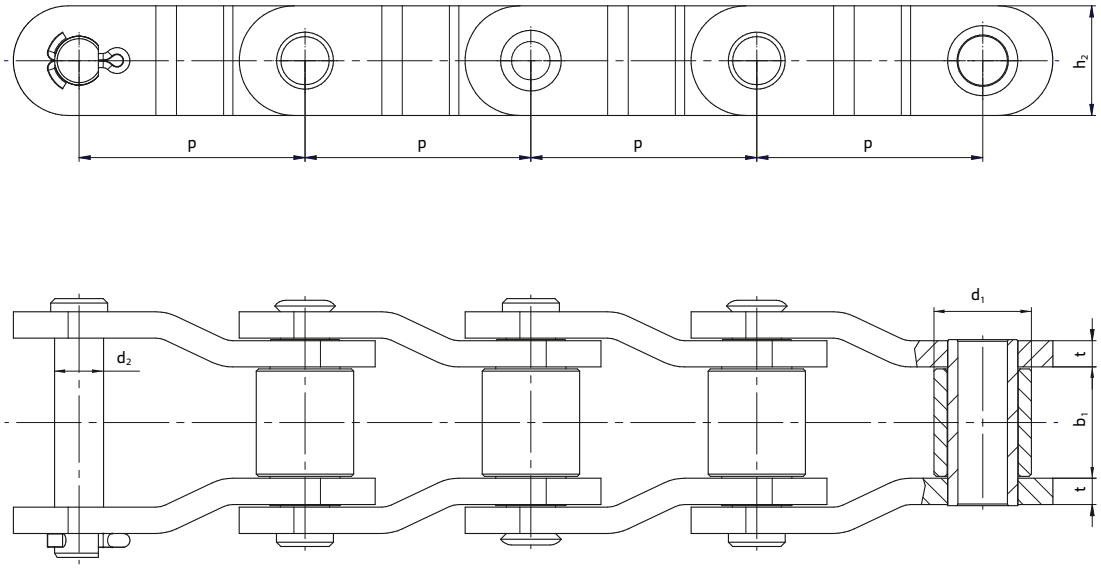
Advantages

Angulated link plates
The chain link plates are cranked so that a chain link forms an inner and outer link simultaneously. This is necessary for an uneven number of links.

Small roller
To protect the sprockets against excessive wear the chains are designed with small rollers. The small rollers are surface-treated to increase their dynamic load capacity.

High-strength materials
The selection and heat treatment of materials is geared towards maximum power transmission.

Drawings/ product data



Basic dimensions of rotary chains

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Pin diameter	Roller diameter	Height of linkplate	Thickness of linkplate
	F_B		p	b_1	d_2	d_1	h_2	t
KWRO2510	271 kN	mm	78,1	36,9	16,0	31,75	40	8
KWRO2814	556 kN	mm	88,9	36,9	22,25	44,45	60	14
KWRO3214	476 kN	mm	103,2	48,0	22,0	44,45	55	14
KWRO3618	894 kN	mm	114,3	50,8	27,97	57,15	75	15
KWRO4020	1100 kN	mm	127,0	68,3	31,78	63,5	90	18

Rotary chains based on DIN 8182

KettenWulf offers a wide selection of special conveyor chains for reclaimer systems.

Chains for reclaimer systems

Storing and homogenising bulk material, in particular raw material and coal, is done with the aid of reclaimer systems of varying design in the bulk material handling industry.

Here KettenWulf offers a wide selection of conveyor chains adapted specially to the extreme environmental Conditions, such as high shock loads, abrasive media, corrosive product and environmental impacts are just a few of the technical considerations our engineers have to consider.

Asphalt


Port technology


Mining


Cement


Fertilisers


Coal fired plants

Specific designs for different storage units

KettenWulf special chains and sprockets permit trouble-free operations in the most varied plant systems for bulk material storage and under extreme environmental conditions, such as in bridge reclaimer, portal reclaimer, side reclaimers or round mixing beds.

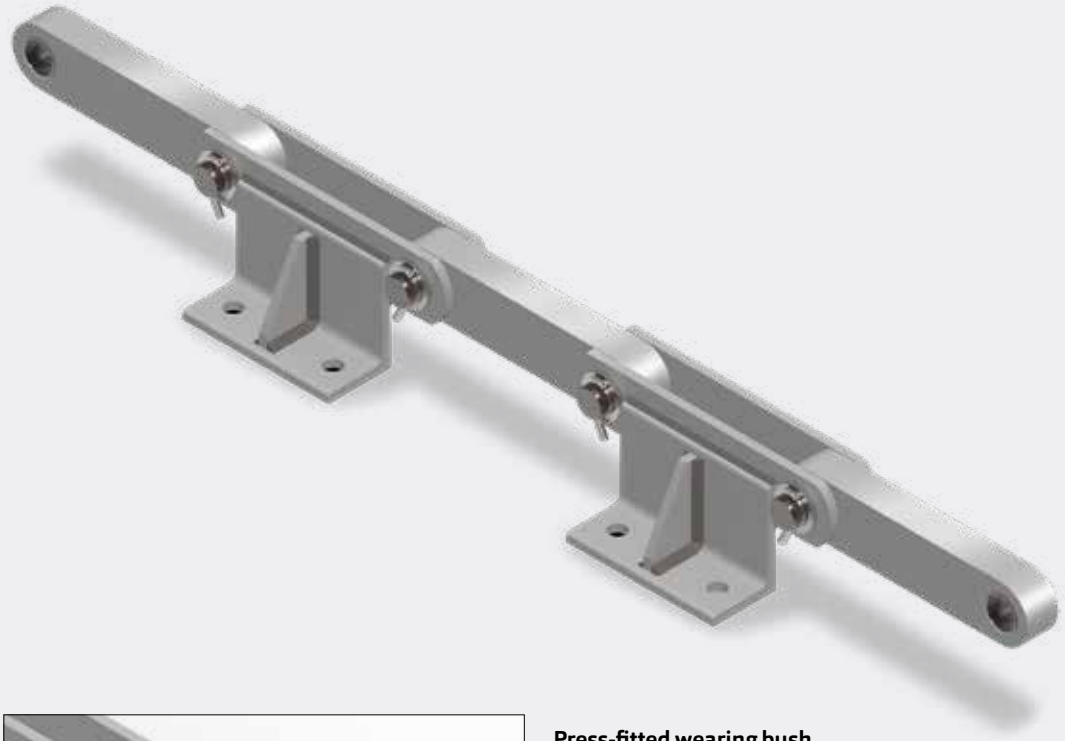
Bridge reclaimer

Semi-portal reclaimer

Portal reclaimer

Reclaimer chains – Block Link Design

Advantages



Press-fitted wearing bush
The hardened wearing bush from alloyed case-hardened steel improves the wear resistance of the chain and increases its service life significantly. The wearing bush is press-fitted with an excess into the block plate to protect against torsion.

Milled block plate heads
To optimise the force transmission between the chain and sprocket and reduce wear, the heads of the block plates are machined.

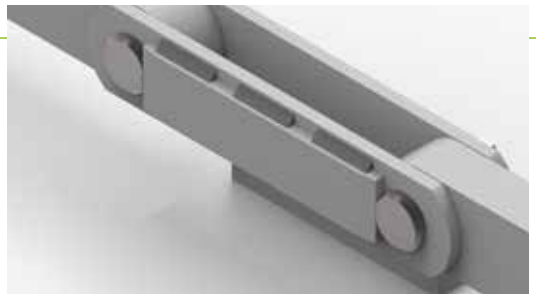
Versions SCS CR

Reinforced reclaimer attachment

» Reinforcement of the dynamically stressed reclaimer attachment plates and gusset plate designs
» Optimised force transmission through component reinforcement

Guide rail

» Guide rail to absorb existing lateral forces
» Guide rail with contact chamfers to reduce friction

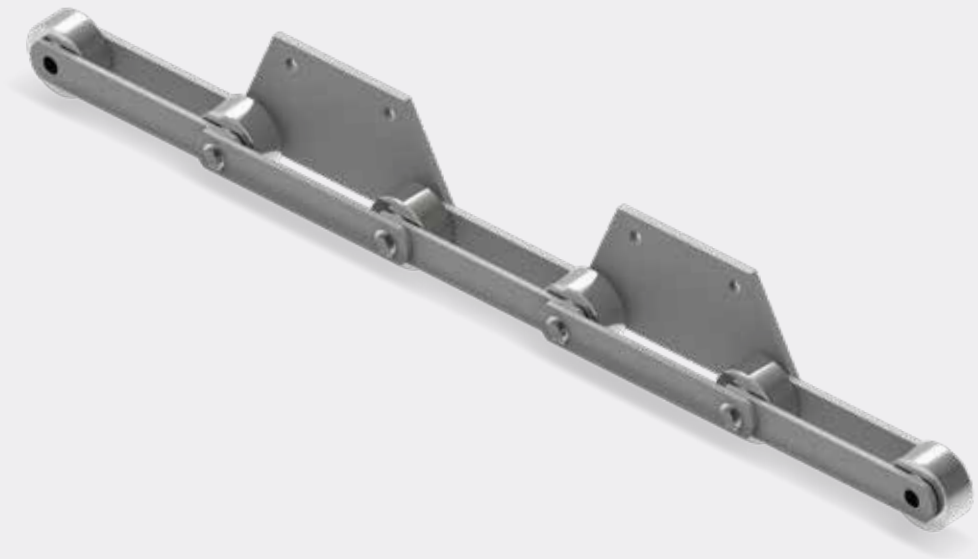


Lubrication system

» Lubrication system consisting of lubrication bores and lubrication nipples in the chain pin
» Optimum lubricant application into the chain link and cleaning effect through lubrication flow from inside to outside

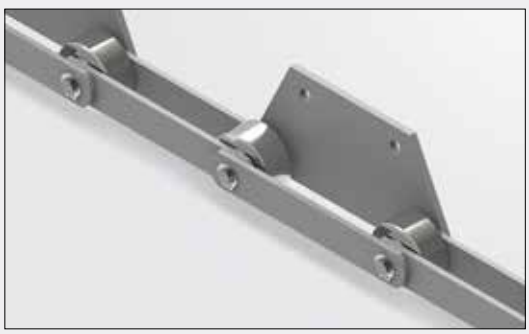
Reclaimer chains as bush conveyor chains
with internal rollers

Advantages



Internal roller
The internal roller permits the chain roll instead of drag like the Block Link Chain which significantly reduces the friction and load on the chain and drive system. The guide rails are also subject to reduced loads from the rolling of the rollers.

Chain link
The chain link consists of a thick-walled hardened bearing bush and a hardened chain pin providing optimum force transmission.



Inner and outer links
The chain link plates of the inner and outer links are made of flat material and enable the optimum interaction between chain and sprocket and a marked weight reduction compared to the block plate chain.

Versions

Reinforced reclaimer attachment

» Integral design attachment plate with one of several welded gusset plate designs
» Optimised force transmission

Welded reinforcement element

» Optimised force distribution of the excavating forces over both chain link plates of the attached link through welded reinforcement element

Relubrication option via lubrication nipples

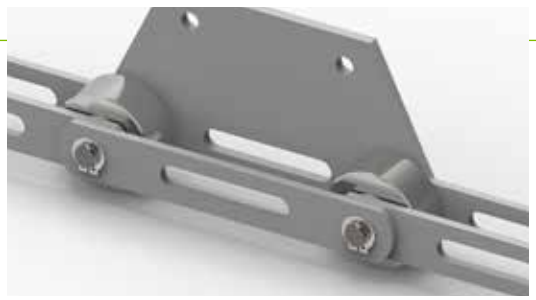
» Lubrication system consisting of lubrication bores and lubrication nipples in the chain pin
» Optimum lubricant application into the chain link

KettenWulf sealing system

» The KettenWulf sealing system protects the chain link against contamination
» Specifically for abrasive or corrosive conveying media

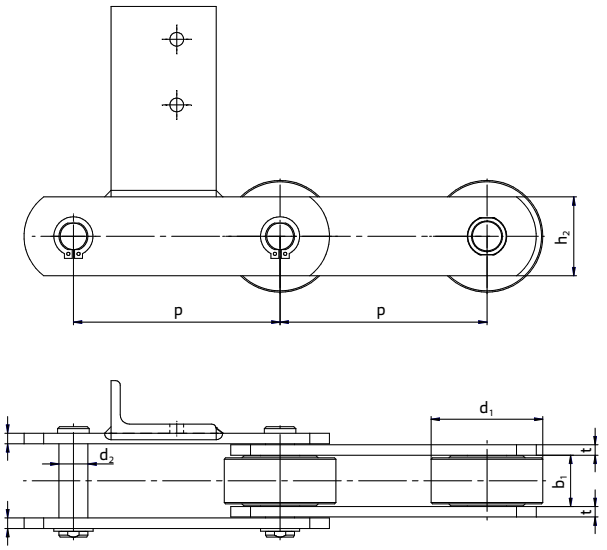
Weight reduction

» Chain link plates with lightening holes for weight reduction
» Reduced chain tensile force due to lower chain weight

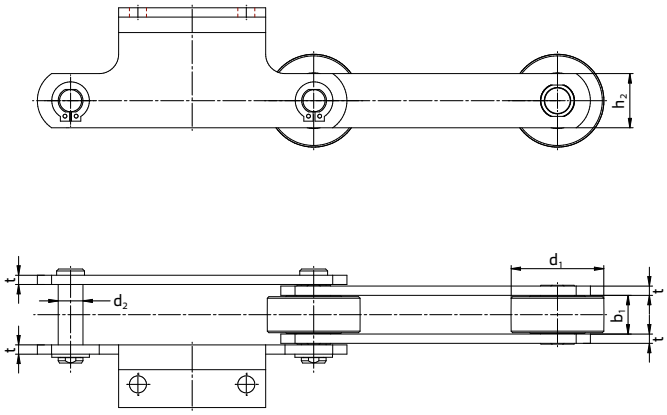


Reclaimer chains as bush conveyor chains
with internal rollers

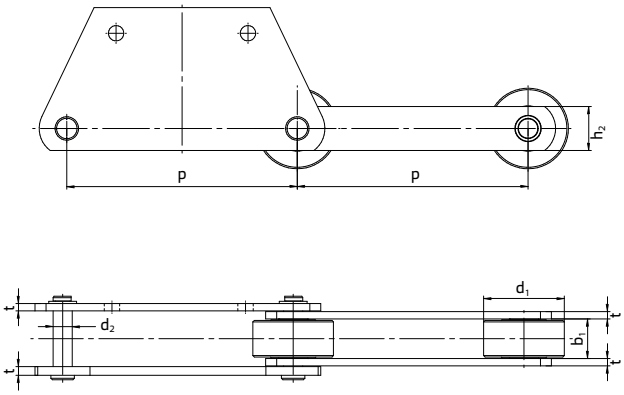
Drawings



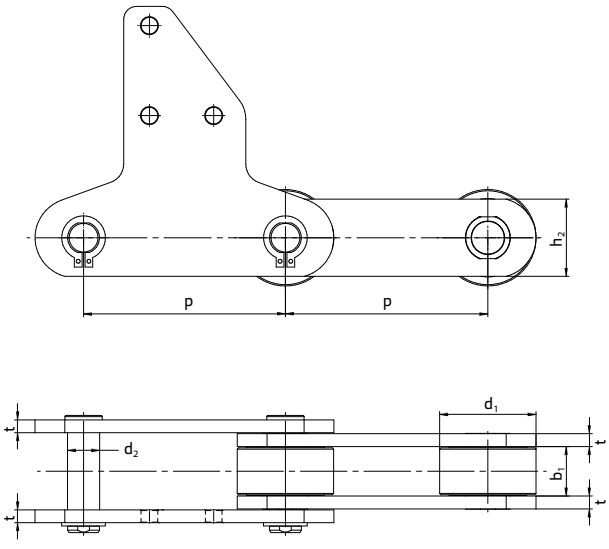
1 **Reclaimer chain with internal roller and welded vertical attachment bracket**



2 **Reclaimer chain with internal roller and angled attachment bracket**



3 **Reclaimer chain with internal roller and raised trapezoidal attachment plate**



4 **Reclaimer chain with internal roller and vertical raised attachment plate**

Product data

Basic dimensions of the reclaimer chain with internal roller

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Roller diameter	Pin diameter	Height of linkplate	Thickness of linkplate
	F_B		p	b_1	d_1	d_2	h_2	t
KWRCI4080	300 kN	mm	160 250 315	40	80	22	60	8
KWRCI50100	500 kN	mm	160 250 315	50	100	30	80	10
KWRCI60120	800 kN	mm	250 315 400	60	120	36	90	12
KWRCI80130	1000 kN	mm	250 315 400	80	130	40	100	15
KWRCI90140	1200 kN	mm	315 400 500	90	150	42	120	15
KWRCI110170	2000 kN	mm	315 400 500	110	170	54	130	20
KWRCI120190	2500 kN	mm	315 400 500	120	190	56	150	25

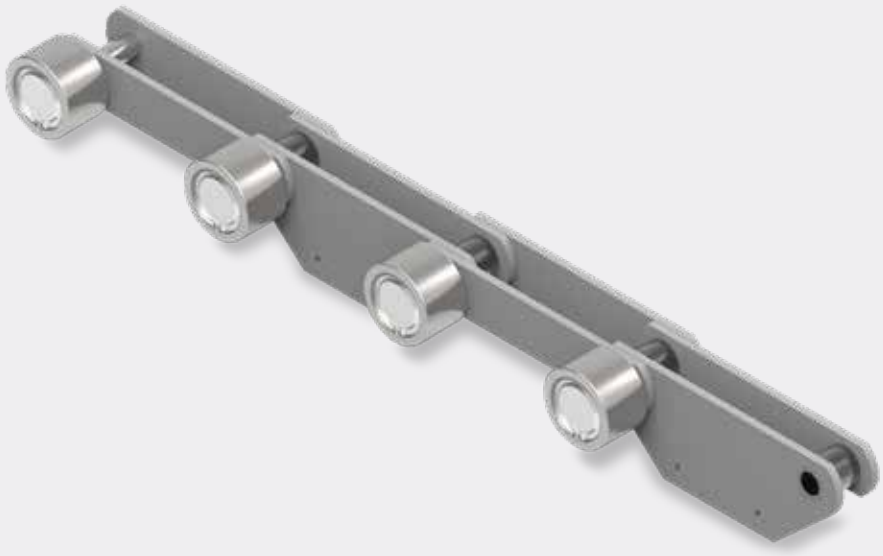
Additional information:

» Design of the reclaimer attachment in accordance with individual customer specification

» Pin lock provided by locking collar head pin

Reclaimer chains as bush conveyor chains
with outboard rollers

Advantages



External low-maintenance roller
The external maintenance-free roller with press-fitted ball bearings reduces the chain tensile force due to lower roller friction compared to the reclaimer chain with internal roller. This achieves an improved chain utilisation.

Chain link from bushing and pin
The chain link consists of a thick-walled hardened bearing bush and a hardened chain pin providing an optimum transmission force.

Inner and outer links
The chain link plates of the inner and outer links are made of flat material and enable the optimum interaction between chain and sprocket and a marked weight reduction compared to the block plate chain.

Versions SCS CR

Reinforced reclaimer attachment

» Reinforcement of the dynamically stressed reclaimer attachment through welded reinforcement gussets
» Optimised force transmission

Welded reinforcement element

» Optimised force distribution of the excavating forces over both chain link plates of the attached link through welded reinforcement element

Relubrication option via lubrication nipples

» Lubrication system consisting of lubrication bores and lubrication nipples in the chain pin
» Optimum lubricant application into the chain link
» Cleaning effect of the chain link through lubricant

KettenWulf sealing system

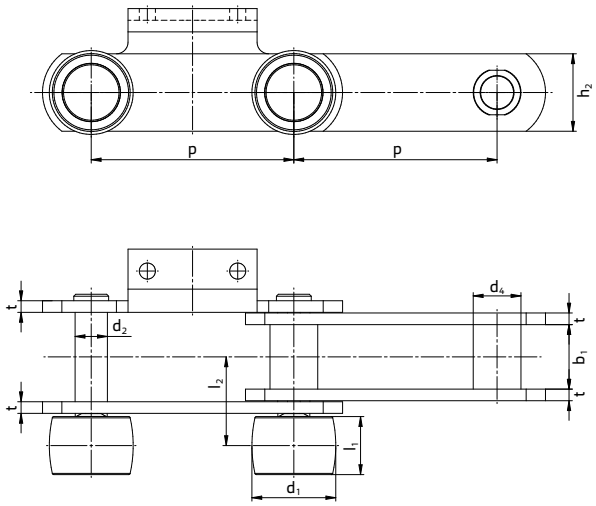
» Protection of the chain link against contamination through the KettenWulf sealing system
» Specifically for abrasive or corrosive conveying media

Weight reduction

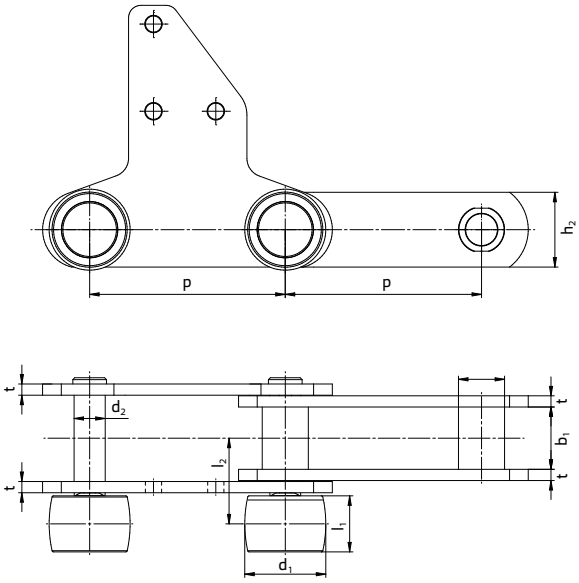
» Chain link plates with lighting contour for weight reduction
» Reduced chain tensile force due to lower chain weight

Reclaimer chains as bush conveyor chains
with outboard rollers

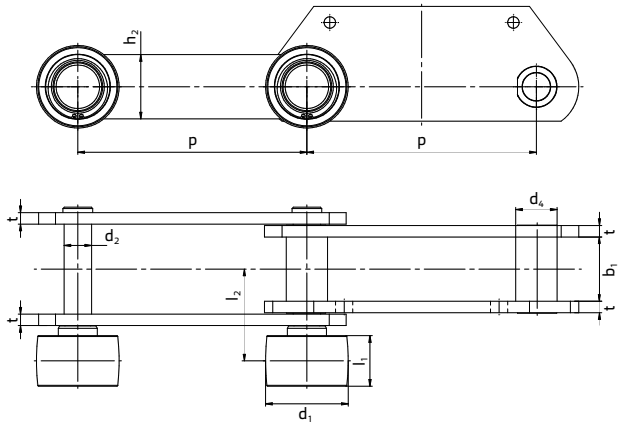
Drawings



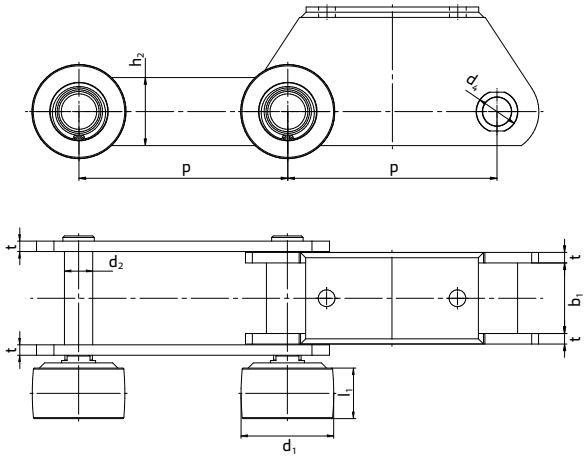
1 Reclaimer chain with outboard roller and angled attachment bracket



2 Reclaimer chain with outboard roller and raised attachment plate



3 Reclaimer chain with outboard roller and raised trapezoidal attachment plate



4 Reclaimer chain with outboard roller, link plates raised on both sides and welded attachment plate

Product data

Basic dimensions of the reclaimer chain with outboard roller

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Roller diameter	Pin diameter	Bush diameter	Height of linkplate	Thickness of linkplate	Roller length	Chain centre - roller centre
	F_B		p	b_1	d_1	d_2	d_4	h_2	t	l_1	l_2
KWRCO4090	300 kN	mm	160 250 315	40	90	22	38	60	8	73	84
KWRCO50110	500 kN	mm	160 250 315	50	110	30	44	80	10	77	95
KWRCO60110	800 kN	mm	160 250 315	60	110	36	58	90	12	77	106
KWRCO80110	1000 kN	mm	250 315 400	80	110	40	60	100	15	77	122
KWRCO90130	1200 kN	mm	250 315 400	90	130	42	65	110	15	95	136
KWRCO100150	1500 kN	mm	315 400 500	100	150	44	71	120	15	97	142
KWRCO110150	2000 kN	mm	315 400 500	110	150	54	80	130	20	97	161
KWRCO120180	2500 kN	mm	315 400 500	120	180	56	85	135	25	113	187
KWRCO140180	3000 kN	mm	315 400 500	140	180	60	90	150	25	113	197

Additional information:

» Design of the reclaimer attachment in accordance with individual customer specification

» Pin lock provided by locking collar head pin

KettenWulf supplies special chains for the most varied conveyor systems, e.g. for hot material transport

Chains for pan conveyors

High conveying material flows with temperatures of up to 700 °C, shaft distances of up to 250 metres, complex line routing and overcoming large conveying heights and conveying speeds of more than 1000 m^3/h: These are the challenges for conveyor systems in the material handling industry.

KettenWulf meets these special requirements with the highest degree of precision in component geometry, optimum press-fit connections, wear-resistant and fatigue-resistant materials and highest surface quality.

Asphalt

Port technology

Mining


Cement

Fertilisers

Coal fired plants

Specific designs for various pan conveyors

The variety of conveyor systems is extensive. Equally extensive is the performance range of KettenWulf. We supply customised chain technology for all conveyor systems, such as apron conveyors, hinge apron conveyors, bucket conveyors or deep drawn pan conveyors.

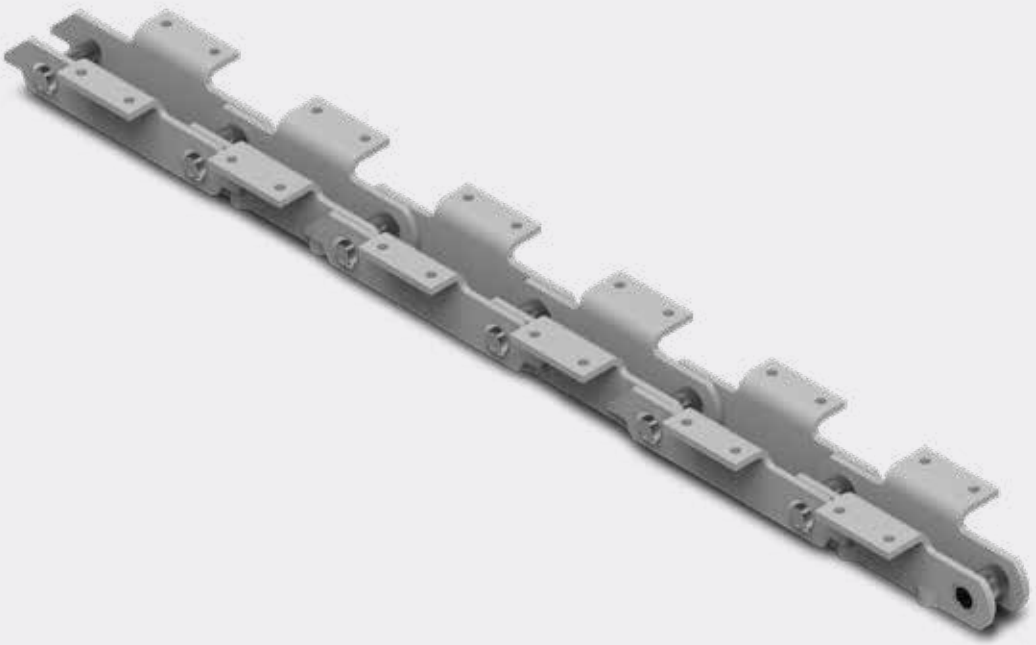
To pull the cell conveyors, bush conveyor chains with single or double sided attachment brackets are used as single or double strand chains. The quality requirements for our products, which are usually adapted to the individual requirements of the conveyor systems, provides our customer with a decisive competitive edge.

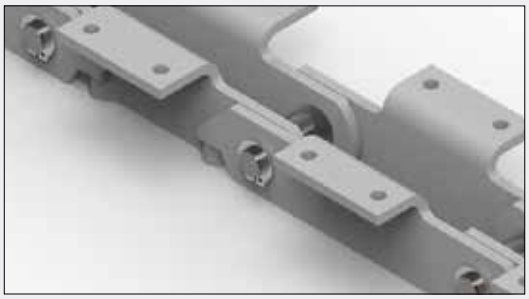
Pan conveyors

Wide pan conveyor

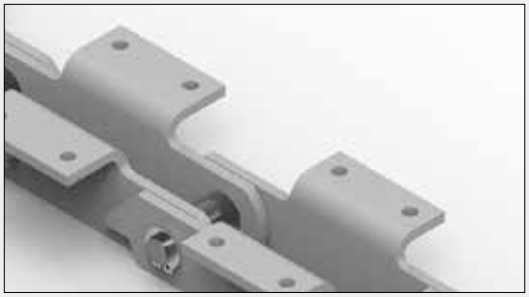
Chains for deep-drawn pan conveyors

Advantages





Anti-Bend Back Design
Chains with back locked design to support the transport weight on the tight side

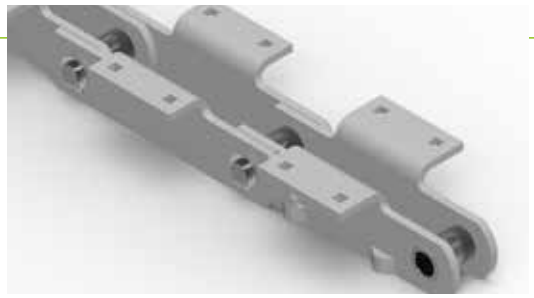


Angled bracket plates
Angled bracket plates to hold and attach the transport flights

Versions

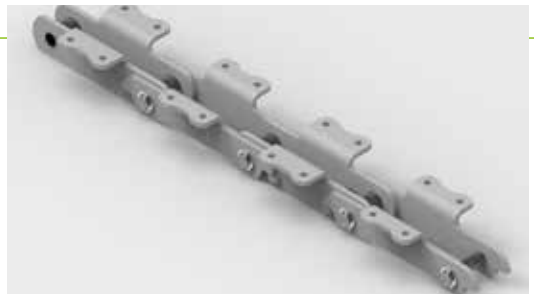
Variable geometry of the attachment holes

» Different hole shapes and distances permit the use of individual attachment elements or carrier cells. The attachment holes can be either round or square shaped.



weight reduction

» Chain link plates with lightening holes or tapering to reduce weight



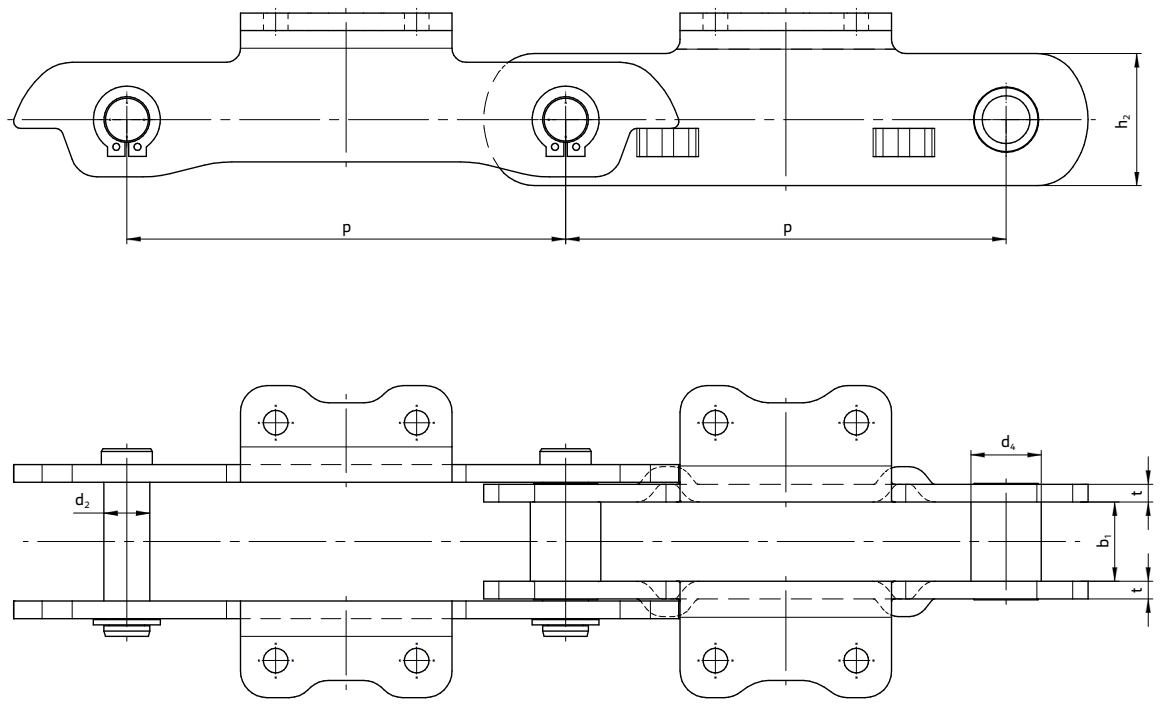
Single or double sided brackets

» Single or double sided bracket design for the variable connection of the carrier cell

Chains for deep-drawn pan conveyors

KWCTN chain

Drawings/ product data



KWCTN chains for deep-drawn pan conveyors

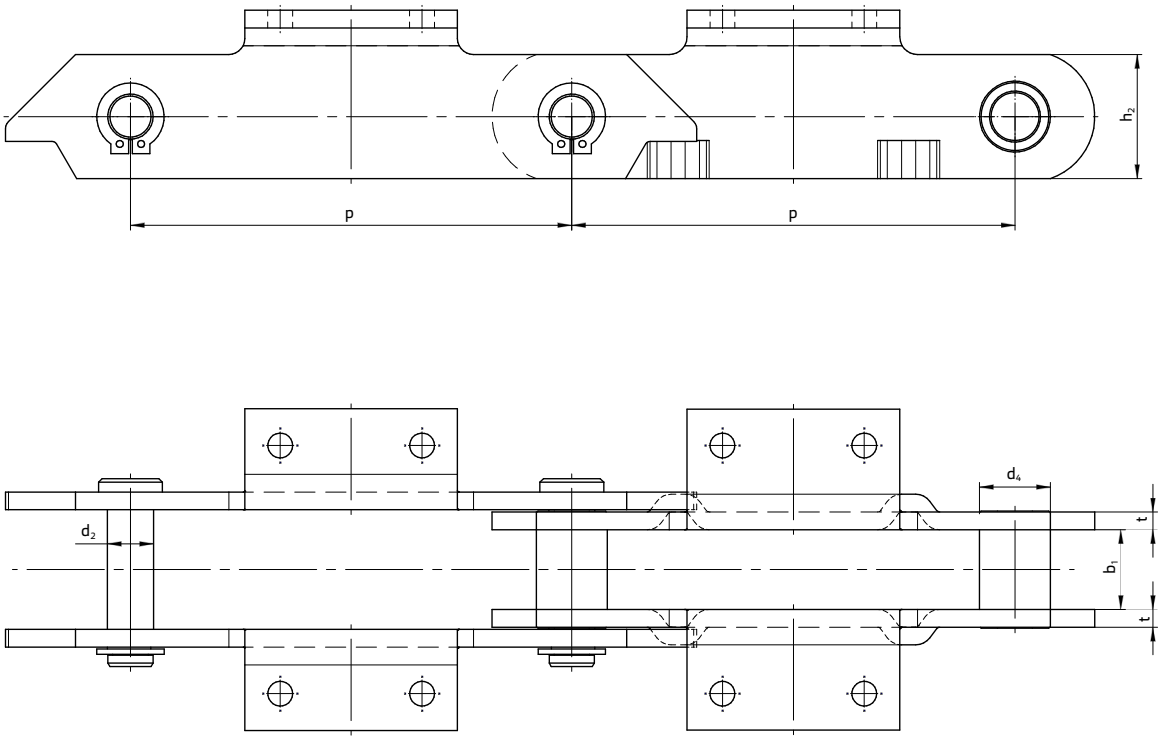
Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Pin diameter	Bush diameter	Thickness of linkplate	Height of linkplate
	F_B		p	b_1	d_2	d_4	t	h_2
KWCTN2503032	290 kN	mm	250	30	20	32	8	55
KWCTN2504540	510 kN	mm	250	45	26	40	10	75
KWCTN2505544	700 kN	mm	250	55	30	44	12	85
KWCTN2506052	900 kN	mm	250	60	34	52	12	100

Other designs and chain divisions are possible upon request

Chains for deep-drawn pan conveyors

KWCTO chain

Drawings/ product data



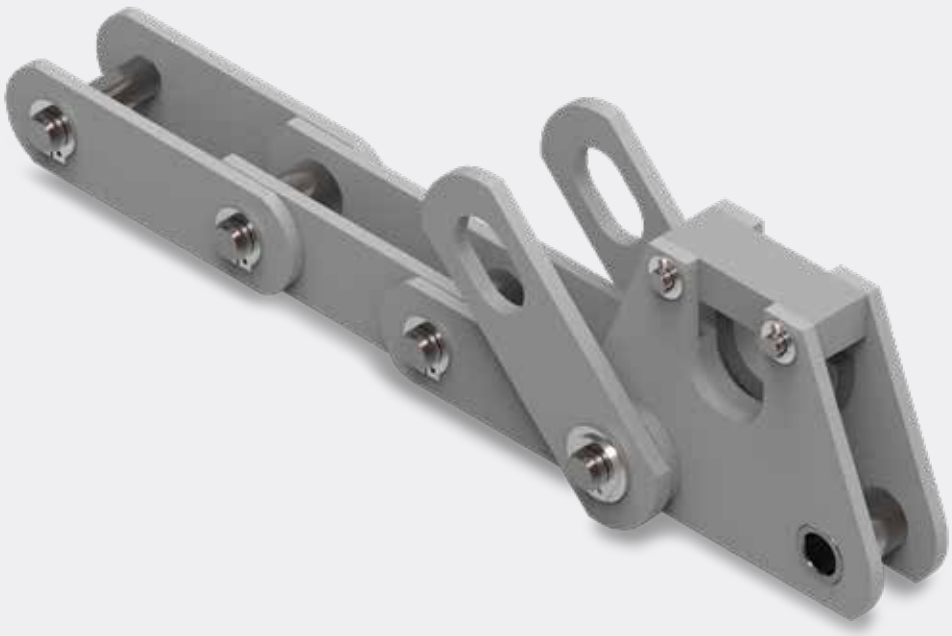
KWCTO chains for deep-drawn pan conveyors

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Pin diameter	Bush diameter	Thickness of linkplate	Height of linkplate
	F_B		p	b_1	d_2	d_4	t	h_2
KWCTO2503032	220 kN	mm	250	30	20	32	8	50
KWCTO2504540	450 kN	mm	250	45	26	40	10	70
KWCTO2506040	520 kN	mm	250	60	26	40	10	80
KWCTO2506044	700 kN	mm	250	60	30	44	12	90
KWCTO2506054	900 kN	mm	250	60	36	54	12	90

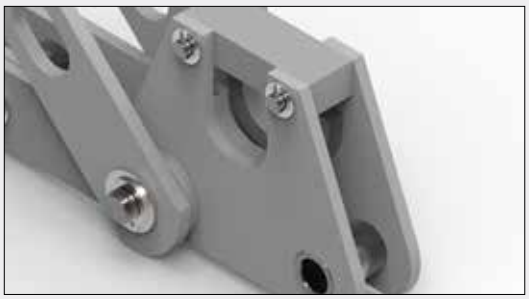
Other designs and chain divisions are possible upon request

Chains for wide pan conveyors

Advantages



Movable lug
Movable lug to connect the movable wide pan to the conveyor chain



Lug link to hold the link axle
Lug link with double sided raised special link plates as fixed bearing to hold the link axle

Versions

Lug link with integrated wear shell

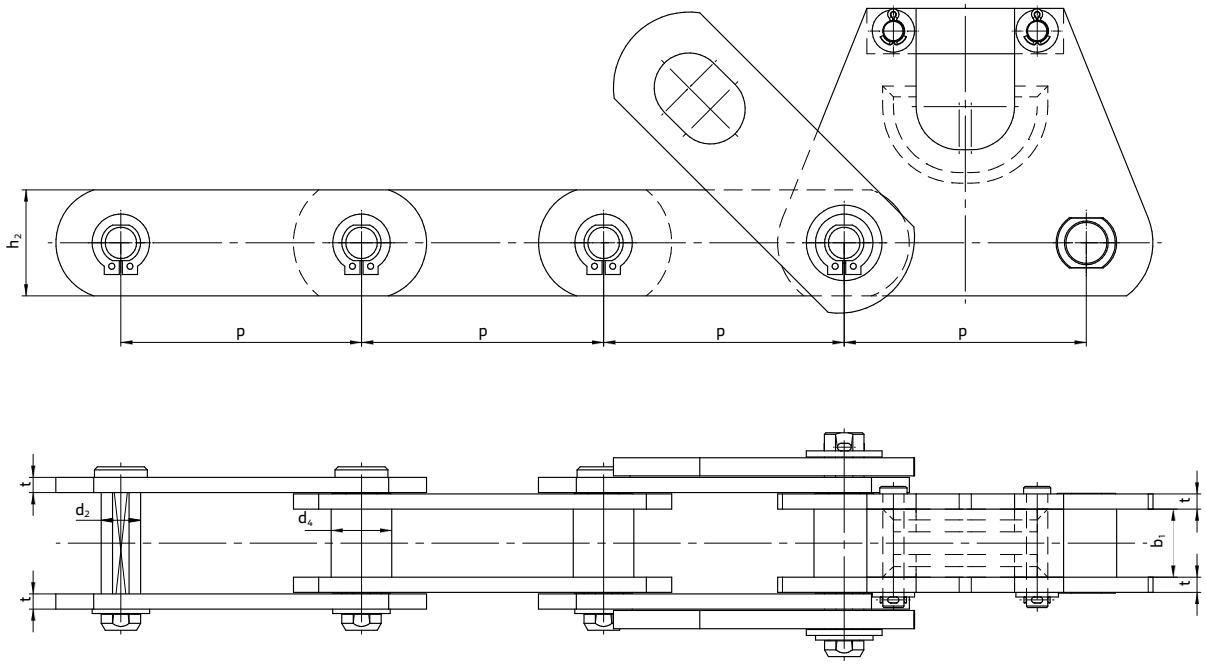
» Lug link with inserted and replaceable wear shell to reduce wear

Lug in solid construction

» Lug in solid construction with hardened contact face to reduce wear

Chains for wide pan conveyors

Drawings/ product data



Cell conveyor chains with movable flap lug

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Pin diameter	Bushing diameter	Height of linkplate	Thickness of linkplate
	F_B		p	b_1	d_2	d_4	h_2	t
KWLC1603032	220 kN	mm	160	30	20	32	50	8
KWLC1604540	350 kN	mm	160	45	26	40	65	9
KWLC1604540H	450 kN	mm	160	45	28	40	80	10
KWLC1605046	550 kN	mm	160	50	34	46	80	12
KWLC1605254	650 kN	mm	160	52	39	54	90	15
KWLC1606060	800 kN	mm	160	60	44	60	100	15
KWLC1606572	1200 kN	mm	160	65	52	72	120	20

Other designs are possible upon request

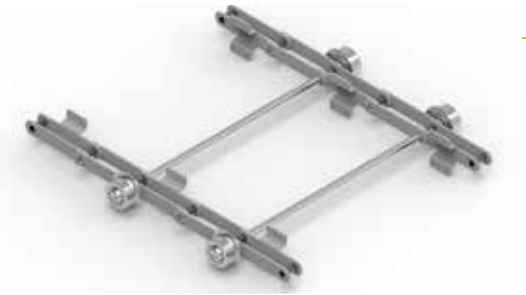
Other designs for the chains of pan conveyors

Slat conveyor chain for crusher entry

» Slat conveyor chain for crusher entry with roller on antifriction bearing

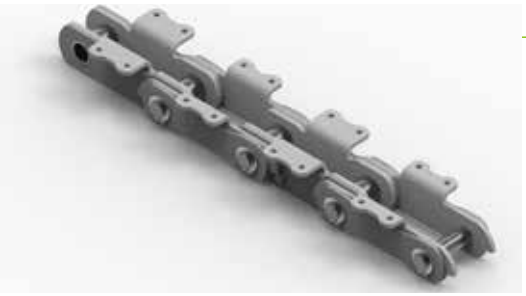
Double strand cell conveyor chain

» Double strand cell conveyor chain with welded attachment element and outboard roller



Back locked deep-drawn pan conveyor chain

» Back locked deep-drawn pan conveyor chain in sandwich construction with angled bracket to hold the links



Products for high performance bucket elevators

Chains for bucket elevators

The use of KettenWulf bucket elevator chains for the vertical conveying of bulk material has become an essential link between production processes in many industries. Double strand chains and central chains, especially for high performance applications, have been proven worldwide in constant use under difficult conditions.

Asphalt

Port technology

Mining

Cement

Fertilisers

Coal fired plants

Specific designs for various chain bucket elevators

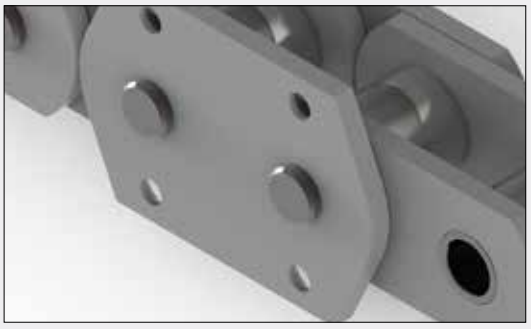
Chain bucket elevators are mainly used for the vertical conveying of bulk material, for silo feeding and in clinker milling. KettenWulf bucket elevator chains meet the highest requirements for wear resistance and dynamic loads, especially for conveying abrasive media.

Double strand bucket elevator

Central chain bucket elevator

Chains for double strand bucket elevators

Advantages



Trapezoidal lug plate
Trapezoidal lug plates are used as lateral attachment element to connect the bucket to the conveyor chain.

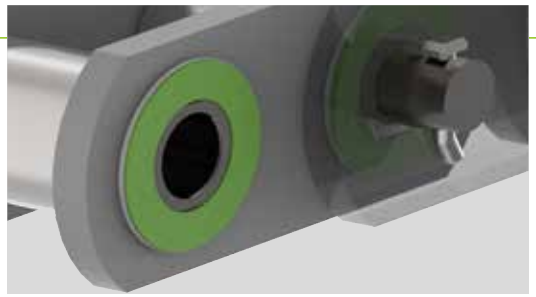
Small rollers
To protect the sprockets against excessive wear the chains are designed with small rollers.

Head pins
To reduce assembly effort our chains are designed with head pins. The head pin protruding from the attachment plate side also ensures optimum force transmission from the bucket to the chain.

Versions SCS CR

Sealing

» The KettenWulf sealing system protects the chain link against contamination
» Specifically for abrasive or corrosive conveying media
» Reduction of the wear characteristics during the start-up phase



Weight reduction

» Chain link plates with lightening holes or in special tapered design ensure weight reductions with unaltered mechanical chain characteristics

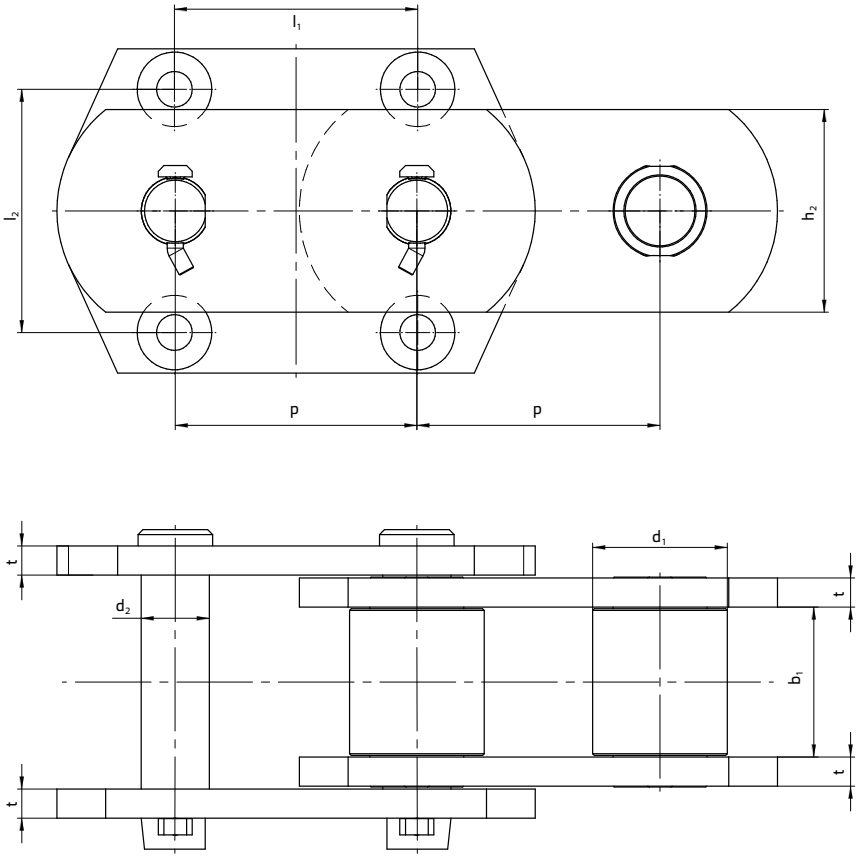
Lug plate in angled design

» Trapezoidal lug plate in angled design to connect the buckets to the conveyor chain

Chains for double strand bucket elevators

KWD chains

Drawings/ product data



KWD chains

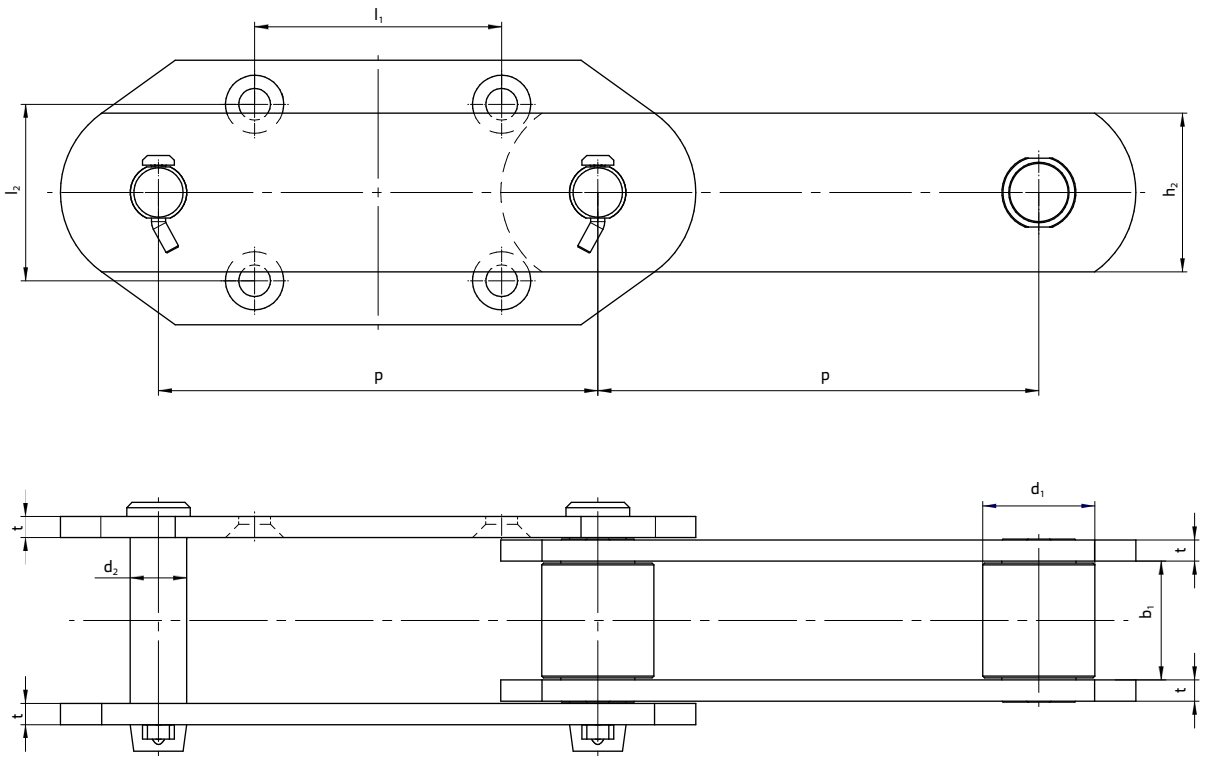
Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Roller diameter	Pin diameter	Height of linkplate	Thickness of linkplate	Hole pattern
	F_B		p	b_1	d_1	d_2	h_2	t	$l_1 \times l_2$
KWD1005144	380 kN	mm	100	51,8	44,5	20	50	10	105 x 100
KWD1005748	550 kN	mm	100	57,6	48,5	26	75	10	105 x 100
KDW1256763	750 kN	mm	125	67,4	63,5	32	90	12	130 x 125
KWD1257570	1000 kN	mm	125	75	70	36	100	16	130 x 125
KWD1508275	1200 kN	mm	150	82.5	75	39	115	16	150 x 140
KWD1509293	1500 kN	mm	150	92.5	83	42	130	18	150 x 150

Other designs are possible upon request

Chains for double strand bucket elevators

KWD chains

Drawings/ product data



KWD chains

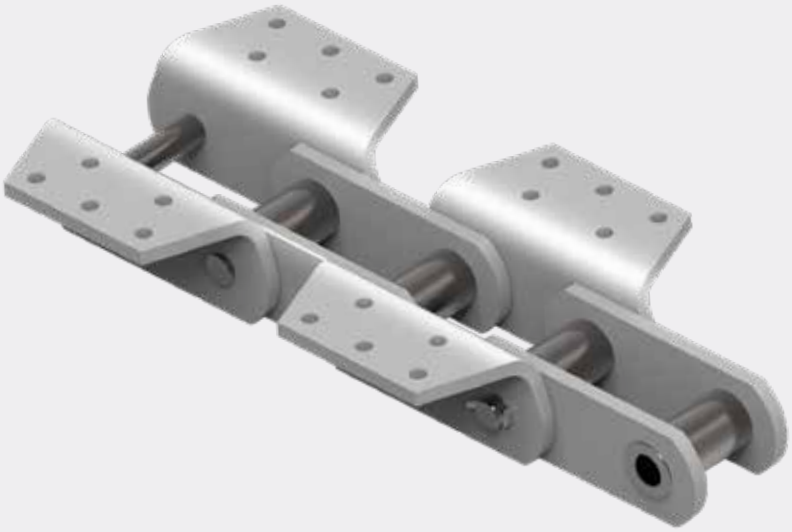
Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Roller diameter	Pin diameter	Height of linkplate	Thickness of linkplate	Hole pattern
	F_B		p	b_1	d_1	d_2	h_2	t	$l_1 \times l_2$
KWD1523636	240 kN	mm	152,4	36,5	36	16	45	8	75 x 70
KWD1005144	380 kN	mm	100	51,8	44,5	22	60	10	100 x 80
KWD2005748	550 kN	mm	200	57,6	48,5	26	75	10	100 x 80
KWD2506763	750 kN	mm	250	67,4	63,5	32	90	12	140 x 100
KWD2507570	1000 kN	mm	250	75	70	36	100	16	140 x 100
KWD3007570	1200 kN	mm	300	75	70	40	100	16	170 x 120
KWD3008275	1200 kN	mm	300	82.5	75	40	115	16	170 x 120

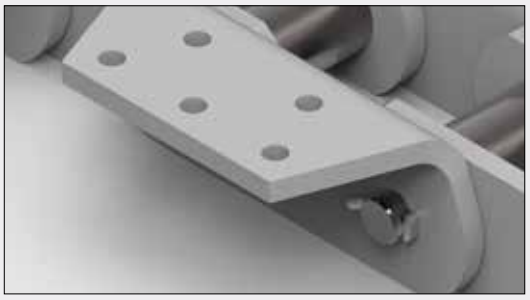
Other designs are possible upon request

Central chains for bucket elevators

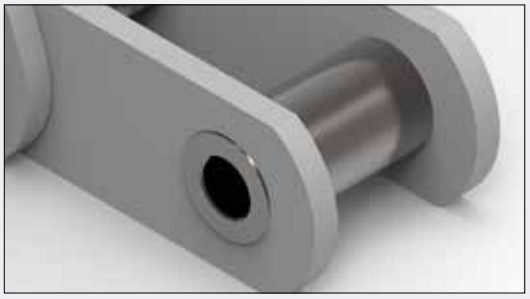
Bucket Elevator Chains with Straight Link Plates

Advantages

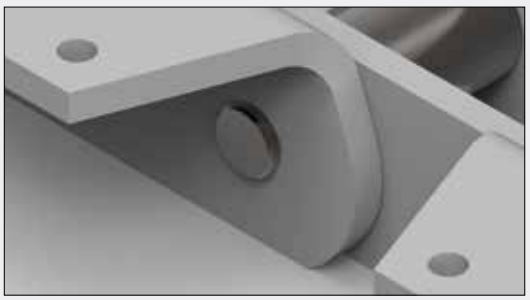




Angled attachment brackets
The angled attachment bracket facilitates the connection of the buckets. The number and position of attachment holes can be designed individually in accordance with customer specification.



Thick-walled bushings
Thick-walled bushings ensure a high resistance to shock loads. The high surface hardness and ductile core significantly increase the service life of the conveyor chain.

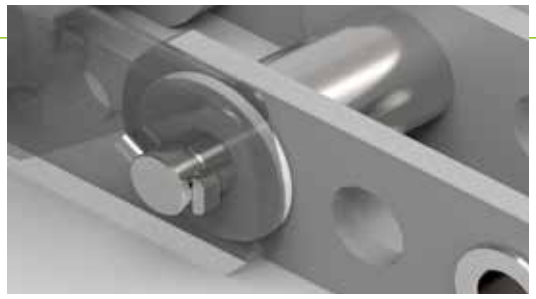


Head pins
To reduce assembly effort our chains are designed with head pins.

Versions SCS CR

Sealing

» The KettenWulf sealing system protects the chain link against contamination
» Specifically for abrasive or corrosive conveying media
» Reduction of the wear characteristics during the start-up phase



weight reduction

» Chain link plates with lightening holes or in special tapered design ensure weight reductions with unaltered mechanical chain characteristics

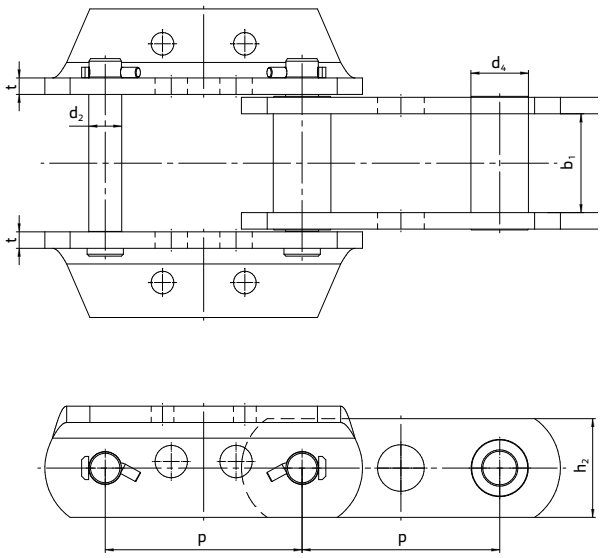
Chain link plates in angled design

» Chain link plates in angled design permit the variable arrangement of the attachment plates

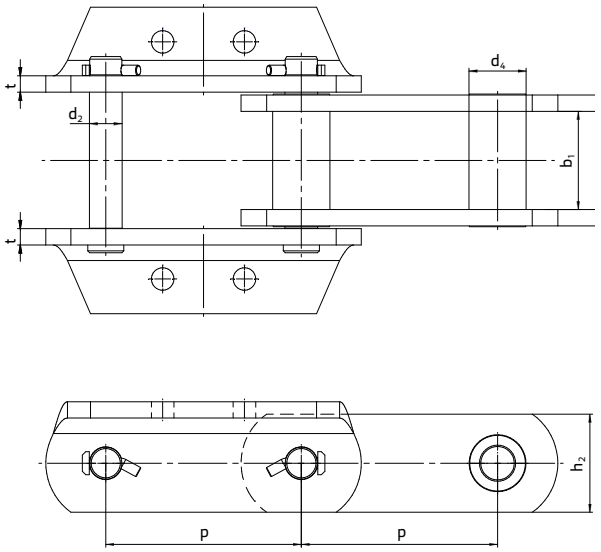
Central chains for bucket elevators

Bucket Elevator Chains with Straight Link Plates

Drawings/ product data



Design A



Design B

Central chains for bucket elevators

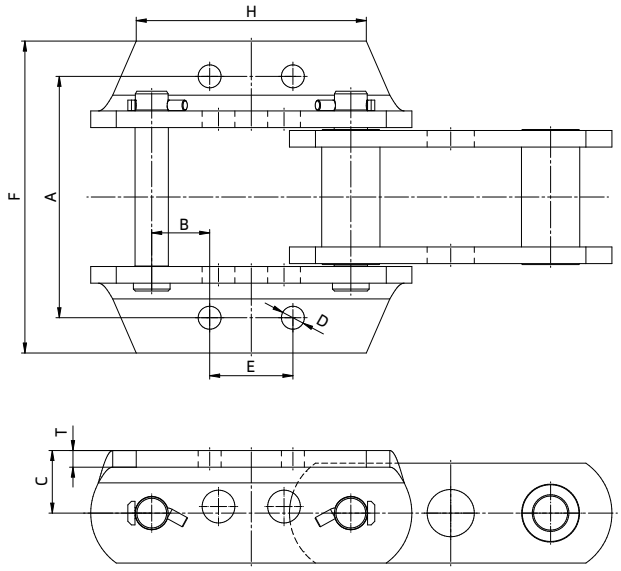
Type of chain	Calculated breaking load	Design	Unit	Pitch	Inner width	Bush diameter	Pin diameter	Height of linkplate	Thickness of linkplate
	F_B			p	b_1	d_4	d_2	h_2	t
KW1856	500 kN	B	inch mm	6 152,4	3 76,2	1,75 44,45	1 25,4	2,5 63,5	0,5 12,7
KW1956	650 kN	A	inch mm	6 152,4	3 76,2	1,75 44,45	1 25,4	3 76,2	0,5 12,7
KW1857	650 kN	B	inch mm	6 152,4	3 76,2	1,75 44,45	1 25,4	3,25 82,5	0,5 12,7
KW1958	800 kN	A	inch mm	6 152,4	3 76,2	2 50,8	1,13 28,7	3,25 82,5	0,5 12,7
KW1859	1000 kN	B	inch mm	6 152,4	3,75 95,3	2,38 60,45	1,25 31,75	4 101,6	0,62 15,7
KW1864	1000 kN	B	inch mm	7 177,8	3,75 95,3	2,38 60,45	1,25 31,75	4 101,6	0,62 15,7
KW1984	1200 kN	A	inch mm	7 177,8	3,75 95,3	2,5 63,5	1,38 34,9	4 101,6	0,62 15,7

Other designs are possible upon request

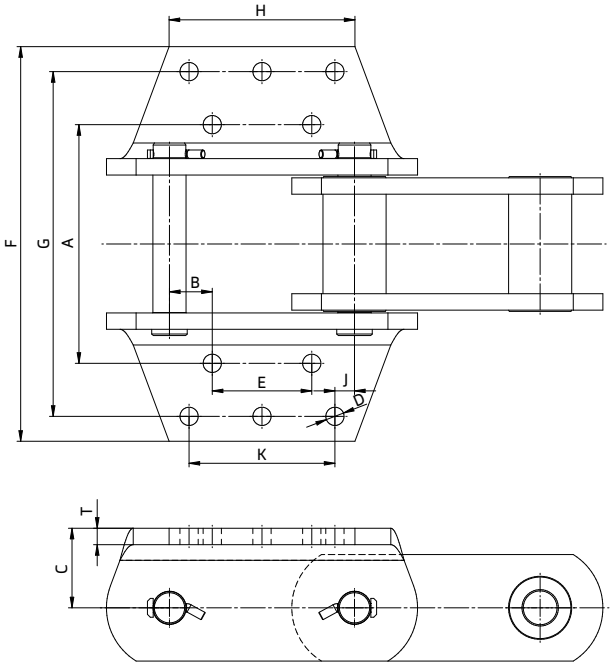
Central chains for bucket elevators

Bucket Elevator Chains with Straight Link Plates

Drawings/ product data



Design K24



Design K44/K443

Central chains for bucket elevators, dimensions of the attachment components

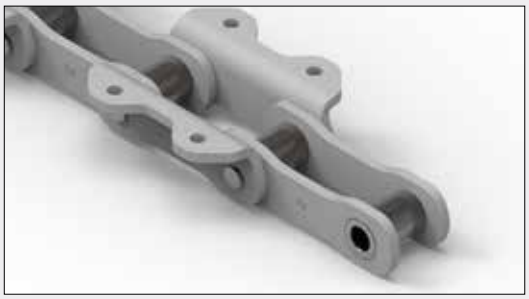
Type of chain	Unit	Design	A	B	C	D	E	F	G	H	J	K	T	Weight
														kg/m
KW1856	inch mm	K24	7,25 184,15	1,75 44,45	1,88 47,75	0,69 17,50	2,50 63,50	9,38 238,00		6,91 175,50			0,50 12,70	32,0
KW1956	inch mm	K24	7,25 184,15	1,75 44,45	1,88 47,75	0,69 17,50	2,50 63,50	9,38 238,00		6,91 175,50			0,50 12,70	34,0
KW1857	inch mm	K44	7,00 177,80	1,25 31,75	2,50 63,50	0,56 14,20	3,50 88,90	14,00 356,00	12,00 304,80	5,50 140,00	1,25 31,75	3,50 88,90	0,50 12,70	48,0
KW1958	inch mm	K44	7,00 177,80	1,25 31,75	2,50 63,50	0,56 14,20	3,50 88,90	13,68 347,00	12,00 304,80	5,75 146,00	1,25 31,75	3,50 88,90	0,50 12,70	49,0
KW1859	inch mm	K44	9,00 228,60	1,62 41,15	3,00 76,20	0,69 17,50	2,75 69,85	15,00 378,00	13,00 330,20	5,92 150,00	0,75 19,05	4,50 114,30	0,62 15,70	75,4
KW1864	inch mm	K443	9,00 228,60	1,62 41,15	3,00 76,20	0,69 17,50	3,75 95,30	15,00 378,00	13,00 330,20	7,00 178,00	0,75 19,05	5,50 139,70	0,62 15,70	71,0
KW1984	inch mm	K443	9,00 228,60	1,62 41,15	3,00 76,20	0,69 17,50	3,75 95,30	14,88 378,00	13,00 330,20	7,00 178,00	0,75 19,05	5,50 139,70	0,62 15,70	65,0

Other designs are possible upon request

Central chains for bucket elevators

Bucket Elevator Chains with Straight Link Plates

Advantages



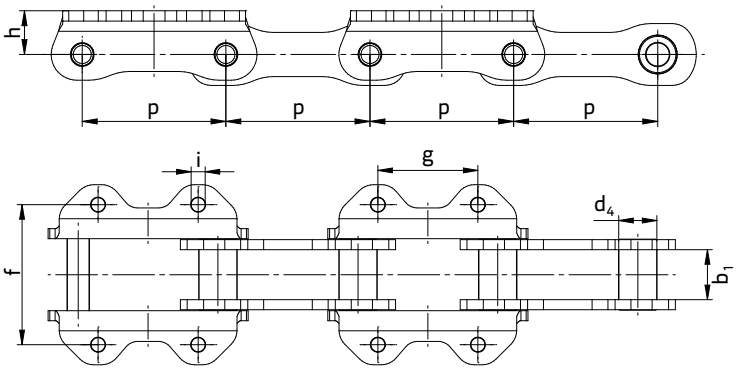
Weight reduction
Sustainable increase in energy efficiency through weight reduction. Easy handling of the chain during installation and removal. Optimization of energy consumption.

Thick-walled bushings
Thick-walled bushings guarantee a high resistance to shock loads. The high surface hardness and ductile core significantly increase the service life of the conveyor chain.

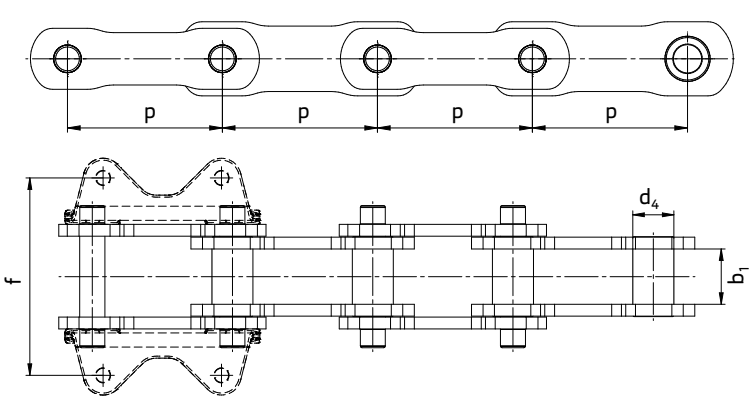
Central chains for bucket elevators

Bucket Elevator Chains with Straight Link Plates

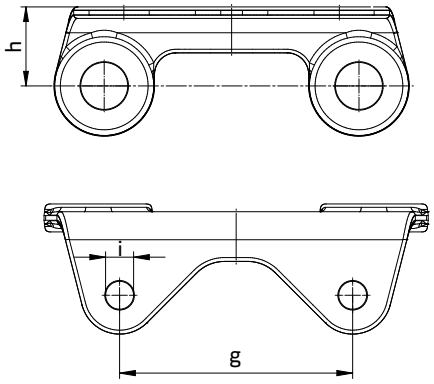
Drawings/ product data



1 **Version Type A** (with angle attachment)



1 **Version Type B** (without bucket holder)



2 **KW BH 408 for Version Type B**

1 **Central Bucket Elevator Chains**

Type of chain	Version	Calculated breaking load	Unit	Pitch	Inner width	Bushing diameter	Diameter Fixation holes	Longitudinal pitch Fixation holes	Transverse pitch Fixation holes	Weight
		F_B		p	b_1	d_4	i	g	f	kg/ m
KW404	**A**	450 kN	mm	140	50	38	14	100	140	18,5
KW406	**A**	630 kN	mm	152,4	65	45	18	130	200	28,5
KW408	**B**	800 kN	mm	177,8	70	52	18	150	250	33,6 without bucket holder

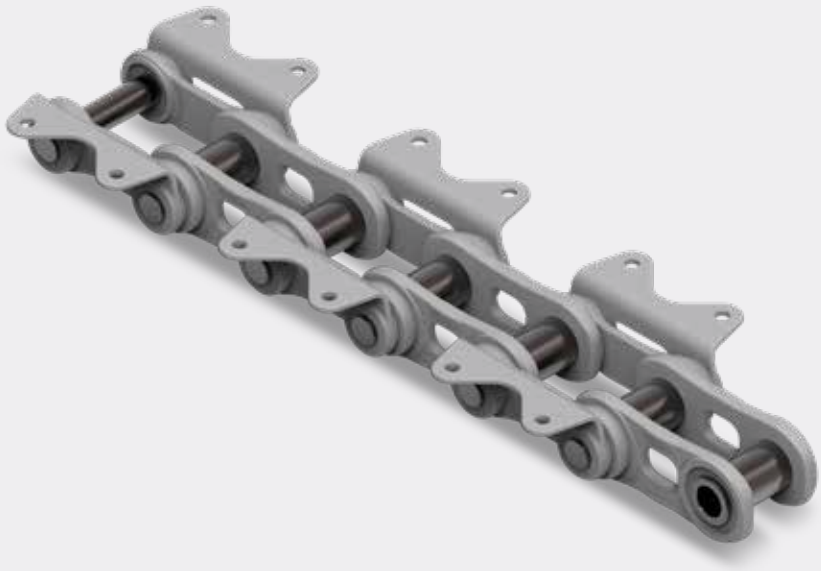
2 **Bucket holder for Central Bucket Elevator Chains Type B**

Type	Unit	Central Edge/ Top Edge Bucket holder	Diameter Fixation holes	Longitudinal pitch Fixation holes	Weight
		h	i	g	kg/ pcs.
KWBH408	mm	55	18	150	1,8

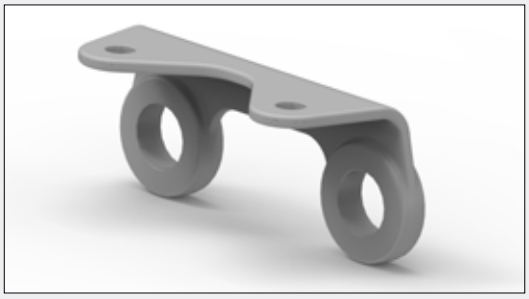
Central chains for bucket elevators

Bucket Elevator Chain with Forged Link Plates

Advantages



Weight reduction
Sustainable increase in energy efficiency through weight reduction.



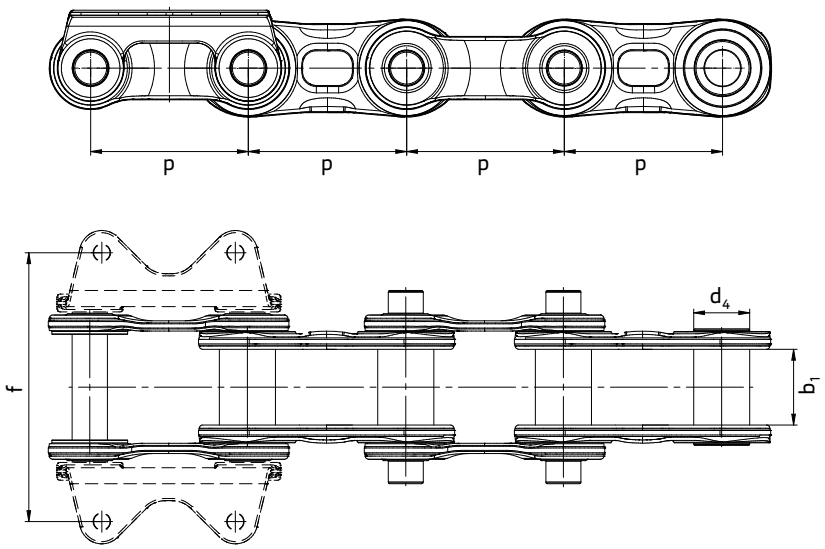
Bucket holder
Forged design with highly wear-resistant bore holes for connection to the chain.

Fatigue strength
Optimized design through research based on FEM analyses and selection of specific materials to maximize fatigue strength.

Central chains for bucket elevators

Bucket Elevator Chain with Forged Link Plates

Drawings / product data



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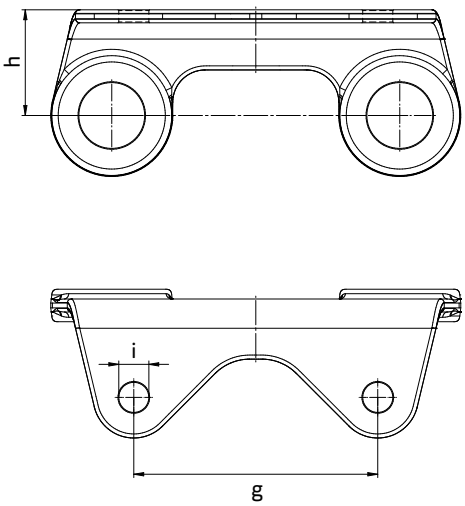

2

1 Bucket Elevator Chain with Forged Link Plates (without bucket holder)

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Bushing diameter	Transverse pitch Fixation holes	Weight
	F_B		p	b_1	d_4	f	kg/ m
KW412	1200 kN	mm	177,8	70	58	250	38,0
KW415	1500 kN	mm	177,8	85	63	300	49,9
KW418	1800 kN	mm	177,8	95	71	300	65,9

2 Bucket holder for Central Bucket Elevator Chains

Type	Unit	Central Edge/ Top Edge Bucketholder	Fixation holes diameter	Longitudinal pitch Fixation holes	Weight
		h	i	g	kg/ pcs.
KWBH412	mm	60	18,5	150	1,7
KWBH415	mm	65	18,5	150	2,0
KWBH418	mm	70	18,5	150	2,4

Bucket elevator base for continuous ship unloader

Chains for continuous ship unloaders

The mass transfer of various bulk materials from river and sea vessels in the medium to large performance range is mainly handled through continuously operating unloading systems. These permit an effective ship unloading which protects the material as well as being dust-free and low in noise for coal, ores, phosphates, sulphurs and fertiliser.

KettenWulf products for unloading bulk material operate environmentally friendly, economic and reliably under all climatic conditions.

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Low maintenance chain technology (SCS CR) in continuous ship unloaders

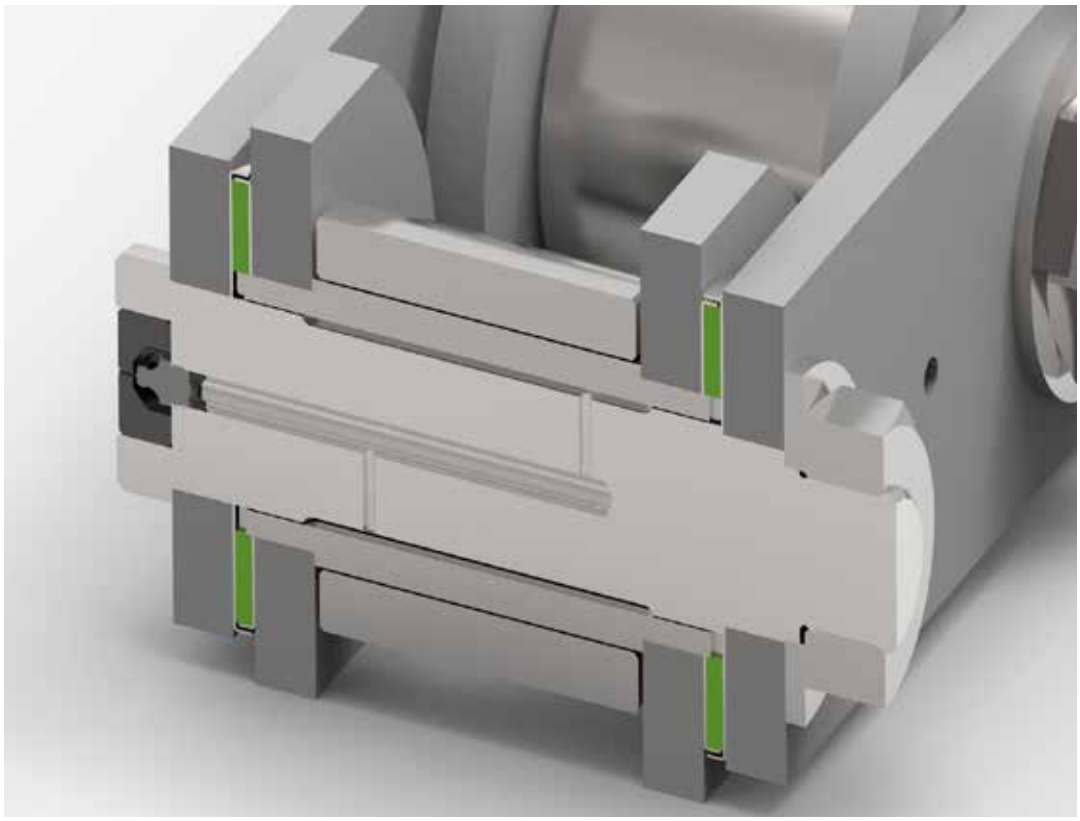
At KettenWulf, innovation means making good products even better: For years KettenWulf has successfully developed groundbreaking innovation in the field of low-maintenance chain technology. The catalyst for this is our drive to continually innovate and develop products with our customers to meet their market demands.

Abrasive media, such as coal, ores or fertilisers cause high wear in the chain link which is mainly responsible for an early failure of the chain. The results are usually very expensive: Increased maintenance or the complete replacement of the conveyor chain and resulting plant downtime. To ensure high plant availability with simultaneously reduced maintenance costs, KettenWulf has developed a special multiple seal system (sandwich seal system) for the chain link.

A special seal embedded in two corrosion-resistant labyrinth covers ensures that neither environmental contamination can enter the chain link nor can special lubricant introduced escape uncontrolled from the chain link. This results in optimum lubrication for the bushing and pin in the chain link, ensuring the long-term sound operation of the entire conveyor system.

With its low use of resources this innovation not only contributes actively to protect the environment but also ensures high product efficiency for our customers.

Multiple seal system for the chain link



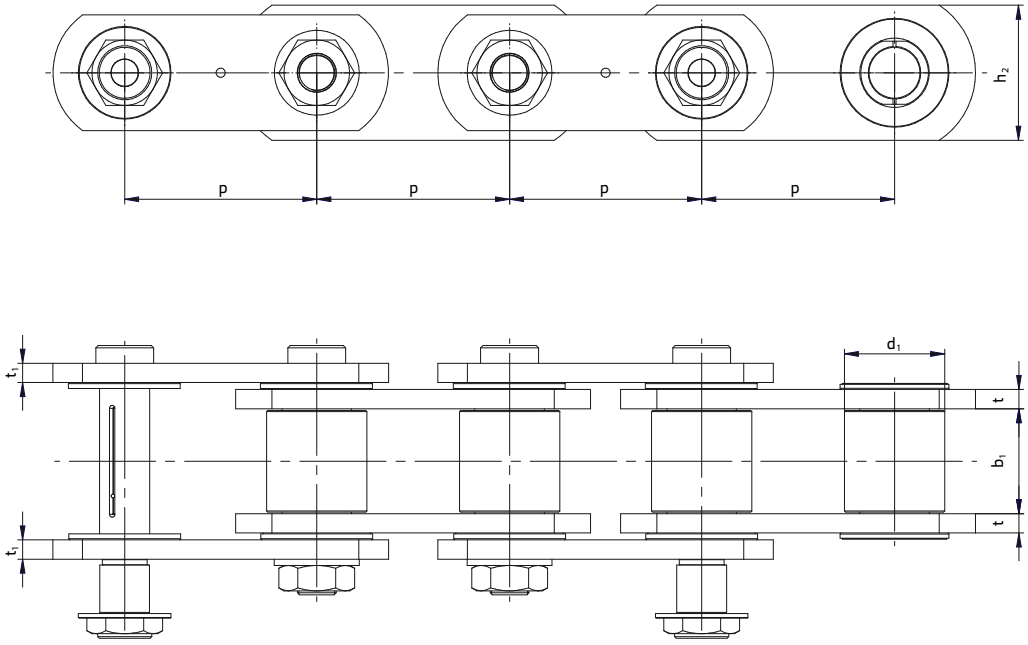
Continuous ship unloader

Advantages

Link plate design
Optimised link plate design for weight reduction to reduce wear and drive energy

Attachment
Optimised attachment for simple assembly and removal of the buckets

Drawings/ product data



Chains for continuous ship unloaders

Type of chain	Calculated breaking load	Unit	Pitch	Inner width	Roller diameter	Thickness of inner linkplate	Thickness of outer linkplate	Height of linkplate
	F_B		p	b_1	d_1	t	t_2	h_2
KWCSU2507264	600 kN	mm	250	72	64	12	12	90
KWCSU2009495	1800 kN	mm	200	94	95	19	19	135
KWCSU250136130	3085 kN	mm	250	136	130	25	25	175
KWCSU350158165	4585 kN	mm	350	158	165	28	28	230

Other designs are possible upon request

Reclaimer system with central guide roller

Roller units for bulk material handling systems

Roller units in bulk material handling systems meet the most varied requirements. Central guide rollers in reclaimer systems ensure the correct guidance of the reclaimer buckets and reduce the axial loads on the conveyor chain.

Support rollers in deep-drawn pan conveyors transfer the vertical loads of the medium onto the guide rail and ensure an optimum lateral guidance via the flange.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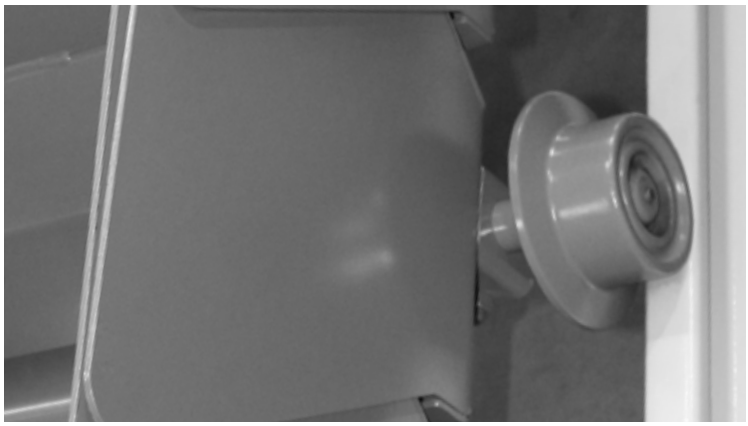
Application examples for roller units in bulk material handling systems

The use of rollers on antifriction bearings reduces the roll resistance in the plant and reduces the stress on the conveyor chain. A special sealing system can reduce the maintenance effort to a minimum.

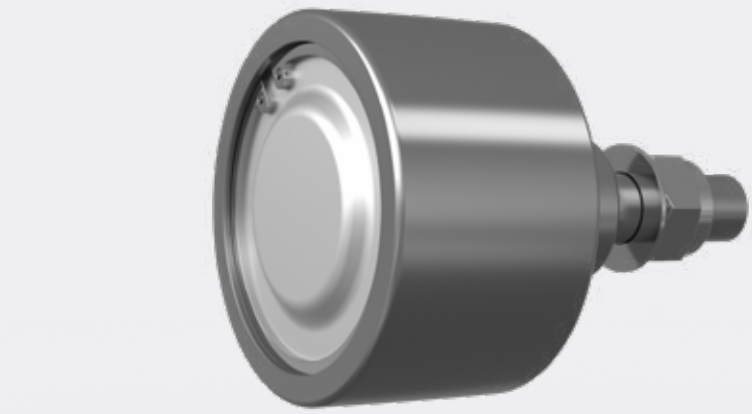
Central guide roller for reclaimer buckets

Support roller for deep-drawn pan conveyor



Central guide rollers

Advantages

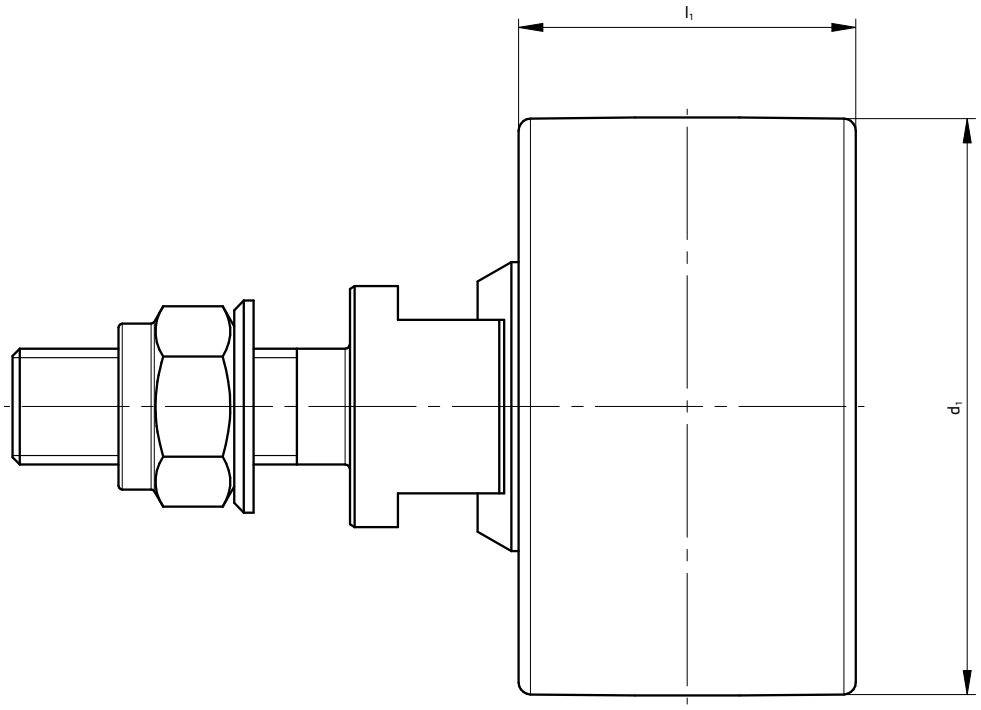


Guide roller
The guide roller is made of tempered steel. To optimize wear resistance, the running surface is inductively hardened.

Ball bearing
To reduce friction and noise the central guide rollers are equipped with ball bearings.

Seal
Special seals protect the ball bearings of the rollers against environmental influences. This makes the roller maintenance-free and permanently lubricated.

Drawings/ product data



Central guide roller with locating pins to connect the reclaimer bucket

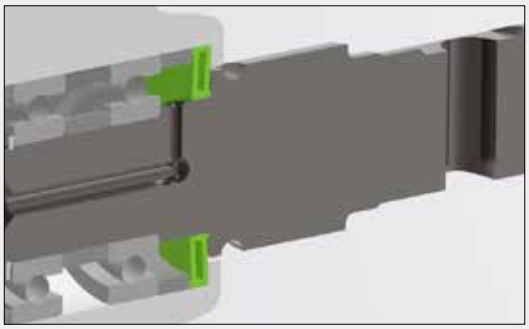
Central guide rollers basic dimensions

Type	Unit	Roller diameter	Roller length
		d_1	l_1
KWGRS90	mm	90	55
KWGRS110	mm	110	65
KWGRS130	mm	130	80
KWGRS150	mm	150	95
KWGRS180	mm	180	110

Locating pins according to customer preferences

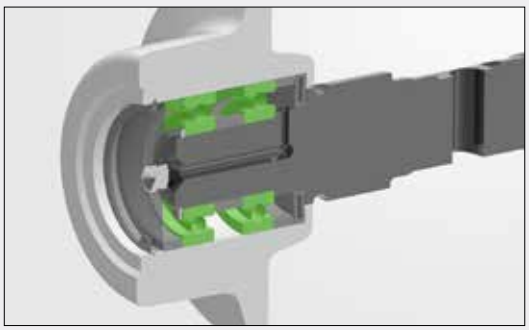
Rollers for pan conveyors

Advantages



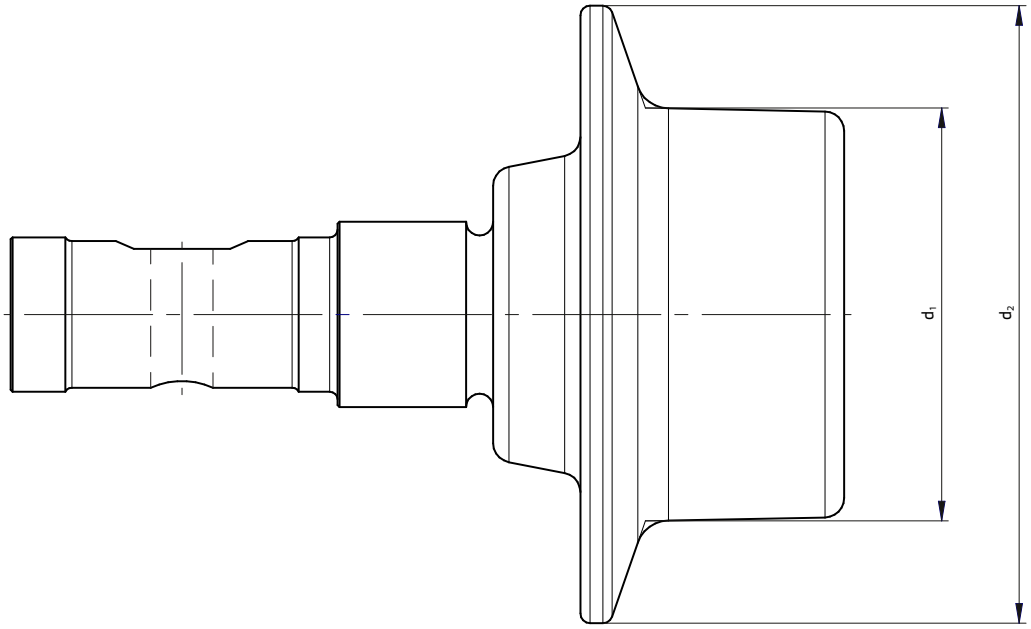
Sealing
To protect against environmental influences the flanged roller is sealed on both sides. The utilisation of a rubber seal back face and cover plate on the front face the unit is protected. Relubrication of the ball bearing is via a grease nipple.

Flanged roller
The flanged roller is made from heat-treated steel and induction harden to optimise the wear resistance at the roller diameter and roller flange.



Antifriction bearing
To reduce wear friction, heating and noise, the rollers are equipped with standardised grooved ball bearings.

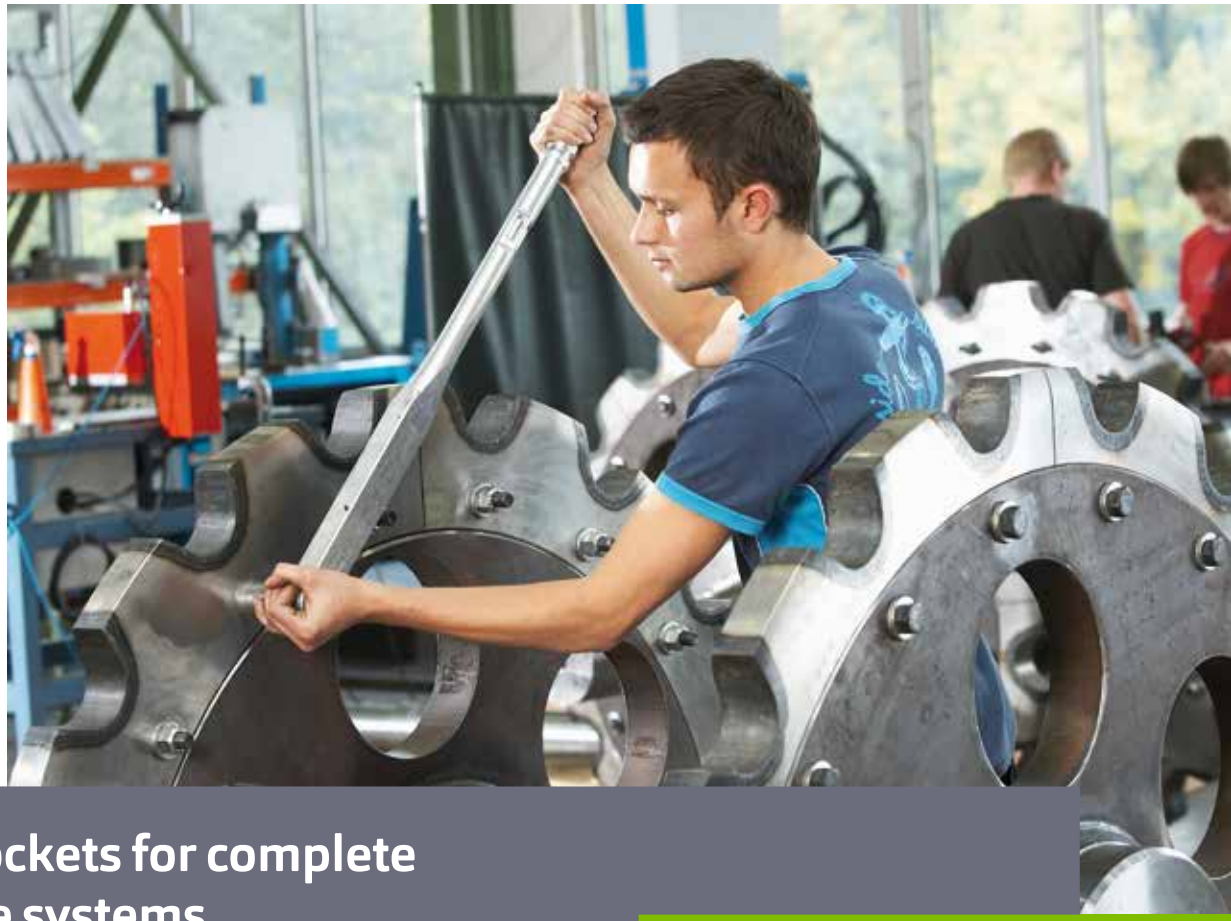
Drawings/ product data



Rollers for pan conveyors

Type	Unit	Roller diameter d_1	Roller diameter d_2
KWSRC108	mm	108	160
KWSRC140	mm	140	200
KWSRC160	mm	160	220

Locating pins according to customer preferences



Assembly of drive shaft and sprocket used in the bulk material handling industry

Sprockets for complete drive systems

Sprockets are a decisive factor in the capability and service life of every chain system. KettenWulf therefore produces its own sprockets to ensure the high quality of all products. Our product range covers in addition to sprockets in all DIN gearings also individual solutions with optimal tooth shapes and wheel sizes. Using high quality heat-treated tempered steel we set quality standards for wear-resistant sprockets and drive components.

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Optimum tooth shape for all designs

We supply the corresponding sprockets for all chains. In addition to sprockets with DIN gearing sprockets with optimised tooth shapes and milled surfaces can also be produced on our CNC machines. Designs in high quality materials with tempered and additionally inductively hardened teeth are part of our standard product programme.

Our production range covers all designs of sprockets, such as sprockets with single and double sided hub, divided sprockets, sprockets with bolted on segments or tooth shells, shear-pin sprockets, pinion sprockets and noise-attenuated special sprockets as well as hardened drive and tensioning wheels for chain bucket elevators without gearing.

1

Figure 1:
Sprocket with bolted-on tooth shells

2

Figure 2:
Sprocket with intermediate gap for welded chain reinforcement tube

3

Figure 3:
Sprocket with special gearing for forged link chains

4

Figure 4:
Double sprocket for block plate chain

5

Figure 5:
Drive wheel without gearing for bucket elevator chain

6

Figure 6:
Drive shaft fully assembled with sprockets

7

Figure 7:
Sprocket with 3-part sprocket wheel and lightening holes

8

Figure 8:
Sprocket with double sided screw-on noise attenuation elements

Maintenance work on a sprocket

Service & Accessories

In addition to a comprehensive range of specific transport solutions for the most varied bulk materials in different industries, service relating to the use of our products is also included. Sustainability and long service life can only be guaranteed if a customised offer is accompanied by an individual service. We offer you accessories beyond the basic equipment as well as various services for the ongoing use of our products.

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Service

Sample and wear analysis

» KettenWulf has the test facilities to perform comprehensive examinations of its chains and drive components in operation We also offer the option to prepare expert evidence relating to the causes of an accident.

Supervision

» On site assembly of the chains often required in-depth chain technology know-how to prevent early damage of the supplied products due to faulty assembly or to instruct your employees in the correct handling of the supplied assembly tools. We can provide experienced site installation staff to assists and support your maintenance team during the installation process.

Tensile tests

» In our test lab we can in addition to comprehensive component tests also carry out tensile tests for chains with a breaking force up to 3000 kN.

Service & Accessories

Accessories

Assembly tools

» To ensure easy and professional assembly KettenWulf supplies the matching assembly and removal tools for the chain upon request. The tool design complies with the statutory standards and safety regulations. The scope of delivery includes also the corresponding user manual for the tool.

Tooth gap template

» Once a sprocket reaches its limit of wear it must be replaced. The wear of the tooth gap can be checked using the tooth shape template supplied.

Accessories

Locking collar pliers

» KettenWulf locking collar pliers with their powerful lever arm enable the easy assembly of the KettenWulf locking rings for securing the pins.
» With the special pliers both locking rings made from steel as well as stainless steel of all designs and sizes can be easily fitted."

Tension pin assembly press

» For the easier assembly and removal of sprocket wheels which can be attached to the flange using clamping sleeves, a special draw-out device is used which has been developed to match the supplied sprocket wheel.

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