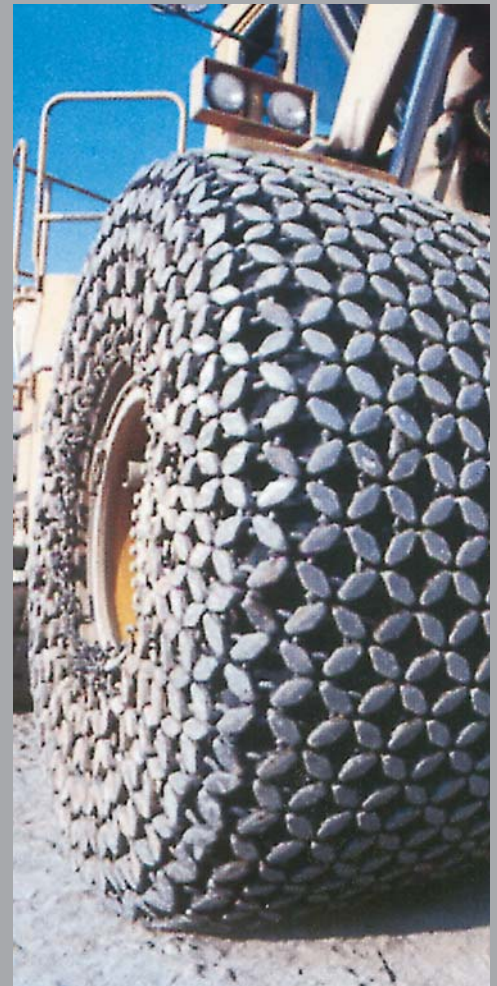
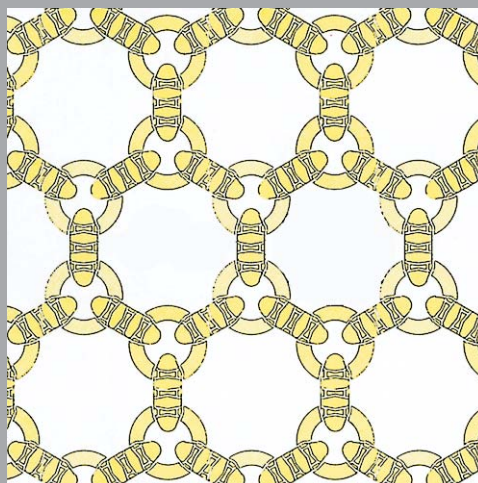




Tyre-Protection Chains





Kettenfabrik Unna was founded in 1921 as a daughter company of Union Sils van de Loo & Co. Fröndenberg. In 1925 the two confidential clerks took the company over with a management buy-out. In 1928 paid one of the confidential clerks, Friedrich Jasper, the other one out. Since then Kettenfabrik Unna is a completely owned family company.

In 1949 followed with Dr. Manfred Jasper the second generation. With Dr. Ingo Jasper the third generation came in 1991 into the company.

Kettenfabrik Unna has its site for more than 30 years in the industrial area of Unna. The last extension took place in 1999/2000 – another hall was built with 1.300 m². Chains and accessories are delivered in different executions worldwide.

Quality was ever one of the main philosophies of Kettenfabrik Unna. This lead to different certifications of various institutions in the domestic market as well as in export markets. The last quality certificate obtained is the ISO 9001 : 2000.

Kettenfabrik Unna has a complete delivery programme for link chains as well as for articulated chains. Articulated chains were taken up in the programme in 1990 and then continuously completed. Kettenfabrik Unna delivers to many branches in many countries of the world – the reputation of Kettenfabrik Unna stands for quality.

Kettenfabrik Unna has all modern platforms for communication.

Contact us – we have 90 years of experience.

Please visit our website: www.chains.de

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Production programme	6
Tyre-protection chains	10
Linking and spare parts	11

Information necessary for placing an order

It is necessary to mention the following information in an order:

- information about the type of machine, type of processed rock and kind of operation (e.g. extraction of rock after blasting)
- information about tyres:
 - producer
 - dimension
 - profile
 - design
 - degree of wearing
- type of required protective chains



Our terms of sale are effective. Please ask for another copy if needed.

Issue 02/2011. Subject to technical changes and printing mistakes.



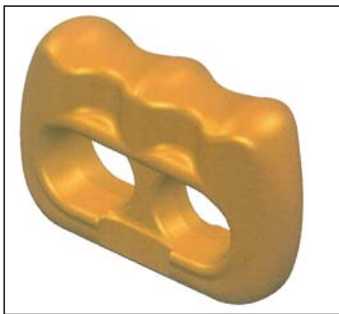
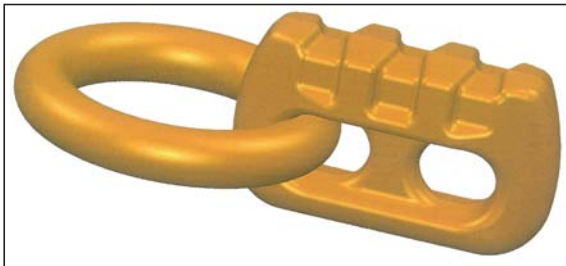
Tyre-protection chains with H-type smooth protective links

A very solid protective link suitable for use on the hardest rock. Its shape and volume ensures an effective cover for the tyre as well as long service life in difficult conditions. The protective link can be recommended for mining, loading hot slag, etc.



Tyre-protection chains with U-type universal protective links

The use is the same as with the smooth-linked protective chain, the adhesion being increased considerably by the use of the universal protective links. This results in smooth operation of machinery in steep slopes or on bare rock. The performance of these chains is especially outstanding in winter time.



Tyre-protection chains with E-type lightened protective links

The E-type lightened protective links are ideal wherever softer rocks (e.g. limestone) are mined, or in places where the operation is not demanding, yet requires intensive material transportation. These conditions ensure similar service life of the lightened-linked chains as in the case of the standard "heavy-duty" H and U-type linked-chains.



Tyre-protection chains with Z-type tooth protective links

Tooth-linked protective chains perfectly meet the strict requirements of maximum surface adhesion combined with a minimum chain weight. The structure of the chain can be tetragonal or hexagonal.

Other catalogues



Chain ends/Chain brackets



Chain wheels segmental type



Endless chain strands and accessories

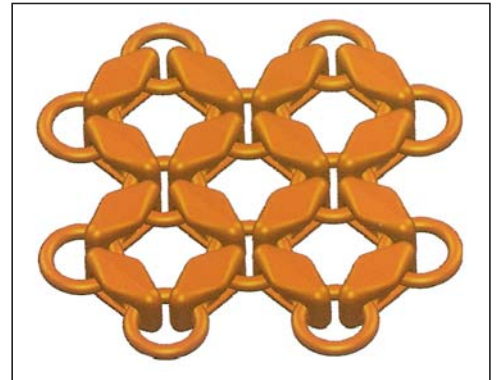


Rotary kiln chains

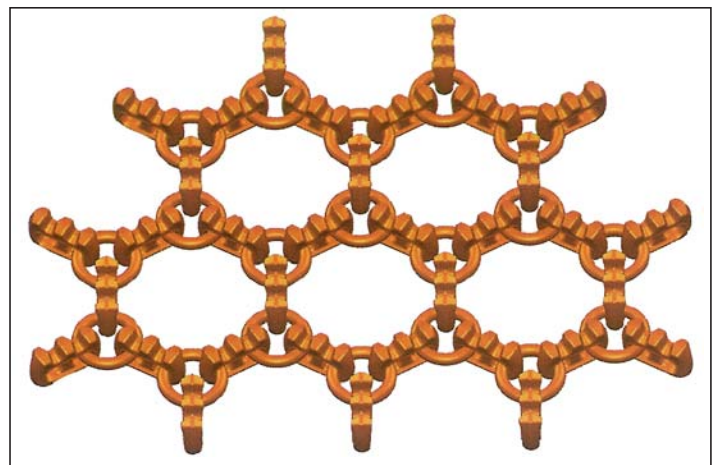
Construction and design

The construction uses the well-proven system “link – ring”; where the forged links protect the tyre and ensure adhesion and welded rings are the connection elements. Various configurations of links and rings provide the desired density of tyre coverage.

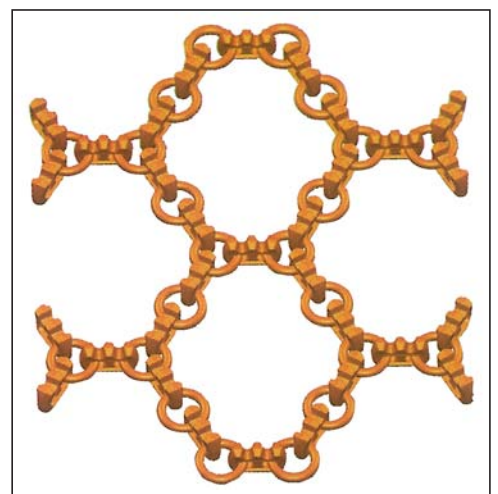
TYPE „4“ - the most common, high coverage of the tyre



TYPE „6“ - increased adhesion in combination with ample protection



TYPE „10“ - used especially with dumpers in winter time, for the purposes of adhesion and protection



Tyre-protection chains
LOM 11.4.H - type

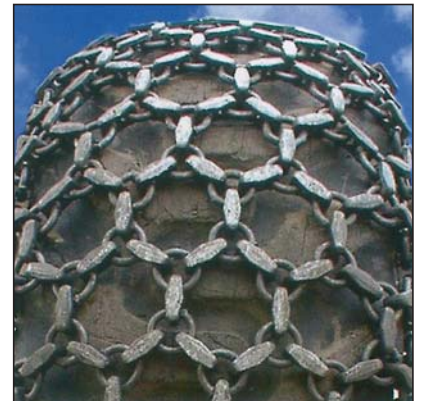


Tyre-protection chains LOM 11.4.H - type

Technical data:

- engine power: up to 100 kW
- tyre size: 10-15 up to 17,5-25
- link size: 62 x 32 x 22 mm
- distance between links: 58 mm
- minimal distance between the tyre and the machine: side: 50 mm radial: 70 mm

Tyre-protection chains
LOM 11.6.H - type



Tyre-protection chains LOM 11.6.H - type

Technical data:

- distance between links/rings: 116/98 mm



Tyre-protection chains with the lightened “link” design (size 9 ÷ 14)

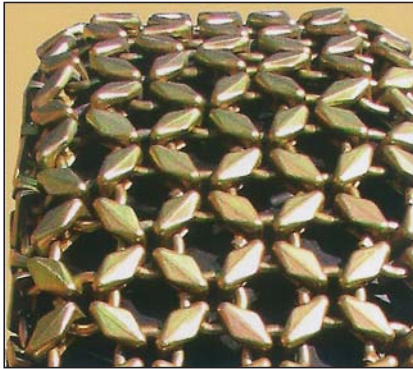
In these chains, the classic forged protective link is substituted by a classic chain link. These designs are perfectly suited for less demanding conditions, e.g. for trailing axles of mining machinery.
Available sizes: 9; 11; 14 mm

Example labelling: LOM 14.4.L3

Tyre-protection chains LOM 14.4.



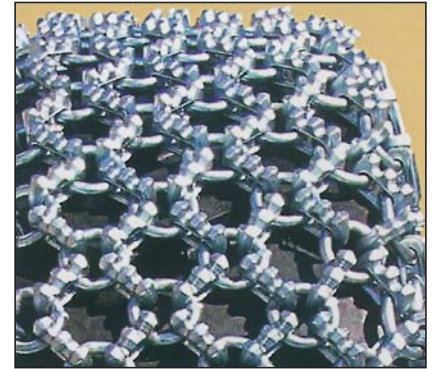
Tyre-protection chains
LOM 14.4.H - type



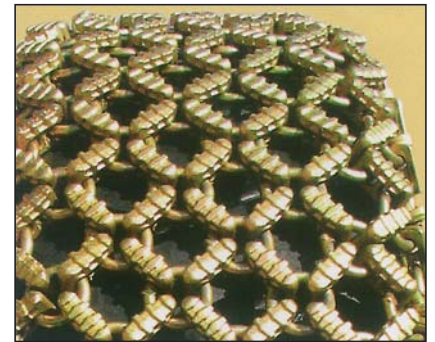
Tyre-protection chains
LOM 14.4.H; U; Z; E - type

Technical data:
 - engine power: 80 to 200 kW
 - tyre size: 14-24 up to 26,5-25
 - link size 78 x 47 x 22 ÷ 39 mm
 - distance between rings: 63 mm
 - distance between links H: 61 mm
 - distance between links U: 72 mm
 - distance between links E and Z: 78 mm
 - minimal distance between
 the tyre and the machine: side: 60 mm
 radial: 80 mm

Tyre-protection chains
LOM 14.4.Z - type



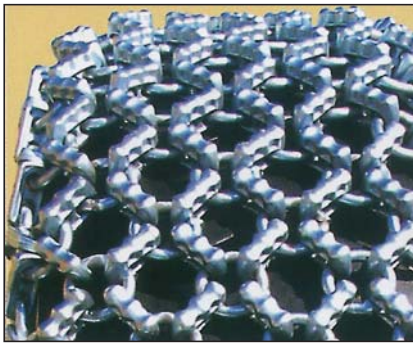
Tyre-protection chains
LOM 14.4.U - type



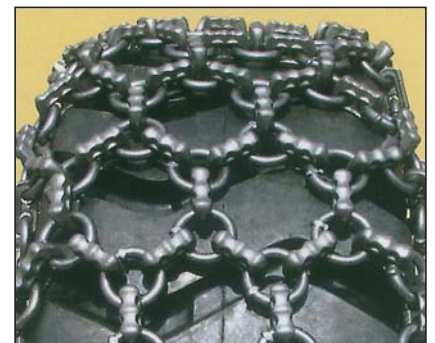
Tyre-protection chains LOM 14.6.Z and E - type

- distance between links/rings: 151/122 mm

Tyre-protection chains
LOM 14.4.E - type



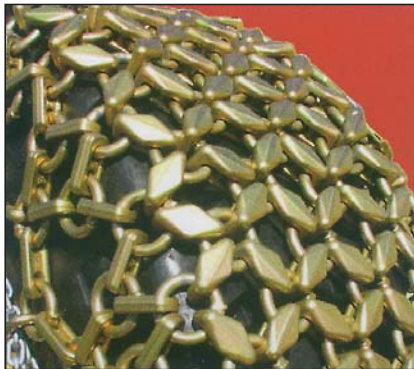
Tyre-protection chains
LOM 14.6.E - type



Tyre-protection chains
LOM 14.6.Z - type



Tyre-protection chains
LOM 16.4.H - type

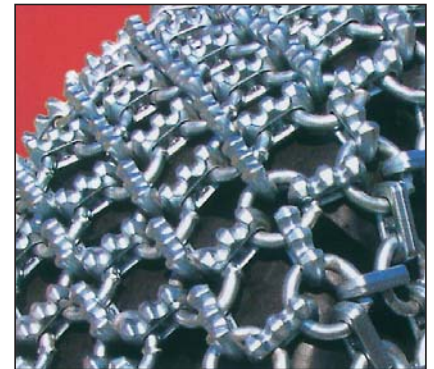


Tyre-protection chains
LOM 16.4.H; U; Z; E - type

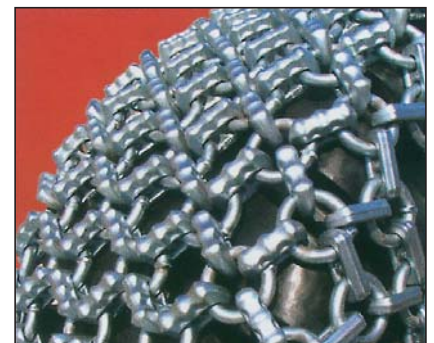
Technical data:

- engine power: 150 to 350 kW
- tyre size: 23,5-25 up to 35/65-33
- link size 88 x 54 x 25 ÷ 44 mm
- distance between rings: 70 mm
- distance between links H: 68 mm
- distance between links U: 80 mm
- distance between links E and Z: 87 mm
- minimal distance between the tyre and the machine: side: 60 mm radial: 90 mm

Tyre-protection chains
LOM 16.4.Z - type



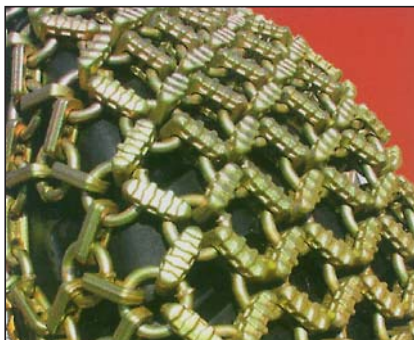
Tyre-protection chains
LOM 16.4.E - type



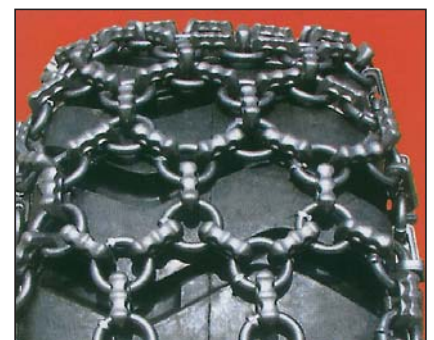
Tyre-protection chains LOM 16.6.Z and E - type

- distance between links/rings: 169/136 mm

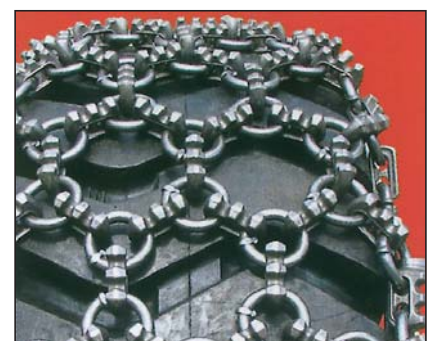
Tyre-protection chains
LOM 16.4.U - type



Tyre-protection chains
LOM 16.6.E - type



Tyre-protection chains
LOM 16.6.Z - type



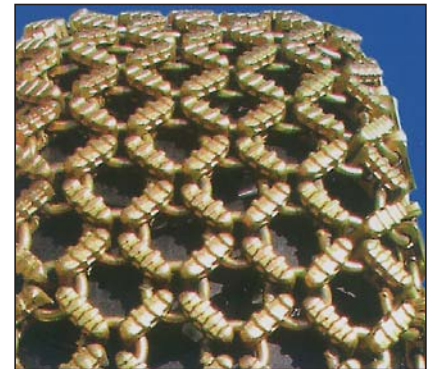
Tyre-protection chains
LOM 18.4.H - type



Tyre-protection chains
LOM 18.4.H; U; E - type

Technical data:
 - engine power: up to 200 kW
 - tyre size: 26,5-25 up to 45/65-45
 - link size: 96 x 63 x 28 ÷ 48 mm
 - distance between links H: 72 mm
 - distance between links U: 86 mm
 - distance between links E and Z: 92 mm
 - minimal distance between the tyre and the machine: side: 70 mm radial: 100 mm

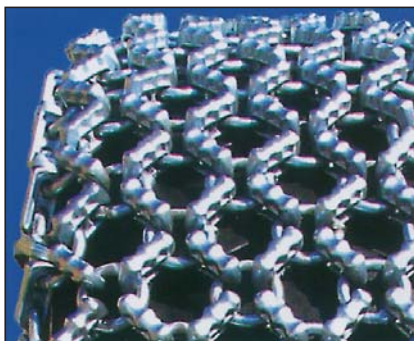
Tyre-protection chains
LOM 18.4.U - type



Tyre-protection chains LOM 18.6.Z and E - type

- distance between links/rings: 174/144 mm

Tyre-protection chains
LOM 18.4.E - type



Tyre-protection chains
LOM 18.6.Z - type



Tyre-protection chains
LOM 18.6.E - type



Protective chains with “lightened” design for lorries (size 14 ÷ 18)

Protective chains for where adhesion is the most important aspect, while keeping the weight at minimum level. Recommended for transporting machinery in steep slopes, especially in winter and mud conditions.



Available for following sizes:
 Tyre-protection chain LOM 14.10 Z-type and LOM 14.10 E-type
 Tyre-protection chain LOM 16.10 Z-type and LOM 16.10 E-type
 Tyre-protection chain LOM 18.10 Z-type and LOM 18.10 E-type

Service life of the tyre-protection chains

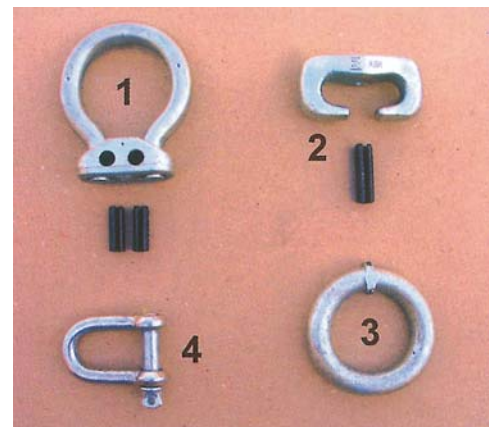
The anticipated service life of the tyre protection chains is affected by the rock conditions (hardness, particle size, sharp edges). The actual service life is greatly influenced by the overall operating conditions, type of operation and also by the chain maintenance. The chart below gives the approximate service lifespan on different types of rock.

Kind of Rock	LOM 11.4.H service-life (hours)	LOM 14.4.H service-life (hours)	LOM 16.4.H service-life (hours)	LOM 18.4.H service-life (hours)
Eruptive Rocks				
granite, quartz, andesite	1.530 - 3.060	2.100 - 4.200	2.700 - 5.400	3.300 - 6.200
basalt, diabase	2.500 - 3.825	3.500 - 5.300	4.500 - 6.750	5.200 - 7.800
Metamorphosic Rocks				
marble	2.975 - 5.100	4.000 - 7.000	5.250 - 9.000	6.100 - 10.300
quartz-rock	850 - 2.210	1.200 - 3.000	1.500 - 3.900	1.900 - 4.500
gneiss	1.530 - 2.210	2.100 - 3.000	2.700 - 3.900	3.300 - 4.500
Sediments				
sandstone	1.020 - 2.380	1.400 - 3.200	1.800 - 4.200	2.000 - 4.800
limestone	4.250 - 12.750	6.000 - 17.000	7.500 - 22.500	13.000 - 24.000
slate	1.020 - 1.530	1.400 - 2.100	1.800 - 2.700	2.000 - 3.100
Others				
slag	1.870 - 3.400	3.000 - 5.500	3.300 - 6.000	3.800 - 6.900
iron ore	2.125 - 3.400	3.000 - 4.700	3.750 - 6.000	4.400 - 6.900
manganase ore	2.125 - 2.975	3.000 - 4.000	3.750 - 5.250	4.400 - 6.100
copper ore	1.700 - 3.400	2.300 - 4.700	3.000 - 6.000	3.400 - 6.900
scrap iron	2.125 - 3.400	3.000 - 4.700	3.750 - 6.000	4.400 - 6.900

Linking and spare parts

The necessary linking parts, including a certain number of spare parts, are a part of each delivery. If required, additional parts can be ordered according to the following chart:

pos.	name	size	JK number
1.	ring linking element	11	317 549 930 110.5
		14	317 549 930 140.4
		16	317 549 930 160.5
		18	317 543 040 180.4
2.	protection link	11	317 549 930 110.4
		14	317 549 930 140.9
		16	317 549 930 160.9
		18	317 543 040 180.9
3.	ring	11	317 549 930 110.2
		14	317 549 930 140.2
		16	317 549 930 160.2
		18	317 543 040 180.3
4.	forged shackle	10	317 562 263 510
		11	317 562 263 511
		12	317 562 263 512



Clearness of the tyre

For assembly and operation, the tyre-protection chains require a certain minimal distance between the tyre and the frame of the machine

See fig. 1 and chart 1.

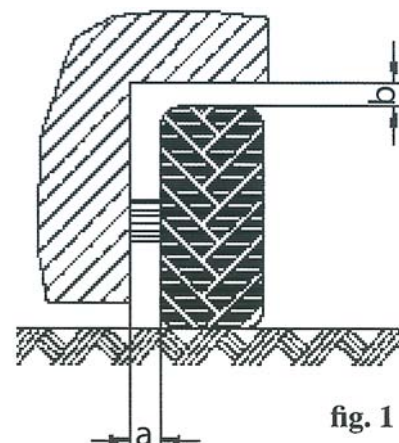


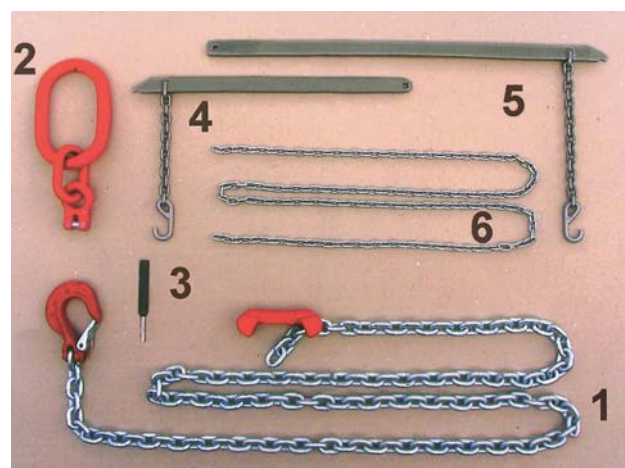
fig. 1

dimension	a	b
	mm	mm
11	50	70
14	60	80
16	60	90
18	70	100

chart 1

Assembly, assembly accessories and tools

The producer will carry out installation upon request; this may be stated in the order of the chains. During the installation, the customer's employees are trained and instructed in the operation, maintenance and repair of the chains. To perform these operations, the producer recommends ordering the assembly accessories and tools as listed in the table below.



pos.	item	size	code JK
1.	Mounting tensioning chain with hook	9	317 263 085 090
		10	317 263 085 100
2.	Mounting tensioning chain with master link	9	317 263 085 091
		10	317 263 085 101
3.	Driver	∅ 6 x 30 mm	317 549 920 067
		∅ 8 x 37 mm	317 549 920 087
		∅ 10 x 40 mm	317 549 920 107
		mm	317 549 920 126
4.	Short-lever	∅ 12 x 45 mm	317 549 920 003
5.	Long-lever	mm	317 549 920 009
		550 mm	317 549 920 002
6.	Chain	1.100 mm	317 549 920 001

Lieferprogramm Delivery programme



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 Internet: <http://www.Chains.de>
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Kettenfabrik Unna
 GmbH & Co. KG

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 59406 Unna
 Max-Planck-Str. 2
 59423 Unna



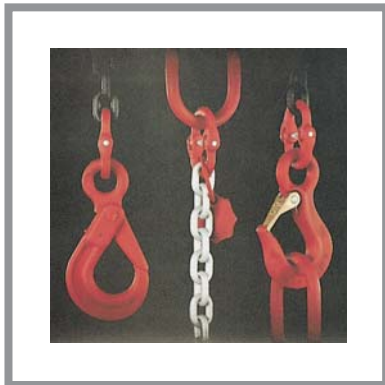
Rundstahlketten
 Round steel chains



Kettenräder
 Chain wheels



Rostfreie Ketten
 Stainless steel chains



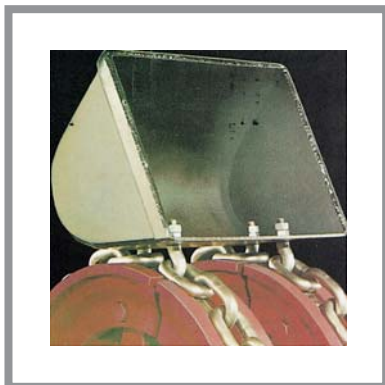
Ketten und Zubehör Güteklasse 8
 Chains and Accessories Grade 8



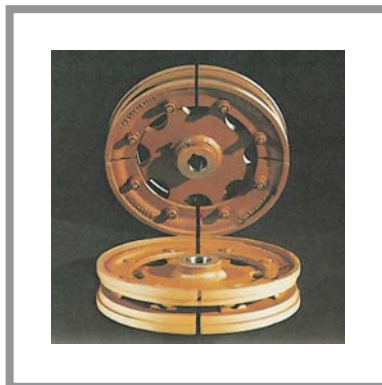
Ketten und Zubehör Güteklasse 10
 Chains and Accessories Grade 10



Ankerstegketten
 Stud link chain cables



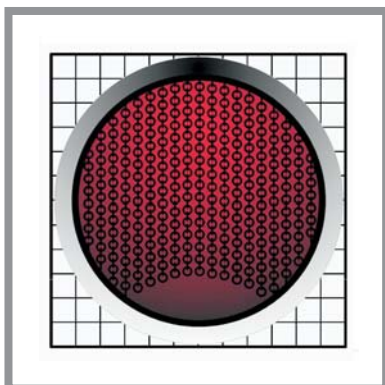
Kettenenden/Kettenbügel
 Chain ends/Chain brackets



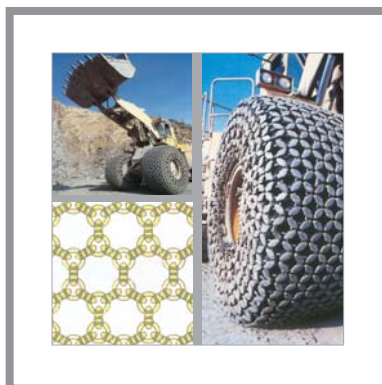
Kettenrollen in Segmentbauweise
 Chain wheels segmental type



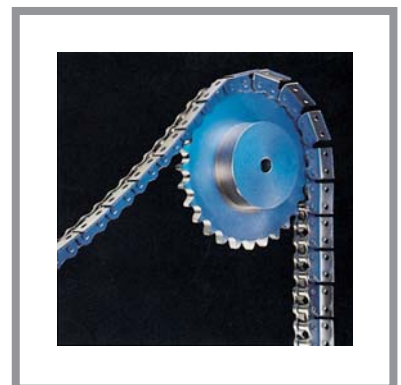
Kettenstränge und Zubehör
 Endless chain strands and accessories



Drehofenketten
 Rotary kiln chains



Reifenschutzketten
 Tyre-Protection chains



Stahlgelenkketten
 Steel link chains