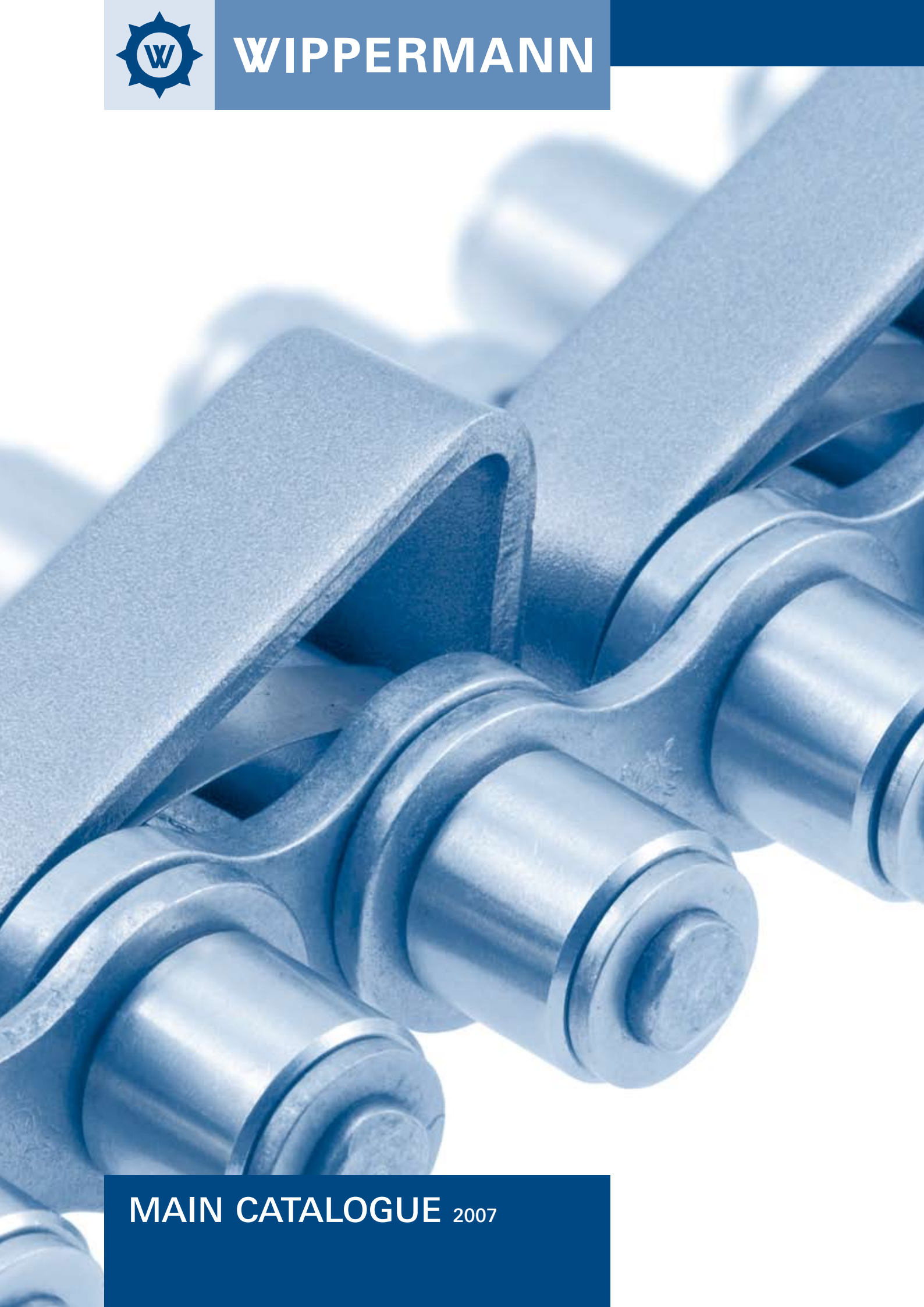




**WIPPERMANN**



**MAIN CATALOGUE** 2007



## Product information

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Simplex roller chains according to DIN 8187-1 (European type).....                              | 10 |
| Duplex roller chains according to DIN 8187-1 (European type).....                               | 11 |
| Triplex roller chains according to DIN 8187-1 (European type).....                              | 12 |
| Simplex roller chains according to DIN 8188-1 (American type) .....                             | 13 |
| Duplex roller chains according to DIN 8188-1 (American type).....                               | 14 |
| Triplex roller chains according to DIN 8188-1 (American type).....                              | 15 |
| Roller chains type series GL (straight plates) .....                                            | 16 |
| Hollow pin chains .....                                                                         | 17 |
| special heavy duty chains .....                                                                 | 18 |
| Power chains .....                                                                              | 19 |
| <b>MARATHON - maintenance-free</b> .....                                                        | 20 |
| Roller chains according to DIN 8187-1 .....                                                     | 22 |
| Roller chains according to DIN 8188-1 .....                                                     | 23 |
| Roller chains type series GL (straight plates) .....                                            | 24 |
| Double pitch roller chains .....                                                                | 25 |
| Accumulator chains .....                                                                        | 26 |
| <b>MARATHON stainless steel - maintenance-free</b> .....                                        | 28 |
| Stainless steel and maintenance-free chain .....                                                |    |
| <b>Simplex roller chains (stainless steel)</b> .....                                            | 30 |
| Main dimensions according to DIN 8187/8188 .....                                                |    |
| <b>Duplex roller chains (stainless steel)</b> .....                                             | 31 |
| Main dimensions according to DIN 8187/8188 .....                                                |    |
| <b>Triplex roller chains (stainless steel)</b> .....                                            | 32 |
| Main dimensions according to DIN 8187 .....                                                     |    |
| <b>Simplex roller chains (works-standard) / agricultural roller chains</b> .....                | 33 |
| <b>Double pitch roller chains according to DIN 8181</b> .....                                   | 34 |
| <b>Roller chains with single hole bent attachments</b> .....                                    | 35 |
| <b>Roller chains with single hole straight attachments and extended pins</b> .....              | 36 |
| <b>Roller chains with two-hole bent and straight attachments</b> .....                          | 37 |
| <b>Roller chains (stainless steel) as attachment chains</b> .....                               | 38 |
| <b>Roller chains with single hole attachments and inside threads</b> .....                      | 39 |
| <b>Roller chains with two-hole attachments and inside thread</b> .....                          | 40 |
| <b>Double pitch roller chains with single hole bent attachments</b> .....                       | 41 |
| <b>Double pitch roller chains with single hole straight attachments and extended pins</b> ..... | 42 |
| <b>Roller chains with extended pins on one side/both sides</b> .....                            | 43 |
| <b>Combination connecting links</b> .....                                                       | 44 |
| <b>Pusher dog</b> .....                                                                         | 45 |
| <b>Special top plate conveyor chain</b> .....                                                   | 46 |
| <b>Bush chains according to DIN 8164</b> .....                                                  | 47 |
| <b>Accumulator chains</b> .....                                                                 | 48 |
| <b>Axial profile of sprockets for accumulator chains</b> .....                                  | 50 |
| <b>Chain guide for accumulator chains</b> .....                                                 | 50 |
| <b>Leaf chains type series LL</b> .....                                                         | 51 |
| <b>Leaf chains according to works-standard</b> .....                                            | 52 |
| <b>Leaf chains heavy duty design U to works-standard</b> .....                                  | 52 |
| <b>Plate end links and connecting pins for leaf chains</b> .....                                | 53 |
| <b>Leaf chains type series BL</b> .....                                                         | 54 |
| <b>Inverted tooth chains with bushings (60° flank angle)</b> .....                              | 55 |
| <b>Inverted tooth (silent) chains</b> .....                                                     | 56 |
| <b>Inverted tooth (silent) chains type series HD</b> .....                                      | 57 |
| <b>Inverted tooth (silent) chains type series HP</b> .....                                      | 58 |
| <b>Additional product range</b> .....                                                           | 59 |
| <b>Chain breaker and chain puller</b> .....                                                     | 60 |
| <b>Sprockets for roller chains according to DIN 8187</b> .....                                  | 61 |
| <b>Sprockets (stainless steel grade 1.4301)</b> .....                                           | 69 |
| <b>Sprockets for accumulator chains</b> .....                                                   | 70 |
| <b>Sprockets for hollow pin chains 01650</b> .....                                              | 70 |
| <b>Sprockets with integrated ball bearing</b> .....                                             | 70 |

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| Sprockets with lantern gear toothing .....                            | 71 |
| Plate sprockets for simplex roller chains according to DIN 8187 ..... | 72 |
| Chain couplings .....                                                 | 75 |
| Sprockets made to specifications .....                                | 76 |
| Groove sizes .....                                                    | 76 |
| Axial profile of sprockets for roller chains .....                    | 77 |
| Calculation of sprocket diameters .....                               | 78 |
| Toothing check .....                                                  | 78 |
| Values for "n" and $\cot \alpha$ .....                                | 79 |
| Sprockets - PCD $d_0$ and tip circle diameter $d_k$ .....             | 80 |
| ETP Bushing for Shaft-to-Hub Connections .....                        | 83 |
| Automatic chain tensioners SPANN-BOX® And SPANN-BOY .....             | 85 |
| How to order or enquire about sprockets.....                          | 89 |

## Technical information

|                                                                                        |     |
|----------------------------------------------------------------------------------------|-----|
| Mounting of chain drives .....                                                         | 90  |
| Faulty mounting .....                                                                  | 90  |
| Lubrication of chains .....                                                            | 91  |
| Various types of steel link chains .....                                               | 95  |
| Advantages of roller chain drives .....                                                | 97  |
| Formulas, designations and units .....                                                 | 98  |
| Pre-selection of leaf chains .....                                                     | 99  |
| Pre-selection of roller chain drives .....                                             | 101 |
| Power diagram for roller chains according to DIN 8187 (European type) .....            | 103 |
| Power diagram for roller chains according to DIN 8188 (American type) .....            | 104 |
| Power diagram for roller chains according to ISO 606 (American type, reinforced) ..... | 105 |
| Calculation of chain length X .....                                                    | 106 |
| Calculation of shaft distance a .....                                                  | 107 |
| Determination of chain length L .....                                                  | 108 |
| Worked examples .....                                                                  | 109 |
| Construction of chain drives .....                                                     | 110 |
| Chain drive configurations with jockey sprockets .....                                 | 111 |
| Maintenance of chain drives .....                                                      | 112 |
| Shortening and extending of roller chains .....                                        | 113 |
| How to order or enquire about roller chains .....                                      | 114 |
| How to order or enquire about special chains.....                                      | 115 |
| Questionnaire for Chain Drives .....                                                   | 116 |
| Index .....                                                                            | 117 |
| Chain numbers.....                                                                     | 119 |
| Troubleshooting guide for chain drives.....                                            | 122 |

This catalogue K 2007 replaces all previous editions.

Chain types, which are no longer manufactured due to rationalisation, may still be available or may be manufactured again, if a sufficient quantity is ordered. We reserve the right to alter non-standard chains or cease their production without prior notice.

Illustrations merely serve for exemplification and are by no means binding for the final design.

Permissible length deviations according to DIN. For dimensions without stated tolerances DIN ISO 2768 c applies.

All information subject to errors and alterations. Any liability for misprints excluded.

All rights reserved. No part of this catalogue may be reproduced without prior written permission.



View of Wippermann plant

## Precision products for worldwide markets

Wippermann is a leading manufacturer of industrial chains and sprockets. We have a renowned customer base, particularly in engine, machine and plant construction.

As a medium-sized family-run business with 300 employees, we manufacture a comprehensive range of products in Germany. We specialise in steel link chains

with pitches of between 5 mm and 100 mm. One of our main focuses is the production of maintenance-free and stainless steel chains.

Furthermore, our product range comprises leaf chains, bush chains and inverted tooth chains as well as chains made to specifications. Additionally, we can supply matching standard sprockets or sprockets made according to drawings.

We have been certified according to DIN EN ISO 9001 for 15 years. One of our core competencies is professional consulting as to drive and conveyor technology. Together with our customers we develop and plan individual, demand-oriented solutions and realise them fast and precisely.

Owing to continuous investments in state-of-the-art technologies we are able to guarantee production processes on the highest possible level. The famous Wippermann quality is ensured by the use of selected raw materials, by our high competence in processing semi-finished goods as well as by the application of sophisticated heat treatment and coating procedures. Our comprehensive distribution network with subsidiaries, agents and dealers guarantees the availability of our products everywhere in the world - fast and reliably.



Examples of highest quality:  
MARATHON chain and duplex sprocket made of stainless steel



Wippermann administration building

## A company with tradition and vision

The company Wippermann was founded in 1893 by Wilhelm Wippermann and initially produced bicycle and motorbike components. Before the First World War, the company expanded rapidly and had several production plants in Germany and abroad as well as an international distribution system. However, the company soon had to face setbacks: due to the Second World War almost all plants were destroyed and all production plants abroad were lost.

As early as in 1929 Wilhelm Wippermann jr. had taken over the management of the company after his father's death. After the war, he managed to consolidate the company and create a new and solid foundation. The manufacturing of precision steel link chains was getting more and more important, and they are now the key product within the Wippermann range.

In the nineties the company changed from merely being a manufacturer of standard chains to a supplier of high technology products.

Today Wippermann is a successful family enterprise in its fifth generation.



The founder of the company Wilhelm Wippermann sen.  
\*1858 †1929



Shape measurement of chain components

## Quality is our philosophy

The name Wippermann has meant highest product quality for more than one hundred years.

We have always managed to guarantee high standards by exclusively using West European raw materials and applying state-of-the-art manufacturing technologies in combination with our specialised know-how.

Our company has been certified according to DIN 9001 for more than 15 years. It is managed on a process-oriented basis and the quality assurance system comprises all areas including design, production as well as after sales service.

Our employees are the most important factor within our company philosophy. They realise our company guidelines and thus ensure Wippermann quality by means of a number of control procedures - for each product and for the entire production process. This guarantees and verifies the continuous improvement of usage properties such as wear, fatigue and corrosion resistance.

Our products set benchmarks, and the increasing requirements of the market are our challenge.



Quality checks with state-of-the-art test stands: fatigue resistance test



Machining centre

### State-of-the-art technology for research, development and production

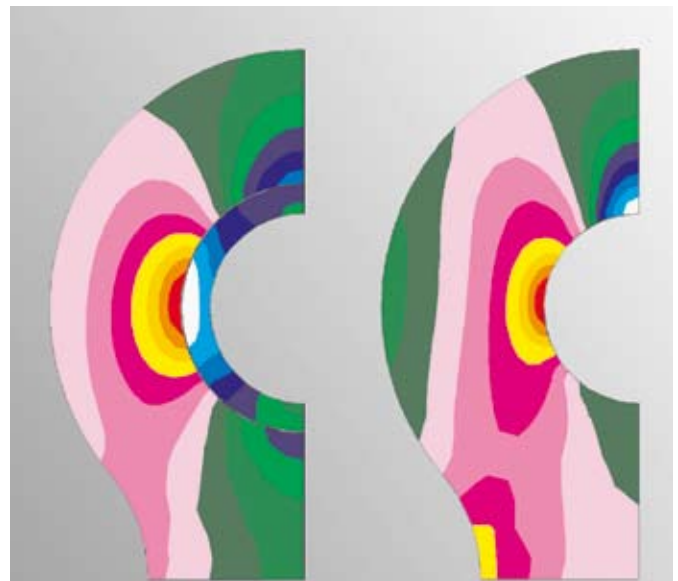
Continuous research and development processes are an essential part of our company philosophy and also a central element for securing the future.

By means of a network of different development partners, institutions and universities we can ensure the up-to-dateness of our procedures and processes.

Furthermore, our know-how on materials, lubricants and functional layers enables us to supply tailor-made solutions to all our customers.

Here is an overview of our competencies in development processes:

- Finite elements method
- Chain calculation programme
- University research
- Co-operation partners
- Test stands
- 3D CAD system



FE analysis of chain components



CNC treatment of sprockets

## Chains and sprockets according to customers' specifications

We offer our customers competent consulting for all drive technology requirements.

Within the framework of an overall concept, Wippermann is able to develop tailor-made engineering solutions resulting in complete chain-sprocket systems with perfectly-matched components for optimal functionality.

Our sprocket manufacturing equipment comprises state-of-the-art CNC automatic lathes and mill centres. Therefore we are able to manufacture all requested tooth shapes according to standard and/or customers' specifications. The use of innovative technologies and multi-shift operation ensure perfect results and short delivery periods.

As far as special chains are concerned, we can offer numerous functionalities by means of various attachments and mounted parts.

- Special chains
- Chains made to specification
- Maintenance-free chains
- Wear-resistant chains
- Highly fatigue endurable chains
- Corrosion-resistant chains



Special chain



Chain plates in the continuous annealing furnace

## Heat treatment

Heat treatment is one of the most important process steps in chain production. We have the most sophisticated equipment as well as specially developed technologies. Furthermore, we support all steel hardening processes by means of a central computer system.

This system checks all heat treatment parameters during the entire procedure and is thus able to guarantee continuously high product quality.



Sophisticated equipment for heat treatment: chamber kiln

## Contract heat treatment

For heat treatment in throughput and charge operation we use conveyor furnace equipment for treatment under inert protective gas. Furthermore, we have multi-purpose chamber kilns, pusher type furnaces and swing retorts.

We will treat bulk goods up to a partial weight of 1.5 kg as well as products with a length of up to 1,000 mm and weights up to 400 kg; this step is then followed by degreasing or vibratory finishing processes.

Subsequently, further finishing by means of shot peening procedure is possible.

Our range of services includes:

- Hardening and tempering
- Case hardening and annealing
- Carbonitriding
- Spheroidise annealing
- Carburisation
- Nitrification

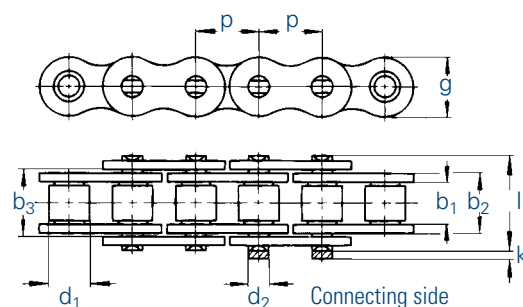
Testing facilities:

- Hardness test according to Brinell, Vickers and Rockwell
- Micro hardness test
- Metallography



# SIMPLEX ROLLER CHAINS ACCORDING TO DIN 8187-1 (EUROPEAN TYPE)

corresponding to ISO 606



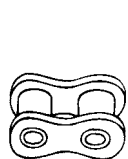
| Chain |              | DIN    | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin      | Bearing area | Minimum tensile strength DIN | Minimum tensile strength | Weight | Connecting links |
|-------|--------------|--------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|---------------------|--------------|------------------------------|--------------------------|--------|------------------|
| No.   | Ind.         |        | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l <sub>1</sub> max. | f            | F <sub>B</sub> min.          | F <sub>B</sub> min.      | q ≈    | No.              |
| 440   |              | 03     | 5,0    | -     | 2,50                | 4,15                | 4,25                | 3,20                | 1,49                | 4,1          | 2,5                             | 7,4                 | 0,06         | 2,2                          | 2,2                      | 0,08   | 11,15            |
| 445   |              | 04     | 6,0    | -     | 2,80                | 4,10                | 4,20                | 4,00                | 1,85                | 5,0          | 2,9                             | 7,4                 | 0,08         | 3,0                          | 3,0                      | 0,15   | 11,15            |
| 450   |              | 05 B-1 | 8,0    | -     | 3,00                | 4,77                | 4,90                | 5,00                | 2,31                | 7,1          | 3,1                             | 8,6                 | 0,11         | 5,0                          | 5,5                      | 0,18   | 11,15            |
| 453   |              | -      | 9,525  | 3/8   | 3,30                | 5,45                | 5,58                | 6,00                | 2,78                | 9,0          | 3,1                             | 9,6                 | 0,15         | 8,0                          | 8,2                      | 0,26   | 11,15,111        |
| 454   |              | -      | 9,525  | 3/8   | 3,94                | 6,70                | 6,83                | 6,35                | 3,28                | 9,0          | 3,3                             | 11,6                | 0,22         | 9,0                          | 9,4                      | 0,36   | 11,12,15         |
| 455   | <sup>1</sup> | 06 B-1 | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 8,2          | 3,3                             | 13,5                | 0,28         | 9,0                          | 9,6                      | 0,41   | 11,12,15         |
| 331   |              | 081    | 12,7   | 1/2   | 3,30                | 5,80                | 5,93                | 7,75                | 3,66                | 9,9          | 1,5                             | 10,2                | 0,21         | 8,2                          | 9,1                      | 0,28   | 11,12,15         |
| 332   |              | -      | 12,7   | 1/2   | 4,88                | 7,20                | 7,33                | 7,75                | 3,66                | 9,9          | 1,5                             | 11,2                | 0,26         | 8,2                          | 9,1                      | 0,33   | 11,12,15         |
| 110   |              | 082    | 12,7   | 1/2   | 2,38                | 4,60                | 4,73                | 7,75                | 3,66                | 9,9          | -                               | 8,2                 | 0,17         | 10,0                         | 10,0                     | 0,26   | 15,111           |
| 17    |              | 083    | 12,7   | 1/2   | 4,88                | 7,90                | 8,03                | 7,75                | 4,09                | 10,3         | 1,5                             | 12,9                | 0,32         | 12,0                         | 13,2                     | 0,42   | 11,12,15         |
| 385   |              | -      | 12,7   | 1/2   | 6,40                | 9,78                | 9,91                | 7,75                | 3,97                | 11,5         | 3,9                             | 15,4                | 0,38         | 16,0                         | 17,1                     | 0,50   | 11,12,15         |
| 461   |              | -      | 12,7   | 1/2   | 6,40                | 9,93                | 10,06               | 8,51                | 4,45                | 11,8         | 3,9                             | 15,8                | 0,44         | 18,0                         | 18,6                     | 0,66   | 11,12,15         |
| 462   |              | 08 B-1 | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 11,8         | 3,9                             | 17,0                | 0,50         | 18,0                         | 18,6                     | 0,70   | 11,12,15         |
| 500   |              | -      | 15,875 | 5/8   | 6,48                | 10,08               | 10,21               | 10,16               | 5,08                | 14,7         | 4,1                             | 16,4                | 0,51         | 22,4                         | 27,5                     | 0,78   | 11,12,15         |
| 501   |              | 10 B-1 | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 14,7         | 4,1                             | 19,6                | 0,67         | 22,4                         | 27,0                     | 0,91   | 11,12,15         |
| 513   |              | 12 B-1 | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 16,1         | 4,6                             | 22,7                | 0,89         | 29,0                         | 31,0                     | 1,18   | 11,12,15         |
| 548   |              | 16 B-1 | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 21,0         | 5,4                             | 36,1                | 2,10         | 60,0                         | 72,0                     | 2,68   | 11,111,12        |
| 552   |              | -      | 30,0   | -     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 21,0         | 5,4                             | 36,1                | 2,10         | 60,0                         | 72,0                     | 2,50   | 11,111,12        |
| 563   |              | 20 B-1 | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 26,4         | 6,1                             | 43,2                | 2,96         | 95,0                         | 105,0                    | 3,50   | 11,111,12        |
| 596   |              | 24 B-1 | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 33,4         | 6,6                             | 53,4                | 5,54         | 160,0                        | 180,0                    | 6,80   | 111,12           |
| 613   |              | 28 B-1 | 44,45  | 1 3/4 | 30,99               | 46,50               | 46,80               | 27,94               | 15,90               | 37,0         | 7,4                             | 65,1                | 7,39         | 200,0                        | 230,0                    | 8,50   | 111,12           |
| 652   |              | 32 B-1 | 50,8   | 2     | 30,99               | 45,50               | 45,80               | 29,21               | 17,81               | 42,2         | 7,9                             | 67,4                | 8,10         | 250,0                        | 276,0                    | 10,50  | 111,12           |
| 671   |              | 40 B-1 | 63,5   | 2 1/2 | 38,10               | 55,70               | 56,00               | 39,37               | 22,89               | 52,9         | 10,0                            | 82,6                | 12,75        | 355,0                        | 405,0                    | 16,40  | 111,12           |
| 679   |              | 48 B-1 | 76,2   | 3     | 45,72               | 70,50               | 71,00               | 48,26               | 29,24               | 63,8         | 10,0                            | 99,1                | 20,61        | 560,0                        | 630,0                    | 25,00  | 111,12           |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>1</sup> with straight side plates

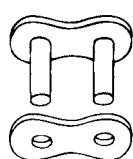
For details on orders and enquiries see page 114. Standard sprockets as of page 61.  
Information on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



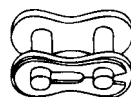
No. 4 (B)

Inner link



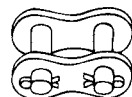
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



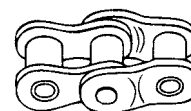
No. 111 (S)

Connecting link with  
cottered pin



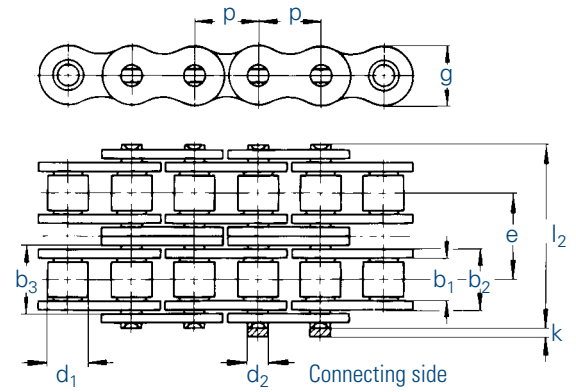
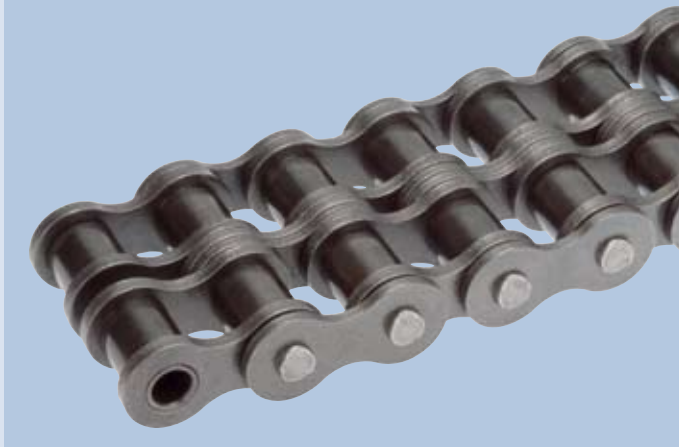
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link



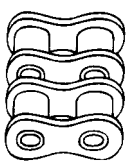
| Chain                                                                             |      |        | Pitch  |                 | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength DIN | Minimum tensile strength  | Weight | Connecting links |
|-----------------------------------------------------------------------------------|------|--------|--------|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|---------------------|-----------------|------------------------------|------------------------------------------------------------------------------------------------------------|--------|------------------|
|  | DIN  |        | p      |                 | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l <sub>2</sub> max. | f               | F <sub>B</sub> min.          | F <sub>B</sub> min.                                                                                        | q ≈    |                  |
| No.                                                                               | Ind. | No.    | mm     | inch            | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                           | kN                                                                                                         | kg/m   | No.              |
| D 445                                                                             |      | -      | 6,0    | -               | 2,80                | 4,10                | 4,25                | 4,00                | 1,85                | 5,50             | 5,0          | 2,9                             | 13,3                | 0,14            | 5,0                          | 5,0                                                                                                        | 0,23   | 11,15            |
| D 450                                                                             |      | 05 B-2 | 8,0    | -               | 3,00                | 4,77                | 4,90                | 5,00                | 2,31                | 5,64             | 7,1          | 3,1                             | 14,3                | 0,22            | 7,8                          | 8,2                                                                                                        | 0,36   | 11,15            |
| D 455                                                                             | 1    | 06 B-2 | 9,525  | $\frac{3}{8}$   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 23,8                | 0,56            | 16,9                         | 17,4                                                                                                       | 0,78   | 11,12,15         |
| D 462                                                                             |      | 08 B-2 | 12,7   | $\frac{1}{2}$   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 31,0                | 1,01            | 32,0                         | 37,0                                                                                                       | 1,36   | 11,12,15         |
| D 501                                                                             |      | 10 B-2 | 15,875 | $\frac{5}{8}$   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 36,2                | 1,34            | 44,5                         | 54,0                                                                                                       | 1,82   | 11,12,15         |
| D 513                                                                             |      | 12 B-2 | 19,05  | $\frac{3}{4}$   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 42,2                | 1,79            | 57,8                         | 63,0                                                                                                       | 2,38   | 11,12,15         |
| D 548                                                                             |      | 16 B-2 | 25,4   | 1               | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 68,0                | 4,21            | 106,0                        | 140,0                                                                                                      | 5,30   | 11,111,12        |
| D 563                                                                             |      | 20 B-2 | 31,75  | 1 $\frac{1}{4}$ | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 79,0                | 5,91            | 170,0                        | 210,0                                                                                                      | 7,30   | 11,111,12        |
| D 596                                                                             |      | 24 B-2 | 38,1   | 1 $\frac{1}{2}$ | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 101,0               | 11,09           | 280,0                        | 360,0                                                                                                      | 13,40  | 111,12           |
| D 613                                                                             |      | 28 B-2 | 44,45  | 1 $\frac{3}{4}$ | 30,99               | 46,50               | 46,80               | 27,94               | 15,90               | 59,56            | 37,0         | 7,4                             | 124,0               | 14,79           | 360,0                        | 443,0                                                                                                      | 16,60  | 111,12           |
| D 652                                                                             |      | 32 B-2 | 50,8   | 2               | 30,99               | 45,50               | 45,80               | 29,21               | 17,81               | 58,55            | 42,2         | 7,9                             | 126,0               | 16,21           | 450,0                        | 530,0                                                                                                      | 21,00  | 111,12           |
| D 671                                                                             |      | 40 B-2 | 63,5   | 2 $\frac{1}{2}$ | 38,10               | 55,70               | 56,00               | 39,37               | 22,89               | 72,29            | 52,9         | 10,0                            | 154,0               | 25,50           | 630,0                        | 806,0                                                                                                      | 32,60  | 111,12           |
| D 679                                                                             |      | 48 B-2 | 76,2   | 3               | 45,72               | 70,50               | 71,00               | 48,26               | 29,24               | 91,21            | 63,8         | 10,0                            | 190,0               | 41,23           | 1000,0                       | 1100,0                                                                                                     | 50,00  | 111,12           |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>1</sup> with straight side plates

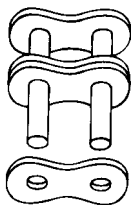
For details on orders and enquiries see page 114. Standard sprockets as of page 61.  
Information on the selection of chain sizes and drives as of page 101.

### Connecting links: According to DIN (...)



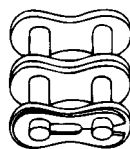
No. 4 (B)

Inner link



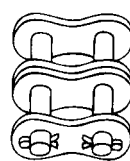
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



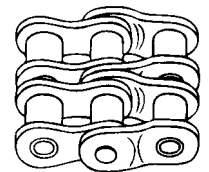
No. 111 (S)

Connecting link with  
cottered pin



No. 12 (L)

Single  
cranked link

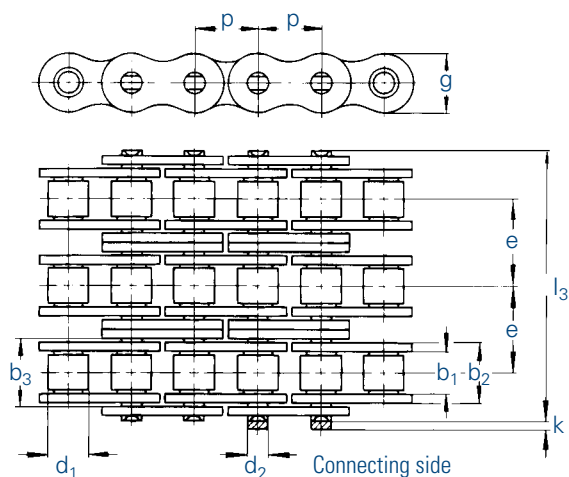


No. 15 (C)

Double  
cranked link



# TRIPLEX ROLLER CHAINS ACCORDING TO DIN 8187-1 (EUROPEAN TYPE) corresponding to ISO 606



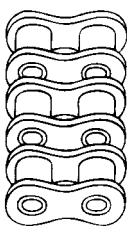
| Chain                                                                             |      |        | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin      | Bearing area | Minimum tensile strength DIN | Minimum tensile strength  | Weight | Connecting links |
|-----------------------------------------------------------------------------------|------|--------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|---------------------|--------------|------------------------------|------------------------------------------------------------------------------------------------------------|--------|------------------|
|  |      | DIN    | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l <sub>3</sub> max. | f            | F <sub>B</sub> min.          | F <sub>B</sub> min.                                                                                        | q ≈    |                  |
| No.                                                                               | Ind. | No.    | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm                  | cm²          | kN                           | kN                                                                                                         | kg/m   | No.              |
| T 450                                                                             | 1    | 05 B-3 | 8,0    | -     | 3,00                | 4,77                | 4,90                | 5,00                | 2,31                | 5,64             | 7,1          | 3,1                             | 19,9                | 0,33         | 11,1                         | 11,1                                                                                                       | 0,54   | 11,15            |
| T 455                                                                             |      | 06 B-3 | 9,525  | 3⁄8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 34,0                | 0,81         | 24,9                         | 24,9                                                                                                       | 1,18   | 11,12,15         |
| T 462                                                                             |      | 08 B-3 | 12,7   | 1⁄2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 44,9                | 1,51         | 47,5                         | 56,0                                                                                                       | 2,01   | 11,12,15         |
| T 501                                                                             |      | 10 B-3 | 15,875 | 5⁄8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 52,8                | 2,02         | 66,7                         | 80,0                                                                                                       | 2,70   | 11,12,15         |
| T 513                                                                             |      | 12 B-3 | 19,05  | 3⁄4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 61,7                | 2,68         | 86,7                         | 94,0                                                                                                       | 3,12   | 11,12,15         |
| T 548                                                                             |      | 16 B-3 | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 99,9                | 6,31         | 160,0                        | 211,0                                                                                                      | 7,50   | 11,111,12        |
| T 563                                                                             |      | 20 B-3 | 31,75  | 1 1⁄4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 116,0               | 8,87         | 250,0                        | 300,0                                                                                                      | 10,60  | 11,111,12        |
| T 596                                                                             |      | 24 B-3 | 38,1   | 1 1⁄2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 150,0               | 16,63        | 425,0                        | 523,0                                                                                                      | 20,00  | 111,12           |
| T 613                                                                             |      | 28 B-3 | 44,45  | 1 3⁄4 | 30,99               | 46,50               | 46,80               | 27,94               | 15,90               | 59,56            | 37,0         | 7,4                             | 184,0               | 22,18        | 530,0                        | 660,0                                                                                                      | 25,00  | 111,12           |
| T 652                                                                             |      | 32 B-3 | 50,8   | 2     | 30,99               | 45,50               | 45,80               | 29,21               | 17,81               | 58,55            | 42,2         | 7,9                             | 184,0               | 24,31        | 670,0                        | 800,0                                                                                                      | 32,00  | 111,12           |
| T 671                                                                             |      | 40 B-3 | 63,5   | 2 1⁄2 | 38,10               | 55,70               | 56,00               | 39,37               | 22,89               | 72,29            | 52,9         | 10,0                            | 227,0               | 38,25        | 950,0                        | 1140,0                                                                                                     | 48,70  | 111,12           |
| T 679                                                                             |      | 48 B-3 | 76,2   | 3     | 45,72               | 70,50               | 71,00               | 48,26               | 29,24               | 91,21            | 63,8         | 10,0                            | 281,0               | 61,84        | 1500,0                       | 1720,0                                                                                                     | 75,00  | 111,12           |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>1</sup> with straight side plates

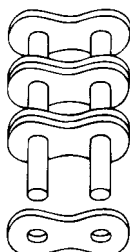
For details on orders and enquiries see page 114. Standard sprockets as of page 61.  
Information on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



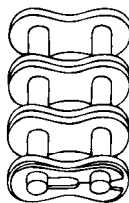
No. 4 (B)

Inner link



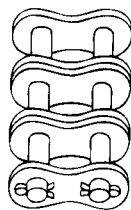
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



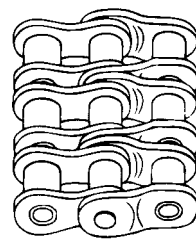
No. 111 (S)

Connecting link with  
cottered pin



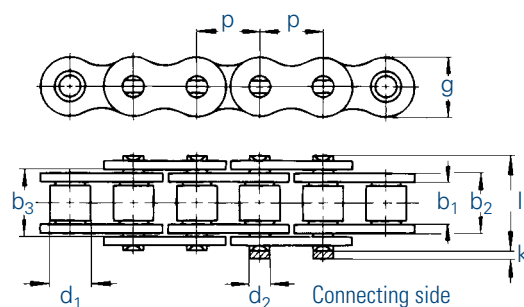
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link



| Chain |              | DIN    | Pitch  |     | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin      | Bearing area | Minimum tensile strength DIN | Minimum tensile strength | Weight | Connecting links |
|-------|--------------|--------|--------|-----|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|---------------------|--------------|------------------------------|--------------------------|--------|------------------|
| No.   | Ind.         |        | p      |     | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l <sub>1</sub> max. | f            | F <sub>B</sub> min.          | F <sub>B</sub> min.      | q ≈    | No.              |
| 25    | <sup>2</sup> | 04 C-1 | 6,35   | ¼   | 3,18                | 4,80                | 4,85                | 3,30                | 2,31                | 6,0          | 2,5                             | 9,0                 | 0,11         | 3,5                          | 3,5                      | 0,13   | 11,15            |
| 35    | <sup>2</sup> | 06 C-1 | 9,525  | ⅜   | 4,68                | 7,47                | 7,52                | 5,08                | 3,58                | 9,1          | 3,3                             | 13,2                | 0,27         | 7,9                          | 10,2                     | 0,35   | 11,12,15         |
| 40    |              | 08 A-1 | 12,7   | ½   | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 12,0         | 3,9                             | 17,8                | 0,44         | 14,1                         | 16,5                     | 0,60   | 11,12,15         |
| 50    |              | 10 A-1 | 15,875 | ⅝   | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | 15,0         | 4,1                             | 21,8                | 0,70         | 22,2                         | 30,0                     | 1,01   | 11,12,15         |
| 60    | <sup>9</sup> | 12 A-1 | 19,05  | ¾   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 18,0         | 4,6                             | 26,9                | 1,05         | 31,8                         | 40,0                     | 1,58   | 11,11,12,15      |
| 80    | <sup>9</sup> | 16 A-1 | 25,4   | 1   | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | 24,1         | 5,4                             | 33,5                | 1,78         | 56,7                         | 69,0                     | 2,36   | 11,11,12         |
| 100   | <sup>9</sup> | 20 A-1 | 31,75  | 1 ¼ | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | 30,1         | 6,1                             | 41,1                | 2,61         | 88,5                         | 92,5                     | 3,80   | 111,12           |
| 120   | <sup>9</sup> | 24 A-1 | 38,1   | 1 ½ | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | 36,2         | 6,6                             | 50,8                | 3,92         | 127,0                        | 139,0                    | 5,40   | 111,12           |
| 140   | <sup>9</sup> | 28 A-1 | 44,45  | 1 ¾ | 25,22               | 37,00               | 37,30               | 25,40               | 12,70               | 42,2         | 7,4                             | 54,9                | 4,70         | 172,4                        | 178,5                    | 7,30   | 111,12           |
| 160   | <sup>9</sup> | 32 A-1 | 50,8   | 2   | 31,55               | 45,00               | 45,30               | 28,58               | 14,27               | 48,2         | 7,9                             | 65,5                | 6,42         | 226,8                        | 231,0                    | 9,90   | 111,12           |
| 200   | <sup>9</sup> | 40 A-1 | 63,5   | 2 ½ | 37,85               | 54,70               | 55,00               | 39,68               | 19,84               | 60,3         | 10,0                            | 80,3                | 10,85        | 353,8                        | 387,0                    | 16,50  | 111,12           |

## Heavy duty design with reinforced side plates and enlarged bearing areas

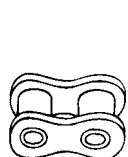
|       |              |   |        |     |       |       |       |       |       |      |      |      |       |       |       |       |     |
|-------|--------------|---|--------|-----|-------|-------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-----|
| 50 H  |              | - | 15,875 | ⅝   | 9,40  | 14,60 | 14,73 | 10,16 | 5,08  | 15,0 | 4,1  | 23,4 | 0,75  | 22,2  | 32,0  | 1,18  | 11  |
| 60 H  | <sup>9</sup> | - | 19,05  | ¾   | 12,57 | 19,45 | 19,60 | 11,91 | 5,94  | 18,0 | 4,6  | 28,9 | 1,16  | 31,8  | 42,0  | 1,94  | 11  |
| 80 H  | <sup>9</sup> | - | 25,4   | 1   | 15,75 | 24,28 | 24,48 | 15,88 | 7,92  | 24,1 | 5,4  | 37,0 | 1,92  | 56,7  | 72,0  | 3,04  | 111 |
| 100 H | <sup>9</sup> | - | 31,75  | 1 ¼ | 18,90 | 29,10 | 29,30 | 19,05 | 9,53  | 30,1 | 6,1  | 44,0 | 2,77  | 88,5  | 96,0  | 4,25  | 111 |
| 120 H | <sup>9</sup> | - | 38,1   | 1 ½ | 25,22 | 37,00 | 37,30 | 22,23 | 11,10 | 36,2 | 6,6  | 54,0 | 4,13  | 127,0 | 141,0 | 6,40  | 111 |
| 140 H | <sup>9</sup> | - | 44,45  | 1 ¾ | 25,22 | 38,70 | 39,00 | 25,40 | 12,70 | 42,2 | 7,4  | 58,0 | 4,94  | 172,4 | 180,0 | 8,30  | 111 |
| 160 H | <sup>9</sup> | - | 50,8   | 2   | 31,55 | 46,90 | 47,20 | 28,58 | 14,27 | 48,2 | 7,9  | 68,0 | 6,70  | 226,8 | 233,0 | 11,50 | 111 |
| 200 H | <sup>9</sup> | - | 63,5   | 2 ½ | 37,85 | 57,60 | 57,90 | 39,68 | 19,84 | 60,3 | 10,0 | 84,0 | 11,60 | 353,8 | 400,0 | 20,00 | 111 |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>2</sup> without rollers (DIN 8154) <sup>9</sup> dismountable designs (with cottered/split pins) on request

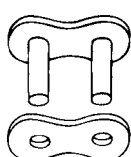
For details on orders and enquiries see page 114. Sprockets on request.  
Details on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



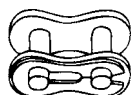
No. 4 (B)

Inner link



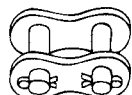
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



No. 111 (S)

Connecting link  
with cottered pin



No. 12 (L)

Single  
cranked link

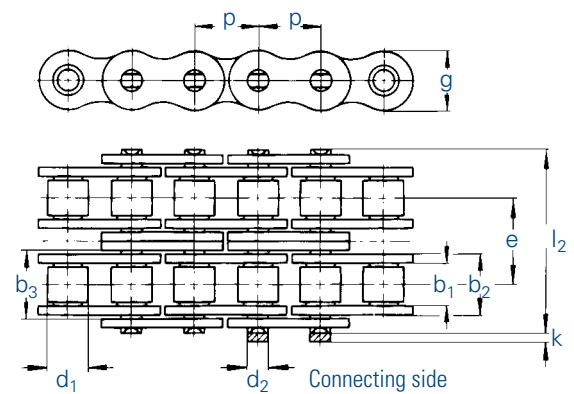


No. 15 (C)

Double  
cranked link



# DUPLEX ROLLER CHAINS ACCORDING TO DIN 8188-1 (AMERICAN TYPE) corresponding to ISO 606



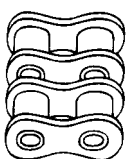
| Chain |              |        | Pitch  |      | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength | Minimum tensile strength | Weight | Connecting links |
|-------|--------------|--------|--------|------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|---------------------|-----------------|--------------------------|--------------------------|--------|------------------|
| ⚙     |              | DIN    | p      |      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l <sub>2</sub> max. | f               | F <sub>B</sub> min.      | F <sub>B</sub> min.      | q ≈    |                  |
| No.   | Ind.         | No.    | mm     | inch | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                       | kN                       | kg/m   | No.              |
| 35-2  | <sup>2</sup> | 06 C-2 | 9,525  | ⅜    | 4,68                | 7,47                | 7,52                | 5,08                | 3,58                | 10,13            | 9,0          | 3,3                             | 23,4                | 0,53            | 15,8                     | 17,0                     | 0,70   | 11,12,15         |
| 40-2  |              | 08 A-2 | 12,7   | ½    | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 14,38            | 12,0         | 3,9                             | 32,3                | 0,88            | 28,2                     | 29,7                     | 1,20   | 11,12,15         |
| 50-2  |              | 10 A-2 | 15,875 | ⅝    | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | 18,11            | 15,0         | 4,1                             | 39,9                | 1,40            | 44,4                     | 62,0                     | 1,78   | 11,12,15         |
| 60-2  | <sup>9</sup> | 12 A-2 | 19,05  | ¾    | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 49,8                | 2,10            | 63,6                     | 76,0                     | 3,15   | 11,111,12,15     |
| 80-2  | <sup>9</sup> | 16 A-2 | 25,4   | 1    | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | 29,29            | 24,1         | 5,4                             | 62,7                | 3,56            | 113,4                    | 135,0                    | 4,90   | 11,111,12,15     |
| 100-2 | <sup>9</sup> | 20 A-2 | 31,75  | 1 ¼  | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | 35,76            | 30,1         | 6,1                             | 77,0                | 5,22            | 177,0                    | 205,0                    | 7,60   | 111,12           |
| 120-2 | <sup>9</sup> | 24 A-2 | 38,1   | 1 ½  | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | 45,44            | 36,2         | 6,6                             | 96,3                | 7,84            | 254,0                    | 290,0                    | 10,80  | 111,12           |
| 140-2 | <sup>9</sup> | 28 A-2 | 44,45  | 1 ¾  | 25,22               | 37,00               | 37,30               | 25,40               | 12,70               | 48,87            | 42,2         | 7,4                             | 103,0               | 9,40            | 344,8                    | 357,0                    | 14,30  | 111,12           |
| 160-2 | <sup>9</sup> | 32 A-2 | 50,8   | 2    | 31,55               | 45,00               | 45,30               | 28,58               | 14,27               | 58,55            | 48,2         | 7,9                             | 124,0               | 12,84           | 453,6                    | 455,0                    | 19,40  | 111,12           |
| 200-2 | <sup>9</sup> | 40 A-2 | 63,5   | 2 ½  | 37,85               | 54,70               | 55,00               | 39,68               | 19,84               | 71,55            | 60,3         | 10,0                            | 151,0               | 21,70           | 707,6                    | 730,0                    | 33,00  | 111,12           |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>2</sup> without rollers (DIN 8154) <sup>9</sup> dismountable designs (with cottered/split pins) on request

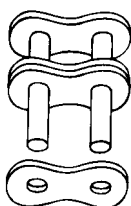
For details on orders and enquiries see page 114. Sprockets on request.  
Information on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



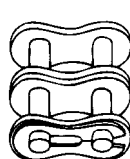
No. 4 (B)

Inner link



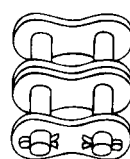
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



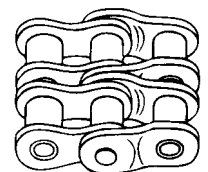
No. 111 (S)

Connecting link  
with cottered pin



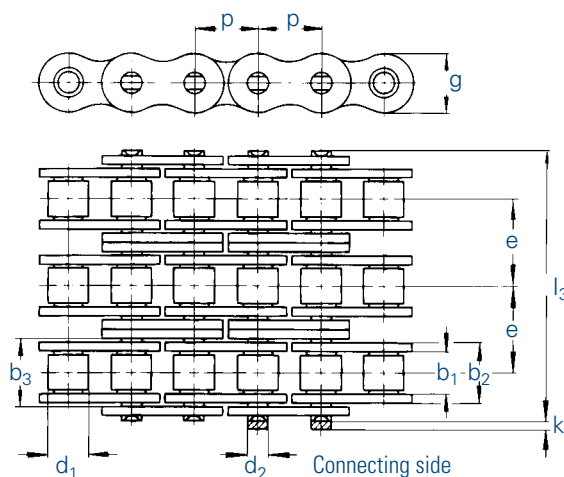
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link



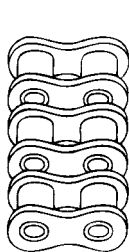
| Chain                                                                             |              |        | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin      | Bearing area | Minimum tensile strength DIN | Minimum tensile strength  | Weight | Connecting links |
|-----------------------------------------------------------------------------------|--------------|--------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|---------------------|--------------|------------------------------|------------------------------------------------------------------------------------------------------------|--------|------------------|
|  |              | DIN    | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l <sub>2</sub> max. | f            | F <sub>B</sub> min.          | F <sub>B</sub> min.       | q ≈    |                  |
| No.                                                                               | Ind.         | No.    | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm                  | cm²          | kN                           | kN                                                                                                         | kg/m   | No.              |
| 35-3                                                                              | <sup>2</sup> | 06 C-3 | 9,525  | 3⁄8   | 4,68                | 7,47                | 7,52                | 5,08                | 3,58                | 10,13            | 9,0          | 3,3                             | 33,5                | 0,80         | 23,7                         | 25,5                                                                                                       | 1,05   | 11,12,15         |
| 40-3                                                                              |              | 08 A-3 | 12,7   | 1⁄2   | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 14,38            | 12,0         | 3,9                             | 46,7                | 1,32         | 42,3                         | 41,2                                                                                                       | 1,80   | 11,12,15         |
| 50-3                                                                              |              | 10 A-3 | 15,875 | 5⁄8   | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | 18,11            | 15,0         | 4,1                             | 57,9                | 2,10         | 66,6                         | 88,0                                                                                                       | 3,02   | 11,12,15         |
| 60-3                                                                              | <sup>9</sup> | 12 A-3 | 19,05  | 3⁄4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 72,6                | 3,15         | 95,4                         | 105,0                                                                                                      | 4,70   | 11,11,12,15      |
| 80-3                                                                              | <sup>9</sup> | 16 A-3 | 25,4   | 1     | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | 29,29            | 24,1         | 5,4                             | 91,7                | 5,35         | 170,1                        | 193,0                                                                                                      | 7,50   | 11,11,12,15      |
| 100-3                                                                             | <sup>9</sup> | 20 A-3 | 31,75  | 1 1⁄4 | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | 35,76            | 30,1         | 6,1                             | 113,0               | 7,83         | 265,5                        | 305,0                                                                                                      | 11,20  | 111,12           |
| 120-3                                                                             | <sup>9</sup> | 24 A-3 | 38,1   | 1 1⁄2 | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | 45,44            | 36,2         | 6,6                             | 141,0               | 11,76        | 381,0                        | 410,0                                                                                                      | 16,10  | 111,12           |
| 140-3                                                                             | <sup>9</sup> | 28 A-3 | 44,45  | 1 3⁄4 | 25,22               | 37,00               | 37,30               | 25,40               | 12,70               | 48,87            | 42,2         | 7,4                             | 152,0               | 14,10        | 517,2                        | 520,0                                                                                                      | 21,40  | 111,12           |
| 160-3                                                                             | <sup>9</sup> | 32 A-3 | 50,8   | 2     | 31,55               | 45,00               | 45,30               | 28,58               | 14,27               | 58,55            | 48,2         | 7,9                             | 182,0               | 19,26        | 680,4                        | 685,0                                                                                                      | 29,10  | 111,12           |
| 200-3                                                                             | <sup>9</sup> | 40 A-3 | 63,5   | 2 1⁄2 | 37,85               | 54,70               | 55,00               | 39,68               | 19,84               | 71,55            | 60,3         | 10,0                            | 223,0               | 32,56        | 1061,4                       | 1095,0                                                                                                     | 50,00  | 111,12           |

Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>2</sup> without rollers (DIN 8154) <sup>9</sup> dismountable designs (with cottred/split pins) on request

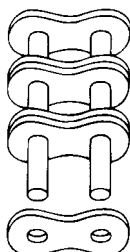
For details on orders and enquiries see page 114. Sprockets on request.  
Information on the selection of chain sizes and drives as of page 101.

#### Connecting links: According to DIN (...)



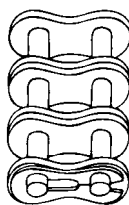
No. 4 (B)

Inner link



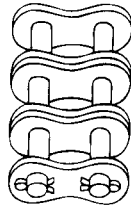
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



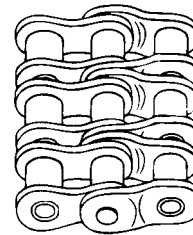
No. 111 (S)

Connecting link  
with cottred pin



No. 12 (L)

Single  
cranked link

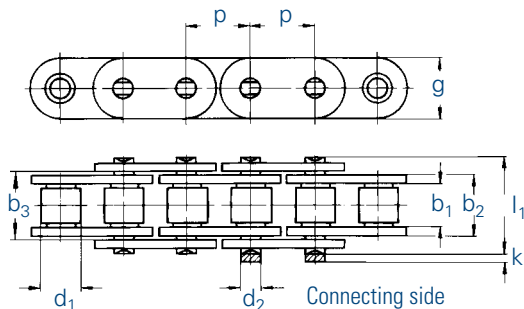


No. 15 (C)

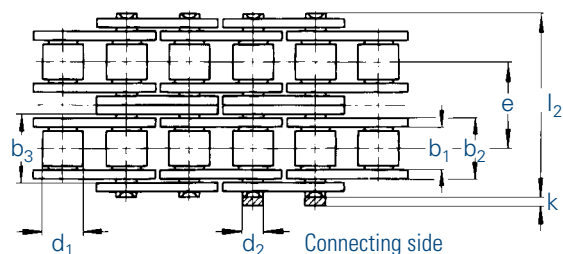
Double  
cranked link



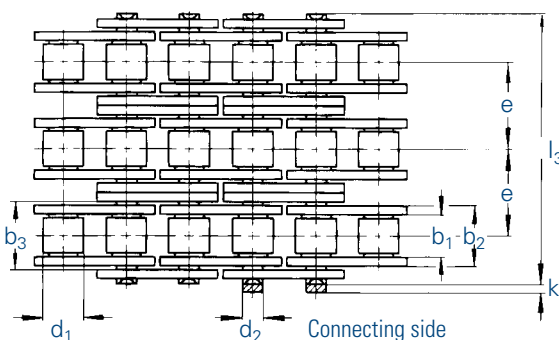
## Simplex chains



## Duplex chains



## Triplex chains

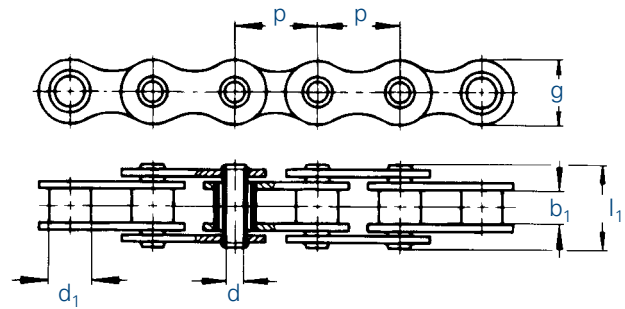


| Chain     |      | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength DIN | Minimum tensile strength | Weight | Connecting links |
|-----------|------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|----------------|-----------------|------------------------------|--------------------------|--------|------------------|
|           |      | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.          | F <sub>B</sub> min.      | q ≈    |                  |
| No.       | Ind. | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                           | kN                       | kg/m   | No.              |
| 455 GL    |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | -                | 8,2          | 3,3                             | 13,5           | 0,28            | 9,0                          | 9,6                      | 0,41   | 4,7,11,12,15     |
| 462 GL    |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | -                | 11,5         | 3,9                             | 17,0           | 0,50            | 18,0                         | 18,6                     | 0,78   | 4,7,11,12        |
| 501 GL    |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | -                | 14,2         | 4,1                             | 19,6           | 0,67            | 22,4                         | 27,0                     | 1,03   | 4,7,11           |
| 513 GL    |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | -                | 15,5         | 4,6                             | 22,7           | 0,89            | 29,0                         | 31,0                     | 1,29   | 4,7,11,12        |
| 60 GL     |      | 19,05  | 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | -                | 18,0         | 4,6                             | 26,9           | 1,05            | 31,8                         | 41,0                     | 1,58   | 4,7,11           |
| 60 HGL    |      | 19,05  | 3/4   | 12,57               | 19,45               | 19,60               | 11,91               | 5,94                | -                | 18,0         | 4,6                             | 28,9           | 1,16            | 31,8                         | 41,0                     | 1,94   | 4,7,11           |
| 548 GL    |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 24,0         | 5,4                             | 36,1           | 2,10            | 60,0                         | 72,0                     | 3,29   | 4,7,11           |
| 548 GLS   |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 21,0         | 5,4                             | 36,1           | 2,10            | 60,0                         | 72,0                     | 2,90   | 4,7,11,12        |
| 563 GL    |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | -                | 26,4         | 6,1                             | 43,2           | 2,95            | 95,0                         | 105,0                    | 4,13   | 4,7,11,12        |
| 596 GL    |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,4                | 14,63               | -                | 33,4         | 6,6                             | 53,4           | 5,54            | 160,0                        | 180,0                    | 7,34   | 4,7,11,12        |
| 455 GL-2  |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 23,8           | 0,56            | 16,9                         | 17,4                     | 0,86   | 4,7,11,12,15     |
| 462 GL-2  |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,5         | 3,9                             | 31,0           | 1,01            | 32,0                         | 37,0                     | 1,50   | 4,7,11,12        |
| 501 GL-2  |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,2         | 4,1                             | 36,2           | 1,34            | 44,5                         | 54,0                     | 2,00   | 4,7,11           |
| 513 GL-2  |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 15,5         | 4,6                             | 42,2           | 1,79            | 57,8                         | 63,0                     | 2,62   | 4,7,11,12        |
| 60 GL-2   |      | 19,05  | 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 49,8           | 2,10            | 63,6                         | 76,0                     | 3,08   | 4,7,11           |
| 548 GL-2  |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 24,0         | 5,4                             | 68,0           | 4,21            | 106,0                        | 140,0                    | 5,83   | 4,7,11           |
| 548 GLS-2 |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 68,0           | 4,21            | 106,0                        | 140,0                    | 5,83   | 4,7,11           |
| 563 GL-2  |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 79,0           | 5,91            | 170,0                        | 210,0                    | 8,03   | 4,7,11,12        |
| 596 GL-2  |      | 38,1   | 1 1/2 | 25,40               | 37,92               | 38,20               | 25,4                | 14,63               | 48,36            | 33,4         | 6,6                             | 101,0          | 11,09           | 280,0                        | 360,0                    | 14,47  | 4,7,11,12        |
| 455 GL-3  |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 34,0           | 0,81            | 24,9                         | 24,9                     | 1,30   | 4,7,11,12,15     |
| 462 GL-3  |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,5         | 3,9                             | 44,9           | 1,51            | 47,5                         | 56,0                     | 2,21   | 4,7,11,12        |
| 501 GL-3  |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,2         | 4,1                             | 52,8           | 2,02            | 66,7                         | 80,0                     | 2,97   | 4,7,11           |
| 513 GL-3  |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 15,5         | 4,6                             | 61,7           | 2,68            | 86,7                         | 94,0                     | 3,43   | 4,7,11,12        |
| 60 GL-3   |      | 19,05  | 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 72,6           | 3,15            | 95,4                         | 105,0                    | 4,58   | 4,7,11           |
| 548 GL-3  |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 24,0         | 5,4                             | 99,9           | 6,31            | 160,0                        | 211,0                    | 8,25   | 4,7,11           |
| 548 GLS-3 |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 99,9           | 6,31            | 160,0                        | 211,0                    | 8,25   | 4,7,11           |
| 563 GL-3  |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 116,0          | 8,87            | 250,0                        | 300,0                    | 11,66  | 4,7,11,12        |
| 596 GL-3  |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 150,0          | 16,63           | 425,0                        | 523,0                    | 22,00  | 4,7,11,12        |

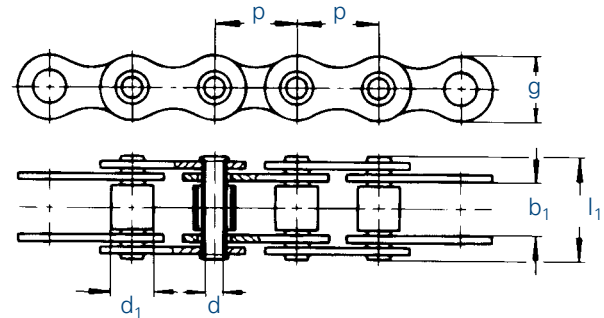
Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

For details on orders and enquiries see page 114. Standard sprockets as of page 61.  
Information on the selection of chain sizes and drives as of page 101.

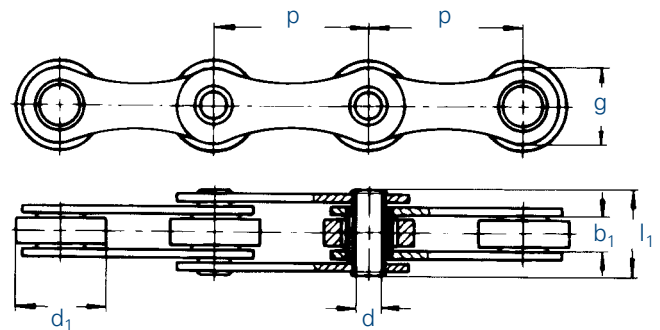
Type 1



Type 2



Type 3



| Chain   |                  | Pitch  |       | Inner width         | Roller (Bushing) Ø  | Hollow pin |                | Plate height | Type | Bearing area    | Minimum tensile strength | Weight |
|---------|------------------|--------|-------|---------------------|---------------------|------------|----------------|--------------|------|-----------------|--------------------------|--------|
|         |                  | p      |       | b <sub>1</sub> min. | d <sub>1</sub> max. | Bore Ø     | Width          | g max.       |      | f               | F <sub>B</sub> min.      | q ≈    |
| No.     | Ind.             | mm     | inch  | mm                  | mm                  | d +0,1     | l <sub>1</sub> | mm           |      | cm <sup>2</sup> | kN                       | kg/m   |
| 01105   |                  | 12,7   | 1/2   | 3,30                | 7,75                | 4,2        | 10,2           | 10,5         | 2    | 0,14            | 10,0                     | 0,34   |
| 01462   |                  | 12,7   | 1/2   | 7,75                | 8,51                | 4,0        | 17,0           | 12,2         | 1    | 0,68            | 10,0                     | 0,65   |
| 01463   |                  | 12,7   | 1/2   | 9,50                | 8,51                | 4,0        | 19,0           | 11,8         | 2    | 0,20            | 14,0                     | 0,68   |
| 01500   |                  | 15,875 | 5/8   | 6,50                | 10,16               | 5,0        | 17,0           | 14,7         | 2    | 0,28            | 15,0                     | 0,74   |
| 01501   |                  | 15,875 | 5/8   | 9,50                | 10,16               | 5,0        | 20,0           | 14,7         | 2    | 0,28            | 15,0                     | 0,83   |
| 01513   |                  | 19,05  | 3/4   | 11,70               | 12,07               | 5,0        | 22,5           | 16,1         | 2    | 0,30            | 25,0                     | 1,07   |
| 01589   |                  | 38,1   | 1 1/2 | 15,20               | 18,00               | 10,2       | 34,5           | 28,0         | 1    | 2,28            | 45,0                     | 2,62   |
| 01598   | <sup>1,3</sup>   | 50,0   | -     | 15,00               | 26,00               | 14,4       | 35,6           | 40,0         | 1    | 4,20            | 100,0                    | 4,10   |
| 01650   | <sup>4,5</sup>   | 50,8   | 2     | 11,00               | 30,00               | 8,2        | 27,0           | 26,0         | 3    | 1,94            | 50,0                     | 2,15   |
| 01650RF | <sup>4,5,6</sup> | 50,8   | 2     | 11,00               | 30,00               | 8,2        | 27,0           | 26,0         | 3    | 1,94            | 32,0                     | 2,15   |

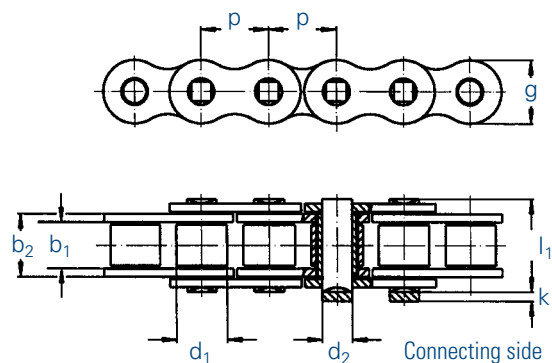
Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

<sup>1</sup> with straight side plates    <sup>3</sup> also supplied with small rollers 32 mm Ø (Type 3)    <sup>4</sup> also with plastic rollers    <sup>5</sup> support rollers    <sup>6</sup> made of stainless and acid resistant steel W.-No. 1.4301

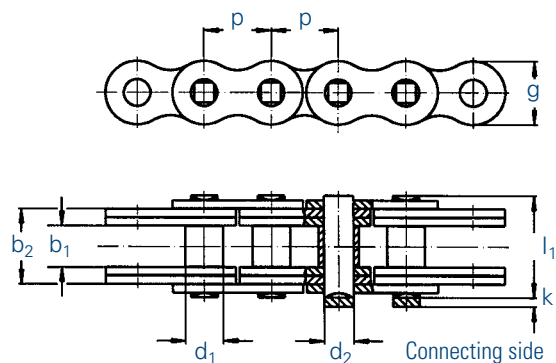
For details on orders and enquiries see page 114. Sprockets on request.  
Information on the selection of chain sizes and drives as of page 101.

Hollow pin chains are to be connected by means of outer links (pin links). For the chains No. 01597 and No. 01598 straight connecting links with Seeger circlip ring can be supplied.

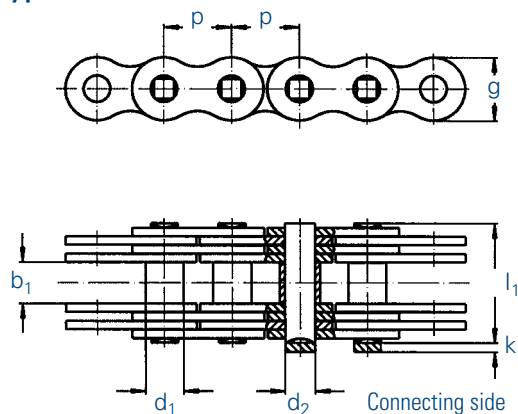
## Type RK



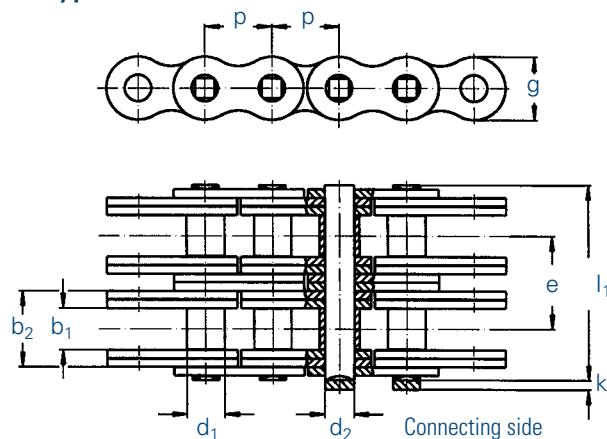
## Type 1



## Type 2



## Type 3



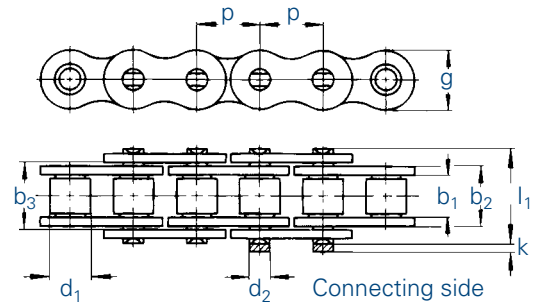
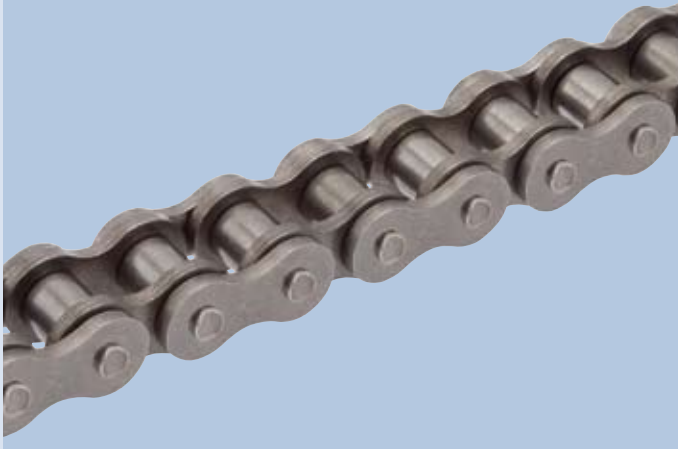
| Chain   |      | Pitch | Inner width         | Inner link width    | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Type | Connecting links |
|---------|------|-------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------|------------------|
|         |      | p     | b <sub>1</sub> min. | b <sub>2</sub> max. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.      | q ≈    |      |                  |
| No.     | Ind. | mm    | mm                  | mm                  | mm                  | mm                  | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   |      | No.              |
| 548 GLX |      | 25,40 | 17,02               | 25,40               | 15,88               | 8,28                | 24,0         | 5,4                             | 36,1           | 2,10            | 85,0                     | 3,29   | RK   | 4, 7, 111        |
| 563 GLX |      | 31,75 | 19,56               | 29,00               | 19,05               | 10,19               | 26,4         | 6,1                             | 43,2           | 2,96            | 123,0                    | 4,13   | RK   | 4, 7, 111        |
| 596 R   |      | 38,10 | 25,40               | 37,90               | 25,40               | 13,50               | 36,0         | 6,6                             | 53,4           | 5,12            | 200,0                    | 7,10   | RK   | 4, 7, 111        |
| 596 SX  |      | 38,10 | 25,40               | 39,90               | 25,40               | 14,63               | 36,0         | 6,6                             | 56,5           | 5,84            | 235,0                    | 8,20   | RK   | 4, 7, 111        |

## Port chains

|          |              |       |       |       |       |       |      |      |       |       |       |       |    |           |
|----------|--------------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|----|-----------|
| 671 SX   |              | 63,50 | 38,10 | 55,70 | 39,37 | 22,85 | 60,3 | 10,0 | 82,6  | 12,76 | 500,0 | 18,70 | RK | 4, 7, 111 |
| 671 VX   |              | 63,50 | 38,10 | 79,40 | 39,37 | 30,00 | 60,3 | 10,0 | 112,0 | 12,00 | 650,0 | 24,20 | 1  | 4, 7, 111 |
| 160 VS   |              | 50,80 | 31,55 | 57,80 | 28,58 | 20,20 | 48,2 | 7,9  | 76,2  | 5,17  | 342,0 | 14,40 | 2  | 4, 7, 111 |
| 160 VS-2 | <sup>8</sup> | 50,80 | 31,55 | 57,80 | 28,58 | 20,20 | 48,2 | 7,9  | 147,0 | 10,34 | 640,0 | 28,80 | 3  | 4, 7, 111 |

<sup>8</sup> e = 70,4

For details on orders and enquiries see page 114. Sprockets on request.

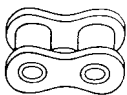


### Type series HX with reinforced plates and pins made of quenched and tempered steel

| Chain  |      | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|--------|------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|---------------------|-----------------|--------------------------|--------|------------------|
|        |      | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l <sub>1</sub> max. | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.    | Ind. | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 50 HX  |      | 15,875 | 5/8   | 9,40                | 14,60               | 14,73               | 10,16               | 5,08                | 15,0         | 4,1                             | 23,4                | 0,75            | 33,4                     | 1,18   | 4,7,11           |
| 60 HX  |      | 19,05  | 3/4   | 12,57               | 19,45               | 19,60               | 11,91               | 5,94                | 18,0         | 4,6                             | 28,9                | 1,16            | 50,0                     | 1,94   | 4,7,11           |
| 80 HX  |      | 25,4   | 1     | 15,75               | 24,28               | 24,49               | 15,88               | 7,92                | 24,1         | 5,4                             | 37,0                | 1,92            | 75,6                     | 3,04   | 4,7,111          |
| 100 HX |      | 31,75  | 1 1/4 | 18,90               | 29,10               | 29,30               | 19,05               | 9,53                | 30,1         | 6,1                             | 44,0                | 2,77            | 113,4                    | 4,25   | 4,7,111          |
| 120 HX |      | 38,1   | 1 1/2 | 25,22               | 37,18               | 37,48               | 22,23               | 11,10               | 36,2         | 6,6                             | 54,0                | 4,13            | 155,7                    | 6,80   | 4,7,111          |
| 140 HX |      | 44,45  | 1 3/4 | 25,22               | 38,85               | 39,15               | 25,40               | 12,70               | 42,2         | 7,4                             | 58,0                | 4,94            | 209,1                    | 7,90   | 4,7,111          |
| 160 HX |      | 50,8   | 2     | 31,55               | 46,88               | 47,20               | 28,58               | 14,27               | 48,2         | 7,9                             | 68,0                | 6,70            | 266,9                    | 10,40  | 4,7,111          |
| 200 HX |      | 63,5   | 2 1/2 | 37,85               | 58,29               | 58,60               | 39,68               | 19,84               | 60,3         | 10,0                            | 84,0                | 11,60           | 442,2                    | 19,50  | 4,7,111          |

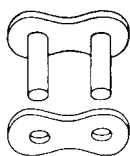
For details on orders and enquiries see page 114. Sprockets on request.

### Connecting links: According to DIN (...)



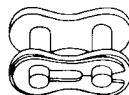
No. 4 (B)

Inner link



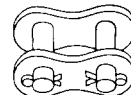
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



No. 111 (S)

Connecting link  
with cottered pin



### **MARATHON, the long distance chain that needs no relubrication:**

- High-performance bearing joints
- Tensile strength according to WIPPERMANN standard
- Electrogalvanised surface for optimum protection
- Bushings with slight projection over plates

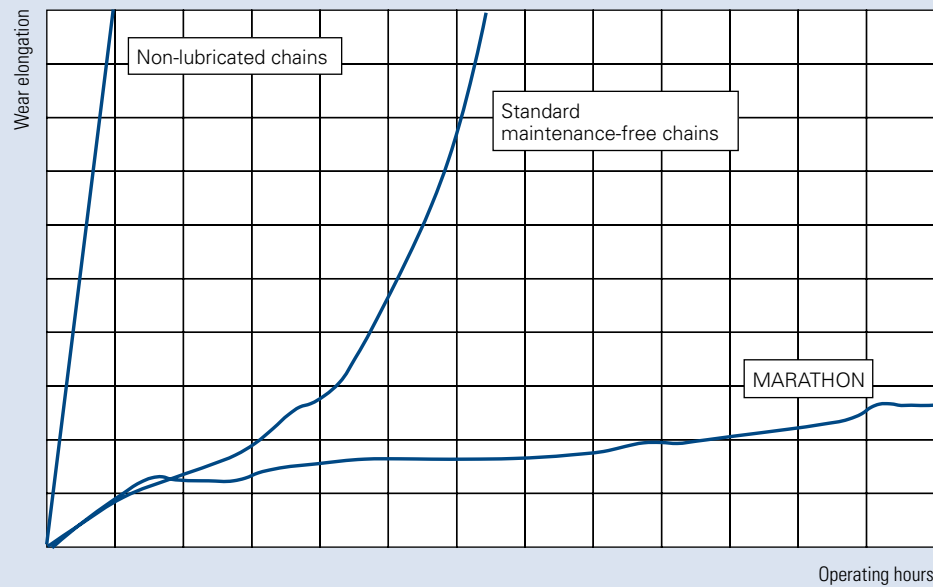


#### **Advantages of the WIPPERMANN MARATHON chain:**

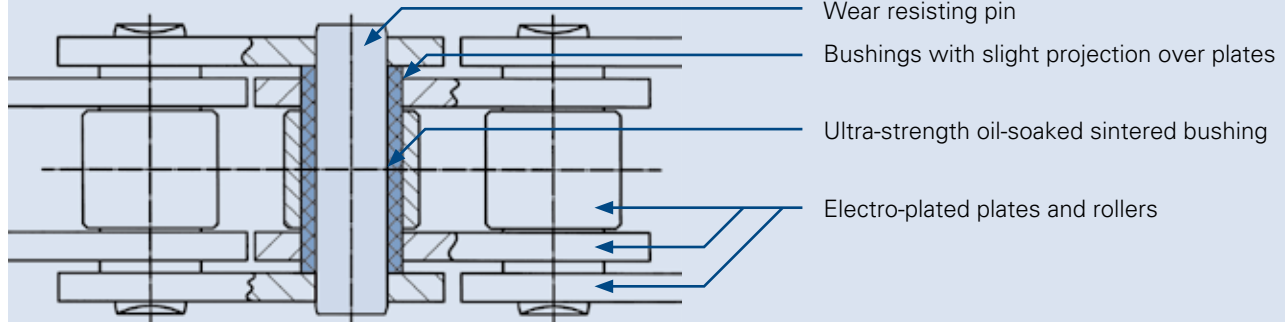
- Up to 35 times longer wear life in comparison with other standard roller chains without lubrication
- Up to 5 times longer wear life than other maintenance-free chains
- No relubrication required
- Clean application with no soiling of machinery and transported goods
- Joint bushings made with a new type of sintered metal with high strength treated with a special lubricant
- Bushings longer than the width of the chain link with sliding contact to the outer plate
- The pins forming the joints with these bushings are made of alloyed hardened steel and are treated with a special coating. The resulting high-wearing coat guarantees an excellent sliding performance.
- Same tensile strength as with WIPPERMANN standard chains
- All MARATHON chains fit standard sprockets

#### **Range of application for WIPPERMANN MARATHON chains:**

- Temperatures from 0°C to +100°C
- With special lubrication from -30°C to +250°C (after consultation)
- Speeds of up to  $v = 150$  m/min.
- Food industry
- Electrical industry
- Production of printed circuit boards (PCBs)
- Television industry
- Packing industry
- Paper processing
- Printing industry
- Bookbinding industry
- Textile industry
- Automotive industry
- All systems where relubrication is either not wanted, problematic or not possible at all.



Results of long-term wear tests

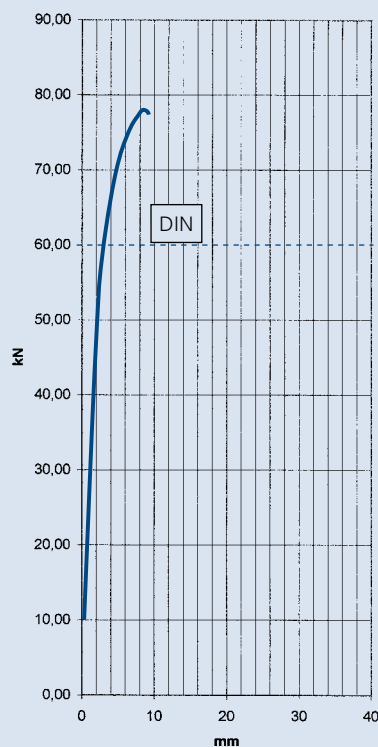


WIPPERMANN jr. GmbH  
58091 Hagen  
Deisterer Straße 133

Force projection diagram

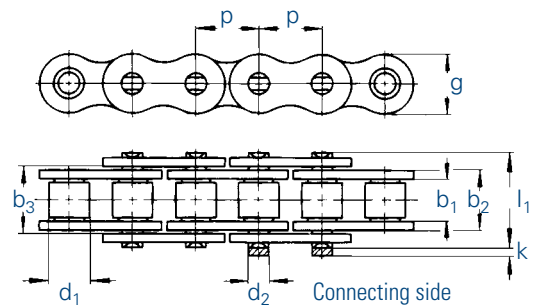
Type of test: Tensile test  
Object: 548 Marathon chain  
Test length: 5 links

Minimum tensile strength: 78,000 N  
Breaking point: Pins

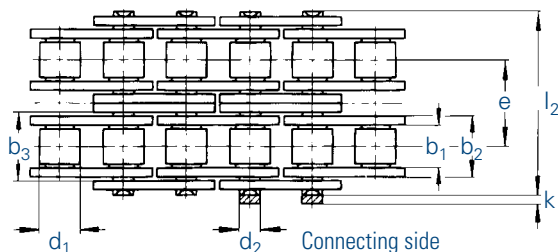




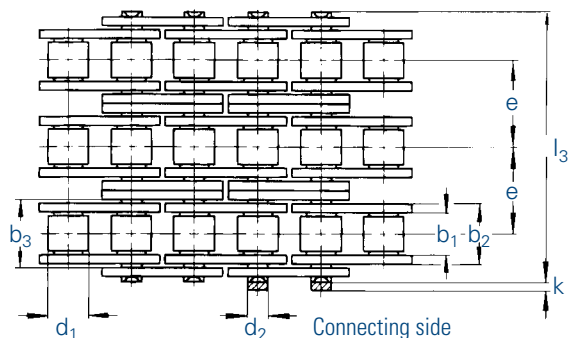
## Simplex chains



## Duplex chains



## Triplex chains

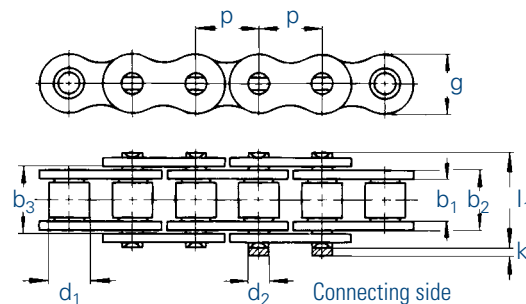


| Chain     |      | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|-----------|------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------------------|
|           |      | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.       | Ind. | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 06 B-1 MA |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | -                | 8,2          | 3,3                             | 13,5           | 0,28            | 9,6                      | 0,41   | 11,12,15         |
| 08 B-1 MA |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | -                | 11,8         | 3,9                             | 17,0           | 0,50            | 18,6                     | 0,70   | 11,12,15         |
| 10 B-1 MA |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | -                | 14,7         | 4,1                             | 19,6           | 0,67            | 27,0                     | 0,91   | 11,12,15         |
| 12 B-1 MA |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | -                | 16,1         | 4,6                             | 22,7           | 0,89            | 31,0                     | 1,18   | 11,12,15         |
| 16 B-1 MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 21,0         | 5,4                             | 36,1           | 2,10            | 72,0                     | 2,68   | 11,111,12        |
| 552 MA    |      | 30,0   | -     | 17,02               | 25,40               |                     | 15,88               | 8,28                | -                | 21,0         | 5,4                             | 36,1           | 2,10            | 72,0                     | 2,50   | 11,111,12        |
| 20 B-1 MA |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | -                | 26,4         | 6,1                             | 43,2           | 2,96            | 105,0                    | 3,50   | 111, 12          |
| 24 B-1 MA |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | -                | 33,4         | 6,6                             | 53,4           | 5,54            | 180,0                    | 6,80   | 111, 12          |
| 06 B-2 MA |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 23,8           | 0,56            | 17,4                     | 0,78   | 11,12,15         |
| 08 B-2 MA |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 31,0           | 1,01            | 37,0                     | 1,36   | 11,12,15         |
| 10 B-2 MA |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 36,2           | 1,34            | 54,0                     | 1,82   | 11,12,15         |
| 12 B-2 MA |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 42,2           | 1,79            | 63,0                     | 2,38   | 11,12,15         |
| 16 B-2 MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 68,0           | 4,21            | 140,0                    | 5,30   | 11,111,12        |
| 20 B-2 MA |      | 31,75  | 1 1/4 | 19,56               | 25,40               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 79,0           | 5,91            | 210,0                    | 7,30   | 111, 12          |
| 24 B-2 MA |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 101,0          | 11,09           | 360,0                    | 13,40  | 111, 12          |
| 06 B-3 MA |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 34,0           | 0,81            | 24,9                     | 1,18   | 11,12,15         |
| 08 B-3 MA |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 44,9           | 1,51            | 56,0                     | 2,01   | 11,12,15         |
| 10 B-3 MA |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 52,8           | 2,02            | 80,0                     | 2,70   | 11,12,15         |
| 12 B-3 MA |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 61,7           | 2,68            | 94,0                     | 3,12   | 11,12,15         |
| 16 B-3 MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 99,9           | 6,31            | 211,0                    | 7,50   | 11,111,12        |
| 20 B-3 MA |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 116,0          | 8,87            | 300,0                    | 10,60  | 111, 12          |
| 24 B-3 MA |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 150,0          | 16,63           | 523,0                    | 20,00  | 111,12           |

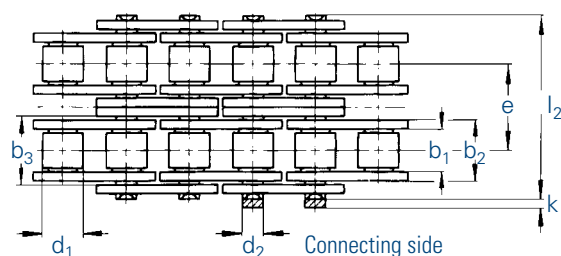
Standard sprockets can be used for these chains.



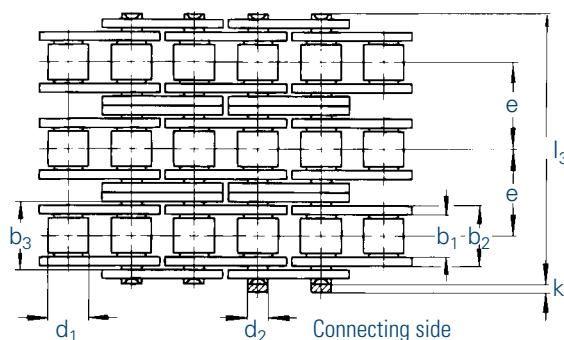
### Simplex chains



### Duplex chains



### Triplex chains



| Chain     |      | Pitch       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|-----------|------|-------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------------------|
|           |      | p           | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.       | Ind. | mm inch     | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 08 A-1 MA |      | 12,7 1/2    | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | -                | 12,0         | 3,9                             | 17,8           | 0,44            | 16,5                     | 0,60   | 11,12,15         |
| 10 A-1 MA |      | 15,875 5/8  | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | -                | 15,0         | 4,1                             | 21,8           | 0,70            | 30,0                     | 1,01   | 11,12,15         |
| 12 A-1 MA |      | 19,05 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | -                | 18,0         | 4,6                             | 26,9           | 1,05            | 40,0                     | 1,58   | 11,111,12,15     |
| 16 A-1 MA |      | 25,4 1      | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | -                | 24,1         | 5,4                             | 33,5           | 1,78            | 69,0                     | 2,36   | 11,111,12,15     |
| 20 A-1 MA |      | 31,75 1 1/4 | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | -                | 30,1         | 6,1                             | 41,1           | 2,61            | 92,5                     | 3,80   | 111,12           |
| 24 A-1 MA |      | 38,1 1 1/2  | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | -                | 36,2         | 6,6                             | 50,8           | 3,92            | 139,0                    | 5,40   | 111,12           |
| 08 A-2 MA |      | 12,7 1/2    | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 14,38            | 12,0         | 3,9                             | 32,3           | 0,88            | 29,7                     | 1,20   | 11,12,15         |
| 10 A-2 MA |      | 15,875 5/8  | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | 18,11            | 15,0         | 4,1                             | 39,9           | 1,40            | 62,0                     | 1,78   | 11,12,15         |
| 12 A-2 MA |      | 19,05 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 49,8           | 2,10            | 76,0                     | 3,15   | 11,111,12,15     |
| 16 A-2 MA |      | 25,4 1      | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | 29,29            | 24,1         | 5,4                             | 62,7           | 3,56            | 135,0                    | 4,90   | 11,111,12,15     |
| 20 A-2 MA |      | 31,75 1 1/4 | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | 35,76            | 30,1         | 6,1                             | 77,0           | 5,22            | 205,0                    | 7,60   | 111,12           |
| 24 A-2 MA |      | 38,1 1 1/2  | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | 45,44            | 36,2         | 6,6                             | 96,3           | 7,84            | 290,0                    | 10,80  | 111,12           |
| 08 A-3 MA |      | 12,7 1/2    | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 14,38            | 12,0         | 3,9                             | 46,7           | 1,32            | 41,2                     | 1,80   | 11,12,15         |
| 10 A-3 MA |      | 15,875 5/8  | 9,40                | 13,80               | 13,93               | 10,16               | 5,08                | 18,11            | 15,0         | 4,1                             | 57,9           | 2,10            | 88,0                     | 3,02   | 11,12,15         |
| 12 A-3 MA |      | 19,05 3/4   | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 72,6           | 3,15            | 105,0                    | 4,70   | 11,111,12,15     |
| 16 A-3 MA |      | 25,4 1      | 15,75               | 22,50               | 22,70               | 15,88               | 7,92                | 29,29            | 24,1         | 5,4                             | 91,7           | 5,35            | 193,0                    | 7,50   | 11,111,12,15     |
| 20 A-3 MA |      | 31,75 1 1/4 | 18,90               | 27,40               | 27,60               | 19,05               | 9,53                | 35,76            | 30,1         | 6,1                             | 113,0          | 7,83            | 305,0                    | 11,20  | 111,12           |
| 24 A-3 MA |      | 38,1 1 1/2  | 25,22               | 35,30               | 35,60               | 22,23               | 11,10               | 45,44            | 36,2         | 6,6                             | 141,0          | 11,76           | 410,0                    | 16,10  | 111,12           |

Sprockets on request.

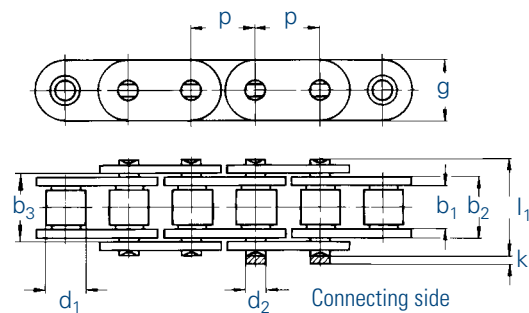


# MARATHON - MAINTENANCE-FREE

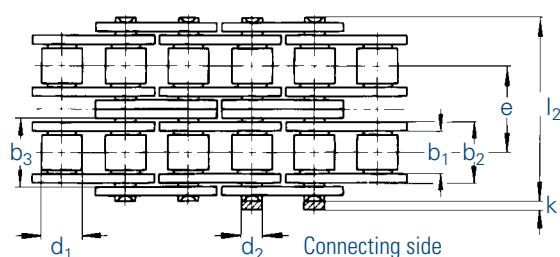
Roller chains type series GL (straight plates)



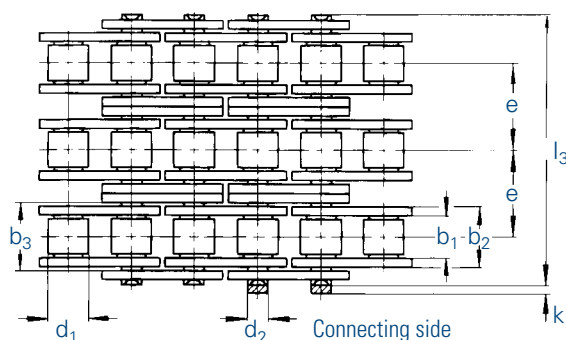
## Simplex chains



## Duplex chains

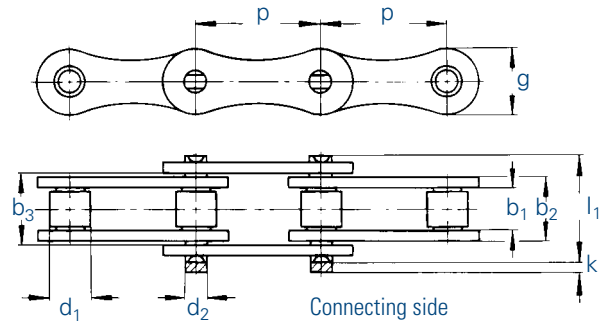


## Triplex chains



| Chain      |      | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|------------|------|--------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------------------|
|            |      | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.        | Ind. | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 455 GL MA  |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | -                | 8,2          | 3,3                             | 13,5           | 0,28            | 9,6                      | 0,41   | 4,7,11,12,15     |
| 462 GL MA  |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | -                | 11,5         | 3,9                             | 17,0           | 0,50            | 18,6                     | 0,78   | 4,7,11,12        |
| 501 GL MA  |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | -                | 14,2         | 4,1                             | 19,6           | 0,67            | 27,0                     | 1,03   | 4,7,11           |
| 513 GL MA  |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | -                | 15,5         | 4,6                             | 22,7           | 0,89            | 31,0                     | 1,29   | 4,7,11,12        |
| 548 GL MA  |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 24,0         | 5,4                             | 36,1           | 2,10            | 72,0                     | 3,29   | 4,7,11           |
| 548 GLS MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 21,0         | 5,4                             | 36,1           | 2,10            | 72,0                     | 2,90   | 4,7,11,12        |
| 563 GL MA  |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | -                | 26,4         | 6,1                             | 43,2           | 2,95            | 105,0                    | 4,13   | 4,7,11,12        |
| 596 GL MA  |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | -                | 33,4         | 6,6                             | 53,4           | 5,54            | 180,0                    | 7,34   | 4,7,11,12        |
| 455 GL-2MA |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 23,8           | 0,56            | 17,4                     | 0,86   | 4,7,11,12,15     |
| 462 GL-2MA |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,5         | 3,9                             | 31,0           | 1,01            | 37,0                     | 1,50   | 4,7,11,12        |
| 501 GL-2MA |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,2         | 4,1                             | 36,2           | 1,34            | 54,0                     | 2,00   | 4,7,11           |
| 513 GL-2MA |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 15,5         | 4,6                             | 42,2           | 1,79            | 63,0                     | 2,62   | 4,7,11,12        |
| 548 GL-2MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 24,0         | 5,4                             | 68,0           | 4,21            | 140,0                    | 5,83   | 4,7,11           |
| 563 GL-2MA |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 79,0           | 5,81            | 210,0                    | 8,03   | 4,7,11,12        |
| 596 GL-2MA |      | 38,1   | 1 1/2 | 25,40               | 37,92               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 101,0          | 11,09           | 360,0                    | 14,47  | 4,7,11,12        |
| 455 GL-3MA |      | 9,525  | 3/8   | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 34,0           | 0,81            | 24,9                     | 1,30   | 4,7,11,12,15     |
| 462 GL-3MA |      | 12,7   | 1/2   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,5         | 3,9                             | 44,9           | 1,51            | 56,0                     | 2,21   | 4,7,11,12        |
| 501 GL-3MA |      | 15,875 | 5/8   | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,2         | 4,1                             | 52,8           | 2,02            | 80,0                     | 2,97   | 4,7,11           |
| 513 GL-3MA |      | 19,05  | 3/4   | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 15,5         | 4,6                             | 61,7           | 2,68            | 94,0                     | 3,43   | 4,7,11,12        |
| 548 GL-3MA |      | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 24,0         | 5,4                             | 99,9           | 6,31            | 211,0                    | 8,25   | 4,7,11           |
| 563 GL-3MA |      | 31,75  | 1 1/4 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19               | 36,45            | 26,4         | 6,1                             | 116,0          | 8,87            | 300,0                    | 11,66  | 4,7,11,12        |
| 596 GL-3MA |      | 38,1   | 1 1/2 | 25,40               | 37,90               | 38,20               | 25,40               | 14,63               | 48,36            | 33,4         | 6,6                             | 150,0          | 16,63           | 523,0                    | 22,00  | 4,7,11,12        |

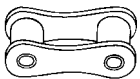
Sprockets on request.



| Chain    |      | Pitch |      | Inner width | Inner link width | Outer plate width | Roller Ø   | Pin Ø      | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight      |
|----------|------|-------|------|-------------|------------------|-------------------|------------|------------|--------------|---------------------------------|----------------|-----------------|--------------------------|-------------|
|          |      | $p$   |      | $b_1$ min.  | $b_2$ max.       | $b_3$ min.        | $d_1$ max. | $d_2$ max. | $g$ max.     | $k$ max.                        | $l_1$ max.     | $f$             | $F_B$ min.               | $q \approx$ |
| No.      | Ind. | mm    | inch | mm          | mm               | mm                | mm         | mm         | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m        |
| 208 B MA |      | 25,4  | 1    | 7,75        | 11,30            | 11,43             | 8,51       | 4,45       | 11,8         | 3,9                             | 17,0           | 0,50            | 18,0                     | 0,48        |
| 210 B MA |      | 31,75 | 1 ¼  | 9,65        | 13,28            | 13,40             | 10,16      | 5,08       | 14,7         | 4,1                             | 19,6           | 0,67            | 22,4                     | 0,55        |
| 212 B MA |      | 38,1  | 1 ½  | 11,68       | 15,62            | 15,75             | 12,07      | 5,72       | 16,1         | 4,6                             | 22,7           | 0,89            | 29,0                     | 0,80        |
| 216 B MA |      | 50,8  | 2    | 17,02       | 25,40            | 25,60             | 15,88      | 8,28       | 21,0         | 5,4                             | 36,1           | 2,10            | 60,0                     | 1,74        |
| 220 B MA |      | 63,5  | 2 ½  | 19,56       | 29,00            | 29,20             | 19,05      | 10,19      | 26,4         | 6,1                             | 43,2           | 2,96            | 95,0                     | 2,55        |

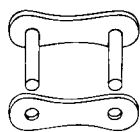
Sprockets for double pitch roller chains can be used for these chains.

**Connecting links:** According to DIN (...)



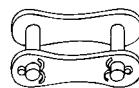
**No. 4 (B)**

Inner link



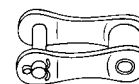
**No. 7 (A)**

Outer link  
(to be riveted)



**No. 111 (S)**

Connecting link with cottred pin  
for chain No. 713 with spring clip (E)

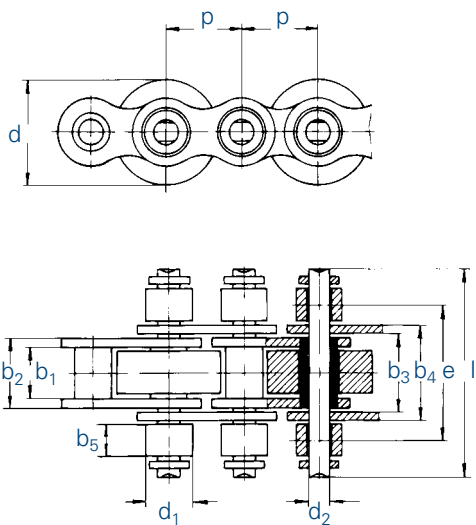


**No. 12 (L)**

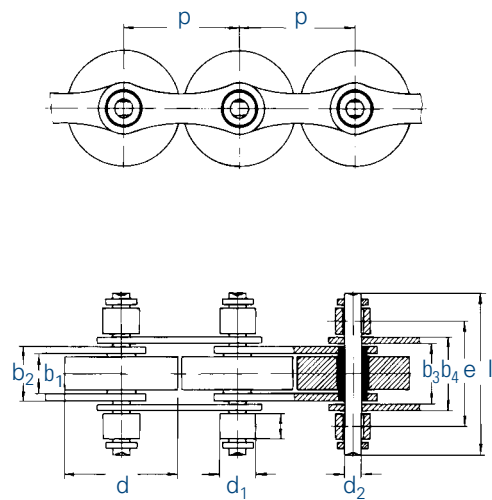
Single cranked link



## Design E



## Double pitch chain Design L



| Chain       |      | Pitch |        | Inner width         | Inner link width    | Width between   over outer plates |                     | Support roller Ø | Pin Ø               | Transverse pitch | Plate height | Width over pin | Support roller width | Width over pin Type I | Support roller width |
|-------------|------|-------|--------|---------------------|---------------------|-----------------------------------|---------------------|------------------|---------------------|------------------|--------------|----------------|----------------------|-----------------------|----------------------|
|             |      | p     | Design | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min.               | b <sub>4</sub> max. | d <sub>1</sub>   | d <sub>2</sub> max. | e                | g max.       | l max.         | b <sub>5</sub> max.  | l max.                | b <sub>5</sub> max.  |
| No.         | Ind. | mm    |        | mm                  | mm                  | mm                                | mm                  | mm               | mm                  | mm               | mm           | mm             | mm                   | mm                    | mm                   |
| 513 SF MA   |      | 19,05 | E      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,00            | 5,72                | 31,50            | 16,1         | 48,0           | 11,5                 | 43,0                  | 9,0                  |
| 548 SF MA   |      | 25,4  | E      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 44,50            | 21,0         | 65,0           | 12,5                 | -                     | -                    |
| 722 SF MA   |      | 38,1  | L      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,00            | 5,72                | 31,50            | 16,1         | 48,0           | 11,5                 | -                     | -                    |
| 728 SF MA   |      | 50,8  | L      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 44,50            | 21,0         | 65,0           | 12,5                 | -                     | -                    |
| D 513 SF MA |      | 19,05 | D      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,07            | 5,72                | 52,00            | 16,1         | 68,0           | 11,5                 | -                     | -                    |
| D 548 SF MA |      | 25,4  | D      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 76,76            | 21,0         | 97,0           | 12,5                 | -                     | -                    |
| T 513 SF MA |      | 19,05 | T      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,07            | 5,72                | 38,92            | 16,1         | 61,7           | -                    | -                     | -                    |
| T 548 SF MA |      | 25,4  | T      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 63,76            | 21,0         | 99,9           | -                    | -                     | -                    |

Sprockets are available for all accumulator chains!

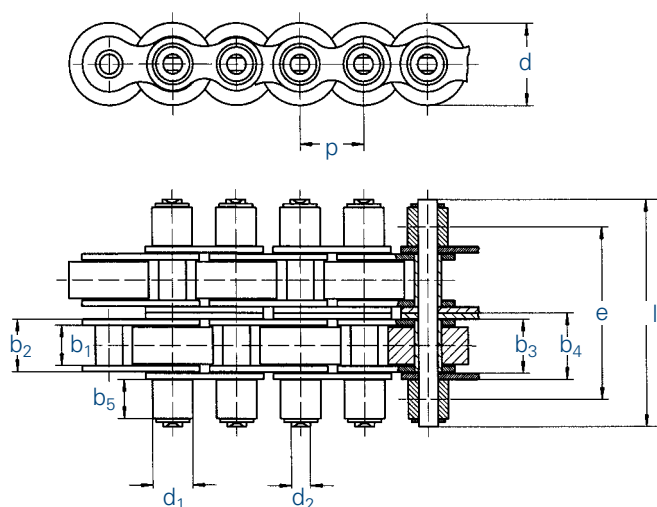
Connecting links with securing circlips.

Our connecting links always have the same length l as the ordinary pins.

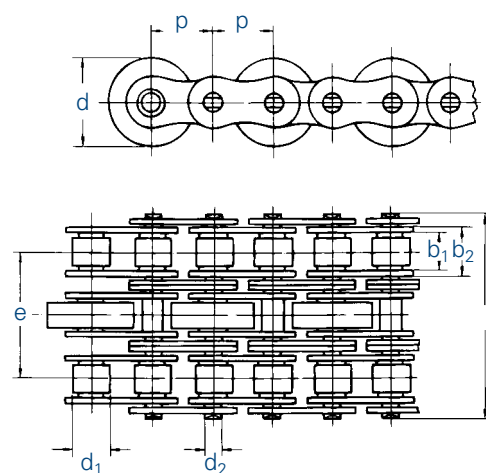
Temperature range: - 30 to 100°C for steel conveyor rollers  
- 10 to 60°C for plastic conveyor rollers



Design D



Design T



| Width over pin<br>Type II<br><br>I<br>max. | Support roller width<br><br>b <sub>5</sub><br>max. | Conveyor rollers         |        |           |          |             |              | Minimum tensile strength<br><br>F <sub>B</sub><br>min. | Maximum load per m conveyor chain with 10 m conveyor length |         |
|--------------------------------------------|----------------------------------------------------|--------------------------|--------|-----------|----------|-------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------|
|                                            |                                                    | Designation for material |        |           | Diameter |             |              |                                                                                                                                           | Steel                                                       | Plastic |
|                                            |                                                    | Steel                    | PA 6.6 | Vestamide | d        | Type I<br>d | Type II<br>d |                                                                                                                                           |                                                             |         |
| mm.                                        | mm                                                 |                          |        |           | mm       | mm          | mm           | kN                                                                                                                                        | kg                                                          | kg      |
| 40,0                                       | 7,5                                                | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 29,0                                                                                                                                      | 300                                                         | 260     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 38,5     | -           | -            | 60,0                                                                                                                                      | 600                                                         | 500     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 29,0                                                                                                                                      | 300                                                         | 260     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 38,5     | 40,0        | 50,0         | 60,0                                                                                                                                      | 600                                                         | 500     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 57,8                                                                                                                                      | 600                                                         | 520     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 38,5     | -           | -            | 120,0                                                                                                                                     | 1200                                                        | 1000    |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 60,0                                                                                                                                      | 600                                                         | 260     |
| -                                          | -                                                  | SF                       | SFK    | SFV       | 38,5     | -           | -            | 120,0                                                                                                                                     | 1200                                                        | 500     |

The load per m applies for 10 m conveyor length per double chain strand. The load may be proportionally increased for shorter chain lengths and must be proportionally decreased for longer conveyor distances: e.g. 5 m conveyor distance = double load, 20 m conveyor distance = half load.

Maximum conveyor distances 25 - 30 m. The installation of guide plates is recommended as of 15 m.

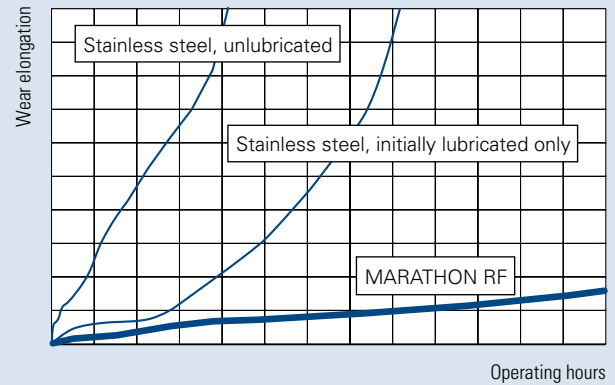


## MARATHON STAINLESS STEEL - MAINTENANCE-FREE

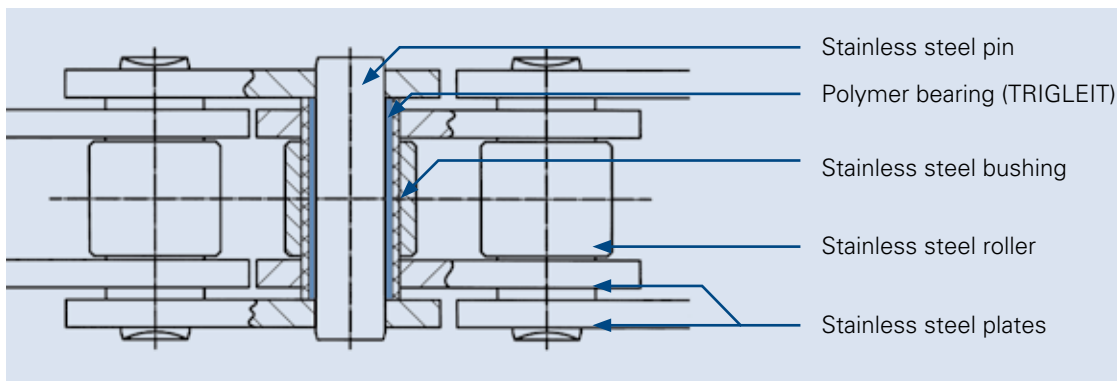
Stainless steel and maintenance-free chain



High performance polymer bearing (TRIGLEIT)



Results of long-term wear tests



### High performance polymer bearings (TRIGLEIT) allow operation of stainless steel chains without relubrication!

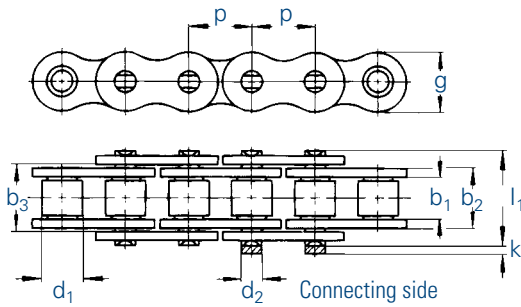
- durable and low-friction polymer bearing (TRIGLEIT)
- all other chain components made of stainless steel grades
- maximum chain speed  $v = 2,5 \text{ m/s}$
- working temperature  $-30^\circ \text{ C}$  to  $+60^\circ \text{ C}$  (higher temperatures on request)
- chain dimensions according to DIN 8187; standard stainless steel sprockets can be used
- no relubrication required
- relubrication with mineral oils possible (no ester oils)
- can also be supplied with extended pins, straight attachments, bent attachments and in special designs
- information on chemical resistance on request



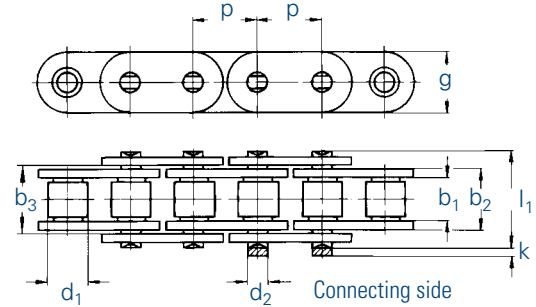
#### Application areas:

- Packing industry
- Chemical industry
- Pharmaceutical industry
- Textile industry
- Food industry
- Sanitation industry
- Electrical industry

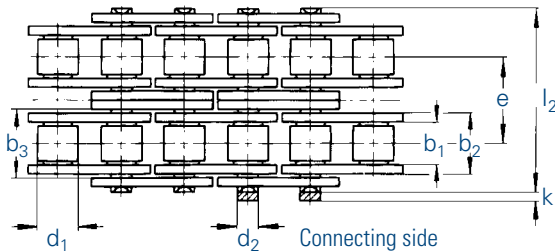
## Simplex chains



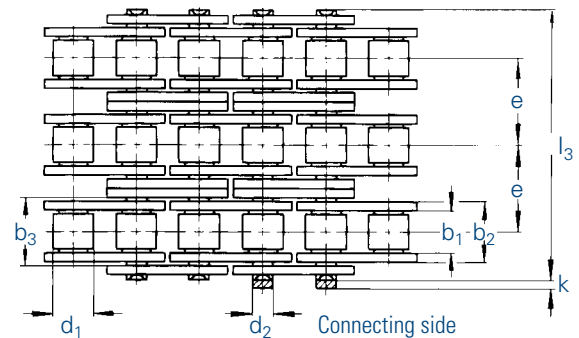
## Simplex chains (Type GL)



## Duplex chains



## Triplex chains



| Chain       |      |        | Pitch  |      | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|-------------|------|--------|--------|------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------------------|
|             |      | DIN    | p      |      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l max.         | f               | F <sub>B</sub> min.      | q ≈    | No.              |
| No.         | Ind. | No.    | mm     | inch | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   |                  |
| 462 RF MA   |      | 08 B-1 | 12,7   | 1/2  | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | -                | 11,8         | 3,9                             | 17,0           | 0,50            | 12,00                    | 0,70   | 4,7,11,12,15     |
| 501 RF MA   |      | 10 B-1 | 15,875 | 5/8  | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | -                | 14,7         | 4,1                             | 19,6           | 0,67            | 14,50                    | 0,91   | 4,7,11,12,15     |
| 513 RF MA   |      | 12 B-1 | 19,05  | 3/4  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | -                | 16,1         | 4,6                             | 22,7           | 0,89            | 18,50                    | 1,18   | 4,7,11,12,15     |
| 548 RF MA   |      | 16 B-1 | 25,4   | 1    | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | -                | 21,0         | 5,4                             | 36,1           | 2,10            | 40,00                    | 2,50   | 4,7,11,12        |
| D 462 RF MA |      | 08 B-2 | 12,7   | 1/2  | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 31,0           | 1,01            | 20,40                    | 1,36   | 4,7,11,12,15     |
| D 501 RF MA |      | 10 B-2 | 15,875 | 5/8  | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 36,2           | 1,34            | 24,65                    | 1,82   | 4,7,11,12,15     |
| D 513 RF MA |      | 12 B-2 | 19,05  | 3/4  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 42,2           | 1,79            | 31,45                    | 2,38   | 4,7,11,12,15     |
| D 548 RF MA |      | 16 B-2 | 25,4   | 1    | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 68,0           | 4,21            | 68,00                    | 5,10   | 4,7,11,12        |
| T 462 RF MA |      | 08 B-3 | 12,7   | 1/2  | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 44,9           | 1,51            | 32,50                    | 2,01   | 4,7,11,12,15     |
| T 501 RF MA |      | 10 B-3 | 15,875 | 5/8  | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 52,8           | 2,02            | 39,00                    | 2,70   | 4,7,11,12,15     |
| T 513 RF MA |      | 12 B-3 | 19,05  | 3/4  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 61,7           | 2,68            | 49,50                    | 3,12   | 4,7,11,12,15     |
| T 548 RF MA |      | 16 B-3 | 25,4   | 1    | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 99,9           | 6,31            | 108,00                   | 7,50   | 4,7,11,12        |

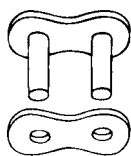
Can also be supplied with attachments, straight plates (type series GL) and as double pitch roller chains (dimensions according to DIN 8181). Chains 548 available as type series GLS with plate height g = 21 mm (max.) and as type series GL with g = 24 mm (max.). Sprockets on request.

## Connecting links: According to DIN (...)



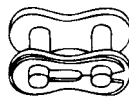
No. 4 (B)

Inner link



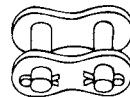
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



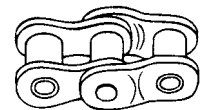
No. 111 (S)

Connecting link  
with cottered pin



No. 12 (L)

Single  
cranked link



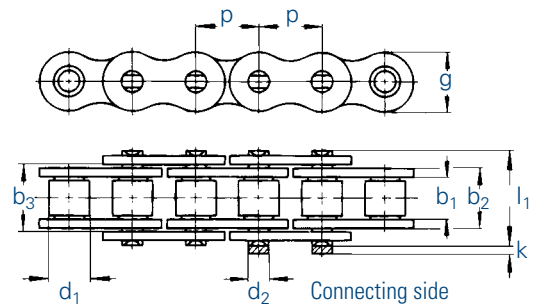
No. 15 (C)

Double  
cranked link



# SIMPLEX ROLLER CHAINS (STAINLESS STEEL)

Main dimensions according to DIN 8187/8188



| Chain      |                   | Pitch  | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|------------|-------------------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|---------------------|-----------------|--------------------------|--------|------------------|
|            |                   | p      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l <sub>1</sub> max. | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.        | Ind.              | mm     | mm                  | mm                  | mm                  | mm                  | mm                  | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 450 RF     | <sup>10,11</sup>  | 8,0    | 3,00                | 4,77                | 4,90                | 5,00                | 2,31                | 7,1          | 3,1                             | 8,6                 | 0,11            | 4,0                      | 0,18   | 4,7,11,122,15    |
| 331 RF     | <sup>10,11</sup>  | 12,7   | 3,30                | 5,80                | 5,93                | 7,75                | 3,66                | 9,9          | 1,5                             | 10,2                | 0,21            | 7,0                      | 0,28   | 4,7,11,122,15    |
| 332 RF     | <sup>10,11</sup>  | 12,7   | 4,88                | 7,20                | 7,33                | 7,75                | 3,66                | 9,9          | 1,5                             | 11,2                | 0,28            | 7,0                      | 0,33   | 4,7,11,122,15    |
| 462 RF     |                   | 12,7   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 11,8         | 3,9                             | 17,0                | 0,50            | 12,0                     | 0,70   | 4,7,11,12,15     |
| 501 RF     |                   | 15,875 | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 14,7         | 4,1                             | 19,6                | 0,67            | 14,5                     | 0,91   | 4,7,11,12,15     |
| 513 RF     |                   | 19,05  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 16,1         | 4,6                             | 22,7                | 0,89            | 18,5                     | 1,18   | 4,7,11,12,15     |
| 548 RF     | <sup>11</sup>     | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 21,0         | 5,4                             | 36,1                | 2,10            | 40,0                     | 2,50   | 4,7,11,12        |
| 35 RF      | <sup>2,11</sup>   | 9,525  | 4,68                | 7,47                | 7,52                | 5,08                | 3,58                | 9,1          | 3,3                             | 13,2                | 0,27            | 6,0                      | 0,35   | 4,7,11           |
| 40 RF      | <sup>10,11</sup>  | 12,7   | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 12,0         | 3,9                             | 17,8                | 0,44            | 10,5                     | 0,61   | 4,7,11,122,15    |
| 60 RF      | <sup>11</sup>     | 19,05  | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 18,0         | 4,6                             | 26,9                | 1,05            | 20,0                     | 1,58   | 4,7,11,12        |
| 455 RFGL   | <sup>10,11</sup>  | 9,525  | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 8,2          | 3,3                             | 13,5                | 0,28            | 7,0                      | 0,41   | 4,7,11,122,15    |
| 455 RFKIGL | <sup>2,7,10</sup> | 9,525  | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 8,2          | 3,3                             | 13,5                | 0,28            | 1,0                      | 0,41   | 4,7,11,122,15    |
| 462 RFGL   | <sup>2,7</sup>    | 12,7   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 11,5         | 3,9                             | 17,0                | 0,50            | 12,0                     | 0,78   | 4,7,11,12,15     |
| 501 RFGL   |                   | 15,875 | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 14,2         | 4,1                             | 19,6                | 0,67            | 14,5                     | 1,03   | 4,7,11,12,15     |
| 513 RFGL   |                   | 19,05  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 15,5         | 4,6                             | 22,7                | 0,89            | 18,5                     | 1,29   | 4,7,11,12,15     |
| 548 RFGL   | <sup>11</sup>     | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 24,0         | 5,4                             | 36,1                | 2,10            | 40,0                     | 3,29   | 4,7,11,12        |
| 548 RFGLS  | <sup>11</sup>     | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 21,0         | 5,4                             | 36,1                | 2,10            | 40,0                     | 2,90   | 4,7,11,12        |

<sup>2</sup> without rollers (DIN 8154)    <sup>7</sup> inner links made entirely of plastic, maintenance-free chain    <sup>10</sup> connecting link No. 12 only with attached riveted bolts  
<sup>11</sup> sprockets on request

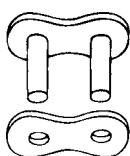
Roller chains RF (stainless steel) - type series GL (straight plates) can also be supplied as multiplex roller chains.  
For details on orders and enquiries see page 114. For sprockets RF (stainless steel) see page 69.

## Connecting links: According to DIN (...)



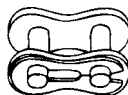
No. 4 (B)

Inner link



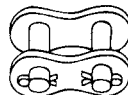
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



No. 111 (S)

Connecting link with  
cottered pin



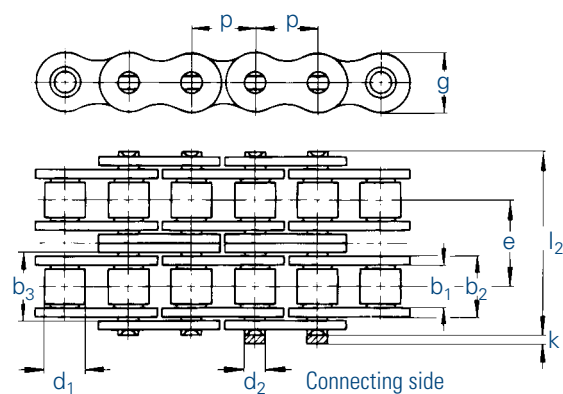
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link

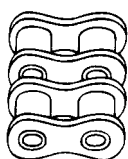


| Chain   |              | Pitch  | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Transverse pitch | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|---------|--------------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------------|---------------------------------|---------------------|-----------------|--------------------------|--------|------------------|
|         |              | p      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | g max.       | k max.                          | l <sub>2</sub> max. | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.     | Ind.         | mm     | mm                  | mm                  | mm                  | mm                  | mm                  | mm               | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| D450 RF |              | 8,0    | 3,00                | 4,77                | 4,90                | 5,00                | 2,31                | 5,64             | 7,1          | 3,1                             | 14,3                | 0,22            | 6,00                     | 0,36   | 4,7,11,15        |
| D455 RF | <sup>1</sup> | 9,525  | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 10,24            | 8,2          | 3,3                             | 23,8                | 0,56            | 11,90                    | 0,78   | 4,7,11,15        |
| D462 RF |              | 12,7   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45                | 13,92            | 11,8         | 3,9                             | 31,0                | 1,01            | 20,40                    | 1,36   | 4,7,11,12,15     |
| D501 RF |              | 15,875 | 9,65                | 13,28               | 13,41               | 10,16               | 5,08                | 16,59            | 14,7         | 4,1                             | 36,2                | 1,34            | 24,65                    | 1,82   | 4,7,11,12,15     |
| D513 RF |              | 19,05  | 11,68               | 15,62               | 15,75               | 12,07               | 5,72                | 19,46            | 16,1         | 4,6                             | 42,2                | 1,79            | 31,45                    | 2,38   | 4,7,11,12,15     |
| D548 RF |              | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 8,28                | 31,88            | 21,0         | 5,4                             | 68,0                | 4,21            | 68,00                    | 5,10   | 4,7,11,12        |
| 35-2 RF |              | 9,525  | 4,68                | 7,47                | 7,52                | 5,08                | 3,58                | 10,13            | 9,0          | 3,3                             | 23,4                | 0,53            | 12,00                    | 0,70   | 11,12,15         |
| 40-2 RF |              | 12,7   | 7,85                | 11,15               | 11,28               | 7,95                | 3,96                | 14,38            | 12,0         | 3,9                             | 32,3                | 0,88            | 17,85                    | 1,20   | 11,12,15         |
| 60-2 RF |              | 19,05  | 12,57               | 17,70               | 17,85               | 11,91               | 5,94                | 22,78            | 18,0         | 4,6                             | 49,8                | 2,10            | 34,00                    | 3,14   | 4,7,11,12        |

<sup>1</sup> with straight side plates

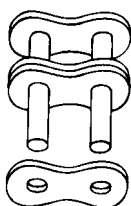
For details on orders and enquiries see page 114.

## Connecting links: According to DIN (...)



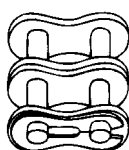
No. 4 (B)

Inner link



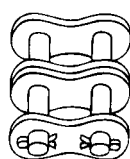
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



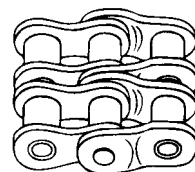
No. 111 (S)

Connecting link with  
cottered pin



No. 12 (L)

Single  
cranked link



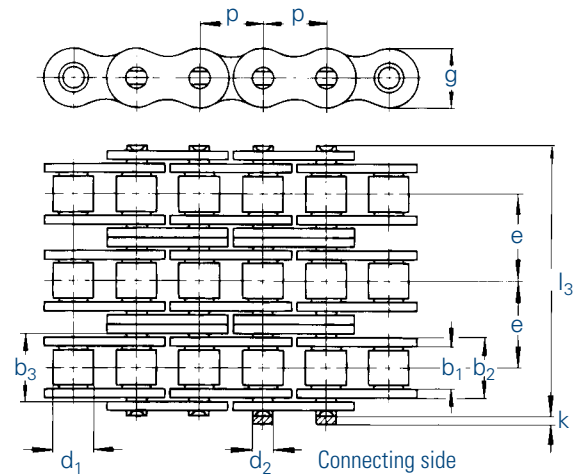
No. 15 (C)

Double  
cranked link



# TRIPLEX ROLLER CHAINS (STAINLESS STEEL)

Main dimensions according to DIN 8187

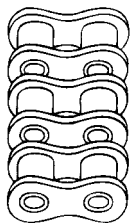


| Chain    |              | Pitch  |      | Inner width | Inner link width | Outer plate width | Roller Ø   | Pin Ø      | Transverse pitch | Plate height | Projection over connecting link | Width over pin | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|----------|--------------|--------|------|-------------|------------------|-------------------|------------|------------|------------------|--------------|---------------------------------|----------------|-----------------|--------------------------|--------|------------------|
|          |              | $p$    |      | $b_1$ min.  | $b_2$ max.       | $b_3$ min.        | $d_1$ max. | $d_2$ max. | $e$              | $g$ max.     | $k$ max.                        | $l_3$ max.     | $f$             | $F_B$ min.               | $q$ ≈  |                  |
| No.      | Ind.         | mm     | inch | mm          | mm               | mm                | mm         | mm         | mm               | mm           | mm                              | mm             | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| T 455 RF | <sup>1</sup> | 9,525  | 3/8  | 5,72        | 8,53             | 8,66              | 6,35       | 3,28       | 10,24            | 8,2          | 3,3                             | 34,0           | 0,81            | 18,9                     | 1,18   | 11,12,15         |
| T 462 RF |              | 12,7   | 1/2  | 7,75        | 11,30            | 11,43             | 8,51       | 4,45       | 13,92            | 11,8         | 3,9                             | 44,9           | 1,51            | 32,5                     | 2,01   | 11,12,15         |
| T 501 RF |              | 15,875 | 5/8  | 9,65        | 13,28            | 13,41             | 10,16      | 5,08       | 16,59            | 14,7         | 4,1                             | 52,8           | 2,02            | 39,0                     | 2,70   | 11,12,15         |
| T 513 RF |              | 19,05  | 3/4  | 11,68       | 15,62            | 15,75             | 12,07      | 5,72       | 19,46            | 16,1         | 4,6                             | 61,7           | 2,68            | 49,5                     | 3,12   | 11,12,15         |
| T 548 RF |              | 25,4   | 1    | 17,02       | 25,40            | 25,60             | 15,88      | 8,28       | 31,88            | 21,0         | 5,4                             | 99,9           | 6,31            | 108,0                    | 7,50   | 11,111,12        |

<sup>1</sup> with straight side plates

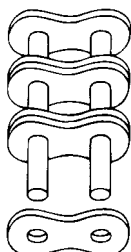
For details on orders and enquiries see page 114, Standard sprockets as of page 61.  
Information on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



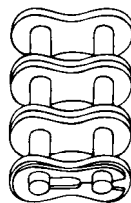
No. 4 (B)

Inner link



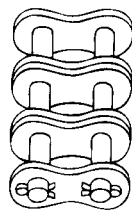
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



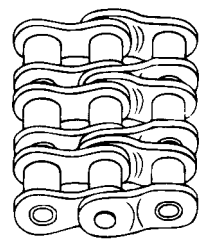
No. 111 (S)

Connecting link  
with cottered pin



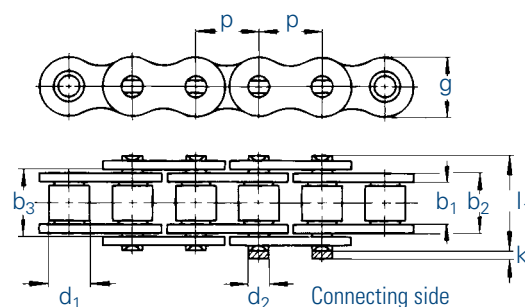
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link



| Chain  |              | Pitch |      | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø               | Plate height | Projection over connecting link | Width over pin      | Bearing area    | Minimum tensile strength | Weight | Connecting links |
|--------|--------------|-------|------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|---------------------------------|---------------------|-----------------|--------------------------|--------|------------------|
|        |              | p     |      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max.       | k max.                          | l <sub>1</sub> max. | f               | F <sub>B</sub> min.      | q ≈    |                  |
| No.    | Ind.         | mm    | inch | mm                  | mm                  | mm                  | mm                  | mm                  | mm           | mm                              | mm                  | cm <sup>2</sup> | kN                       | kg/m   | No.              |
| 455 TL |              | 9,525 | 3/8  | 5,72                | 8,53                | 8,66                | 6,35                | 3,28                | 9,0          | 3,3                             | 13,5                | 0,28            | 9,0                      | 0,41   | 4,7,11,12,15     |
| 18     |              | 12,7  | 1/2  | 4,88                | 9,30                | 9,43                | 7,75                | 4,18                | 11,2         | 1,5                             | 14,4                | 0,39            | 17,5                     | 0,55   | 4,7,11,12,15     |
| 460    |              | 12,7  | 1/2  | 5,21                | 8,70                | 8,93                | 8,51                | 4,45                | 11,8         | 3,9                             | 15,0                | 0,39            | 18,2                     | 0,62   | 4,7,11,12,15     |
| 515    |              | 19,05 | 3/4  | 13,50               | 19,70               | 19,83               | 12,07               | 5,72                | 16,2         | 4,6                             | 28,6                | 1,12            | 35,0                     | 1,67   | 4,7,11,12        |
| 517    |              | 19,05 | 3/4  | 11,68               | 17,00               | 17,13               | 12,07               | 6,10                | 18,1         | 3,6                             | 24,9                | 1,05            | 40,0                     | 1,51   | 4,7,11,12        |
| 540    |              | 25,4  | 1    | 12,70               | 19,00               | 18,20               | 12,70               | 7,00                | 20,5         | 5,4                             | 27,2                | 1,32            | 35,0                     | 1,58   | 4,7,11,12        |
| 546 b  |              | 25,4  | 1    | 12,70               | 20,00               | 20,20               | 14,00               | 7,50                | 22,5         | 5,4                             | 30,0                | 1,48            | 58,0                     | 2,14   | 4,7,11,12        |
| 547    |              | 25,4  | 1    | 12,70               | 21,07               | 21,27               | 15,88               | 8,28                | 21,0         | 5,4                             | 30,9                | 1,74            | 63,0                     | 2,50   | 4,7,11,12,111    |
| 577    |              | 35,0  | -    | 19,60               | 27,00               | 27,20               | 19,05               | 10,19               | 26,0         | 6,1                             | 40,0                | 2,74            | 85,0                     | 2,90   | 4,7,111,12       |
| 6144   | <sup>1</sup> | 41,5  | -    | 20,70               | 26,90               | 27,28               | 15,90               | 9,05                | 26,3         | 5,0                             | 38,1                | 2,40            | 56,0                     | 2,59   | 4,7,111          |

<sup>1</sup> with straight side plates

For new installations we recommend to use only standardised roller chains according to DIN 8187 or 8188!  
We reserve the right to cease production of this type series without prior notice!

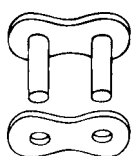
For details on orders and enquiries see page 114. Sprockets on request.

#### Connecting links: According to DIN (...)



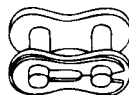
No. 4 (B)

Inner link



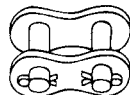
No. 7 (A)

Outer link  
(to be riveted)



No. 11 (E)

Spring clip  
connecting link



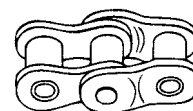
No. 111 (S)

Connecting link  
with cottered pin



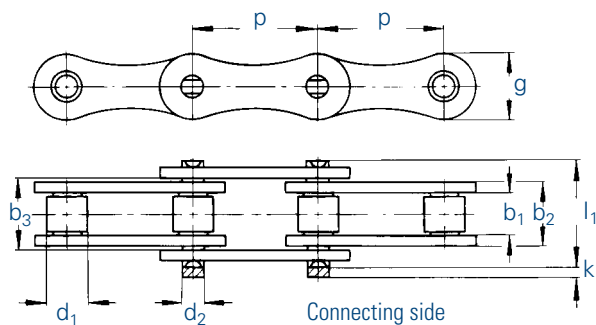
No. 12 (L)

Single  
cranked link



No. 15 (C)

Double  
cranked link



| Chain                                                                             |      | DIN   | Pitch |                     | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Pin Ø  | Plate height | Projection over connecting link | Width over pin | Bearing area        | Minimum tensile strength DIN | Weight |
|-----------------------------------------------------------------------------------|------|-------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|--------|--------------|---------------------------------|----------------|---------------------|------------------------------|--------|
|  |      |       | p     | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | g max. | k max.       | l <sub>1</sub> max.             | f              | F <sub>B</sub> min. | q ≈                          |        |
| No.                                                                               | Ind. | No.   | mm    | inch                | mm                  | mm                  | mm                  | mm                  | mm     | mm           | mm                              | mm             | cm <sup>2</sup>     | kN                           | kg/m   |
| 713                                                                               |      | 208 B | 25,4  | 1                   | 7,75                | 11,30               | 11,43               | 8,51                | 4,45   | 11,8         | 3,9                             | 17,0           | 0,50                | 18,0                         | 0,46   |
| 717                                                                               |      | 210 B | 31,75 | 1 ¼                 | 9,65                | 13,28               | 13,41               | 10,16               | 5,08   | 14,7         | 4,1                             | 19,6           | 0,67                | 22,4                         | 0,57   |
| 722                                                                               |      | 212 B | 38,1  | 1 ½                 | 11,68               | 15,62               | 15,75               | 12,07               | 5,72   | 16,1         | 4,6                             | 22,7           | 0,89                | 29,0                         | 0,75   |
| 728                                                                               |      | 216 B | 50,8  | 2                   | 17,02               | 25,40               | 25,60               | 15,88               | 8,28   | 21,0         | 5,4                             | 36,1           | 2,10                | 60,0                         | 1,74   |
| 734                                                                               |      | 220 B | 63,5  | 2 ½                 | 19,56               | 29,00               | 29,20               | 19,05               | 10,19  | 28,5         | 6,1                             | 43,2           | 2,96                | 95,0                         | 2,55   |

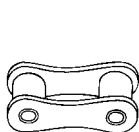
Electrogalvanised or nickel-plated chains on request. In this case chains may only have 80 % of the tensile strength.

## Double pitch roller chains (stainless steel)

|        |  |       |       |     |       |       |       |       |      |      |     |      |      |      |      |
|--------|--|-------|-------|-----|-------|-------|-------|-------|------|------|-----|------|------|------|------|
| 713 RF |  | 208 B | 25,4  | 1   | 7,75  | 11,30 | 11,43 | 8,51  | 4,45 | 11,8 | 3,9 | 17,0 | 0,50 | 12,0 | 0,48 |
| 717 RF |  | 210 B | 31,75 | 1 ¼ | 9,65  | 13,28 | 13,41 | 10,16 | 5,08 | 14,7 | 4,1 | 19,6 | 0,67 | 14,5 | 0,55 |
| 722 RF |  | 212 B | 38,1  | 1 ½ | 11,68 | 15,62 | 15,75 | 12,07 | 5,72 | 16,1 | 4,6 | 22,7 | 0,89 | 18,5 | 0,80 |
| 728 RF |  | 216 B | 50,8  | 2   | 17,02 | 25,40 | 25,60 | 15,88 | 8,28 | 21,0 | 5,4 | 36,1 | 2,10 | 40,0 | 1,74 |

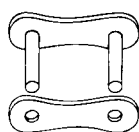
For details on orders and enquiries see page 114. Sprockets on request.  
Information on the selection of chain sizes and drives as of page 101.

## Connecting links: According to DIN (...)



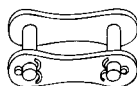
No. 4 (B)

Inner link



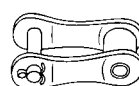
No. 7 (A)

Outer link  
(to be riveted)



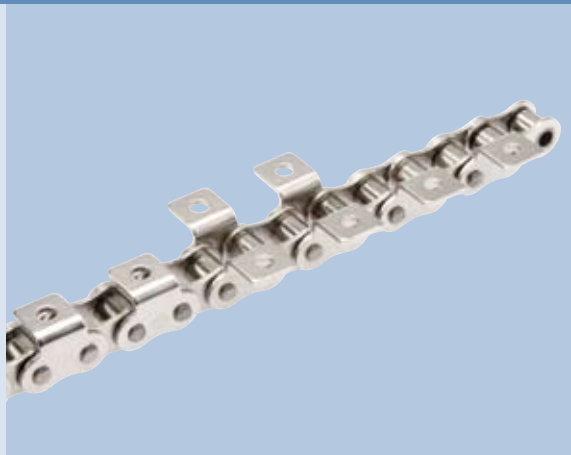
No. 111 (S)

Connecting link with cotttered pin  
for chain No. 713 with spring clip (E)



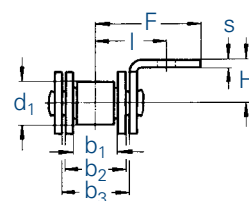
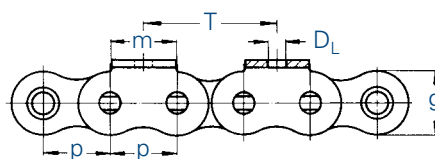
No. 12 (L)

Single  
cranked link



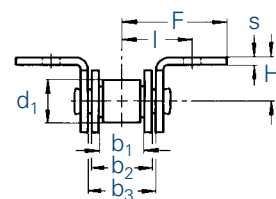
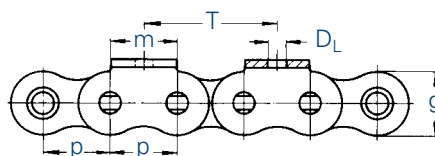
## Type A

bent attachments, one side



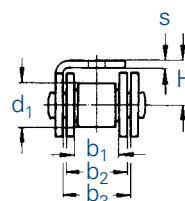
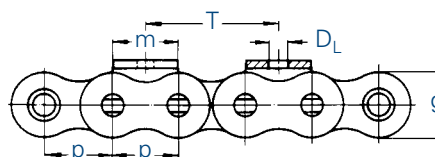
## Type B

bent attachments, both sides



## Type C

bent over chain attachments, one side



| Basic chain |                  | Pitch  |                               | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                |      |      |      |      |
|-------------|------------------|--------|-------------------------------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|----------------|------|------|------|------|
|             |                  | p      |                               | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | D <sub>L</sub> | I    | F    | H    | s    |
| No.         | Ind.             | mm     | inch                          | mm                  | mm                  | mm                  | mm                  | mm           | mm                    | mm             | mm   | mm   | mm   | mm   |
| 450         |                  | 8,0    | -                             | 3,00                | 4,77                | 4,90                | 5,00                | 7,1          | 8,0                   | 3,2            | 6,6  | 12,0 | 5,0  | 0,80 |
| 455         | <sup>1,15</sup>  | 9,525  | <sup>3</sup> / <sub>8</sub>   | 5,72                | 8,53                | 8,66                | 6,35                | 8,2          | 8,0                   | 3,5            | 9,5  | 13,5 | 6,5  | 1,25 |
| 331         | <sup>17</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 3,30                | 5,80                | 5,93                | 7,75                | 9,9          | 10,5                  | 3,5            | 9,0  | 15,1 | 7,0  | 0,95 |
| 332         | <sup>17</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 4,88                | 7,20                | 7,33                | 7,75                | 9,9          | 10,5                  | 3,5            | 9,7  | 15,8 | 7,0  | 0,95 |
| 462         | <sup>15</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 12,5                  | 4,5            | 13,1 | 19,0 | 10,0 | 1,50 |
| 501         | <sup>15</sup>    | 15,875 | <sup>5</sup> / <sub>8</sub>   | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 15,0                  | 5,5            | 16,7 | 27,0 | 10,0 | 1,70 |
| 513         | <sup>15</sup>    | 19,05  | <sup>3</sup> / <sub>4</sub>   | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 18,5                  | 6,6            | 18,6 | 29,0 | 11,0 | 1,80 |
| 548         | <sup>15,16</sup> | 25,4   | 1                             | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 25,0                  | 9,0            | 28,9 | 41,8 | 18,0 | 3,00 |
| 563         |                  | 31,75  | 1 <sup>1</sup> / <sub>4</sub> | 19,56               | 29,00               | 29,20               | 19,05               | 26,4         | 35,0                  | 9,0            | 33,4 | 49,0 | 18,0 | 3,75 |
| 596         |                  | 38,1   | 1 <sup>1</sup> / <sub>2</sub> | 25,40               | 37,90               | 38,20               | 25,40               | 33,4         | 38,0                  | 11,0           | 44,0 | 64,0 | 25,0 | 5,00 |
| 613         |                  | 44,45  | 1 <sup>3</sup> / <sub>4</sub> | 30,99               | 46,50               | 46,80               | 27,94               | 37,0         | 45,0                  | 14,0           | 54,1 | 78,0 | 32,0 | 6,00 |
| 652         |                  | 50,8   | 2                             | 30,99               | 45,50               | 45,80               | 29,21               | 42,2         | 50,0                  | 14,0           | 54,0 | 76,3 | 35,0 | 6,00 |
| 40          | <sup>15</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 7,85                | 11,15               | 11,28               | 7,95                | 12,0         | 10,5                  | 3,5            | 12,7 | 17,9 | 7,9  | 1,50 |
| 50          | <sup>15</sup>    | 15,875 | <sup>5</sup> / <sub>8</sub>   | 9,40                | 13,80               | 13,93               | 10,16               | 15,0         | 12,7                  | 5,2            | 15,9 | 23,9 | 10,3 | 2,00 |
| 60          | <sup>15</sup>    | 19,05  | <sup>3</sup> / <sub>4</sub>   | 12,57               | 17,70               | 17,85               | 11,91               | 18,0         | 15,9                  | 5,2            | 19,1 | 28,2 | 11,9 | 2,40 |
| 80          | <sup>15</sup>    | 25,4   | 1                             | 15,75               | 22,50               | 22,70               | 15,88               | 24,1         | 19,1                  | 6,7            | 25,4 | 37,3 | 15,9 | 3,20 |

<sup>1</sup> with straight side plates    <sup>15</sup> also with single hole bent attachments on inner link    <sup>16</sup> on inner link s = 4    <sup>17</sup> can also be supplied with m = 16

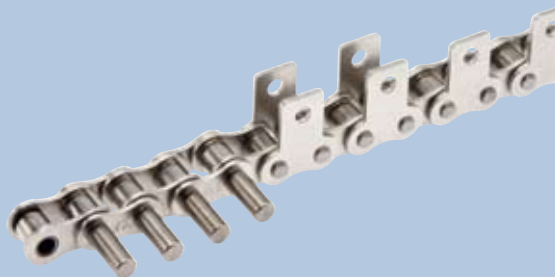
All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



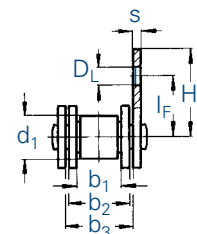
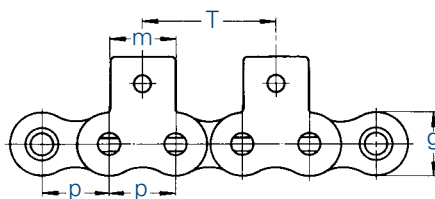
# ROLLER CHAINS WITH SINGLE HOLE STRAIGHT ATTACHMENTS AND EXTENDED PINS

Main dimensions according to DIN 8187, DIN 8188 and works-standard



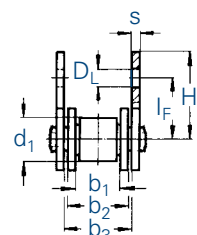
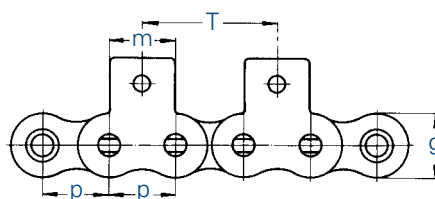
## Type D

straight attachments, one side



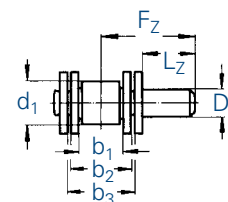
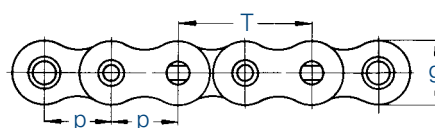
## Type E

straight attachments, both sides



## Type F

extended pins (available on alternate sides)



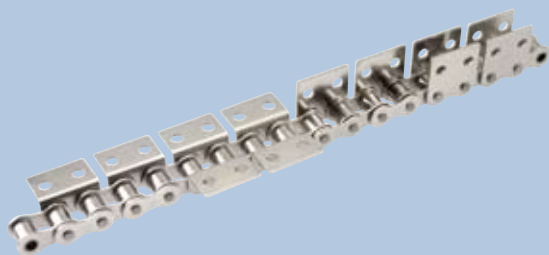
| Basic chain |                  | Pitch  |                               | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                |                |                |      |                                |                             |                             |
|-------------|------------------|--------|-------------------------------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|----------------|----------------|----------------|------|--------------------------------|-----------------------------|-----------------------------|
|             |                  | p      |                               | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | D <sub>L</sub> | I <sub>F</sub> | H <sub>F</sub> | s    | D <sub>Z</sub> <sup>7</sup> h9 | L <sub>Z</sub> <sup>7</sup> | F <sub>Z</sub> <sup>7</sup> |
| No.         | Ind.             | mm     | inch                          | mm                  | mm                  | mm                  | mm                  | mm           | mm                    | mm             | mm             | mm             | mm   | mm                             | mm                          | mm                          |
| 450         |                  | 8,0    | -                             | 3,00                | 4,77                | 4,90                | 5,00                | 7,1          | 8,0                   | 3,2            | 7,5            | 13,00          | 0,80 | 4,0                            | 10,0                        | 13,3                        |
| 455         | <sup>1,18</sup>  | 9,525  | <sup>3</sup> / <sub>8</sub>   | 5,72                | 8,53                | 8,66                | 6,35                | 8,2          | 8,0                   | 3,5            | 9,0            | 13,80          | 1,25 | 5,0                            | 15,0                        | 20,7                        |
| 331         | <sup>17</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 3,30                | 5,80                | 5,93                | 7,75                | 9,9          | 10,5                  | 3,5            | 11,5           | 17,65          | 0,95 | 5,0                            | 15,0                        | 19,0                        |
| 332         | <sup>17</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 4,88                | 7,20                | 7,33                | 7,75                | 9,9          | 10,5                  | 3,5            | 11,5           | 17,65          | 0,95 | 5,0                            | 15,0                        | 19,7                        |
| 462         | <sup>18</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 12,5                  | 4,5            | 14,7           | 20,30          | 1,50 | 6,0                            | 15,0                        | 22,4                        |
| 501         | <sup>18</sup>    | 15,875 | <sup>5</sup> / <sub>8</sub>   | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 15,0                  | 5,5            | 17,2           | 26,70          | 1,70 | 6,5                            | 20,0                        | 28,5                        |
| 513         | <sup>18</sup>    | 19,05  | <sup>3</sup> / <sub>4</sub>   | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 18,5                  | 6,6            | 18,7           | 29,00          | 1,80 | 7,0                            | 20,0                        | 29,8                        |
| 548         | <sup>16,18</sup> | 25,4   | 1                             | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 25,0                  | 9,0            | 28,6           | 41,50          | 3,00 | 10,0                           | 30,0                        | 45,9                        |
| 563         |                  | 31,75  | 1 <sup>1</sup> / <sub>4</sub> | 19,56               | 29,00               | 29,20               | 19,05               | 26,4         | 35,0                  | 9,0            | 30,5           | 45,70          | 3,75 | 12,0                           | 30,0                        | 48,4                        |
| 596         |                  | 38,1   | 1 <sup>1</sup> / <sub>2</sub> | 25,40               | 37,90               | 38,20               | 25,40               | 33,4         | 38,0                  | 11,0           | 41,0           | 60,00          | 5,00 | 16,0                           | 35,0                        | 59,1                        |
| 613         |                  | 44,45  | 1 <sup>3</sup> / <sub>4</sub> | 30,99               | 46,50               | 46,80               | 27,94               | 37,0         | 45,0                  | 14,0           | 52,5           | 75,50          | 6,00 | 20,0                           | 40,0                        | 69,0                        |
| 652         |                  | 50,8   | 2                             | 30,99               | 45,50               | 45,80               | 29,21               | 42,2         | 50,0                  | 14,0           | 53,5           | 77,00          | 6,00 | 20,0                           | 40,0                        | 69,0                        |
| 40          | <sup>18</sup>    | 12,7   | <sup>1</sup> / <sub>2</sub>   | 7,85                | 11,15               | 11,28               | 7,95                | 12,0         | 10,5                  | 3,5            | 11,5           | 17,65          | 1,50 | 5,0                            | 15,0                        | 22,2                        |
| 50          | <sup>18</sup>    | 15,875 | <sup>5</sup> / <sub>8</sub>   | 9,40                | 13,80               | 13,93               | 10,16               | 15,0         | 12,7                  | 5,2            | 15,9           | 23,50          | 2,00 | 5,08                           | 11,9                        | 21,1                        |
| 60          | <sup>18</sup>    | 19,05  | <sup>3</sup> / <sub>4</sub>   | 12,57               | 17,70               | 17,85               | 11,91               | 18,0         | 15,9                  | 5,2            | 18,3           | 27,20          | 2,40 | 5,94                           | 14,3                        | 25,8                        |
| 80          | <sup>18</sup>    | 25,4   | 1                             | 15,75               | 22,50               | 22,70               | 15,88               | 24,1         | 19,1                  | 6,7            | 24,6           | 35,50          | 3,20 | 7,92                           | 19,1                        | 33,7                        |

<sup>1</sup> with straight side plates <sup>16</sup> on inner link s = 4 <sup>17</sup> can also be supplied with m = 16 <sup>18</sup> also with straight attachments on inner link

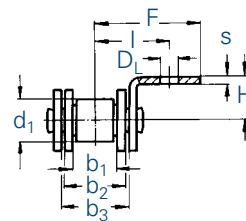
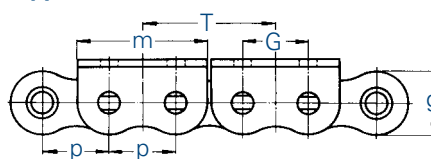
<sup>19</sup> other dimensions available on request

All designs can also be supplied as Marathon roller chains (maintenance-free)!

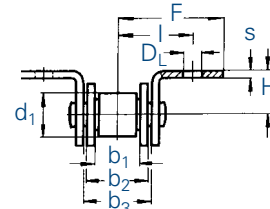
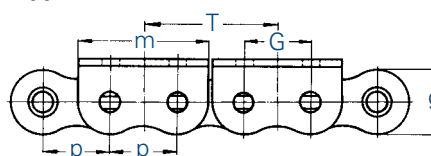
For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



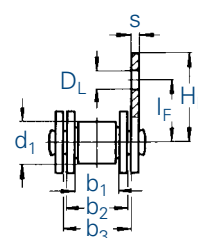
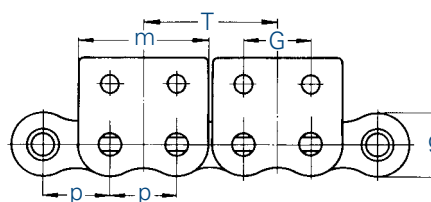
**Type A2** bent attachments, one side



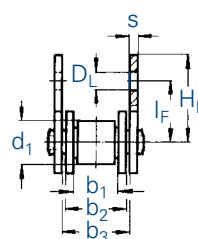
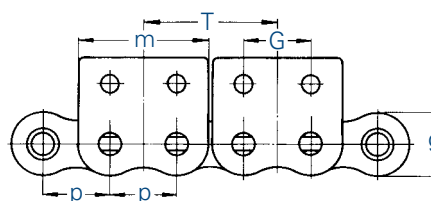
**Type B2** bent attachments, both sides



**Type D2** straight attachments, one side



**Type E2** straight attachments, both sides



| Basic chain                                                                         |                 | Pitch  |       | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                |      |      |      |      |                |                |      |
|-------------------------------------------------------------------------------------|-----------------|--------|-------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|----------------|------|------|------|------|----------------|----------------|------|
|  |                 | p      |       | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | D <sub>L</sub> | G    | I    | F    | H    | I <sub>F</sub> | H <sub>F</sub> | s    |
| No.                                                                                 | Ind.            | mm     | inch  | mm                  | mm                  | mm                  | mm                  | mm           | mm                    | mm             | mm   | mm   | mm   | mm   | mm             | mm             | mm   |
| 455                                                                                 | <sup>1,20</sup> | 9,525  | 3⁄8   | 5,72                | 8,53                | 8,66                | 6,35                | 8,2          | 18,2                  | 3,2            | 9,5  | 9,8  | 13,2 | 5,7  | 9,2            | 12,6           | 1,25 |
| 462                                                                                 |                 | 12,7   | 1⁄2   | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 23,2                  | 4,5            | 12,7 | 13,1 | 19,0 | 10,0 | 14,7           | 20,3           | 1,50 |
| 501                                                                                 |                 | 15,875 | 5⁄8   | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 28,5                  | 5,5            | 15,9 | 16,7 | 27,0 | 10,0 | 17,2           | 26,7           | 1,70 |
| 513                                                                                 |                 | 19,05  | 3⁄4   | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 33,6                  | 6,6            | 19,1 | 18,6 | 29,0 | 11,0 | 18,7           | 29,0           | 1,80 |
| 548                                                                                 |                 | 25,4   | 1     | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 46,5                  | 9,0            | 25,4 | 28,9 | 42,0 | 18,0 | 28,6           | 41,5           | 3,00 |
| 563                                                                                 |                 | 31,75  | 1 1⁄4 | 19,56               | 29,00               | 29,20               | 19,05               | 26,4         | 55,8                  | 9,0            | 31,8 | 33,4 | 49,0 | 18,0 | 30,5           | 46,0           | 3,75 |
| 596                                                                                 |                 | 38,1   | 1 1⁄2 | 25,40               | 37,90               | 38,20               | 25,40               | 33,4         | 71,1                  | 11,0           | 38,1 | 44,0 | 64,0 | 25,0 | 41,0           | 60,0           | 5,00 |

**Roller chains (stainless steel) with two-hole bent and straight attachments**

|        |                 |        |     |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|--------|-----------------|--------|-----|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 455 RF | <sup>1,20</sup> | 9,525  | 3/8 | 5,72  | 8,53  | 8,66  | 6,35  | 8,2  | 18,2 | 3,2  | 9,5  | 9,8  | 13,2 | 5,7  | 9,2  | 12,6 | 1,25 |
| 462 RF |                 | 12,7   | 1/2 | 7,75  | 11,30 | 11,43 | 8,51  | 11,8 | 23,2 | 4,5  | 12,7 | 13,1 | 19,0 | 10,0 | 14,7 | 20,3 | 1,60 |
| 501 RF |                 | 15,875 | 5/8 | 9,65  | 13,28 | 13,41 | 10,16 | 14,7 | 28,5 | 5,5  | 15,9 | 16,7 | 27,0 | 10,0 | 17,2 | 26,7 | 1,70 |
| 513 RF |                 | 19,05  | 3/4 | 11,68 | 15,62 | 15,75 | 12,07 | 16,1 | 33,6 | 6,6  | 19,1 | 18,5 | 29,0 | 11,0 | 18,7 | 29,0 | 1,80 |
| 548 RF |                 | 25,4   | 1   | 17,02 | 25,40 | 25,60 | 15,88 | 21,0 | 46,5 | 10,0 | 25,4 | 28,9 | 41,8 | 18,0 | 28,6 | 41,5 | 3,00 |

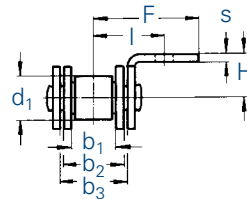
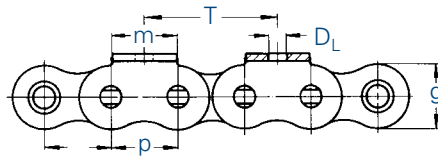
<sup>1</sup> with straight side plates    <sup>20</sup> can be supplied with or without bore

All designs can also be supplied as Marathon roller chains (maintenance-free)! Sprockets made of stainless steel or plastic are available on request.

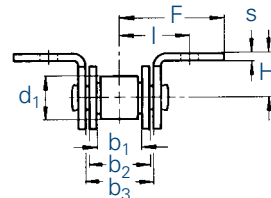
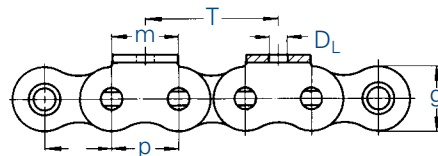
For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



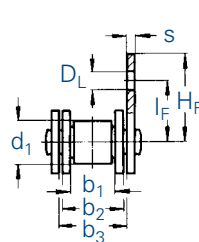
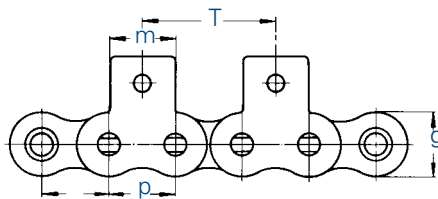
**Type A** bent attachments, one side



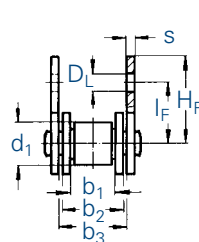
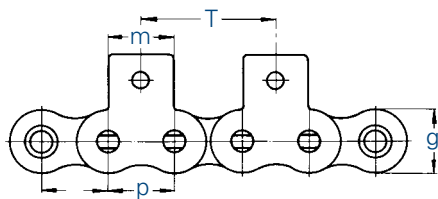
**Type B** bent attachments, both sides



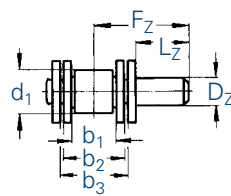
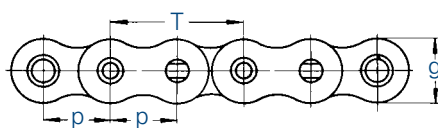
**Type D** straight attachments, one side



**Type E** straight attachments, both sides



**Type F** extended pins  
(available on alternate sides)



| Basic chain                                                                         |                  | Pitch  | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                |      |      |      |                |                |      |                                 |                              |                              |
|-------------------------------------------------------------------------------------|------------------|--------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|----------------|------|------|------|----------------|----------------|------|---------------------------------|------------------------------|------------------------------|
|  |                  | p      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | D <sub>L</sub> | I    | F    | H    | I <sub>F</sub> | H <sub>F</sub> | s    | D <sub>Z</sub> <sup>19</sup> h9 | L <sub>Z</sub> <sup>19</sup> | F <sub>Z</sub> <sup>19</sup> |
| No.                                                                                 | Ind.             | mm     | mm                  | mm                  | mm                  | mm                  | mm           | mm                    | mm             | mm   | mm   | mm   | mm             | mm             | mm   | mm                              | mm                           | mm                           |
| 450 RF                                                                              |                  | 8,0    | 3,00                | 4,77                | 4,90                | 5,00                | 7,1          | 8,0                   | 3,2            | 6,6  | 12,0 | 5,0  | 7,5            | 13,0           | 0,80 | 4,0                             | 10                           | 13,3                         |
| 455 RF                                                                              | <sup>1,21</sup>  | 9,525  | 5,72                | 8,53                | 8,66                | 6,35                | 8,2          | 8,0                   | 3,5            | 9,5  | 13,5 | 6,5  | 9,0            | 13,4           | 1,25 | 5,0                             | 15                           | 20,7                         |
| 331 RF                                                                              | <sup>17</sup>    | 12,7   | 3,30                | 5,80                | 5,93                | 7,75                | 9,9          | 10,5                  | 3,5            | 9,0  | 15,1 | 7,0  | 11,5           | 17,7           | 0,95 | 5,0                             | 15                           | 19,0                         |
| 40 RF                                                                               | <sup>21</sup>    | 12,7   | 7,85                | 11,15               | 11,28               | 7,95                | 12,0         | 10,5                  | 3,5            | 11,8 | 17,9 | 7,9  | 11,5           | 17,7           | 1,50 | 5,0                             | 15                           | 22,2                         |
| 332 RF                                                                              | <sup>17</sup>    | 12,7   | 4,88                | 7,20                | 7,33                | 7,75                | 9,9          | 10,5                  | 3,5            | 9,7  | 15,8 | 7,0  | 11,5           | 17,7           | 0,95 | 5,0                             | 15                           | 19,7                         |
| 462 RF                                                                              | <sup>21</sup>    | 12,7   | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 12,5                  | 4,5            | 13,1 | 19,0 | 10,0 | 14,7           | 20,3           | 1,60 | 6,0                             | 15                           | 22,4                         |
| 501 RF                                                                              | <sup>21</sup>    | 15,875 | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 15,0                  | 5,5            | 16,7 | 27,0 | 10,0 | 17,2           | 26,7           | 1,70 | 6,5                             | 20                           | 28,5                         |
| 513 RF                                                                              | <sup>21</sup>    | 19,05  | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 18,5                  | 6,6            | 18,5 | 29,0 | 11,0 | 18,7           | 29,0           | 1,80 | 7,0                             | 20                           | 29,8                         |
| 548 RF                                                                              | <sup>16,21</sup> | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 25,0                  | 10,0           | 28,9 | 41,8 | 18,0 | 28,6           | 41,5           | 3,00 | 10,0                            | 30                           | 45,9                         |

<sup>1</sup> with straight side plates    <sup>16</sup> on inner link s = 4    <sup>17</sup> can also be supplied with m = 16    <sup>19</sup> other dimensions available on request

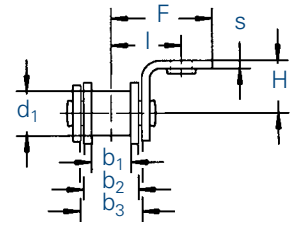
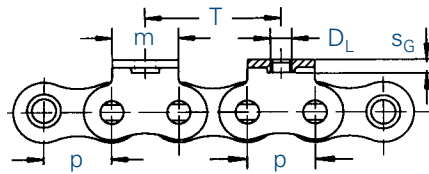
<sup>21</sup> also with single hole bent attachments on inner link

Sprockets made of stainless steel or plastic are available on request.

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.

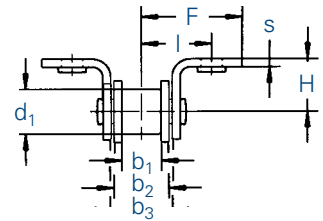
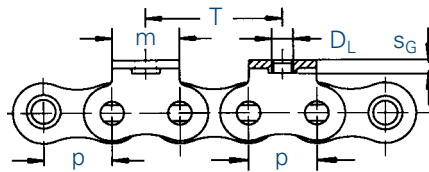
## Type A G

bent attachments, one side



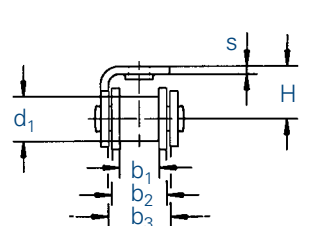
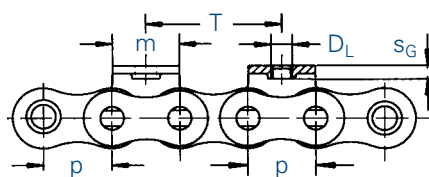
## Type B G

bent attachments, both sides



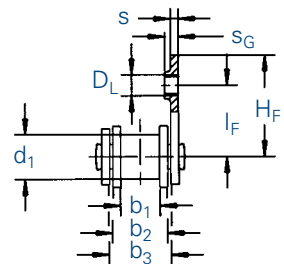
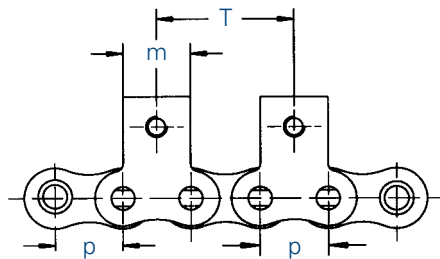
## Type C G

bent over chain attachments, one side



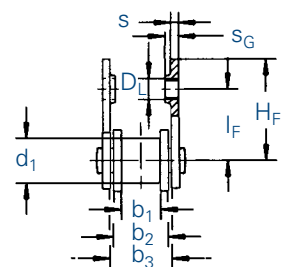
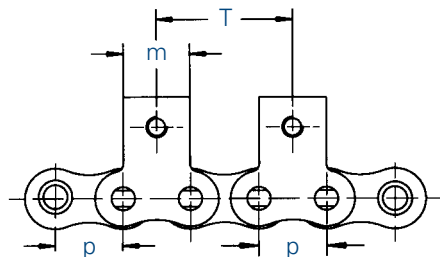
## Type D G

straight attachments, one side



## Type E G

straight attachments, both sides



| Basic chain |               | Pitch  |      | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |               |      |      |    |      |                |
|-------------|---------------|--------|------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|---------------|------|------|----|------|----------------|
|             |               | p      |      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | Inside thread | I    | F    | H  | s    | s <sub>G</sub> |
| No.         | Ind.          | mm     | inch | mm                  | mm                  | mm                  | mm                  | mm           | mm                    |               | mm   | mm   | mm | mm   | mm             |
| 462         | <sup>22</sup> | 12,7   | 1/2  | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 12,5                  | M 4           | 13,1 | 19,0 | 10 | 1,50 | 4,00           |
| 501         | <sup>22</sup> | 15,875 | 5/8  | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 15,0                  | M 5           | 16,7 | 27,0 | 10 | 1,70 | 4,20           |
| 513         | <sup>22</sup> | 19,05  | 3/4  | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 18,5                  | M 6           | 18,6 | 29,0 | 11 | 1,80 | 4,50           |
| 548         | <sup>22</sup> | 25,4   | 1    | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 25,0                  | M 8           | 28,9 | 41,8 | 18 | 3,00 | 7,50           |

<sup>22</sup> can also be supplied in stainless steel

All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.

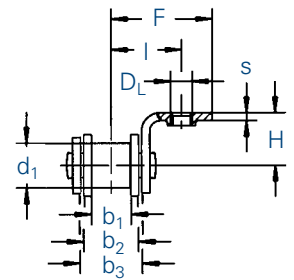
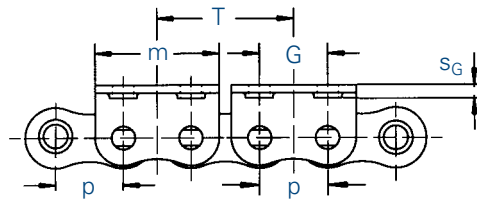


# ROLLER CHAINS WITH TWO-HOLE ATTACHMENTS AND INSIDE THREAD

Main dimensions according to DIN 8187

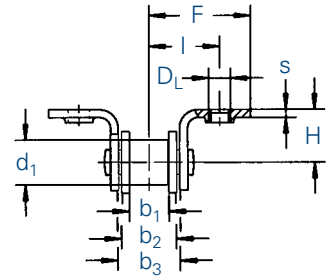
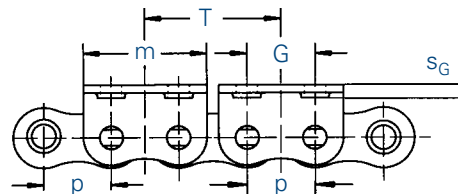
## Type A 2 G

bent attachments, one side



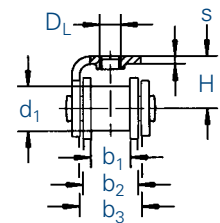
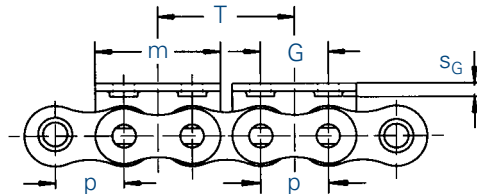
## Type B 2 G

bent attachments, both sides



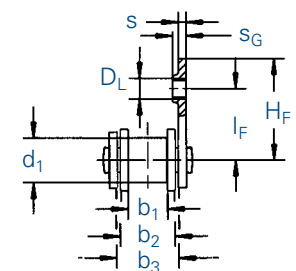
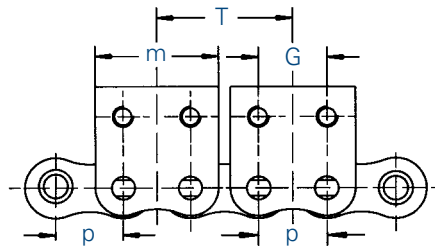
## Type C 2 G

bent over chain attachments, one side



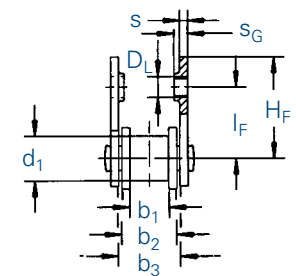
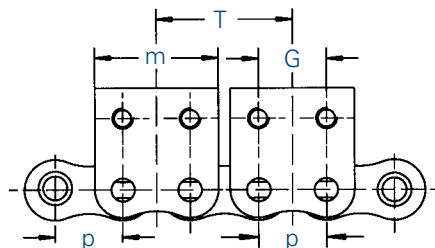
## Type D 2 G

straight attachments, one side



## Type E 2 G

straight attachments, both sides



| Basic chain |               | Pitch  | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                              |      |      |      |    |                |                |      |                |
|-------------|---------------|--------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|------------------------------|------|------|------|----|----------------|----------------|------|----------------|
|             |               | p      | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | Inside thread D <sub>L</sub> | G    | I    | F    | H  | I <sub>F</sub> | H <sub>F</sub> | s    | s <sub>G</sub> |
| No.         | Ind.          | mm     | mm                  | mm                  | mm                  | mm                  | mm           | mm                    |                              | mm   | mm   | mm   | mm | mm             | mm             | mm   | mm             |
| 462         | <sup>22</sup> | 12,7   | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 23,2                  | M 4                          | 12,7 | 13,1 | 19,0 | 10 | 14,7           | 20,3           | 1,50 | 4,00           |
| 501         | <sup>22</sup> | 15,875 | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 28,5                  | M 5                          | 15,9 | 16,7 | 27,0 | 10 | 17,2           | 26,7           | 1,70 | 4,20           |
| 513         | <sup>22</sup> | 19,05  | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 33,6                  | M 6                          | 19,1 | 18,5 | 29,0 | 11 | 18,7           | 29,0           | 1,80 | 4,50           |
| 548         | <sup>22</sup> | 25,4   | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 46,5                  | M 8                          | 25,4 | 28,9 | 41,8 | 18 | 28,6           | 41,5           | 3,00 | 7,50           |

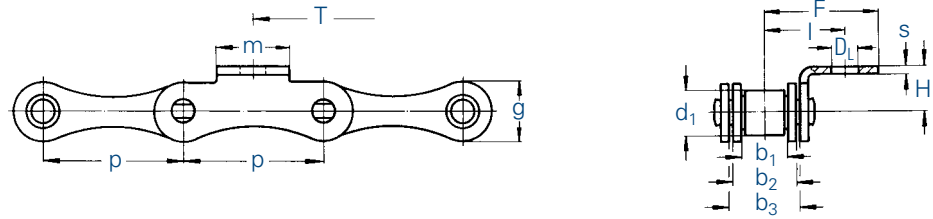
<sup>22</sup> can also be supplied in stainless steel

All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.

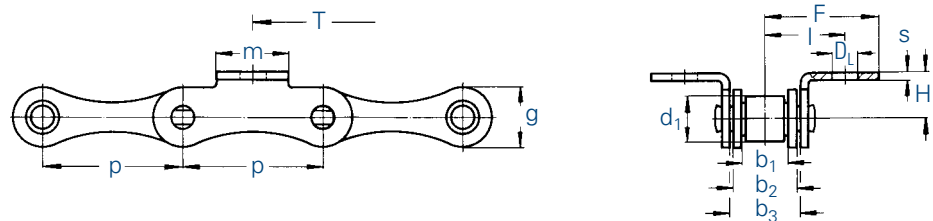
## Type A

bent attachments, one side



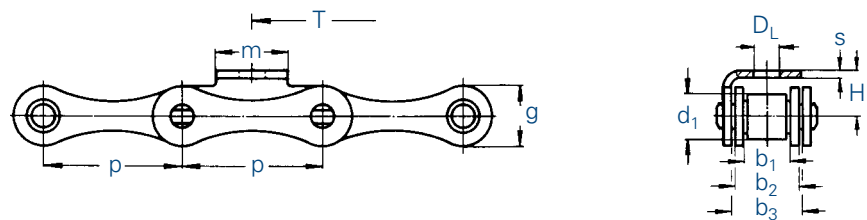
## Type B

bent attachments, both sides



## Type C

bent over chain attachments,  
one side



| Basic chain |      | Pitch |      | Inner width            | Inner link width       | Outer plate width      | Roller Ø               | Plate height | Attachment dimensions |                |      |      |      |      |
|-------------|------|-------|------|------------------------|------------------------|------------------------|------------------------|--------------|-----------------------|----------------|------|------|------|------|
|             |      |       |      |                        |                        |                        |                        |              |                       |                |      |      |      |      |
| No.         | Ind. | mm    | inch | b <sub>1</sub><br>min. | b <sub>2</sub><br>max. | b <sub>3</sub><br>min. | d <sub>1</sub><br>max. | g<br>max.    | m                     | D <sub>L</sub> | I    | F    | H    | s    |
| 713         |      | 25,4  | 1    | 7,75                   | 11,30                  | 11,43                  | 8,51                   | 11,8         | 13,0                  | 4,5            | 13,1 | 19,3 | 10,0 | 1,60 |
| 717         |      | 31,75 | 1 ¼  | 9,65                   | 13,28                  | 13,41                  | 10,16                  | 14,7         | 15,0                  | 5,5            | 16,7 | 26,7 | 10,0 | 1,70 |
| 722         |      | 38,1  | 1 ½  | 11,68                  | 15,62                  | 15,75                  | 12,07                  | 16,1         | 19,0                  | 6,6            | 18,5 | 26,0 | 11,0 | 1,80 |
| 728         |      | 50,8  | 2    | 17,02                  | 25,40                  | 25,60                  | 15,88                  | 21,0         | 30,0                  | 9,0            | 28,9 | 43,0 | 18,0 | 3,00 |
| 734         |      | 63,5  | 2 ½  | 19,56                  | 29,00                  | 29,20                  | 19,05                  | 28,5         | 35,0                  | 9,0            | 33,1 | 49,6 | 18,0 | 3,75 |

### Double pitch stainless steel roller chains with single hole bent attachments

|        |  |       |     |       |       |       |       |      |      |     |      |      |      |      |
|--------|--|-------|-----|-------|-------|-------|-------|------|------|-----|------|------|------|------|
| 713 RF |  | 25,4  | 1   | 7,75  | 11,30 | 11,43 | 8,51  | 11,8 | 13,0 | 4,5 | 13,1 | 19,5 | 10,0 | 1,60 |
| 717 RF |  | 31,75 | 1 ¼ | 9,65  | 13,28 | 13,41 | 10,16 | 14,7 | 15,0 | 5,5 | 16,7 | 26,7 | 10,0 | 1,70 |
| 722 RF |  | 38,1  | 1 ½ | 11,68 | 15,62 | 15,75 | 12,07 | 16,1 | 19,0 | 6,6 | 18,5 | 26,0 | 11,0 | 1,80 |
| 728 RF |  | 50,8  | 2   | 17,02 | 25,40 | 25,60 | 15,88 | 21,0 | 30,0 | 9,0 | 28,9 | 43,0 | 18,0 | 3,00 |

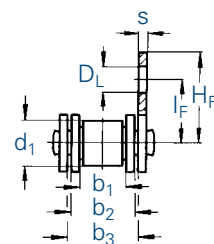
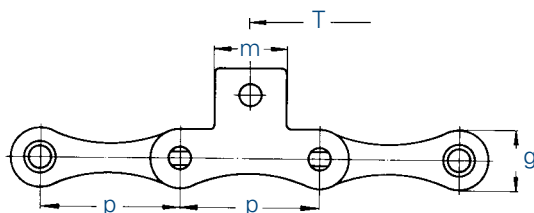
All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



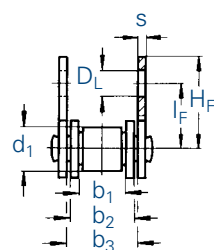
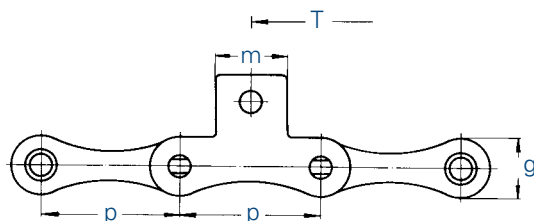
## Type D

straight attachments, one side



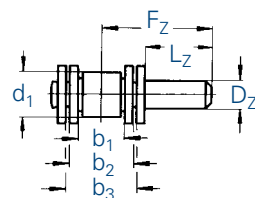
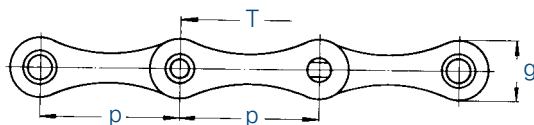
## Type E

straight attachments, both sides



## Type F

extended pin  
(available on alternate sides)



| Basic chain |      | Pitch |      | Inner width         | Inner link width    | Outer plate width   | Roller Ø            | Plate height | Attachment dimensions |                |                |                |      |                              |                              |                              |
|-------------|------|-------|------|---------------------|---------------------|---------------------|---------------------|--------------|-----------------------|----------------|----------------|----------------|------|------------------------------|------------------------------|------------------------------|
|             |      |       |      |                     |                     |                     |                     |              |                       |                |                |                |      |                              |                              |                              |
| No.         | Ind. | mm    | inch | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | g max.       | m                     | D <sub>L</sub> | I <sub>F</sub> | H <sub>F</sub> | s    | D <sub>Z</sub> <sup>19</sup> | L <sub>Z</sub> <sup>19</sup> | F <sub>Z</sub> <sup>19</sup> |
| 713         |      | 25,4  | 1    | 7,75                | 11,30               | 11,43               | 8,51                | 11,8         | 13,0                  | 4,5            | 14,7           | 20,3           | 1,60 | 6,0                          | 15,0                         | 22,4                         |
| 717         |      | 31,75 | 1 ¼  | 9,65                | 13,28               | 13,41               | 10,16               | 14,7         | 15,0                  | 5,5            | 17,0           | 26,7           | 1,70 | 6,5                          | 20,0                         | 28,5                         |
| 722         |      | 38,1  | 1 ½  | 11,68               | 15,62               | 15,75               | 12,07               | 16,1         | 19,0                  | 6,6            | 17,6           | 26,0           | 1,80 | 7,0                          | 20,0                         | 29,8                         |
| 728         |      | 50,8  | 2    | 17,02               | 25,40               | 25,60               | 15,88               | 21,0         | 30,0                  | 9,0            | 29,0           | 42,5           | 3,00 | 10,0                         | 30,0                         | 45,9                         |
| 734         |      | 63,5  | 2 ½  | 19,56               | 29,00               | 29,20               | 19,05               | 28,5         | 35,0                  | 9,0            | 30,5           | 45,7           | 3,75 | 12,0                         | 30,0                         | 48,4                         |

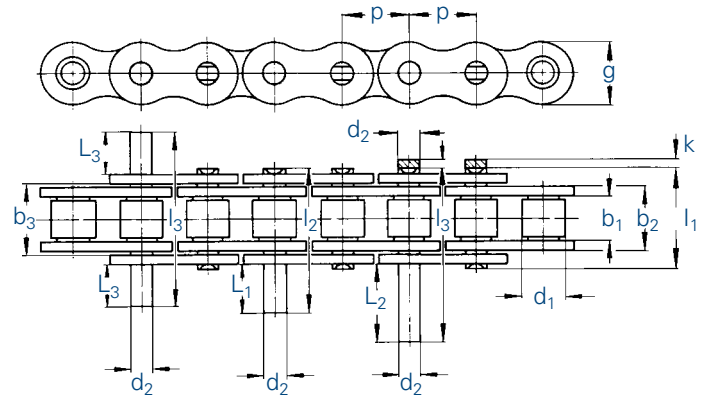
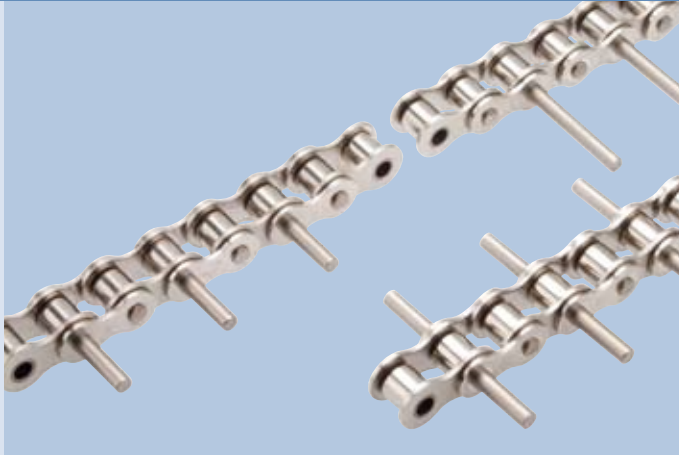
### Double pitch roller chains (stainless steel) with single hole straight attachments and extended pins

|        |  |       |     |       |       |       |       |      |      |     |      |      |      |      |      |      |
|--------|--|-------|-----|-------|-------|-------|-------|------|------|-----|------|------|------|------|------|------|
| 713 RF |  | 25,4  | 1   | 7,75  | 11,30 | 11,43 | 8,51  | 11,8 | 13,0 | 4,5 | 14,7 | 20,3 | 1,60 | 6,0  | 15,0 | 22,4 |
| 717 RF |  | 31,75 | 1 ¼ | 9,65  | 13,28 | 13,41 | 10,16 | 14,7 | 15,0 | 5,5 | 17,0 | 26,7 | 1,70 | 6,5  | 20,0 | 28,5 |
| 722 RF |  | 38,1  | 1 ½ | 11,68 | 15,62 | 15,75 | 12,07 | 16,1 | 19,0 | 6,6 | 17,6 | 26,0 | 1,80 | 7,0  | 20,0 | 29,8 |
| 728 RF |  | 50,8  | 2   | 17,02 | 25,40 | 25,60 | 15,88 | 21,0 | 30,0 | 9,0 | 29,0 | 42,5 | 3,00 | 10,0 | 30,0 | 45,9 |

<sup>19</sup> can also be supplied in stainless steel

Can also be supplied as Marathon roller chain (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



| Basic chain |                 | Pitch  |                | Inner width | Inner link width | Outer plate width | Roller Ø | Pin Ø | Projection over connecting link | Plate height | Width over pin | Dimensions for extended pin |                 |               |            |            |
|-------------|-----------------|--------|----------------|-------------|------------------|-------------------|----------|-------|---------------------------------|--------------|----------------|-----------------------------|-----------------|---------------|------------|------------|
|             |                 |        |                |             |                  |                   |          |       |                                 |              |                | Overall length              |                 | Pin extension |            |            |
|             |                 |        |                |             |                  |                   |          |       |                                 |              |                | $l_2^{11}$ max.             | $l_3^{12}$ max. | $L_1$ max.    | $L_2$ max. | $L_3$ max. |
| No.         | Ind.            | mm     | inch           | mm          | mm               | mm                | mm       | mm    | mm                              | mm           | mm             | mm                          | mm              | mm            | mm         | mm         |
| 445         |                 | 6      | -              | 2,80        | 4,10             | 4,20              | 4,00     | 1,85  | 2,9                             | 5,0          | 7,4            | 12,7                        | -               | 6,6           | -          | -          |
| 450         |                 | 8      | -              | 3,00        | 4,77             | 4,90              | 5,00     | 2,31  | 3,1                             | 7,1          | 8,6            | 14,3                        | 19,9            | 6,3           | 12,2       | 6,35       |
| 455         | <sup>1,10</sup> | 9,525  | $\frac{3}{8}$  | 5,72        | 8,53             | 8,66              | 6,35     | 3,28  | 3,3                             | 8,2          | 13,5           | 23,1                        | 33,7            | 11,0          | 21,6       | 11,15      |
| 462         | <sup>10</sup>   | 12,7   | $\frac{1}{2}$  | 7,75        | 11,30            | 11,43             | 8,51     | 4,45  | 3,9                             | 11,8         | 17,0           | 30,7                        | 44,9            | 15,3          | 29,5       | 15,3       |
| 501         | <sup>10</sup>   | 15,875 | $\frac{5}{8}$  | 9,65        | 13,28            | 13,41             | 10,16    | 5,08  | 4,1                             | 14,7         | 19,6           | 36,2                        | 52,8            | 18,2          | 34,8       | 18         |
| 513         | <sup>10</sup>   | 19,05  | $\frac{3}{4}$  | 11,68       | 15,62            | 15,75             | 12,07    | 5,72  | 4,6                             | 16,1         | 22,7           | 41,8                        | 61,3            | 21,0          | 40,5       | 20,9       |
| 548         | <sup>10</sup>   | 25,4   | 1              | 17,02       | 25,40            | 25,60             | 15,88    | 8,28  | 5,4                             | 21,0         | 36,0           | 67,5                        | 99,3            | 33,6          | 65,4       | 33,7       |
| 552         | <sup>10</sup>   | 30     | -              | 17,02       | 25,40            | 25,60             | 15,88    | 8,28  | 5,4                             | 21,0         | 36,0           | 67,5                        | 99,3            | 33,6          | 65,4       | 33,7       |
| 563         |                 | 31,75  | $1\frac{1}{4}$ | 19,56       | 29,00            | 29,20             | 19,05    | 10,19 | 6,1                             | 26,4         | 41,5           | 78,0                        | 114,7           | 38,6          | 75,3       | 38,7       |
| 577         |                 | 35     | -              | 19,60       | 27,00            | 27,20             | 19,05    | 10,19 | 6,1                             | 26,0         | 38,3           | 78,0                        | 114,7           | 41,8          | 78,5       | 41,8       |
| 596         |                 | 38,1   | $1\frac{1}{2}$ | 25,40       | 37,90            | 38,20             | 25,40    | 14,63 | 6,6                             | 33,4         | 53,0           | 101,3                       | 149,5           | 50,5          | 98,7       | 50,5       |
| 613         |                 | 44,45  | $1\frac{3}{4}$ | 30,99       | 46,50            | 46,80             | 27,94    | 15,90 | 7,4                             | 37,0         | 63,6           | 122,9                       | 182,9           | 62,0          | 122,0      | 62,3       |
| 652         |                 | 50,8   | 2              | 30,99       | 45,50            | 45,80             | 29,21    | 17,81 | 7,9                             | 42,2         | 63,6           | 121,7                       | 180,5           | 60,8          | 119,6      | 61,1       |
| 35          | <sup>10</sup>   | 9,525  | $\frac{3}{8}$  | 4,68        | 7,47             | 7,52              | 5,08     | 3,59  | 3,3                             | 9,1          | 13,2           | 22,0                        | 32,5            | 11,0          | 21,5       | 11,1       |
| 40          | <sup>10</sup>   | 12,7   | $\frac{1}{2}$  | 7,85        | 11,15            | 11,28             | 7,95     | 3,96  | 3,9                             | 12,0         | 17,8           | 30,1                        | 45,2            | 14,8          | 29,9       | 15,35      |
| 50          | <sup>10</sup>   | 15,875 | $\frac{5}{8}$  | 9,40        | 13,80            | 13,93             | 10,16    | 5,08  | 4,1                             | 15,0         | 20,5           | 38,7                        | 56,8            | 19,4          | 37,5       | 19,4       |
| 60          | <sup>10</sup>   | 19,05  | $\frac{3}{4}$  | 12,57       | 17,70            | 17,85             | 11,91    | 5,94  | 4,6                             | 18,0         | 25,4           | 48,3                        | 71,1            | 24,2          | 47,0       | 24,2       |
| 80          |                 | 25,4   | 1              | 15,75       | 22,50            | 22,70             | 15,88    | 7,92  | 5,4                             | 24,1         | 33,5           | 62,6                        | 92,0            | 31,3          | 60,6       | 31,3       |
| 100         |                 | 31,75  | $1\frac{1}{4}$ | 18,90       | 27,40            | 27,60             | 19,05    | 9,53  | 6,1                             | 30,1         | 40,4           | 76,3                        | 112,2           | 38,2          | 74,1       | 38,2       |
| 120         |                 | 38,1   | $1\frac{1}{2}$ | 25,22       | 35,30            | 35,60             | 22,23    | 11,10 | 6,6                             | 36,2         | 50,3           | 96,1                        | 141,9           | 48,2          | 94,0       | 48,2       |

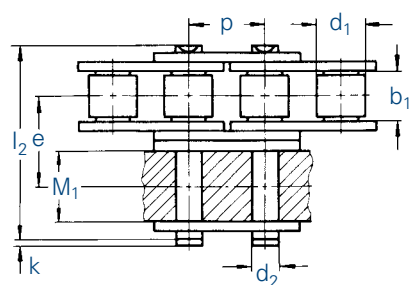
<sup>1</sup> with straight side plates    <sup>10</sup> can also be supplied in stainless steel    <sup>11</sup> Duplex pin    <sup>12</sup> Triplex pin

All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.

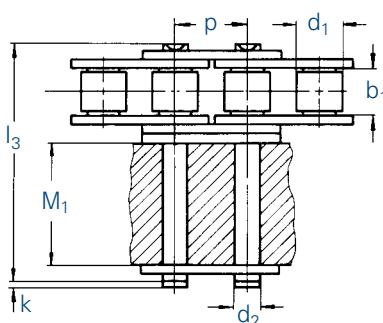
## Simplex chain

with duplex connecting link



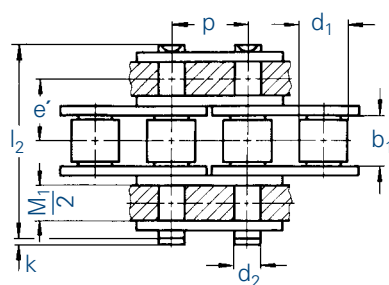
## Simplex chain

with triplex connecting link



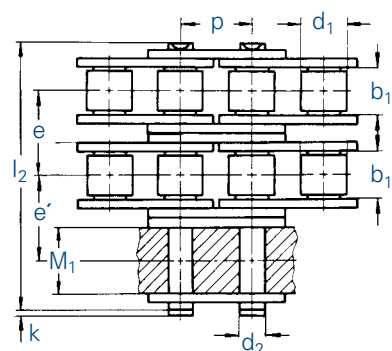
## Simplex chain

with duplex connecting link



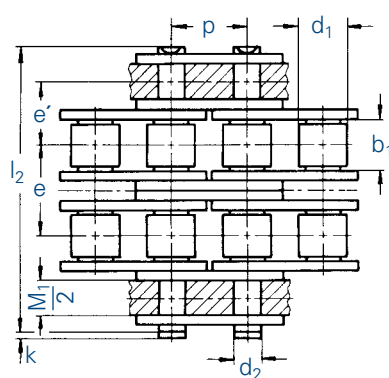
## Duplex chain

with triplex connecting link



## Duplex chain

with triplex connecting link



| Chain |               | Pitch  |      | Inner width         | Roller Ø            | Pin Ø               | Transverse pitch |       | Attachment width    |                     | Projection over connecting link | Pin length          |                     |
|-------|---------------|--------|------|---------------------|---------------------|---------------------|------------------|-------|---------------------|---------------------|---------------------------------|---------------------|---------------------|
|       |               | p      |      | b <sub>1</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | e                | e'    | M <sub>1</sub> max. | M <sub>2</sub> max. | k max.                          | l <sub>2</sub> max. | l <sub>3</sub> max. |
| No.   | Ind.          | mm     | inch | mm                  | mm                  | mm                  | mm               | mm    | mm                  | mm                  | mm                              | mm                  | mm                  |
| 455   | <sup>10</sup> | 9,525  | 3/8  | 5,72                | 6,35                | 3,28                | 10,24            | 7,24  | 8,5                 | -                   | 3,3                             | 23,8                | -                   |
| D 455 | <sup>10</sup> | 9,525  | 3/8  | 5,72                | 6,35                | 3,28                | 10,24            | 7,24  | 8,5                 | -                   | 3,3                             | -                   | 34,0                |
| 462   | <sup>10</sup> | 12,7   | 1/2  | 7,75                | 8,51                | 4,45                | 13,92            | 10,10 | 11,3                | 25,6                | 3,9                             | 31,0                | -                   |
| D 462 | <sup>10</sup> | 12,7   | 1/2  | 7,75                | 8,51                | 4,45                | 13,92            | 10,10 | 11,3                | -                   | 3,9                             | -                   | 44,9                |
| 501   | <sup>10</sup> | 15,875 | 5/8  | 9,65                | 10,16               | 5,08                | 16,59            | 11,62 | 13,3                | 30,0                | 4,1                             | 36,2                | -                   |
| D 501 | <sup>10</sup> | 15,875 | 5/8  | 9,65                | 10,16               | 5,08                | 16,59            | 11,62 | 13,3                | -                   | 4,1                             | -                   | 52,8                |
| 513   | <sup>10</sup> | 19,05  | 3/4  | 11,68               | 12,07               | 5,72                | 19,46            | 13,63 | 15,6                | 34,8                | 4,6                             | 42,2                | -                   |
| D 513 | <sup>10</sup> | 19,05  | 3/4  | 11,68               | 12,07               | 5,72                | 19,46            | 13,63 | 15,6                | -                   | 4,6                             | -                   | 61,7                |
| 548   | <sup>10</sup> | 25,4   | 1    | 17,02               | 15,88               | 8,28                | 31,88            | 22,30 | 25,4                | 56,8                | 5,4                             | 68,0                | -                   |
| D 548 | <sup>10</sup> | 25,4   | 1    | 17,02               | 15,88               | 8,28                | 31,88            | 22,30 | 25,4                | -                   | 5,4                             | -                   | 99,9                |

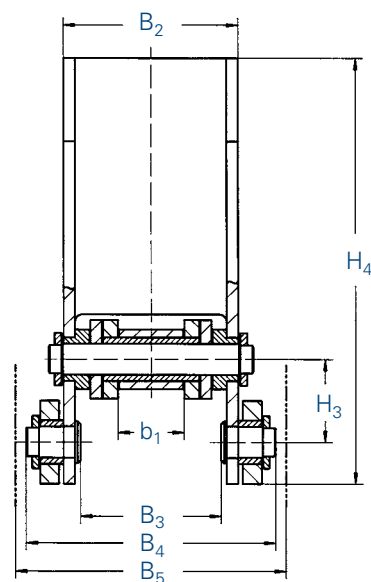
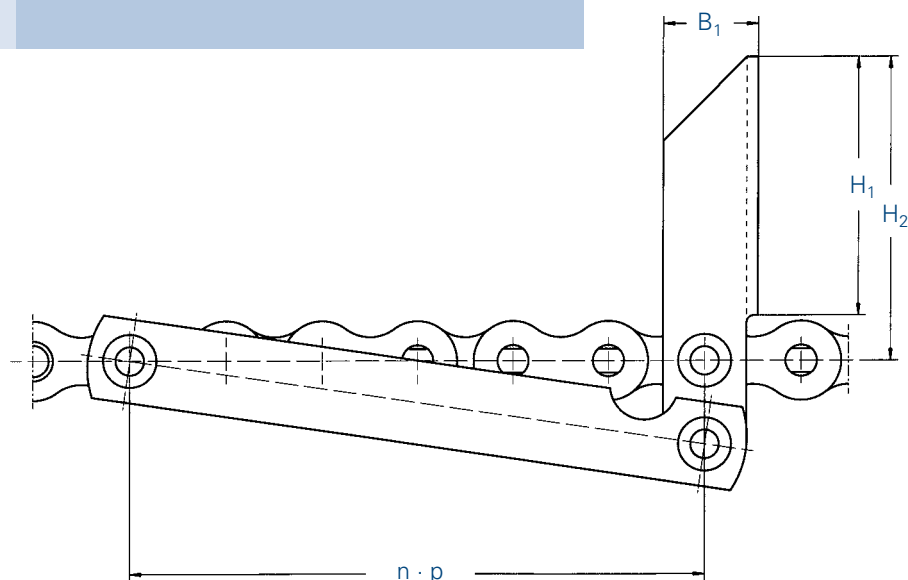
<sup>10</sup> can also be supplied in stainless steel

All designs can also be supplied as Marathon roller chains (maintenance-free)!

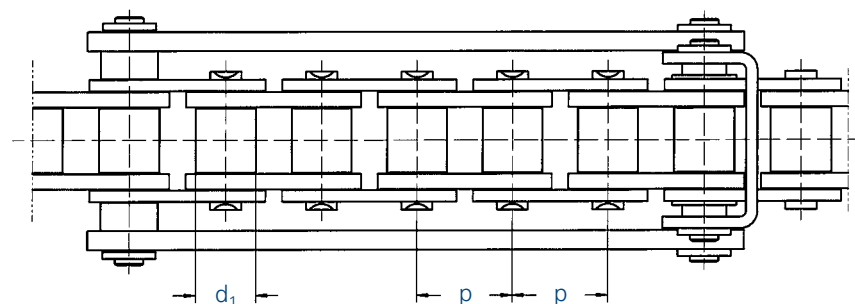
For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



During conveyance the WIPPERMANN pusher is at right angles to the chain. In the deflection phase it submerges under the transported material without damaging it.



recommended duct width

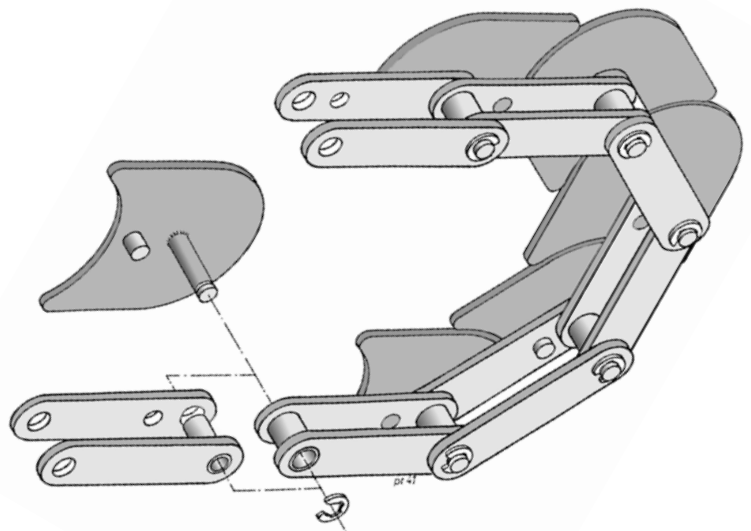
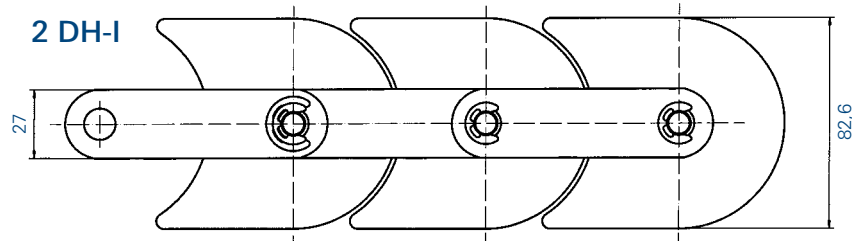
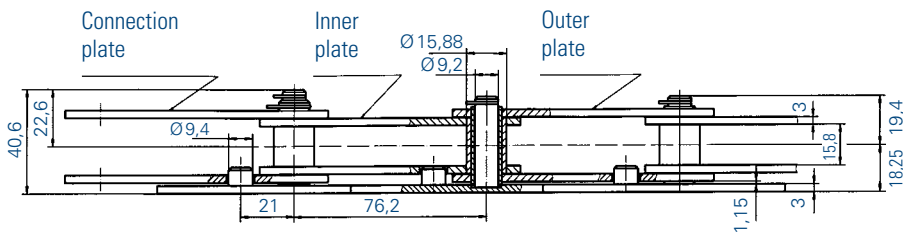


| Chain       |               | Sprockets          |                  | Pitch<br>p | Inner<br>width<br>b <sub>1</sub><br>min. | Roller<br>Ø<br>d <sub>1</sub><br>max. | Pusher dog dimensions |                |                |                |                |                |                |                |                |     | Thrust<br>max. |
|-------------|---------------|--------------------|------------------|------------|------------------------------------------|---------------------------------------|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|----------------|
|             |               | Number<br>of teeth | Hub<br>Ø<br>max. |            |                                          |                                       | B <sub>1</sub>        | B <sub>2</sub> | B <sub>3</sub> | B <sub>4</sub> | B <sub>5</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | H <sub>4</sub> | n   |                |
| No.         | Ind.          |                    | mm               | mm         | mm                                       | mm                                    | mm                    | mm             | mm             | mm             | mm             | mm             | mm             | mm             | mm             | mm  | kN             |
| 462 / M 120 | <sup>10</sup> | 20                 | 32               | 32         | 7,75                                     | 8,51                                  | 18,0                  | 25,0           | 19,0           | 35,0           | 40,0           | 22,0           | 29,0           | 11,0           | 46,0           | 5,0 | 0,5            |
| 501 / M 132 | <sup>10</sup> | 32                 | 80               | 80         | 9,65                                     | 10,16                                 | 18,0                  | 31,0           | 23,0           | 40,0           | 45,0           | 50,0           | 60,0           | 18,0           | 86,0           | 8,0 | 1,0            |
| 501 / M 133 | <sup>10</sup> | 24                 | 60               | 60         | 9,65                                     | 10,16                                 | 18,0                  | 31,0           | 23,0           | 40,0           | 45,0           | 50,0           | 60,0           | 14,0           | 82,0           | 6,0 | 1,0            |
| 548 / M 132 | <sup>10</sup> | 24                 | 90               | 90         | 17,02                                    | 15,88                                 | 25,0                  | 46,0           | 37,0           | 65,0           | 70,0           | 68,0           | 80,0           | 22,0           | 113,0          | 6,0 | 3,0            |

<sup>10</sup> can also be supplied in stainless steel

All designs can also be supplied as Marathon roller chains (maintenance-free)!

For details on orders and enquiries see page 115. For untoleranced dimensions DIN ISO 2768 c applies.



| Chain                                                                               | Weight | Minimum tensile strength |
|-------------------------------------------------------------------------------------|--------|--------------------------|
|  |        |                          |
| No.                                                                                 | kg/m   | kN                       |
| 2 DH-I                                                                              | 3,4    | 55,0                     |

The main advantage compared to previous solutions is that the top plates are no component parts of the inner and outer links of the actual chain.

The plates are attached in the hollow pin as a separate assembly part. This specific DBG M protected construction characteristic (DBG M 295 05 477.8) allows for the top plates to be replaced even with a tensioned chain, i.e. the chain does not have to be separated.

Due to an additional short pin attached to the top plate the plate is twist-secured. The floating assembly of the top plate can compensate minor height differences of the slideways.

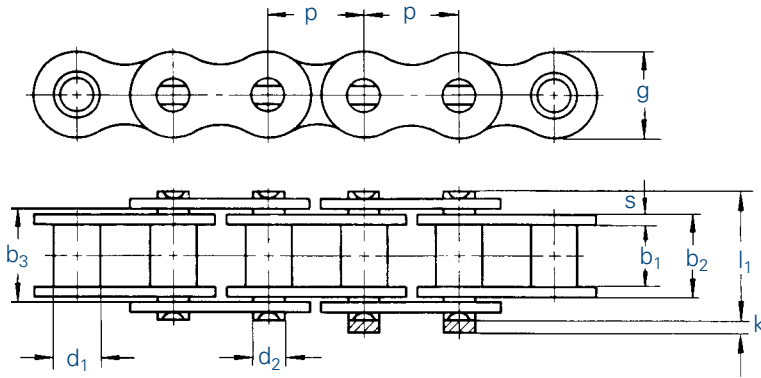
- Apart from that we have succeeded in considerably reducing the distance between the plates compared to previous solutions.
- The sickle-shaped conveyor plates allow unrestricted motion through narrow bends and curves.
- Owing to the special construction of the WIPPERMANN special top plate conveyor chain an identical run of the top plate and the basic chain is guaranteed.

- In order to facilitate assembly and disassembly, the top plates were mounted with circlips.
- The WIPPERMANN special top plate conveyor chain with its especially narrow chain plate construction ensures a larger bearing area of the top plates on the guide profiles.
- The top plates are coated and therefore have a high wear protection.
- The WIPPERMANN special top plate conveyor chain is fully compatible with other systems.

Top plate conveyor chains suitable for following curved paths are installed in particular for long conveyor distances and high loads.

Primarily, they are required by the beverage and food industry and by subcontractors to the automotive industry.

Sprockets on request.



Chain speeds with bush chains up to a pitch :

- of 20 mm ... up to 5 m/s
- of 40 mm ... up to 4 m/s
- more than 40 mm ... up to 3 m/s

| Chain |               | Pitch | Inner width         | Inner link width    | Outer plate width   | Bushing Ø           | Pin Ø               | Width over pin      | Projection over connecting link | Plate thickness | Plate height | Bearing area    | Minimum tensile strength DIN | Weight | Connecting links |
|-------|---------------|-------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------|-----------------|--------------|-----------------|------------------------------|--------|------------------|
|       |               | p     | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min. | d <sub>1</sub> max. | d <sub>2</sub> max. | l <sub>1</sub> max. | k                               | s               | g max.       | f               | F <sub>B</sub> min.          | q ≈    |                  |
| No.   | Ind.          | mm    | mm                  | mm                  | mm                  | mm                  | mm                  | mm                  | mm                              | mm              | mm           | cm <sup>2</sup> | kN                           | kg/m   | No.              |
| 200   | <sup>26</sup> | 15,0  | 14,0                | 18,50               | 19,00               | 9,0                 | 6,0                 | 26,0                | 2,0                             | 2,00            | 14,0         | 1,1             | 12,5                         | 1,25   | 4,7,111,12       |
| 203   | <sup>26</sup> | 20,0  | 16,0                | 22,50               | 23,00               | 12,0                | 8,0                 | 33,0                | 3,0                             | 3,00            | 19,0         | 1,8             | 25,0                         | 2,10   | 4,7,11,111,12    |
| 206   | <sup>26</sup> | 25,0  | 18,0                | 24,50               | 25,00               | 15,0                | 10,0                | 37,0                | 3,5                             | 3,00            | 24,0         | 2,5             | 31,5                         | 2,60   | 4,7,111,12       |
| 209   | <sup>26</sup> | 30,0  | 20,0                | 28,50               | 29,00               | 17,0                | 11,0                | 43,0                | 3,5                             | 4,00            | 28,0         | 3,1             | 40,0                         | 4,00   | 4,7,111,12       |
| 212   | <sup>26</sup> | 35,0  | 22,0                | 30,50               | 31,00               | 18,0                | 12,0                | 46,0                | 4,5                             | 4,00            | 30,0         | 3,7             | 50,0                         | 4,30   | 4,7,111,12       |
| 215   | <sup>26</sup> | 40,0  | 25,0                | 35,50               | 36,00               | 20,0                | 14,0                | 53,0                | 4,5                             | 5,00            | 35,0         | 5,0             | 63,0                         | 6,00   | 4,7,111,12       |
| 218   | <sup>26</sup> | 45,0  | 30,0                | 42,50               | 43,00               | 22,0                | 16,0                | 63,0                | 4,5                             | 6,00            | 40,0         | 6,8             | 80,0                         | 8,00   | 4,7,111,12       |

<sup>26</sup> Connecting link No. 111 (S) with double cottred pin, i.e. projection k on both chain sides

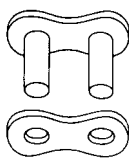
For details on orders and enquiries see page 115. Sprockets on request.

### Connecting links: According to DIN (...)



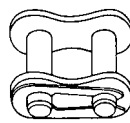
No. 4 (B)

Inner link



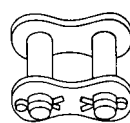
No. 7 (A)

Outer link  
(to be riveted)



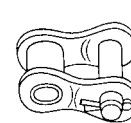
No. 11 (E)

Spring clip  
connecting link



No. 111 (S)

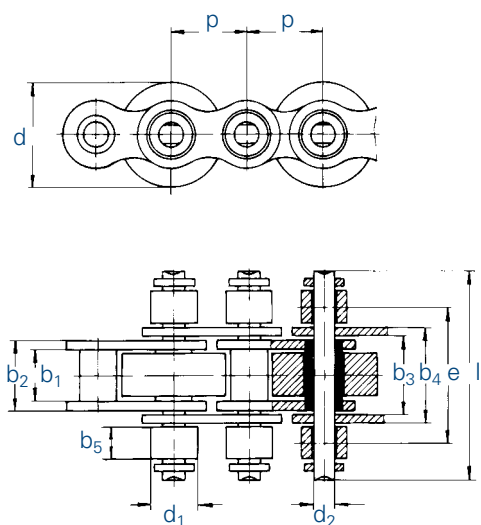
Connecting link  
with cottred pin



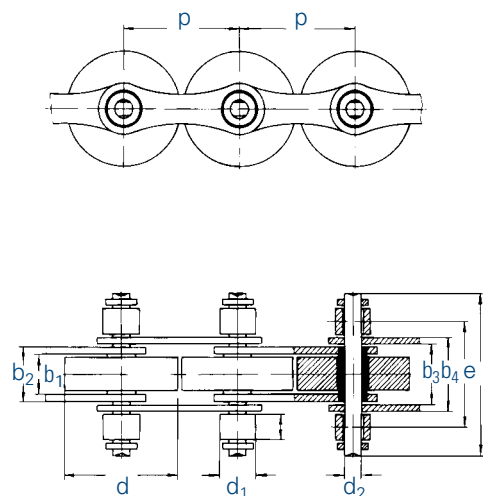
No. 12 (L)

Single  
cranked link

## Design E



## Double pitch roller chain Design L



| Chain    |      | Pitch |        | Inner width         | Inner link width    | Width between   over outer plates |                     | Support roller Ø | Pin Ø               | Transverse pitch | Plate height | Width over pin | Support roller width | Width over pin type I | Support roller width |
|----------|------|-------|--------|---------------------|---------------------|-----------------------------------|---------------------|------------------|---------------------|------------------|--------------|----------------|----------------------|-----------------------|----------------------|
|          |      | p     | Design | b <sub>1</sub> min. | b <sub>2</sub> max. | b <sub>3</sub> min.               | b <sub>4</sub> max. | d <sub>1</sub>   | d <sub>2</sub> max. | e                | g max.       | l max.         | b <sub>5</sub> max.  | l max.                | b <sub>5</sub> max.  |
| No.      | Ind. | mm    |        | mm                  | mm                  | mm                                | mm                  | mm               | mm                  | mm               | mm           | mm             | mm                   | mm                    | mm                   |
| 513 SF   |      | 19,05 | E      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,00            | 5,72                | 31,50            | 16,1         | 48,0           | 11,5                 | 43,0                  | 9,0                  |
| 548 SF   |      | 25,4  | E      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 44,50            | 21,0         | 65,0           | 12,5                 | -                     | -                    |
| 722 SF   |      | 38,1  | L      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,00            | 5,72                | 31,50            | 16,1         | 48,0           | 11,5                 | -                     | -                    |
| 728 SF   |      | 50,8  | L      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 44,50            | 21,0         | 65,0           | 12,5                 | -                     | -                    |
| D 513 SF |      | 19,05 | D      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,07            | 5,72                | 52,00            | 16,1         | 68,0           | 11,5                 | -                     | -                    |
| D 548 SF |      | 25,4  | D      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 76,76            | 21,0         | 97,0           | 12,5                 | -                     | -                    |
| T 455 SF | 27   | 9,525 | T      | 5,72                | 8,53                | -                                 | -                   | 6,35             | 3,28                | 20,48            | 8,2          | 34,0           | -                    | -                     | -                    |
| T 513 SF |      | 19,05 | T      | 11,68               | 15,62               | 15,80                             | 20,0                | 12,07            | 5,72                | 38,92            | 16,1         | 61,7           | -                    | -                     | -                    |
| T 548 SF |      | 25,4  | T      | 17,02               | 25,45               | 25,81                             | 32,0                | 15,88            | 8,28                | 63,76            | 21,0         | 99,9           | -                    | -                     | -                    |

### Accumulator chains (stainless steel)

|             |  |       |   |       |       |       |      |       |      |       |      |      |      |      |     |
|-------------|--|-------|---|-------|-------|-------|------|-------|------|-------|------|------|------|------|-----|
| 513 SF RF   |  | 19,05 | E | 11,68 | 15,62 | 15,80 | 20,0 | 12,00 | 5,72 | 31,50 | 16,1 | 48,0 | 11,5 | 43,0 | 9,0 |
| 548 SF RF   |  | 25,4  | E | 17,02 | 25,45 | 25,81 | 32,0 | 15,88 | 8,28 | 44,50 | 21,0 | 65,0 | 12,5 | -    | -   |
| 722 SF RF   |  | 38,1  | L | 11,68 | 15,62 | 15,80 | 20,0 | 12,00 | 5,72 | 31,50 | 16,1 | 48,0 | 11,5 | -    | -   |
| 728 SF RF   |  | 50,8  | L | 17,02 | 25,45 | 25,81 | 32,0 | 15,88 | 8,28 | 44,50 | 21,0 | 65,0 | 12,5 | -    | -   |
| T 513 SF RF |  | 19,05 | T | 11,68 | 15,62 | -     | -    | 12,07 | 5,72 | 38,92 | 16,1 | 61,7 | -    | -    | -   |
| T 548 SF RF |  | 25,4  | T | 17,02 | 25,45 | -     | -    | 15,88 | 8,28 | 63,76 | 21,0 | 99,9 | -    | -    | -   |

<sup>27</sup> Different from the drawing: No inner links in the middle strand! Roller width: 8,5 mm.

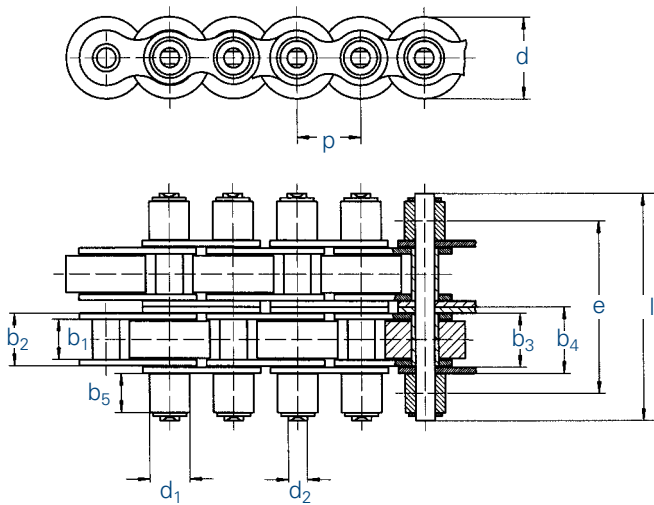
Sprockets are available for all accumulator chains!

Connecting links with securing circlips.

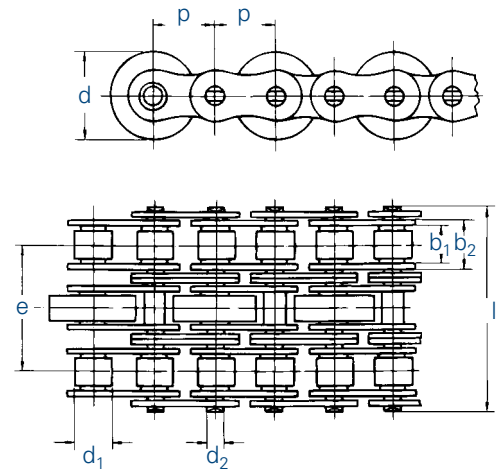
Our connecting links always have the same length l as the ordinary pins.

Temperature range: - 30 to 100°C for steel conveyor rollers  
- 10 to 60°C for plastic conveyor rollers

## Design D



## Design T



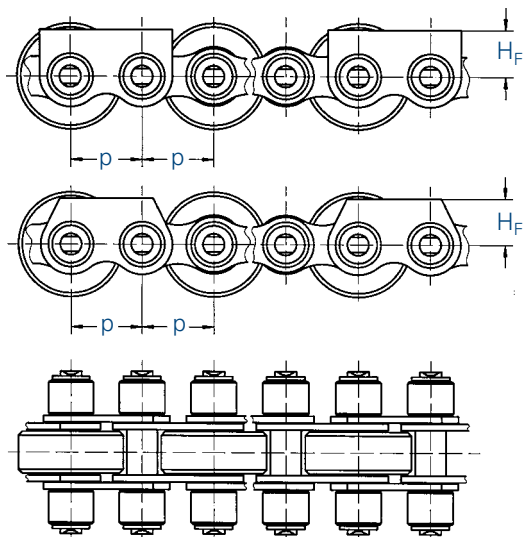
| Width<br>over pin<br>type II | Support<br>roller<br>roller | Conveyor rollers         |        |           |          |             |              | Minimum<br>tensile<br>strength<br><br>F <sub>B</sub><br>min. | Maximum load per m<br>conveyor chain with 10 m<br>conveyor length |         |
|------------------------------|-----------------------------|--------------------------|--------|-----------|----------|-------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------|
|                              |                             | Designation for material |        |           | Diameter |             |              |                                                                                                                                                | Steel                                                             | Plastic |
| I<br>max.                    | b <sub>5</sub><br>max.      | Steel                    | PA 6.6 | Vestamide | d        | type I<br>d | type II<br>d |                                                                                                                                                |                                                                   |         |
| mm.                          | mm                          |                          |        |           | mm       | mm          | mm           | kN                                                                                                                                             | kg                                                                | kg      |
| 40,0                         | 7,5                         | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 29,00                                                                                                                                          | 300                                                               | 260     |
| -                            | -                           | SF                       | SFK    | SFV       | 38,5     | -           | -            | 60,00                                                                                                                                          | 600                                                               | 500     |
| -                            | -                           | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 29,00                                                                                                                                          | 300                                                               | 260     |
| -                            | -                           | SF                       | SFK    | SFV       | 38,5     | 40,0        | 50,0         | 60,00                                                                                                                                          | 600                                                               | 500     |
| -                            | -                           | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 57,80                                                                                                                                          | 600                                                               | 520     |
| -                            | -                           | SF                       | SFK    | SFV       | 38,5     | -           | -            | 120,00                                                                                                                                         | 1200                                                              | 1000    |
| -                            | -                           | SF                       | SFK    | SFV       | 9,2      | 15,0        | -            | 16,80                                                                                                                                          | 100                                                               | 100     |
| -                            | -                           | SF                       | SFK    | SFV       | 24,0     | 26,0        | 28,0         | 60,00                                                                                                                                          | 600                                                               | 260     |
| -                            | -                           | SF                       | SFK    | SFV       | 38,5     | -           | -            | 120,00                                                                                                                                         | 1200                                                              | 500     |

## Accumulator chains (stainless steel)

|      |     |       |        |        |      |      |      |       |     |     |
|------|-----|-------|--------|--------|------|------|------|-------|-----|-----|
| 40,0 | 7,5 | SF RF | SFK RF | SFV RF | 24,0 | 26,0 | 28,0 | 18,50 | 200 | 200 |
| -    | -   | SF RF | SFK RF | SFV RF | 38,5 | -    | -    | 40,00 | 300 | 300 |
| -    | -   | SF RF | SFK RF | SFV RF | 24,0 | 26,0 | 28,0 | 18,50 | 200 | 200 |
| -    | -   | SF RF | SFK RF | SFV RF | 38,5 | 40,0 | 50,0 | 40,00 | 300 | 300 |
| -    | -   | SF RF | SFK RF | SFV RF | 24,0 | 26,0 | 28,0 | 31,45 | 400 | 400 |
| -    | -   | SF RF | SFK RF | SFV RF | 38,5 | -    | -    | 68,00 | 600 | 600 |

The load per m applies for 10 m conveyor distance per double chain strand. The load may be proportionally increased for shorter chain strands and must be proportionally decreased for longer conveyor distances: e.g. 5 m conveyor distance = double load, 20 m conveyor distance = half load.

Maximum conveyor distances 25 - 30 m. The installation of guide plates is recommended as of 15 m (see page 50).



**548 SF**

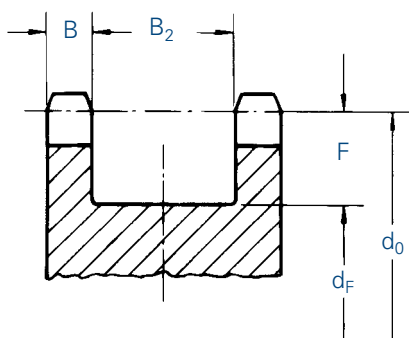
**513 SF**

The guide plate distance is an even multiple of the pitch, e.g.  $T = 4 p$

| Chain<br>⚙ | p     | H <sub>F</sub> |
|------------|-------|----------------|
| No.        | mm    | mm             |
| 513 SF     | 19,05 | 12,6 ± 0,1     |
| 548 SF     | 25,40 | 18,0 ± 0,1     |

Design with guide plates

## AXIAL PROFILE OF SPROCKETS FOR ACCUMULATOR CHAINS



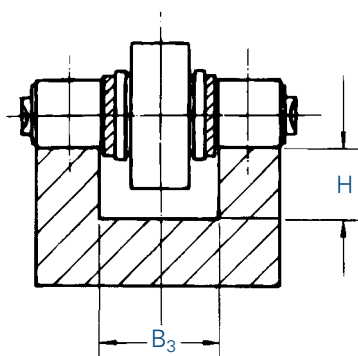
$$d_F = d_0 - 2 F$$

$$F = \frac{d}{2} + 2$$

| Chain<br>⚙ | B    | B <sub>2</sub> | F    |
|------------|------|----------------|------|
| No.        | mm   | mm             | mm   |
| T 455      | 5,2  | 15,3           | 8,0  |
| 513 SF     | 10,6 | 20,8           | 16,0 |
| D 513 SF   | 10,6 | 42,0           | 16,0 |
| T 513 SF   | 10,8 | 28,2           | 16,0 |
| 548 SF     | 12,0 | 33,0           | 22,0 |
| D 548 SF   | 12,0 | 66,0           | 22,0 |
| T 548 SF   | 15,8 | 48,0           | 22,0 |
| 722 SF     | 10,6 | 20,8           | 16,0 |
| 728 SF     | 12,0 | 33,0           | 27,0 |

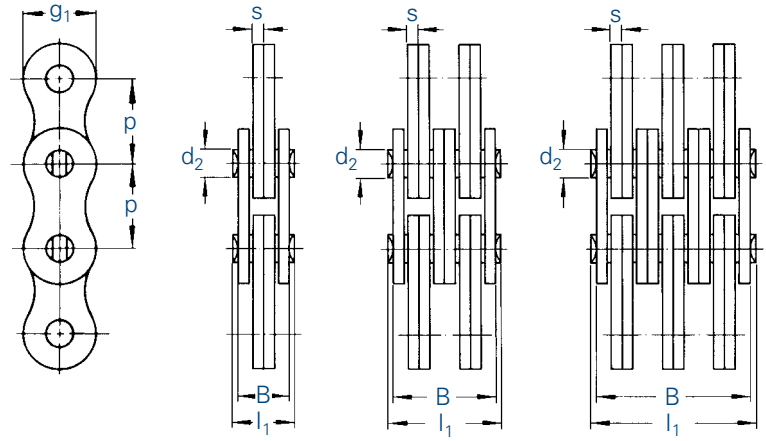
Sprockets are available for all accumulator chains.

## CHAIN GUIDE FOR ACCUMULATOR CHAINS



| Chain<br>⚙ | B <sub>3</sub> | H    |
|------------|----------------|------|
| No.        | mm             | mm   |
| 513 SF     | 20,8           | 15,0 |
| 513 SFK    | 20,8           | 15,0 |
| D 513 SF   | 40,5           | 15,0 |
| 548 SF     | 33,0           | 20,0 |
| D 548 SF   | 66,0           | 20,0 |
| 722 SF     | 20,8           | 15,0 |
| 728 SF     | 33,0           | 27,0 |

Different designs, roller diameters and pin lengths are available on request



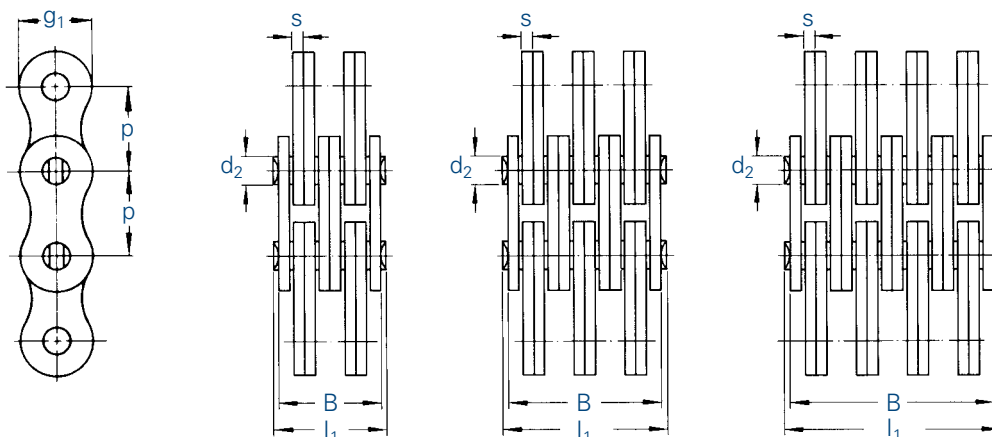
### Abstract from DIN 8152

Chains may be assembled with chain parts according to DIN 8187. Therefore the actual pitch may deviate from the nominal pitch. The permissible length deviation refers to the length specification of the manufacturer and is  $\pm 0,25\%$  under the measuring force.

| Chain                                                                              |      | DIN     | Nominal pitch |      | Lacing  | Width over             |           | Pin<br>Ø | Plate                  |        | Effective<br>length over<br>100 x<br>pitch* | Bearing<br>area | Minimum<br>tensile<br>strength<br>DIN | Weight |
|------------------------------------------------------------------------------------|------|---------|---------------|------|---------|------------------------|-----------|----------|------------------------|--------|---------------------------------------------|-----------------|---------------------------------------|--------|
|  |      |         | p             |      |         | Pins                   | Plates    |          | thickness              | height |                                             |                 |                                       |        |
|                                                                                    |      |         |               |      |         | l <sub>1</sub><br>max. | B<br>max. |          | d <sub>2</sub><br>max. | s      |                                             |                 |                                       |        |
| No.                                                                                | Ind. | No.     | mm            | inch |         | mm                     | mm        | mm       | mm                     | mm     | mm                                          | cm²             | kN                                    | kg/m   |
| F 122                                                                              |      | LL 0822 | 12,7          | ½    | 2 x 2   | 9,0                    | 6,4       | 4,45     | 1,55                   | 10,7   | 1260                                        | 0,138           | 18,0                                  | 0,39   |
| F 124                                                                              |      | LL 0844 | 12,7          | ½    | 4 x 4   | 15,2                   | 12,8      | 4,45     | 1,55                   | 10,7   | 1260                                        | 0,276           | 36,0                                  | 0,74   |
| F 126                                                                              |      | LL 0866 | 12,7          | ½    | 6 x 6   | 21,4                   | 19,0      | 4,45     | 1,55                   | 10,7   | 1260                                        | 0,414           | 54,0                                  | 1,10   |
| F 152                                                                              |      | LL 1022 | 15,875        | ⅝    | 2 x 2   | 10,0                   | 7,2       | 5,08     | 1,65                   | 12,6   | 1580                                        | 0,175           | 26,0                                  | 0,50   |
| F 154                                                                              |      | LL 1044 | 15,875        | ⅝    | 4 x 4   | 17,1                   | 14,5      | 5,08     | 1,65                   | 12,6   | 1580                                        | 0,349           | 50,0                                  | 0,96   |
| F 156                                                                              |      | LL 1066 | 15,875        | ⅝    | 6 x 6   | 24,1                   | 21,5      | 5,08     | 1,65                   | 12,6   | 1580                                        | 0,524           | 78,0                                  | 1,39   |
| F 192                                                                              |      | LL 1222 | 19,05         | ¾    | 2 x 2   | 10,7                   | 7,8       | 5,72     | 1,83                   | 14,7   | 1892                                        | 0,209           | 33,0                                  | 0,59   |
| F 194                                                                              |      | LL 1244 | 19,05         | ¾    | 4 x 4   | 18,1                   | 15,2      | 5,72     | 1,83                   | 14,7   | 1892                                        | 0,419           | 66,0                                  | 1,15   |
| F 196                                                                              |      | LL 1266 | 19,05         | ¾    | 6 x 6   | 25,4                   | 22,6      | 5,72     | 1,83                   | 14,7   | 1892                                        | 0,628           | 99,0                                  | 1,70   |
| F 194 S                                                                            |      | -       | 19,05         | ¾    | 4 x 4   | 21,0                   | 18,6      | 5,98     | 2,25                   | 14,7   | 1905                                        | 0,515           | 76,5                                  | 1,40   |
| F 196 S                                                                            |      | -       | 19,05         | ¾    | 6 x 6   | 31,5                   | 27,8      | 5,98     | 2,25                   | 14,7   | 1905                                        | 0,772           | 115,0                                 | 2,10   |
| F 252                                                                              |      | LL 1622 | 25,4          | 1    | 2 x 2   | 17,2                   | 12,8      | 8,28     | 3,00                   | 21,1   | 2532                                        | 0,500           | 70,0                                  | 1,56   |
| F 254                                                                              |      | LL 1644 | 25,4          | 1    | 4 x 4   | 29,3                   | 25,6      | 8,28     | 3,00                   | 21,1   | 2532                                        | 0,994           | 140,0                                 | 3,04   |
| F 256                                                                              |      | LL 1666 | 25,4          | 1    | 6 x 6   | 41,3                   | 37,5      | 8,28     | 3,00                   | 21,1   | 2532                                        | 1,490           | 210,0                                 | 4,53   |
| F 312                                                                              |      | LL 2022 | 31,75         | 1 ¼  | 2 x 2   | 20,3                   | 16,0      | 10,19    | 3,75                   | 25,4   | 3170                                        | 0,750           | 105,0                                 | 2,01   |
| F 314                                                                              |      | LL 2044 | 31,75         | 1 ¼  | 4 x 4   | 36,5                   | 32,0      | 10,19    | 3,75                   | 25,4   | 3170                                        | 1,500           | 210,0                                 | 3,93   |
| F 316                                                                              |      | LL 2066 | 31,75         | 1 ¼  | 6 x 6   | 51,5                   | 48,0      | 10,19    | 3,75                   | 25,4   | 3170                                        | 2,250           | 315,0                                 | 5,86   |
| F 382                                                                              |      | LL 2422 | 38,1          | 1 ½  | 2 x 2   | 26,5                   | 21,0      | 14,63    | 5,00                   | 33,4   | 3797                                        | 1,460           | 175,0                                 | 4,18   |
| F 384                                                                              |      | LL 2444 | 38,1          | 1 ½  | 4 x 4   | 46,5                   | 42,0      | 14,63    | 5,00                   | 33,4   | 3797                                        | 2,930           | 350,0                                 | 8,48   |
| F 386                                                                              |      | LL 2466 | 38,1          | 1 ½  | 6 x 6   | 67,5                   | 62,0      | 14,63    | 5,00                   | 33,4   | 3797                                        | 4,390           | 525,0                                 | 12,20  |
| F 502                                                                              |      | LL 3222 | 50,8          | 2    | 2 x 2   | 30,5                   | 25,0      | 17,81    | 6,00                   | 43,0   | 5070                                        | 2,140           | 265,0                                 | 6,73   |
| F 504                                                                              |      | LL 3244 | 50,8          | 2    | 4 x 4   | 54,5                   | 50,0      | 17,81    | 6,00                   | 43,0   | 5070                                        | 4,280           | 530,0                                 | 13,10  |
| F 506                                                                              |      | LL 3266 | 50,8          | 2    | 6 x 6   | 80,5                   | 74,0      | 17,81    | 6,00                   | 43,0   | 5070                                        | 6,420           | 800,0                                 | 19,50  |
| F 508                                                                              |      | LL 3288 | 50,8          | 2    | 8 x 8   | 105,5                  | 99,0      | 17,81    | 6,00                   | 43,0   | 5070                                        | 8,560           | 1050,0                                | 25,80  |
| F 501                                                                              |      | LL 3110 | 50,8          | 2    | 10 x 10 | 130,0                  | 123,0     | 17,81    | 6,00                   | 43,0   | 5070                                        | 10,850          | 1330,0                                | 31,56  |
| F 632                                                                              |      | LL 4022 | 63,5          | 2 ½  | 2 x 2   | 44,7                   | 33,2      | 22,89    | 8,00                   | 52,0   | 6335                                        | 3,525           | 422,0                                 | 10,51  |
| F 634                                                                              |      | LL 4044 | 63,5          | 2 ½  | 4 x 4   | 77,9                   | 65,6      | 22,89    | 8,00                   | 52,0   | 6335                                        | 7,050           | 845,0                                 | 20,29  |
| F 636                                                                              |      | LL 4066 | 63,5          | 2 ½  | 6 x 6   | 111,1                  | 98,0      | 22,89    | 8,00                   | 52,0   | 6335                                        | 10,575          | 1270,0                                | 29,74  |
| F 638                                                                              |      | LL 4088 | 63,5          | 2 ½  | 8 x 8   | 136,0                  | 130,4     | 22,89    | 8,00                   | 52,0   | 6335                                        | 14,100          | 1690,0                                | 39,30  |

\* Chain length tolerance  $\pm 0,25\%$  of uncoiled chain under measuring force.

For ordering examples, end links and end pins see page 53.



| Chain    |      | Nominal pitch |      | Lacing | Width over          |        | Pin Ø               | Plate     |                     | Effective length over 100 x pitch* | Bearing area    | Minimum tensile strength | Weight |
|----------|------|---------------|------|--------|---------------------|--------|---------------------|-----------|---------------------|------------------------------------|-----------------|--------------------------|--------|
|          |      | p             |      |        | Pins                | Plates |                     | thickness | height              |                                    | f ≈             | F <sub>B</sub> min.      | q ≈    |
| No.      | Ind. | mm            | inch |        | l <sub>1</sub> max. | B max. | d <sub>2</sub> max. | s         | g <sub>1</sub> max. | mm                                 | cm <sup>2</sup> | kN                       | kg/m   |
| FU 154   |      | 15,875        | 5/8  | 4 x 4  | 17,1                | 14,5   | 5,08                | 1,65      | 14,4                | 1596                               | 0,350           | 52,0                     | 1,2    |
| FU 156   |      | 15,875        | 5/8  | 6 x 6  | 24,1                | 21,5   | 5,08                | 1,65      | 14,4                | 1596                               | 0,524           | 78,0                     | 1,8    |
| FU 158   |      | 15,875        | 5/8  | 8 x 8  | 30,9                | 28,0   | 5,08                | 1,65      | 14,4                | 1596                               | 0,699           | 102,0                    | 2,3    |
| FU 156 S |      | 15,875        | 5/8  | 6 x 6  | 27,5                | 25,0   | 5,08                | 2,05      | 14,7                | 1596                               | 0,625           | 83,5                     | 2,1    |
| FU 194   |      | 19,05         | 3/4  | 4 x 4  | 18,1                | 15,2   | 5,72                | 1,83      | 16,1                | 1907                               | 0,419           | 66,0                     | 1,4    |
| FU 196   |      | 19,05         | 3/4  | 6 x 6  | 25,4                | 22,6   | 5,72                | 1,83      | 16,1                | 1907                               | 0,628           | 99,0                     | 2,3    |
| FU 196 S |      | 19,05         | 3/4  | 6 x 6  | 31,7                | 28,8   | 6,50                | 2,35      | 18,1                | 1907                               | 0,917           | 130,0                    | 2,9    |
| FU 254   |      | 25,4          | 1    | 4 x 4  | 29,3                | 25,6   | 8,28                | 3,00      | 23,0                | 2550                               | 0,994           | 140,0                    | 3,5    |
| FU 256   |      | 25,4          | 1    | 6 x 6  | 41,3                | 37,5   | 8,28                | 3,00      | 23,0                | 2550                               | 1,490           | 210,0                    | 5,0    |
| FU 258   |      | 25,4          | 1    | 8 x 8  | 53,1                | 49,0   | 8,28                | 3,00      | 23,0                | 2550                               | 1,987           | 280,0                    | 6,8    |

\* Chain length tolerance ± 0,25 % of uncoiled chain under measuring force.

For ordering examples, end links and end pins see page 53. For information on the selection of chain sizes see pages 99 + 100.

## LEAF CHAINS HEAVY DUTY DESIGN U TO WORKS-STANDARD

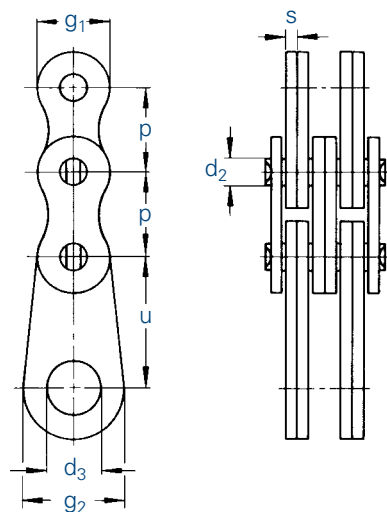
With chains of this type all plates are mounted with a sliding fit and are also secured with laterally attached riveted washers. This design guarantees an even load distribution and reduces the bending load of the pin. These chains have been designed to transport heavy loads under harsh conditions. They are particularly suitable for such applications due to their high fatigue strength.

| Chain   |      | Nominal pitch |       | Lacing  | Width over          |        | Pin Ø               | Plate     |                     | Effective length over 100 x pitch* | Bearing area    | Minimum tensile strength | Weight |
|---------|------|---------------|-------|---------|---------------------|--------|---------------------|-----------|---------------------|------------------------------------|-----------------|--------------------------|--------|
|         |      | p             |       |         | Pins                | Plates |                     | thickness | height              |                                    | f ≈             | F <sub>B</sub> min.      | q ≈    |
| No.     | Ind. | mm            | inch  |         | l <sub>1</sub> max. | B max. | d <sub>2</sub> max. | s         | g <sub>1</sub> max. | mm                                 | cm <sup>2</sup> | kN                       | kg/m   |
| F 384 U |      | 38,1          | 1 1/2 | 4 x 4   | 53,2                | 42,0   | 14,63               | 5,00      | 33,4                | 3802                               | 2,926           | 354,0                    | 9,1    |
| F 386 U |      | 38,1          | 1 1/2 | 6 x 6   | 75,2                | 62,0   | 14,63               | 5,00      | 33,4                | 3802                               | 4,389           | 540,0                    | 12,5   |
| F 388 U |      | 38,1          | 1 1/2 | 8 x 8   | 94,2                | 83,0   | 14,63               | 5,00      | 33,4                | 3802                               | 5,852           | 700,0                    | 16,5   |
| F 504 U |      | 50,8          | 2     | 4 x 4   | 60,2                | 50,0   | 17,81               | 6,00      | 43,0                | 5073                               | 4,274           | 530,0                    | 13,5   |
| F 506 U |      | 50,8          | 2     | 6 x 6   | 87,2                | 74,0   | 17,81               | 6,00      | 43,0                | 5073                               | 6,412           | 800,0                    | 20,0   |
| F 508 U |      | 50,8          | 2     | 8 x 8   | 111,2               | 99,0   | 17,81               | 6,00      | 43,0                | 5073                               | 8,549           | 1050,0                   | 26,5   |
| F 501 U |      | 50,8          | 2     | 10 x 10 | 135,0               | 123,0  | 17,81               | 6,00      | 43,0                | 5073                               | 10,686          | 1330,0                   | 33,1   |
| F 634 U |      | 63,5          | 2 1/2 | 4 x 4   | 81,2                | 70,0   | 22,89               | 8,00      | 52,0                | 6340                               | 5,494           | 845,0                    | 19,4   |
| F 636 U |      | 63,5          | 2 1/2 | 6 x 6   | 112,2               | 101,0  | 22,89               | 8,00      | 52,0                | 6340                               | 10,990          | 1270,0                   | 29,1   |
| F 638 U |      | 63,5          | 2 1/2 | 8 x 8   | 146,0               | 135,0  | 22,89               | 8,00      | 52,0                | 6340                               | 14,650          | 1690,0                   | 38,8   |

\* Chain length tolerance ± 0,25 % of uncoiled chain under measuring force.

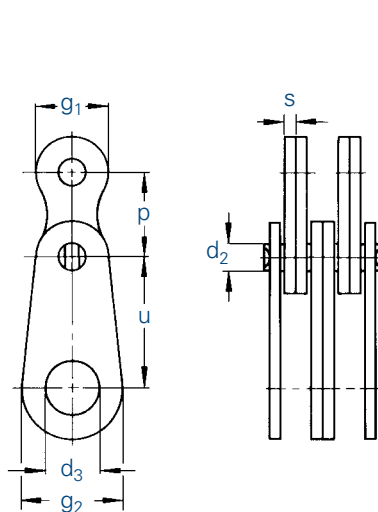
### Inner end link

4 x 4

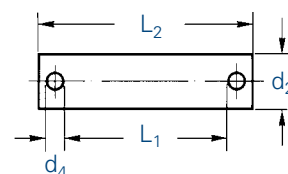


### Outer end link

4 x 4



### Connecting pin



Leaf chains are only supplied with end links on customers' request. The design with either outer or inner end link must be stated in the order.

### Design of chain ends:

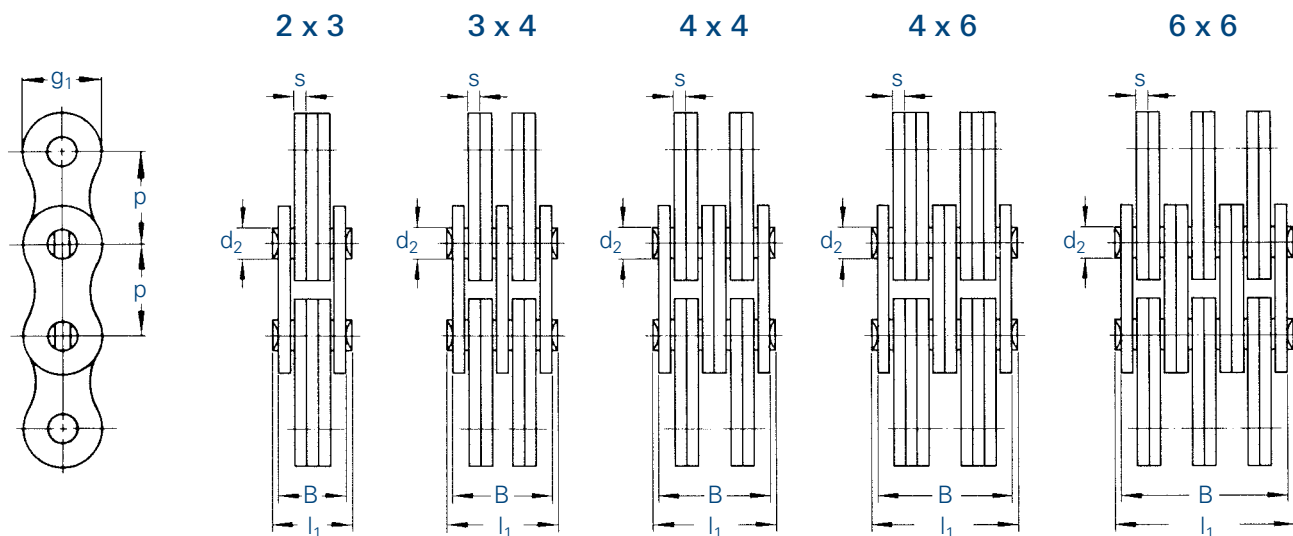
#### Only the normal links are counted

- A Both sides with inner end links (uneven number of links)
- B Both sides with outer end links (uneven number of links)
- C One side with inner end link, other side with outer end link (even number of links)
- D One side with inner end link, other side with inner link (even number of links)
- E One side with outer end link, other side with outer link (even number of links)
- F One side with inner end link, other side with outer link (uneven number of links)
- G One side with outer end link, other side with inner link (uneven number of links)
- H Both sides with inner links (uneven number of links)
- I Both sides with outer links (uneven number of links)
- K One side with inner link, other side with outer link (even number of links)

Designation of a leaf chain design A with 25,4 mm pitch, combination 4 x 4, 45 normal links and end links on both sides:  
F 254 A x 45

| Chain   |      | Nominal pitch |       | End plates |                |                |                |                |      |                |                | Connecting pins |                |                |                |                |                |                |                |
|---------|------|---------------|-------|------------|----------------|----------------|----------------|----------------|------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|         |      |               |       | u          | d <sub>2</sub> | d <sub>3</sub> | g <sub>1</sub> | g <sub>2</sub> | s    | d <sub>2</sub> | d <sub>4</sub> | 2 x 2           |                | 4 x 4          |                | 6 x 6          |                | 8 x 8          |                |
|         |      |               |       |            |                |                |                |                |      |                |                | L <sub>1</sub>  | L <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> |
| No.     | Ind. | mm            | inch  | mm         | mm             | mm             | mm             | mm             | mm   | mm             | mm             | mm              | mm             | mm             | mm             | mm             | mm             | mm             | mm             |
| F 12    |      | 12,7          | 1/2   | 30         | 4,45           | 10,0           | 10,5           | 20             | 1,55 | 4,45           | 1,6            | 6,8             | 13,0           | 13,6           | 19,8           | 20,4           | 26,6           | -              | -              |
| F 15    |      | 15,875        | 5/8   | 30         | 5,08           | 10,0           | 12,5           | 20             | 1,70 | 5,08           | 1,6            | 7,4             | 13,6           | 14,8           | 21,0           | 21,8           | 28,0           | -              | -              |
| F 19    |      | 19,05         | 3/4   | 30         | 5,72           | 10,0           | 14,5           | 20             | 1,80 | 5,72           | 1,6            | 8,0             | 14,2           | 15,4           | 21,6           | 22,9           | 29,1           | -              | -              |
| F 25    |      | 25,4          | 1     | 45         | 8,28           | 16,0           | 21,0           | 35             | 3,00 | 8,28           | 3,4            | 13,0            | 23,8           | 25,9           | 36,7           | 38,0           | 48,8           | 51,0           | 61,8           |
| F 31    |      | 31,75         | 1 1/4 | 45         | 10,19          | 16,0           | 24,5           | 35             | 3,80 | 10,19          | 3,4            | 16,4            | 27,2           | 32,4           | 43,2           | 48,5           | 59,3           | 64,8           | 75,6           |
| F 38    |      | 38,1          | 1 1/2 | 60         | 14,63          | 26,0           | 33,0           | 50             | 5,00 | 14,63          | 4,2            | 21,3            | 33,7           | 42,4           | 54,8           | 63,5           | 75,9           | 84,8           | 97,2           |
| F 50    |      | 50,8          | 2     | 70         | 17,81          | 36,0           | 43,0           | 70             | 6,00 | 17,81          | 4,2            | 25,5            | 37,9           | 50,5           | 62,9           | 75,5           | 87,9           | 100,7          | 113,0          |
| F 63    |      | 63,5          | 2 1/2 | 90         | 22,89          | 45,0           | 52,0           | 80             | 8,00 | 22,89          | 5,2            | -               | -              | 66,4           | 86,8           | 99,6           | 120,0          | 132,8          | 153,2          |
| FU 12   |      | 12,7          | 1/2   | 30         | 4,45           | 10,0           | 11,5           | 20             | 1,55 | 4,45           | 1,6            | -               | -              | 13,6           | 19,8           | 20,4           | 26,6           | -              | -              |
| FU 15   |      | 15,875        | 5/8   | 30         | 5,08           | 10,0           | 14,5           | 20             | 1,70 | 5,08           | 1,6            | -               | -              | 14,8           | 21,0           | 21,8           | 28,0           | 28,3           | 34,5           |
| FU 15 S |      | 15,875        | 5/8   | 20         | 5,08           | 8,3            | 14,7           | 18             | 2,00 | 5,08           | 1,6            | -               | -              | -              | -              | 25,6           | 31,8           | -              | -              |
| FU 19   |      | 19,05         | 3/4   | 30         | 5,72           | 10,0           | 15,4           | 20             | 1,80 | 5,72           | 1,6            | -               | -              | 15,4           | 21,6           | 22,9           | 29,1           | -              | -              |
| FU 19 S |      | 19,05         | 3/4   | 25         | 6,50           | 10,3           | 18,0           | 20             | 2,30 | 6,50           | 1,6            | -               | -              | 19,6           | 25,8           | 29,3           | 35,5           | -              | -              |
| FU 25   |      | 25,4          | 1     | 45         | 8,28           | 16,0           | 21,0           | 35             | 3,00 | 8,28           | 3,4            | -               | -              | 25,9           | 36,7           | 38,0           | 48,8           | 51             | 61,8           |
| F 38 U  |      | 38,1          | 1 1/2 | 60         | 14,63          | 26,0           | 33,0           | 50             | 5,00 | 14,63          | 4,2            | -               | -              | 48,4           | 61,0           | 70,0           | 82,4           | 90,8           | 103,2          |
| F 50 U  |      | 50,8          | 2     | 70         | 17,81          | 36,0           | 43,0           | 70             | 6,00 | 17,81          | 4,2            | -               | -              | 56,5           | 68,9           | 81,5           | 93,9           | 106,8          | 119,2          |
| F 63 U  |      | 63,5          | 2 1/2 | 90         | 22,89          | 45,0           | 52,0           | 80             | 8,00 | 22,89          | 5,2            | -               | -              | 72,4           | 92,8           | 105,6          | 126,0          | 138,8          | 159,2          |

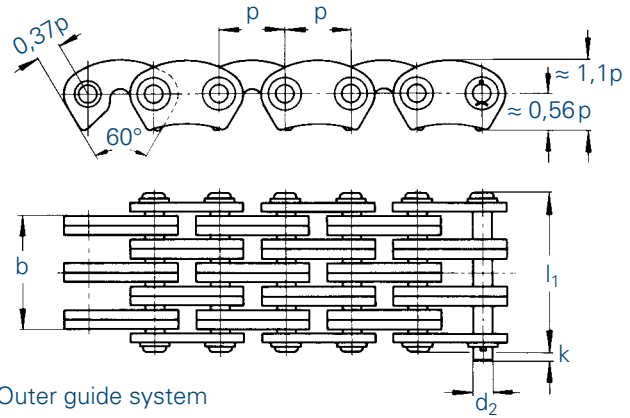
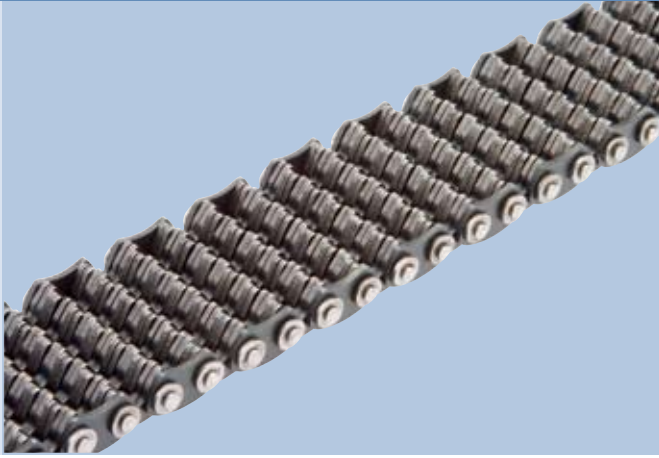
Other dimensions on request.



| Chain                                                                             |      | DIN     | Nominal pitch |                        | Lacing | Width over |           | Pin<br>Ø | Plate                  |      | Effective<br>length over<br>100 x<br>pitch* | Bearing<br>area | Minimum<br>tensile<br>strength<br>DIN<br>F <sub>B</sub><br>min. | Weight |
|-----------------------------------------------------------------------------------|------|---------|---------------|------------------------|--------|------------|-----------|----------|------------------------|------|---------------------------------------------|-----------------|-----------------------------------------------------------------|--------|
|  |      |         | p             | Pins                   |        | Plates     | thickness |          | height                 |      |                                             |                 |                                                                 |        |
|                                                                                   |      |         |               | l <sub>1</sub><br>max. |        | B<br>max.  | s         |          | g <sub>1</sub><br>max. |      |                                             |                 |                                                                 |        |
| No.                                                                               | Ind. | No.     | mm            | inch                   |        | mm         | mm        | mm       | mm                     | mm   | mm                                          | cm <sup>2</sup> | kN                                                              | kg/m   |
| BL 523                                                                            |      | LH 1023 | 15,875        | 5⁄8                    | 2 x 3  | 15,3       | 12,6      | 5,95     | 2,46                   | 15,1 | 1592                                        | 0,43            | 33,4                                                            | 1,18   |
| BL 534                                                                            |      | LH 1034 | 15,875        | 5⁄8                    | 3 x 4  | 20,3       | 17,5      | 5,95     | 2,46                   | 15,1 | 1592                                        | 0,57            | 50,1                                                            | 1,63   |
| BL 544                                                                            |      | LH 1044 | 15,875        | 5⁄8                    | 4 x 4  | 22,7       | 20,0      | 5,95     | 2,46                   | 15,1 | 1592                                        | 0,57            | 66,8                                                            | 1,86   |
| BL 546                                                                            |      | LH 1046 | 15,875        | 5⁄8                    | 4 x 6  | 27,7       | 24,8      | 5,95     | 2,46                   | 15,1 | 1592                                        | 0,86            | 66,8                                                            | 2,32   |
| BL 566                                                                            |      | LH 1066 | 15,875        | 5⁄8                    | 6 x 6  | 32,1       | 29,7      | 5,95     | 2,46                   | 15,1 | 1592                                        | 0,86            | 100,2                                                           | 2,77   |
| BL 823                                                                            |      | LH 1623 | 25,4          | 1                      | 2 x 3  | 25,4       | 21,1      | 9,53     | 4,06                   | 24,0 | 2544                                        | 1,11            | 84,5                                                            | 2,98   |
| BL 834                                                                            |      | LH 1634 | 25,4          | 1                      | 3 x 4  | 33,7       | 29,2      | 9,53     | 4,06                   | 24,0 | 2544                                        | 1,49            | 126,8                                                           | 4,14   |
| BL 844                                                                            |      | LH 1644 | 25,4          | 1                      | 4 x 4  | 37,9       | 33,2      | 9,53     | 4,06                   | 24,0 | 2544                                        | 1,49            | 169,0                                                           | 4,72   |
| BL 846                                                                            |      | LH 1646 | 25,4          | 1                      | 4 x 6  | 46,1       | 41,4      | 9,53     | 4,06                   | 24,0 | 2544                                        | 2,23            | 169,0                                                           | 5,88   |
| BL 866                                                                            |      | LH 1666 | 25,4          | 1                      | 6 x 6  | 54,4       | 49,4      | 9,53     | 4,06                   | 24,0 | 2544                                        | 2,23            | 253,6                                                           | 7,04   |

\* Chain length tolerance  $\pm 0,25$  % of uncoiled chain under measuring force.

For a pre-selection of leaf chains see page 99 + 100.



Outer guide system

| Chain |      | Pitch | Lacing | Working width | Overall width | Pin $\emptyset$ | Projection over connecting link | Bearing area    | Minimum tensile strength | Weight        |
|-------|------|-------|--------|---------------|---------------|-----------------|---------------------------------|-----------------|--------------------------|---------------|
|       |      | $p$   |        | $b$           | $l_1$         | $d_2$           | $k$                             | $f$             | $F_B$ min.               | $q$ $\approx$ |
| No.   | Ind. | mm    |        | mm            | mm            | mm              | mm                              | cm <sup>2</sup> | kN                       | kg/m          |
| 1110  |      | 10,0  | 1 x 2  | 9,6           | 17,6          | 3,15            | 1,6                             | 0,20            | 11,0                     | 0,64          |
| 1112  |      | 10,0  | 2 x 3  | 16,0          | 24,1          | 3,15            | 1,6                             | 0,29            | 17,0                     | 0,93          |
| 1114  |      | 10,0  | 4 x 5  | 28,9          | 37,1          | 3,15            | 1,6                             | 0,49            | 28,0                     | 1,56          |
| 1115  |      | 10,0  | 5 x 6  | 35,2          | 43,4          | 3,15            | 1,6                             | 0,59            | 34,0                     | 1,88          |

Inverted tooth chain sprockets on request.

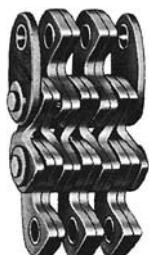
When ordered by length in metres, the chain will contain the next higher even number of links with a connecting pin. When ordered by number of links, the chain will be supplied with an uneven number of links and include a single cranked link riveted into the chain as well as a connecting pin.

### Connecting links (end links):



No. 10

Connecting pin



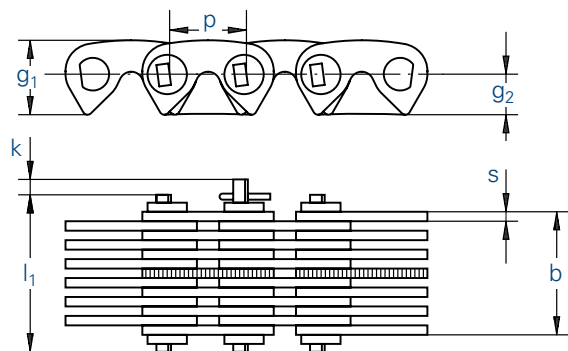
No. 52

Cranked three-joint connecting link

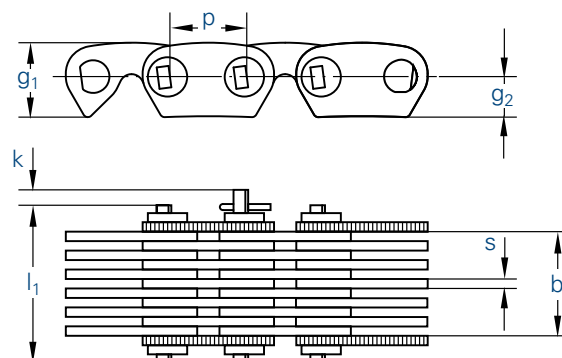


No. 53

Straight two-joint connecting link



Inner guide system (J)



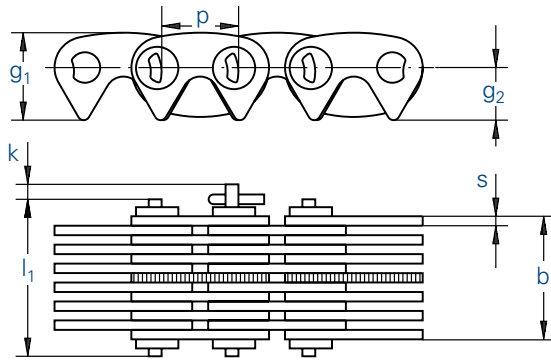
Outer guide system (A)

| Chain   |      | Pitch  | Working width | Overall width       | Plate height        |                | Plate thickness | Projection over connecting link | Number of rows* | Minimum tensile strength | Measuring force | Weight |
|---------|------|--------|---------------|---------------------|---------------------|----------------|-----------------|---------------------------------|-----------------|--------------------------|-----------------|--------|
|         |      | p      | b min.        | l <sub>1</sub> max. | g <sub>1</sub> max. | g <sub>2</sub> | s               | k                               | RZ              | F <sub>B</sub> min.      |                 | q ≈    |
| No.     | Ind. | mm     | mm            | mm                  | mm                  | mm             | mm              | mm                              |                 | kN                       | mm              | kg/m   |
| 06-015A |      | 9,525  | 12,5          | 20,0                | 9,2                 | 5,2            | 1,50            | 2,0                             | 10,0            | 14,5                     | 14,5            | 0,64   |
| 06-020A |      | 9,525  | 18,8          | 26,0                | 9,2                 | 5,2            | 1,50            | 2,0                             | 14,0            | 21,0                     | 21,0            | 0,86   |
| 06-025J |      | 9,525  | 26,5          | 31,0                | 9,2                 | 5,2            | 1,50            | 2,0                             | 17,0            | 27,4                     | 27,4            | 0,94   |
| 06-030J |      | 9,525  | 33,0          | 37,0                | 9,2                 | 5,2            | 1,50            | 2,0                             | 21,0            | 34,0                     | 34,0            | 1,16   |
| 06-035J |      | 9,525  | 39,0          | 44,0                | 9,2                 | 5,2            | 1,50            | 2,0                             | 25,0            | 40,0                     | 40,0            | 1,39   |
| 08-015A |      | 12,7   | 12,5          | 22,0                | 12,3                | 6,7            | 1,50            | 2,5                             | 10,0            | 18,5                     | 18,5            | 0,83   |
| 08-020A |      | 12,7   | 19,0          | 27,5                | 12,3                | 6,7            | 1,50            | 2,5                             | 14,0            | 26,5                     | 26,5            | 1,12   |
| 08-025J |      | 12,7   | 26,5          | 33,0                | 12,3                | 6,7            | 1,50            | 2,5                             | 17,0            | 34,6                     | 34,6            | 1,39   |
| 08-030J |      | 12,7   | 33,0          | 39,0                | 12,3                | 6,7            | 1,50            | 2,5                             | 21,0            | 43,0                     | 43,0            | 1,54   |
| 08-035J |      | 12,7   | 39,0          | 45,0                | 12,3                | 6,7            | 1,50            | 2,5                             | 25,0            | 51,0                     | 51,0            | 1,84   |
| 08-050J |      | 12,7   | 51,5          | 58,0                | 12,3                | 6,7            | 1,50            | 2,5                             | 33,0            | 67,5                     | 67,5            | 2,42   |
| 08-065J |      | 12,7   | 64,2          | 69,8                | 12,3                | 6,7            | 1,50            | 2,5                             | 41,0            | 83,0                     | 83,0            | 3,02   |
| 10-025J |      | 15,875 | 27,0          | 33,0                | 15,4                | 8,4            | 2,00            | 3,0                             | 13,0            | 46,0                     | 46,0            | 1,68   |
| 10-035J |      | 15,875 | 35,5          | 41,5                | 15,4                | 8,4            | 2,00            | 3,0                             | 17,0            | 61,0                     | 61,0            | 2,31   |
| 10-040J |      | 15,875 | 43,7          | 49,5                | 15,4                | 8,4            | 2,00            | 3,0                             | 21,0            | 75,5                     | 75,5            | 2,75   |
| 10-050J |      | 15,875 | 52,0          | 58,0                | 15,4                | 8,4            | 2,00            | 3,0                             | 25,0            | 89,0                     | 89,0            | 3,35   |
| 10-065J |      | 15,875 | 69,0          | 74,5                | 15,4                | 8,4            | 2,00            | 3,0                             | 33,0            | 117,5                    | 117,5           | 4,30   |
| 12-035J |      | 19,05  | 35,5          | 43,0                | 18,4                | 10,0           | 2,00            | 3,5                             | 17,0            | 73,5                     | 73,5            | 2,66   |
| 12-040J |      | 19,05  | 44,0          | 51,0                | 18,4                | 10,0           | 2,00            | 3,5                             | 21,0            | 91,0                     | 91,0            | 3,22   |
| 12-050J |      | 19,05  | 52,0          | 59,0                | 18,4                | 10,0           | 2,00            | 3,5                             | 25,0            | 108,0                    | 108,0           | 3,95   |
| 12-065J |      | 19,05  | 68,5          | 76,0                | 18,4                | 10,0           | 2,00            | 3,5                             | 33,0            | 142,0                    | 142,0           | 5,15   |
| 12-075J |      | 19,05  | 77,0          | 84,0                | 18,4                | 10,0           | 2,00            | 3,5                             | 37,0            | 160,0                    | 160,0           | 6,20   |
| 16-050J |      | 25,4   | 53,0          | 61,0                | 25,0                | 13,1           | 3,00            | 4,0                             | 17,0            | 127,0                    | 127,0           | 5,60   |
| 16-065J |      | 25,4   | 65,0          | 73,0                | 25,0                | 13,1           | 3,00            | 4,0                             | 21,0            | 157,0                    | 157,0           | 6,80   |
| 16-075J |      | 25,4   | 77,5          | 85,5                | 25,0                | 13,1           | 3,00            | 4,0                             | 25,0            | 187,0                    | 187,0           | 8,20   |
| 16-100J |      | 25,4   | 103,0         | 111,0               | 25,0                | 13,1           | 3,00            | 4,0                             | 33,0            | 245,0                    | 245,0           | 10,70  |
| 16-125J |      | 25,4   | 127,0         | 135,0               | 25,0                | 13,1           | 3,00            | 4,0                             | 41,0            | 304,0                    | 304,0           | 12,70  |
| 24-065J |      | 38,1   | 65,5          | 77,5                | 37,0                | 20,1           | 3,00            | 6,0                             | 21,0            | 257,0                    | 257,0           | 10,30  |
| 24-075J |      | 38,1   | 78,0          | 90,0                | 37,0                | 20,1           | 3,00            | 6,0                             | 25,0            | 306,0                    | 306,0           | 11,60  |
| 24-100J |      | 38,1   | 103,0         | 115,0               | 37,0                | 20,1           | 3,00            | 6,0                             | 33,0            | 403,0                    | 403,0           | 16,20  |
| 24-125J |      | 38,1   | 127,5         | 139,5               | 37,0                | 20,1           | 3,00            | 6,0                             | 41,0            | 500,0                    | 500,0           | 20,10  |
| 24-150J |      | 38,1   | 153,0         | 165,0               | 37,0                | 20,1           | 3,00            | 6,0                             | 49,0            | 600,0                    | 600,0           | 23,60  |
| 32-100J |      | 50,8   | 104,0         | 117,0               | 49,2                | 26,8           | 4,00            | 7,0                             | 25,0            | 490,0                    | 490,0           | 22,40  |
| 32-115J |      | 50,8   | 120,0         | 133,0               | 49,2                | 26,8           | 4,00            | 7,0                             | 29,0            | 570,0                    | 570,0           | 25,60  |
| 32-135J |      | 50,8   | 138,0         | 151,0               | 49,2                | 26,8           | 4,00            | 7,0                             | 33,0            | 650,0                    | 650,0           | 28,30  |
| 32-150J |      | 50,8   | 153,0         | 166,0               | 49,2                | 26,8           | 4,00            | 7,0                             | 37,0            | 725,0                    | 725,0           | 32,60  |
| 32-180J |      | 50,8   | 186,0         | 199,0               | 49,2                | 26,8           | 4,00            | 7,0                             | 45,0            | 880,0                    | 880,0           | 38,20  |

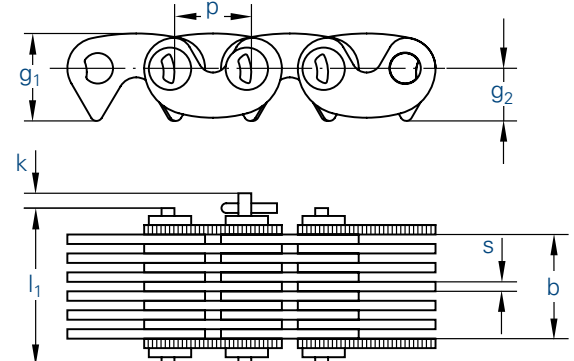
\* Plates on one pivot pin

Inverted tooth chain sprockets on request.

When ordered by length in metres, the chain will contain the next higher even number of links with a connecting pin. When ordered by number of links, the chain will be supplied with an uneven number of links and include a single cranked link riveted into the chain as well as a connecting pin.



Inner guide system (J)



Outer guide system (A)

| Chain      |      | Pitch | Working width | Overall width       | Plate height        |                | Plate thickness | Projection over connecting link | Number of rows* | Minimum tensile strength | Measuring force | Weight |
|------------|------|-------|---------------|---------------------|---------------------|----------------|-----------------|---------------------------------|-----------------|--------------------------|-----------------|--------|
|            |      | p     | b min.        | l <sub>1</sub> max. | g <sub>1</sub> max. | g <sub>2</sub> | s               | k                               | RZ              | F <sub>B</sub> min.      |                 | q ≈    |
| No.        | Ind. | mm    | mm            | mm                  | mm                  | mm             | mm              | mm                              |                 | kN                       | mm              | kg/m   |
| HD 06-015A |      | 9,525 | 12,5          | 19,9                | 10,9                | 6,7            | 1,50            | 2,0                             | 10,0            | 14,5                     | 14,5            | 0,90   |
| HD 06-020A |      | 9,525 | 17,2          | 24,5                | 10,9                | 6,7            | 1,50            | 2,0                             | 13,0            | 17,7                     | 17,7            | 1,10   |
| HD 06-025J |      | 9,525 | 26,6          | 30,8                | 10,9                | 6,7            | 1,50            | 2,0                             | 17,0            | 27,4                     | 27,4            | 1,40   |
| HD 06-030J |      | 9,525 | 32,9          | 37,1                | 10,9                | 6,7            | 1,50            | 2,0                             | 21,0            | 33,9                     | 33,9            | 1,70   |
| HD 06-040J |      | 9,525 | 39,1          | 43,3                | 10,9                | 6,7            | 1,50            | 2,0                             | 25,0            | 40,3                     | 40,3            | 2,00   |
| HD 06-050J |      | 9,525 | 51,6          | 55,8                | 10,9                | 6,7            | 1,50            | 2,0                             | 33,0            | 53,2                     | 53,2            | 2,60   |
| HD 06-065J |      | 9,525 | 64,2          | 68,4                | 10,9                | 6,7            | 1,50            | 2,0                             | 41,0            | 66,2                     | 66,2            | 3,30   |
| HD 08-015A |      | 12,7  | 12,5          | 21,3                | 14,5                | 8,7            | 1,50            | 2,5                             | 10,0            | 20,2                     | 20,2            | 1,10   |
| HD 08-020A |      | 12,7  | 17,2          | 25,9                | 14,5                | 8,7            | 1,50            | 2,5                             | 13,0            | 24,7                     | 24,7            | 1,40   |
| HD 08-025J |      | 12,7  | 26,6          | 32,2                | 14,5                | 8,7            | 1,50            | 2,5                             | 17,0            | 38,2                     | 38,2            | 1,80   |
| HD 08-030J |      | 12,7  | 32,9          | 38,5                | 14,5                | 8,7            | 1,50            | 2,5                             | 21,0            | 47,3                     | 47,3            | 2,20   |
| HD 08-040J |      | 12,7  | 39,1          | 44,7                | 14,5                | 8,7            | 1,50            | 2,5                             | 25,0            | 56,3                     | 56,3            | 2,60   |
| HD 08-050J |      | 12,7  | 51,6          | 57,2                | 14,5                | 8,7            | 1,50            | 2,5                             | 33,0            | 74,3                     | 74,3            | 3,40   |
| HD 08-065J |      | 12,7  | 64,2          | 69,8                | 14,5                | 8,7            | 1,50            | 2,5                             | 41,0            | 92,3                     | 92,3            | 4,30   |
| HD 08-075J |      | 12,7  | 76,7          | 82,3                | 14,5                | 8,7            | 1,50            | 2,5                             | 49,0            | 110,3                    | 110,3           | 5,10   |
| HP 08-100J |      | 12,7  | 101,7         | 107,3               | 14,5                | 8,7            | 1,50            | 2,5                             | 65,0            | 146,4                    | 146,4           | 6,70   |
| HD 12-030A |      | 19,05 | 27,0          | 38,2                | 21,0                | 10,7           | 2,00            | 3,5                             | 15,0            | 59,6                     | 59,6            | 3,30   |
| HD 12-035J |      | 19,05 | 35,4          | 42,4                | 21,0                | 10,7           | 2,00            | 3,5                             | 17,0            | 78,0                     | 78,0            | 3,70   |
| HD 12-040J |      | 19,05 | 43,7          | 50,7                | 21,0                | 10,7           | 2,00            | 3,5                             | 21,0            | 96,3                     | 96,3            | 4,50   |
| HD 12-050J |      | 19,05 | 52,0          | 59,0                | 21,0                | 10,7           | 2,00            | 3,5                             | 25,0            | 114,7                    | 114,7           | 5,40   |
| HD 12-065J |      | 19,05 | 68,6          | 75,6                | 21,0                | 10,7           | 2,00            | 3,5                             | 33,0            | 151,4                    | 151,4           | 7,10   |
| HD 12-085J |      | 19,05 | 85,3          | 92,3                | 21,0                | 10,7           | 2,00            | 3,5                             | 41,0            | 188,1                    | 188,1           | 8,90   |
| HD 12-100J |      | 19,05 | 101,9         | 108,9               | 21,0                | 10,7           | 2,00            | 3,5                             | 49,0            | 224,9                    | 224,9           | 10,60  |
| HD 12-125J |      | 19,05 | 126,9         | 133,9               | 21,0                | 10,7           | 2,00            | 3,5                             | 61,0            | 279,9                    | 279,9           | 13,20  |
| HD 12-150J |      | 19,05 | 151,8         | 158,8               | 21,0                | 10,7           | 2,00            | 3,5                             | 73,0            | 335,0                    | 335,0           | 15,80  |
| HD 12-200J |      | 19,05 | 201,8         | 208,8               | 21,0                | 10,7           | 2,00            | 3,5                             | 97,0            | 445,2                    | 445,2           | 20,90  |
| HD 16-040J |      | 25,4  | 40,2          | 48,2                | 27,7                | 14,0           | 3,00            | 6,0                             | 13,0            | 112,1                    | 112,1           | 5,60   |
| HD 16-050J |      | 25,4  | 52,6          | 60,6                | 27,7                | 14,0           | 3,00            | 6,0                             | 17,0            | 146,6                    | 146,6           | 7,30   |
| HD 16-065J |      | 25,4  | 65,0          | 73,0                | 27,7                | 14,0           | 3,00            | 6,0                             | 21,0            | 181,1                    | 181,1           | 9,00   |
| HD 16-075J |      | 25,4  | 77,4          | 85,4                | 27,7                | 14,0           | 3,00            | 6,0                             | 25,0            | 215,6                    | 215,6           | 10,70  |
| HD 16-100J |      | 25,4  | 102,1         | 110,1               | 27,7                | 14,0           | 3,00            | 6,0                             | 33,0            | 284,7                    | 284,7           | 14,10  |
| HD 16-125J |      | 25,4  | 126,9         | 134,9               | 27,7                | 14,0           | 3,00            | 6,0                             | 41,0            | 353,7                    | 353,7           | 17,50  |
| HD 16-150J |      | 25,4  | 151,7         | 159,7               | 27,7                | 14,0           | 3,00            | 6,0                             | 49,0            | 422,7                    | 422,7           | 21,00  |
| HD 16-200J |      | 25,4  | 201,2         | 209,2               | 27,7                | 14,0           | 3,00            | 6,0                             | 65,0            | 560,7                    | 560,7           | 27,80  |

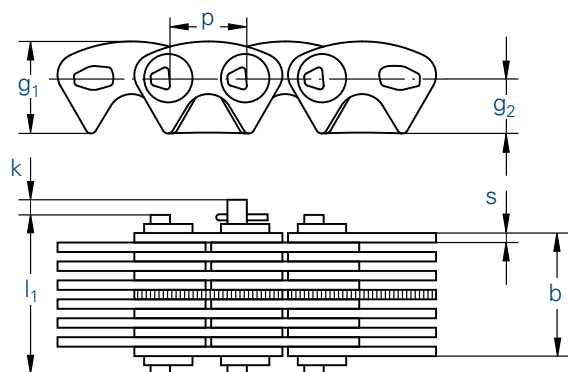
\* Plates on one pivot pin

Inverted tooth chain sprockets on request.

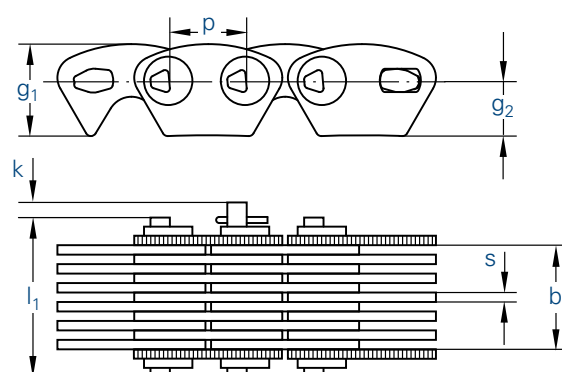
When ordered by length in metres, the chain will contain the next higher even number of links with a connecting pin. For this type of inverted tooth chain no cranked links are available.



# INVERTED TOOTH (SILENT) CHAINS TYPE SERIES HP



Inner guide system (J)



Outer guide system (A)

| Chain      |      | Pitch | Working width | Overall width       | Plate height        |                | Plate thickness | Projection over connecting link | Number of rows* | Minimum tensile strength | Measuring force | Weight |
|------------|------|-------|---------------|---------------------|---------------------|----------------|-----------------|---------------------------------|-----------------|--------------------------|-----------------|--------|
|            |      | p     | b min.        | l <sub>1</sub> max. | g <sub>1</sub> max. | g <sub>2</sub> | s               | k                               | RZ              | F <sub>B</sub> min.      |                 | q ≈    |
| No.        | Ind. | mm    | mm            | mm                  | mm                  | mm             | mm              | mm                              |                 | kN                       | mm              | kg/m   |
| HP 06-015A |      | 9,525 | 12,5          | 19,9                | 11,3                | 6,8            | 1,50            | 2,0                             | 10,0            | 25,4                     | 25,4            | 1,00   |
| HP 06-020A |      | 9,525 | 17,2          | 24,5                | 11,3                | 6,8            | 1,50            | 2,0                             | 13,0            | 30,1                     | 30,1            | 1,20   |
| HP 06-025J |      | 9,525 | 26,6          | 30,8                | 11,3                | 6,8            | 1,50            | 2,0                             | 17,0            | 39,3                     | 39,3            | 1,50   |
| HP 06-030J |      | 9,525 | 32,9          | 37,1                | 11,3                | 6,8            | 1,50            | 2,0                             | 21,0            | 48,6                     | 48,6            | 1,80   |
| HP 06-040J |      | 9,525 | 39,1          | 43,3                | 11,3                | 6,8            | 1,50            | 2,0                             | 25,0            | 57,9                     | 57,9            | 2,20   |
| HP 06-050J |      | 9,525 | 51,6          | 55,8                | 11,3                | 6,8            | 1,50            | 2,0                             | 33,0            | 76,4                     | 76,4            | 2,90   |
| HP 06-065J |      | 9,525 | 64,2          | 68,4                | 11,3                | 6,8            | 1,50            | 2,0                             | 41,0            | 94,9                     | 94,9            | 3,60   |
| HP 08-015A |      | 12,7  | 12,5          | 21,7                | 15,2                | 9,0            | 1,50            | 2,5                             | 10,0            | 27,9                     | 27,9            | 1,20   |
| HP 08-020A |      | 12,7  | 17,2          | 26,3                | 15,2                | 9,0            | 1,50            | 2,5                             | 13,0            | 34,1                     | 34,1            | 1,60   |
| HP 08-025J |      | 12,7  | 26,6          | 32,6                | 15,2                | 9,0            | 1,50            | 2,5                             | 17,0            | 52,7                     | 52,7            | 2,00   |
| HP 08-030J |      | 12,7  | 32,9          | 38,9                | 15,2                | 9,0            | 1,50            | 2,5                             | 21,0            | 65,1                     | 65,1            | 2,40   |
| HP 08-040J |      | 12,7  | 39,1          | 45,1                | 15,2                | 9,0            | 1,50            | 2,5                             | 25,0            | 77,5                     | 77,5            | 2,90   |
| HP 08-050J |      | 12,7  | 51,6          | 57,6                | 15,2                | 9,0            | 1,50            | 2,5                             | 33,0            | 102,3                    | 102,3           | 3,80   |
| HP 08-065J |      | 12,7  | 64,2          | 70,2                | 15,2                | 9,0            | 1,50            | 2,5                             | 41,0            | 127,2                    | 127,2           | 4,70   |
| HP 08-075J |      | 12,7  | 76,7          | 82,7                | 15,2                | 9,0            | 1,50            | 2,5                             | 49,0            | 152,0                    | 152,0           | 5,60   |
| HP 08-100J |      | 12,7  | 101,7         | 107,7               | 15,2                | 9,0            | 1,50            | 2,5                             | 65,0            | 201,6                    | 201,6           | 7,50   |
| HP 08-125J |      | 12,7  | 126,8         | 132,8               | 15,2                | 9,0            | 1,50            | 2,5                             | 81,0            | 251,3                    | 251,3           | 9,30   |
| HP 08-150J |      | 12,7  | 151,8         | 157,8               | 15,2                | 9,0            | 1,50            | 2,5                             | 97,0            | 300,9                    | 300,9           | 11,10  |
| HP 12-020J |      | 19,05 | 18,7          | 25,7                | 22,5                | 13,5           | 2,00            | 3,5                             | 9,0             | 55,4                     | 55,4            | 2,10   |
| HP 12-025J |      | 19,05 | 27,0          | 34,0                | 22,5                | 13,5           | 2,00            | 3,5                             | 13,0            | 80,1                     | 80,1            | 3,00   |
| HP 12-030J |      | 19,05 | 31,2          | 38,2                | 22,5                | 13,5           | 2,00            | 3,5                             | 15,0            | 80,1                     | 80,1            | 3,60   |
| HP 12-035J |      | 19,05 | 35,4          | 42,4                | 22,5                | 13,5           | 2,00            | 3,5                             | 17,0            | 104,7                    | 104,7           | 3,90   |
| HP 12-040J |      | 19,05 | 43,7          | 50,7                | 22,5                | 13,5           | 2,00            | 3,5                             | 21,0            | 129,4                    | 129,4           | 4,90   |
| HP 12-050J |      | 19,05 | 52,0          | 59,0                | 22,5                | 13,5           | 2,00            | 3,5                             | 25,0            | 154,0                    | 154,0           | 5,80   |
| HP 12-065J |      | 19,05 | 68,6          | 75,6                | 22,5                | 13,5           | 2,00            | 3,5                             | 33,0            | 203,3                    | 203,3           | 7,60   |
| HP 12-085J |      | 19,05 | 85,3          | 92,3                | 22,5                | 13,5           | 2,00            | 3,5                             | 41,0            | 252,6                    | 252,6           | 9,50   |
| HP 12-100J |      | 19,05 | 101,9         | 108,9               | 22,5                | 13,5           | 2,00            | 3,5                             | 49,0            | 301,9                    | 301,9           | 11,40  |
| HP 12-125J |      | 19,05 | 126,9         | 133,9               | 22,5                | 13,5           | 2,00            | 3,5                             | 61,0            | 375,9                    | 375,9           | 14,10  |
| HP 12-150J |      | 19,05 | 151,8         | 158,8               | 22,5                | 13,5           | 2,00            | 3,5                             | 73,0            | 449,8                    | 449,8           | 16,90  |
| HP 12-200J |      | 19,05 | 201,8         | 208,8               | 22,5                | 13,5           | 2,00            | 3,5                             | 97,0            | 597,7                    | 597,7           | 22,50  |
| HP 16-040J |      | 25,4  | 40,4          | 52,4                | 45,0                | 27,0           | 3,00            | 6,0                             | 13,0            | 232,0                    | 232,0           | 9,00   |
| HP 16-050J |      | 25,4  | 52,8          | 64,8                | 45,0                | 27,0           | 3,00            | 6,0                             | 17,0            | 303,4                    | 303,4           | 11,80  |
| HP 16-065J |      | 25,4  | 65,2          | 77,2                | 45,0                | 27,0           | 3,00            | 6,0                             | 21,0            | 374,8                    | 374,8           | 14,60  |
| HP 16-075J |      | 25,4  | 77,6          | 89,6                | 45,0                | 27,0           | 3,00            | 6,0                             | 25,0            | 446,2                    | 446,2           | 17,40  |
| HP 16-100J |      | 25,4  | 102,5         | 114,5               | 45,0                | 27,0           | 3,00            | 6,0                             | 33,0            | 589,0                    | 589,0           | 22,90  |
| HP 16-125J |      | 25,4  | 127,3         | 139,3               | 45,0                | 27,0           | 3,00            | 6,0                             | 41,0            | 731,8                    | 731,8           | 28,50  |
| HP 16-150J |      | 25,4  | 152,1         | 164,1               | 45,0                | 27,0           | 3,00            | 6,0                             | 49,0            | 874,6                    | 874,6           | 34,10  |
| HP 16-200J |      | 25,4  | 201,8         | 213,8               | 45,0                | 27,0           | 3,00            | 6,0                             | 65,0            | 1160,2                   | 1160,2          | 45,20  |

\* Plates on one pivot pin

Inverted tooth chain sprockets on request.

When ordered by length in metres, the chain will contain the next higher even number of links with a connecting pin. For this type of inverted tooth chain no cranked links are available.



On the following pages, we will only be able to give you a brief overview of the types of chains we can supply since conveyor chains are mostly chains designed for individual applications.

Please send us an enquiry, if you have any queries concerning your specific application.

**1. Sprockets for all chains made of steel, cast steel and cast iron, also in split versions and with welded-on segments.**

**2. Special chains for process engineering equipment of all kind; also made of stainless and heat resistant steel grades.**

**3. Draw bench chains**

- according to DIN 8156 and DIN 8157

**4. Conveyor chains / Deep link conveyor chains / Accumulation conveyor chains**

- according to DIN 8165 full pin chains and hollow pin chains / type FV
- according to DIN 8167 full pin chains / type M
- according to DIN 8168 hollow pin chains / type MC
- Made to specifications for all applications

**5. Moving staircase chains**

- according to works-standard and customers' specifications

**6. Plate chains for steel plate apron conveyor chains**

- according to DIN 8175

**7. Plate chains for funiculars**

- according to DIN 8176 and DIN Berg 2251

**8. Inverted tooth chains according to DIN 8190**

- Inverted tooth chains for high speed drives
- Inverted tooth chains made to specifications / Inverted tooth chains for transport

**9. Inverted tooth chain sprockets**

- according to customers' specifications

**10. Sliding rails**

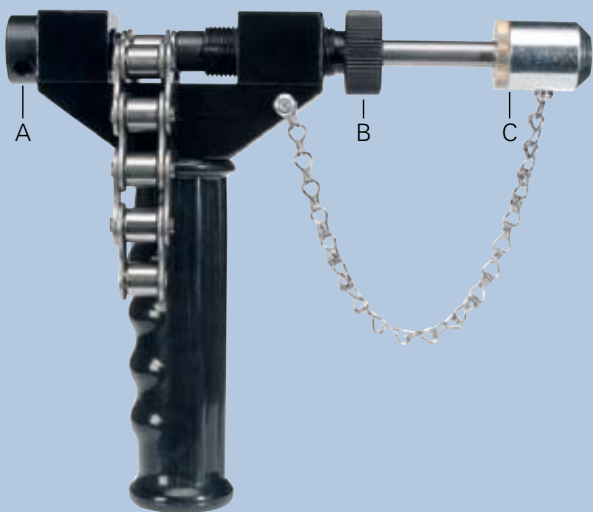
**11. Cranked link chains**

**12. Galle chains and sprockets**

- according to DIN 8150

**13. ATC magazine chains and sprockets**

We will be happy to assist you with all your problems concerning drives and conveyance!



Chain breaker

**Chain breaker**

With only a few hammer blows a chain can be broken within seconds - and all this without a vice or a grinding machine!

A powerful WIPPERMANN chain breaker: simple, effective and practical.

| No.        | suitable for the following chains                                  |
|------------|--------------------------------------------------------------------|
| KT 455     | 454, 455, 331, 332, D 455<br>ASA 35, 40, 41, 35-2, 40-2            |
| KT 462     | 331, 332, 17, 18, 385, 460, 461, 462, D462<br>ASA 35, 40, 41, 40-2 |
| KT 501-213 | 500,501,513,D501,D513<br>ASA 50, 60, 50-2                          |
| KT 548     | 548<br>ASA 80                                                      |

- Accessories:** Screw A  
Screw B  
Replacement pin C



Chain puller 125 mm

**Chain puller**

Due to the overall weight it is often extremely cumbersome to assemble two chain ends without any tools.

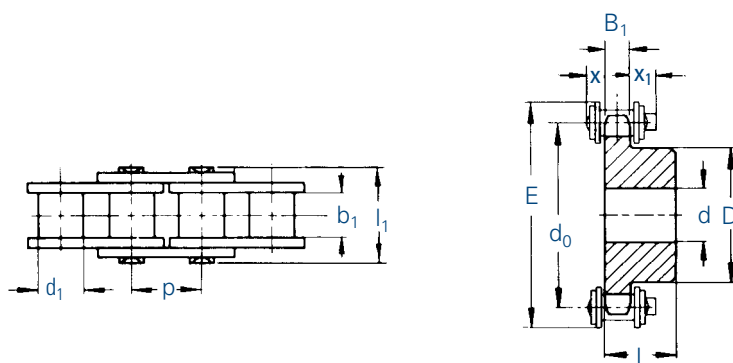
By means of our practical chain puller, the two ends of the chain are pulled together far enough for a connecting link to be mounted without any difficulties.

This chain puller can be supplied in two sizes:

| No. | For chain pitches p | Clamping width | Weight |
|-----|---------------------|----------------|--------|
| 135 | 12,7 bis 19,05 mm   | 50,0 mm        | 0,2 kg |
| 180 | 25,4 bis 63,50 mm   | 125,0 mm       | 1,0 kg |



Chain puller 50 mm



| Chain                                                                             |      |       | Pitch | Inner width            | Roller Ø               | Width over pin         | Tooth width    | Projection |                        |
|-----------------------------------------------------------------------------------|------|-------|-------|------------------------|------------------------|------------------------|----------------|------------|------------------------|
|  |      | DIN   | p     | b <sub>1</sub><br>min. | d <sub>1</sub><br>max. | l <sub>1</sub><br>max. | B <sub>1</sub> | x<br>max.  | x <sub>1</sub><br>max. |
| No.                                                                               | Ind. | No.   | mm    | mm                     | mm                     | mm                     | mm             | mm         | mm                     |
| 445                                                                               |      | 04    | 6,0   | 2,8                    | 4,0                    | 7,4                    | 2,6            | 2,5        | 3,0                    |
| 450                                                                               |      | 05B-1 | 8,0   | 3,0                    | 5,0                    | 8,6                    | 2,8            | 5,4        | 6,1                    |

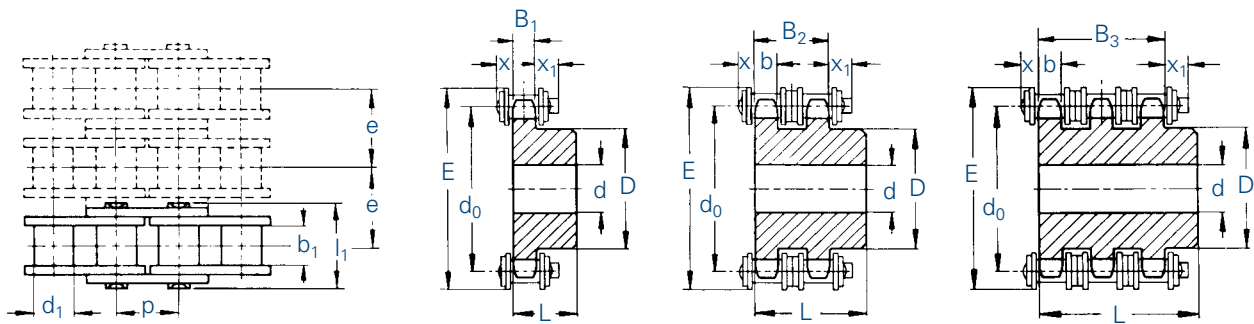
| Number of teeth |      | 445 (04)       |                  |    |    |    | 450 (05B-1)    |                  |    |    |    |
|-----------------|------|----------------|------------------|----|----|----|----------------|------------------|----|----|----|
|                 |      | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  |
| No.             | Ind. | mm             | mm               | mm | mm | mm | mm             | mm               | mm | mm | mm |
| 10              |      | 19,42          | 25               | 6  | 13 | 10 | 25,89          | 34               | 8  | 17 | 12 |
| 11              |      | 21,30          | 27               | 6  | 14 | 10 | 28,40          | 36               | 8  | 18 | 13 |
| 12              |      | 23,18          | 29               | 6  | 16 | 10 | 30,91          | 39               | 8  | 20 | 13 |
| 13              |      | 25,07          | 31               | 8  | 18 | 10 | 33,43          | 41               | 8  | 23 | 13 |
| 14              |      | 26,96          | 33               | 8  | 20 | 10 | 35,95          | 44               | 8  | 25 | 13 |
| 15              |      | 28,86          | 35               | 8  | 20 | 10 | 38,48          | 46               | 8  | 28 | 13 |
| 16              |      | 30,75          | 36               | 8  | 20 | 13 | 41,01          | 49               | 8  | 30 | 14 |
| 17              |      | 32,65          | 38               | 8  | 20 | 13 | 43,54          | 51               | 8  | 30 | 14 |
| 18              |      | 34,55          | 40               | 8  | 20 | 13 | 46,07          | 54               | 8  | 30 | 14 |
| 19              |      | 36,45          | 42               | 8  | 20 | 13 | 48,60          | 57               | 8  | 30 | 14 |
| 20              |      | 38,36          | 44               | 8  | 20 | 13 | 51,14          | 59               | 8  | 30 | 14 |
| 21              |      | 40,26          | 46               | 8  | 25 | 13 | 53,68          | 62               | 8  | 35 | 14 |
| 22              |      | 42,16          | 48               | 8  | 25 | 13 | 56,21          | 64               | 8  | 35 | 14 |
| 23              |      | 44,06          | 50               | 8  | 25 | 13 | 58,75          | 67               | 8  | 35 | 14 |
| 24              |      | 45,97          | 51               | 8  | 25 | 13 | 61,29          | 69               | 8  | 35 | 14 |
| 25              |      | 47,87          | 53               | 8  | 25 | 13 | 63,83          | 72               | 8  | 35 | 14 |
| 26              |      | 49,78          | 55               | 8  | 30 | 15 | 66,37          | 74               | 10 | 40 | 16 |
| 27              |      | 51,68          | 57               | 8  | 30 | 15 | 68,91          | 77               | 10 | 40 | 16 |
| 28              |      | 53,59          | 59               | 8  | 30 | 15 | 71,45          | 79               | 10 | 40 | 16 |
| 29              |      | 55,49          | 61               | 8  | 30 | 15 | 73,99          | 82               | 10 | 40 | 16 |
| 30              |      | 57,40          | 63               | 8  | 30 | 15 | 76,53          | 84               | 10 | 40 | 16 |
| 32              |      | 61,21          | 67               | 8  | 30 | 15 | 81,62          | 90               | 10 | 40 | 16 |
| 34              |      | 65,03          | 71               | 8  | 30 | 15 | 86,70          | 94               | 10 | 40 | 16 |
| 35              |      | 66,93          | 73               | 8  | 30 | 15 | 89,25          | 97               | 10 | 40 | 16 |
| 36              |      | 68,84          | 75               | 8  | 30 | 15 | 91,79          | 100              | 10 | 40 | 16 |
| 38              |      | 72,66          | 78               | 8  | 30 | 15 | 96,88          | 105              | 10 | 40 | 16 |
| 40              |      | 76,47          | 82               | 8  | 30 | 15 | 101,96         | 110              | 10 | 40 | 16 |

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.



# SPROCKETS FOR ROLLER CHAINS ACCORDING TO DIN 8187

corresponding to ISO 606

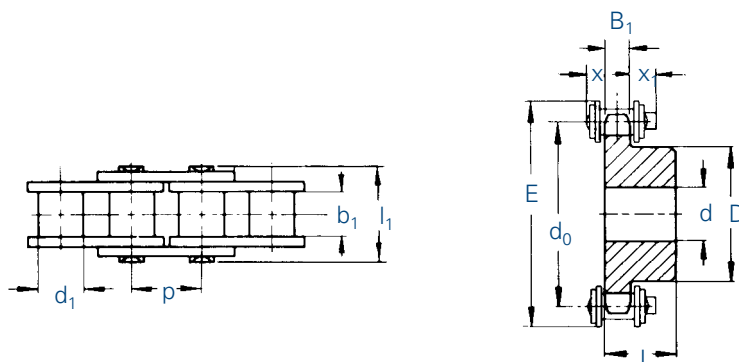


| Chain                                                                             |      | DIN   | Pitch | Inner width         | Roller Ø            | Width over pin | Transverse pitch | Tooth width    |     |                |                | Projection |                     |
|-----------------------------------------------------------------------------------|------|-------|-------|---------------------|---------------------|----------------|------------------|----------------|-----|----------------|----------------|------------|---------------------|
|  |      |       | p     | b <sub>1</sub> min. | d <sub>1</sub> max. | l max.         | e                | B <sub>1</sub> | b   | B <sub>2</sub> | B <sub>3</sub> | x max.     | x <sub>1</sub> max. |
|                                                                                   |      |       | mm    | mm                  | mm                  | mm             | mm               | mm             | mm  | mm             | mm             | mm         | mm                  |
| No.                                                                               | Ind. |       | mm    | mm                  | mm                  | mm             | mm               | mm             | mm  | mm             | mm             | mm         | mm                  |
| 455                                                                               |      | 06B-1 | 9,525 | 5,72                | 6,35                | 13,5           | -                | 5,3            | -   | -              | -              | 4,5        | 7,8                 |
| D 455                                                                             |      | 06B-2 | 9,525 | 5,72                | 6,35                | 23,8           | 10,24            | -              | 5,2 | 15,4           | -              | 4,5        | 7,8                 |
| T 455                                                                             |      | 06B-3 | 9,525 | 5,72                | 6,35                | 34,0           | 10,24            | -              | 5,2 | -              | 25,6           | 4,5        | 7,8                 |

| Number<br>of teeth |      | d <sub>0</sub> | E <sub>max</sub> | 455 (06B-1) |    |    | D 455 (06B-2) |    |    | T 455 (06B-3) |    |    |
|--------------------|------|----------------|------------------|-------------|----|----|---------------|----|----|---------------|----|----|
|                    |      |                |                  | d           | D  | L  | d             | D  | L  | d             | D  | L  |
| No.                | Ind. | mm             | mm               | mm          | mm | mm | mm            | mm | mm | mm            | mm | mm |
| 10                 |      | 30,82          | 40               | 8           | 20 | 22 | 8             | 20 | 22 | -             | -  | -  |
| 11                 |      | 33,81          | 43               | 8           | 22 | 25 | 10            | 22 | 25 | -             | -  | -  |
| 12                 |      | 36,80          | 46               | 8           | 25 | 25 | 10            | 25 | 25 | -             | -  | -  |
| 13                 |      | 39,80          | 49               | 10          | 28 | 25 | 10            | 28 | 25 | 10            | 28 | 35 |
| 14                 |      | 42,81          | 52               | 10          | 31 | 25 | 10            | 31 | 25 | -             | -  | -  |
| 15                 |      | 45,81          | 55               | 10          | 34 | 25 | 10            | 34 | 25 | 12            | 34 | 35 |
| 16                 |      | 48,82          | 58               | 10          | 37 | 28 | 12            | 37 | 30 | -             | -  | -  |
| 17                 |      | 51,84          | 61               | 10          | 40 | 28 | 12            | 40 | 30 | 12            | 40 | 35 |
| 18                 |      | 54,85          | 64               | 10          | 43 | 28 | 12            | 43 | 30 | -             | -  | -  |
| 19                 |      | 57,87          | 67               | 10          | 45 | 28 | 12            | 46 | 30 | 12            | 46 | 35 |
| 20                 |      | 60,89          | 70               | 10          | 46 | 28 | 12            | 49 | 30 | -             | -  | -  |
| 21                 |      | 63,91          | 73               | 12          | 48 | 28 | 12            | 52 | 30 | 14            | 52 | 40 |
| 22                 |      | 66,93          | 76               | 12          | 50 | 28 | 12            | 55 | 30 | -             | -  | -  |
| 23                 |      | 69,95          | 79               | 12          | 52 | 28 | 12            | 58 | 30 | 14            | 58 | 40 |
| 24                 |      | 72,97          | 82               | 12          | 54 | 28 | 12            | 61 | 30 | -             | -  | -  |
| 25                 |      | 76,00          | 85               | 12          | 57 | 28 | 12            | 64 | 30 | 14            | 64 | 40 |
| 26                 |      | 79,02          | 88               | 12          | 60 | 28 | 12            | 67 | 30 | -             | -  | -  |
| 27                 |      | 82,05          | 92               | 12          | 60 | 28 | 12            | 70 | 30 | 14            | 70 | 40 |
| 28                 |      | 85,07          | 95               | 12          | 60 | 28 | 12            | 73 | 30 | -             | -  | -  |
| 29                 |      | 88,10          | 98               | 12          | 60 | 28 | 12            | 76 | 30 | -             | -  | -  |
| 30                 |      | 91,12          | 101              | 12          | 60 | 30 | 12            | 79 | 30 | 14            | 79 | 40 |
| 31                 |      | 94,15          | 104              | 14          | 65 | 30 | -             | -  | -  | -             | -  | -  |
| 32                 |      | 97,18          | 107              | 14          | 65 | 30 | 16            | 80 | 30 | -             | -  | -  |
| 33                 |      | 100,20         | 110              | 14          | 65 | 30 | -             | -  | -  | -             | -  | -  |
| 34                 |      | 103,23         | 113              | 14          | 65 | 30 | -             | -  | -  | -             | -  | -  |
| 35                 |      | 106,26         | 116              | 14          | 65 | 30 | -             | -  | -  | -             | -  | -  |
| 36                 |      | 109,29         | 119              | 16          | 70 | 30 | -             | -  | -  | -             | -  | -  |
| 37                 |      | 112,31         | 122              | 16          | 70 | 30 | -             | -  | -  | -             | -  | -  |
| 38                 |      | 115,34         | 125              | 16          | 70 | 30 | 16            | 90 | 30 | 16            | 90 | 40 |
| 39                 |      | 118,37         | 128              | 16          | 70 | 30 | -             | -  | -  | -             | -  | -  |
| 40                 |      | 121,40         | 131              | 16          | 70 | 30 | 16            | 90 | 30 | -             | -  | -  |
| 38                 | *    | 115,34         | 125              | 19          | 70 | 32 | 19            | 80 | 40 | -             | -  | -  |
| 45                 | *    | 136,55         | 146              | 19          | 70 | 32 | -             | -  | -  | 23            | 90 | 56 |
| 57                 | *    | 172,91         | 182              | 19          | 70 | 32 | 19            | 80 | 40 | 23            | 90 | 56 |

\* Cast iron GG22

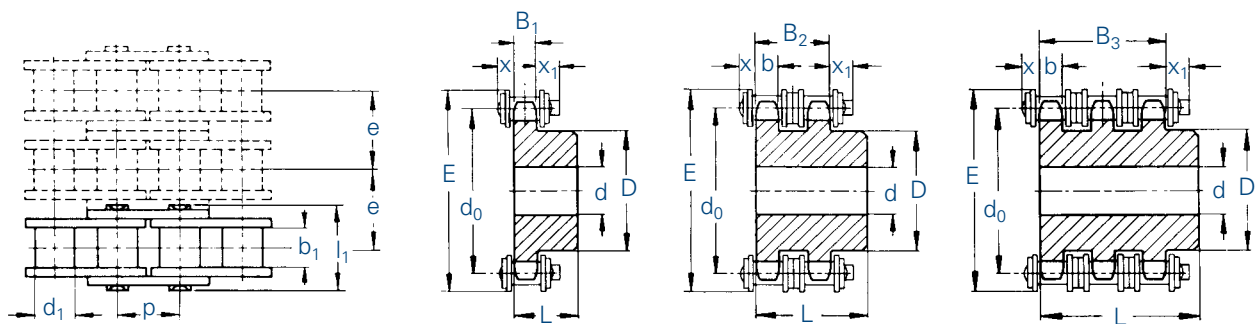
Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.



| Chain                                                                             |      |     | Pitch | Inner width         | Roller Ø            | Width over pin      | Tooth width    | Projection |                     |
|-----------------------------------------------------------------------------------|------|-----|-------|---------------------|---------------------|---------------------|----------------|------------|---------------------|
|  |      | DIN | p     | b <sub>1</sub> min. | d <sub>1</sub> max. | l <sub>1</sub> max. | B <sub>1</sub> | x max.     | x <sub>1</sub> max. |
| No.                                                                               | Ind. |     | mm    | mm                  | mm                  | mm                  | mm             | mm         | mm                  |
| 331                                                                               |      | 081 | 12,7  | 3,30                | 7,75                | 10,2                | 3,0            | 3,8        | 5,3                 |
| 332                                                                               |      | -   | 12,7  | 4,88                | 7,75                | 11,2                | 4,5            | 3,8        | 5,3                 |

| Number of teeth |      | 331 (081)      |                  |    |    |    | 332 / 17 / 18  |                  |    |    |    |
|-----------------|------|----------------|------------------|----|----|----|----------------|------------------|----|----|----|
|                 |      | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  |
| No.             | Ind. | mm             | mm               | mm | mm | mm | mm             | mm               | mm | mm | mm |
| 10              |      | 41,10          | 51               | 8  | 28 | 14 | 41,10          | 51               | 8  | 28 | 14 |
| 11              |      | 45,08          | 55               | 8  | 31 | 16 | 45,08          | 55               | 8  | 31 | 16 |
| 12              |      | 49,07          | 59               | 8  | 35 | 16 | 49,07          | 59               | 8  | 35 | 16 |
| 13              |      | 53,07          | 63               | 8  | 39 | 16 | 53,07          | 63               | 8  | 39 | 16 |
| 14              |      | 57,07          | 67               | 8  | 43 | 16 | 57,07          | 67               | 8  | 43 | 16 |
| 15              |      | 61,08          | 71               | 8  | 47 | 16 | 61,08          | 71               | 8  | 47 | 16 |
| 16              |      | 65,10          | 75               | 10 | 50 | 18 | 65,10          | 75               | 10 | 50 | 18 |
| 17              |      | 69,12          | 79               | 10 | 50 | 18 | 69,12          | 79               | 10 | 50 | 18 |
| 18              |      | 73,14          | 84               | 10 | 50 | 18 | 73,14          | 84               | 10 | 50 | 18 |
| 19              |      | 77,16          | 88               | 10 | 50 | 18 | 77,16          | 88               | 10 | 50 | 18 |
| 20              |      | 81,18          | 92               | 10 | 50 | 18 | 81,18          | 92               | 10 | 50 | 18 |
| 21              |      | 85,21          | 96               | 12 | 60 | 20 | 85,21          | 96               | 12 | 60 | 20 |
| 22              |      | 89,24          | 100              | 12 | 60 | 20 | 89,24          | 100              | 12 | 60 | 20 |
| 23              |      | 93,27          | 104              | 12 | 60 | 20 | 93,27          | 104              | 12 | 60 | 20 |
| 24              |      | 97,30          | 108              | 12 | 60 | 20 | 97,30          | 108              | 12 | 60 | 20 |
| 25              |      | 101,33         | 112              | 12 | 60 | 20 | 101,33         | 112              | 12 | 60 | 20 |
| 26              |      | 105,36         | 116              | 16 | 70 | 20 | 105,36         | 116              | 16 | 70 | 20 |
| 27              |      | 109,40         | 120              | 16 | 70 | 20 | 109,40         | 120              | 16 | 70 | 20 |
| 28              |      | 113,43         | 124              | 16 | 70 | 20 | 113,43         | 124              | 16 | 70 | 20 |
| 29              |      | 117,46         | 128              | 16 | 70 | 20 | 117,46         | 128              | 16 | 70 | 20 |
| 30              |      | 121,50         | 132              | 16 | 70 | 20 | 121,50         | 132              | 16 | 70 | 20 |
| 34              |      | -              | -                | -  | -  | -  | 137,64         | 148              | 16 | 70 | 20 |
| 36              |      | -              | -                | -  | -  | -  | 145,72         | 156              | 16 | 70 | 25 |
| 38              |      | -              | -                | -  | -  | -  | 153,79         | 165              | 16 | 70 | 25 |
| 40              |      | -              | -                | -  | -  | -  | 161,87         | 173              | 16 | 70 | 25 |

Made of SM steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.

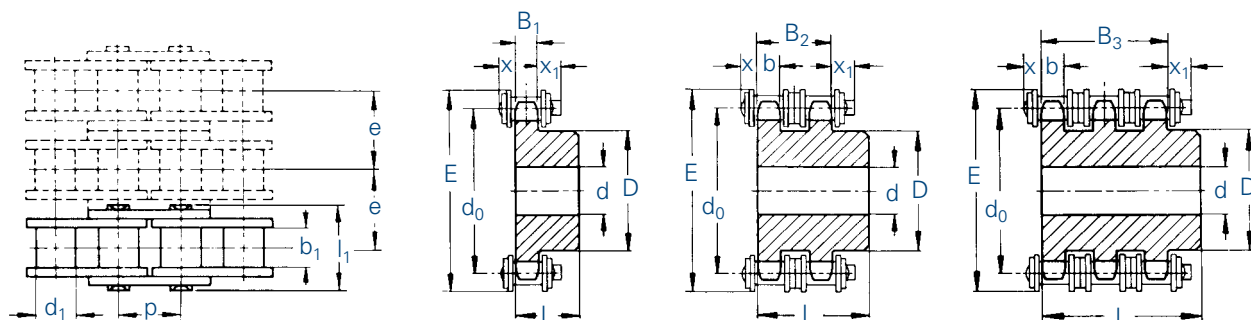


| Chain |      |        | Pitch | Inner width         | Roller Ø            | Width over pin | Transverse pitch | Tooth width    |     |                |                | Projection |                     |
|-------|------|--------|-------|---------------------|---------------------|----------------|------------------|----------------|-----|----------------|----------------|------------|---------------------|
|       |      | DIN    | p     | b <sub>1</sub> min. | d <sub>1</sub> max. | l max.         | e                | B <sub>1</sub> | b   | B <sub>2</sub> | B <sub>3</sub> | x max.     | x <sub>1</sub> max. |
| No.   | Ind. | No.    | mm    | mm                  | mm                  | mm             | mm               | mm             | mm  | mm             | mm             | mm         | mm                  |
| 462   |      | 08 B-1 | 12,7  | 7,75                | 8,51                | 17,0           | -                | 7,2            | -   | -              | -              | 5,4        | 9,3                 |
| D 462 |      | 08 B-2 | 12,7  | 7,75                | 8,51                | 31,0           | 13,92            | -              | 7,0 | 21,0           | -              | 5,4        | 9,3                 |
| T 462 |      | 08 B-3 | 12,7  | 7,75                | 8,51                | 44,9           | 13,92            | -              | 7,0 | -              | 34,9           | 5,4        | 9,3                 |

| Number of teeth |      |                |                  | 462 (08B-1) |    |    | D 462 (08B-2) |     |    | T 462 (08B-3) |     |    |
|-----------------|------|----------------|------------------|-------------|----|----|---------------|-----|----|---------------|-----|----|
| z               |      | d <sub>0</sub> | E <sub>max</sub> | d           | D  | L  | d             | D   | L  | d             | D   | L  |
|                 | Ind. | mm             | mm               | mm          | mm | mm | mm            | mm  | mm | mm            | mm  | mm |
| 10              |      | 41,10          | 54               | 10          | 26 | 25 | 10            | 28  | 32 | -             | -   | -  |
| 11              |      | 45,08          | 58               | 10          | 29 | 25 | 12            | 32  | 35 | -             | -   | -  |
| 12              |      | 49,07          | 62               | 10          | 33 | 28 | 12            | 35  | 35 | -             | -   | -  |
| 13              |      | 53,07          | 66               | 10          | 37 | 28 | 12            | 38  | 35 | 14            | 38  | 50 |
| 14              |      | 57,07          | 70               | 10          | 41 | 28 | 12            | 42  | 35 | -             | -   | -  |
| 15              |      | 61,08          | 74               | 10          | 45 | 28 | 12            | 46  | 35 | 14            | 46  | 50 |
| 16              |      | 65,10          | 78               | 12          | 50 | 28 | 14            | 50  | 35 | -             | -   | -  |
| 17              |      | 69,12          | 82               | 12          | 52 | 28 | 14            | 54  | 35 | 16            | 54  | 50 |
| 18              |      | 73,14          | 86               | 12          | 56 | 28 | 14            | 58  | 35 | -             | -   | -  |
| 19              |      | 77,16          | 90               | 12          | 60 | 28 | 14            | 62  | 35 | 16            | 62  | 50 |
| 20              |      | 81,18          | 94               | 12          | 64 | 28 | 14            | 66  | 35 | -             | -   | -  |
| 21              |      | 85,21          | 98               | 12          | 68 | 28 | 16            | 70  | 40 | 20            | 70  | 55 |
| 22              |      | 89,24          | 102              | 12          | 70 | 28 | 16            | 70  | 40 | -             | -   | -  |
| 23              |      | 93,27          | 106              | 14          | 70 | 28 | 16            | 70  | 40 | 20            | 70  | 55 |
| 24              |      | 97,30          | 110              | 14          | 70 | 28 | 16            | 75  | 40 | -             | -   | -  |
| 25              |      | 101,33         | 114              | 14          | 70 | 28 | 16            | 80  | 40 | 20            | 80  | 55 |
| 26              |      | 105,36         | 118              | 16          | 70 | 30 | 20            | 85  | 40 | -             | -   | -  |
| 27              |      | 109,40         | 122              | 16          | 70 | 30 | 20            | 85  | 40 | 20            | 85  | 55 |
| 28              |      | 113,43         | 126              | 16          | 70 | 30 | 20            | 90  | 40 | -             | -   | -  |
| 29              |      | 117,46         | 130              | 16          | 80 | 30 | 20            | 95  | 40 | -             | -   | -  |
| 30              |      | 121,50         | 134              | 16          | 80 | 30 | 20            | 100 | 40 | 20            | 100 | 55 |
| 31              |      | 125,53         | 138              | 16          | 90 | 30 | -             | -   | -  | -             | -   | -  |
| 32              |      | 129,57         | 142              | 16          | 90 | 30 | 20            | 100 | 40 | -             | -   | -  |
| 33              |      | 133,61         | 146              | 16          | 90 | 30 | -             | -   | -  | -             | -   | -  |
| 34              |      | 137,64         | 150              | 16          | 90 | 30 | -             | -   | -  | -             | -   | -  |
| 35              |      | 141,68         | 154              | 16          | 90 | 30 | 20            | 100 | 40 | -             | -   | -  |
| 36              |      | 145,72         | 158              | 16          | 90 | 35 | 20            | 110 | 40 | -             | -   | -  |
| 37              |      | 149,75         | 162              | 16          | 90 | 35 | -             | -   | -  | -             | -   | -  |
| 38              |      | 153,79         | 166              | 16          | 90 | 35 | 20            | 110 | 40 | 25            | 120 | 55 |
| 39              |      | 157,83         | 170              | 16          | 90 | 35 | -             | -   | -  | -             | -   | -  |
| 40              |      | 161,87         | 174              | 16          | 90 | 35 | 20            | 110 | 40 | -             | -   | -  |
| 38              | *    | 153,79         | 166              | -           | -  | -  | 23            | 90  | 50 | 23            | 100 | 60 |
| 45              | *    | 182,06         | 195              | 19          | 70 | 40 | -             | -   | -  | -             | -   | -  |
| 57              | *    | 230,54         | 243              | 19          | 70 | 40 | 23            | 90  | 50 | 23            | 100 | 60 |

\* Cast iron GG22

Made of SM steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.



| Chain |      | DIN    | Pitch<br>p | Inner width<br>b <sub>1</sub><br>min. | Roller<br>Ø<br>d <sub>1</sub><br>max. | Width over<br>pin<br>l<br>max. | Transverse<br>pitch<br>e | Tooth width    |     |                |                | Projection |                        |
|-------|------|--------|------------|---------------------------------------|---------------------------------------|--------------------------------|--------------------------|----------------|-----|----------------|----------------|------------|------------------------|
| ⚙     |      |        |            |                                       |                                       |                                |                          | B <sub>1</sub> | b   | B <sub>2</sub> | B <sub>3</sub> | x<br>max.  | x <sub>1</sub><br>max. |
| No.   | Ind. |        | mm         | mm                                    | mm                                    | mm                             | mm                       | mm             | mm  | mm             | mm             | mm         | mm                     |
| 501   |      | 10 B-1 | 15,875     | 9,65                                  | 10,16                                 | 19,6                           | -                        | 9,1            | -   | -              | -              | 5,6        | 9,7                    |
| D 501 |      | 10 B-2 | 15,875     | 9,65                                  | 10,16                                 | 36,2                           | 16,59                    | -              | 9,0 | 25,5           | -              | 5,6        | 9,7                    |
| T 501 |      | 10 B-3 | 15,875     | 9,65                                  | 10,16                                 | 52,8                           | 16,59                    | -              | 9,0 | -              | 42,1           | 5,6        | 9,7                    |

| Number<br>of teeth |      | d <sub>0</sub> | E <sub>max</sub> | 501 (10B-1) |     |    | D 501 (10B-2) |     |    | T 501 (10B-3) |     |    |
|--------------------|------|----------------|------------------|-------------|-----|----|---------------|-----|----|---------------|-----|----|
|                    |      |                |                  | d           | D   | L  | d             | D   | L  | d             | D   | L  |
| z                  |      |                |                  |             |     |    |               |     |    |               |     |    |
|                    | Ind. | mm             | mm               | mm          | mm  | mm | mm            | mm  | mm | mm            | mm  | mm |
| 10                 |      | 51,37          | 68               | 10          | 35  | 25 | 12            | 35  | 40 | -             | -   | -  |
| 11                 |      | 56,35          | 72               | 12          | 37  | 30 | 14            | 39  | 40 | -             | -   | -  |
| 12                 |      | 61,34          | 77               | 12          | 42  | 30 | 14            | 44  | 40 | -             | -   | -  |
| 13                 |      | 66,34          | 82               | 12          | 47  | 30 | 14            | 49  | 40 | 16            | 49  | 55 |
| 14                 |      | 71,34          | 87               | 12          | 52  | 30 | 14            | 54  | 40 | -             | -   | -  |
| 15                 |      | 76,35          | 92               | 12          | 57  | 30 | 14            | 59  | 40 | 16            | 59  | 55 |
| 16                 |      | 81,37          | 97               | 12          | 60  | 30 | 16            | 64  | 45 | -             | -   | -  |
| 17                 |      | 86,39          | 102              | 12          | 60  | 30 | 16            | 69  | 45 | 16            | 69  | 60 |
| 18                 |      | 91,42          | 107              | 14          | 70  | 30 | 16            | 74  | 45 | -             | -   | -  |
| 19                 |      | 96,45          | 112              | 14          | 70  | 30 | 16            | 79  | 45 | 16            | 79  | 60 |
| 20                 |      | 101,48         | 117              | 14          | 75  | 30 | 16            | 84  | 45 | -             | -   | -  |
| 21                 |      | 106,51         | 122              | 16          | 75  | 30 | 16            | 85  | 45 | 20            | 85  | 60 |
| 22                 |      | 111,55         | 127              | 16          | 80  | 30 | 16            | 90  | 45 | -             | -   | -  |
| 23                 |      | 116,59         | 132              | 16          | 80  | 30 | 16            | 95  | 45 | 20            | 95  | 60 |
| 24                 |      | 121,62         | 137              | 16          | 80  | 30 | 16            | 100 | 45 | -             | -   | -  |
| 25                 |      | 126,66         | 142              | 16          | 80  | 30 | 16            | 105 | 45 | 20            | 105 | 60 |
| 26                 |      | 131,7          | 147              | 20          | 85  | 35 | 20            | 110 | 45 | -             | -   | -  |
| 27                 |      | 136,74         | 152              | 20          | 85  | 35 | 20            | 110 | 45 | 20            | 110 | 60 |
| 28                 |      | 141,79         | 157              | 20          | 90  | 35 | 20            | 115 | 45 | -             | -   | -  |
| 29                 |      | 146,83         | 162              | 20          | 90  | 35 | 20            | 115 | 45 | -             | -   | -  |
| 30                 |      | 151,87         | 167              | 20          | 90  | 35 | 20            | 120 | 45 | 20            | 120 | 60 |
| 31                 |      | 156,92         | 173              | 20          | 95  | 35 | -             | -   | -  | -             | -   | -  |
| 32                 |      | 161,96         | 178              | 20          | 95  | 35 | 20            | 120 | 45 | -             | -   | -  |
| 33                 |      | 167,01         | 183              | 20          | 95  | 35 | -             | -   | -  | -             | -   | -  |
| 34                 |      | 172,05         | 188              | 20          | 95  | 35 | -             | -   | -  | -             | -   | -  |
| 35                 |      | 177,1          | 193              | 20          | 95  | 35 | -             | -   | -  | -             | -   | -  |
| 36                 |      | 182,14         | 198              | 20          | 100 | 35 | -             | -   | -  | -             | -   | -  |
| 37                 |      | 187,19         | 203              | 20          | 100 | 35 | -             | -   | -  | -             | -   | -  |
| 38                 |      | 192,24         | 208              | 20          | 100 | 35 | 20            | 120 | 45 | 25            | 120 | 60 |
| 39                 |      | 197,29         | 213              | 20          | 100 | 35 | -             | -   | -  | -             | -   | -  |
| 40                 |      | 202,35         | 218              | 20          | 100 | 35 | 20            | 120 | 45 | -             | -   | -  |
| 38                 | *    | 192,24         | 208              | -           | -   | -  | 29            | 100 | 50 | 31            | 100 | 60 |
| 45                 | *    | 227,58         | 243              | 19          | 80  | 40 | -             | -   | -  | -             | -   | -  |
| 57                 | *    | 288,18         | 304              | 23          | 90  | 45 | 29            | 100 | 56 | 31            | 100 | 63 |

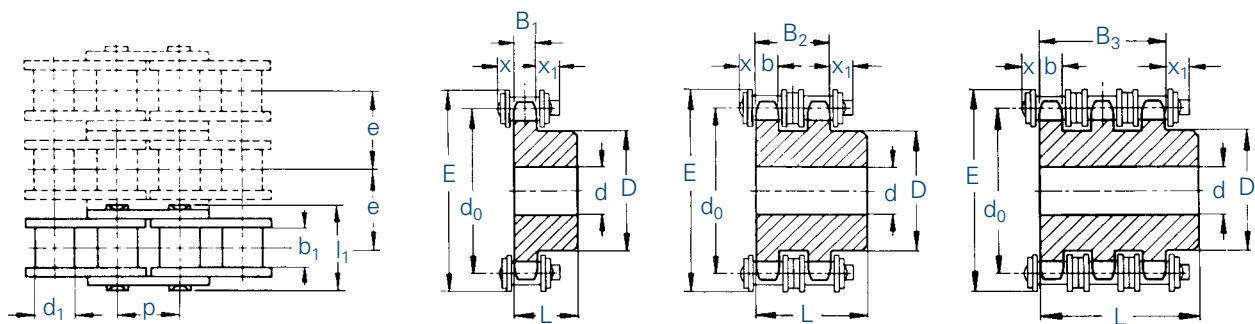
\* Cast iron GG22

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.



# SPROCKETS FOR ROLLER CHAINS ACCORDING TO DIN 8187

corresponding ISO 606

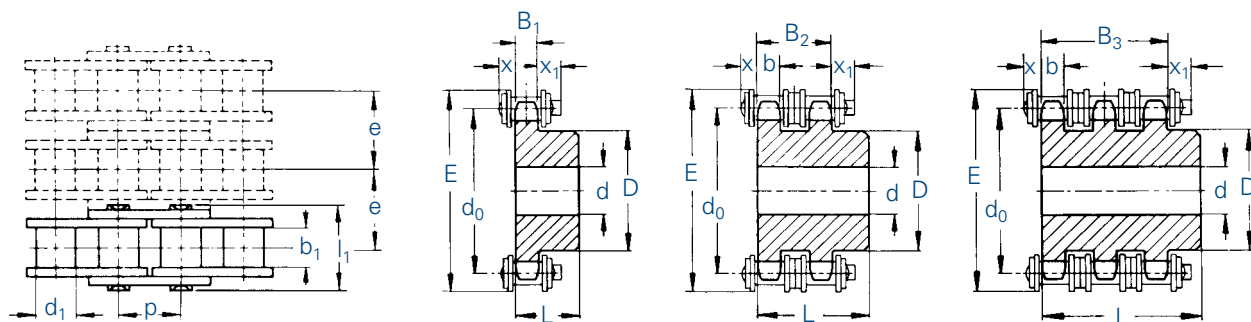


| Chain                                                                             |      | DIN    | Pitch | Inner width         | Roller Ø            | Width over pin | Transverse pitch | Tooth width    |      |                |                | Projection |                     |
|-----------------------------------------------------------------------------------|------|--------|-------|---------------------|---------------------|----------------|------------------|----------------|------|----------------|----------------|------------|---------------------|
|  | Ind. |        | p     | b <sub>1</sub> min. | d <sub>1</sub> max. | l max.         | e                | B <sub>1</sub> | b    | B <sub>2</sub> | B <sub>3</sub> | x max.     | x <sub>1</sub> max. |
|                                                                                   |      |        | mm    | mm                  | mm                  | mm             | mm               | mm             | mm   | mm             | mm             | mm         | mm                  |
| 513                                                                               |      | 12 B-1 | 19,05 | 11,68               | 12,07               | 22,7           | -                | 11,1           | -    | -              | -              | 6,4        | 11,0                |
| D 513                                                                             |      | 12 B-2 | 19,05 | 11,68               | 12,07               | 42,2           | 19,46            | -              | 10,8 | 30,3           | -              | 6,4        | 11,0                |
| T 513                                                                             |      | 12 B-3 | 19,05 | 11,68               | 12,07               | 61,7           | 19,46            | -              | 10,8 | -              | 49,8           | 6,4        | 11,0                |

| Number of teeth |      |                |                  |    | 513 (12 B-1) |    |    | D 513 (12 B-2) |    |    | T 513 (12 B-3) |    |    |
|-----------------|------|----------------|------------------|----|--------------|----|----|----------------|----|----|----------------|----|----|
| z               |      | d <sub>0</sub> | E <sub>max</sub> |    | d            | D  | L  | d              | D  | L  | d              | D  | L  |
|                 | Ind. | mm             | mm               |    | mm           | mm | mm | mm             | mm | mm | mm             | mm | mm |
| 10              |      | 61,65          | 79               | 12 | 42           | 30 | 12 | 42             | 45 | -  | -              | -  | -  |
| 11              |      | 67,62          | 85               | 14 | 46           | 35 | 16 | 47             | 50 | -  | -              | -  | -  |
| 12              |      | 73,6           | 91               | 14 | 52           | 35 | 16 | 53             | 50 | -  | -              | -  | -  |
| 13              |      | 79,6           | 97               | 14 | 58           | 35 | 16 | 59             | 50 | 20 | 59             | 70 | -  |
| 14              |      | 85,61          | 103              | 14 | 64           | 35 | 16 | 65             | 50 | -  | -              | -  | -  |
| 15              |      | 91,62          | 109              | 14 | 70           | 35 | 16 | 71             | 50 | 20 | 71             | 70 | -  |
| 16              |      | 97,65          | 115              | 16 | 75           | 35 | 20 | 77             | 50 | -  | -              | -  | -  |
| 17              |      | 103,67         | 121              | 16 | 80           | 35 | 20 | 83             | 50 | 20 | 83             | 70 | -  |
| 18              |      | 109,71         | 127              | 16 | 80           | 35 | 20 | 89             | 50 | -  | -              | -  | -  |
| 19              |      | 115,74         | 133              | 16 | 80           | 35 | 20 | 95             | 50 | 20 | 95             | 70 | -  |
| 20              |      | 121,78         | 139              | 16 | 80           | 35 | 20 | 100            | 50 | -  | -              | -  | -  |
| 21              |      | 127,82         | 145              | 20 | 90           | 40 | 20 | 100            | 50 | 20 | 100            | 70 | -  |
| 22              |      | 133,86         | 151              | 20 | 90           | 40 | 20 | 100            | 50 | -  | -              | -  | -  |
| 23              |      | 139,9          | 157              | 20 | 90           | 40 | 20 | 110            | 50 | 20 | 110            | 70 | -  |
| 24              |      | 145,95         | 163              | 20 | 90           | 40 | 20 | 110            | 50 | -  | -              | -  | -  |
| 25              |      | 151,99         | 169              | 20 | 90           | 40 | 20 | 120            | 50 | 20 | 120            | 70 | -  |
| 26              |      | 158,04         | 176              | 20 | 95           | 40 | 20 | 120            | 50 | -  | -              | -  | -  |
| 27              |      | 164,09         | 182              | 20 | 95           | 40 | 20 | 120            | 50 | -  | -              | -  | -  |
| 28              |      | 170,14         | 188              | 20 | 95           | 40 | 20 | 120            | 50 | -  | -              | -  | -  |
| 29              |      | 176,2          | 194              | 20 | 95           | 40 | 20 | 120            | 50 | -  | -              | -  | -  |
| 30              |      | 182,25         | 200              | 20 | 95           | 40 | 20 | 120            | 50 | 20 | 120            | 70 | -  |
| 31              |      | 188,3          | 206              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 32              |      | 194,35         | 212              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 33              |      | 200,41         | 218              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 34              |      | 206,46         | 224              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 35              |      | 212,52         | 230              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 36              |      | 218,57         | 236              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 37              |      | 224,63         | 242              | 20 | 100          | 40 | -  | -              | -  | -  | -              | -  | -  |
| 38              |      | 230,69         | 248              | 20 | 100          | 40 | 25 | 120            | 50 | 25 | 130            | 70 | -  |
| 39              |      | 236,74         | 254              | 20 | 100          | 40 | -  | -              | -  | 25 | 130            | 70 | -  |
| 40              |      | 242,8          | 260              | 20 | 100          | 40 | 25 | 120            | 50 | -  | -              | -  | -  |
| 38              | *    | 230,69         | 248              | -  | -            | -  | 23 | 130            | 63 | 31 | 140            | 70 | -  |
| 45              | *    | 273,09         | 290              | 23 | 100          | 56 | -  | -              | -  | -  | -              | -  | -  |
| 57              | *    | 345,81         | 363              | 29 | 100          | 56 | 29 | 130            | 63 | 39 | 140            | 70 | -  |

\* Cast iron GG22

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.

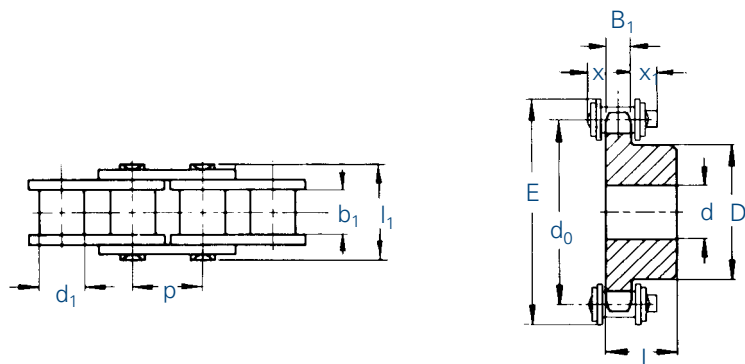


| Chain                                                                             |     |      | Pitch  | Inner width         | Roller Ø            | Width over pin | Transverse pitch | Tooth width    |      |                |                | Projection |                     |      |
|-----------------------------------------------------------------------------------|-----|------|--------|---------------------|---------------------|----------------|------------------|----------------|------|----------------|----------------|------------|---------------------|------|
|  |     | DIN  | p      | b <sub>1</sub> min. | d <sub>1</sub> max. | l max.         | e                | B <sub>1</sub> | b    | B <sub>2</sub> | B <sub>3</sub> | x max.     | x <sub>1</sub> max. |      |
|                                                                                   | No. | Ind. | No.    | mm                  | mm                  | mm             | mm               | mm             | mm   | mm             | mm             | mm         | mm                  |      |
| 548                                                                               |     |      | 16 B-1 | 25,4                | 17,02               | 15,88          | 36,1             | -              | 16,2 | -              | -              | -          | 10,8                | 16,2 |
| D 548                                                                             |     |      | 16 B-2 | 25,4                | 17,02               | 15,88          | 68,0             | 31,88          | -    | 15,8           | 47,7           | -          | 10,8                | 16,2 |
| T 548                                                                             |     |      | 16 B-3 | 25,4                | 17,02               | 15,88          | 99,9             | 31,88          | -    | 15,8           | -              | 79,6       | 10,8                | 16,2 |

| Number of teeth |      | 548 (16 B-1)   |                  |    |     |    | D 548 (16 B-2) |     |    | T 548 (16 B-3) |     |     |
|-----------------|------|----------------|------------------|----|-----|----|----------------|-----|----|----------------|-----|-----|
| z               |      | d <sub>0</sub> | E <sub>max</sub> | d  | D   | L  | d              | D   | L  | d              | D   | L   |
|                 | Ind. | mm             | mm               | mm | mm  | mm | mm             | mm  | mm | mm             | mm  | mm  |
| 10              |      | 82,2           | 104              | 16 | 55  | 35 | 16             | 56  | 65 | -              | -   | -   |
| 11              |      | 90,16          | 112              | 16 | 61  | 40 | 20             | 64  | 70 | 25             | 64  | 100 |
| 12              |      | 98,14          | 120              | 16 | 69  | 40 | 20             | 72  | 70 | -              | -   | -   |
| 13              |      | 106,14         | 128              | 16 | 78  | 40 | 20             | 80  | 70 | 25             | 80  | 100 |
| 14              |      | 114,15         | 136              | 16 | 84  | 40 | 20             | 88  | 70 | -              | -   | -   |
| 15              |      | 122,17         | 144              | 16 | 92  | 40 | 20             | 96  | 70 | 25             | 96  | 100 |
| 16              |      | 130,2          | 152              | 20 | 100 | 45 | 20             | 104 | 70 | -              | -   | -   |
| 17              |      | 138,23         | 160              | 20 | 100 | 45 | 20             | 112 | 70 | 30             | 112 | 100 |
| 18              |      | 146,27         | 168              | 20 | 100 | 45 | 20             | 120 | 70 | -              | -   | -   |
| 19              |      | 154,32         | 176              | 20 | 100 | 45 | 20             | 128 | 70 | 30             | 128 | 100 |
| 20              |      | 162,37         | 184              | 20 | 100 | 45 | 20             | 130 | 70 | -              | -   | -   |
| 21              |      | 170,42         | 192              | 20 | 110 | 50 | 25             | 130 | 70 | 30             | 130 | 100 |
| 22              |      | 178,48         | 200              | 20 | 110 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 23              |      | 186,54         | 208              | 20 | 110 | 50 | 25             | 130 | 70 | 30             | 130 | 100 |
| 24              |      | 194,6          | 216              | 20 | 110 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 25              |      | 202,66         | 224              | 20 | 110 | 50 | 25             | 130 | 70 | 30             | 130 | 100 |
| 26              |      | 210,72         | 232              | 20 | 120 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 27              |      | 218,79         | 240              | 20 | 120 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 28              |      | 226,86         | 248              | 20 | 120 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 29              |      | 234,93         | 256              | 20 | 120 | 50 | 25             | 130 | 70 | -              | -   | -   |
| 30              |      | 243            | 265              | 20 | 120 | 50 | 25             | 130 | 70 | 30             | 130 | 100 |
| 32              |      | 259,14         | 281              | 25 | 120 | 50 | -              | -   | -  | -              | -   | -   |
| 34              |      | 275,29         | 297              | 25 | 120 | 50 | -              | -   | -  | -              | -   | -   |
| 35              |      | 283,36         | 305              | 25 | 120 | 50 | -              | -   | -  | -              | -   | -   |
| 36              |      | 291,43         | 313              | 25 | 120 | 50 | -              | -   | -  | -              | -   | -   |
| 38              |      | 307,58         | 329              | 25 | 120 | 50 | 25             | 140 | 70 | 30             | 140 | 100 |
| 40              |      | 323,74         | 345              | 25 | 120 | 50 | 25             | 140 | 70 | -              | -   | -   |
| 45              | *    | 364,12         | 386              | 29 | 125 | 70 | -              | -   | -  | -              | -   | -   |
| 57              | *    | 461,08         | 483              | 34 | 125 | 70 | 39             | 160 | 90 | 44             | 165 | 100 |

\* Cast iron GG22

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.

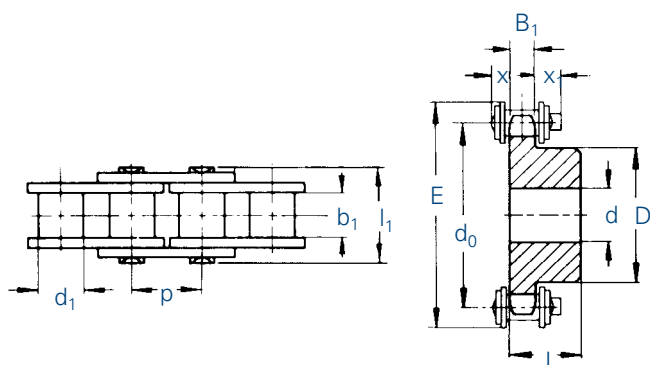


| Chain |      |        | Pitch | Inner width            | Roller<br>Ø            | Width over pin         | Tooth width    | Projection |                        |
|-------|------|--------|-------|------------------------|------------------------|------------------------|----------------|------------|------------------------|
|       |      | DIN    | p     | b <sub>1</sub><br>min. | d <sub>1</sub><br>max. | l <sub>1</sub><br>max. | B <sub>1</sub> | x<br>max.  | x <sub>1</sub><br>max. |
| No.   | Ind. | No.    | mm    | mm                     | mm                     | mm                     | mm             | mm         | mm                     |
| 563   |      | 20 B-1 | 31,75 | 19,56                  | 19,05                  | 43,2                   | 18,5           | 12,8       | 18,9                   |
| 596   |      | 24 B-1 | 38,10 | 25,40                  | 25,40                  | 53,4                   | 24,1           | 16,0       | 22,6                   |

| Number<br>of teeth |      | 563 (20 B-1)   |                  |    |     |    | 596 (24 B-1)   |                  |    |     |    |
|--------------------|------|----------------|------------------|----|-----|----|----------------|------------------|----|-----|----|
|                    |      | d <sub>0</sub> | E <sub>max</sub> | d  | D   | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D   | L  |
|                    | Ind. | mm             | mm               | mm | mm  | mm | mm             | mm               | mm | mm  | mm |
| 10                 |      | 102,75         | 130              | 20 | 70  | 40 | 123,30         | 157              | 20 | 80  | 45 |
| 11                 |      | 112,69         | 139              | 20 | 77  | 45 | 135,23         | 169              | 25 | 90  | 50 |
| 12                 |      | 122,67         | 149              | 20 | 88  | 45 | 147,21         | 181              | 25 | 102 | 50 |
| 13                 |      | 132,67         | 159              | 20 | 98  | 45 | 159,21         | 193              | 25 | 114 | 50 |
| 14                 |      | 142,68         | 169              | 20 | 108 | 45 | 171,22         | 205              | 25 | 128 | 50 |
| 15                 |      | 152,71         | 179              | 20 | 118 | 45 | 183,25         | 217              | 25 | 140 | 50 |
| 16                 |      | 162,74         | 190              | 25 | 120 | 50 | 195,29         | 229              | 25 | 140 | 55 |
| 17                 |      | 172,79         | 200              | 25 | 120 | 50 | 207,35         | 241              | 25 | 140 | *  |
| 18                 |      | 182,84         | 210              | 25 | 120 | 50 | 219,41         | 253              | 25 | 140 | *  |
| 19                 |      | 192,90         | 220              | 25 | 120 | *  | 231,48         | 265              | 25 | 140 | *  |
| 20                 |      | 202,96         | 230              | 25 | 120 | *  | 243,55         | 277              | 25 | 140 | *  |
| 21                 |      | 213,03         | 240              | 25 | 140 | *  | 255,63         | 289              | 25 | 150 | *  |
| 22                 |      | 223,10         | 250              | 25 | 140 | *  | 267,72         | 302              | 25 | 150 | *  |
| 23                 |      | 233,17         | 260              | 25 | 140 | *  | 279,81         | 314              | 25 | 150 | *  |
| 24                 |      | 243,25         | 270              | 25 | 140 | *  | 291,90         | 326              | 25 | 150 | *  |
| 25                 |      | 253,32         | 280              | 25 | 140 | *  | 303,99         | 338              | 25 | 150 | *  |

\* Possibly welded-on hub

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>. We supply sprockets with custom bore and groove according to specifications. For details on orders and enquiries see page 89. Other sprockets on request.

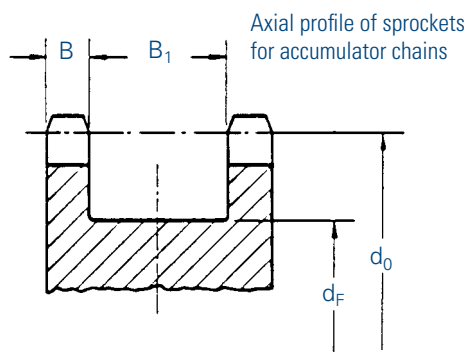


| Chain  | Pitch | Inner width         | Roller Ø            | Width over pin      | Tooth width    | Projection |                     |
|--------|-------|---------------------|---------------------|---------------------|----------------|------------|---------------------|
|        | p     | b <sub>1</sub> min. | d <sub>1</sub> max. | l <sub>1</sub> max. | B <sub>1</sub> | x max.     | x <sub>1</sub> max. |
| No.    | Ind.  | mm                  | mm                  | mm                  | mm             | mm         | mm                  |
| 455 RF |       | 9,525               | 5,72                | 6,35                | 13,5           | 5,3        | 4,5                 |
| 462 RF |       | 12,7                | 7,75                | 8,51                | 17,0           | 7,2        | 5,4                 |
| 501 RF |       | 15,875              | 9,65                | 10,16               | 19,6           | 9,1        | 5,6                 |
| 513 RF |       | 19,05               | 11,68               | 12,07               | 22,7           | 11,1       | 6,4                 |
| 548 RF |       | 25,4                | 17,02               | 15,88               | 36,1           | 16,2       | 10,8                |

| Number of teeth |      | 455 RF         |                  |    |    |    | 462 RF         |                  |    |    |    | 501 RF         |                  |    |    |    |
|-----------------|------|----------------|------------------|----|----|----|----------------|------------------|----|----|----|----------------|------------------|----|----|----|
| z               |      | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  |
| No.             | Ind. | mm             | mm               | mm | mm | mm | mm             | mm               | mm | mm | mm | mm             | mm               | mm | mm | mm |
| 13              |      | 39,79          | 49               | 10 | 28 | 25 | 53,06          | 66               | 10 | 37 | 28 | 66,32          | 82               | 12 | 47 | 30 |
| 15              |      | 45,81          | 55               | 10 | 34 | 25 | 61,09          | 74               | 10 | 45 | 28 | 76,36          | 92               | 12 | 57 | 30 |
| 17              |      | 51,83          | 61               | 10 | 40 | 28 | 69,11          | 82               | 12 | 52 | 28 | 86,39          | 102              | 12 | 60 | 30 |
| 19              |      | 57,87          | 67               | 10 | 45 | 28 | 77,16          | 90               | 12 | 60 | 28 | 96,45          | 112              | 14 | 70 | 30 |
| 21              |      | 63,91          | 73               | 12 | 48 | 28 | 85,22          | 98               | 14 | 68 | 28 | 106,52         | 122              | 16 | 80 | 30 |
| 23              |      | 69,65          | 79               | 12 | 52 | 28 | 93,27          | 106              | 14 | 70 | 28 | 116,58         | 132              | 16 | 80 | 30 |
| 25              |      | 76,00          | 85               | 12 | 57 | 28 | 101,33         | 114              | 14 | 70 | 28 | 126,66         | 142              | 16 | 80 | 30 |

| Number of teeth |      | 513 RF         |                  |    |    |    | 548 RF         |                  |    |     |    |
|-----------------|------|----------------|------------------|----|----|----|----------------|------------------|----|-----|----|
| z               |      | d <sub>0</sub> | E <sub>max</sub> | d  | D  | L  | d <sub>0</sub> | E <sub>max</sub> | d  | D   | L  |
| No.             | Ind. | mm             | mm               | mm | mm | mm | mm             | mm               | mm | mm  | mm |
| 13              |      | 79,59          | 97               | 16 | 58 | 35 | 106,12         | 128              | 16 | 78  | 40 |
| 15              |      | 91,63          | 109              | 16 | 70 | 35 | 122,17         | 144              | 16 | 92  | 40 |
| 17              |      | 103,67         | 121              | 16 | 80 | 35 | 138,22         | 160              | 20 | 100 | 45 |
| 19              |      | 115,75         | 133              | 16 | 80 | 35 | 154,33         | 176              | 20 | 100 | 45 |
| 21              |      | 127,82         | 145              | 20 | 90 | 40 | 170,43         | 192              | 20 | 110 | 50 |
| 23              |      | 139,90         | 157              | 20 | 90 | 40 | 186,54         | 208              | 20 | 110 | 50 |
| 25              |      | 152,00         | 169              | 20 | 90 | 40 | 202,66         | 224              | 20 | 110 | 50 |

Other sprockets made of stainless steel or plastic are available on request.

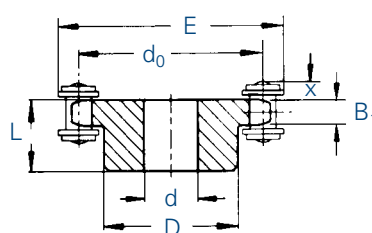
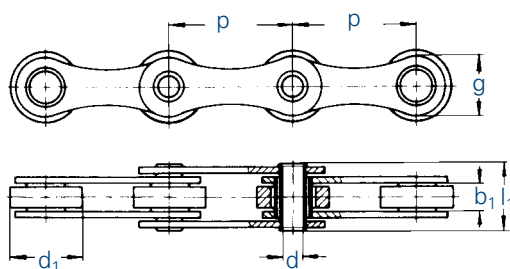


| Chain<br>No. | B <sub>1</sub><br>mm | B <sub>2</sub><br>mm |
|--------------|----------------------|----------------------|
| 513 SF       | 10,6                 | 20,80                |
| 513 SFK      | 10,6                 | 20,80                |
| 513 SFV      | 10,6                 | 20,80                |
| Pitch        | p                    | = 19,05              |
| Roller Ø     | d <sub>1</sub>       | = 12,00              |
| Inner width  | b <sub>1</sub>       | = 11,68              |

| Number of teeth<br>z | PCD<br>d <sub>0</sub> | Pilot bore<br>Ø | Hub-Ø<br>d <sub>F</sub><br>between sprockets |
|----------------------|-----------------------|-----------------|----------------------------------------------|
| 15 + 15              | 91,62                 | 20              | 61                                           |
| 17 + 17              | 103,67                | 20              | 73                                           |
| 19 + 19              | 115,73                | 20              | 85                                           |

Other sprockets made of stainless steel or plastic are available on request.

## SPROCKETS FOR HOLLOW PIN CHAINS 01650

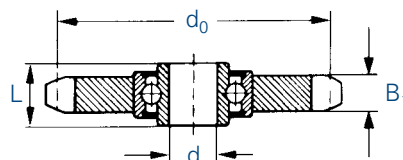
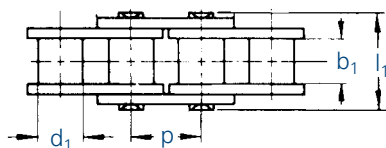


| Chain<br>No. | Pitch<br>p | Inner width<br>b <sub>1</sub><br>min. | Roller Ø<br>d <sub>1</sub><br>max. | Hollow pin Ø<br>d | Width over hollow pin<br>l <sub>1</sub><br>max. | Plate height<br>g | Number of teeth<br>z | Sprocket dimensions |                |    |      |    |           |    |
|--------------|------------|---------------------------------------|------------------------------------|-------------------|-------------------------------------------------|-------------------|----------------------|---------------------|----------------|----|------|----|-----------|----|
|              |            |                                       |                                    |                   |                                                 |                   |                      | B <sub>1</sub>      | d <sub>0</sub> | d  | D    | L  | E<br>max. | x  |
| 01650        | 50,8       | 10                                    | 30                                 | 8,2               | 27                                              | 26                | 7                    | 9                   | 117,08         | 20 | 80   | 40 | 148       | 10 |
| 01650        | 50,8       | 10                                    | 30                                 | 8,2               | 27                                              | 26                | 12                   | 9                   | 196,28         | 30 | 110* | 50 | 227       | 10 |
| 01650        | 50,8       | 10                                    | 30                                 | 8,2               | 27                                              | 26                | 15                   | 9                   | 244,33         | 30 | 120* | 50 | 275       | 10 |
| 01650        | 50,8       | 10                                    | 30                                 | 8,2               | 27                                              | 26                | 18                   | 9                   | 292,55         | 30 | 140* | 50 | 323       | 10 |

\* welded hub

We supply sprockets with custom bore and groove according to specifications.

## SPROCKETS WITH INTEGRATED BALL BEARING

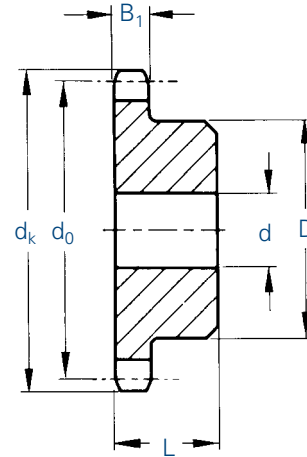
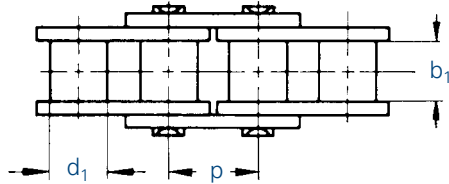


| Chain<br>No. | DIN<br>No. | Pitch<br>p |       | Inner width<br>b <sub>1</sub><br>min. | Roller Ø<br>d <sub>1</sub><br>max. | Width over pin<br>l <sub>1</sub><br>max. | Jockey sprocket<br>No. | Number of teeth<br>z | d <sub>0</sub><br>mm | B <sub>1</sub><br>mm | Bearing             |      | Load ratings |                         |
|--------------|------------|------------|-------|---------------------------------------|------------------------------------|------------------------------------------|------------------------|----------------------|----------------------|----------------------|---------------------|------|--------------|-------------------------|
|              |            | mm         | inch  |                                       |                                    |                                          |                        |                      |                      |                      | d<br>+ 0,3<br>+ 0,1 | L    | C<br>dyn.    | C <sub>v</sub><br>stat. |
| 455          | 06B-1      | 9,525      | 3/8   | 5,72                                  | 6,35                               | 13,5                                     | SPR 455                | 21                   | 63,91                | 5,3                  | 16                  | 18,3 | 7,5          | 4,5                     |
| 331          | 081        | 12,7       | 1/2   | 3,30                                  | 7,75                               | 10,2                                     | SPR 331                | 18                   | 73,14                | 3,0                  | 16                  | 18,3 | 7,5          | 4,5                     |
| 332          | -          | 12,7       | 1/2   | 4,88                                  | 7,75                               | 11,2                                     | SPR 332                | 18                   | 73,14                | 4,5                  | 16                  | 18,3 | 7,5          | 4,5                     |
| 462          | 08B-1      | 12,7       | 1/2   | 7,75                                  | 8,51                               | 17,0                                     | SPR 462                | 18                   | 73,14                | 7,2                  | 16                  | 18,3 | 7,5          | 4,5                     |
| 501          | 10B-1      | 15,875     | 5/8   | 9,65                                  | 10,16                              | 19,6                                     | SPR 501                | 17                   | 86,39                | 9,1                  | 16                  | 18,3 | 7,5          | 4,5                     |
| 513          | 12B-1      | 19,05      | 3/4   | 11,68                                 | 12,07                              | 22,7                                     | SPR 513                | 15                   | 91,62                | 11,1                 | 16                  | 18,3 | 7,5          | 4,5                     |
| 548          | 16B-1      | 25,4       | 1     | 17,02                                 | 15,88                              | 36,1                                     | SPR 548                | 12                   | 98,14                | 16,2                 | 20                  | 17,7 | 10,1         | 6,3                     |
| 563          | 20B-1      | 31,75      | 1 1/4 | 19,56                                 | 19,05                              | 43,2                                     | SPR 563                | 13                   | 132,67               | 18,5                 | 25                  | 21,0 | 11,0         | 7,1                     |

Made of steel with a strength of 500 - 600 N/mm<sup>2</sup>.

In all cases where the chain does not wrap around the sprocket, but only contacts it tangentially, the sprocket must be a lantern gear version, because only one tooth at a time meshes with the chain. Therefore the teeth of the sprocket are tempered to reduce wear. Thus roller chains are frequently used as a rack and pinion arrangement.

Rack and pinion arrangements with chains are inexpensive and easy to assemble. A spring clip connecting link or a connecting link with cottered pin is attached to both ends of a pre-stretched chain with an uneven number of links. By means of the connecting links the chain is then mounted to a clamping device. The chain must be supported over the whole length.



Formula for calculating the PCD:

$$d_0 = \frac{p}{\pi} \cdot z$$

Formula for calculating the permissible torque:

$$M_{\max.} = \frac{F_B \cdot N \cdot \frac{d_0}{2}}{10 \cdot 1000} \text{ Nm}$$

| Lantern gear | Number of teeth | PCD                 | Tip circle Ø        | Tooth width    | Bore   | Hub   |          | Roller chain | Pitch  | Inner width         | Roller Ø            |
|--------------|-----------------|---------------------|---------------------|----------------|--------|-------|----------|--------------|--------|---------------------|---------------------|
|              | z               | d <sub>0</sub> min. | d <sub>k</sub> max. | B <sub>1</sub> | d max. | Ø D   | length L |              | p      | b <sub>1</sub> min. | d <sub>1</sub> max. |
| No.          |                 | mm                  | mm                  | mm             | mm     | mm    | mm       | mm           | mm     | mm                  | mm                  |
| TRB 15462    | 15              | 60,64               | 69,1                | 6,3            | 10     | 30,5  | 25       | 462          | 12,7   | 7,75                | 8,51                |
| TRB 17462    | 17              | 68,72               | 77,2                | 6,3            | 12     | 38,5  | 25       | 462          | 12,7   | 7,75                | 8,51                |
| TRB 19462    | 19              | 76,81               | 85,3                | 6,3            | 12     | 46,5  | 25       | 462          | 12,7   | 7,75                | 8,51                |
| TRB 21462    | 21              | 84,89               | 93,4                | 6,3            | 16     | 54,5  | 25       | 462          | 12,7   | 7,75                | 8,51                |
| TRB 23462    | 23              | 92,98               | 101,4               | 6,3            | 16     | 63,0  | 25       | 462          | 12,7   | 7,75                | 8,51                |
| TRB 15501    | 15              | 75,80               | 85,9                | 8,0            | 12     | 45,5  | 25       | 501          | 15,875 | 9,65                | 10,16               |
| TRB 17501    | 17              | 85,90               | 96,0                | 8,0            | 16     | 55,5  | 25       | 501          | 15,875 | 9,65                | 10,16               |
| TRB 19501    | 19              | 96,01               | 106,1               | 8,0            | 16     | 66,0  | 25       | 501          | 15,875 | 9,65                | 10,16               |
| TRB 21501    | 21              | 106,12              | 116,2               | 8,0            | 16     | 76,0  | 25       | 501          | 15,875 | 9,65                | 10,16               |
| TRB 23501    | 23              | 116,22              | 126,3               | 8,0            | 16     | 86,0  | 25       | 501          | 15,875 | 9,65                | 10,16               |
| TRB 15513    | 15              | 90,96               | 103,0               | 9,5            | 16     | 45,0  | 35       | 513          | 19,05  | 11,68               | 12,07               |
| TRB 17513    | 17              | 103,08              | 115,1               | 9,5            | 20     | 57,0  | 35       | 513          | 19,05  | 11,68               | 12,07               |
| TRB 19513    | 19              | 115,21              | 127,3               | 9,5            | 20     | 69,0  | 35       | 513          | 19,05  | 11,68               | 12,07               |
| TRB 21513    | 21              | 127,34              | 139,4               | 9,5            | 20     | 81,0  | 35       | 513          | 19,05  | 11,68               | 12,07               |
| TRB 23513    | 23              | 139,47              | 151,5               | 9,5            | 20     | 93,0  | 35       | 513          | 19,05  | 11,68               | 12,07               |
| TRB 15548    | 15              | 121,28              | 137,1               | 14,0           | 20     | 75,0  | 40       | 548          | 25,4   | 17,02               | 15,88               |
| TRB 17548    | 17              | 137,45              | 153,3               | 14,0           | 20     | 91,0  | 40       | 548          | 25,4   | 17,02               | 15,88               |
| TRB 19548    | 19              | 153,62              | 169,5               | 14,0           | 20     | 107,0 | 40       | 548          | 25,4   | 17,02               | 15,88               |
| TRB 21548    | 21              | 169,79              | 185,6               | 14,0           | 25     | 123,0 | 40       | 548          | 25,4   | 17,02               | 15,88               |
| TRB 23548    | 23              | 185,96              | 201,8               | 14,0           | 25     | 140,0 | 40       | 548          | 25,4   | 17,02               | 15,88               |



# PLATE SPROCKETS FOR SIMPLEX ROLLER CHAINS ACCORDING TO DIN 8187

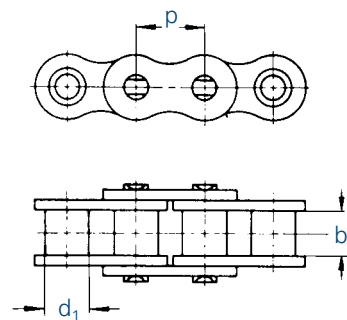
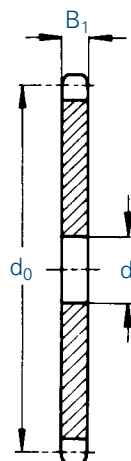
corresponding to ISO 606

made of steel

Plate thickness = 4 mm

6 mm as of  $z = 51$

8 mm as of  $z = 46$

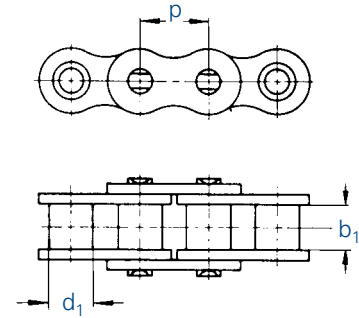
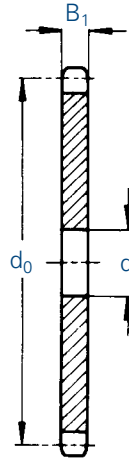


| Number of teeth |      | 445 (04)                                                           |    | 450 (05 B-1)                                                       |    | 455 (06 B-1)                                                               |    |
|-----------------|------|--------------------------------------------------------------------|----|--------------------------------------------------------------------|----|----------------------------------------------------------------------------|----|
|                 |      | $p = 6,0$ mm<br>$b_1 = 2,7$ mm<br>$d_1 = 4,0$ mm<br>$B_1 = 2,6$ mm |    | $p = 8,0$ mm<br>$b_1 = 3,0$ mm<br>$d_1 = 5,0$ mm<br>$B_1 = 2,8$ mm |    | $p = 9,525$ mm<br>$b_1 = 5,720$ mm<br>$d_1 = 6,350$ mm<br>$B_1 = 5,300$ mm |    |
| z               |      | $d_0$                                                              | d  | $d_0$                                                              | d  | $d_0$                                                                      | d  |
|                 | Ind. | mm                                                                 | mm | mm                                                                 | mm | mm                                                                         | mm |
| 11              |      | 21,30                                                              | 6  | 28,40                                                              | 8  | 33,81                                                                      | 8  |
| 12              |      | 23,18                                                              | 6  | 30,91                                                              | 8  | 36,80                                                                      | 8  |
| 13              |      | 25,07                                                              | 8  | 33,43                                                              | 8  | 39,80                                                                      | 8  |
| 14              |      | 26,96                                                              | 8  | 35,95                                                              | 8  | 42,81                                                                      | 8  |
| 15              |      | 28,86                                                              | 8  | 38,48                                                              | 8  | 45,81                                                                      | 8  |
| 16              |      | 30,75                                                              | 8  | 41,01                                                              | 8  | 48,82                                                                      | 10 |
| 17              |      | 32,65                                                              | 8  | 43,54                                                              | 8  | 51,84                                                                      | 10 |
| 18              |      | 34,55                                                              | 8  | 46,07                                                              | 8  | 54,85                                                                      | 10 |
| 19              |      | 36,45                                                              | 8  | 48,60                                                              | 8  | 57,87                                                                      | 10 |
| 20              |      | 38,36                                                              | 8  | 51,14                                                              | 8  | 60,89                                                                      | 10 |
| 21              |      | 40,26                                                              | 8  | 53,68                                                              | 8  | 63,91                                                                      | 10 |
| 22              |      | 42,16                                                              | 8  | 56,21                                                              | 8  | 66,93                                                                      | 10 |
| 23              |      | 44,06                                                              | 8  | 58,75                                                              | 8  | 69,95                                                                      | 10 |
| 24              |      | 45,97                                                              | 8  | 61,29                                                              | 8  | 72,97                                                                      | 10 |
| 25              |      | 47,87                                                              | 8  | 63,83                                                              | 8  | 76,00                                                                      | 10 |
| 26              |      | 49,78                                                              | 8  | 66,37                                                              | 10 | 79,02                                                                      | 10 |
| 27              |      | 51,68                                                              | 8  | 68,91                                                              | 10 | 82,05                                                                      | 10 |
| 28              |      | 53,59                                                              | 8  | 71,45                                                              | 10 | 85,07                                                                      | 10 |
| 29              |      | -                                                                  | -  | 73,99                                                              | 10 | 88,10                                                                      | 10 |
| 30              |      | 57,40                                                              | 8  | 76,53                                                              | 10 | 91,12                                                                      | 10 |
| 31              |      | -                                                                  | -  | 79,08                                                              | 10 | 94,15                                                                      | 12 |
| 32              |      | 61,21                                                              | 8  | 81,62                                                              | 10 | 97,18                                                                      | 12 |
| 33              |      | 63,12                                                              | 8  | 84,16                                                              | 10 | 100,20                                                                     | 12 |
| 34              |      | 65,03                                                              | 8  | 86,70                                                              | 10 | 103,23                                                                     | 12 |
| 35              |      | 66,93                                                              | 8  | 89,25                                                              | 10 | 106,26                                                                     | 12 |
| 36              |      | 68,84                                                              | 8  | 91,79                                                              | 10 | 109,29                                                                     | 12 |
| 37              |      | 70,75                                                              | 8  | 94,33                                                              | 10 | 112,31                                                                     | 12 |
| 38              |      | 72,65                                                              | 8  | 96,88                                                              | 10 | 115,34                                                                     | 12 |
| 39              |      | -                                                                  | -  | 99,42                                                              | 10 | 118,37                                                                     | 12 |
| 40              |      | 76,47                                                              | 8  | 101,96                                                             | 10 | 121,40                                                                     | 12 |
| 45              |      | 86,01                                                              | 10 | 114,68                                                             | 12 | 136,55                                                                     | 16 |
| 57              |      | 108,92                                                             | 12 | 145,22                                                             | 14 | 172,91                                                                     | 16 |
| 65              |      | 124,19                                                             | 14 | 165,59                                                             | 16 | 197,15                                                                     | 20 |

made of steel

Plate thickness = 4 mm

331 (081) as of z = 41



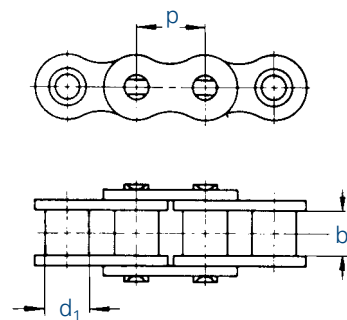
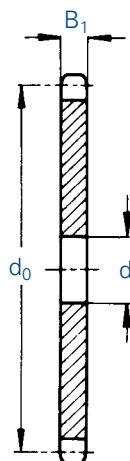
| Number of teeth<br><br>z | 331 (081)                                                                                        |        | 332                                                                                              |        | 462 (08 B-1)                                                                                     |        | 501 (10 B-1)                                                                                          |        |
|--------------------------|--------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------|--------|
|                          | p = 12,70 mm<br>b <sub>1</sub> = 3,30 mm<br>d <sub>1</sub> = 7,75 mm<br>B <sub>1</sub> = 3,00 mm |        | p = 12,70 mm<br>b <sub>1</sub> = 4,88 mm<br>d <sub>1</sub> = 7,75 mm<br>B <sub>1</sub> = 4,50 mm |        | p = 12,70 mm<br>b <sub>1</sub> = 7,75 mm<br>d <sub>1</sub> = 8,51 mm<br>B <sub>1</sub> = 7,20 mm |        | p = 15,875 mm<br>b <sub>1</sub> = 9,650 mm<br>d <sub>1</sub> = 10,160 mm<br>B <sub>1</sub> = 9,100 mm |        |
|                          | d <sub>0</sub>                                                                                   | d      | d <sub>0</sub>                                                                                   | d      | d <sub>0</sub>                                                                                   | d      | d <sub>0</sub>                                                                                        | d      |
|                          | Ind.                                                                                             | mm     | mm                                                                                               | mm     | mm                                                                                               | mm     | mm                                                                                                    | mm     |
| 11                       |                                                                                                  | 45,08  | 8                                                                                                | 45,08  | 8                                                                                                | 45,08  | 10                                                                                                    | 56,35  |
| 12                       |                                                                                                  | 49,07  | 8                                                                                                | 49,07  | 8                                                                                                | 49,07  | 10                                                                                                    | 61,34  |
| 13                       |                                                                                                  | 53,07  | 8                                                                                                | 53,07  | 8                                                                                                | 53,07  | 10                                                                                                    | 66,34  |
| 14                       |                                                                                                  | 57,07  | 8                                                                                                | 57,07  | 8                                                                                                | 57,07  | 10                                                                                                    | 71,34  |
| 15                       |                                                                                                  | 61,08  | 8                                                                                                | 61,08  | 8                                                                                                | 61,08  | 10                                                                                                    | 76,35  |
| 16                       |                                                                                                  | 65,10  | 10                                                                                               | 65,10  | 10                                                                                               | 65,10  | 12                                                                                                    | 81,37  |
| 17                       |                                                                                                  | 69,12  | 10                                                                                               | 69,12  | 10                                                                                               | 69,12  | 12                                                                                                    | 86,39  |
| 18                       |                                                                                                  | 73,14  | 10                                                                                               | 73,14  | 10                                                                                               | 73,14  | 12                                                                                                    | 91,42  |
| 19                       |                                                                                                  | 77,16  | 10                                                                                               | 77,16  | 10                                                                                               | 77,16  | 12                                                                                                    | 96,45  |
| 20                       |                                                                                                  | 81,18  | 10                                                                                               | 81,18  | 10                                                                                               | 81,18  | 12                                                                                                    | 101,48 |
| 21                       |                                                                                                  | 85,21  | 10                                                                                               | 85,21  | 12                                                                                               | 85,21  | 12                                                                                                    | 106,51 |
| 22                       |                                                                                                  | 89,24  | 10                                                                                               | 89,24  | 12                                                                                               | 89,24  | 12                                                                                                    | 111,55 |
| 23                       |                                                                                                  | 93,27  | 10                                                                                               | 93,27  | 12                                                                                               | 93,27  | 12                                                                                                    | 116,59 |
| 24                       |                                                                                                  | 97,30  | 10                                                                                               | 97,30  | 12                                                                                               | 97,30  | 12                                                                                                    | 121,62 |
| 25                       |                                                                                                  | 101,33 | 10                                                                                               | 101,33 | 12                                                                                               | 101,33 | 12                                                                                                    | 126,66 |
| 26                       |                                                                                                  | 105,36 | 12                                                                                               | 105,36 | 16                                                                                               | 105,36 | 16                                                                                                    | 131,70 |
| 27                       |                                                                                                  | 109,40 | 12                                                                                               | 109,40 | 16                                                                                               | 109,40 | 16                                                                                                    | 136,74 |
| 28                       |                                                                                                  | 113,43 | 12                                                                                               | 113,43 | 16                                                                                               | 113,43 | 16                                                                                                    | 141,79 |
| 29                       |                                                                                                  | -      | -                                                                                                | 117,46 | 12                                                                                               | 117,46 | 16                                                                                                    | 146,83 |
| 30                       |                                                                                                  | 121,50 | 12                                                                                               | 121,50 | 12                                                                                               | 121,50 | 16                                                                                                    | 151,87 |
| 31                       |                                                                                                  | -      | -                                                                                                | 125,53 | 12                                                                                               | 125,53 | 16                                                                                                    | 156,92 |
| 32                       |                                                                                                  | 129,57 | 12                                                                                               | 129,57 | 12                                                                                               | 129,57 | 16                                                                                                    | 161,96 |
| 33                       |                                                                                                  | 133,61 | 12                                                                                               | 133,61 | 12                                                                                               | 133,61 | 16                                                                                                    | 167,01 |
| 34                       |                                                                                                  | 137,64 | 12                                                                                               | 137,64 | 12                                                                                               | 137,64 | 16                                                                                                    | 172,05 |
| 35                       |                                                                                                  | 141,68 | 12                                                                                               | 141,68 | 12                                                                                               | 141,68 | 16                                                                                                    | 177,10 |
| 36                       |                                                                                                  | 145,72 | 16                                                                                               | 145,72 | 16                                                                                               | 145,72 | 16                                                                                                    | 182,14 |
| 37                       |                                                                                                  | 149,75 | 16                                                                                               | 149,75 | 16                                                                                               | 149,75 | 16                                                                                                    | 187,19 |
| 38                       |                                                                                                  | 153,79 | 16                                                                                               | 153,79 | 16                                                                                               | 153,79 | 16                                                                                                    | 192,24 |
| 39                       |                                                                                                  | 157,83 | 16                                                                                               | 157,83 | 16                                                                                               | 157,83 | 16                                                                                                    | 197,29 |
| 40                       |                                                                                                  | 161,87 | 16                                                                                               | 161,87 | 16                                                                                               | 161,87 | 16                                                                                                    | 202,35 |
| 45                       |                                                                                                  | 182,06 | 16                                                                                               | 182,06 | 16                                                                                               | 182,06 | 20                                                                                                    | 227,58 |
| 57                       |                                                                                                  | 230,54 | 20                                                                                               | 230,54 | 20                                                                                               | -      | 25                                                                                                    | 288,18 |
| 65                       |                                                                                                  | -      | -                                                                                                | 262,87 | 20                                                                                               | 262,87 | 25                                                                                                    | 328,58 |



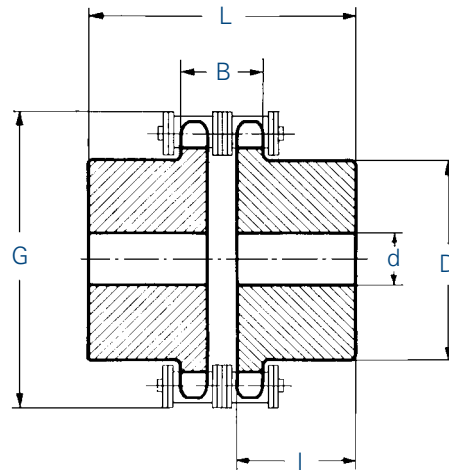
# PLATE SPROCKETS FOR SIMPLEX ROLLER CHAINS ACCORDING TO DIN 8187

corresponding to ISO 606

made of steel



| Number of teeth<br><br>z | 513 (12 B-1)                                                                                        |    | 548 (16 B-1)                                                                                        |    | 563 (20 B-1)                                                                                        |    | 596 (24 B-1)                                                                                        |    |
|--------------------------|-----------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------|----|
|                          | p = 19,05 mm<br>b <sub>1</sub> = 11,68 mm<br>d <sub>1</sub> = 12,07 mm<br>B <sub>1</sub> = 11,10 mm |    | p = 25,40 mm<br>b <sub>1</sub> = 17,02 mm<br>d <sub>1</sub> = 15,88 mm<br>B <sub>1</sub> = 16,20 mm |    | p = 31,75 mm<br>b <sub>1</sub> = 19,56 mm<br>d <sub>1</sub> = 19,05 mm<br>B <sub>1</sub> = 18,50 mm |    | p = 38,10 mm<br>b <sub>1</sub> = 25,40 mm<br>d <sub>1</sub> = 25,40 mm<br>B <sub>1</sub> = 24,10 mm |    |
|                          | d <sub>0</sub>                                                                                      | d  | d <sub>0</sub>                                                                                      | d  | d <sub>0</sub>                                                                                      | d  | d <sub>0</sub>                                                                                      | d  |
| Ind.                     | mm                                                                                                  | mm | mm                                                                                                  | mm | mm                                                                                                  | mm | mm                                                                                                  | mm |
| 11                       | 67,62                                                                                               | 14 | 90,16                                                                                               | 15 | 112,69                                                                                              | 16 | 135,23                                                                                              | 20 |
| 12                       | 73,60                                                                                               | 14 | 98,14                                                                                               | 15 | 122,67                                                                                              | 20 | 147,21                                                                                              | 20 |
| 13                       | 79,60                                                                                               | 14 | 106,14                                                                                              | 15 | 132,67                                                                                              | 20 | 159,21                                                                                              | 20 |
| 14                       | 85,61                                                                                               | 14 | 114,15                                                                                              | 15 | 142,68                                                                                              | 20 | 171,22                                                                                              | 20 |
| 15                       | 91,62                                                                                               | 14 | 122,17                                                                                              | 15 | 152,71                                                                                              | 20 | 183,25                                                                                              | 20 |
| 16                       | 97,65                                                                                               | 14 | 130,20                                                                                              | 19 | 162,74                                                                                              | 25 | 195,29                                                                                              | 25 |
| 17                       | 103,67                                                                                              | 14 | 138,23                                                                                              | 19 | 172,79                                                                                              | 25 | 207,35                                                                                              | 25 |
| 18                       | 109,71                                                                                              | 14 | 146,27                                                                                              | 19 | 182,84                                                                                              | 25 | 219,41                                                                                              | 25 |
| 19                       | 115,74                                                                                              | 14 | 154,32                                                                                              | 19 | 192,90                                                                                              | 25 | 231,48                                                                                              | 25 |
| 20                       | 121,78                                                                                              | 14 | 162,37                                                                                              | 19 | 202,96                                                                                              | 25 | 243,55                                                                                              | 25 |
| 21                       | 127,82                                                                                              | 16 | 170,42                                                                                              | 20 | 213,03                                                                                              | 25 | 255,63                                                                                              | 25 |
| 22                       | 133,86                                                                                              | 16 | 178,48                                                                                              | 20 | 223,10                                                                                              | 25 | 267,72                                                                                              | 25 |
| 23                       | 139,90                                                                                              | 16 | 186,54                                                                                              | 20 | 233,17                                                                                              | 25 | 279,81                                                                                              | 25 |
| 24                       | 145,95                                                                                              | 16 | 194,60                                                                                              | 20 | 243,25                                                                                              | 25 | 291,90                                                                                              | 25 |
| 25                       | 151,99                                                                                              | 16 | 202,66                                                                                              | 20 | 253,32                                                                                              | 25 | 303,99                                                                                              | 25 |
| 26                       | 158,04                                                                                              | 16 | 210,72                                                                                              | 20 | 263,40                                                                                              | 25 | -                                                                                                   | -  |
| 27                       | 164,09                                                                                              | 16 | 218,79                                                                                              | 20 | 273,49                                                                                              | 25 | 328,19                                                                                              | 30 |
| 28                       | 170,14                                                                                              | 16 | 226,86                                                                                              | 20 | 283,57                                                                                              | 25 | -                                                                                                   | -  |
| 29                       | 176,20                                                                                              | 16 | 234,93                                                                                              | 20 | 293,66                                                                                              | 25 | 352,39                                                                                              | 30 |
| 30                       | 182,25                                                                                              | 16 | 243,00                                                                                              | 20 | 303,75                                                                                              | 25 | 364,50                                                                                              | 30 |
| 31                       | 188,30                                                                                              | 20 | 251,07                                                                                              | 25 | 313,83                                                                                              | 25 | -                                                                                                   | -  |
| 32                       | 194,35                                                                                              | 20 | 259,14                                                                                              | 25 | 323,92                                                                                              | 25 | 388,71                                                                                              | 30 |
| 33                       | 200,41                                                                                              | 20 | 267,21                                                                                              | 25 | 334,01                                                                                              | 25 | -                                                                                                   | -  |
| 34                       | 206,46                                                                                              | 20 | 275,29                                                                                              | 25 | 344,11                                                                                              | 25 | -                                                                                                   | -  |
| 35                       | 212,52                                                                                              | 20 | 283,36                                                                                              | 25 | 354,20                                                                                              | 25 | 425,04                                                                                              | 30 |
| 36                       | 218,57                                                                                              | 20 | 291,43                                                                                              | 25 | 364,29                                                                                              | 25 | -                                                                                                   | -  |
| 37                       | 224,63                                                                                              | 20 | 299,51                                                                                              | 25 | 374,38                                                                                              | 25 | -                                                                                                   | -  |
| 38                       | 230,69                                                                                              | 20 | 307,58                                                                                              | 25 | 384,48                                                                                              | 25 | 461,38                                                                                              | 30 |
| 39                       | 236,74                                                                                              | 20 | 315,66                                                                                              | 25 | 394,57                                                                                              | 25 | -                                                                                                   | -  |
| 40                       | 242,80                                                                                              | 20 | 323,74                                                                                              | 25 | 404,67                                                                                              | 25 | 485,60                                                                                              | 30 |
| 45                       | 273,09                                                                                              | 25 | 364,12                                                                                              | 25 | 455,16                                                                                              | 30 | 546,19                                                                                              | 30 |
| 57                       | 345,81                                                                                              | 25 | 461,08                                                                                              | 30 | 576,35                                                                                              | 30 | 691,63                                                                                              | 30 |
| 65                       | 394,30                                                                                              | 25 | 525,73                                                                                              | 30 | 657,17                                                                                              | 30 | 788,60                                                                                              | 40 |

**Advantages:**

- Elastic torque transmission
- Fast decoupling by simply slackening the chain
- Especially inexpensive.

**Example:**

A 4-cylinder diesel engine with  
 $P = 110 \text{ kW}$  and  $n = 1400 \text{ rpm}$   
 is to be coupled to a three-phase  
 alternator - dynamic load factor 1,5.

The calculation is as follows:

$$1,5 \frac{P}{n} = 1,5 \frac{110}{1400} = 0,1178$$

Select the coupling according to  $\frac{P}{n}$   
 column (see below):

The coupling next in size is No. 548 18.

**Dynamic load factors**

| Load type of driven machines | Drive machines  |                             |                       |
|------------------------------|-----------------|-----------------------------|-----------------------|
|                              | Electric motors | Internal combustion engines |                       |
|                              |                 | 4 cylinders and more        | less than 4 cylinders |
| impact-free                  | 1,0             | 1,5                         | 2,0                   |
| low impact                   | 1,5             | 2,0                         | 2,5                   |
| high impact                  | 2,0             | 2,5                         | 3,0                   |

| Coupling                                                                            |      | Torque | Flywheel effect  | $\frac{P}{n}$ | n max. | d max. | D   | l   | B     | Required space |       | Weight   |
|-------------------------------------------------------------------------------------|------|--------|------------------|---------------|--------|--------|-----|-----|-------|----------------|-------|----------|
|  |      | $M_d$  | $mD^2$           |               |        |        |     |     |       | G              | L     | q max.   |
| No.                                                                                 | Ind. | Nm     | kgm <sup>2</sup> | kW/rpm        | rpm    | mm     | mm  | mm  | mm    | mm             | mm    | kg/piece |
| 450 18                                                                              |      | 38     | 0,000 405        | 0,0039        | 8 000  | 10     | 38  | 20  | 8,2   | 53,5           | 43,0  | 0,41     |
| 455 14                                                                              | *    | 60     | 0,000 410        | 0,0062        | 6 000  | 12     | 33  | 22  | 15,2  | 51,8           | 49,0  | 0,41     |
| 455 18                                                                              | *    | 95     | 0,001 170        | 0,0097        | 6 000  | 12     | 45  | 25  | 15,2  | 63,9           | 55,0  | 0,78     |
| 462 14                                                                              | *    | 150    | 0,001 650        | 0,0154        | 5 500  | 15     | 44  | 28  | 20,7  | 70,0           | 63,0  | 0,93     |
| 462 18                                                                              | *    | 240    | 0,004 740        | 0,0246        | 5 500  | 15     | 60  | 32  | 20,7  | 86,0           | 71,0  | 1,83     |
| 501 18                                                                              | *    | 380    | 0,013            | 0,0390        | 4 500  | 15     | 75  | 35  | 25,0  | 107,0          | 78,0  | 3,21     |
| 513 18                                                                              | *    | 600    | 0,030 100        | 0,0616        | 3 000  | 25     | 90  | 40  | 29,5  | 126,5          | 89,5  | 4,97     |
| 513 24                                                                              | *    | 940    | 0,107            | 0,0965        | 2 500  | 25     | 125 | 50  | 29,5  | 162,5          | 109,5 | 10,90    |
| 548 18                                                                              | *    | 1 480  | 0,158            | 0,1519        | 2 500  | 30     | 120 | 60  | 46,7  | 170,0          | 137,0 | 12,30    |
| 548 24                                                                              | *    | 2 350  | 0,517            | 0,2413        | 2 000  | 30     | 165 | 70  | 46,7  | 219,0          | 157,0 | 27,65    |
| 563 22                                                                              | *    | 3 700  | 0,882            | 0,3798        | 1 800  | 40     | 180 | 75  | 53,5  | 250,0          | 169,5 | 37,50    |
| 596 18                                                                              | *    | 5 800  | 1,160            | 0,5954        | 1 200  | 50     | 180 | 80  | 70,4  | 256,0          | 186,5 | 43,50    |
| 596 24                                                                              | *    | 9 200  | 3,250            | 0,9445        | 1 200  | 50     | 220 | 100 | 70,4  | 328,0          | 226,5 | 78,50    |
| 652 22                                                                              |      | 14 500 | 7,940            | 1,4887        | 1 000  | 60     | 260 | 120 | 85,6  | 401,0          | 272,0 | 138,00   |
| 671 20                                                                              |      | 23 000 | 18,710           | 2,3613        | 800    | 75     | 300 | 150 | 105,3 | 466,0          | 340,0 | 231,00   |

\* can also be supplied in maintenance-free Marathon design. In this case please put MA after the number for the coupling, e.g. 462 14 MA

Couplings are supplied unassembled and the loose chain is enclosed.  
 Other sprockets, number of teeth, chain types and dimensions on request.

For enquiries and orders please supply the following details:

1. Number of couplings
2. Chain pitch
3. Number of teeth
4. Coupling No. or alternatively torque to be transmitted
5. Bores of coupling halves
6. Groove sizes (for keyways also tightening direction); without additional specifications we will supply sprockets on the basis of DIN 6885 sheet 1

## Standard sprockets

Standard sprockets can be supplied ex stock with custom bore or bored and grooved "ready-to-install" at extra cost.

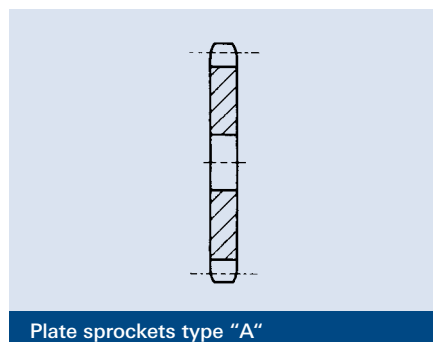
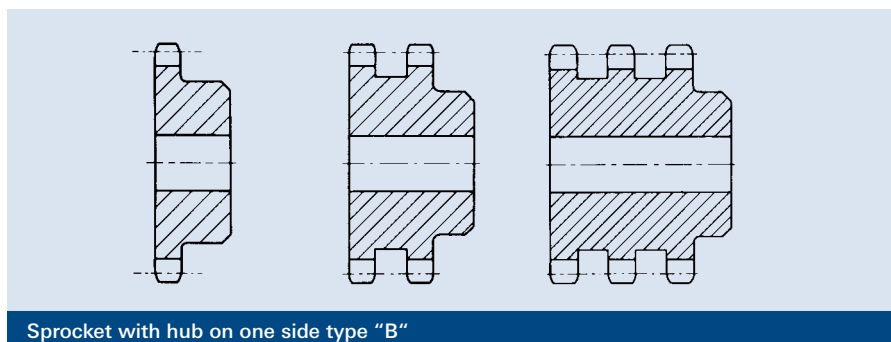


Plate sprockets type "A"

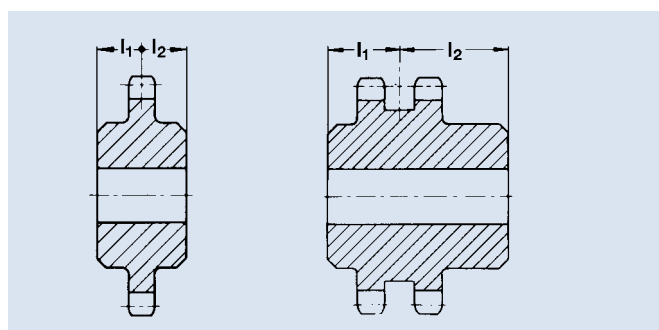


Sprocket with hub on one side type "B"

## Sprockets made to specifications

Sprockets can be manufactured to your specifications and drawings.

**Sprockets with hub on both sides (type "C")** can be symmetrical or asymmetrical. For asymmetrical hub lengths the two hub sections  $l_1$  and  $l_2$  up to the centre of the sprocket must be stated in your order.



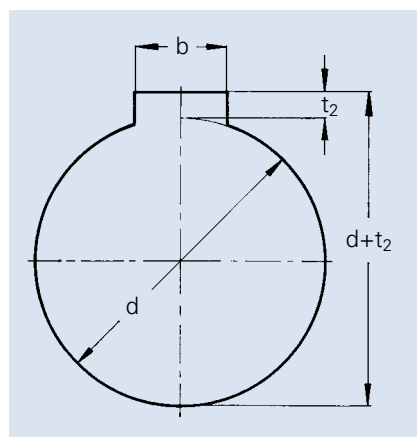
## Material grades

For sprockets with a diameter of up to approx. 300 mm unalloyed steel with a steel strength of 500 - 600 N/mm<sup>2</sup> (S355JOC, C45 and the like) are usually sufficient.

For larger sprockets cast iron suffices in case of normal loads. For drive pinions subjected to high loads with speeds

of more than 500 rpm or with chain speeds of more than 1 m/s it is recommended to harden or to harden and temper the teeth to 50 ± 2 HRC.

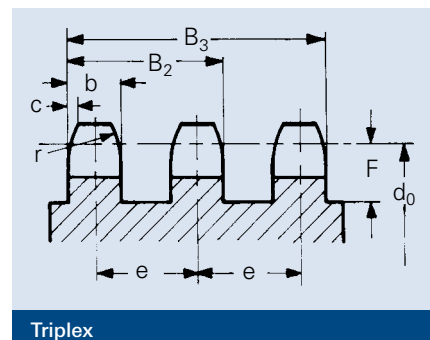
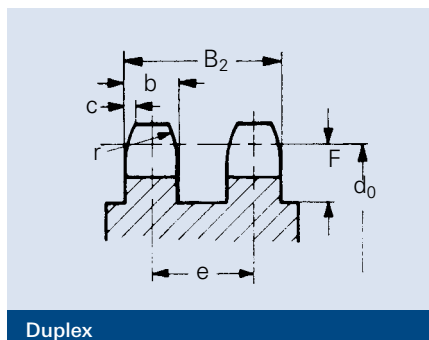
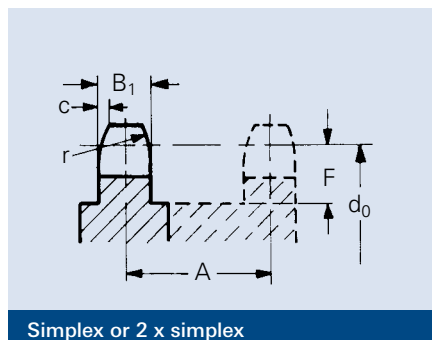
## GROOVE SIZES



Groove sizes for woodruff keys DIN 6888 are in accordance with: DIN 6885 sheet 1 (with clearance) design A, DIN 6885 sheet 2 design B

We manufacture hub grooves only when specifically ordered by our customers. If no further specifications are given, we will work according to DIN 6885 sheet 1.

| DIN<br><br>for shaft<br>diameter<br><br>d |  | Groove<br>width<br><br>b | Feather keys                |                  |                 |                   |                  | Keyways |      | Hollow keys | Flat keys |
|-------------------------------------------|--|--------------------------|-----------------------------|------------------|-----------------|-------------------|------------------|---------|------|-------------|-----------|
|                                           |  |                          | 6885<br>Sheet 1             |                  | 6885<br>Sheet 2 | 6885<br>Sheet 3   |                  | 6886    | 6887 | 6881/6889   | 6883/6884 |
|                                           |  |                          | Groove depth t <sub>2</sub> |                  |                 |                   |                  |         |      |             |           |
|                                           |  |                          | with<br>clearance           | with<br>oversize |                 | with<br>clearance | with<br>oversize |         |      |             |           |
| more than 6 to 8                          |  | 2,0                      | 1,0                         | 0,5              | -               | -                 | -                | 0,5     | -    | -           | -         |
| " 8 " 10                                  |  | 3,0                      | 1,4                         | 0,9              | -               | -                 | -                | 0,9     | -    | -           | -         |
| " 10 " 12                                 |  | 4,0                      | 1,8                         | 1,2              | 1,1             | -                 | -                | 1,2     | 1,2  | -           | -         |
| " 12 " 17                                 |  | 5,0                      | 2,3                         | 1,7              | 1,3             | 1,2               | 0,8              | 1,7     | 1,7  | -           | -         |
| " 17 " 22                                 |  | 6,0                      | 2,8                         | 2,2              | 1,7             | 1,6               | 1,1              | 2,2     | 2,2  | -           | -         |
| " 22 " 30                                 |  | 8,0                      | 3,3                         | 2,4              | 1,7             | 2,0               | 1,4              | 2,4     | 2,4  | 3,2         | 3,2       |
| " 30 " 38                                 |  | 10,0                     | 3,3                         | 2,4              | 2,1             | 2,4               | 1,8              | 2,4     | 2,4  | 3,7         | 3,7       |
| " 38 " 44                                 |  | 12,0                     | 3,3                         | 2,4              | 2,1             | 2,2               | 1,6              | 2,4     | 2,4  | 3,7         | 3,7       |
| " 44 " 50                                 |  | 14,0                     | 3,8                         | 2,9              | 2,6             | 2,1               | 1,4              | 2,9     | 2,9  | 4,0         | 4,0       |
| " 50 " 58                                 |  | 16,0                     | 4,3                         | 3,4              | 2,6             | 2,4               | 1,7              | 3,4     | 3,4  | 4,5         | 4,5       |
| " 58 " 65                                 |  | 18,0                     | 4,4                         | 3,4              | 3,1             | 2,3               | 1,6              | 3,4     | 3,4  | 4,5         | 4,5       |
| " 65 " 75                                 |  | 20,0                     | 4,9                         | 3,9              | 4,1             | 2,7               | 2,0              | 3,9     | 3,9  | 5,5         | 5,5       |
| " 75 " 85                                 |  | 22,0                     | 5,4                         | 4,4              | 4,1             | 3,1               | 2,4              | 4,4     | 4,4  | 6,5         | 6,5       |
| " 85 " 95                                 |  | 25,0                     | 5,4                         | 4,4              | 4,1             | 2,9               | 2,2              | 4,4     | 4,4  | 6,4         | 6,4       |
| " 95 " 110                                |  | 28,0                     | 6,4                         | 5,4              | 5,1             | 3,2               | 2,4              | 5,4     | 5,4  | 6,9         | 6,9       |
| " 110 " 130                               |  | 32,0                     | 7,4                         | 6,4              | 5,2             | 3,5               | 2,7              | 6,4     | 6,4  | 7,9         | 7,9       |
| " 130 " 150                               |  | 36,0                     | 8,4                         | 7,1              | 6,5             | 3,8               | 3,0              | 7,1     | 7,1  | 8,4         | 8,4       |
| " 150 " 170                               |  | 40,0                     | 9,4                         | 8,1              | 8,2             | -                 | -                | 8,1     | 8,1  | -           | 9,1       |
| " 170 " 200                               |  | 45,0                     | 10,4                        | 9,1              | -               | -                 | -                | 9,1     | 9,1  | -           | 10,4      |
| " 200 " 230                               |  | 50,0                     | 11,4                        | 10,1             | -               | -                 | -                | 10,1    | 10,1 | -           | 11,7      |
| " 230 " 260                               |  | 56,0                     | 12,4                        | 11,1             | -               | -                 | -                | 11,1    | 11,1 | -           | -         |



|                                                    |                                                                      |
|----------------------------------------------------|----------------------------------------------------------------------|
| B <sub>1</sub> = Tooth width for simplex sprocket  | r = Tooth chamfer radius $\geq p$                                    |
| b = Tooth width for multiplex sprocket             | e = Transverse pitch                                                 |
| B <sub>2</sub> = Tooth width over duplex sprocket  | F = Undercut                                                         |
| B <sub>3</sub> = Tooth width over triplex sprocket | A = Centre to centre distance for separated chain strands            |
| c = Chamfer of tooth width 0.1 to 0.15 p           | (only for 2 x simplex roller chain, each with outer connecting side) |

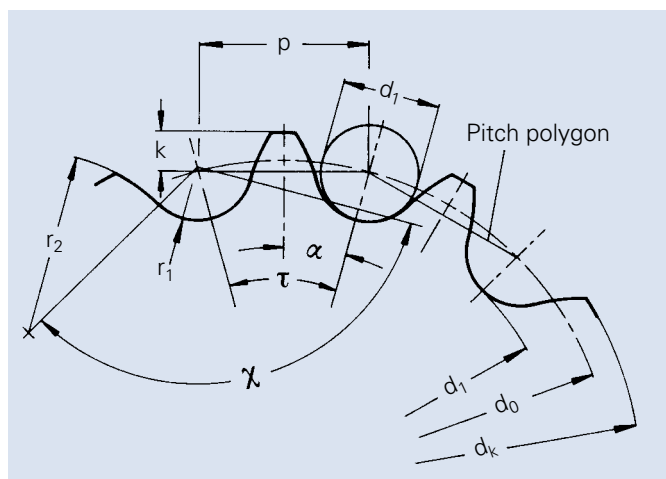
### Roller chains according to DIN 8187 (European type)

| Chains                                                                              | Chain dimensions |      |                        |                      | e     | Profile dimensions    |          |                  |                  |           |           |
|-------------------------------------------------------------------------------------|------------------|------|------------------------|----------------------|-------|-----------------------|----------|------------------|------------------|-----------|-----------|
|                                                                                     | Pitch            |      | Inner width            | Roller Ø             |       |                       |          |                  |                  |           |           |
|  | p                |      | b <sub>1</sub><br>min. | d <sub>1</sub><br>h9 |       | B <sub>1</sub><br>h14 | b<br>h14 | B <sub>2</sub> * | B <sub>3</sub> * | F<br>min. | A<br>min. |
| No.                                                                                 | mm               | inch | mm                     | mm                   | mm    | mm                    | mm       | mm               | mm               | mm        | mm        |
| 440                                                                                 | 5,0              | -    | 2,50                   | 3,20                 | -     | 2,3                   | -        | -                | -                | 3,0       | 9         |
| 445, D 445                                                                          | 6,0              | -    | 2,80                   | 4,00                 | 5,50  | 2,6                   | 2,5      | 8,0              | -                | 3,5       | 9         |
| 450, D 450, T 450                                                                   | 8,0              | -    | 3,00                   | 5,00                 | 5,64  | 2,8                   | 2,7      | 8,3              | 14,0             | 5,0       | 10        |
| 453                                                                                 | 9,525            | 3⁄8  | 3,30                   | 6,00                 | -     | 3,0                   | -        | -                | -                | 6,0       | 11        |
| 454                                                                                 | 9,525            | 3⁄8  | 3,94                   | 6,35                 | -     | 3,6                   | -        | -                | -                | 6,0       | 13        |
| 455, D 455, T 455                                                                   | 9,525            | 3⁄8  | 5,72                   | 6,35                 | 10,24 | 5,3                   | 5,2      | 15,4             | 25,7             | 6,0       | 15        |
| 331                                                                                 | 12,7             | 1⁄2  | 3,30                   | 7,75                 | -     | 3,0                   | -        | -                | -                | 7,0       | 12        |
| 332, 17                                                                             | 12,7             | 1⁄2  | 4,88                   | 7,75                 | -     | 4,5                   | -        | -                | -                | 7,0       | 15        |
| 110                                                                                 | 12,7             | 1⁄2  | 2,38                   | 7,75                 | -     | 2,2                   | -        | -                | -                | 7,0       | 9         |
| 41                                                                                  | 12,7             | 1⁄2  | 6,38                   | 7,75                 | -     | 5,9                   | -        | -                | -                | 7,0       | 16        |
| 385                                                                                 | 12,7             | 1⁄2  | 6,40                   | 7,75                 | -     | 5,9                   | -        | -                | -                | 8,0       | 18        |
| 461                                                                                 | 12,7             | 1⁄2  | 6,40                   | 8,51                 | -     | 5,9                   | -        | -                | -                | 8,0       | 18        |
| 462, D 462, T 462                                                                   | 12,7             | 1⁄2  | 7,75                   | 8,51                 | 13,92 | 7,2                   | 7,0      | 21,0             | 34,8             | 8,0       | 20        |
| 500                                                                                 | 15,875           | 5⁄8  | 6,48                   | 10,16                | -     | 6,1                   | -        | -                | -                | 10,0      | 19        |
| 501, D 501, T 501                                                                   | 15,875           | 5⁄8  | 9,65                   | 10,16                | 16,59 | 9,1                   | 9,0      | 25,6             | 42,2             | 10,0      | 23        |
| 513, D 513, T 513                                                                   | 19,05            | 3⁄4  | 11,68                  | 12,07                | 19,46 | 11,1                  | 10,8     | 30,3             | 49,7             | 11,0      | 27        |
| 548, D 548, T 548                                                                   | 25,4             | 1    | 17,02                  | 15,88                | 31,88 | 16,2                  | 15,8     | 47,7             | 79,6             | 15,0      | 42        |
| 552                                                                                 | 30,0             | -    | 17,02                  | 15,88                | -     | 16,2                  | -        | -                | -                | 15,0      | 42        |
| 563, D 563, T 563                                                                   | 31,75            | 1 ¼  | 19,56                  | 19,05                | 36,45 | 18,5                  | 18,2     | 54,6             | 91,1             | 18,0      | 50        |
| 596, D 596, T 596                                                                   | 38,1             | 1 ½  | 25,40                  | 25,40                | 48,36 | 24,1                  | 23,6     | 72,0             | 120,3            | 23,0      | 63        |
| 613, D 613, T 613                                                                   | 44,45            | 1 ¾  | 30,99                  | 27,94                | 59,56 | 29,4                  | 28,8     | 88,4             | 147,9            | 25,0      | 76        |
| 652, D 652, T 652                                                                   | 50,8             | 2    | 30,99                  | 29,21                | 58,55 | 29,4                  | 28,8     | 87,4             | 145,9            | 29,0      | 79        |
| 671, D 671, T 671                                                                   | 63,5             | 2 ½  | 38,10                  | 39,37                | 72,29 | 36,2                  | 35,4     | 107,7            | 180,0            | 36,0      | 97        |
| 679, D 679, T 679                                                                   | 76,2             | 3    | 45,72                  | 48,26                | 91,21 | 43,4                  | 42,5     | 133,7            | 224,9            | 43,0      | 116       |

### Roller chains according to DIN 8188 (American type)

|                          |        |       |       |       |       |      |      |       |       |      |         |
|--------------------------|--------|-------|-------|-------|-------|------|------|-------|-------|------|---------|
| 35, 35-2, 35-3           | 9,525  | 3/8   | 4,77  | 5,08  | 10,13 | 4,4  | 4,3  | 14,4  | 24,5  | 6,0  | 15      |
| 40, 40-2, 40-3           | 12,7   | 1/2   | 7,85  | 7,95  | 14,38 | 7,4  | 7,2  | 21,6  | 36,0  | 8,0  | 20      |
| 50, 50-2, 50-3           | 15,875 | 5/8   | 9,40  | 10,16 | 18,11 | 9,0  | 8,8  | 26,9  | 45,0  | 10,0 | 25      |
| 60, 60 H, 60-2, 60-3     | 19,05  | 3/4   | 12,57 | 11,91 | 22,78 | 12,0 | 11,8 | 34,6  | 57,3  | 12,0 | 31/33** |
| 80, 80 H, 80-2, 80-3     | 25,4   | 1     | 15,75 | 15,88 | 29,29 | 15,1 | 14,8 | 44,1  | 73,4  | 16,0 | 39/42** |
| 100, 100 H, 100-2, 100-3 | 31,75  | 1 1/4 | 18,90 | 19,05 | 35,76 | 18,1 | 17,7 | 53,4  | 89,2  | 20,0 | 48/51** |
| 120, 120-2, 120-3        | 38,1   | 1 1/2 | 25,22 | 22,23 | 45,44 | 24,1 | 23,6 | 69,0  | 114,5 | 24,0 | 60      |
| 140, 140-2, 140-3        | 44,45  | 1 3/4 | 25,22 | 25,40 | 48,87 | 24,1 | 23,6 | 72,5  | 121,3 | 28,0 | 64      |
| 160, 160-2, 160-3        | 50,8   | 2     | 31,55 | 28,58 | 58,55 | 30,1 | 29,5 | 88,0  | 146,6 | 32,0 | 77      |
| 200, 200-2, 200-3        | 63,5   | 2 1/2 | 37,85 | 39,68 | 71,55 | 36,2 | 35,4 | 106,9 | 178,5 | 40,0 | 94      |

\* rounded off values    \*\* the second value only applies to chains of type series "H"



- $p$  : Pitch  
 $z$  : Number of teeth  
 $d_1$  : Roller diameter, bushing diameter or pin diameter  
 $d_0$  : PCD  
 $d_k$  : Tip circle diameter  
 $d_f$  : Root circle diameter  
 $t$  : Pitch angle =  $\frac{360^\circ}{z}$      $\alpha = \frac{180^\circ}{z}$   
 $x$  : Roller contact angle  
 $k$  : Tooth height above pitch polygon  
 (Diameter of pitch polygon =  $p \cot \alpha$ )  
 $r_1$  : Tooth root radius  
 $r_2$  : Tooth profile radius  
 $n$  : Factor for the number of teeth =  $\frac{1}{\sin \alpha} = \frac{1}{\sin (180^\circ/z)}$

## PCD

$$d_0 = \frac{p}{\sin \alpha} = \frac{p}{\sin (180^\circ/z)} = pn$$

## Tip circle diameter $d_k$

### a) Roller chain sprockets

$$d_k = p \cot \alpha + 0,8 d_1 = d_0 \cos \alpha + 0,8 d_1$$

the following applies with sufficient accuracy:

|                                 |                                  |
|---------------------------------|----------------------------------|
| $d_k = d_0 + 0,5 \dots 0,6 d_1$ | $z = 6 \dots 12$ teeth           |
| $d_k = d_0 + 0,6 \dots 0,7 d_1$ | $z = 13 \dots 25$ teeth          |
| $d_k = d_0 + 0,7 \dots 0,8 d_1$ | $z = \text{more than } 25$ teeth |

### b) Bush chain sprockets

$$d_k = d_0 + 0,8 \dots 1,0 d_1$$

### c) Galle chain sprockets

$$d_k = d_0 + d_1$$

## Root circle diameter

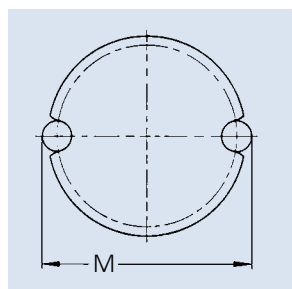
$$d_f = d_0 - d_1$$

## TOOTHING CHECK

### a) by measuring

In order to check the sprocket tothing the root circle diameter must be determined by means of measuring pins with the same diameters as the chain rollers, but with the tolerance  $+0,01$   
 $0,00$

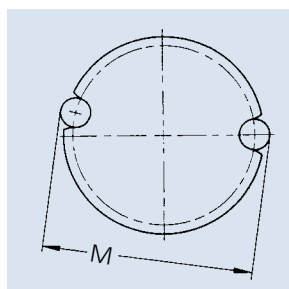
For an even number of teeth the measure M is:



$$M = d_0 + d_1$$

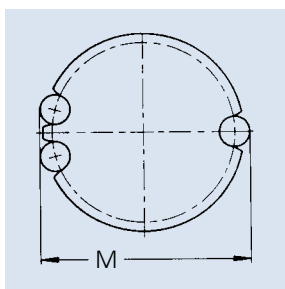
$$M = p n + d_1$$

For an uneven number of teeth the measure M is:  
over 2 measuring pins    over 3 measuring pins



$$M = d_0 \cos \frac{\alpha}{2} + d_1$$

$$M = p n \cos \frac{\alpha}{2} + d_1$$

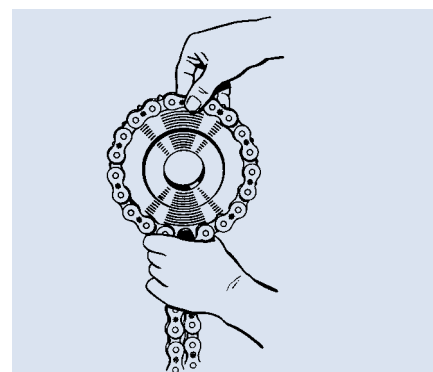


$$M = \frac{p}{2} \left( \frac{1}{\sin \alpha} + \cot \alpha \right) + d_1$$

$$M = \frac{p}{2} (n + \cot \alpha) + d_1$$

### b) by means of a chain looped around the sprocket

It must be possible to fully loop the chain around the sprocket quite easily. If the tothing was milled too deeply, the sprocket is defective and must be scrapped! In case of the root circle diameter being too long (i.e. the chain cannot be looped around the sprocket and moves upwards on the tooth flanks after a few links), the sprocket can be milled again.



Tothing check by means of a chain looped around the sprocket

For permissible deviations of the measure M the tolerances of the root circle diameter ( $h_{11}$ ) apply.



| z  | n       | cot α   |
|----|---------|---------|
|    |         |         |
|    |         |         |
|    |         |         |
| 6  | 2,0000  | 1,7321  |
| 7  | 2,3048  | 2,0765  |
| 8  | 2,6131  | 2,4142  |
| 9  | 2,9238  | 2,7475  |
| 10 | 3,2361  | 3,0777  |
| 11 | 3,5495  | 3,4057  |
| 12 | 3,8637  | 3,7321  |
| 13 | 4,1786  | 4,0572  |
| 14 | 4,4940  | 4,3813  |
| 15 | 4,8097  | 4,7046  |
| 16 | 5,1258  | 5,0273  |
| 17 | 5,4422  | 5,3495  |
| 18 | 5,7588  | 5,6713  |
| 19 | 6,0755  | 5,9927  |
| 20 | 6,3925  | 6,3138  |
| 21 | 6,7095  | 6,6346  |
| 22 | 7,0267  | 6,9552  |
| 23 | 7,3439  | 7,2755  |
| 24 | 7,6613  | 7,5958  |
| 25 | 7,9787  | 7,9158  |
| 26 | 8,2962  | 8,2357  |
| 27 | 8,6138  | 8,5555  |
| 28 | 8,9314  | 8,8752  |
| 29 | 9,2491  | 9,1948  |
| 30 | 9,5668  | 9,5144  |
| 31 | 9,8845  | 9,8338  |
| 32 | 10,2023 | 10,1532 |
| 33 | 10,5201 | 10,4725 |
| 34 | 10,8380 | 10,7917 |
| 35 | 11,1558 | 11,1109 |
| 36 | 11,4737 | 11,4300 |
| 37 | 11,7916 | 11,7492 |
| 38 | 12,1096 | 12,0682 |
| 39 | 12,4275 | 12,3872 |
| 40 | 12,7455 | 12,7062 |
| 41 | 13,0635 | 13,0251 |
| 42 | 13,3815 | 13,3441 |
| 43 | 13,6995 | 13,6630 |
| 44 | 14,0176 | 13,9818 |
| 45 | 14,3356 | 14,3007 |
| 46 | 14,6537 | 14,6195 |
| 47 | 14,9717 | 14,9383 |
| 48 | 15,2898 | 15,2571 |
| 49 | 15,6079 | 15,5758 |
| 50 | 15,9260 | 15,8945 |
| 51 | 16,2441 | 16,2133 |
| 52 | 16,5622 | 16,5320 |
| 53 | 16,8803 | 16,8507 |
| 54 | 17,1984 | 17,1693 |
| 55 | 17,5166 | 17,4880 |
| 56 | 17,8347 | 17,8066 |
| 57 | 18,1529 | 18,1253 |
| 58 | 18,4710 | 18,4439 |
| 59 | 18,7892 | 18,7625 |
| 60 | 19,1073 | 19,0811 |

| z   | n       | cot α   |
|-----|---------|---------|
| 61  | 19,4255 | 19,3997 |
| 62  | 19,7437 | 19,7183 |
| 63  | 20,0619 | 20,0369 |
| 64  | 20,3800 | 20,3555 |
| 65  | 20,6982 | 20,6740 |
| 66  | 21,0164 | 20,9926 |
| 67  | 21,3346 | 21,3111 |
| 68  | 21,6528 | 21,6297 |
| 69  | 21,9710 | 21,9482 |
| 70  | 22,2892 | 22,2667 |
| 71  | 22,6074 | 22,5853 |
| 72  | 22,9256 | 22,9038 |
| 73  | 23,2438 | 23,2223 |
| 74  | 23,5620 | 23,5408 |
| 75  | 23,8802 | 23,8593 |
| 76  | 24,1984 | 24,1778 |
| 77  | 24,5167 | 24,4963 |
| 78  | 24,8349 | 24,8147 |
| 79  | 25,1531 | 25,1332 |
| 80  | 25,4713 | 25,4517 |
| 81  | 25,7896 | 25,7702 |
| 82  | 26,1078 | 26,0886 |
| 83  | 26,4260 | 26,4071 |
| 84  | 26,7443 | 26,7256 |
| 85  | 27,0625 | 27,0440 |
| 86  | 27,3808 | 27,3625 |
| 87  | 27,6990 | 27,6809 |
| 88  | 28,0172 | 27,9994 |
| 89  | 28,3355 | 28,3178 |
| 90  | 28,6537 | 28,6363 |
| 91  | 28,9720 | 28,9547 |
| 92  | 29,2902 | 29,2731 |
| 93  | 29,6084 | 29,5916 |
| 94  | 29,9267 | 29,9100 |
| 95  | 30,2449 | 30,2284 |
| 96  | 30,5632 | 30,5468 |
| 97  | 30,8815 | 30,8653 |
| 98  | 31,1997 | 31,1837 |
| 99  | 31,5180 | 31,5021 |
| 100 | 31,8362 | 31,8205 |
| 101 | 32,1545 | 32,1389 |
| 102 | 32,4727 | 32,4573 |
| 103 | 32,7910 | 32,7758 |
| 104 | 33,1093 | 33,0942 |
| 105 | 33,4275 | 33,4126 |
| 106 | 33,7458 | 33,7310 |
| 107 | 34,0641 | 34,0494 |
| 108 | 34,3823 | 34,3678 |
| 109 | 34,7006 | 34,6862 |
| 110 | 35,0188 | 35,0046 |
| 111 | 35,3371 | 35,3229 |
| 112 | 35,6554 | 35,6414 |
| 113 | 35,9737 | 35,9598 |
| 114 | 36,2919 | 36,2781 |
| 115 | 36,6102 | 36,5965 |
| 116 | 36,9285 | 36,9150 |
| 117 | 37,2467 | 37,2333 |
| 118 | 37,5650 | 37,5517 |
| 119 | 37,8833 | 37,8701 |
| 120 | 38,2015 | 38,1884 |

| z   | n       | cot α   |
|-----|---------|---------|
| 121 | 38,5198 | 38,5068 |
| 122 | 38,8381 | 38,8252 |
| 123 | 39,1564 | 39,1436 |
| 124 | 39,4746 | 39,4620 |
| 125 | 39,7929 | 39,7804 |
| 126 | 40,1112 | 40,0987 |
| 127 | 40,4295 | 40,4171 |
| 128 | 40,7478 | 40,7355 |
| 129 | 41,0660 | 41,0538 |
| 130 | 41,3843 | 41,3722 |
| 131 | 41,7026 | 41,6906 |
| 132 | 42,0209 | 42,0090 |
| 133 | 42,3392 | 42,3273 |
| 134 | 42,6574 | 42,6457 |
| 135 | 42,9757 | 42,9641 |
| 136 | 43,2940 | 43,2825 |
| 137 | 43,6123 | 43,6008 |
| 138 | 43,9306 | 43,9192 |
| 139 | 44,2488 | 44,2375 |
| 140 | 44,5671 | 44,5559 |
| 141 | 44,8854 | 44,8743 |
| 142 | 45,2037 | 45,1926 |
| 143 | 45,5220 | 45,5110 |
| 144 | 45,8402 | 45,8293 |
| 145 | 46,1585 | 46,1477 |
| 146 | 46,4768 | 46,4661 |
| 147 | 46,7951 | 46,7844 |
| 148 | 47,1134 | 47,1028 |
| 149 | 47,4317 | 47,4212 |
| 150 | 47,7500 | 47,7395 |
| 151 | 48,0683 | 48,0579 |
| 152 | 48,3865 | 48,3762 |
| 153 | 48,7048 | 48,6946 |
| 154 | 49,0231 | 49,0129 |
| 155 | 49,3414 | 49,3313 |
| 156 | 49,6597 | 49,6496 |
| 157 | 49,9780 | 49,9680 |
| 158 | 50,2963 | 50,2863 |
| 159 | 50,6146 | 50,6047 |
| 160 | 50,9329 | 50,9230 |
| 161 | 51,2511 | 51,2414 |
| 162 | 51,5694 | 51,5597 |
| 163 | 51,8877 | 51,8781 |
| 164 | 52,2060 | 52,1964 |
| 165 | 52,5243 | 52,5148 |
| 166 | 52,8426 | 52,8332 |
| 167 | 53,1609 | 53,1515 |
| 168 | 53,4792 | 53,4699 |
| 169 | 53,7975 | 53,7883 |
| 170 | 54,1158 | 54,1066 |
| 171 | 54,4341 | 54,4249 |
| 172 | 54,7524 | 54,7433 |
| 173 | 55,0707 | 55,0617 |
| 174 | 55,3889 | 55,3799 |
| 175 | 55,7072 | 55,6982 |
| 176 | 56,0255 | 56,0166 |
| 177 | 56,3438 | 56,3349 |
| 178 | 56,6621 | 56,6533 |
| 179 | 56,9804 | 56,9716 |
| 180 | 57,2987 | 57,2900 |

| z   | n       | cot α   |
|-----|---------|---------|
| 181 | 57,6170 | 57,6083 |
| 182 | 57,9353 | 57,9266 |
| 183 | 58,2536 | 58,2451 |
| 184 | 58,5719 | 58,5633 |
| 185 | 58,8902 | 58,8817 |
| 186 | 59,2085 | 59,2001 |
| 187 | 59,5267 | 59,5184 |
| 188 | 59,8450 | 59,8367 |
| 189 | 60,1634 | 60,1551 |
| 190 | 60,4817 | 60,4735 |
| 191 | 60,7999 | 60,7917 |
| 192 | 61,1182 | 61,1100 |
| 193 | 61,4366 | 61,4285 |
| 194 | 61,7549 | 61,7468 |
| 195 | 62,0732 | 62,0652 |
| 196 | 62,3915 | 62,3835 |
| 197 | 62,7097 | 62,7019 |
| 198 | 63,0279 | 63,0201 |
| 199 | 63,3464 | 63,3385 |
| 200 | 63,6646 | 63,6567 |
| 201 | 63,9829 | 63,9750 |
| 202 | 64,3012 | 64,2935 |
| 203 | 64,6195 | 64,6118 |
| 204 | 64,9378 | 64,9301 |
| 205 | 65,2562 | 65,2484 |
| 206 | 65,5744 | 65,5668 |
| 207 | 65,8927 | 65,8852 |
| 208 | 66,2110 | 66,2034 |
| 209 | 66,5294 | 66,5217 |
| 210 | 66,8477 | 66,8403 |
| 211 | 67,1659 | 67,1584 |
| 212 | 67,4842 | 67,4768 |
| 213 | 67,8025 | 67,7952 |
| 214 | 68,1208 | 68,1134 |
| 215 | 68,4391 | 68,4318 |
| 216 | 68,7574 | 68,7501 |
| 217 | 69,0757 | 69,0684 |
| 218 | 69,3940 | 69,3868 |
| 219 | 69,7123 | 69,7051 |
| 220 | 70,0306 | 70,0235 |
| 221 | 70,3489 | 70,3418 |
| 222 | 70,6671 | 70,6605 |
| 223 | 70,9855 | 70,9784 |
| 224 | 71,3038 | 71,2968 |
| 225 | 71,6221 | 71,6151 |
| 226 | 71,9405 | 71,9336 |
| 227 | 72,2587 | 72,2518 |
| 228 | 72,5770 | 72,5701 |
| 229 | 72,8953 | 72,8884 |
| 230 | 73,2136 | 73,2067 |
| 231 | 73,5319 | 73,5251 |
| 232 | 73,8502 | 73,8434 |
| 233 | 74,1685 | 74,1617 |
| 234 | 74,4868 | 74,4801 |
| 235 | 74,8051 | 74,7984 |
| 236 | 75,1234 | 75,1167 |
| 237 | 75,4417 | 75,4351 |
| 238 | 75,7599 | 75,7534 |
| 239 | 76,0783 | 76,0717 |
| 240 | 76,3966 | 76,3900 |



# SPROCKETS - PCD $d_0$ AND TIP CIRCLE DIAMETER $d_k$ for roller chains according to DIN 8187, DIN 8188 and works-standard

| Chain No.<br> | 440    |                             | 445<br>D 450 |                             | 450<br>D 450<br>T 450 |                             | 35<br>35-2<br>35-3 |                             | 453, 454<br>455<br>D 455<br>T 455 |                             | 17, 18, 41<br>110, 331<br>40<br>40-2<br>40-3 |                             |
|------------------------------------------------------------------------------------------------|--------|-----------------------------|--------------|-----------------------------|-----------------------|-----------------------------|--------------------|-----------------------------|-----------------------------------|-----------------------------|----------------------------------------------|-----------------------------|
| Pitch p                                                                                        | 5,0    |                             | 6,0          |                             | 8,0                   |                             | 9,525              |                             | 9,525                             |                             | 12,7                                         |                             |
| Roller $\varnothing d_1$                                                                       | 3,2    |                             | 4,0          |                             | 5,0                   |                             | 5,08               |                             | 6,0 - 6,35                        |                             | 7,75 - 7,95                                  |                             |
| Number<br>of teeth<br>z                                                                        | PCD    | Tip<br>circle $\varnothing$ | PCD          | Tip<br>circle $\varnothing$ | PCD                   | Tip<br>circle $\varnothing$ | PCD                | Tip<br>circle $\varnothing$ | PCD                               | Tip<br>circle $\varnothing$ | PCD                                          | Tip<br>circle $\varnothing$ |
|                                                                                                | $d_0$  | $d_k$                       | $d_0$        | $d_k$                       | $d_0$                 | $d_k$                       | $d_0$              | $d_k$                       | $d_0$                             | $d_k$                       | $d_0$                                        | $d_k$                       |
| 11                                                                                             | 17,75  | 19,6                        | 21,30        | 23,6                        | 28,40                 | 31,2                        | 33,81              | 36,5                        | 33,81                             | 37,5                        | 45,08                                        | 49,6                        |
| 12                                                                                             | 19,32  | 21,2                        | 23,18        | 25,6                        | 30,91                 | 33,8                        | 36,80              | 39,6                        | 36,80                             | 40,6                        | 49,07                                        | 53,8                        |
| 13                                                                                             | 20,89  | 22,8                        | 25,07        | 27,5                        | 33,43                 | 36,4                        | 39,80              | 42,7                        | 39,80                             | 43,7                        | 53,07                                        | 57,9                        |
| 14                                                                                             | 22,47  | 24,5                        | 26,96        | 29,5                        | 35,95                 | 39,0                        | 42,81              | 45,8                        | 42,81                             | 46,8                        | 57,07                                        | 62,0                        |
| 15                                                                                             | 24,05  | 26,1                        | 28,86        | 31,4                        | 38,48                 | 41,6                        | 45,81              | 48,9                        | 45,81                             | 49,9                        | 61,08                                        | 66,1                        |
| 16                                                                                             | 25,63  | 27,7                        | 30,75        | 33,3                        | 41,01                 | 44,2                        | 48,82              | 52,0                        | 48,82                             | 53,0                        | 65,10                                        | 70,2                        |
| 17                                                                                             | 27,21  | 29,3                        | 32,65        | 35,2                        | 43,54                 | 46,8                        | 51,84              | 55,0                        | 51,84                             | 56,0                        | 69,12                                        | 74,3                        |
| 18                                                                                             | 28,79  | 30,9                        | 34,55        | 37,2                        | 46,07                 | 49,5                        | 54,85              | 58,1                        | 54,85                             | 59,1                        | 73,14                                        | 78,4                        |
| 19                                                                                             | 30,38  | 32,5                        | 36,45        | 39,1                        | 48,60                 | 51,9                        | 57,87              | 61,2                        | 57,87                             | 62,2                        | 77,16                                        | 82,5                        |
| 20                                                                                             | 31,96  | 34,2                        | 38,36        | 41,1                        | 51,14                 | 54,5                        | 60,89              | 64,2                        | 60,89                             | 65,2                        | 81,18                                        | 86,6                        |
| 21                                                                                             | 33,55  | 35,7                        | 40,26        | 43,0                        | 53,68                 | 57,1                        | 63,91              | 67,3                        | 63,91                             | 68,3                        | 85,21                                        | 90,6                        |
| 22                                                                                             | 35,13  | 37,3                        | 42,16        | 44,9                        | 56,21                 | 59,6                        | 66,93              | 70,3                        | 66,93                             | 71,3                        | 89,24                                        | 94,7                        |
| 23                                                                                             | 36,72  | 38,9                        | 44,06        | 46,8                        | 58,75                 | 62,2                        | 69,95              | 73,4                        | 69,95                             | 74,4                        | 93,27                                        | 98,8                        |
| 24                                                                                             | 38,31  | 40,5                        | 45,97        | 48,8                        | 61,29                 | 64,8                        | 72,97              | 76,4                        | 72,97                             | 77,4                        | 97,30                                        | 102,9                       |
| 25                                                                                             | 39,89  | 42,2                        | 47,87        | 50,7                        | 63,83                 | 67,3                        | 76,00              | 79,5                        | 76,00                             | 80,5                        | 101,33                                       | 106,9                       |
| 26                                                                                             | 41,48  | 43,7                        | 49,78        | 52,6                        | 66,37                 | 69,9                        | 79,02              | 82,5                        | 79,02                             | 83,5                        | 105,36                                       | 111,0                       |
| 27                                                                                             | 43,07  | 45,3                        | 51,68        | 54,5                        | 68,91                 | 72,4                        | 82,05              | 85,6                        | 82,05                             | 86,6                        | 109,40                                       | 115,0                       |
| 28                                                                                             | 44,66  | 46,9                        | 53,59        | 56,4                        | 71,45                 | 75,0                        | 85,07              | 88,6                        | 85,07                             | 89,6                        | 113,43                                       | 119,1                       |
| 29                                                                                             | 46,25  | 48,5                        | 55,49        | 58,4                        | 73,99                 | 77,5                        | 88,10              | 91,7                        | 88,10                             | 92,7                        | 117,46                                       | 123,2                       |
| 30                                                                                             | 47,83  | 50,1                        | 57,40        | 60,3                        | 76,53                 | 80,1                        | 91,12              | 94,7                        | 91,12                             | 95,7                        | 121,50                                       | 127,2                       |
| 31                                                                                             | 49,42  | 51,7                        | 59,31        | 62,2                        | 79,08                 | 82,7                        | 94,15              | 97,8                        | 94,15                             | 98,8                        | 125,53                                       | 131,3                       |
| 32                                                                                             | 51,01  | 53,3                        | 61,21        | 64,1                        | 81,62                 | 85,7                        | 97,18              | 100,8                       | 97,18                             | 101,8                       | 129,57                                       | 135,3                       |
| 33                                                                                             | 52,60  | 54,9                        | 63,12        | 66,0                        | 84,16                 | 87,8                        | 100,20             | 103,8                       | 100,20                            | 104,8                       | 133,61                                       | 139,4                       |
| 34                                                                                             | 54,19  | 56,5                        | 65,03        | 67,9                        | 86,70                 | 90,3                        | 103,23             | 106,9                       | 103,23                            | 107,9                       | 137,64                                       | 143,4                       |
| 35                                                                                             | 55,78  | 58,2                        | 66,93        | 69,8                        | 89,25                 | 92,9                        | 106,26             | 109,9                       | 106,26                            | 110,9                       | 141,68                                       | 147,5                       |
| 36                                                                                             | 57,37  | 59,7                        | 68,84        | 71,8                        | 91,79                 | 95,4                        | 109,29             | 113,0                       | 109,29                            | 114,0                       | 145,72                                       | 151,5                       |
| 37                                                                                             | 58,96  | 61,3                        | 70,75        | 73,7                        | 94,33                 | 98,0                        | 112,31             | 116,0                       | 112,31                            | 117,0                       | 149,75                                       | 155,6                       |
| 38                                                                                             | 60,55  | 62,9                        | 72,66        | 75,6                        | 96,88                 | 100,5                       | 115,34             | 119,0                       | 115,34                            | 120,0                       | 153,79                                       | 159,6                       |
| 39                                                                                             | 62,14  | 64,5                        | 74,57        | 77,5                        | 99,42                 | 103,1                       | 118,37             | 122,1                       | 118,37                            | 123,1                       | 157,83                                       | 163,7                       |
| 40                                                                                             | 63,73  | 66,1                        | 76,47        | 79,4                        | 101,96                | 105,6                       | 121,40             | 125,1                       | 121,40                            | 126,1                       | 161,87                                       | 167,7                       |
| 41                                                                                             | 65,32  | 67,7                        | 78,38        | 81,3                        | 104,51                | 108,2                       | 124,43             | 128,1                       | 124,43                            | 129,1                       | 165,91                                       | 171,8                       |
| 42                                                                                             | 66,91  | 69,3                        | 80,29        | 83,2                        | 107,05                | 110,7                       | 127,46             | 131,2                       | 127,46                            | 132,2                       | 169,95                                       | 175,9                       |
| 43                                                                                             | 68,50  | 70,9                        | 82,20        | 85,2                        | 109,60                | 113,3                       | 130,49             | 134,2                       | 130,49                            | 135,2                       | 173,98                                       | 179,9                       |
| 44                                                                                             | 70,09  | 72,5                        | 84,11        | 87,1                        | 112,14                | 115,8                       | 133,52             | 137,2                       | 133,52                            | 138,2                       | 178,02                                       | 184,0                       |
| 45                                                                                             | 71,68  | 74,1                        | 86,01        | 89,0                        | 114,68                | 118,4                       | 136,55             | 140,3                       | 136,55                            | 141,3                       | 182,06                                       | 188,0                       |
| 46                                                                                             | 73,27  | 75,7                        | 87,92        | 90,9                        | 117,23                | 120,9                       | 139,58             | 143,3                       | 139,58                            | 144,3                       | 186,10                                       | 192,0                       |
| 47                                                                                             | 74,86  | 77,3                        | 89,83        | 92,8                        | 119,77                | 123,5                       | 142,61             | 146,4                       | 142,61                            | 147,4                       | 190,14                                       | 196,1                       |
| 48                                                                                             | 76,45  | 78,8                        | 91,74        | 94,7                        | 122,32                | 126,0                       | 145,64             | 149,4                       | 145,64                            | 150,4                       | 194,18                                       | 200,1                       |
| 49                                                                                             | 78,04  | 80,4                        | 93,65        | 96,6                        | 124,86                | 128,6                       | 148,67             | 152,4                       | 148,67                            | 153,4                       | 198,22                                       | 204,2                       |
| 50                                                                                             | 79,63  | 82,0                        | 95,56        | 98,5                        | 127,41                | 131,1                       | 151,70             | 155,5                       | 151,70                            | 156,5                       | 202,26                                       | 208,2                       |
| 51                                                                                             | 81,22  | 83,6                        | 97,46        | 100,5                       | 129,95                | 133,7                       | 154,73             | 158,5                       | 154,73                            | 159,5                       | 206,30                                       | 212,3                       |
| 52                                                                                             | 82,81  | 85,2                        | 99,37        | 102,4                       | 132,50                | 136,2                       | 157,75             | 161,5                       | 157,75                            | 162,5                       | 210,34                                       | 216,3                       |
| 53                                                                                             | 84,40  | 86,8                        | 101,28       | 104,3                       | 135,04                | 138,8                       | 160,78             | 164,5                       | 160,78                            | 165,6                       | 214,38                                       | 220,4                       |
| 54                                                                                             | 85,99  | 88,4                        | 103,19       | 106,2                       | 137,59                | 141,3                       | 163,81             | 167,6                       | 163,81                            | 168,6                       | 218,42                                       | 224,4                       |
| 55                                                                                             | 87,58  | 90,0                        | 105,10       | 108,1                       | 140,13                | 143,9                       | 166,85             | 170,6                       | 166,85                            | 171,6                       | 222,46                                       | 228,5                       |
| 56                                                                                             | 89,17  | 91,6                        | 107,01       | 110,0                       | 142,68                | 146,4                       | 169,88             | 173,7                       | 169,88                            | 174,7                       | 226,50                                       | 232,5                       |
| 57                                                                                             | 90,76  | 93,2                        | 108,92       | 111,9                       | 145,22                | 149,0                       | 172,91             | 176,7                       | 172,91                            | 177,7                       | 230,54                                       | 236,6                       |
| 58                                                                                             | 92,36  | 94,8                        | 110,83       | 113,8                       | 147,77                | 151,5                       | 175,94             | 179,8                       | 175,94                            | 180,8                       | 234,58                                       | 240,6                       |
| 59                                                                                             | 93,95  | 96,4                        | 112,74       | 115,8                       | 150,31                | 154,1                       | 178,97             | 182,8                       | 178,97                            | 183,8                       | 238,62                                       | 244,7                       |
| 60                                                                                             | 95,54  | 98,0                        | 114,64       | 117,7                       | 152,86                | 156,7                       | 182,00             | 185,8                       | 182,00                            | 186,8                       | 242,66                                       | 248,7                       |
| 61                                                                                             | 97,13  | 99,6                        | 116,55       | 119,6                       | 155,40                | 159,2                       | 185,03             | 188,9                       | 185,03                            | 189,9                       | 246,70                                       | 252,8                       |
| 62                                                                                             | 98,72  | 101,2                       | 118,46       | 121,5                       | 157,95                | 161,7                       | 188,06             | 191,9                       | 188,06                            | 192,9                       | 250,74                                       | 256,8                       |
| 63                                                                                             | 100,31 | 102,7                       | 120,37       | 123,4                       | 160,50                | 164,3                       | 191,09             | 194,9                       | 191,09                            | 195,9                       | 254,79                                       | 260,9                       |
| 64                                                                                             | 101,90 | 104,3                       | 122,28       | 125,3                       | 163,04                | 166,8                       | 194,12             | 198,0                       | 194,12                            | 199,0                       | 258,83                                       | 264,9                       |
| 65                                                                                             | 103,49 | 105,9                       | 124,19       | 127,2                       | 165,59                | 169,4                       | 197,15             | 201,0                       | 197,15                            | 202,0                       | 262,87                                       | 268,9                       |
| 66                                                                                             | 105,08 | 107,5                       | 126,10       | 129,1                       | 168,13                | 171,9                       | 200,18             | 204,0                       | 200,18                            | 205,0                       | 266,91                                       | 273,0                       |
| 67                                                                                             | 106,67 | 109,1                       | 128,01       | 131,0                       | 170,68                | 174,5                       | 203,21             | 207,1                       | 203,21                            | 208,1                       | 270,95                                       | 277,0                       |
| 68                                                                                             | 108,26 | 110,7                       | 129,92       | 132,9                       | 173,22                | 177,0                       | 206,24             | 210,1                       | 206,24                            | 211,1                       | 274,99                                       | 281,1                       |
| 69                                                                                             | 109,86 | 112,3                       | 131,83       | 134,9                       | 175,77                | 179,6                       | 209,27             | 213,1                       | 209,27                            | 214,1                       | 279,03                                       | 285,1                       |
| 70                                                                                             | 111,45 | 113,9                       | 133,74       | 136,8                       | 178,31                | 182,1                       | 212,30             | 216,2                       | 212,30                            | 217,2                       | 283,07                                       | 289,2                       |

All dimensions in mm



| Chain No.<br> | 460<br>461<br>462<br>D 462<br>T 462 | 50 H<br>50 HX<br>50<br>50-2<br>50-3 | 500<br>501<br>501<br>501 | 60<br>60-2<br>60-3<br>60 H<br>60 HX | 513<br>D 513<br>T 513<br>515<br>517 | 80 H<br>80 HX<br>80<br>80-2<br>80-3 | 548<br>D 548<br>T 548 | 100 HX<br>100<br>100-2<br>100-3   | 563<br>D 563<br>T 563 | 120 HX<br>120<br>120-2<br>120-3   |
|------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-----------------------------------|-----------------------|-----------------------------------|
| Pitch p                                                                                        | 12,7                                | 15,875                              |                          | 19,05                               |                                     | 25,4                                |                       | 31,75                             |                       | 38,1                              |
| Roller $\varnothing d_1$                                                                       | 8,51                                | 10,16                               |                          | 11,91 - 12,07                       |                                     | 15,88                               |                       | 19,05                             |                       | 22,23                             |
| Number of teeth<br>z                                                                           | PCD<br>$d_0$                        | Tip circle $\varnothing$<br>$d_k$   | PCD<br>$d_0$             | Tip circle $\varnothing$<br>$d_k$   | PCD<br>$d_0$                        | Tip circle $\varnothing$<br>$d_k$   | PCD<br>$d_0$          | Tip circle $\varnothing$<br>$d_k$ | PCD<br>$d_0$          | Tip circle $\varnothing$<br>$d_k$ |
| 11                                                                                             | 45,08                               | 50,0                                | 56,35                    | 62,2                                | 67,62                               | 74,5                                | 90,16                 | 99,2                              | 112,69                | 123,4                             |
| 12                                                                                             | 49,07                               | 54,2                                | 61,34                    | 67,4                                | 73,60                               | 80,7                                | 98,14                 | 107,5                             | 122,67                | 133,7                             |
| 13                                                                                             | 53,07                               | 58,3                                | 66,34                    | 72,5                                | 79,60                               | 86,9                                | 106,14                | 115,7                             | 132,67                | 144,0                             |
| 14                                                                                             | 57,07                               | 62,4                                | 71,34                    | 77,7                                | 85,61                               | 93,1                                | 114,15                | 124,0                             | 142,68                | 154,3                             |
| 15                                                                                             | 61,08                               | 66,5                                | 76,35                    | 82,8                                | 91,62                               | 99,2                                | 122,17                | 132,2                             | 152,71                | 164,6                             |
| 16                                                                                             | 65,10                               | 70,6                                | 81,37                    | 87,9                                | 97,65                               | 105,4                               | 130,20                | 140,4                             | 162,74                | 174,9                             |
| 17                                                                                             | 69,12                               | 74,7                                | 86,39                    | 93,0                                | 103,67                              | 111,5                               | 138,23                | 148,5                             | 172,79                | 185,1                             |
| 18                                                                                             | 73,14                               | 78,8                                | 91,42                    | 98,1                                | 109,71                              | 117,7                               | 146,27                | 156,7                             | 182,84                | 195,3                             |
| 19                                                                                             | 77,16                               | 82,9                                | 96,45                    | 103,2                               | 115,74                              | 123,8                               | 154,32                | 164,9                             | 192,90                | 205,5                             |
| 20                                                                                             | 81,18                               | 87,0                                | 101,48                   | 108,3                               | 121,78                              | 129,9                               | 162,37                | 173,0                             | 202,96                | 215,7                             |
| 21                                                                                             | 85,21                               | 91,0                                | 106,51                   | 113,4                               | 127,82                              | 136,0                               | 170,42                | 181,2                             | 213,03                | 225,9                             |
| 22                                                                                             | 89,24                               | 95,1                                | 111,55                   | 118,5                               | 133,86                              | 142,1                               | 178,48                | 189,3                             | 223,10                | 236,1                             |
| 23                                                                                             | 93,27                               | 99,2                                | 116,59                   | 123,6                               | 139,90                              | 148,2                               | 186,54                | 197,5                             | 233,17                | 246,2                             |
| 24                                                                                             | 97,30                               | 103,3                               | 121,62                   | 128,7                               | 145,95                              | 154,3                               | 194,60                | 205,6                             | 243,25                | 256,4                             |
| 25                                                                                             | 101,33                              | 107,3                               | 126,66                   | 133,8                               | 151,99                              | 160,4                               | 202,66                | 213,7                             | 253,32                | 266,6                             |
| 26                                                                                             | 105,36                              | 111,4                               | 131,70                   | 138,8                               | 158,04                              | 166,5                               | 210,72                | 221,9                             | 263,40                | 276,7                             |
| 27                                                                                             | 109,40                              | 115,4                               | 136,74                   | 143,9                               | 164,09                              | 172,6                               | 218,79                | 230,0                             | 273,49                | 286,9                             |
| 28                                                                                             | 113,43                              | 119,5                               | 141,79                   | 149,0                               | 170,14                              | 178,7                               | 226,86                | 238,1                             | 283,57                | 297,0                             |
| 29                                                                                             | 117,46                              | 123,6                               | 146,83                   | 154,1                               | 176,20                              | 184,8                               | 234,93                | 246,2                             | 293,66                | 307,2                             |
| 30                                                                                             | 121,50                              | 127,6                               | 151,87                   | 159,1                               | 182,25                              | 190,9                               | 243,00                | 254,3                             | 303,75                | 317,3                             |
| 31                                                                                             | 125,53                              | 131,7                               | 156,92                   | 164,2                               | 188,30                              | 197,0                               | 251,07                | 262,5                             | 313,83                | 327,5                             |
| 32                                                                                             | 129,57                              | 135,7                               | 161,96                   | 169,3                               | 194,35                              | 203,0                               | 259,14                | 270,6                             | 323,92                | 337,6                             |
| 33                                                                                             | 133,61                              | 139,8                               | 167,01                   | 174,4                               | 200,41                              | 209,1                               | 267,21                | 278,7                             | 334,01                | 347,7                             |
| 34                                                                                             | 137,64                              | 143,8                               | 172,05                   | 179,4                               | 206,46                              | 215,2                               | 275,29                | 286,8                             | 344,11                | 357,9                             |
| 35                                                                                             | 141,68                              | 147,9                               | 177,10                   | 184,5                               | 212,52                              | 221,3                               | 283,36                | 294,9                             | 354,20                | 368,0                             |
| 36                                                                                             | 145,72                              | 152,0                               | 182,14                   | 189,6                               | 218,57                              | 227,4                               | 291,43                | 303,0                             | 364,29                | 378,1                             |
| 37                                                                                             | 149,75                              | 156,0                               | 187,19                   | 194,6                               | 224,63                              | 233,5                               | 299,51                | 311,1                             | 374,38                | 388,3                             |
| 38                                                                                             | 153,79                              | 160,1                               | 192,24                   | 199,7                               | 230,69                              | 239,5                               | 307,58                | 319,2                             | 384,48                | 398,4                             |
| 39                                                                                             | 157,83                              | 164,1                               | 197,29                   | 204,8                               | 236,74                              | 245,6                               | 315,66                | 327,3                             | 394,57                | 408,5                             |
| 40                                                                                             | 161,87                              | 168,2                               | 202,35                   | 209,8                               | 242,80                              | 251,7                               | 323,74                | 335,4                             | 404,67                | 418,7                             |
| 41                                                                                             | 165,91                              | 172,2                               | 207,38                   | 214,9                               | 248,86                              | 257,8                               | 331,81                | 343,5                             | 414,77                | 428,8                             |
| 42                                                                                             | 169,95                              | 176,3                               | 212,43                   | 219,9                               | 254,92                              | 263,8                               | 339,89                | 351,6                             | 424,86                | 438,9                             |
| 43                                                                                             | 173,98                              | 180,3                               | 217,48                   | 225,0                               | 260,98                              | 269,9                               | 347,97                | 359,7                             | 434,96                | 449,0                             |
| 44                                                                                             | 178,02                              | 184,4                               | 222,53                   | 230,1                               | 267,04                              | 276,0                               | 356,05                | 367,8                             | 445,06                | 459,2                             |
| 45                                                                                             | 182,06                              | 188,4                               | 227,58                   | 235,1                               | 273,09                              | 282,0                               | 364,12                | 375,9                             | 455,16                | 469,3                             |
| 46                                                                                             | 186,10                              | 192,5                               | 232,63                   | 240,2                               | 279,15                              | 288,1                               | 372,20                | 384,0                             | 465,25                | 479,4                             |
| 47                                                                                             | 190,14                              | 196,5                               | 237,68                   | 245,3                               | 285,21                              | 294,2                               | 380,28                | 392,1                             | 475,35                | 489,5                             |
| 48                                                                                             | 194,18                              | 200,6                               | 242,73                   | 250,3                               | 291,27                              | 300,3                               | 388,36                | 400,2                             | 485,45                | 499,6                             |
| 49                                                                                             | 198,22                              | 204,6                               | 247,78                   | 255,4                               | 297,33                              | 306,4                               | 396,44                | 408,3                             | 495,55                | 509,8                             |
| 50                                                                                             | 202,26                              | 208,6                               | 252,83                   | 260,4                               | 303,39                              | 312,4                               | 404,52                | 416,4                             | 505,65                | 519,9                             |
| 51                                                                                             | 206,30                              | 212,7                               | 257,88                   | 265,5                               | 309,45                              | 318,5                               | 412,60                | 424,5                             | 515,75                | 530,0                             |
| 52                                                                                             | 210,34                              | 216,7                               | 262,93                   | 270,6                               | 315,51                              | 324,6                               | 420,68                | 432,6                             | 525,85                | 540,1                             |
| 53                                                                                             | 214,38                              | 220,8                               | 267,97                   | 275,6                               | 321,57                              | 330,6                               | 428,76                | 440,7                             | 535,95                | 550,2                             |
| 54                                                                                             | 218,42                              | 224,8                               | 273,02                   | 280,7                               | 327,63                              | 336,7                               | 436,84                | 448,8                             | 546,05                | 560,4                             |
| 55                                                                                             | 222,46                              | 228,9                               | 278,08                   | 285,7                               | 333,69                              | 342,8                               | 444,92                | 456,9                             | 556,15                | 570,5                             |
| 56                                                                                             | 226,50                              | 232,9                               | 283,13                   | 290,8                               | 339,75                              | 348,8                               | 453,00                | 465,0                             | 566,25                | 580,6                             |
| 57                                                                                             | 230,54                              | 237,0                               | 288,18                   | 295,8                               | 345,81                              | 354,9                               | 461,08                | 473,1                             | 576,35                | 590,7                             |
| 58                                                                                             | 234,58                              | 241,0                               | 293,23                   | 300,9                               | 351,87                              | 361,0                               | 469,16                | 481,2                             | 586,45                | 600,8                             |
| 59                                                                                             | 238,62                              | 245,1                               | 298,28                   | 306,0                               | 357,93                              | 367,0                               | 477,24                | 489,2                             | 596,56                | 610,9                             |
| 60                                                                                             | 242,66                              | 249,1                               | 303,33                   | 311,0                               | 363,99                              | 373,1                               | 485,33                | 497,3                             | 606,66                | 621,0                             |
| 61                                                                                             | 246,70                              | 253,2                               | 308,38                   | 316,1                               | 370,06                              | 379,2                               | 493,41                | 505,4                             | 616,76                | 631,1                             |
| 62                                                                                             | 250,74                              | 257,2                               | 313,43                   | 321,1                               | 376,12                              | 385,3                               | 501,49                | 513,5                             | 626,86                | 641,3                             |
| 63                                                                                             | 254,79                              | 261,3                               | 318,48                   | 326,2                               | 382,18                              | 391,3                               | 509,57                | 521,6                             | 636,97                | 651,4                             |
| 64                                                                                             | 258,83                              | 265,3                               | 323,53                   | 331,2                               | 388,24                              | 397,4                               | 517,65                | 529,7                             | 647,07                | 661,5                             |
| 65                                                                                             | 262,87                              | 269,4                               | 328,58                   | 336,3                               | 394,30                              | 403,5                               | 525,73                | 537,8                             | 657,17                | 671,6                             |
| 66                                                                                             | 266,91                              | 273,4                               | 333,64                   | 341,4                               | 400,36                              | 409,5                               | 533,82                | 545,9                             | 667,27                | 681,7                             |
| 67                                                                                             | 270,95                              | 277,4                               | 338,69                   | 346,4                               | 406,42                              | 415,6                               | 541,90                | 554,0                             | 677,37                | 691,9                             |
| 68                                                                                             | 274,99                              | 281,5                               | 343,74                   | 351,5                               | 412,49                              | 421,7                               | 549,98                | 562,1                             | 687,48                | 701,9                             |
| 69                                                                                             | 279,03                              | 285,5                               | 348,79                   | 356,5                               | 418,55                              | 427,7                               | 558,06                | 570,2                             | 697,58                | 712,0                             |
| 70                                                                                             | 283,07                              | 289,6                               | 353,84                   | 361,6                               | 424,61                              | 433,8                               | 566,15                | 578,2                             | 707,68                | 722,2                             |

All dimensions in mm

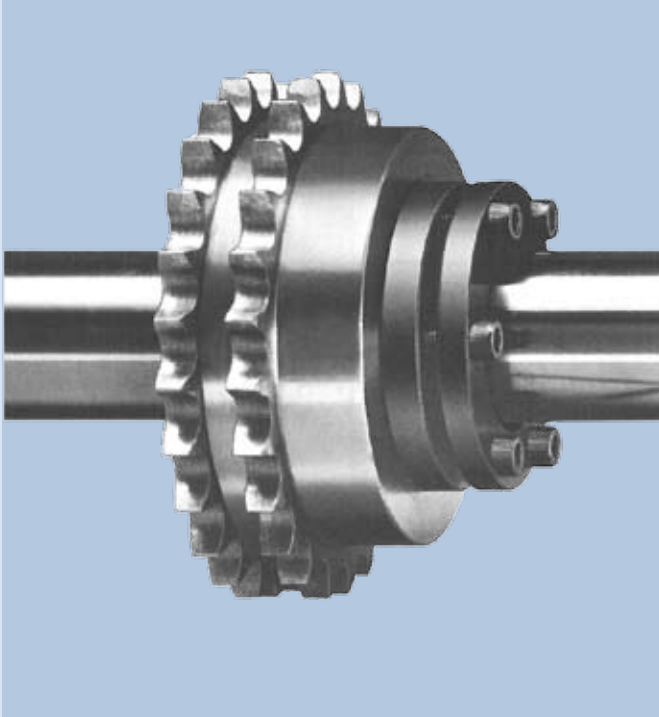


# SPROCKETS - PCD $d_0$ AND TIP CIRCLE DIAMETER $d_k$

for roller chains according to DIN 8187, DIN 8188 and works-standard

| Chain No.<br> | 596 R<br>596 SX<br>596<br>D 596<br>T 596 |                                | 140 HX<br>140<br>140-2<br>140-3 |                                | 613<br>D 613<br>T 613 |                                | 160 HX<br>160<br>160-2<br>160-3 |                                | 652<br>D 652<br>T 652 |                                | 200 HX<br>200<br>200-2<br>200-3 |                                | 671 SX<br>D 671<br>T 671 |                                | 679<br>D 679<br>T 679 |                                |
|------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------|---------------------------------|--------------------------------|-----------------------|--------------------------------|---------------------------------|--------------------------------|-----------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------|--------------------------------|-----------------------|--------------------------------|
| Pitch p                                                                                        | 38,1                                     |                                | 44,45                           |                                | 44,45                 |                                | 50,8                            |                                |                       |                                | 63,5                            |                                |                          |                                | 76,2                  |                                |
| Roller Ø d <sub>1</sub>                                                                        | 25,4                                     |                                | 25,4                            |                                | 27,94                 |                                | 28,58 - 29,21                   |                                |                       |                                | 39,37 - 39,68                   |                                |                          |                                | 48,26                 |                                |
| Number of teeth<br>z                                                                           | PCD<br>d <sub>0</sub>                    | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub>           | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub> | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub>           | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub> | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub>           | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub>    | Tip circle Ø<br>d <sub>k</sub> | PCD<br>d <sub>0</sub> | Tip circle Ø<br>d <sub>k</sub> |
| 11                                                                                             | 135,23                                   | 150,0                          | 157,77                          | 171,8                          | 157,77                | 173,8                          | 180,31                          | 196,4                          | 225,39                | 248,1                          | 270,47                          | 298,1                          |                          |                                |                       |                                |
| 12                                                                                             | 147,21                                   | 162,5                          | 171,74                          | 186,3                          | 171,74                | 188,3                          | 196,28                          | 213,0                          | 245,35                | 268,8                          | 294,41                          | 323,0                          |                          |                                |                       |                                |
| 13                                                                                             | 159,21                                   | 174,9                          | 185,74                          | 200,7                          | 185,74                | 202,7                          | 212,27                          | 229,5                          | 265,34                | 289,4                          | 318,41                          | 347,7                          |                          |                                |                       |                                |
| 14                                                                                             | 171,22                                   | 187,2                          | 199,76                          | 215,1                          | 199,76                | 217,1                          | 228,30                          | 246,0                          | 285,37                | 310,0                          | 342,44                          | 372,5                          |                          |                                |                       |                                |
| 15                                                                                             | 183,25                                   | 199,5                          | 213,79                          | 229,5                          | 213,79                | 231,5                          | 244,33                          | 262,4                          | 305,42                | 330,5                          | 366,50                          | 397,1                          |                          |                                |                       |                                |
| 16                                                                                             | 195,29                                   | 211,8                          | 227,84                          | 243,9                          | 227,84                | 245,9                          | 260,39                          | 278,8                          | 325,49                | 351,0                          | 390,59                          | 421,7                          |                          |                                |                       |                                |
| 17                                                                                             | 207,35                                   | 224,1                          | 241,91                          | 258,2                          | 241,91                | 260,2                          | 276,46                          | 295,2                          | 345,58                | 371,5                          | 414,70                          | 446,2                          |                          |                                |                       |                                |
| 18                                                                                             | 219,41                                   | 236,3                          | 255,98                          | 272,5                          | 255,98                | 274,5                          | 292,55                          | 311,5                          | 365,68                | 391,9                          | 438,82                          | 470,7                          |                          |                                |                       |                                |
| 19                                                                                             | 231,48                                   | 248,6                          | 270,06                          | 286,8                          | 270,06                | 288,8                          | 308,64                          | 327,8                          | 385,79                | 412,3                          | 462,95                          | 495,2                          |                          |                                |                       |                                |
| 20                                                                                             | 243,55                                   | 260,9                          | 284,15                          | 301,0                          | 284,15                | 303,0                          | 324,74                          | 344,1                          | 405,92                | 432,7                          | 487,11                          | 519,7                          |                          |                                |                       |                                |
| 21                                                                                             | 255,63                                   | 273,1                          | 298,24                          | 315,3                          | 298,24                | 317,3                          | 340,84                          | 360,4                          | 426,05                | 453,1                          | 511,26                          | 544,2                          |                          |                                |                       |                                |
| 22                                                                                             | 267,72                                   | 285,3                          | 312,34                          | 329,6                          | 312,34                | 331,6                          | 356,96                          | 376,7                          | 446,20                | 473,5                          | 535,44                          | 568,6                          |                          |                                |                       |                                |
| 23                                                                                             | 279,81                                   | 297,5                          | 326,44                          | 343,8                          | 326,44                | 345,8                          | 373,07                          | 393,0                          | 466,34                | 493,8                          | 559,61                          | 593,0                          |                          |                                |                       |                                |
| 24                                                                                             | 291,90                                   | 309,7                          | 340,55                          | 358,0                          | 340,55                | 360,0                          | 389,19                          | 409,3                          | 486,49                | 514,1                          | 583,79                          | 617,4                          |                          |                                |                       |                                |
| 25                                                                                             | 303,99                                   | 321,9                          | 354,65                          | 372,3                          | 354,65                | 374,3                          | 405,32                          | 425,5                          | 506,65                | 534,5                          | 607,98                          | 641,8                          |                          |                                |                       |                                |
| 26                                                                                             | 316,09                                   | 334,1                          | 368,77                          | 386,5                          | 368,77                | 388,5                          | 421,45                          | 441,8                          | 526,81                | 554,8                          | 632,17                          | 666,2                          |                          |                                |                       |                                |
| 27                                                                                             | 328,19                                   | 346,2                          | 382,88                          | 400,7                          | 382,88                | 402,7                          | 437,58                          | 458,0                          | 546,98                | 575,1                          | 656,37                          | 690,5                          |                          |                                |                       |                                |
| 28                                                                                             | 340,29                                   | 358,4                          | 397,00                          | 414,9                          | 397,00                | 416,9                          | 453,72                          | 474,3                          | 567,14                | 595,4                          | 680,57                          | 714,9                          |                          |                                |                       |                                |
| 29                                                                                             | 352,39                                   | 370,6                          | 411,12                          | 429,1                          | 411,12                | 431,1                          | 469,85                          | 490,5                          | 587,32                | 615,7                          | 704,78                          | 739,2                          |                          |                                |                       |                                |
| 30                                                                                             | 364,50                                   | 382,8                          | 425,24                          | 443,3                          | 425,24                | 445,3                          | 485,99                          | 506,7                          | 607,49                | 636,0                          | 728,99                          | 763,6                          |                          |                                |                       |                                |
| 31                                                                                             | 376,60                                   | 395,0                          | 439,37                          | 457,5                          | 439,37                | 459,5                          | 502,13                          | 523,0                          | 627,67                | 656,2                          | 753,20                          | 787,9                          |                          |                                |                       |                                |
| 32                                                                                             | 388,71                                   | 407,1                          | 453,49                          | 471,7                          | 453,49                | 473,7                          | 518,28                          | 539,2                          | 647,85                | 676,5                          | 777,42                          | 812,3                          |                          |                                |                       |                                |
| 33                                                                                             | 400,82                                   | 419,3                          | 467,62                          | 485,8                          | 467,62                | 487,9                          | 534,42                          | 555,4                          | 668,03                | 696,8                          | 801,63                          | 836,6                          |                          |                                |                       |                                |
| 34                                                                                             | 412,93                                   | 431,4                          | 481,75                          | 500,1                          | 481,75                | 502,1                          | 550,57                          | 571,6                          | 688,21                | 717,1                          | 825,86                          | 860,9                          |                          |                                |                       |                                |
| 35                                                                                             | 425,04                                   | 443,6                          | 495,88                          | 514,3                          | 495,88                | 516,3                          | 566,72                          | 587,8                          | 708,39                | 737,3                          | 850,07                          | 885,3                          |                          |                                |                       |                                |
| 36                                                                                             | 437,15                                   | 455,8                          | 510,01                          | 528,5                          | 510,01                | 530,5                          | 582,86                          | 604,0                          | 728,58                | 757,6                          | 874,30                          | 909,6                          |                          |                                |                       |                                |
| 37                                                                                             | 449,26                                   | 467,9                          | 524,14                          | 542,7                          | 524,14                | 544,7                          | 599,01                          | 620,3                          | 748,77                | 777,9                          | 898,52                          | 933,9                          |                          |                                |                       |                                |
| 38                                                                                             | 461,38                                   | 480,1                          | 538,27                          | 556,8                          | 538,27                | 558,8                          | 615,17                          | 636,5                          | 768,96                | 798,1                          | 922,75                          | 958,2                          |                          |                                |                       |                                |
| 39                                                                                             | 473,49                                   | 492,2                          | 552,40                          | 571,0                          | 552,40                | 573,0                          | 631,32                          | 652,7                          | 789,15                | 818,4                          | 946,98                          | 982,5                          |                          |                                |                       |                                |
| 40                                                                                             | 485,60                                   | 504,4                          | 566,54                          | 585,2                          | 566,54                | 587,2                          | 647,47                          | 668,9                          | 809,34                | 838,6                          | 971,21                          | 1007                           |                          |                                |                       |                                |
| 41                                                                                             | 497,72                                   | 516,6                          | 580,67                          | 599,4                          | 580,67                | 601,4                          | 663,63                          | 685,1                          | 829,53                | 858,9                          | 995,44                          | 1031                           |                          |                                |                       |                                |
| 42                                                                                             | 509,84                                   | 528,7                          | 594,81                          | 613,5                          | 594,81                | 615,5                          | 679,78                          | 701,3                          | 849,73                | 879,2                          | 1019,67                         | 1055                           |                          |                                |                       |                                |
| 43                                                                                             | 521,95                                   | 540,9                          | 608,94                          | 627,7                          | 608,94                | 629,7                          | 695,93                          | 717,5                          | 869,92                | 899,4                          | 1043,90                         | 1080                           |                          |                                |                       |                                |
| 44                                                                                             | 534,07                                   | 553,0                          | 623,08                          | 641,9                          | 623,08                | 643,9                          | 712,09                          | 733,7                          | 890,12                | 919,6                          | 1068,14                         | 1104                           |                          |                                |                       |                                |
| 45                                                                                             | 546,19                                   | 565,1                          | 637,22                          | 656,1                          | 637,22                | 658,1                          | 728,25                          | 749,9                          | 910,31                | 939,9                          | 1092,37                         | 1128                           |                          |                                |                       |                                |
| 46                                                                                             | 558,31                                   | 577,3                          | 651,36                          | 670,2                          | 651,36                | 672,2                          | 744,41                          | 766,1                          | 930,51                | 960,1                          | 1116,61                         | 1153                           |                          |                                |                       |                                |
| 47                                                                                             | 570,42                                   | 589,4                          | 665,49                          | 684,4                          | 665,49                | 686,4                          | 760,56                          | 782,3                          | 950,70                | 980,4                          | 1140,84                         | 1177                           |                          |                                |                       |                                |
| 48                                                                                             | 582,54                                   | 601,6                          | 679,63                          | 698,6                          | 679,63                | 700,6                          | 776,72                          | 798,5                          | 970,90                | 1000                           | 1165,08                         | 1201                           |                          |                                |                       |                                |
| 49                                                                                             | 594,66                                   | 613,7                          | 693,77                          | 712,7                          | 693,77                | 714,7                          | 792,88                          | 814,7                          | 991,10                | 1021                           | 1189,32                         | 1226                           |                          |                                |                       |                                |
| 50                                                                                             | 606,78                                   | 625,9                          | 707,91                          | 726,9                          | 707,91                | 728,9                          | 809,04                          | 830,8                          | 1011,30               | 1041                           | 1213,56                         | 1250                           |                          |                                |                       |                                |
| 51                                                                                             | 618,90                                   | 638,0                          | 722,05                          | 741,1                          | 722,05                | 743,1                          | 825,20                          | 847,0                          | 1031,50               | 1061                           | 1237,80                         | 1274                           |                          |                                |                       |                                |
| 52                                                                                             | 631,02                                   | 650,2                          | 736,19                          | 755,2                          | 736,19                | 757,2                          | 841,36                          | 863,2                          | 1051,70               | 1082                           | 1262,04                         | 1298                           |                          |                                |                       |                                |
| 53                                                                                             | 643,14                                   | 662,3                          | 750,33                          | 769,4                          | 750,33                | 771,4                          | 857,52                          | 879,4                          | 1071,90               | 1102                           | 1286,28                         | 1323                           |                          |                                |                       |                                |
| 54                                                                                             | 655,26                                   | 674,4                          | 764,47                          | 783,6                          | 764,47                | 785,6                          | 873,68                          | 895,6                          | 1092,10               | 1122                           | 1310,52                         | 1347                           |                          |                                |                       |                                |
| 55                                                                                             | 667,38                                   | 686,6                          | 778,61                          | 797,7                          | 778,61                | 799,7                          | 889,84                          | 911,8                          | 1112,30               | 1142                           | 1334,76                         | 1371                           |                          |                                |                       |                                |
| 56                                                                                             | 679,50                                   | 698,7                          | 792,75                          | 811,9                          | 792,75                | 813,9                          | 906,00                          | 928,0                          | 1132,50               | 1163                           | 1359,00                         | 1395                           |                          |                                |                       |                                |
| 57                                                                                             | 691,63                                   | 710,9                          | 806,90                          | 826,1                          | 806,90                | 828,1                          | 922,17                          | 944,2                          | 1152,71               | 1183                           | 1383,25                         | 1420                           |                          |                                |                       |                                |
| 58                                                                                             | 703,75                                   | 723,0                          | 821,04                          | 840,2                          | 821,04                | 842,2                          | 938,33                          | 960,4                          | 1172,91               | 1203                           | 1407,49                         | 1444                           |                          |                                |                       |                                |
| 59                                                                                             | 715,87                                   | 735,1                          | 835,18                          | 854,4                          | 835,18                | 856,4                          | 954,49                          | 976,5                          | 1193,11               | 1223                           | 1431,74                         | 1468                           |                          |                                |                       |                                |
| 60                                                                                             | 727,99                                   | 747,3                          | 849,32                          | 868,5                          | 849,32                | 870,5                          | 970,65                          | 992,7                          | 1213,31               | 1243                           | 1455,98                         | 1493                           |                          |                                |                       |                                |
| 61                                                                                             | 740,11                                   | 759,4                          | 863,46                          | 882,7                          | 863,46                | 884,7                          | 986,82                          | 1009                           | 1233,52               | 1264                           | 1480,22                         | 1517                           |                          |                                |                       |                                |
| 62                                                                                             | 752,23                                   | 771,6                          | 877,61                          | 896,9                          | 877,61                | 898,9                          | 1002,97                         | 1025                           | 1253,72               | 1284                           | 1504,46                         | 1541                           |                          |                                |                       |                                |
| 63                                                                                             | 764,36                                   | 783,7                          | 891,75                          | 911,0                          | 891,75                | 913,0                          | 1019,14                         | 1041                           | 1273,93               | 1304                           | 1528,72                         | 1565                           |                          |                                |                       |                                |
| 64                                                                                             | 776,48                                   | 795,8                          | 905,89                          | 925,2                          | 905,89                | 927,2                          | 1035,30                         | 1057                           | 1294,13               | 1324                           | 1552,96                         | 1590                           |                          |                                |                       |                                |
| 65                                                                                             | 788,60                                   | 808,0                          | 920,03                          | 939,4                          | 920,03                | 941,4                          | 1051,47                         | 1074                           | 1314,34               | 1345                           | 1577,20                         | 1614                           |                          |                                |                       |                                |
| 66                                                                                             | 800,72                                   | 820,1                          | 934,18                          | 953,5                          | 934,18                | 955,5                          | 1067,63                         | 1090                           | 1334,54               | 1365                           | 1601,45                         | 1638                           |                          |                                |                       |                                |
| 67                                                                                             | 812,85                                   | 832,3                          | 948,32                          | 967,7                          | 948,32                | 969,7                          | 1083,80                         | 1106                           | 1354,75               | 1385                           | 1625,70                         | 1663                           |                          |                                |                       |                                |
| 68                                                                                             | 824,97                                   | 844,4                          | 962,47                          | 981,8                          | 962,47                | 983,8                          | 1099,96                         | 1122                           | 1374,95               | 1405                           | 1649,94                         | 1687                           |                          |                                |                       |                                |
| 69                                                                                             | 837,10                                   | 856,5                          | 976,61                          | 996,0                          | 976,61                | 998,0                          | 1116,13                         | 1138                           | 1395,16               | 1425                           | 1674,19                         | 1711                           |                          |                                |                       |                                |
| 70                                                                                             | 849,22                                   | 868,6                          | 990,75                          | 1010,0                         | 990,75                | 1012,0                         | 1132,29                         | 1155                           | 1415,36               | 1445                           | 1698,44                         | 1735                           |                          |                                |                       |                                |

All dimensions in mm



The ETP shaft bushing is a high-quality clamping element, which mounts components such as sprockets, toothed wheels, levers and other machine parts fast, easily and permanently onto shafts. Grooves, tapers and inside threads are no longer necessary.

Simply slide bushing and hub onto the shaft and tighten the few clamping screws. The only required tool is a simple hexagon wrench. However, a small torque wrench (up to 32 Nm) would be absolutely perfect. The transmissible torques easily exceed the allowable values of the shaft torsional stresses.

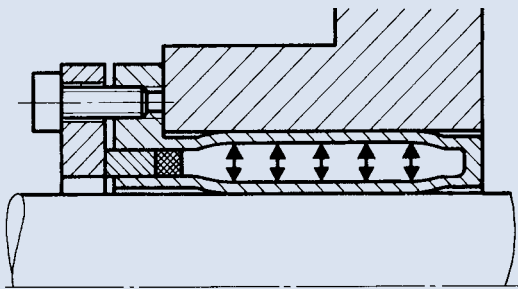
Here is an example for a shaft diameter of 40 mm with a feather key connection:

- a) Shaft material St 60  $M_d$  approx. 230 Nm
- b) Shaft material 42 CrMo4  $M_d$  approx. 310 Nm

The ETP bushing transmits 800 Nm (at 20° Centigrade). Since it is not necessary to mill grooves into the shaft, the shaft diameter can be reduced by max. 25 % (2 x groove depth), i.e. a shaft with a diameter of 30 mm fitted with the proper bushing transmits at least 340 Nm.

This means more efficiency due to:

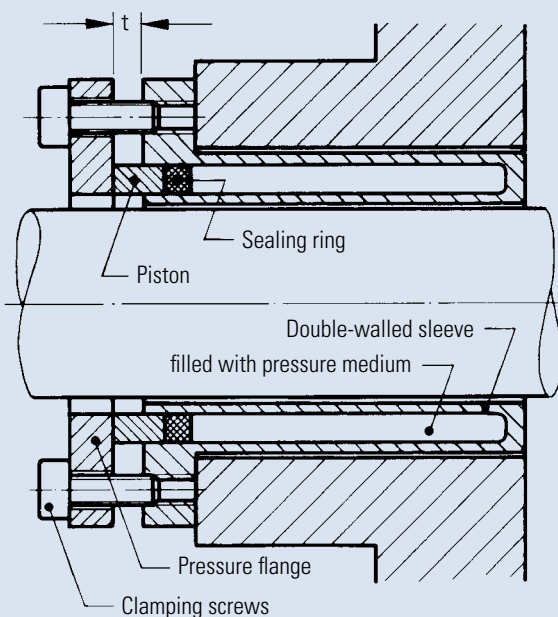
1. Material savings
2. Lower dimensioning of other components, particularly bearings.



Bushing after tightening of clamping screws

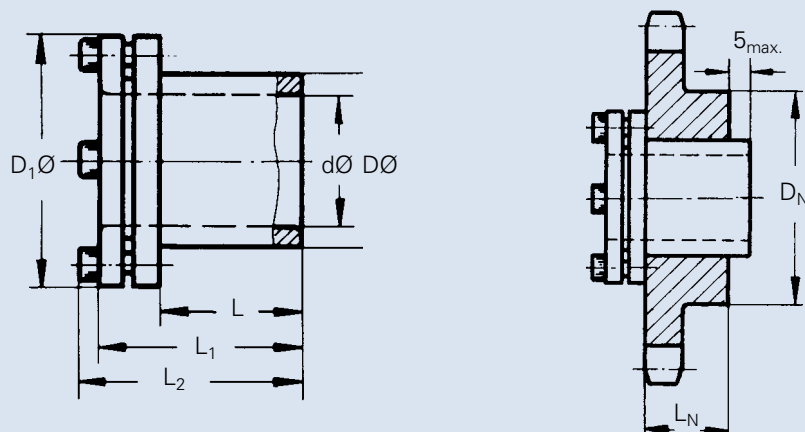
Fine adjustments are possible. Adjusting the transmission elements is never a problem. The bushings are subsequently radially and axially adjustable to change positions without difficulty and backlash-free.

The ETP bushing is easy to repair. There will be no frictional corrosion since micro-movements are prevented due to the solid connection. The bushing can always be re-used, e.g. it can easily be mounted to a new sprocket. Subsequent machining on the old shaft will not be necessary.



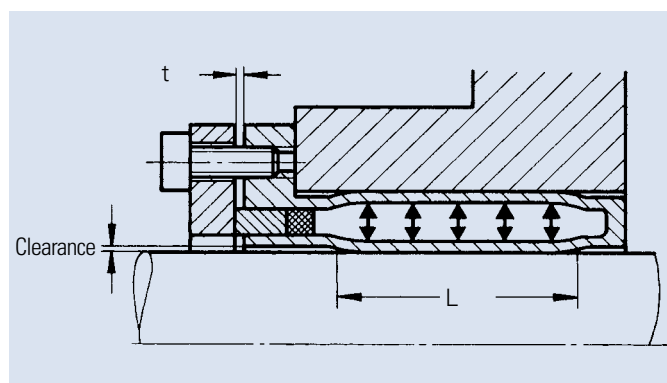
The ETP bushing consists of five parts: double-walled sleeve filled with pressure medium, sealing ring, piston, pressure flange and clamping screws (3, 4, 6 or 8 screws).

When the screws are being tightened, the piston forces the pressure medium in the double-walled sleeve against the walls. After tightening the screws with the required clamping torque  $M_{anz}$ , almost the entire bushing lies against shaft and hub. Thus the shaft and the respective part it is to be connected to are friction-locked. The pressure medium is resistant to material fatigue, and the clamping force of the bushing will persist. A 100 mm ETP bushing will then be non-slip up to a static moment of at least 12,500 Nm. The maximum working temperature is 85° Centigrade.



| Order number    | d   | D   | D <sub>1</sub> | L   | L <sub>1</sub> | L <sub>2</sub> | M <sub>N</sub> | F <sub>N</sub> | Clamping screws |        |                   | Weight | Hub Ø D <sub>N</sub> min. |           | Hub length L <sub>N</sub> |
|-----------------|-----|-----|----------------|-----|----------------|----------------|----------------|----------------|-----------------|--------|-------------------|--------|---------------------------|-----------|---------------------------|
|                 |     |     |                |     |                |                |                |                |                 |        |                   |        | Steel                     | Cast iron |                           |
|                 | mm  | mm  | mm             | mm  | mm             | mm             | Nm             | kN             | Number          | Thread | M <sub>anz.</sub> | kg     | mm                        | mm        | mm                        |
| ETP-15/23-17    | 15  | 23  | 36             | 17  | 28             | 32             | 43             | 5,7            | 3               | M4     | 4,5               | 0,11   | 35                        | 46        | 12                        |
| ETP-19/28-21    | 19  | 28  | 45             | 21  | 34             | 39             | 88             | 9,3            | 3               | M5     | 7                 | 0,18   | 42                        | 56        | 16                        |
| ETP-20/28-22    | 20  | 28  | 45             | 22  | 40             | 45             | 125            | 13,0           | 3               | M5     | 8                 | 0,18   | 42                        | 56        | 22                        |
| ETP-22/32-22    | 22  | 32  | 49             | 22  | 35             | 40             | 135            | 11,6           | 3               | M5     | 8                 | 0,21   | 48                        | 64        | 17                        |
| ETP-24/34-25    | 24  | 34  | 49             | 25  | 38             | 43             | 175            | 14,4           | 4               | M5     | 8                 | 0,22   | 51                        | 68        | 20                        |
| ETP-25/34-27    | 25  | 34  | 49             | 27  | 41             | 46             | 195            | 16,2           | 4               | M5     | 8                 | 0,22   | 51                        | 68        | 22                        |
| ETP-28/39-29    | 28  | 39  | 55             | 29  | 43             | 48             | 280            | 19,5           | 4               | M5     | 8                 | 0,28   | 59                        | 78        | 24                        |
| ETP-30/41-32    | 30  | 41  | 57             | 32  | 46             | 51             | 340            | 23,1           | 4               | M5     | 8                 | 0,30   | 62                        | 82        | 27                        |
| ETP-32/43-34    | 32  | 43  | 60             | 34  | 50             | 55             | 410            | 26,1           | 4               | M5     | 8                 | 0,34   | 65                        | 86        | 29                        |
| ETP-35/47-37    | 35  | 47  | 63             | 37  | 53             | 58             | 540            | 31,1           | 6               | M5     | 8                 | 0,40   | 71                        | 94        | 32                        |
| ETP-38/50-41    | 38  | 50  | 65             | 41  | 57             | 62             | 700            | 37,4           | 6               | M5     | 8                 | 0,46   | 75                        | 100       | 36                        |
| ETP-40/53-43    | 40  | 53  | 70             | 43  | 60             | 65             | 800            | 41,3           | 6               | M5     | 8                 | 0,58   | 80                        | 106       | 38                        |
| ETP-42/55-45    | 42  | 55  | 70             | 45  | 62             | 67             | 940            | 45,4           | 6               | M5     | 8                 | 0,60   | 83                        | 110       | 40                        |
| ETP-45/59-49    | 45  | 59  | 77             | 49  | 66             | 72             | 1180           | 53,0           | 6               | M6     | 13                | 0,75   | 89                        | 118       | 44                        |
| ETP-48/62-52    | 48  | 62  | 80             | 52  | 70             | 76             | 1370           | 59,9           | 6               | M6     | 13                | 0,80   | 93                        | 124       | 47                        |
| ETP-50/65-53    | 50  | 65  | 83             | 53  | 72             | 78             | 1620           | 64,8           | 6               | M6     | 13                | 0,93   | 98                        | 130       | 48                        |
| ETP-55/71-58    | 55  | 71  | 88             | 58  | 77             | 83             | 2110           | 77,9           | 8               | M6     | 13                | 1,10   | 107                       | 142       | 53                        |
| ETP-60/77-64    | 60  | 77  | 95             | 64  | 85             | 91             | 2750           | 93,6           | 8               | M6     | 13                | 1,40   | 116                       | 154       | 59                        |
| ETP-65/84-68    | 65  | 84  | 102            | 68  | 90             | 96             | 3430           | 108            | 8               | M6     | 13                | 1,73   | 126                       | 168       | 63                        |
| ETP-70/90-72    | 70  | 90  | 113            | 72  | 94             | 100            | 4300           | 124            | 6               | M8     | 32                | 1,90   | 135                       | 180       | 67                        |
| ETP-75/95-85    | 75  | 95  | 118            | 85  | 108            | 114            | 5300           | 153            | 6               | M8     | 32                | 2,25   | 143                       | 190       | 80                        |
| ETP-80/100-90   | 80  | 100 | 123            | 90  | 114            | 122            | 6400           | 173            | 6               | M8     | 32                | 2,62   | 150                       | 200       | 85                        |
| ETP-85/106-95   | 85  | 106 | 129            | 95  | 119            | 127            | 7700           | 194            | 6               | M8     | 32                | 3,00   | 159                       | 212       | 90                        |
| ETP-90/112-100  | 90  | 112 | 135            | 100 | 127            | 135            | 9100           | 216            | 8               | M8     | 32                | 3,56   | 168                       | 224       | 95                        |
| ETP-95/120-105  | 95  | 120 | 143            | 105 | 132            | 140            | 10700          | 239            | 8               | M8     | 32                | 4,39   | 180                       | 240       | 100                       |
| ETP-100/125-110 | 100 | 125 | 148            | 110 | 139            | 147            | 12500          | 264            | 8               | M8     | 32                | 4,81   | 188                       | 250       | 105                       |

Dimensions, technical specifications and other details were correct at the time of printing, but are subject to change. M<sub>anz</sub> is the clamping torque of the clamping screws to reach M<sub>N</sub> or F<sub>N</sub>. F<sub>N</sub> is the transmissible axial force at a torque of 0. M<sub>N</sub> is the transmissible torque at an axial force of 0.



## Fit tolerances

ETP bushings have been designed for the following fit tolerances:

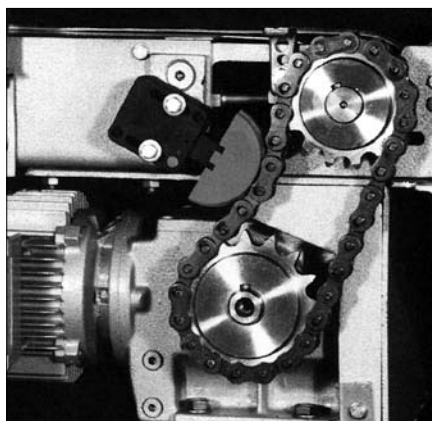
Shafts Ø h8 – k6 (except 15 mm Ø: h7), hub bore hole H7.

Permissible roughness depth: R<sub>a</sub> max = 3 / R<sub>a</sub> min. = 1 [µm].

Please note: the torque transmission (M) is influenced in a negative way, if the tolerance zone of the bushing connection does not comply with the recommended values. The distance (t) will diminish with increasing clearance. In case of exceedingly high tolerances the pressure flange will connect to the sleeve without the surface pressure required for the torque transmission being reached.

## Hub dimensioning

Depending on the material used, the pressure reached at the maximum clamping torque requires a minimum wall thickness of the hub as well as a minimum hub length (see table).



SPANN-BOX® size 0

Not only correct lubrication and wheel alignment, but also chain re-tensioning to compensate for elongation is of crucial importance for a satisfactory life cycle of a chain drive.

Apart from chain tension wheels, our chain tensioners SPANN-BOY® and SPANN-BOX® offer perfect solutions. Due to different sizes and profiles they cover almost all application areas.

For controlling purposes SPANN-BOY® and SPANN-BOX® can be fitted with limit or proximity switches.

We can also supply SPANN-BOY® and SPANN-BOX® with casings or springs made of stainless steel.



SPANN-BOY®



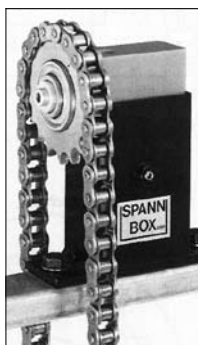
SPANN-BOX® size 1  
with deflecting profile



SPANN-BOX® size 1  
with arch profile

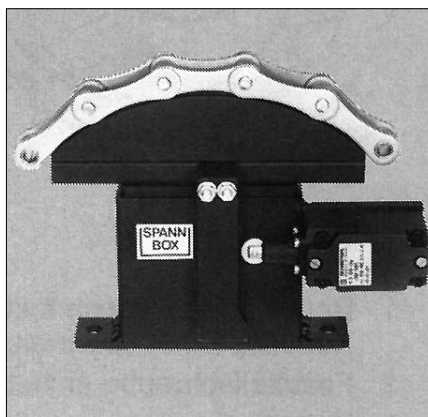


Typ-KL

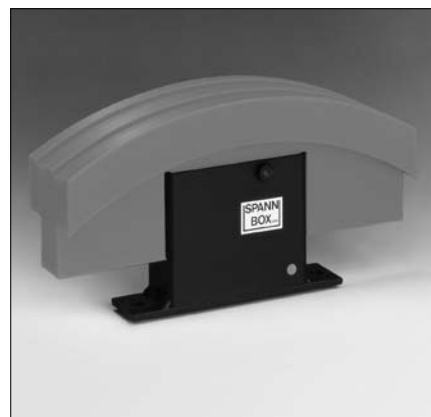


Typ-KS

SPANN-BOX® size 1  
with sprocket



SPANN-BOX® size 1  
with arch profile and limit switch



SPANN-BOX® size 2  
with block profile



|                                             |        | Arch profile |    |   |   | Semicircle profile |   |    |   | Deflecting profile |  |   |    | Block profile |   |  |   | Sprocket |   |   |   |
|---------------------------------------------|--------|--------------|----|---|---|--------------------|---|----|---|--------------------|--|---|----|---------------|---|--|---|----------|---|---|---|
| Chain                                       | Pitch  | Size         |    |   |   | SPANN-BOY®         |   |    |   | Size               |  |   |    | SPANN-BOY®    |   |  |   | Size     |   |   |   |
| No.                                         | mm     | 0            | 30 | 1 | 2 |                    | 0 | 30 | 1 | 2                  |  | 0 | 30 | 1             | 2 |  | 0 | 30       | 1 | 2 |   |
| not mentioned chains with width up to 15 mm |        |              |    |   |   | X                  | X |    |   |                    |  |   |    |               |   |  |   |          |   |   |   |
| 455                                         | 9,525  |              |    | X |   |                    | X | X  |   |                    |  |   | X  |               |   |  |   |          |   | X | X |
| D 455                                       | 9,525  |              | X  | X |   | X                  | X | X  |   |                    |  |   | X  |               |   |  |   |          |   |   |   |
| T 455                                       | 9,525  |              | X  | X |   | X                  |   | X  |   |                    |  |   | X  |               |   |  |   |          |   |   |   |
| 462                                         | 12,7   |              | X  | X |   | X                  | X | X  |   |                    |  |   | X  |               |   |  |   |          | X |   | X |
| D 462                                       | 12,7   |              | X  | X | X | X                  | X | X  | X |                    |  |   | X  | X             |   |  |   |          |   |   |   |
| T 462                                       | 12,7   |              | X  | X | X |                    |   | X  | X |                    |  |   | X  | X             |   |  |   |          |   |   |   |
| 501                                         | 15,875 |              | X  | X |   | X                  | X | X  |   |                    |  |   | X  |               |   |  |   |          | X |   | X |
| D 501                                       | 15,875 |              | X  | X | X | X                  |   | X  | X |                    |  |   | X  | X             |   |  |   |          |   |   |   |
| T 501                                       | 15,875 |              |    | X | X |                    |   |    | X |                    |  |   |    | X             |   |  |   |          |   |   |   |
| 513                                         | 19,05  |              | X  | X | X | X                  |   | X  | X |                    |  |   | X  | X             |   |  |   |          | X |   | X |
| D 513                                       | 19,05  |              | X  | X | X |                    |   | X  | X |                    |  |   | X  | X             |   |  |   |          |   |   |   |
| T 513                                       | 19,05  |              |    | X | X |                    |   |    |   |                    |  |   |    | X             |   |  |   |          |   |   |   |
| 548                                         | 25,4   |              | X  | X | X |                    |   |    | X |                    |  |   | X  | X             |   |  |   |          |   |   |   |
| D 548                                       | 25,4   |              |    | X | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 548                                       | 25,4   |              |    |   | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 563                                         | 31,75  |              |    | X | X |                    |   |    |   |                    |  |   | X  |               |   |  |   |          |   |   |   |
| D 563                                       | 31,75  |              |    |   | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 563                                       | 31,75  |              |    |   | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 596                                         | 38,1   |              |    |   | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| D 596                                       | 38,1   |              |    |   | X |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 596                                       | 38,1   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 613                                         | 44,45  |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| D 613                                       | 44,45  |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 613                                       | 44,45  |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 652                                         | 50,8   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| D 652                                       | 50,8   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 652                                       | 50,8   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 671                                         | 63,5   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| D 671                                       | 63,5   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 671                                       | 63,5   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| 679                                         | 76,2   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| D 679                                       | 76,2   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |
| T 679                                       | 76,2   |              |    |   |   |                    |   |    |   |                    |  |   |    |               |   |  | X |          |   |   |   |

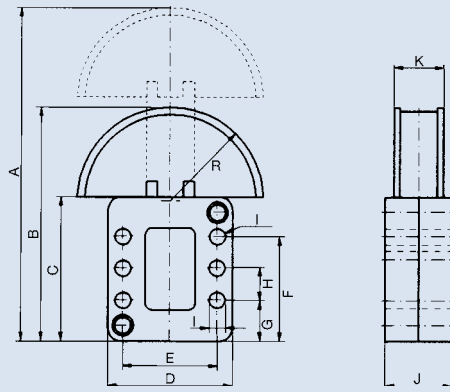
## Tension values and range of shift

| Size               | SPANN-BOY® |          | SPANN-BOX® size 0 |          | SPANN-BOX® size 30 or 1 |           | SPANN-BOX® size 2 |           |
|--------------------|------------|----------|-------------------|----------|-------------------------|-----------|-------------------|-----------|
| Range of shift     | 40 mm      |          | 40 mm             |          | 40 mm                   |           | 60 mm             |           |
| Spring design      | light      | heavy    | light             | heavy    | light                   | heavy     | light             | heavy     |
| Tension force      | N          | N        | N                 | N        | N                       | N         | N                 | N         |
| 1 spring released  | 58 - 32    | 132 - 60 | 58 - 32           | 132 - 60 | 58 - 32                 | 132 - 60  | 148 - 82          | 262 - 116 |
| 2 springs released | -          | -        | -                 | -        | 116 - 64                | 264 - 120 | 296 - 164         | 524 - 236 |
| 3 springs released | -          | -        | -                 | -        | 174 - 96                | 396 - 180 | 444 - 246         | 786 - 454 |

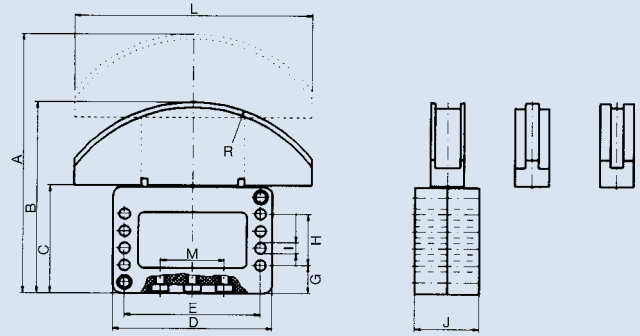
The chain weight should not be higher than the force of a spring already released by 50%.

The second and the third spring may be activated later if required.

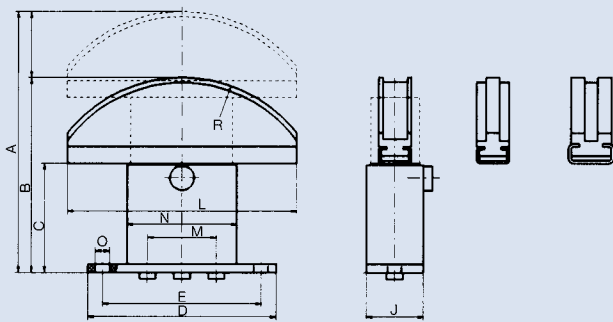
Further combinations and profiles made to specification are also available.



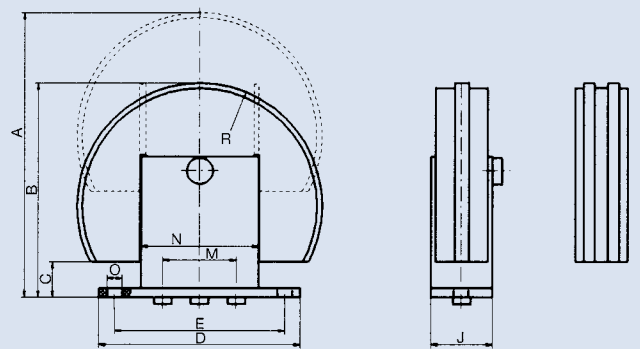
SPANN-BOX® size 0



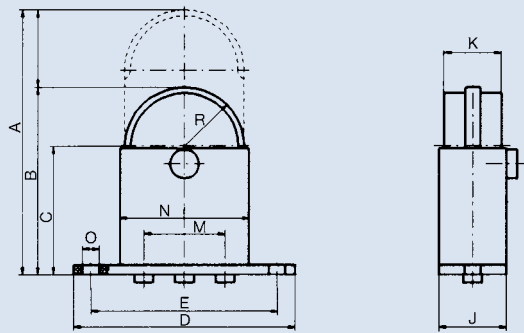
SPANN-BOX® size 30 with arch profile



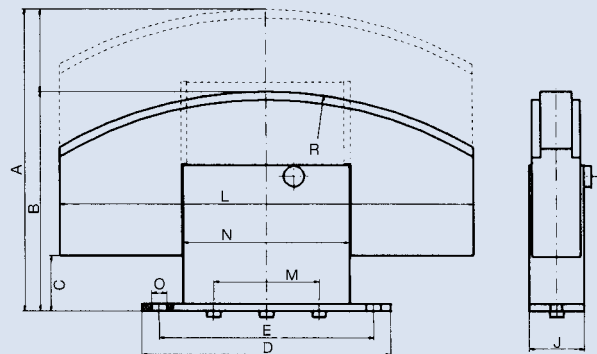
SPANN-BOX® size 1 and 2 with arch profile



SPANN-BOX® size 1 and 2 with deflecting profile



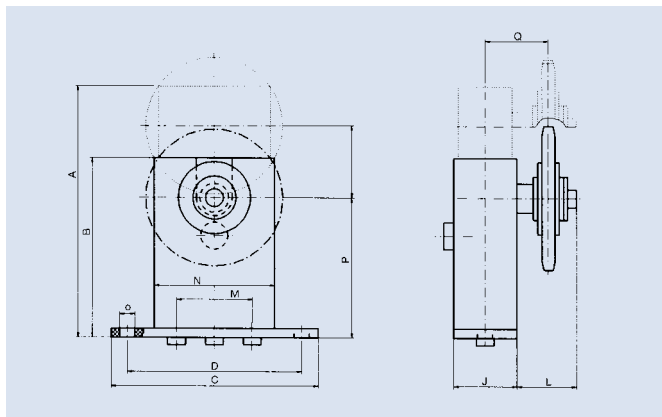
SPANN-BOX® size 1 and 2 with semicircle profile



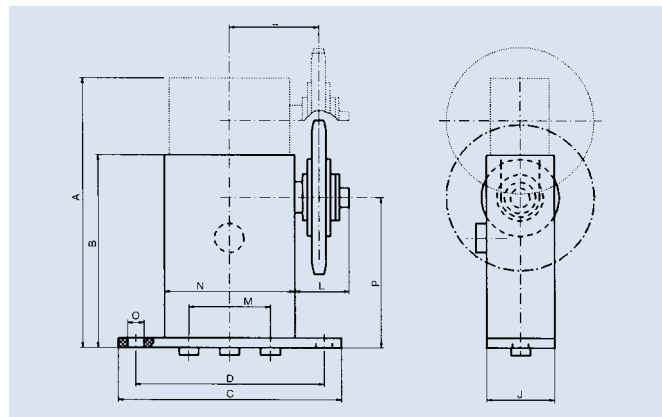
SPANN-BOX® size 2 with block profile

| Dimensions                 | Ind. | A     | B     | C    | D   | E   | F  | G    | H    | I   | J  | K  | L   | M  | N   | O   | R    |
|----------------------------|------|-------|-------|------|-----|-----|----|------|------|-----|----|----|-----|----|-----|-----|------|
| Size 0                     |      | 134   | 94    | 58   | 50  | 38  | 42 | 16,2 | 12,9 | 6,5 | 27 | 20 | -   | -  | -   | -   | 37,5 |
| Size 30                    |      | 152,5 | 112,5 | 63,5 | 94  | 80  | -  | 16,5 | 30   | 6,5 | 38 | -  | 140 | 38 | -   | -   | 90   |
| Size 1, arch profile       |      | 158   | 118   | 66   | 115 | 97  | -  | -    | -    | -   | 35 | -  | 140 | 42 | 67  | 8,5 | 90   |
| Size 1, arch profile       | *    | 173   | 133   | 81   | 115 | 97  | -  | -    | -    | -   | 40 | -  | 140 | 42 | 67  | 8,5 | 90   |
| Size 1, semicircle profile |      | 137   | 97    | 66   | 115 | 97  | -  | -    | -    | -   | 35 | 30 | -   | 42 | 67  | 8,5 | 31   |
| Size 1, semicircle profile | *    | 152   | 112   | 81   | 115 | 97  | -  | -    | -    | -   | 40 | 30 | -   | 42 | 67  | 8,5 | 31   |
| Size 1, deflecting profile |      | 162   | 122   | 20   | 115 | 97  | -  | -    | -    | -   | 35 | -  | -   | 42 | 67  | 8,5 | 70   |
| Size 2, arch profile       |      | 209   | 149   | 86   | 180 | 155 | -  | -    | -    | -   | 40 | -  | 200 | 76 | 120 | 11  | 150  |
| Size 2, arch profile       | *    | 229   | 169   | 106  | 180 | 155 | -  | -    | -    | -   | 40 | -  | 200 | 76 | 120 | 11  | 150  |
| Size 2, semicircle profile |      | 203   | 143   | 86   | 180 | 155 | -  | -    | -    | -   | 40 | 35 | -   | 76 | 120 | 11  | 57   |
| Size 2, semicircle profile | *    | 223   | 163   | 106  | 180 | 155 | -  | -    | -    | -   | 40 | 35 | -   | 76 | 120 | 11  | 57   |
| Size 2, deflecting profile |      | 225   | 165   | 40   | 180 | 155 | -  | -    | -    | -   | 40 | -  | -   | 76 | 120 | 11  | 100  |
| Size 2, block profile      |      | 218   | 158   | 40   | 180 | 155 | -  | -    | -    | -   | 40 | -  | 300 | 76 | 120 | 11  | 300  |

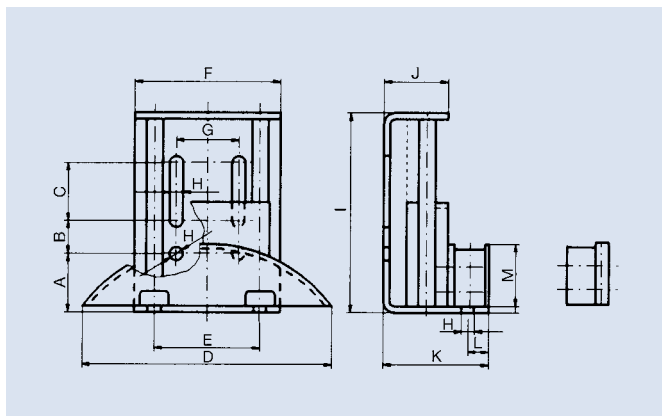
\* long casing



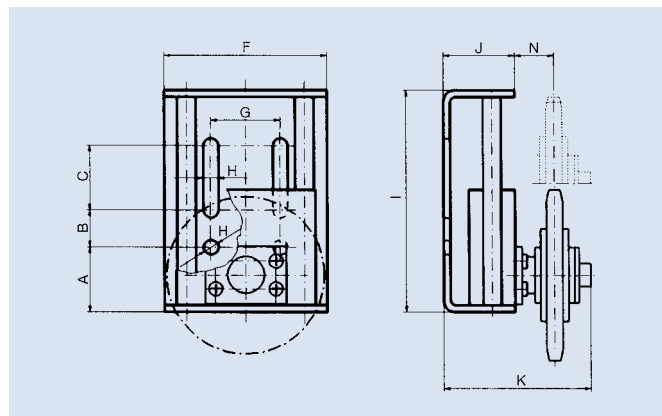
SPANN-BOX® size 1 with sprocket type KL



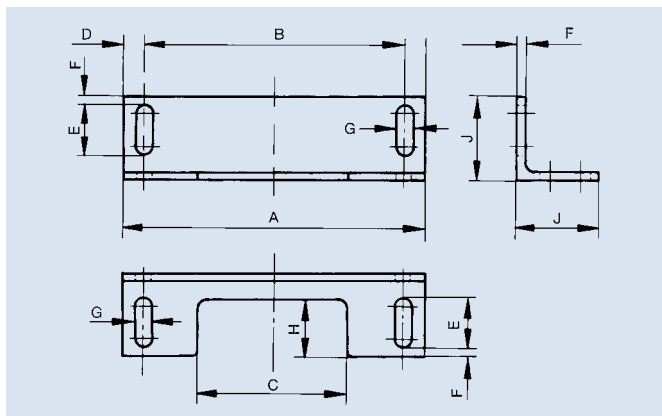
SPANN-BOX® size 1 with sprocket type KS



SPANN-BOY® with arch profile



SPANN-BOY® with sprocket



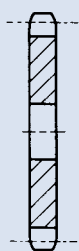
Mounting bracket for SPANN-BOX® size 1 and 2

## Standard sprockets

| Chain No. | Number of teeth |    |    |    |
|-----------|-----------------|----|----|----|
|           | 20              | 21 | 23 |    |
| 455       | 16              | 17 | 18 |    |
| 462       | 14              | 15 | 16 | 17 |
| 501       | 13              | 15 | 16 | 17 |
| 513       |                 |    |    |    |

| Dimensions                  | A   | B   | C   | D    | E    | F  | G   | H   | I  | J  | K       | L       | M  | N  | O   | P  | Q  |
|-----------------------------|-----|-----|-----|------|------|----|-----|-----|----|----|---------|---------|----|----|-----|----|----|
| SPANN-BOX® size 1 (type KL) | 140 | 100 | 115 | 97   | -    | -  | -   | -   | -  | 35 | 8,5     | 35 max. | 42 | 67 | 8,5 | 78 | 35 |
| SPANN-BOX® size 1 (type KS) | 140 | 100 | 115 | 97   | -    | -  | -   | -   | -  | 35 | 8,5     | 30 max. | 42 | 67 | 8,5 | 78 | 46 |
| Bracket size 1              | 115 | 97  | 60  | 9    | 25   | 5  | 8,5 | 30  | -  | 45 | -       | -       | -  | -  | -   | -  | -  |
| Bracket size 2              | 180 | 155 | 90  | 12,5 | 30   | 5  | 11  | 35  | -  | 50 | -       | -       | -  | -  | -   | -  | -  |
| SPANN-BOY® (arch profile)   | 28  | 16  | 28  | 120  | 50,8 | 70 | 30  | 6,4 | 96 | 31 | 51      | 10      | 30 | -  | -   | -  | -  |
| SPANN-BOY® (with sprocket)  | 28  | 16  | 28  | -    | -    | 70 | 30  | 6,4 | 96 | 31 | 66 max. | -       | -  | 17 | -   | -  | -  |

SPANN-BOX® and mounting brackets made of stainless steel grade 1.4301 on request (Please note: different sizes!)



Type A

In order to avoid errors or misunderstandings and thus time-consuming queries please supply the following details:

#### Plate sprocket Type "A"

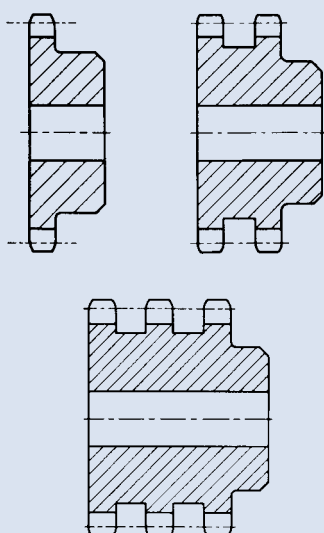
(for simplex roller chains according to DIN 8187)

1. Number of plate sprockets
2. ⚙-plate sprocket No. (e.g. plate sprocket with 20 teeth for simplex roller chain No. 462 – 1/2" x 5/16" = A 20 462)
3. Custom bore size (fit normal H7)

#### Sprocket Type "B"

(for simplex, duplex and triplex roller chains according to DIN 8187)

1. Number of sprockets
2. ⚙-sprocket No. (e.g. sprocket with 23 teeth for duplex roller chain No. D 501 – 5/8" x 3/8" = B 23 D 501)
3. Custom bore size (fit normal H7)
4. Groove sizes (for keyways also tightening direction); without additional specifications (e.g. if you merely state groove according to DIN) we will supply sprockets on the basis of DIN 6885 sheet 1.
5. Inside threads or pin holes



Type B

#### Sprockets in special designs

(for all chains in our manufacturing line)

1. Number of sprockets
2. Appropriate ⚙-chain No. or ISO No.; alternatively pitch p, inner width b1 (between inner plates) and roller Ø, pin Ø or bushing Ø.
3. Number of teeth z
4. Bore size and fit
5. Hub diameter and hub length
6. Hub seat (one-sided or symmetrical); in case of asymmetrical hubs please state the two hub sections up to the sprocket centre
7. Groove sizes (for keyways also tightening direction)
8. Inside threads or pin holes

It is advisable to include a precise drawing when ordering sprockets in special designs.

#### Tooththing

(for all chains in our manufacturing line including inverted tooth chains up to p = 25,4 mm)

1. Number of wheel bodies to be toothed
2. ⚙-chain No. or ISO No.; alternatively pitch p, inner width b1 and roller Ø, pin Ø or bushing Ø
3. Number of teeth

#### Grooves

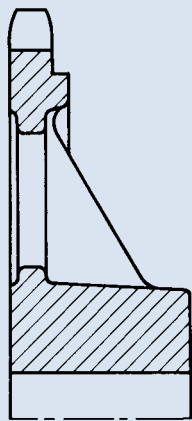
1. Number of parts to be grooved
2. Groove sizes (normal DIN 6885 sheet 1)

#### Lantern gear tooththing

1. Number of lantern gears

#### Chain tensioner SPANN-BOX®

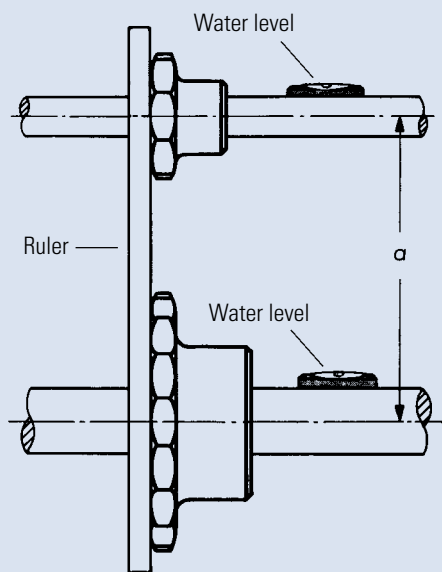
1. Number of chain tensioners SPANN-BOX®
2. ⚙-chain No. or ISO No.
3. SPANN-BOX® size
4. Sliding profile (arch, semicircle or deflecting profile)
5. Spring tension (high or low) and design (ordinary steel or grade 1.4301 [V2 A])



Type B (Cast iron)

#### ETP Bushings

1. Number of bushings
2. Order number



## Alignment of the sprockets

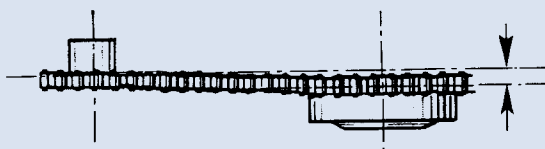
The wear life of a chain largely depends on the proper alignment of the sprockets. Sprockets must always align exactly. Alignment can be checked by means of a long ruler applied across the sprockets. This check must be repeated several times with the sprockets turned a little further each time. Subsequently, they have to be secured in axial direction.

The shafts must be aligned exactly horizontally. They must be axially parallel and free from runout. In order to avoid vibrations they should be dimensioned according to the weight of the sprockets, the design layout and the loads.

## Chain tensioning

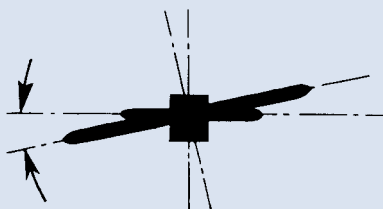
Unlike belt drives, chains do not require pre-tensioning, and they should have a slight slack span (see page 110). Chains must not be over-tightened, since this would load the drive unnecessarily and lead to premature wear of the chain. However, if chains are fitted too loosely, they tend to "jump off" the sprockets. The chain slack span should be checked after a few weeks. Initial elongation is higher than during the subsequent operation period due to running-in wear.

## FAULTY MOUNTING



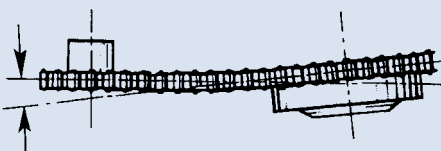
### Chain runs on laterally offset sprockets

In this case the sprockets are not lopsided, but they are laterally offset. Therefore the chain runs laterally skewed. As a result, the chain plates heavily grind on the teeth of the sprocket and wear quickly. The lateral pressure also loosens the riveting. The chain cannot run smoothly and there is a relatively strong elongation due to the strong wear between pins and bushings.



### Tilted position of sprockets

Originally the sprockets were aligned. During tensioning the gear mechanism shifted and is now in an angle to the line of the sprocket on the machine shaft. The consequences are the same as before. Apart from that, axial forces put pressure on the machine and gearing shafts.



### Skewed position of sprockets

The drawing shows that the sprockets are aligned, but that they are skewed, so that the driven sprocket, for example, has now a tilted position against the angle. In this case, the chain is also subject to extreme load and will wear prematurely.

**The followings aspects should be considered when selecting a lubricant:**

- **Oil or grease lubrication**

Oils are normally used for continuous relubrication. Grease is preferred, if the ambient air contains dust (lime, talcum, flour etc.).

- **Operating temperature**

This is one of the most significant aspects of lubricant selection. The decisive criterion is the temperature in the chain bearing during operation.

- **Viscosity**

Viscosity must be high enough so that all the chain parts are protected against wear and galling. However, despite high viscosity the oil must be sufficiently capable of flow.

The following rules of thumb apply:

- Low bearing pressure, high chain speed = low viscosity
- High bearing pressure, low chain speed = high viscosity
- Low operating temperature = low viscosity
- High operating temperature = high viscosity

- **Initial lubricant**

It must have excellent corrosion protection qualities and guarantee sufficient wear protection up to the first relubrication. The envisaged operating conditions should be taken into account.

- **Load-bearing properties**

Sufficient load-bearing properties of the lubricating oil film help to reduce wear.

- **Friction point wetting**

The chain lubricant must be able to permeate the lubrication gap autonomously.

- **Chain cooling**

In conjunction with appropriate lubrication procedures certain oils are suitable for cooling. The maximum service temperature of the lubricating oil must never be exceeded.

- **Applications in the food industry**

Lubricants must comply with specific food law requirements.

- **Applications in the textile industry**

Non-drip and non-adhesive oils should be used.

- **Corrosion protection**

This is particularly important for chains used in corrosive environments.

- **Applications in wet environments**

Lubricants must not be washed off by splash water. They must be capable of creep, and supply sufficient corrosion protection even as emulsions.

- **Muffling of chain noises**

Lubricants with higher viscosity ensure better muffling properties than low viscosity lubricants. However, the lubricants must always be sufficiently capable of flow.

- **Contact with elastomers and synthetic materials**

Compatibility with elastomers and synthetic materials must be guaranteed. Compatibility tests are always required.

- **Lifetime lubrication**

Lubrication has been designed in a way that the lubricant will be functioning during the entire lifetime of the chain.

Lifetime lubrication for chains is possible, if

- the chain load is low
  - the service temperature of the lubricant is considerably underrun
  - the overall operating time is low
- For lifetime lubrication special non-aging chain lubricants have been developed.

- **Ground water hazards**

Please refer to the appropriate safety data specifications

- **General environmental compatibility**

Please use lubricants, which are biodegradable and particularly environmentally friendly.

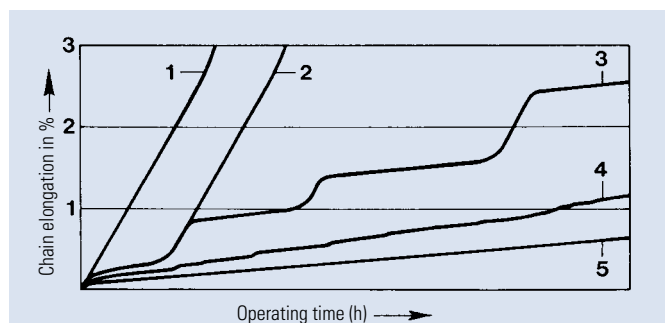
#### Chain lubrication from production to operation

|                              |                                                                                                                                                                                                                              |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chain manufacturers          | Initial lubrication                                                                                                                                                                                                          |
|                              | Corrosion and wear protection<br>Selection of suitable lubrication method                                                                                                                                                    |
| Machine/engine manufacturers | Make already installed chains accessible for manual lubrication<br>Plan chain protection boxes<br>Provide oil pans<br>Design lubrication facilities<br>State reference values for lubrication schedules and lubricant dosage |
|                              | Inspection of lubrication state and, if necessary, evaluation of lubrication schedules and lubricant dosage<br>Chain cleansing<br>Chain conservation<br>Relubrication                                                        |

## General information

Chains running on sprockets are subject to wear of the joints due to angle-sliding movements of the pins. Therefore efficient lubrication is of utmost importance. Even low-maintenance roller chains with plastic slide bearings should be relubricated occasionally.

Dry running condition (curve 1) causes excessive wear and destroys the chain within a very short time.



Chain elongation as a function of operating time with different lubrication states

One-time lubrication (curve 2) only delays the wear until the lubricant has been used up.

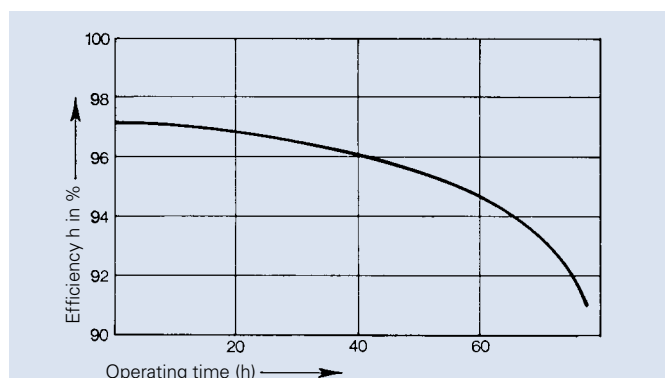
Intermittent dry running conditions (curve 3) frequently occur with manual lubrication, particularly if deadlines for relubrication have not been met.

Wrong lubrication (curve 4) results in uneven wear and may be caused by inferior, dirty, wrong (unsuitable viscosity) or too little lubricant.

Correct lubrication (curve 5) is crucial for chain drives according to performance diagrams.

## Lubrication and degree of efficiency

The following graph shows the influence of lubrication on efficiency.



Degree of efficiency as a function of operating time with one-time lubrication (according to Worobjew)

## Lubricants

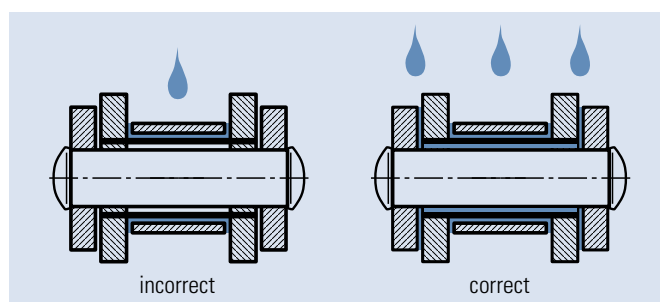
The selection of an appropriate lubricant depends first of all on the type of lubrication.

Low viscosity mineral oils are particularly suitable for chain drives.

| Ambient temperature °C | Viscosity group of lubricant |
|------------------------|------------------------------|
| - 5 up to + 25         | ISO VG 100 (SAE 30)          |
| 25 up to 45            | ISO VG 150 (SAE 40)          |
| 45 up to 65            | ISO VG 220 (SAE 50)          |

For higher temperatures (e.g. furnace chains) graphite or molybdenum disulfide ( $\text{MoS}_2$ ) applied either as additive or spray will facilitate lubrication.

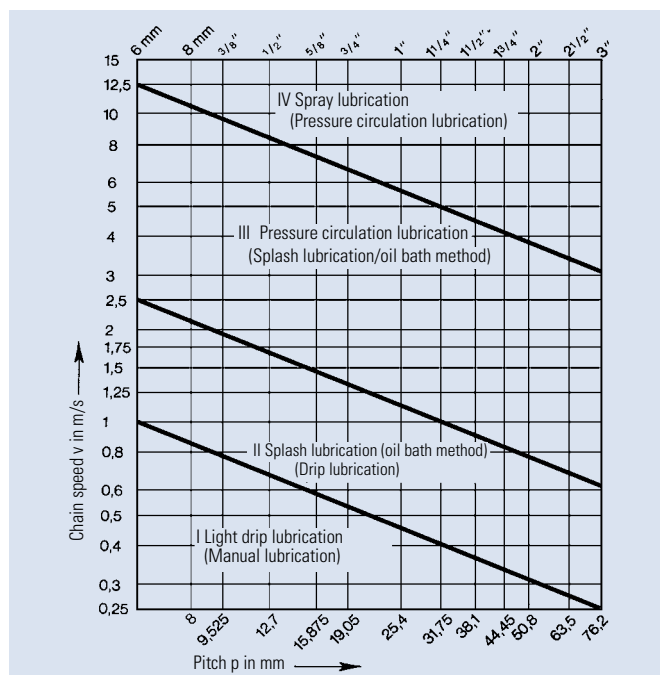
Low-viscosity or hardened grease products with a drop point of  $70^\circ\text{C}$  are also suitable for manual lubrication. In special cases liquidised grease may be sprayed on. Initial operation can start immediately after evaporation of the volatile carrier substance.



It is very important that the lubricant reaches the joints (pins, bushings), which are subject to wear.

## Recommendations for lubrication

The type of lubrication depends on the chain pitch and the chain speed.



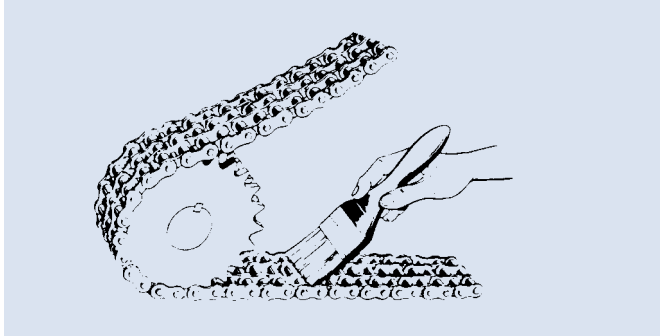
The lubrication types, which are not in brackets, are preferable to those in brackets (permitted).

In order to achieve a long wear life and high cost effectiveness for chain drives in lubrication range I (light drip lubrication or manual lubrication) relubrication schedules must be determined by tests.

### Manual lubrication

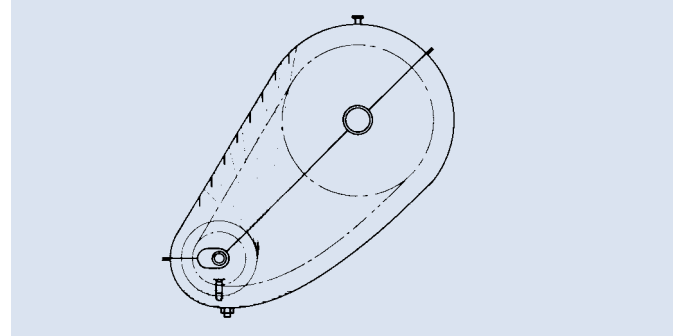
This type of lubrication by means of oil can and brush is not very safe and therefore only suitable for chains with occasional operation or for secondary drives and low chain speeds.

Sufficient lubrication should take place at least once a day (if possible every 8 operating hours). Lubricant colouration may not occur.



### Spinning disk lubrication

With this type of lubrication the chain operates above oil level. A disk submerging into the lower oil level (peripheral velocity between min. and max. 40 m/s) centrifuges oil against the casing walls from where it continuously runs down onto the chain via drip rails.



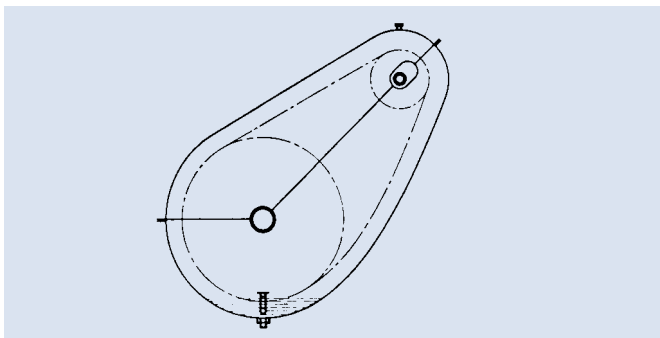
### Drip lubrication

Drip lubrication by means of wick oilers, needle oilers or drip oilers is only suitable for low load bearing drives. Sufficient lubrication of the joint surfaces must be ensured. Lubricant colouration may not occur.

### Splash lubrication (oil bath method)

There is just enough oil in a sufficiently sized protection box (the worn and elongated chain must not be able to hit against the casing wall) to allow the chain plates to submerge into the bath up to the rollers or the bushings respectively.

Higher submerging depths cause the oil to heat up and lead to untimely oxidation of the oil.

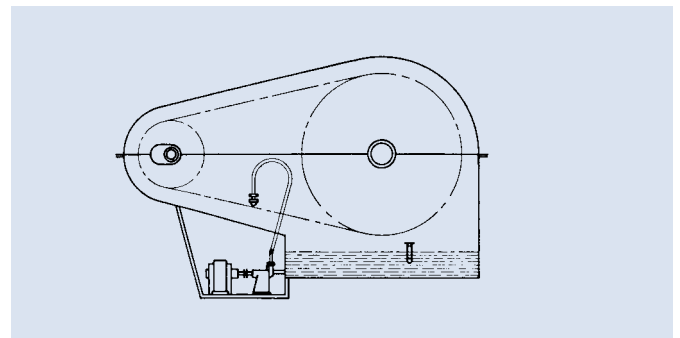


### Pressure circulation lubrication

This type of lubrication is suitable for fast-running drives and high loads. The oil can be supplied via a connection to an existing pressure oil pipe or via an extra pump. By means of a lubrication shower situated near the large sprocket, oil is sprayed onto the inner side of the chain return strand in running direction over the whole width of the chain. High load-bearing drives need a second shower for cooling with the oil to be sprayed onto the pull strand. The oil quantity depends on the drive size and the amount of heat to be dissipated.

### Spray lubrication

Spray lubrication is very similar to pressure circulation lubrication. Instead of a lubrication shower, however, lubrication spray valves atomise the oil into aerosol form, and thus the fine oil mist can reach every single chain joint.



### Lubrication overview

| Lubrication range | Chain speed<br>m/s   | Lubrication<br>a) favourable<br>b) permitted                                                                      | Transmissible power                              |                          |                    |                         |
|-------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------|--------------------|-------------------------|
|                   |                      |                                                                                                                   | correct<br>lubrication<br>(favourable/permitted) | insufficient lubrication |                    | without<br>lubrication* |
|                   |                      |                                                                                                                   |                                                  | without contamination    | with contamination |                         |
| I                 | up to $\approx 1$    | a) Light drip lubrication<br>b) Manual lubrication/grease lubrication                                             | 100 %                                            | 60 %                     | 30 %               | 15 %                    |
| II                | up to $\approx 2,5$  | a) Splash lubrication (oil bath method)<br>b) Drip lubrication                                                    |                                                  | 30 %                     | 15 %               |                         |
| III               | up to $\approx 12,5$ | a) Pressure circulation lubrication<br>b) Splash lubrication (oil bath method),<br>if possible with spinning disk |                                                  | not permitted            |                    |                         |
| IV                | above 12,5           | a) Spray lubrication<br>b) Pressure circulation lubrication<br>(possibly with oil cooling system)                 |                                                  |                          |                    |                         |

\* a wear life of 15 000 hours cannot be guaranteed!

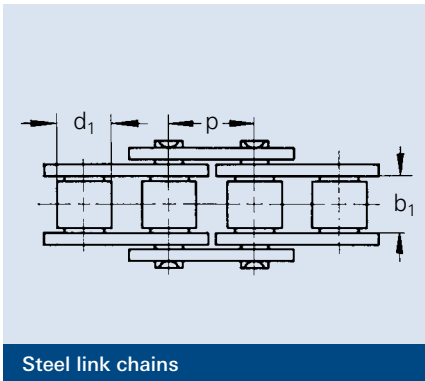


## Wippermann lubrication

| Product     | Oil | Grease | Spray | Application<br>°C |                                                             | Technical features                                                                                                                                                                                                                                                                                                                   |
|-------------|-----|--------|-------|-------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |     |        |       | from              | to                                                          |                                                                                                                                                                                                                                                                                                                                      |
| WKS-C       |     |        |       | - 10              | + 100                                                       | <b>Wippermann standard lubrication</b><br>Mineral oil-based soap-free chain grease, with wax and product-specific additives, for extreme requirements as to corrosion and wear protection<br>Water resistant.                                                                                                                        |
| WKS-W       |     |        |       | 0                 | + 80                                                        | <b>Lubrication wax for chains</b><br>"Quasi dry" non-tacky lubrication film<br>Wear protection<br>High corrosion protection<br>Good adhesive properties<br>Excellent water resistance                                                                                                                                                |
| WKS-Rapid   |     |        |       | - 15              | + 120                                                       | <b>White chain lubricant</b><br>Difficult to centrifuge off<br>Protects against corrosion and wear<br>It has absorbing and rinsing properties and provides effective lubrication<br>Resistant to water and vapour<br>Quite resistant to acids and bases                                                                              |
| WKS-D       |     |        |       | - 10              | + 80                                                        | <b>Corrosion protection oil</b><br>Chlorine-free lubricant made with mineral oil raffinates and corrosion protection additives; thin, waxen and pressure-resistant lubrication with anti-wear additives<br>Excellent corrosion protection.                                                                                           |
| WKS-H1      |     |        |       | - 10              | + 170                                                       | <b>Chain lubricant for the food and beverage industry</b><br>Synthetic lubricant for hygienic and clean lubrication, which in itself is not germinable<br>Excellent resistance to oxidation as well as temperature-resistant and with reduced vapour generation                                                                      |
| WKS-Plus    |     |        |       | - 30              | + 250                                                       | <b>High-temperature lubricant</b><br>Biodegradable synthetic high temperature lubricant based on ester with a low vaporisation rate<br>Excellent wear and corrosion protection<br>Good adhesive properties<br>Not explosive                                                                                                          |
| WKS-HT      |     |        |       | - 30              | +1000<br><small>(as of +300 °C<br/>dry lubrication)</small> | <b>High-temperature lubricant with graphite additives</b><br>Synthetic high-temperature lubricant based on ester with graphite-based solid lubricants<br>With temperatures of more than 250 °C, the oil proportion in the lubricant evaporates; the solid lubricants remain and have excellent dry-running operation characteristics |
| WKS-T       |     |        |       | - 55              | + 90                                                        | <b>Lubricant for environments with low temperatures</b><br>Fast biodegradable and low-temperature multi-purpose oil based on synthetic ester with excellent wear protection<br>The product has a low evaporation rate and is characterised by its excellent viscosity-temperature behaviour; it is also highly age resistant         |
| WKS-Spezial |     |        |       | - 10              | + 80                                                        | <b>Chain spray for relubrication</b><br>Mineral oil-based chain spray with synthetic wax, corrosion protection and anti-wear additives (propellant: propane / butane pressure gas mixture)<br>For relubrication of open drive chains, conveyor chains in conveying systems as well as for load chains                                |

All lubricants supplied by WIPPERMANN are free from chlorine and silicone.

Detailed product description and safety data sheets on request.



### Steel link chains

Generally, steel link chains can only operate on one plane, and they are primarily used as drive elements for chain drives.

They are precisely determined by three main measurements:

**p = Pitch** is the distance from pin centre to pin centre.

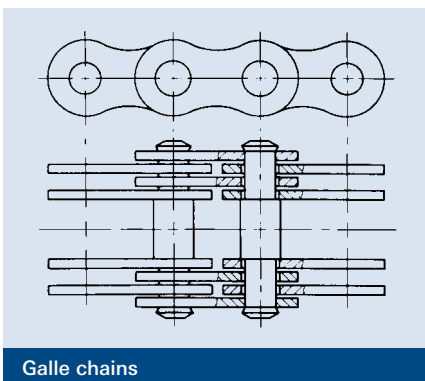
**b<sub>1</sub> = Inner width** is the distance between the inner plates.

**d<sub>1</sub> = Roller diameter, bushing diameter or pin diameter** is the outer dimension of the cylindrical parts between the inner plates.

The characteristic feature of a steel link chain is the chain joint.

It consists of an outer and an inner link. On this joint the calculated bearing area equals the projection of the pin onto the bearing area of the inner link. It has a different size depending on the type of chain.

In the following overview the characteristic features of various types of steel link chains are briefly described.



### Galle chains

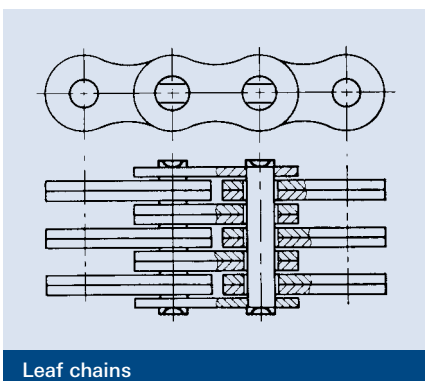
Galle chains were named after their inventor André Galle (1761-1841). A Galle chain is the simplest type of steel link chain.

The plates rotate directly on the pin lug. With this type of chain the bearing area is very small.

Therefore the chain speed should not exceed 0,3 m/s.

Consequently, Galle chains are less suitable for power transmission, and they are almost exclusively used as load chains (e.g. counterweight chains, lock chains and tack chains).

Galle chains on request (see page 59).



### Leaf chains

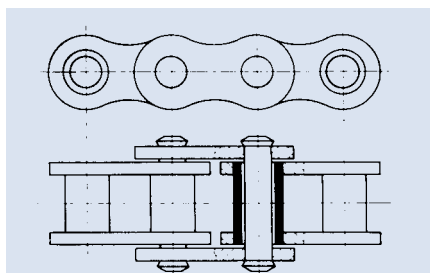
Leaf chains in normal design or reinforced design are used as load chains in cranes, hoisting gear and lifting equipment as well as for counterweights, e.g. on machine tools, and also to transmit back-and-forth movements.

The plates of leaf chains are punched from high-grade steel and are subsequently hardened and tempered to guarantee high fatigue strength. Very narrow tolerances ensure that all plates bear the same load proportions. Pins made of high alloy case-hardened steel are tempered to achieve high wear resistance. The tightly adjoining plates are designed in various combinations and rotate on the pins.

One special design is the heavy-duty type series U. On chains of this type all plates are mounted with a sliding fit and are also secured with laterally attached riveted disks. This design guarantees an even load distribution and reduces the bending load of the pins. These chains were especially developed for heavy loads and operations under harsh conditions. Due to their high fatigue strength they are particularly suitable for such application areas.

Due to their design (no tooth meshing) leaf chains cannot transmit torques. Their force direction, however, can easily be deflected by means of rollers. Even with a small working width they have a high breaking load.

Dimensions as of page 51.



Bush chains

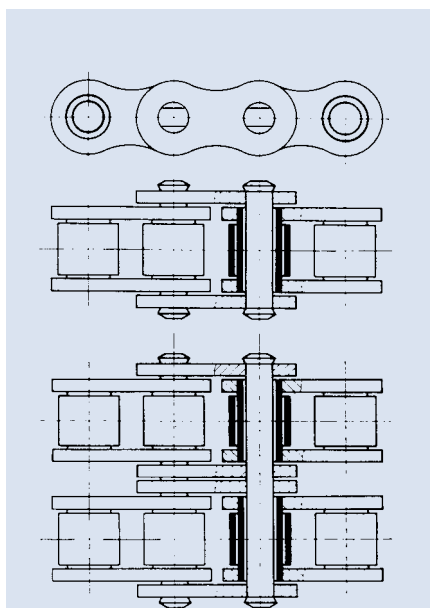
## Bush chains

Bush chains are more wear-resistant than Galle chains. The inner links consist of two inner plates with two force-fitted bushings. The outer links consist of two outer plates with two force-fitted and riveted pins.

Chain speeds of up to 5 m/s are possible depending on the pitch.

Due to their robust design bush chains are mainly used as drive and conveyor chains, particularly where there are rough operating conditions, e.g. in mining or construction site equipment.

For dimensions see page 47.



High performance roller chains

## High performance roller chains

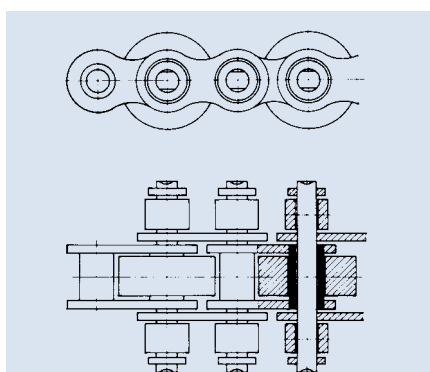
Compared to bush chains, high performance roller chains are of better quality due to the use of higher steel grades and heat treatment. Furthermore, they are produced with higher accuracy and narrower tolerances. The visible difference is the rollers, which are mounted on the bushings with running fit, and which absorb the meshing impact in the sprocket and thus reduce sprocket wear. Plates and rollers are hardened and tempered in order to achieve high fatigue strength, whereas bushings and pins, which are subject to wear, are case-hardened.

For high power transmission under restricted mounting conditions multi-strand roller chains can be used. This means that several simplex roller chains are connected by means of an end-to-end pin to form one single unit. Duplex and triplex chains are standardised.

Roller chains can be employed universally and are therefore the most common chain type. They are not only used as drive and gear chains in machine construction, but also in special designs with attachments for transport and conveyance purposes or instead of rack and pinion arrangements.

Roller chains RF made of stainless and acid-resistant steel grade 4301 have proved their value on corrosion-endangered drives and because of their anti-magnetic properties for many years. They are mainly used in the chemical, beverage and food industry.

Dimensions as of page 10.



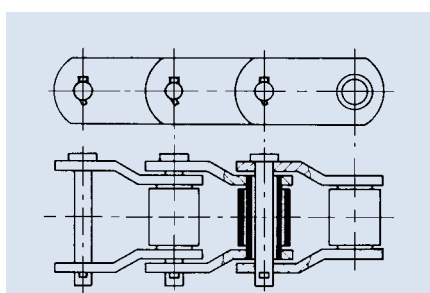
Accumulator chains

## Accumulator chains

Accumulator chains are employed, when accumulation of piece goods during transportation is required. The chain runs on lateral support rollers, whereas the conveyor roller in the middle runs freely.

The particular advantages of this type of chain lie in the simple control, the exact guiding possibilities as well as in the smooth transition from one direction to another without abrupt acceleration. During intentional or unintentional accumulation of the transported piece goods no excessive impact pressure is put on the following transport units since the power and free conveyor chain will continue to run smoothly under the goods until the end of the accumulation, when transportation will continue due to friction.

For dimensions see page 26, 27, 48 - 50.



Cranked link chains

## Cranked link chains (Rotary chains)

Cranked link chains (Rotary chains) are in fact roller chains, but only cranked plates are used. These plates help to give the chain a high amount of elasticity so that load impacts can easily be absorbed. It is also quite straightforward to repair cranked link chains since each individual link can be replaced.

Cranked link chains (Rotary chains) are mainly employed for applications with intermittent impacts and where the drive is exposed to rough soiling, e.g. in excavation machinery, crawlers for excavators and dozers or drilling equipment.

Cranked link chains (Rotary chains) on request (see page 59).

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High efficiency:</b>                 | $\eta$ up to 0,98 with a properly lubricated chain under normal circumstances and with a drive working under full load.                                                                                                                                                                                                                                                                                    |
| <b>Long wear life:</b>                  | $\approx$ 15,000 operating hours if the correct drive was selected and with appropriate maintenance.                                                                                                                                                                                                                                                                                                       |
| <b>Extensive power and speed range:</b> | P up to 225 kW with simplex roller chain $p = 76,2$ mm<br>Power diagram for roller chains according to DIN 8187 see page 103.<br>Power diagram for roller chains according to DIN 8188 see page 104.<br>Power diagram for roller chains according to ISO 606 see page 105.                                                                                                                                 |
| <b>Long shaft distance:</b>             | The shaft distance (usually between 30 times and 50 times the pitch) has no fixed measurements. It can easily be adjusted by shortening or lengthening of the chain, even after completed assembly, in order to meet altered construction requirements.                                                                                                                                                    |
| <b>No slip:</b>                         | In contrast to friction-locked drives chain drives have no slip. In motor vehicles, camshaft drives with chains guarantee exact valve timing.                                                                                                                                                                                                                                                              |
| <b>Multiple transmission ratios:</b>    | The transmission ratio:<br>$i = \frac{n_1}{n_2} = \frac{z_2}{z_1} \quad (\text{usually up to approx. } 7:1)$<br>(in special cases up to 10:1 in one step possible)<br>remains constant during the entire operation period due to its positive locking connection. However, it may be easily altered by simply changing the sprockets and keeping the shaft distance.                                       |
| <b>High load capacity:</b>              | For the permissible bearing pressure with recommended lubrication please refer to the table on page 102.                                                                                                                                                                                                                                                                                                   |
| <b>Elastic properties:</b>              | Roller chain drives have a high elasticity, because of the plate material and the lubrication layer between rollers, pins and bushings.                                                                                                                                                                                                                                                                    |
| <b>Versatile applications:</b>          | Roller chains are mainly used as drive elements for power transmission or as load chains; equipped with special links they can also be used for transportation and conveyance purposes. One chain is able to simultaneously drive several shafts with the same or opposite rotational direction at the same or at different speeds. It can also be employed as a rack and pinion assembly (lantern gears). |
| <b>Cost effectiveness:</b>              | Roller chains do not need to be pre-tensioned. Therefore there are only minor bearing loads. Space-saving construction, simple mounting, low service and maintenance costs make chain drives very economical.                                                                                                                                                                                              |



| Designation                              | Symbol     | Unit              | Basic equations                                             |
|------------------------------------------|------------|-------------------|-------------------------------------------------------------|
| Input speed                              | n          | rpm               |                                                             |
| Operating factor                         | k          |                   | $k = f_y \cdot f_i \cdot f_z$                               |
| Minimum tensile strength                 | $F_B$      | N                 | see chain tables                                            |
| Torque                                   | M          | Nm                | $M = \frac{9550 P}{n} = \frac{F \cdot d_0}{2000}$ in Nm     |
| Correction factor for impact loads       | $f_y$      |                   | see page 101                                                |
| Correction factor for transmission ratio | $f_i$      |                   | see page 102                                                |
| Correction factor for shaft distance     | $f_a$      |                   | see page 102                                                |
| Correction factor for number of teeth    | $f_z$      |                   | see page 102                                                |
| Bearing area                             | f          | cm <sup>2</sup>   | see chain tables                                            |
| Bearing pressure                         | $p_r$      | N/cm <sup>2</sup> | $p_r = \frac{F}{f}$ see page 100                            |
| Speed                                    | v          | m/s               | $v = \frac{z \cdot p \cdot n}{60\,000}$ in m/s              |
| Weight of chain per meter                | q          | kg/m              | see chain tables                                            |
| Power                                    | P          | kW                | $P = \frac{F \cdot v}{1000} = \frac{M \cdot n}{9550}$ in kW |
| Diagram power                            | $P_c$      | kW                | $P_c = P \cdot k$ in kW                                     |
| Safety factor                            | S          |                   | $S = \frac{F_B}{F_G}$                                       |
| Impact coefficient                       | Y          |                   | see tables page 101                                         |
| PCD                                      | $d_0$      | mm                | $d_0 = \frac{p}{\sin \frac{180^\circ}{z}}$ in mm            |
| Pitch                                    | p          | mm                | see chain tables                                            |
| Transmission ratio                       | i          |                   | $i = \frac{n_1}{n_2} = \frac{z_2}{z_1}$                     |
| Shaft distance                           | a          | mm                |                                                             |
| Number of teeth                          | $z_1, z_2$ |                   |                                                             |
| Tensile force                            | F          | N                 | $F = \frac{1000 P}{v} = \frac{2000 M}{d_0}$ in N            |
| Tensile force, dynamic                   | $F_d$      | N                 | $F_d = F \cdot f_y$ in N                                    |
| Tensile force, centrifugal               | $F_F$      | N                 | $F_F = q \cdot v^2$ in N                                    |
| Tensile force, total                     | $F_G$      | N                 | $F_G = F_d + F_F$ in N                                      |

### Dimensioning of leaf chains

The transmissible load as well as the operating conditions i.e. type of load, chain speed, chain activity rate, impact level and operating temperature must be considered when selecting a leaf chain.

The permissible dynamic tensile force depends on the fatigue strength of plates and pins. As an indirect benchmark the breaking load of chains is used, and thus fatigue strength is taken into account by including a sufficient safety factor. Type and design of the chain determine the safety factor to be selected. In order to be able to dimension leaf chains, the tensile force  $F$  as well as the operating conditions for assessing further

dynamic loads have to be known. The tensile force  $F$ , the factor  $f_1$  for the operating conditions and the safety factor  $S$  are crucial to calculate the required minimum breaking load  $F_B$  of the chain.

The safety factor  $S$  is subject to the regulations stipulated by various authorities and the German Technical Inspection Authority (TÜV). If there are no specific regulations, the factor  $S$  can normally be selected between 7 and 12 according to the type and design (combination of plates) of the respective chain.

### Calculation of the minimum breaking load $F_B$

$$F_B \geq F \cdot f_1 \cdot S$$

$$F_B \geq F \cdot f_1 \cdot (n_{LW} \cdot 100 \cdot f_u)^{0,1}$$

$F_B$  : Minimum tensile strength of chain

$F$  : Tensile force in chain

$f_1$  : Operating factor

$S$  : Safety factor

$n_{LW}$  : No. of load cycles (fatigue limit:  $n_{LW} = 10^7$ )

$f_u$  : Correction factor for PCD

$$S = (n_{LW} \cdot 100 \cdot f_u)^{0,1}$$

$$d_0 = d_u + g$$

$d_0$  : PCD of deflection

$d_u$  : Diameter of contact surface of deflection roller

$g$  : Plate height

$p$  : Chain pitch

| Load type                                              | $f_1$ |
|--------------------------------------------------------|-------|
| no impact                                              | 1,00  |
| uniform, single slight impacts, slightly swelling load | 1,25  |
| repeated slight impacts, moderately swelling load      | 1,37  |
| repeated slight impacts, highly swelling load          | 1,59  |
| repeated high impacts, moderately swelling load        | 1,72  |
| repeated high impacts, highly swelling load            | 1,85  |

| PCD $d_0$     | $f_u$ |
|---------------|-------|
| $4,5 \cdot p$ | 9,10  |
| $5,0 \cdot p$ | 7,14  |
| $5,5 \cdot p$ | 5,95  |
| $5,8 \cdot p$ | 5,43  |
| $6,0 \cdot p$ | 5,13  |
| $6,5 \cdot p$ | 4,52  |
| $7,0 \cdot p$ | 3,79  |
| $7,5 \cdot p$ | 3,70  |

### Chain speed

up to 5 m/min.

> 5 ... 10 m/min.

> 10 ... 30 m/min.

### Minimum safety factor $S$

7

10

12

### Further details:

- For temperatures as of 150 °C higher safety factors apply. On request we will give you more detailed information as to these safety factors.
- The higher the number of plates the higher the safety factor  $S$  should be.
- For single lacing the safety factor should be higher than for double lacing.

## Calculation of the bearing pressure $p_r$

$$p_r = p_r = \frac{F \cdot f_1}{f} \leq p_{rzul}$$

- $p_r$  : Bearing pressure  
 $f$  : Chain joint area  
 $p_{rzul}$  : Permissible pressure in bearing area  
 $F$  : Tensile force in chain  
 $f_1$  : Operating factor

## Chain speed

| Chain speed        | $P_{rzul}$              |
|--------------------|-------------------------|
| up to 5 m/min.     | 14000 N/cm <sup>2</sup> |
| > 5 ... 10 m/min.  | 12000 N/cm <sup>2</sup> |
| > 10 ... 30 m/min. | 9000 N/cm <sup>2</sup>  |

In case of permanent tensile force (counter balances)  $p_{rzul}$  must be smaller than with a regularly released chain.

## Check and maintenance of leaf chains

Permissible wear elongation may be max. 3 %. If a chain has elongated by 3 % caused by wear in the joints, it must be replaced. Therefore leaf chains must be subjected to wear checks at regular intervals. These checks should comprise:

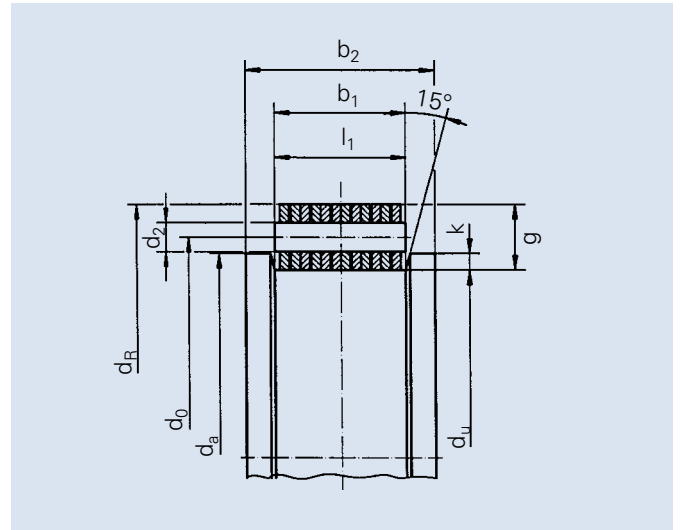
1. Check of elongation in working area (max. 3 %)
2. Check of play in joints (by pushing the chain together, pulling it apart again and measuring the length difference)
3. Check of pin fit in outer plates

4. Check for fatigue failure (cracks in plates)
5. Check for deformed plates
6. Check for corrosion (pitting corrosion)
7. Check of flexibility (sufficient lubrication)

Leaf chains must be relubricated at regular intervals (see as of page 91). Sufficient lubrication will considerably reduce wear and increase the wear life by a multiple.

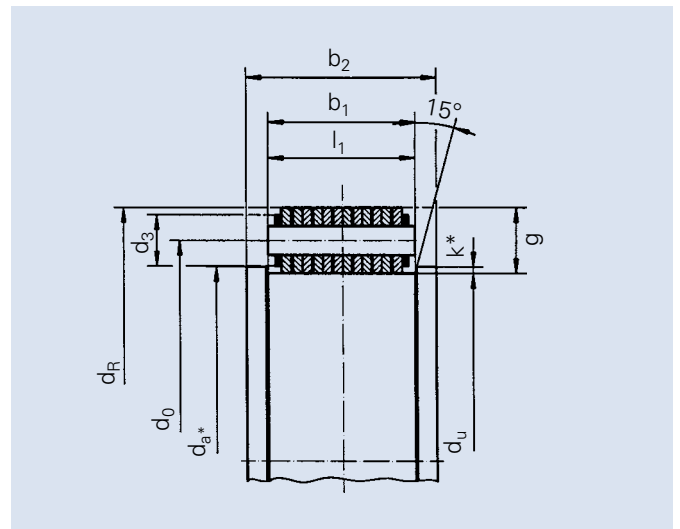
## Deflection of leaf chains

- $d_0 = d + g$   
 $d_a = d_u + 2 \cdot k$   
 $d_R \geq d_u + 2 \cdot g$   
 $b_1 \geq l_1$   
 $p$  : Chain pitch  
 $d_0$  : PCD of deflection  
 $d_R$  : Diameter with fitted chain  
 $b_1$  : Width of contact surface  
 $g$  : Plate height  
 $k = 0,86 \cdot \frac{g - d_2}{2}$   
 $b_2 \geq 1,2 \cdot b_1$   
 $d_u$  : Diameter of contact surface of deflection roller  
 $d_a$  : Outer diameter of roller  
 $b_2$  : Roller width  
 $l_1$  : Width of chain over pin  
 $k$  : Height of collar  
 $d_2$  : Pin diameter



## Leaf chains heavy duty design U

- $k^* = 0,86 \cdot \frac{g - d_3}{2}$   
 $d_a^* = d_u + 2 \cdot k^*$   
 $d_a^*$  : Outer diameter of rollers (for chains with washers)  
 $k^*$  : Height of collar (for chains with washers)  
 $d_3$  : Diameter of washers



### General information

The selection criteria discussed below apply to general mechanical engineering applications. Application areas such as hoisting devices (e.g. for lifting loads etc.) are excluded.

The chain life is exclusively determined by its wear behaviour. Wear occurs in the chain joints on pins and bushings. Primarily, wear depends on the chain tensile force, on deflection movements of links running along the sprockets, on the bearing area as well as on lubrication and on the number of rotations.

Therefore the chain must be dimensioned in a way that prevents overloads and fatigue failure. This means that plates and pins resist the transmissible tensile forces, rollers withstand the loads occurring when meshing with the sprocket, and that wear in the joints and on the tooth flanks remains within permissible limits.

Chain drives only have a satisfactory wear life, if the sprockets align, if they are subjected to sufficient lubrication, if there are re-tensioning facilities to compensate for the elongation occurring during operation, and if vibrations of the pull and return strands or torsional vibrations of the entire drive are eliminated. With new chains, the slack span in the return strand should be about 1 % of the shaft distance.

### Basic information for chain selection

In order to be able to select a chain, at least the following values for power transmission must be known:

1. Transmissible power  $P$  in kW
2. Speed of driving sprocket  $n_1$  in rpm
3. Transmission ratio  $i = n_1/n_2 = z_2/z_1$
4. Operating conditions of drive (impact coefficient  $f_y$ )
5. Shaft distance  $a$  in mm

If possible, sprockets with at least 17 teeth should be selected. For chain drives with medium speeds or more, and for maximum loads we recommend sprockets with 21 tempered teeth. Normally, the maximum number of teeth should not exceed 150.

The optimal shaft distance is 30 times  $p$  - 50 times  $p$  and should allow an angle of lap of at least  $120^\circ$  on the smaller sprocket. On chain drives with an inclination of more than  $60^\circ$  clampingjockey sprockets or automatic chain tensioners must be mounted to ensure the required chain tension.

There often is a choice between a simplex roller chain with a longer pitch and a multiplex roller chains with a shorter pitch. However, chain drives with multiplex roller chains allow smaller sprocket diameters in restricted spaces. They cause less noise and fewer vibrations than chains with a long pitch, which run on sprockets with fewer teeth.

### Factor $f_y$ to take into account specific operating conditions

| Driving motor / engine                                                                                                                                                      | Driven equipment                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                             | Centrifugal pumps and compressors<br>Printing machines<br>Conveyors with regular infeed<br>Paper calenders<br>Escalators<br>Stirring devices for liquids<br>Rotary driers<br>Ventilators<br>Generators (apart from welding generators) | Piston pumps and compressors with three or more cylinders<br>Concrete mixers<br>Conveyors with irregular feed<br>Screw conveyors<br>Rolling mills direct<br>Saws and reciprocating saws<br>Stirring devices for solid matter<br>Spinning and rinsing machines<br>Brick work machines | Planing machine and pulp grinders<br>Excavators and other building plant<br>Roller crushers<br>Pulling machines<br>Welding generators<br>Choppers<br>Rubber processing machines<br>Piston pumps and compressors with one or two cylinders<br>Gas or oil drill poles<br>Dough mixers |
| Electric motors in continuous operation<br>Internal combustion engines with hydraulic coupling<br>Water, steam or gas turbines                                              | 1                                                                                                                                                                                                                                      | 1,4                                                                                                                                                                                                                                                                                  | 1,8                                                                                                                                                                                                                                                                                 |
| Electric motors, which are repeatedly started and stopped with fewer than 10 cycles/min<br>Internal combustion engines with six or more cylinders and mechanical coupling   | 1,1                                                                                                                                                                                                                                    | 1,5                                                                                                                                                                                                                                                                                  | 1,9                                                                                                                                                                                                                                                                                 |
| Electric motors, which are repeatedly started and stopped with more than 10 cycles/min<br>Internal combustion engines with fewer than six cylinders and mechanical coupling | 1,3                                                                                                                                                                                                                                    | 1,7                                                                                                                                                                                                                                                                                  | 2,1                                                                                                                                                                                                                                                                                 |



Table of tolerable bearing pressures with recommended type of lubrication

| Chain speed in m/s | Bearing pressure $p_r$ in N/cm <sup>2</sup> with number of teeth $z$ on smaller sprocket |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------|------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                    | 11                                                                                       | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | ≥ 25 |
| 0,1                | 3080                                                                                     | 3120 | 3170 | 3220 | 3270 | 3300 | 3320 | 3350 | 3400 | 3430 | 3450 | 3480 | 3500 | 3530 | 3550 |
| 0,2                | 2810                                                                                     | 2850 | 2880 | 2930 | 2980 | 3000 | 3030 | 3060 | 3100 | 3120 | 3140 | 3170 | 3190 | 3220 | 3240 |
| 0,4                | 2700                                                                                     | 2740 | 2780 | 2830 | 2870 | 2890 | 2910 | 2950 | 2980 | 300  | 3020 | 3070 | 3070 | 3100 | 3120 |
| 0,6                | 2580                                                                                     | 2620 | 2650 | 2700 | 2740 | 2760 | 2780 | 2820 | 2850 | 2870 | 2890 | 2910 | 2930 | 2960 | 2980 |
| 0,8                | 2490                                                                                     | 2490 | 2560 | 2610 | 2650 | 2670 | 2680 | 2720 | 2750 | 2770 | 2790 | 2810 | 2830 | 2860 | 2880 |
| 1                  | 2380                                                                                     | 2420 | 2450 | 2490 | 2520 | 2540 | 2560 | 2590 | 2620 | 2640 | 2660 | 2680 | 2700 | 2720 | 2740 |
| 1,5                | 2290                                                                                     | 2330 | 2360 | 2400 | 230  | 2450 | 2470 | 2500 | 2530 | 2550 | 2570 | 2590 | 2610 | 2630 | 2650 |
| 2                  | 2210                                                                                     | 2240 | 2270 | 2310 | 2350 | 2370 | 2380 | 2410 | 2440 | 2460 | 2470 | 2490 | 2510 | 2530 | 2550 |
| 2,5                | 2130                                                                                     | 2160 | 2190 | 2230 | 2260 | 2280 | 2290 | 2320 | 2350 | 2370 | 2380 | 2400 | 2440 | 2470 | 2500 |
| 3                  | 2050                                                                                     | 2080 | 2110 | 2140 | 2170 | 2190 | 2210 | 2240 | 2260 | 2290 | 2320 | 2350 | 2380 | 2420 | 2460 |
| 4                  | 1740                                                                                     | 1830 | 1920 | 2000 | 2070 | 2100 | 2130 | 2160 | 2180 | 2220 | 2260 | 2300 | 2340 | 2380 | 2420 |
| 5                  | 1400                                                                                     | 1550 | 1690 | 1770 | 1840 | 1910 | 1970 | 2010 | 2050 | 2100 | 2150 | 2180 | 2210 | 2240 | 2280 |
| 6                  | 1050                                                                                     | 1230 | 1410 | 1540 | 1640 | 1730 | 1810 | 1880 | 1950 | 1990 | 2040 | 2070 | 2110 | 2140 | 2180 |
| 7                  | 850                                                                                      | 1000 | 1150 | 1280 | 1400 | 1510 | 1620 | 1740 | 1850 | 1870 | 1900 | 1940 | 1980 | 2020 | 2060 |
| 8                  | -                                                                                        | 800  | 1020 | 1110 | 1200 | 1310 | 1420 | 1560 | 1700 | 1740 | 1780 | 1820 | 1870 | 1910 | 1960 |
| 10                 | -                                                                                        | -    | 810  | 900  | 1020 | 1110 | 1200 | 1320 | 1430 | 1460 | 1500 | 1570 | 1640 | 1700 | 1770 |
| 12                 | -                                                                                        | -    | -    | -    | 820  | 910  | 1070 | 1170 | 1260 | 1300 | 1350 | 1410 | 1480 | 1540 | 1600 |
| 15                 | -                                                                                        | -    | -    | -    | -    | -    | 890  | 970  | 1050 | 1100 | 1150 | 1210 | 1270 | 1330 | 1400 |
| 18                 | -                                                                                        | -    | -    | -    | -    | -    | -    | -    | 880  | 960  | 1050 | 1110 | 1180 | 1240 | 1300 |

This applies to chains according to DIN 8187 and 8188 with pins and bushings made of case-hardened steel.  
 Annotation: If requested, we can supply chains made of steel grades that can be subjected to particularly high bearing pressure.

Ratio between speed  $n$  and chain pitch  $p$  for  $z_1 = 25$ 

| Pitch $p$       | mm   | 8    | 9,525 | 12,7 | 15,875 | 19,05 | 25,4 | 31,75  | 38,1   | 44,45 | 50,8 | 63,5   | 76,2 |
|-----------------|------|------|-------|------|--------|-------|------|--------|--------|-------|------|--------|------|
|                 | inch | -    | 3/8"  | 1/2" | 5/8"   | 3/4"  | 1"   | 1 1/4" | 1 1/2" | 13/4" | 2"   | 2 1/2" | 3"   |
| Speed $n_{max}$ | rpm  | 6000 | 5000  | 3600 | 2700   | 2000  | 1500 | 1200   | 900    | 700   | 550  | 450    | 300  |

## Factors to be considered in case of different operating conditions

Impact coefficients  $f_y$  (see table on page 101)

## Number of teeth of driving sprocket

| $z$   | 11  | 13  | 15   | 17   | 19   | 21  | 23  | 25  | 31   | 37   |
|-------|-----|-----|------|------|------|-----|-----|-----|------|------|
| $f_z$ | 2,5 | 2,0 | 1,75 | 1,55 | 1,35 | 1,2 | 1,1 | 1,0 | 0,78 | 0,64 |

Diagram power  $P_C = P \cdot f_y \cdot f_z \cdot f_i = P \cdot k$

## Transmission ratio

| $i$   | 1 : 1 | 2 : 1 | 3 : 1 | 5 : 1 |
|-------|-------|-------|-------|-------|
| $f_i$ | 1,22  | 1,08  | 1     | 0,92  |

## Shaft distance

| $a$   | 10 $p$ | 20 $p$ | 40 $p$ | 80 $p$ |
|-------|--------|--------|--------|--------|
| $f_a$ | 1,3    | 1,15   | 1      | 0,85   |

Diagrams 1, 2 and 3 are typical power diagrams for chain drives with the following operating conditions:

- Chain drive with two sprockets on parallel, horizontal shafts
- Driving sprocket with 19 teeth
- Simplex chain without a cranked link
- Chain length 120 links (for shorter chains the chain life decreases proportionally)
- Speed reducing ratio from 1:3 up to 3:1
- 15000 h expected wear life; 15,000 operating hours only with a maximum of 3 % elongation caused by wear
- Operating temperature between - 5°C and + 70°C
- Sprockets aligned and chain tensioned according to specifications (see page 90, 110, 111)
- Regular operation without overload, impacts or frequent restarts
- Clean and sufficient lubrication (see page 91 - 94)

#### Power diagram for roller chains according to DIN 8187 (European type)

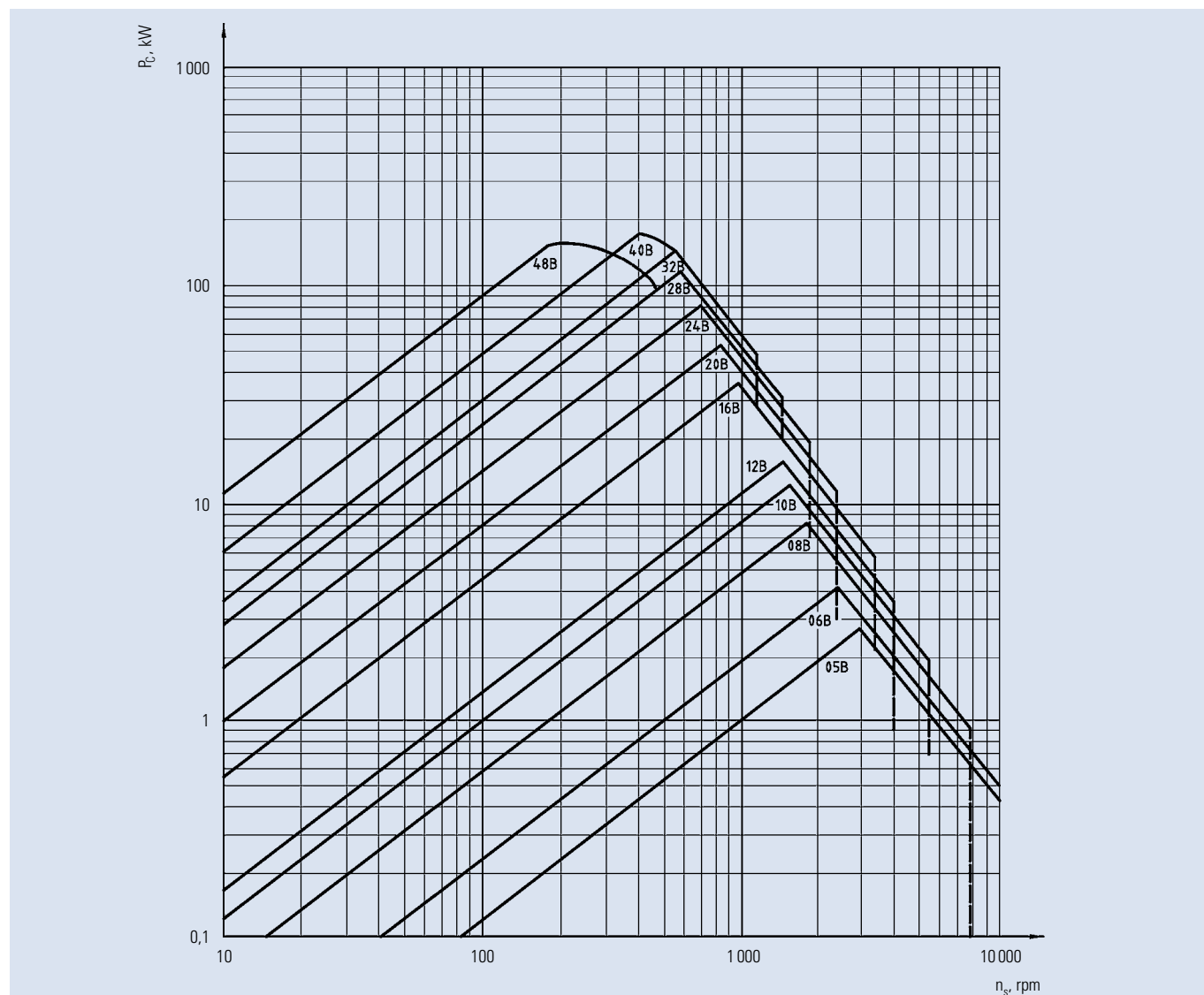


Figure 1: Typical power diagram for selection of simplex chains type B according to ISO 606, based on a sprocket with 19 teeth

$P_c$  : Corrected power

$n_s$  : Speed of smaller sprocket

Annotation 1: The nominal values for the performance of duplex roller chains can be calculated by multiplying the  $P_c$ -value for simplex chains with the factor 1,7.

Annotation 2: The nominal values for the performance of triplex roller chains can be calculated by multiplying the  $P_c$ -value for simplex chains with the factor 2,5.

In case of different operating conditions, the value of the transmissible power "P" must be multiplied with the respective factor "k" in order to be able to select the appropriate chain from the diagram on the basis of the

Diagram power  $P_C = P \cdot k$

The operating factor "k" takes into account the operating conditions of the drive, the number of teeth on the small sprocket, the transmission ratio and the shaft distance.

Longer wear lifes can be achieved by transmitting less power than shown in the diagram.

If roller chains are operated with very low speeds or idly (e.g. as load chains), the tensile force must be calculated according to the formula  $F_d = F \cdot f_y$ .

The safety factor should be at least  $S = 7$ !

## Power diagram for roller chains according to DIN 8188 (American type)

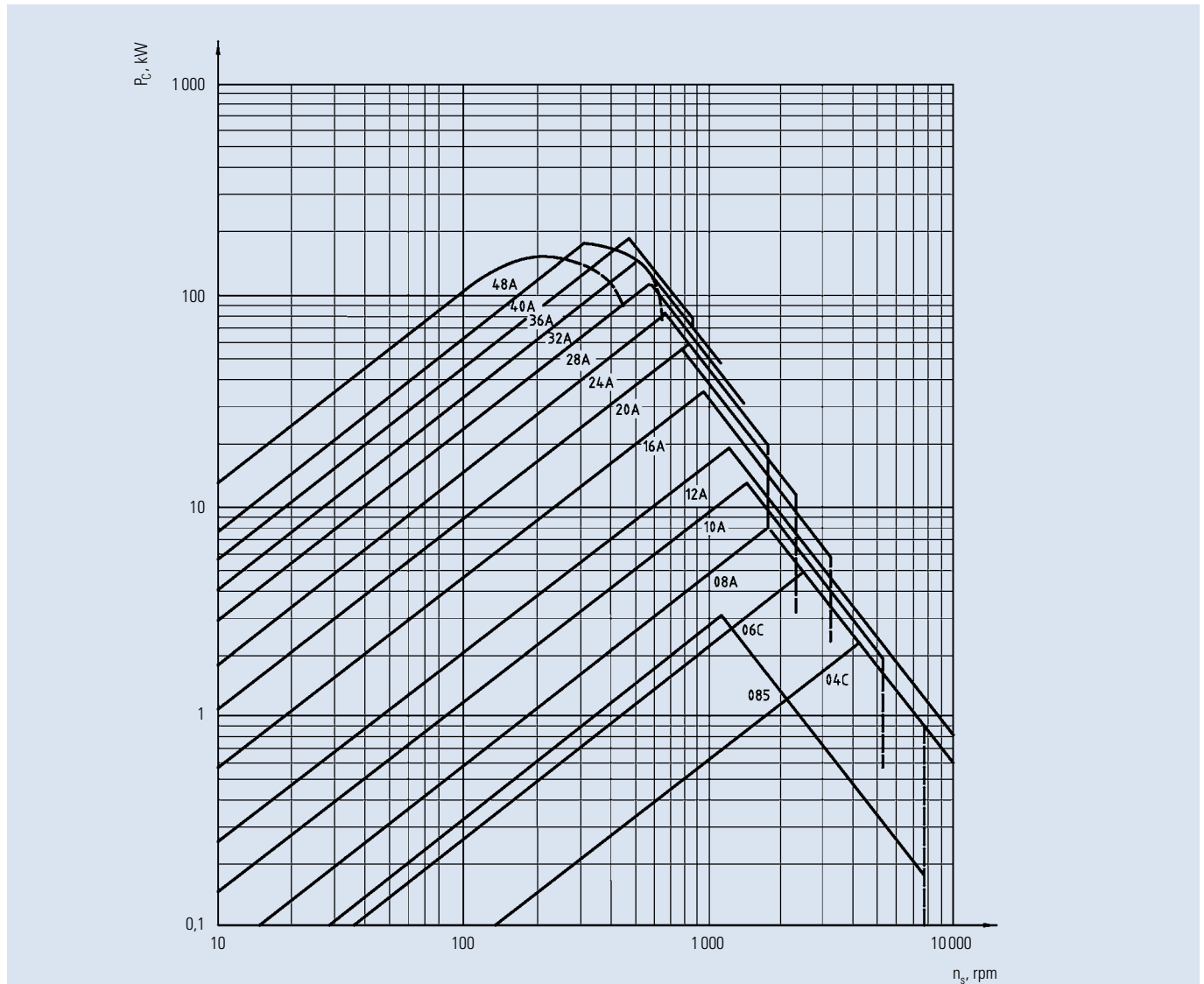


Figure 2: Typical power diagram for selection of simplex chains type A according to ISO 606, based on a sprocket with 19 teeth

$P_C$  : Corrected power

$n_s$  : Speed of smaller sprocket

Annotation 1: The nominal values for the performance of duplex roller chains can be calculated by multiplying the  $P_C$ -value for simplex chains with the factor 1,7.

Annotation 2: The nominal values for the performance of triplex roller chains can be calculated by multiplying the  $P_C$ -value for simplex chains with the factor 2,5.

Power diagram for roller chains according to ISO 606 (American type, reinforced)

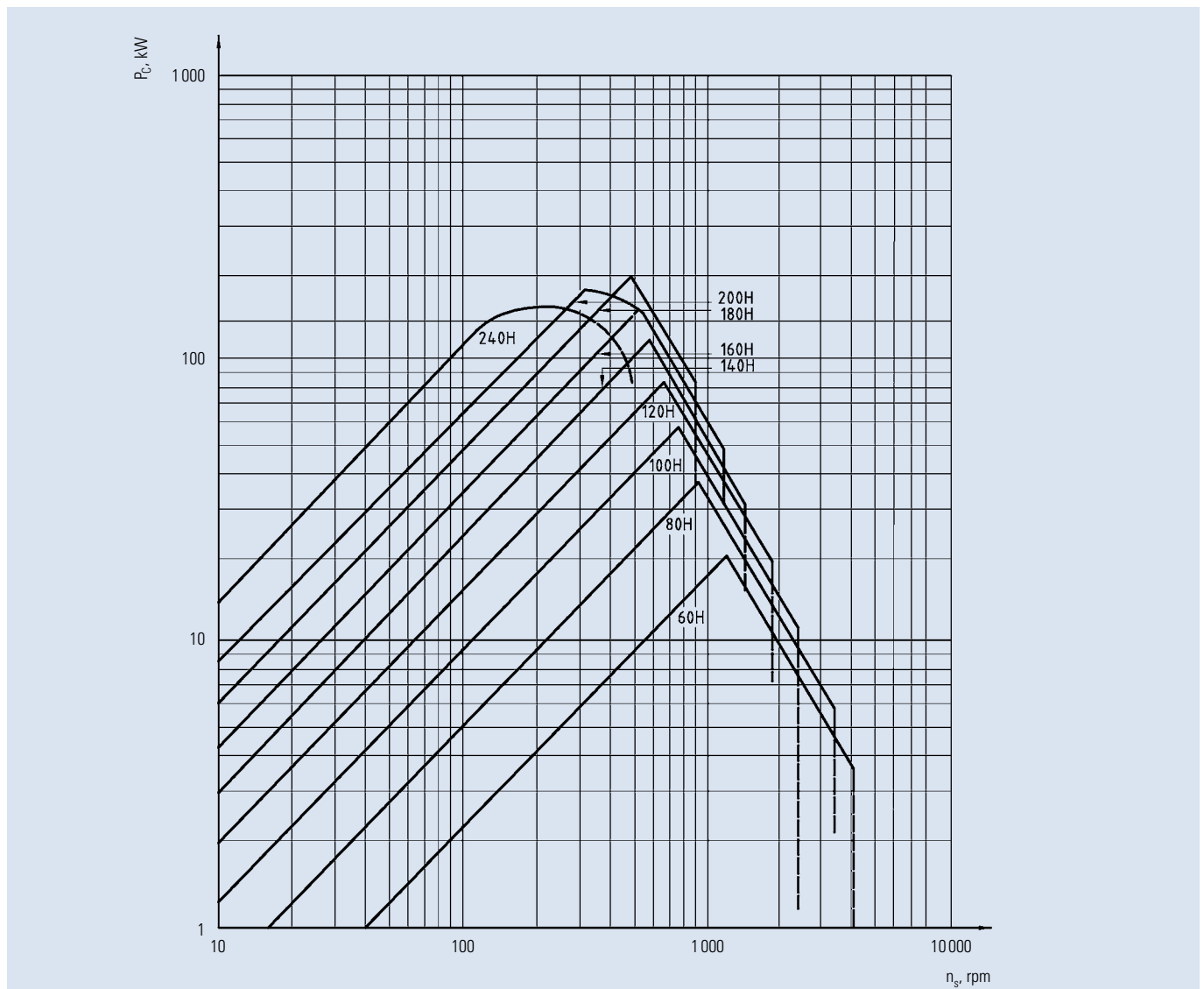


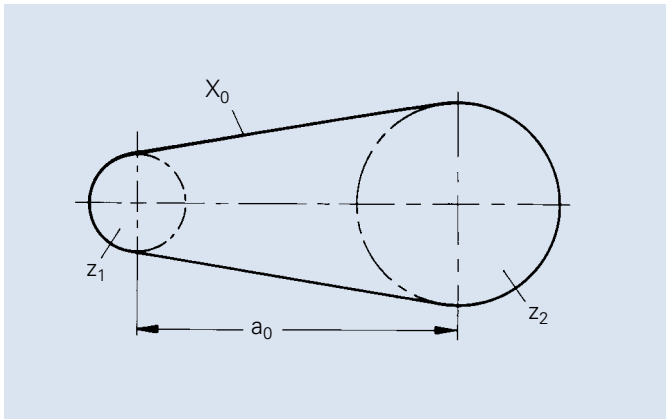
Figure 3: Typical power diagram for selection of reinforced simplex chains type A according to ISO 606, based on a sprocket with 19 teeth

$P_c$  : Corrected power

$n_s$  : Speed of smaller sprocket

Annotation 1: The nominal values for the performance of duplex roller chains can be calculated by multiplying the  $P_c$ -value for simplex chains with the factor 1,7.

Annotation 2: The nominal values for the performance of triplex roller chains can be calculated by multiplying the  $P_c$ -value for simplex chains with the factor 2,5.



- X = Chain length in links
- X<sub>0</sub> = Theoretical chain length
- a = Shaft distance in mm
- a<sub>0</sub> = Theoretical shaft distance
- p = Pitch in mm
- z<sub>1</sub> = Number of teeth on small sprocket
- z<sub>2</sub> = Number of teeth on large sprocket
- C = Coefficient from table

$$C = \left( \frac{z_2 - z_1}{2 \pi} \right)^2$$

Example:

- a<sub>0</sub> = 700 mm
- p = 19,05 mm
- C = 17,12 (for z<sub>2</sub> - z<sub>1</sub> = 26)
- z<sub>1</sub> = 19
- z<sub>2</sub> = 45

$$X_0 = 2 \frac{a_0}{p} + \frac{z_1 + z_2}{2} + \frac{C \cdot p}{a_0}$$

$$X_0 = \frac{2 \times 700}{19,05} + \frac{19 + 45}{2} + \frac{17,12 \times 19,05}{700}$$

X<sub>0</sub> = 73,49 + 32 + 0,466 = 105,956

X = 106 links

With the same number of teeth z<sub>1</sub> = z<sub>2</sub> the chain length is:

$$X_0 = 2 \frac{a_0}{p} + z$$

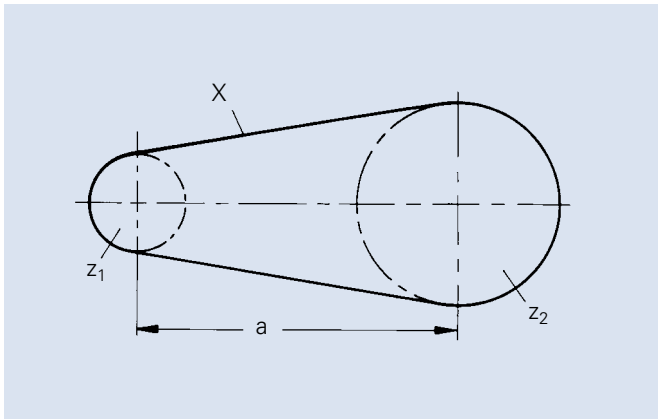
With different numbers of teeth z<sub>1</sub> and z<sub>2</sub> the chain length is:

$$X_0 = 2 \frac{a_0}{p} + \frac{z_1 + z_2}{2} + \frac{C \cdot p}{a_0}$$

The calculated number of links must always be rounded up. In case of minor differences, one pitch should be added in order to avoid assembly difficulties. If the calculation results in an uneven number of chain links, one single cranked link (0,8 of breaking load) has to be mounted. In such cases it is recommended to select the next even number of links. Then the exact shaft distance can easily be calculated according to the detailed information on page 107.

Values for "C" =  $\left( \frac{z_2 - z_1}{2 \pi} \right)^2$

| z <sub>2</sub> - z <sub>1</sub> | C     | z <sub>2</sub> - z <sub>1</sub> | C      | z <sub>2</sub> - z <sub>1</sub> | C      | z <sub>2</sub> - z <sub>1</sub> | C      |
|---------------------------------|-------|---------------------------------|--------|---------------------------------|--------|---------------------------------|--------|
| 1                               | 0,025 | 41                              | 42,58  | 81                              | 166,19 | 121                             | 370,86 |
| 2                               | 0,101 | 42                              | 44,68  | 82                              | 170,32 | 122                             | 377,02 |
| 3                               | 0,228 | 43                              | 46,84  | 83                              | 174,50 | 123                             | 383,22 |
| 4                               | 0,405 | 44                              | 49,04  | 84                              | 178,73 | 124                             | 389,48 |
| 5                               | 0,633 | 45                              | 51,29  | 85                              | 183,01 | 125                             | 395,79 |
| 6                               | 0,912 | 46                              | 53,60  | 86                              | 187,34 | 126                             | 402,14 |
| 7                               | 1,24  | 47                              | 55,95  | 87                              | 191,73 | 127                             | 408,55 |
| 8                               | 1,62  | 48                              | 58,36  | 88                              | 196,16 | 128                             | 415,01 |
| 9                               | 2,05  | 49                              | 60,82  | 89                              | 200,64 | 129                             | 421,52 |
| 10                              | 2,53  | 50                              | 63,33  | 90                              | 205,18 | 130                             | 428,08 |
| 11                              | 3,07  | 51                              | 65,88  | 91                              | 209,76 | 131                             | 434,69 |
| 12                              | 3,65  | 52                              | 68,49  | 92                              | 214,40 | 132                             | 441,36 |
| 13                              | 4,28  | 53                              | 71,15  | 93                              | 219,08 | 133                             | 448,07 |
| 14                              | 4,96  | 54                              | 73,86  | 94                              | 223,82 | 134                             | 454,83 |
| 15                              | 5,70  | 55                              | 76,62  | 95                              | 228,61 | 135                             | 461,64 |
| 16                              | 6,48  | 56                              | 79,44  | 96                              | 233,44 | 136                             | 468,51 |
| 17                              | 7,32  | 57                              | 82,30  | 97                              | 238,33 | 137                             | 475,42 |
| 18                              | 8,21  | 58                              | 85,21  | 98                              | 243,27 | 138                             | 482,39 |
| 19                              | 9,14  | 59                              | 88,17  | 99                              | 248,26 | 139                             | 489,41 |
| 20                              | 10,13 | 60                              | 91,19  | 100                             | 253,30 | 140                             | 496,47 |
| 21                              | 11,17 | 61                              | 94,25  | 101                             | 258,39 | 141                             | 503,59 |
| 22                              | 12,26 | 62                              | 97,37  | 102                             | 263,54 | 142                             | 510,76 |
| 23                              | 13,40 | 63                              | 100,54 | 103                             | 268,73 | 143                             | 517,98 |
| 24                              | 14,59 | 64                              | 103,75 | 104                             | 273,97 | 144                             | 525,25 |
| 25                              | 15,83 | 65                              | 107,02 | 105                             | 279,27 | 145                             | 532,57 |
| 26                              | 17,12 | 66                              | 110,34 | 106                             | 284,61 | 146                             | 539,94 |
| 27                              | 18,47 | 67                              | 113,71 | 107                             | 290,01 | 147                             | 547,36 |
| 28                              | 19,86 | 68                              | 117,13 | 108                             | 295,45 | 148                             | 554,83 |
| 29                              | 21,80 | 69                              | 120,60 | 109                             | 300,95 | 149                             | 562,36 |
| 30                              | 22,80 | 70                              | 124,12 | 110                             | 306,50 | 150                             | 569,93 |
| 31                              | 24,34 | 71                              | 127,69 | 111                             | 312,09 | 151                             | 577,56 |
| 32                              | 25,94 | 72                              | 131,31 | 112                             | 317,74 | 152                             | 585,23 |
| 33                              | 27,58 | 73                              | 134,99 | 113                             | 323,44 | 153                             | 592,96 |
| 34                              | 29,28 | 74                              | 138,71 | 114                             | 329,19 | 154                             | 600,73 |
| 35                              | 31,03 | 75                              | 142,48 | 115                             | 334,99 | 155                             | 608,56 |
| 36                              | 32,83 | 76                              | 146,31 | 116                             | 340,84 | 156                             | 616,44 |
| 37                              | 34,68 | 77                              | 150,18 | 117                             | 346,75 | 157                             | 624,37 |
| 38                              | 36,58 | 78                              | 154,11 | 118                             | 352,70 | 158                             | 632,35 |
| 39                              | 38,53 | 79                              | 158,09 | 119                             | 358,70 | 159                             | 640,38 |
| 40                              | 40,53 | 80                              | 162,11 | 120                             | 364,76 | 160                             | 648,46 |



$a$  = Shaft distance in mm  
 $X$  = Chain length in links  
 $p$  = Pitch in mm  
 $z_1$  = Number of teeth on small sprocket  
 $z_2$  = Number of teeth on large sprocket

The calculation of a chain length rarely results in an even number of links. Mostly, the result must be rounded up. In order to avoid a cranked link in the chain, an even number should be selected.

The exact shaft difference is calculated according to the following formulas:

With the same number of teeth  $z_1 = z_2 = z$  the shaft distance is:

$$a = \frac{X - z}{2} p$$

With an uneven number of teeth  $z_1 \neq z_2$  the shaft distance is:

$$a = p [2 X - (z_1 + z_2)] B$$

The coefficient "B" is a function of  $K = \frac{X - z_1}{z_2 - z_1}$  and can be taken from the following table.

## Example:

$X = 106$  links  $z_1 = 19$   
 $p = 19,05$  mm  $z_2 = 45$

$$a = p [2 x - (z_1 + z_2)] B$$

$$\frac{X - z_1}{z_2 - z_1} = \frac{106 - 19}{45 - 19} = \frac{87}{26} = 3,34615$$

The table shows a value  $B = 0,24825$  for  $K = 3,2$   
 and a value  $B = 0,24849$  for  $K = 3,4$

$B$  must be calculated by means of interpolation.  
 The following applies:

Difference K times table difference B  
Table difference K

$$B = 0,24825 + \frac{(3,34615 - 3,2) \times (0,24849 - 0,24825)}{3,4 - 3,2}$$

$$B = 0,24825 + \frac{0,14615 \times 0,00024}{0,2}$$

$$B = 0,24825 + 0,00017538 = 0,24843 \text{ (rounded up)}$$

The exact shaft distance is

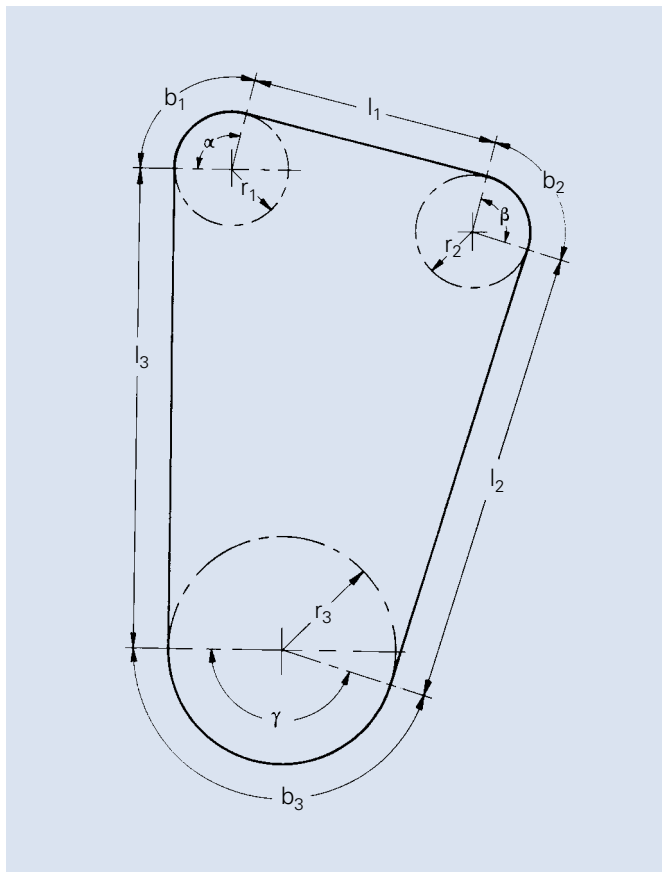
$$a = 19,05 (2 \times 106 - 19 - 45) 0,24843$$

$$\underline{\underline{a = 700,4 \text{ mm}}}$$

## Coefficient "B"

| K   | B        | K    | B        | K    | B        | K    | B        |
|-----|----------|------|----------|------|----------|------|----------|
| 13  | 0,24 991 | 2,7  | 0,24 735 | 1,54 | 0,23 758 | 1,26 | 0,22 520 |
| 12  | 990      | 2,6  | 708      | 1,52 | 705      | 1,25 | 443      |
| 11  | 988      | 2,5  | 678      | 1,50 | 648      | 1,24 | 361      |
| 10  | 986      | 2,4  | 643      | 1,48 | 588      | 1,23 | 275      |
| 9   | 983      | 2,3  | 602      | 1,46 | 524      | 1,22 | 185      |
| 8   | 978      | 2,2  | 552      | 1,44 | 455      | 1,21 | 090      |
| 7   | 970      | 2,1  | 493      | 1,42 | 381      | 1,20 | 0,21 990 |
| 6   | 958      | 2,0  | 421      | 1,40 | 301      | 1,19 | 884      |
| 5   | 937      | 1,95 | 380      | 1,39 | 259      | 1,18 | 771      |
| 4,8 | 931      | 1,90 | 333      | 1,38 | 215      | 1,17 | 652      |
| 4,6 | 925      | 1,85 | 281      | 1,37 | 170      | 1,16 | 526      |
| 4,4 | 917      | 1,80 | 222      | 1,36 | 123      | 1,15 | 390      |
| 4,2 | 907      | 1,75 | 156      | 1,35 | 073      | 1,14 | 245      |
| 4,0 | 896      | 1,70 | 081      | 1,34 | 022      | 1,13 | 090      |
| 3,8 | 883      | 1,68 | 048      | 1,33 | 0,22 968 | 1,12 | 0,20 923 |
| 3,6 | 868      | 1,66 | 013      | 1,32 | 912      | 1,11 | 744      |
| 3,4 | 849      | 1,64 | 0,23 977 | 1,31 | 854      | 1,10 | 549      |
| 3,2 | 825      | 1,62 | 938      | 1,30 | 793      | 1,09 | 336      |
| 3,0 | 795      | 1,60 | 897      | 1,29 | 729      | 1,08 | 104      |
| 2,9 | 778      | 1,58 | 854      | 1,28 | 662      | 1,07 | 0,19 848 |
| 2,8 | 758      | 1,56 | 807      | 1,27 | 593      | 1,06 | 564      |

$K > 13$        $B = 0,25$



- $L$  = Chain length in mm  
 $X$  = Chain length in links  
 $p$  = Pitch in mm  
 $l_{1,2,3}$  = Tangent lengths in mm  
 $r_{1,2,3}$  = Pitch circle radiuses in mm  
 $\alpha, \beta, \gamma$  = Central angles in degrees  
 $b_{1,2,3}$  = Arc lengths in mm  
 $= r_1 \text{ arc } \alpha, r_2 \text{ arc } \beta, r_3 \text{ arc } \gamma$

**Example:** (see above drawing)

Chain pitch  $p = 15,875 \text{ mm}$

$r_1 = 43,2 \text{ mm} \quad \alpha = 104^\circ \quad l_1 = 188 \text{ mm}$   
 $r_2 = 43,2 \text{ mm} \quad \beta = 93^\circ \quad l_2 = 345 \text{ mm}$   
 $r_3 = 86,0 \text{ mm} \quad \gamma = 163^\circ \quad l_3 = 363 \text{ mm}$

$b_1 = r_1 \text{ arc } \alpha = 43,2 \times 1,8151 = 78,41 \text{ mm}$

$b_2 = r_2 \text{ arc } \beta = 43,2 \times 1,6232 = 70,12 \text{ mm}$

$b_3 = r_3 \text{ arc } \gamma = 86,0 \times 2,8449 = 244,66 \text{ mm}$

$L = b_1 + b_2 + b_3 + l_1 + l_2 + l_3$   
 $= 78,41 + 70,12 + 244,66 + 188 + 345 + 363$   
 $= 1289,19 \text{ mm}$

$X = \frac{L}{p} = \frac{1,289,19}{15,875} = 81,21 = \underline{\underline{82 \text{ links}}}$

If a chain runs on several sprockets (as shown in the drawing), graphics will usually suffice to determine the chain length since this method is sufficiently accurate and considerably simpler than mathematical calculations. To begin with, the drive is drawn schematically, if possible on a scale of 1:1 or larger. Then tangents are drawn to the pitch circles, and the central angles of the circular arc spanned by the chain are determined.

For the respective arc values please refer to the table "arc lengths".

The chain length  $L$  can then be calculated by adding up the partial lengths.

$$L = l_1 + l_2 + l_3 + \dots + b_1 + b_2 + b_3 \dots$$

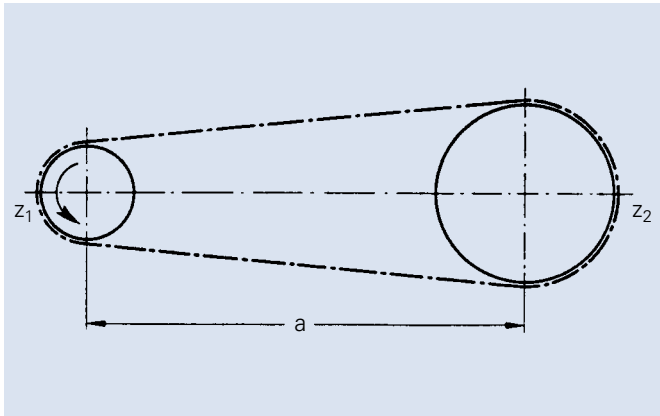
$$X = L/p$$

The result must always be rounded up, if possible to the next even number of links. Uneven numbers should be avoided!

Arc lengths for the radius  $r = 1$

| Central angle<br>$\varphi^\circ$ | Arc length<br>arc $\varphi$ | Central angle<br>$\varphi^\circ$ | Arc length<br>arc $\varphi$ | Central angle<br>$\varphi^\circ$ | Arc length<br>arc $\varphi$ | Central angle<br>$\varphi^\circ$ | Arc length<br>arc $\varphi$ |
|----------------------------------|-----------------------------|----------------------------------|-----------------------------|----------------------------------|-----------------------------|----------------------------------|-----------------------------|
| 1                                | 0,0175                      | 46                               | 0,8029                      | 91                               | 1,5882                      | 136                              | 2,3736                      |
| 2                                | 0,0349                      | 47                               | 0,8203                      | 92                               | 1,6057                      | 137                              | 2,3911                      |
| 3                                | 0,0524                      | 48                               | 0,8378                      | 93                               | 1,6232                      | 138                              | 2,4086                      |
| 4                                | 0,0698                      | 49                               | 0,8552                      | 94                               | 1,6406                      | 139                              | 2,4260                      |
| 5                                | 0,0873                      | 50                               | 0,8727                      | 95                               | 1,6580                      | 140                              | 2,4435                      |
| 6                                | 0,1047                      | 51                               | 0,8901                      | 96                               | 1,6755                      | 141                              | 2,4609                      |
| 7                                | 0,1222                      | 52                               | 0,9076                      | 97                               | 1,6930                      | 142                              | 2,4784                      |
| 8                                | 0,1396                      | 53                               | 0,9250                      | 98                               | 1,7104                      | 143                              | 2,4958                      |
| 9                                | 0,1571                      | 54                               | 0,9425                      | 99                               | 1,7279                      | 144                              | 2,5133                      |
| 10                               | 0,1745                      | 55                               | 0,9599                      | 100                              | 1,7453                      | 145                              | 2,5307                      |
| 11                               | 0,1920                      | 56                               | 0,9774                      | 101                              | 1,7628                      | 146                              | 2,5482                      |
| 12                               | 0,2094                      | 57                               | 0,9948                      | 102                              | 1,7802                      | 147                              | 2,5656                      |
| 13                               | 0,2269                      | 58                               | 1,0123                      | 103                              | 1,7977                      | 148                              | 2,5831                      |
| 14                               | 0,2443                      | 59                               | 1,0297                      | 104                              | 1,8151                      | 149                              | 2,6005                      |
| 15                               | 0,2618                      | 60                               | 1,0472                      | 105                              | 1,8326                      | 150                              | 2,6180                      |
| 16                               | 0,2793                      | 61                               | 1,0647                      | 106                              | 1,8500                      | 151                              | 2,6354                      |
| 17                               | 0,2967                      | 62                               | 1,0821                      | 107                              | 1,8675                      | 152                              | 2,6529                      |
| 18                               | 0,3142                      | 63                               | 1,0996                      | 108                              | 1,8850                      | 153                              | 2,6704                      |
| 19                               | 0,3316                      | 64                               | 1,1170                      | 109                              | 1,9024                      | 154                              | 2,6878                      |
| 20                               | 0,3491                      | 65                               | 1,1345                      | 110                              | 1,9199                      | 155                              | 2,7053                      |
| 21                               | 0,3665                      | 66                               | 1,1519                      | 111                              | 1,9373                      | 156                              | 2,7227                      |
| 22                               | 0,3840                      | 67                               | 1,1694                      | 112                              | 1,9548                      | 157                              | 2,7402                      |
| 23                               | 0,4014                      | 68                               | 1,1868                      | 113                              | 1,9722                      | 158                              | 2,7576                      |
| 24                               | 0,4189                      | 69                               | 1,2043                      | 114                              | 1,9897                      | 159                              | 2,7751                      |
| 25                               | 0,4363                      | 70                               | 1,2217                      | 115                              | 2,0071                      | 160                              | 2,7925                      |
| 26                               | 0,4538                      | 71                               | 1,2392                      | 116                              | 2,0246                      | 161                              | 2,8100                      |
| 27                               | 0,4712                      | 72                               | 1,2566                      | 117                              | 2,0420                      | 162                              | 2,8274                      |
| 28                               | 0,4887                      | 73                               | 1,2741                      | 118                              | 2,0595                      | 163                              | 2,8449                      |
| 29                               | 0,5061                      | 74                               | 1,2915                      | 119                              | 2,0769                      | 164                              | 2,8623                      |
| 30                               | 0,5236                      | 75                               | 1,3090                      | 120                              | 2,0944                      | 165                              | 2,8798                      |
| 31                               | 0,5411                      | 76                               | 1,3265                      | 121                              | 2,1118                      | 166                              | 2,8972                      |
| 32                               | 0,5585                      | 77                               | 1,3439                      | 122                              | 2,1293                      | 167                              | 2,9147                      |
| 33                               | 0,5760                      | 78                               | 1,3614                      | 123                              | 2,1468                      | 168                              | 2,9322                      |
| 34                               | 0,5934                      | 79                               | 1,3788                      | 124                              | 2,1642                      | 169                              | 2,9496                      |
| 35                               | 0,6109                      | 80                               | 1,3963                      | 125                              | 2,1817                      | 170                              | 2,9671                      |
| 36                               | 0,6283                      | 81                               | 1,4137                      | 126                              | 2,1991                      | 171                              | 2,9845                      |
| 37                               | 0,6458                      | 82                               | 1,4312                      | 127                              | 2,2166                      | 172                              | 3,0020                      |
| 38                               | 0,6632                      | 83                               | 1,4486                      | 128                              | 2,2340                      | 173                              | 3,0194                      |
| 39                               | 0,6807                      | 84                               | 1,4661                      | 129                              | 2,2515                      | 174                              | 3,0369                      |
| 40                               | 0,6981                      | 85                               | 1,4835                      | 130                              | 2,2689                      | 175                              | 3,0543                      |
| 41                               | 0,7156                      | 86                               | 1,5010                      | 131                              | 2,2864                      | 176                              | 3,0718                      |
| 42                               | 0,7330                      | 87                               | 1,5184                      | 132                              | 2,3038                      | 177                              | 3,0892                      |
| 43                               | 0,7505                      | 88                               | 1,5359                      | 133                              | 2,3213                      | 178                              | 3,1067                      |
| 44                               | 0,7679                      | 89                               | 1,5533                      | 134                              | 2,3387                      | 179                              | 3,1241                      |
| 45                               | 0,7854                      | 90                               | 1,5708                      | 135                              | 2,3562                      | 180                              | 3,1416                      |

## 1. Example 1



### 1.1 Given are:

(Refer to the drawing in example 1, which illustrates this worked example)

|              |                           |
|--------------|---------------------------|
| Input power  | $P = 0,16 \text{ kW}$     |
| Input speed  | $n_1 = 36 \text{ rpm}$    |
| Output speed | $n_2 = 10,75 \text{ rpm}$ |

$$\text{Transmission ratio} \quad i = \frac{n_1}{n_2} = 3,35$$

|                |                                 |
|----------------|---------------------------------|
| Mode of drive  | electric gear motor             |
| Driven machine | Conveyor (with uneven charging) |

$$\text{Approx. shaft centre distance} \quad a_0 \approx 530 \text{ mm}$$

### 1.2 Selection of sprockets

Selected number of teeth on drive sprocket:  $z_1 = 17$

Number of teeth on driven sprocket:  $z_2 = i \cdot z_1; \quad z_2 = 3,35 \cdot 17 = 57$

### 1.3 Calculations and selection of chain

#### 1.3.1 Correction of chain

Correction factor for operating conditions:

Correction factor for number of teeth:

Corrected power:

$$k = f_y \cdot f_i \cdot f_z \quad (f_y = 1,4; \quad f_i = 1; \quad f_z = 1,55)$$

$$k = 1,4 \cdot 1 \cdot 1,55$$

$$P_C = P \cdot k$$

$$P_C = 0,16 \text{ kW} \cdot 2,17$$

$$P_C = 0,35 \text{ kW}$$

#### 1.3.2 Selection of chain

For  $P_C = 0,35 \text{ kW}$  and  $n_1 = 36 \text{ rpm}$  the roller chain 10A-1 or 10B-1 is selected from the power diagrams (see pages 103 - 103-105).

The chain pitch  $p$  for a chain 10A-1 or 10B-1 is 15,875 mm (according to ISO 606).

#### 1.3.3 Chain length

Calculation of number of links

$$X_0 = 2 \frac{a_0}{p} + \frac{z_1 + z_2}{2} + \frac{C \cdot p}{a_0}$$

Here  $C = 40,529$  for  $z_2 - z_1 = 57 - 17 = 40$

Result:

$$X_0 = \frac{530}{15,875} + \frac{17 + 57}{2} + \frac{40,529 \cdot 15,875}{530}$$

$$X_0 = 104,99$$

Selected number of links  $X = 106$  (i.e. the next higher even number).

#### 1.3.4 Chain speed

$$v = \frac{n \cdot z \cdot p}{60\,000} = \frac{37 \cdot 17 \cdot 15,875}{60\,000} = 0,16 \text{ m/s}$$

### 1.4 Maximum shaft centre distance of sprockets

Maximum shaft centre distance:

$$a = p [2X - (z_1 + z_2)] B$$

$$\text{Results: } B = 0,24567 \text{ for } \frac{X - z_1}{z_2 - z_1} = \frac{106 - 17}{57 - 17} = 2,23 \text{ (interpolated)}$$

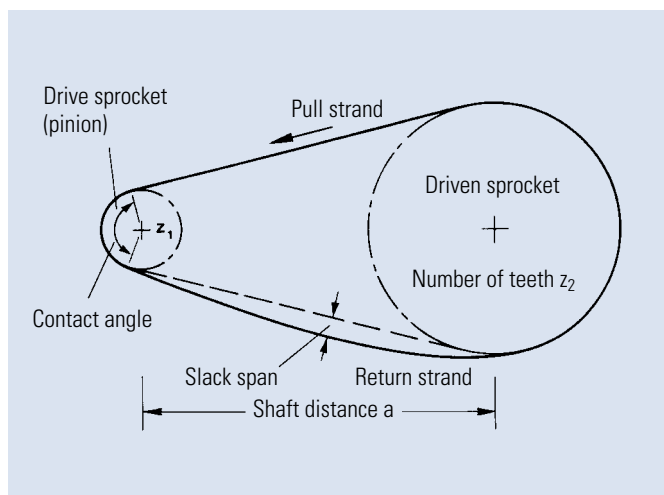
This is the value for the shaft centre distance:

$$a = 15,875 [2 \cdot 106 - (17 + 57)] 0,24567$$

$$a = 538,2 \text{ mm}$$

### 1.5 Lubrication

For  $v = 0,16 \text{ m/s}$  and for a chain type 10A-1 or 10B-1 the diagram (page 92) shows the lubrication range I. Consequently, the simplest lubrication method, i.e. regular manual oil lubrication, will be sufficient in this case.



## General information

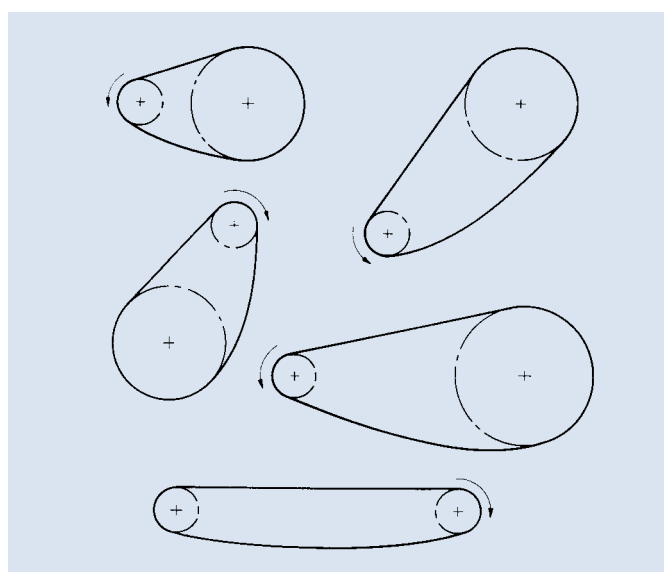
Slack span of the return strand for horizontal drives approx. 1 % to 2 % of the shaft distance.

Chain contact angle on the drive sprocket 120° if possible (always the case when  $a > d_{o2} - d_{o1}$ ), at least 90° for higher number of teeth ( $z = 25$ ).

The shaft distance is normally 30 times  $p$  - 50 times  $p$ .

$$\text{minimum } a_{\min} > \frac{dk_1 + dk_2}{2}$$

With longer shaft distances, heavy drives or vertical shafts, the chain weight of the pull strand and the return strand must be supported by means of chain support wheels, support rollers or guide strips. The number of teeth on the drive sprocket should be 19 if possible. The minimum number of teeth on a sprocket is 6 ( $d_o = 2 p$ ), which is then only suitable for manual operation because of the polygon effect!



## Chain drive configurations (assessment)

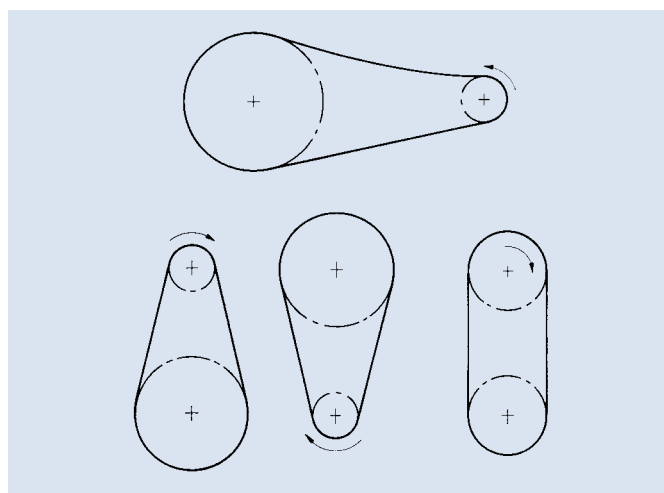
### Favourable

In order to guarantee trouble-free operation and a long wear life, the correct chain run for the different drive configurations has to be selected. A horizontal drive or a configuration with a drive inclined by up to 60° is common and favourable. In this case the pull strand should be at the top and the return strand at the bottom.

### Less favourable

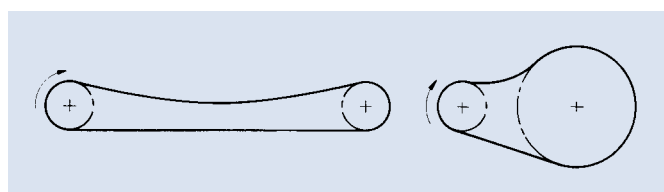
With horizontal drives and normal shaft distances the return strand may also be at the top.

Vertical drives should have the smaller sprocket at the top. The chain must be kept rather tight to stop it from getting slack and jumping off the lower sprocket. A minor deviation from the vertical position will improve the running conditions. It might be necessary to mount a jockey sprocket.

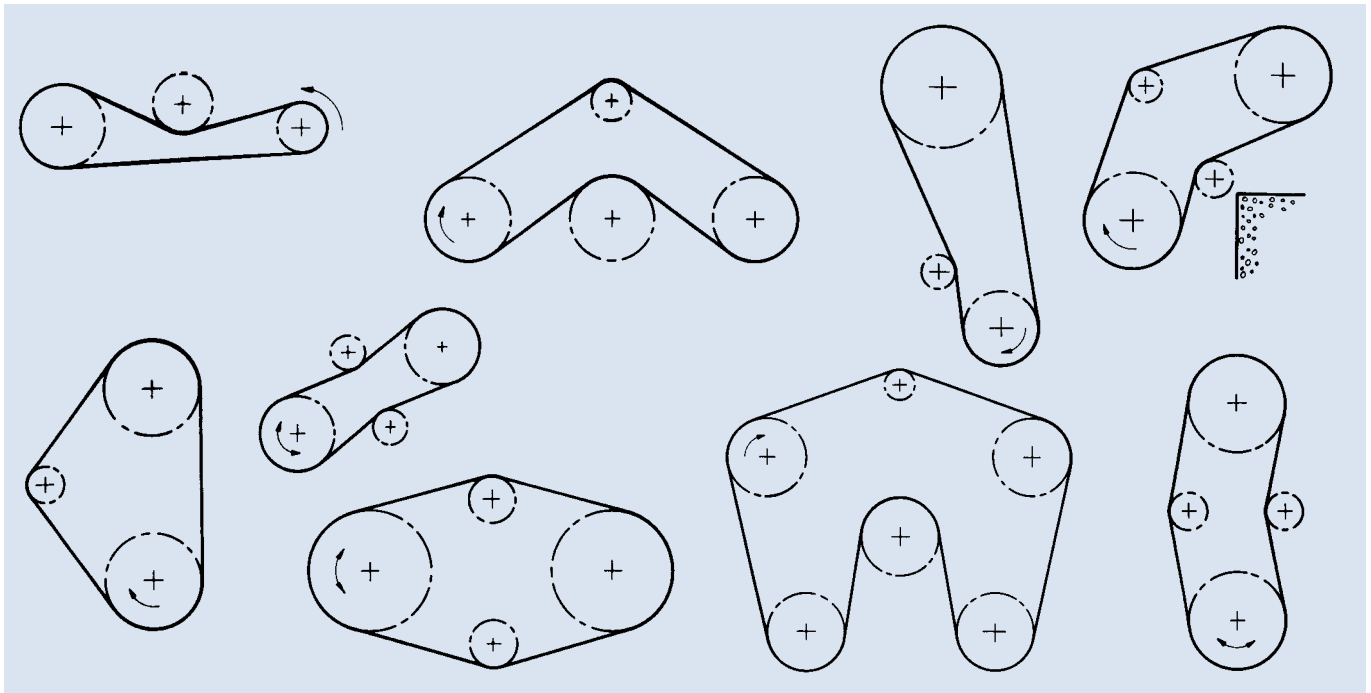


### Please avoid if possible

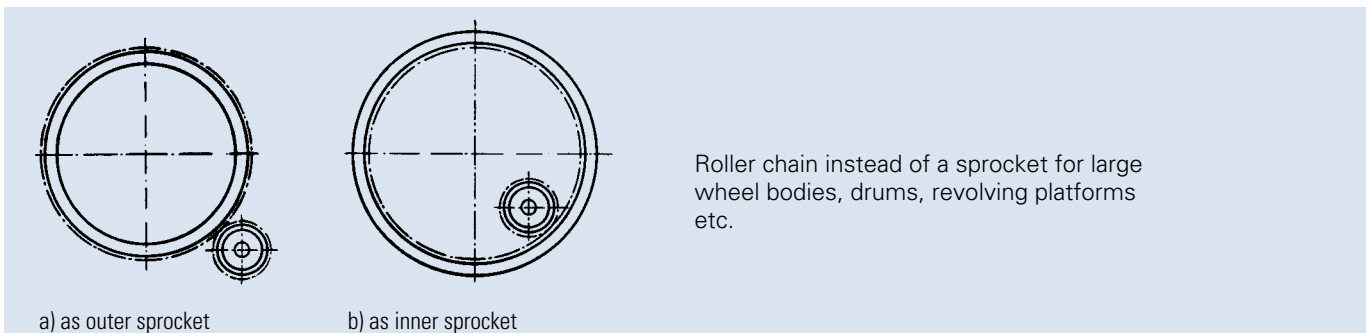
In case of short or long shaft distances the pull strand should be at the top if possible!



Jockey sprockets should have approximately three teeth in mesh with the return strand of the chain. On the basis of the selected number of teeth, the maximum speed (see page 102 "ratio between  $n$  and  $p$ ") must not be exceeded.

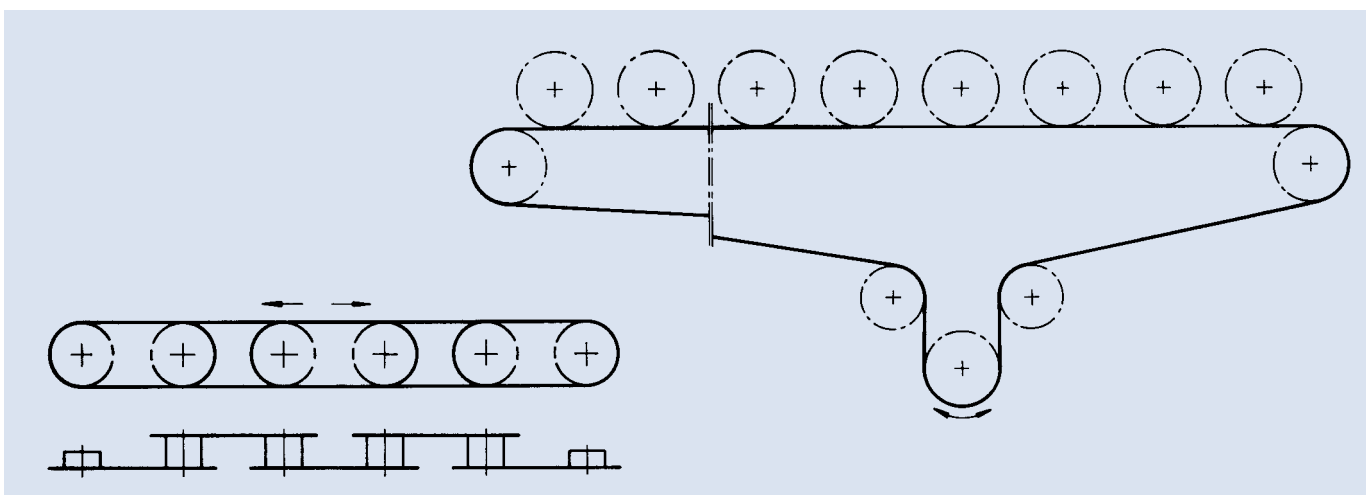


Instead of jockey sprockets, support wheels or deflexion pulleys, plastic guide rails might be advantageous in some cases to support or deflect a chain.



## Driving of roller conveyors

- a) by means of alternate individual chain strands driving from roller to roller;
- b) by means of a circulating chain with lantern gear toothing sprockets (p. 71).



## General information

A chain drive needs relatively little maintenance, if the correct chain was selected, if it was installed correctly and if it is lubricated according to the recommended procedure.

However, the chain should be protected against dirt and adverse environmental influences. A chain protection box helps to prevent dirt, averts accidents and absorbs noise.

In case of protected drives maintenance comprises a regular (annual) cleaning of the oil container and a renewal of the oil filling.

Open running chain drives must be cleaned every 3 to 6 months.

Shorter periods may be necessary, if the chains are very dirty. When cleaning the chain drives, wheel alignment and chain tension should be checked as well.

## Cleaning

First of all, in order to clean a chain drive properly, the external rough dirt must be removed by means of a hard or steel brush. Subsequently, the chain is rinsed in cleaning solvent, paraffin or diesel oil.

Furthermore, it is important to clean the inner parts of the chain. Therefore the chain is placed into paraffin, diesel oil or another solvent for approximately 24 hours in order to soak the dirt in the joints as well as the hardened lubrication remnants.

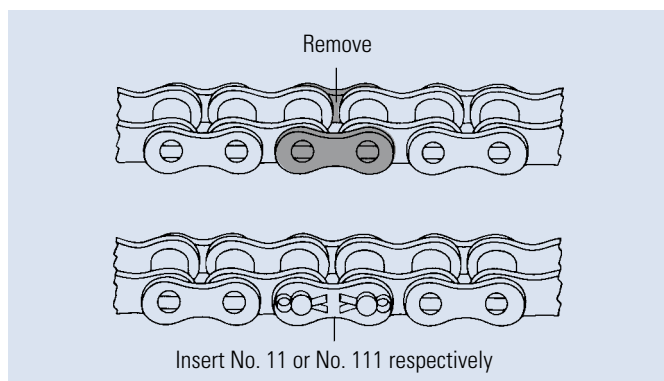
If the chain is moved several times back and forth in the solvent bath, joints will be thoroughly cleaned.

After the chain has been properly cleaned it should not make anymore scratching noises when the links are moved; if it does, the remaining dirt in the joints will form a grinding compound with the lubricating agent, which would destroy the chain very quickly.

## Repair

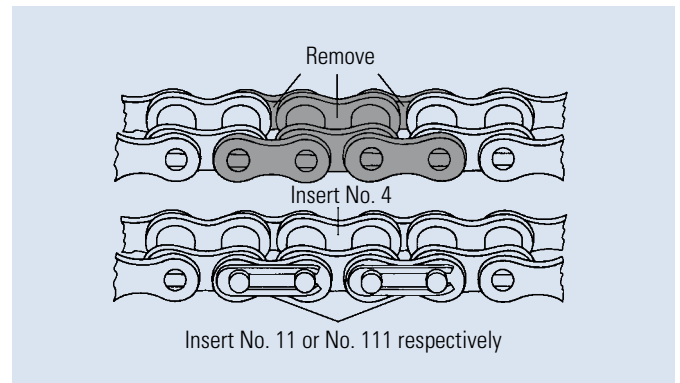
Subsequently the chain should be carefully examined for defective links, which must be replaced, if necessary.

A damaged outer link is replaced with a connecting link. Outer links are riveted into endless chains.



If an inner link or a roller is broken, the two adjoining links must also be removed; they must then be replaced by an inner link with two connecting links.

With endless chains outer links are to be used. However, if a chain looks really worn, it should be replaced by a new one.



## Relubrication

Thorough relubrication is to be carried out immediately after cleaning and, if necessary, repair of the chain. It is important to ensure that quality and viscosity of the lubricant comply with the operating conditions of the chain drive, e.g. temperature and velocity (please refer to pages 91 ff.). It is not recommended to add just a few drops from the oil can or simply douse the chain, since the oil will not reach the chain links, i.e. those parts which actually have to be lubricated. Even if the inner and outer plates are oiled, this will by no means guarantee a proper lubrication of the inner parts such as pins and bushings.

For perfect lubrication the chain is placed into a container with liquidised special chain lubricant heated up to 120° C. The chain is left in the lubricant bath until it has reached its temperature, before it is then taken out. Excess lubricant must be allowed to drip off since it will not aid the lubrication of the chains links if it sticks to the outer plates.

However, in practice, such perfect lubrication will rarely be possible. In this case an excellent engine lubricating oil should be used according to the recommendations on page 97. Please ensure that the lubricant will actually reach the links, which are to be lubricated.

## Sprockets

The sprocket teeth must be thoroughly cleaned before the chain is finally put back on. It is particularly important to remove dirt sediments, which would stretch the chain, from



the bottom of the tooth gaps. Subsequently, the sprocket must be examined in order to determine, if the teeth are worn too much. In case of excessive wear or hooked-shaped teeth, sprockets should be replaced with new ones.

It is not recommended to simply turn a worn sprocket around so that it works in reverse

running direction. New sprockets are to be checked according to the specifications on page 78.

Please note that a new chain should never be placed around a worn sprocket, because this will definitely reduce the lifecycle of the chain.

## Shortening by 1 link

### a) Even number of links

up to a pitch of 19,05 mm

Pitch as of 25,4 mm

### b) Odd number of links

up to a pitch of 19,05 mm

Pitch as of 25,4 mm

## Extending by 1 link

### a) Even number of links

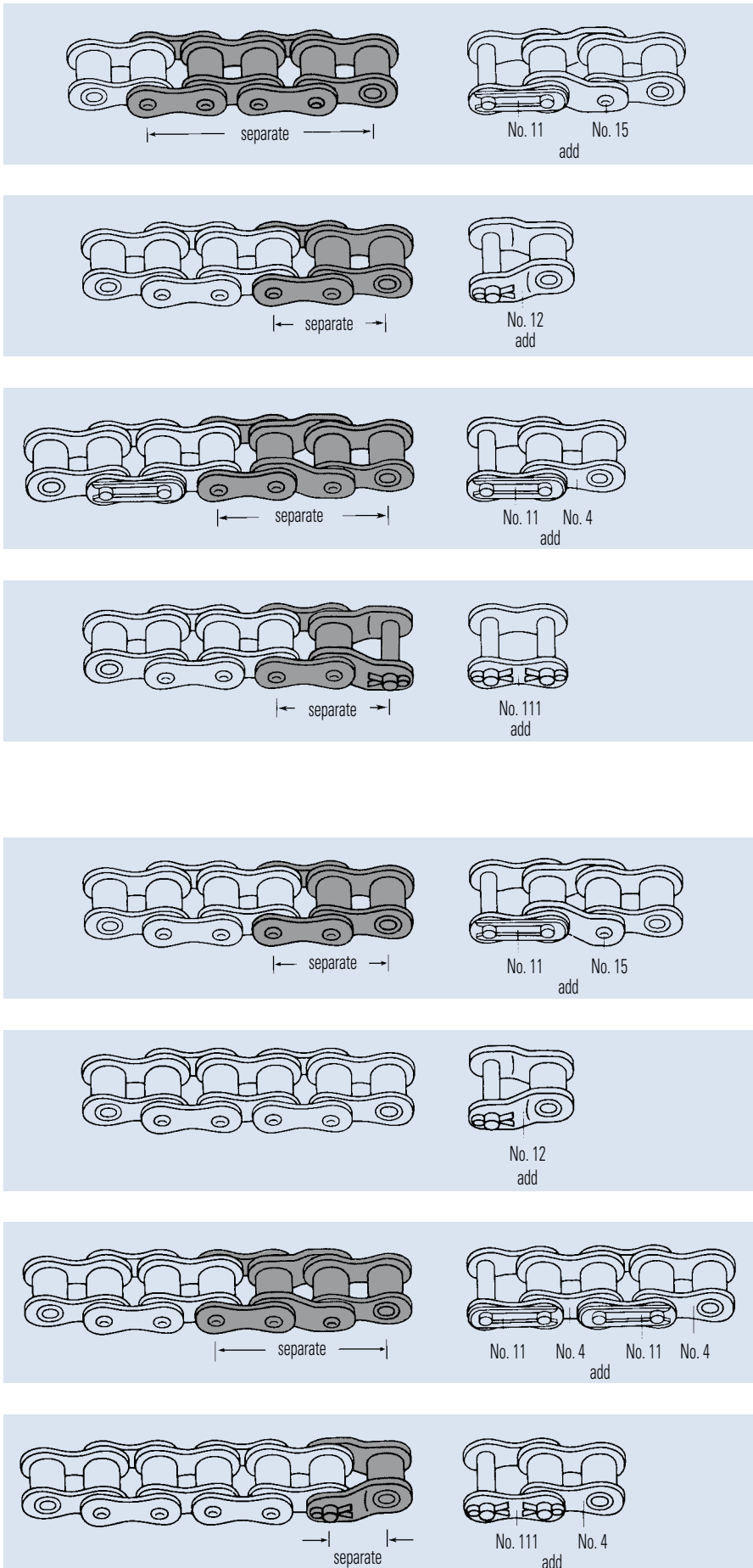
up to a pitch of 19,05 mm

Pitch as of 25,4 mm

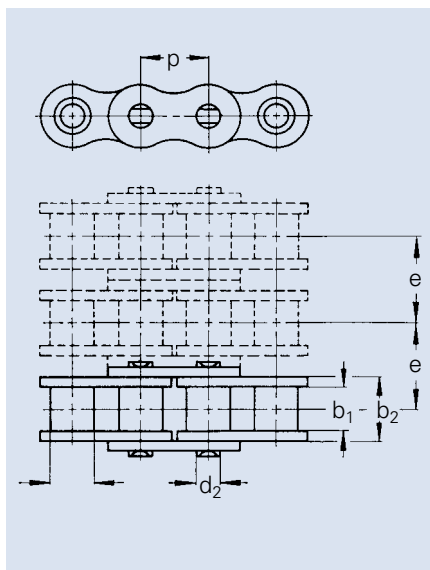
### b) Odd number of links

up to a pitch of 19,05 mm

Pitch as of 25,4 mm



Please note: When cranked links are used, roller chains may only have 80 % of the tensile strength.



In order to avoid errors or misunderstandings and thus time-consuming queries please supply the following details:

## Number of chains

### W - Chain No.

If this is unknown e.g. when ordering replacement chains, please supply a short part of the chain as a sample (at least one inner link) or, alternatively, state the following dimensions according to the adjoining drawing:

1. Pitch  $p$
2. Inner width  $b_1$
3. Inner link width  $b_2$
4. Roller and bushing diameter as well as
5. Pin diameter for Galle chains  $d_1$
6. Shoulder diameter for Galle chains  $d_2$
7. Transverse pitch (only for multiplex roller chains)
8. Please state, if simplex, duplex or multiplex chain designs are required

For replacement chains it is sufficient to state the main dimensions  $p$ ,  $b_1$  and  $d_1$  as well as  $e$  for multiplex chains. If a chain is to be extended or repaired, all the dimensions shown in the drawing must be supplied.

Please note: In case of replacements it is important to replace both sprockets as well as chains!

## Length of chain in meters or links

- 1.) When ordered by length in metres (e.g. 5 m) the end links are always inner links. Connecting links must be ordered separately.

- 2.) When ordered by number of links:

### Orders for chains with even number of links

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
|                       | chain is supplied:                                        |
| ready to be installed | including one connecting link                             |
| open*                 | end links = inner links including one single cranked link |
| endless               | riveted                                                   |

### Orders for chains with odd number of links

|                        |                                                                                                                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | chain is supplied:                                                                                                                                                                                              |
| ready to be installed* | (up to a pitch of $p = 19,05 \text{ mm} = \frac{3}{4}''$ )<br>including one double cranked link and one connecting link<br>(up to a pitch of $p = 25,4 \text{ mm} = 1''$ )<br>including one single cranked link |
| open                   | end links = inner links                                                                                                                                                                                         |
| endless*               | riveted (including one cranked link)                                                                                                                                                                            |

\* When cranked links are used, roller chains may only have 80 % of the breaking load. Avoid if possible!

## What will the chain be used for?

Please inform us on the application area of the chain. Only then will we be able to offer you the perfect chain for the application you have in mind – and you will benefit from our long-time experience!

## Parallel running chains

Chains envisaged for parallel running operation are matched for length, pre-stretched and marked at extra cost.

It is important to clearly stipulate this requirement when ordering!

In special cases measured chains can be supplied at extra cost.

In order to avoid errors or misunderstandings and thus time-consuming queries please supply the following details:

### Number of chains

#### - Chain No. of the basic chain

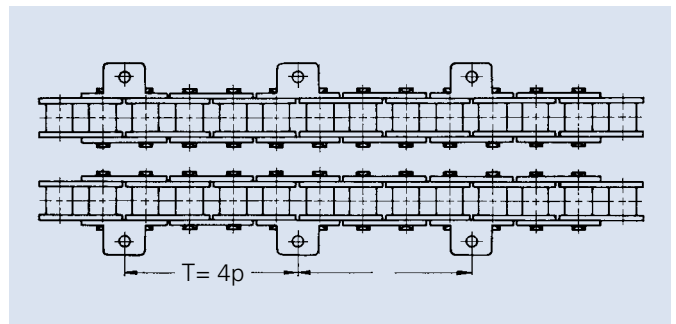
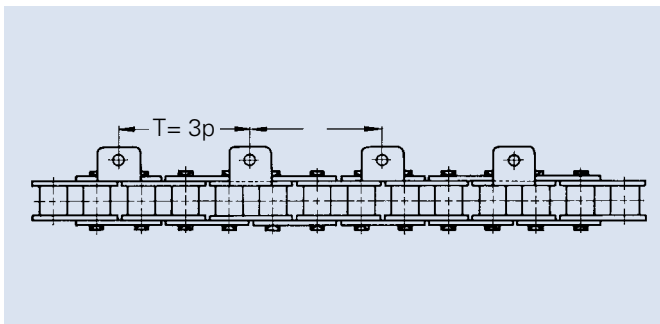
#### Type of attachment links

(e.g. A, B, C, D, E or F); for other special designs please state if single-sided or double sided attachments are required.

#### Attachment spacing $T$ of special links

in (preferably even) multiples of pitch  $p$

If attachments are also available on the inner link, the attachment spacing can be arranged in any way. In case of an odd number (e.g.  $T = 3p$ ) the attachment is alternated on the outer and inner rings. If inner link attachments are not available, an odd number spacing can only be made possible by mounting a cranked connecting link No. 12 or a double cranked link No. 15. In this case the chain may only have 80 % of the breaking load!



#### Length of chain in metres and links

- When ordered by length in metres, the end links are always inner links. Connecting links must be ordered separately.
- When ordered by a certain number of links, this number should be divisible by the distance  $T$  of the special links (e.g. chain length 176 links,  $T = 4p$ , i.e. every 4<sup>th</sup> link is a special link; the chain includes  $176 : 4 = 44$  special links).

If the chain length cannot be a multiple of  $T$ , but has to be longer or shorter for design reasons, this fact must be clearly stated as: "Does not work out even!" In such a case the distance  $T$  at the end of the chain will be alternately longer or shorter.

Chains with an even number of links will be delivered with a connecting link and are ready for assembly. With a distance of  $T = 2p$  (each outer link is a special link) the connecting link is supplied in the respective special design. With a distance of  $T = 4p$  and more the connecting link will be supplied in the standard design.

Please note: When cranked links are used, roller chains may only have 80% of the breaking load. Avoid if possible!

#### Matched or pre-stretched special chains

Parallel running chain strands used for transport and conveying purposes are often required to have highly matching opposite attachments. At extra cost we will supply the appropriately matched chain strands and mark them accordingly.

When ordering your chain, please state clearly:

**Please supply matched, pre-stretched and marked chain strands!**

The installation of guide rails is recommended to help support and guide chains with long span lengths.



## Application

What is to be conveyed or driven by the chain? (If an existing chain drive is to be replaced, please state which one!)

.....

.....

## Chain drive

### Power requirement

(max. power to be transmitted)

Please underline where applicable and enter the respective data if necessary!

power output  $P =$  ..... hp/kW    torque  $M =$  ..... Nm    tensile force  $F =$  ..... N

### Drive, type, and performance

..... / ..... hp/kW  
(e.g. electric motor, internal combustion engine / 2, 4, 6 cylinders etc.)

### Chain loading

operation period ..... hours/day

☐ regular   ☐ cyclic   ☐ impact   ☐ alternating direction ..... times per hour

☐ interruption (re-start) approx ..... times per hour

### Centrifugal mass for impact compensation

☐ existing   ☐ possible   ☐ not existing   ☐ not possible

$a =$  ..... mm

shaft distance is adjustable by ..... mm / not adjustable

☐ jockey sprocket   ☐ clamping rail   ☐ clamping spring   ☐ automatic chain tensioner

### Ambient influences

☐ nothing in particular   ☐ dust   ☐ fibres   ☐ sand   ☐ humidity

temperatures up to ..... °C

corrosion caused by .....

### Chain protection box

☐ dust proof   ☐ not dust proof   ☐ installation not possible

☐ chain unprotected   ☐ chain protected by engine / machine housing

### Lubrication

☐ not permitted   ☐ manually (occasionally)   ☐ drip feed   ☐ oil bath   ☐ pressure circulation

## Sprockets

### Speed

or

### planned transmission ratio

### Driving sprocket

$n_1 =$  ..... rpm

$i =$  ..... :

### Driven sprocket

$n_2 =$  ..... rpm

### Sprocket diameter

Largest possible incl. chain

max. = ..... mm Ø

max. = ..... mm Ø

### Sprocket width

Largest possible incl. chain

max. = ..... mm

max. = ..... mm

### Sprocket design

#### Hub bore (shaft Ø)

$d_1 =$  ..... mm Ø

$d_2 =$  ..... mm Ø

#### Hub length

$L_1 =$  ..... mm

$L_2 =$  ..... mm

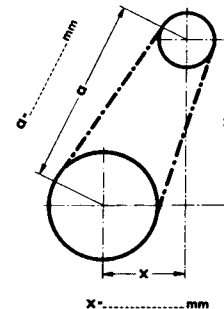
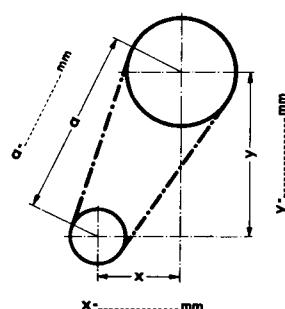
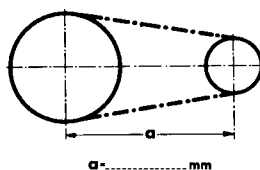
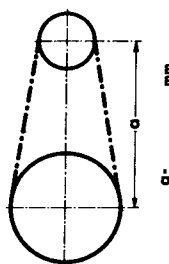
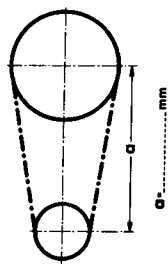
#### Hub design

One-sided: standard

Double-sided: symmetrical or asymmetrical

### Installation on the shaft

(groove sizes according to DIN)



Please enter the dimensions of the requested drive into the drawing. The driving wheel designation should be T. Please indicate the rotation direction by an arrow and in case of alternating rotation direction by a double arrow ( $\longleftrightarrow$ ).

|                                                                      |                                                  |  |
|----------------------------------------------------------------------|--------------------------------------------------|--|
| <b>A</b>                                                             |                                                  |  |
| Accumulator chains                                                   | 48 - 50                                          |  |
| Accumulator chains - MARATHON                                        | 26, 27                                           |  |
| Acid-resistant chains RF (stainless steel)                           | 29-32,34,37,38,41,42                             |  |
| Advantages of roller chain drives                                    | 97                                               |  |
| Agricultural chains according to DIN 8189                            | 33                                               |  |
| Alignment of sprockets                                               | 90                                               |  |
| ASA roller chains, DIN 8188                                          | 13-15, 19, 23                                    |  |
| Attachment chains                                                    | 35 - 44                                          |  |
| ATC magazine chains                                                  | 59                                               |  |
| Automatic chain tensioners                                           | 85ff                                             |  |
| <b>B</b>                                                             |                                                  |  |
| Bearing area                                                         | 10ff                                             |  |
| Bent attachments                                                     | 35, 37 - 41                                      |  |
| Bush chains                                                          |                                                  |  |
| dimensions according to DIN 8164                                     | 47                                               |  |
| construction and applications                                        | 96                                               |  |
| conveyor chains with bushings                                        | 59                                               |  |
| <b>C</b>                                                             |                                                  |  |
| Calculation of chain drives                                          | 109                                              |  |
| Calculation of chain lengths                                         | 106, 108, 109                                    |  |
| Calculation of chain length L (in metres)                            | 108                                              |  |
| Calculation of chain length X (in links)                             | 106                                              |  |
| Calculation of shaft distance a                                      | 107                                              |  |
| Calculation of sprockets                                             | 78                                               |  |
| Calculation of sprocket diameters                                    | 78                                               |  |
| Centre to centre distance A for sprockets                            | 77                                               |  |
| Chain cleaning                                                       | 112                                              |  |
| Chain couplings                                                      | 75                                               |  |
| Chain disassembly                                                    | 113                                              |  |
| Chain drives                                                         |                                                  |  |
| configurations                                                       | 110, 111                                         |  |
| calculation (examples)                                               | 109                                              |  |
| Chain lengths                                                        |                                                  |  |
| calculation                                                          | 106 - 109                                        |  |
| Chain lubricant WKS-Spezial and WKS-Plus                             | 94                                               |  |
| Chain maintenance                                                    | 112                                              |  |
| Chain parts                                                          | 10ff                                             |  |
| Chain puller                                                         | 60                                               |  |
| Chain repair                                                         | 112, 113                                         |  |
| Chain selection (examples)                                           | 109                                              |  |
| Chain separation                                                     | 113                                              |  |
| Chain breaker                                                        | 60                                               |  |
| Chain tensioners, automatic                                          | 85 - 88                                          |  |
| Chain tensioning                                                     | 110, 111                                         |  |
| Combination attachment chains                                        | 44                                               |  |
| Connecting links                                                     | 10ff                                             |  |
| Connecting link No. 11, 111                                          | 10ff                                             |  |
| Connecting link with cottered pin No. 111 or 12                      | 10ff                                             |  |
| Construction of chain drives                                         | 110, 111                                         |  |
| Construction of steel link chains                                    | 95, 96                                           |  |
| Contact angle                                                        | 110                                              |  |
| Conveyor chains                                                      | 59                                               |  |
| Cranked link chains, roller chains with cranked links                | 59                                               |  |
| <b>D</b>                                                             |                                                  |  |
| Details for                                                          |                                                  |  |
| enquiries and orders                                                 | 114, 115                                         |  |
| construction of chain drives                                         | 110, 111                                         |  |
| Determination of chain length L (graphically)                        | 108                                              |  |
| Diameters of sprockets                                               | 78                                               |  |
| Diagram power $P_c$                                                  | 103 - 105                                        |  |
| Different types of steel link chains                                 | 95, 96                                           |  |
| Dimensions of chains                                                 | 10 ff                                            |  |
| Dimensions of standard sprockets                                     | 61 ff                                            |  |
| Double cranked link No. 15                                           | 10ff                                             |  |
| Double pitch roller chains according to DIN 8181 and stainless steel | 34                                               |  |
| MARATHON double pitch roller chains                                  | 25                                               |  |
| with single hole straight attachments and extended pins              | 42                                               |  |
| with bent attachments                                                | 41                                               |  |
| Drip lubrication                                                     | 93                                               |  |
| Drum drives                                                          | 111                                              |  |
| Dry running                                                          | 92                                               |  |
| Duplex roller chains                                                 | 11, 14, 16, 22 - 24, 26, 27, 29, 31, 44, 48 - 50 |  |
| <b>E</b>                                                             |                                                  |  |
| Efficiency                                                           | 92                                               |  |
| End links                                                            |                                                  |  |
| for leaf chains                                                      | 53                                               |  |
| Enquiries about special chains, details                              | 115                                              |  |
| Enquiries about sprockets, details                                   | 89                                               |  |
| Enquiries, details                                                   | 114                                              |  |
| ETP shaft bushing                                                    | 83, 84                                           |  |
| Extending of chains                                                  | 113                                              |  |
| Extended pins                                                        | 35 - 44                                          |  |
| <b>F</b>                                                             |                                                  |  |
| Factors for chain calculation                                        | 98 - 102                                         |  |
| Factors for impact coefficient $f_y$                                 | 101                                              |  |
| Factor for the number of teeth n                                     |                                                  |  |
| calculation                                                          | 78                                               |  |
| table                                                                | 79                                               |  |
| Faulty mounting of chain drives                                      | 90                                               |  |
| Favourable lubrication                                               | 92                                               |  |
| Formulas, designations and units                                     | 98                                               |  |
| <b>G</b>                                                             |                                                  |  |
| Galle chains                                                         |                                                  |  |
| construction and applications                                        | 95                                               |  |
| according to DIN 8150                                                | 59                                               |  |
| Groove sizes                                                         | 76                                               |  |
| <b>H</b>                                                             |                                                  |  |
| Hardening of sprockets                                               | 76, 101                                          |  |
| Hollow pin chains                                                    | 17                                               |  |
| Hub dimensions (standard sprockets)                                  | 61ff                                             |  |
| <b>I</b>                                                             |                                                  |  |
| Induction hardening of sprockets                                     | 76, 101                                          |  |
| Inner link No. 4                                                     | 10ff                                             |  |
| Inner width b1                                                       | 10ff                                             |  |
| Inside thread                                                        | 39, 40                                           |  |
| Inverted tooth chains with bushings                                  | 55                                               |  |
| Inverted tooth (silent) chains                                       | 56                                               |  |
| Inverted tooth (silent) chains type series HD                        | 57                                               |  |
| Inverted tooth (silent) chains type series HP                        | 58                                               |  |
| <b>K</b>                                                             |                                                  |  |
| Keyways, sizes                                                       | 76                                               |  |
| <b>L</b>                                                             |                                                  |  |
| Lantern gear toothing                                                | 71                                               |  |
| Leaf chains                                                          |                                                  |  |
| dimensions                                                           | 51 - 54                                          |  |
| construction and applications                                        | 95                                               |  |
| Link numbers                                                         | 106                                              |  |
| Lubrication                                                          | 91 - 94                                          |  |



|                                                                  |                                                   |  |
|------------------------------------------------------------------|---------------------------------------------------|--|
| <b>M</b>                                                         |                                                   |  |
| Main chain dimensions .....                                      | 95, 96                                            |  |
| Maintenance .....                                                | 112                                               |  |
| Maintenance of chain drives .....                                | 112                                               |  |
| Manual lubrication .....                                         | 92, 93                                            |  |
| Maintenance-free chains MARATHON .....                           | 20 - 27                                           |  |
| Maintenance-free chains MARATHON, stainless steel .....          | 28 - 29                                           |  |
| MARATHON - maintenance-free chains .....                         | 20 - 27                                           |  |
| MARATHON - stainless steel - maintenance-free chains .....       | 28 - 29                                           |  |
| Matched chains .....                                             | 114, 115                                          |  |
| Mounting of chain drives .....                                   | 90                                                |  |
| Multiplex roller chains                                          |                                                   |  |
| dimensions according to DIN 8187                                 |                                                   |  |
| and 8188 .....                                                   | 11, 12, 14 - 16, 22 - 24, 29, 31, 32              |  |
| construction .....                                               | 95, 96                                            |  |
| <b>N</b>                                                         |                                                   |  |
| Nominal power P .....                                            | 103 - 105                                         |  |
| Number of teeth .....                                            | 61ff                                              |  |
| <b>O</b>                                                         |                                                   |  |
| Oil bath .....                                                   | 93                                                |  |
| Oils .....                                                       | 92 - 94                                           |  |
| Operating factors k .....                                        | 98                                                |  |
| Orders, details .....                                            | 114                                               |  |
| Orders of special chains, details .....                          | 115                                               |  |
| Outer diameter of sprockets .....                                | 78                                                |  |
| Outer link No. 7 (A) (to be riveted) .....                       | 10 ff                                             |  |
| <b>P</b>                                                         |                                                   |  |
| PCD                                                              |                                                   |  |
| calculation .....                                                | 78                                                |  |
| for roller chain sprockets .....                                 | 80 - 82                                           |  |
| Pitch angle .....                                                | 78                                                |  |
| Pitch p .....                                                    | 10ff                                              |  |
| Plastic rollers .....                                            | 17, 26, 27, 48, 49                                |  |
| Plate end links                                                  |                                                   |  |
| for leaf chains .....                                            | 53                                                |  |
| Power chains .....                                               | 19                                                |  |
| Power diagrams .....                                             | 103 - 105                                         |  |
| Pre-selection of leaf chains .....                               | 99, 100                                           |  |
| Pre-selection of roller chain drives .....                       | 101ff                                             |  |
| Pressure circulation lubrication .....                           | 93                                                |  |
| Pre-stretched chains .....                                       | 114, 115                                          |  |
| Profile of sprockets .....                                       | 78                                                |  |
| Pull strand .....                                                | 110                                               |  |
| Pusher dog .....                                                 | 45                                                |  |
| <b>R</b>                                                         |                                                   |  |
| Recommended lubrication and lubricants .....                     | 91 - 94                                           |  |
| Replacing of chain links .....                                   | 112, 113                                          |  |
| Required space for standard sprockets .....                      | 61ff                                              |  |
| Return strand .....                                              | 110                                               |  |
| Roller chains                                                    |                                                   |  |
| dimensions according to DIN 8187, 8188 and works-standards ..... | 10ff                                              |  |
| construction .....                                               | 96, 97                                            |  |
| with single hole straight attachments .....                      | 36 - 40, 42                                       |  |
| with extended pins .....                                         | 36, 38, 42, 43                                    |  |
| with bent attachments .....                                      | 35, 37 - 41                                       |  |
| power chains .....                                               | 19                                                |  |
| type series GL .....                                             | 16, 24, 29                                        |  |
| heavy duty design .....                                          | 18                                                |  |
| Roller conveyors with chains .....                               | 111                                               |  |
| Roller diameter d <sub>1</sub> .....                             | 10ff                                              |  |
| Root circle diameter, calculation and checking .....             | 78                                                |  |
| <b>S</b>                                                         |                                                   |  |
| Safety factors for leaf chains .....                             | 99, 100                                           |  |
| Shaft bushings .....                                             | 83, 84                                            |  |
| Shaft centre distance, shaft distance .....                      | 107                                               |  |
| Shaft distance                                                   |                                                   |  |
| calculation .....                                                | 107                                               |  |
| guidelines .....                                                 | 110 - 112                                         |  |
| Shortening and extending of roller chains .....                  | 113                                               |  |
| Simplex roller chains .....                                      | 10, 13, 16, 22 - 24, 29, 30, 33, 34, 43           |  |
| Dimensions according to DIN 8187/8188 and works-standard         |                                                   |  |
| specifications .....                                             | 10, 13, 16, 22-24, 29, 30, 33, 34, 43             |  |
| construction and applications .....                              | 95 - 96                                           |  |
| type series RF made of stainless                                 |                                                   |  |
| and acid-resistant steel .....                                   | 29 - 32, 34, 37, 38, 41, 42                       |  |
| Single cranked link No. 12 .....                                 | 10ff                                              |  |
| Slack span .....                                                 | 110                                               |  |
| SPANN-BOX® .....                                                 | 85 - 88                                           |  |
| SPANN-BOY® .....                                                 | 85 - 88                                           |  |
| Special heavy duty chains .....                                  | 18                                                |  |
| Speeds and chain pitches .....                                   | 102                                               |  |
| Speeds                                                           |                                                   |  |
| bush chains .....                                                | 47                                                |  |
| for roller chains refer to "Speeds and chain pitches" .....      | 102                                               |  |
| also refer to "Lubrication" .....                                | 92                                                |  |
| Speed range of roller chains .....                               | 102 - 105                                         |  |
| Splash lubrication (oil bath method) .....                       | 93                                                |  |
| Spring clip connecting link (connecting link No. 11) .....       | 10ff                                              |  |
| Sprocket designs .....                                           | 76                                                |  |
| Sprockets                                                        |                                                   |  |
| design "A" (plate sprockets) .....                               | 72 - 74                                           |  |
| design "B" (with hub on one side) .....                          | 61 - 71                                           |  |
| designs and steel grades .....                                   | 76                                                |  |
| axial profiles .....                                             | 77                                                |  |
| calculation .....                                                | 78                                                |  |
| tooth design .....                                               | 78                                                |  |
| Sprocket diameters (table)                                       |                                                   |  |
| for roller chains .....                                          | 80 - 82                                           |  |
| Sprockets made to specifications .....                           | 70 - 76                                           |  |
| Stainless steel chains RF .....                                  | 29 - 32, 34, 37, 38, 41, 42                       |  |
| Standard designs of sprockets .....                              | 76                                                |  |
| Standard sprockets .....                                         | 61ff                                              |  |
| Straight attachments .....                                       | 36 - 40, 42                                       |  |
| Straight connecting link, connecting link No.11, 111 .....       | 10ff                                              |  |
| <b>T</b>                                                         |                                                   |  |
| Tables for chain dimensions .....                                | 10ff                                              |  |
| Tensile strength .....                                           | 10ff                                              |  |
| Tip circle diameter                                              |                                                   |  |
| calculation .....                                                | 78                                                |  |
| table .....                                                      | 80 - 82                                           |  |
| To be riveted, outer link No. 7 .....                            | 10ff                                              |  |
| Toothing .....                                                   | 78                                                |  |
| Toothing check .....                                             | 78                                                |  |
| Tooth designs .....                                              | 78                                                |  |
| Toothing, hardened .....                                         | 76                                                |  |
| Top-plate conveyor chain .....                                   | 46                                                |  |
| Transverse pitch e .....                                         | 11, 12, 14 - 16, 22 - 24, 29, 31, 32, 44, 48 - 50 |  |
| Triplex roller chains .....                                      | 12, 15, 16, 22 - 24, 26, 27, 29, 32, 48 - 50      |  |
| <b>V</b>                                                         |                                                   |  |
| Validity of power diagrams .....                                 | 103 - 105                                         |  |
| <b>W</b>                                                         |                                                   |  |
| Wear life .....                                                  | 101, 103 - 105                                    |  |



| DIN - designation | Wippermann- designation | Design                        | Page                        |
|-------------------|-------------------------|-------------------------------|-----------------------------|
|                   | 2DH I                   | Top-plate conveyor chain      | 47                          |
| <b>03</b>         | 440                     | Roller chain                  | 10                          |
| <b>04</b>         | 445                     | "                             | 10, 43                      |
|                   | D 445                   | "                             | 11                          |
| <b>04C-1</b>      | ASA 25                  | Bush chain                    | 13                          |
| <b>05B-1</b>      | 450                     | Roller chain                  | 10, 35, 36, 43, 48, 49      |
|                   | 450 RF                  | " stainless steel             | 30, 38                      |
|                   | 453                     | "                             | 10                          |
|                   | 454                     | "                             | 10                          |
| <b>05B-2</b>      | D 450                   | Roller chain                  | 11                          |
|                   | D 450 RF                | " stainless steel             | 31                          |
| <b>05B-3</b>      | T 450                   | "                             | 12                          |
| <b>06B-1</b>      | 455 GL                  | "                             | 10, 16, 24, 35 - 37, 43, 44 |
|                   | 06B-1 MA                | " maintenance-free            | 22, 24                      |
|                   | 455 RF                  | " stainless steel             | 30, 37, 38                  |
|                   | 455 TL                  | Roller chain                  | 33                          |
| <b>06C-1</b>      | ASA 35                  | Bush chain                    | 13, 43                      |
|                   | ASA 35 RF               | Roller chain stainless steel  | 30                          |
| <b>06B-2</b>      | 455 GL-2                | "                             | 11, 16, 44                  |
|                   | 455 GL-2 MA             | " maintenance-free            | 22, 24                      |
|                   | 06B-2 GL MA             | "                             | 22, 24                      |
|                   | D 455 RF                | " stainless steel             | 31                          |
| <b>06B-3</b>      | T 455 RF                | "                             | 32                          |
| <b>06C-2</b>      | ASA 35-2                | Bush chain                    | 14                          |
|                   | ASA 35-2 RF             | "                             | 31                          |
| <b>06B-3</b>      | 455 GL-3                | Roller chain                  | 12, 16                      |
|                   | 455 GL-3 MA             | " maintenance-free            | 22, 24                      |
|                   | 06B 3 MA                | "                             | 22, 24                      |
| <b>06C-3</b>      | ASA 35-3                | Bush chain                    | 15                          |
| <b>08A-1</b>      | ASA 40                  | Roller chain                  | 13, 35, 36, 43              |
|                   | 08A-1 MA                | " maintenance-free            | 23, 43                      |
|                   | ASA 40 RF               | " stainless steel             | 30, 38                      |
| <b>081</b>        | 331                     | Roller chain                  | 10, 35, 36                  |
|                   | 331 RF                  | " stainless steel             | 30, 38                      |
|                   | 332                     | "                             | 10, 35, 35                  |
|                   | 332 RF                  | " stainless steel             | 30, 38                      |
| <b>082</b>        | 110                     | "                             | 10                          |
| <b>083</b>        | 17                      | "                             | 10                          |
|                   | 18                      | "                             | 33                          |
|                   | 460                     | "                             | 33                          |
|                   | 461                     | "                             | 10                          |
| <b>08B-1</b>      | 462                     | "                             | 10, 35 - 37, 39, 40, 43, 44 |
|                   | 08B-1 MA                | Roller chain maintenance-free | 22, 24                      |
|                   | 462 GL                  | "                             | 16                          |
|                   | 462 GL MA               | " maintenance-free            | 24                          |
|                   | 462 RF                  | " stainless steel             | 30, 37, 38                  |
|                   | 462 RF GL               | "                             | 30                          |
|                   | 462 RF MA               | " maintenance-free            | 29                          |
| <b>08A-2</b>      | ASA 40-2                | Roller chain                  | 14                          |
|                   | 08A-2 MA                | " maintenance-free            | 23                          |
|                   | ASA 40-2 RF             | " stainless steel             | 31                          |
| <b>08B-2</b>      | D 462                   | "                             | 11, 44                      |
|                   | 08B-2 MA                | " maintenance-free            | 22                          |
|                   | 462 GL-2                | "                             | 16                          |
|                   | 462 GL-2 MA             | " maintenance-free            | 24                          |
|                   | D 462 RF                | " stainless steel             | 31                          |
|                   | D 462 RF MA             | " maintenance-free            | 29                          |
| <b>08A-3</b>      | ASA 40-3                | "                             | 15                          |
|                   | 08A-3 MA                | " maintenance-free            | 23                          |
| <b>08B-3</b>      | T 462                   | "                             | 12                          |
|                   | 08B-3 MA                | " maintenance-free            | 22                          |
|                   | 462 GL-3                | "                             | 16                          |
|                   | 462 GL-3 MA             | " maintenance-free            | 24                          |
| <b>08B-3</b>      | T 462 RF                | " stainless steel             | 32                          |
|                   | T 462 RF MA             | " maintenance-free            | 29                          |
| <b>10A-1</b>      | ASA 50                  | "                             | 13, 35, 36, 43              |
|                   | ASA 50 H                | " reinforced                  | 13                          |
|                   | ASA 50 HX               | "                             | 19                          |
|                   | 10A-1 MA                | " maintenance-free            | 23, 43                      |
|                   | 500                     | "                             | 10                          |

| DIN - designation | Wippermann- designation | Design                            | Page                        |
|-------------------|-------------------------|-----------------------------------|-----------------------------|
| <b>10B-1</b>      | 501                     | "                                 | 10, 35 - 37, 39, 40, 43, 44 |
|                   | 10B-1 MA                | " maintenance-free                | 22, 25, 35 - 40, 43, 44     |
|                   | 501 GL                  | "                                 | 16                          |
|                   | 501 GL MA               | " maintenance-free                | 24                          |
|                   | 501 RF                  | " stainless steel                 | 30, 37, 38                  |
|                   | 501 RF GL               | "                                 | 30                          |
|                   | 501 RF MA               | " maintenance-free                | 29                          |
| <b>10A-2</b>      | ASA 50-2                | "                                 | 14                          |
|                   | 10A-2 MA                | " maintenance-free                | 23                          |
| <b>10B-2</b>      | D 501                   | "                                 | 11, 44                      |
|                   | 10B-2 MA                | " maintenance-free                | 22                          |
|                   | 501 GL-2                | "                                 | 16                          |
|                   | 501 GL-2 MA             | " maintenance-free                | 24                          |
|                   | D 501 RF                | " stainless steel                 | 31                          |
|                   | D 501 RF MA             | " maintenance-free                | 29                          |
| <b>10A-3</b>      | ASA 50-3                | "                                 | 15                          |
|                   | 10A-3 MA                | " maintenance-free                | 23                          |
| <b>10B-3</b>      | T 501                   | "                                 | 12                          |
|                   | 10B-3 MA                | " maintenance-free                | 22                          |
|                   | 501 GL-3                | "                                 | 16                          |
|                   | 501 GL-3 MA             | " maintenance-free                | 24                          |
| <b>10B-3</b>      | T 501 RF                | " stainless steel                 | 32                          |
|                   | T 501 RF MA             | " maintenance-free                | 29                          |
| <b>12A-1</b>      | ASA 60                  | "                                 | 13, 35, 36, 43              |
|                   | 12A-1 MA                | " maintenance-free                | 23, 43                      |
|                   | ASA 60 GL               | "                                 | 16                          |
|                   | ASA 60 H                | " reinforced                      | 13                          |
|                   | ASA 60 HX               | "                                 | 19                          |
|                   | ASA 60 HGL              | "                                 | 16                          |
|                   | ASA 60 RF               | " stainless steel                 | 30                          |
| <b>12B-1</b>      | 513                     | "                                 | 10, 35 - 37, 39, 40, 43, 44 |
|                   | 12B-1 MA                | " maintenance-free                | 22, 26, 27, 43              |
|                   | 513 GL                  | "                                 | 16                          |
|                   | 513 GL MA               | "                                 | 24                          |
|                   | 513 RF                  | " stainless steel                 | 30, 37, 38                  |
|                   | 513 RF GL               | "                                 | 30                          |
|                   | 513 RF MA               | " maintenance-free                | 29                          |
|                   | 513 SF RF               | Accumulator chain stainless steel | 48                          |
|                   | 513 SF                  | Accumulator chain                 | 48                          |
|                   | 513 SF MA               | " maintenance-free                | 26, 27                      |
| <b>12A-2</b>      | ASA 60-2                | Roller chain                      | 14                          |
|                   | 12A-2 MA                | " maintenance-free                | 23                          |
|                   | ASA 60 GL-2             | "                                 | 16                          |
|                   | ASA 60-2 RF             | " stainless steel                 | 31                          |
| <b>12B-2</b>      | D 513                   | "                                 | 11, 44                      |
|                   | 12B-2 MA                | " maintenance-free                | 22                          |
|                   | 513 GL-2                | "                                 | 16                          |
|                   | 513 GL-2 MA             | " maintenance-free                | 24                          |
|                   | D 513 RF                | "                                 | 30                          |
|                   | D 513 RF MA             | " maintenance-free                | 29                          |
|                   | D 513 SF                | Accumulator chain                 | 49, 49                      |
|                   | D 513 SF MA             | " maintenance-free                | 23, 27                      |
| <b>12A-3</b>      | ASA 60-3                | Roller chain                      | 15                          |
|                   | 12A-3 MA                | " maintenance-free                | 23                          |
|                   | ASA 60 GL-3             | "                                 | 16                          |
| <b>12B-3</b>      | T 513                   | "                                 | 12                          |
|                   | 12B-3 MA                | " maintenance-free                | 22                          |
|                   | 513 GL-3                | "                                 | 16                          |
|                   | 513 GL-3 MA             | " maintenance-free                | 24                          |
| <b>12B-3</b>      | T 513 RF                | " stainless steel                 | 32                          |
|                   | T 513 RF MA             | " maintenance-free                | 29                          |
|                   | T 513 SF RF             | Accumulator chain stainless steel | 48, 49                      |
|                   | T 513 SF                | "                                 | 48, 49                      |
|                   | T 513 SF MA             | " maintenance-free                | 26, 27                      |
|                   | 515                     | Roller chain                      | 33                          |
|                   | 517                     | "                                 | 33                          |
|                   | 540                     | "                                 | 33                          |
|                   | 546b                    | "                                 | 33                          |
|                   | 547                     | "                                 | 33                          |
| <b>16A-1</b>      | ASA 80                  | "                                 | 13, 35, 36, 43              |



| DIN - designation | Wippermann- designation | Design                            | Page                        |
|-------------------|-------------------------|-----------------------------------|-----------------------------|
|                   | ASA 80 H                | „ reinforced                      | 13                          |
|                   | ASA 80 HX               | „ „                               | 19                          |
|                   | 16A-1 MA                | „ maintenance-free                | 23, 43                      |
| <b>16B-1</b>      | 548                     | „                                 | 10, 35 - 37, 39, 40, 43, 44 |
|                   | 16B-1 MA                | „ maintenance-free                | 22, 35 - 40, 43, 44         |
|                   | 548 GL                  | „                                 | 16                          |
|                   | 548 GL MA               | „ maintenance-free                | 24                          |
|                   | 548 GLS                 | „                                 | 16                          |
|                   | 548 GLS MA              | „ maintenance-free                | 24                          |
|                   | 548 GLX                 | „ reinforced                      | 18                          |
|                   | 548 RF                  | „ stainless steel                 | 30, 37, 38                  |
|                   | 548 RF GL               | „ „                               | 30                          |
|                   | 548 RF GLS              | „ „                               | 30                          |
|                   | 548 SF RF               | Accumulator chain „               | 48, 49                      |
|                   | 548 SF                  | „                                 | 48, 49                      |
|                   | 548 SF MA               | „ maintenance-free                | 26, 27                      |
| <b>16A-2</b>      | ASA 80-2                | Roller chain                      | 14                          |
|                   | 16A-2 MA                | „ maintenance-free                | 23                          |
| <b>16B-2</b>      | D 548                   | „                                 | 11, 44                      |
|                   | 16B-2 MA                | Roller chain maintenance-free     | 22                          |
|                   | 548 GL-2                | „                                 | 16                          |
|                   | 548 GLS-2               | „                                 | 16                          |
|                   | 548 GL-2 MA             | „ maintenance-free                | 24                          |
|                   | D 548 RF                | „ stainless steel                 | 31                          |
|                   | D 548 RF MA             | „ maintenance-free                | 29                          |
|                   | D 548 SF                | Accumulator chain                 | 48, 49                      |
|                   | D 548 SF MA             | „ maintenance-free                | 26, 27                      |
| <b>16A-3</b>      | ASA 80-3                | Roller chain                      | 15                          |
|                   | 16A-3 MA                | „ maintenance-free                | 23                          |
| <b>16B-3</b>      | T 548                   | „                                 | 12                          |
|                   | 16B-3 MA                | Roller chain maintenance-free     | 22                          |
|                   | 548 GL-3                | „                                 | 16                          |
|                   | 548 GLS-3               | „                                 | 16                          |
|                   | 548 GL-3 MA             | „ maintenance-free                | 24                          |
| <b>16B-3</b>      | T 548 RF                | „ stainless steel                 | 32                          |
|                   | T 548 RF MA             | „ maintenance-free                | 29                          |
|                   | T 548 SF RF             | Accumulator chain stainless steel | 48, 49                      |
|                   | T 548 SF                | „                                 | 48, 49                      |
|                   | T 548 SF MA             | „ maintenance-free                | 26, 27                      |
| <b>20A-1</b>      | ASA 100                 | Roller chain                      | 13, 43                      |
|                   | ASA 100 H               | „ reinforced                      | 13                          |
|                   | ASA 100 HX              | „ „                               | 19                          |
|                   | 20A-1 MA                | „ maintenance-free                | 23, 43                      |
|                   | 552                     | „                                 | 10, 43                      |
|                   | 552 MA                  | „ maintenance-free                | 22, 43                      |
| <b>20B-1</b>      | 563                     | „                                 | 10, 35 - 37, 43             |
|                   | 20B-1 MA                | „ maintenance-free                | 22, 35 - 37, 43             |
|                   | 563 GL                  | „                                 | 16                          |
|                   | 563 GL MA               | „ maintenance-free                | 24                          |
|                   | 563 GLX                 | „ reinforced                      | 18                          |
| <b>20A-2</b>      | ASA 100-2               | „                                 | 14                          |
|                   | 20A-2 MA                | „ maintenance-free                | 23                          |
| <b>20B-2</b>      | D 563                   | „                                 | 11                          |
|                   | 20B-2 MA                | „ maintenance-free                | 22                          |
|                   | 563 GL-2                | „                                 | 16                          |
|                   | 563 GL-2 MA             | „ maintenance-free                | 24                          |
| <b>20A-3</b>      | ASA 100-3               | „                                 | 15                          |
|                   | 20A-3 MA                | „ maintenance-free                | 23                          |
| <b>20B-3</b>      | T 563                   | „                                 | 12                          |
|                   | 20B-3 MA                | „ maintenance-free                | 22                          |
|                   | 563 GL-3                | „                                 | 16                          |
|                   | 563 GL-3 MA             | „ maintenance-free                | 24                          |
|                   | 577                     | „                                 | 33, 43                      |
| <b>24A-1</b>      | ASA 120                 | „                                 | 13, 43                      |
|                   | ASA 120 H               | „ reinforced                      | 13                          |
|                   | ASA 120 HX              | „ „                               | 15                          |
|                   | 24A-1 MA                | „ maintenance-free                | 23, 43                      |
| <b>24B-1</b>      | 596                     | „                                 | 10, 35 - 37, 43             |
|                   | 24B-1 MA                | „ maintenance-free                | 22, 35, 37, 43              |
|                   | 596 GL                  | „                                 | 16                          |

| DIN - designation | Wippermann- designation | Design                        | Page           |
|-------------------|-------------------------|-------------------------------|----------------|
|                   | 596 GL MA               | „ maintenance-free            | 24             |
|                   | 596 R                   | „                             | 18             |
|                   | 596 SX                  | „                             | 18             |
| <b>24A-2</b>      | ASA 120-2               | „                             | 14             |
|                   | 24A-2 MA                | „ maintenance-free            | 23             |
| <b>24B-2</b>      | D 596                   | „                             | 11             |
|                   | 24B-2 MA                | „ maintenance-free            | 22             |
|                   | 596 GL-2                | „                             | 16             |
|                   | 596 GL-2 MA             | „ maintenance-free            | 24             |
| <b>24A-3</b>      | ASA 120-3               | „                             | 15             |
|                   | 24A-3 MA                | „ maintenance-free            | 23             |
| <b>24B-3</b>      | T 596                   | „                             | 12             |
|                   | 24B-3 MA                | Roller chain maintenance-free | 22             |
|                   | 596 GL-3                | Roller chain                  | 16             |
|                   | 596 GL-3 MA             | „ maintenance-free            | 24             |
| <b>28A-1</b>      | ASA 140                 | „                             | 13             |
|                   | ASA 140 H               | „ reinforced                  | 13             |
|                   | ASA 140 HX              | „ „                           | 19             |
| <b>28B-1</b>      | 613                     | „                             | 10, 35, 36, 43 |
| <b>28A-2</b>      | ASA 140-2               | „                             | 14             |
| <b>28B-2</b>      | D 613                   | „                             | 11             |
| <b>28A-3</b>      | ASA 140-3               | „                             | 15             |
| <b>28B-3</b>      | T 613                   | „                             | 12             |
| <b>32A-1</b>      | ASA 160                 | „                             | 13             |
|                   | ASA 160 H               | „ reinforced                  | 13             |
|                   | ASA 160 HX              | „ „                           | 19             |
|                   | ASA 160 VS              | „                             | 18             |
| <b>32B-1</b>      | 652                     | „                             | 10, 35, 36, 43 |
| <b>32A-2</b>      | ASA 160-2               | „                             | 14             |
|                   | ASA 160-2 VS            | „                             | 18             |
| <b>32B-2</b>      | D 652                   | „                             | 11             |
| <b>32A-3</b>      | ASA 160-3               | „                             | 15             |
| <b>32B-3</b>      | T 652                   | „                             | 12             |
| <b>40A-1</b>      | ASA 200                 | „                             | 13             |
|                   | ASA 200 H               | „ reinforced                  | 13             |
|                   | ASA 200 HX              | „ „                           | 19             |
| <b>40B-1</b>      | 671                     | „                             | 10             |
|                   | 671 SX                  | „                             | 18             |
|                   | 671 VX                  | „                             | 18             |
| <b>40A-2</b>      | ASA 200-2               | „                             | 14             |
| <b>40B-2</b>      | D 671                   | „                             | 11             |
| <b>40A-3</b>      | ASA 200-3               | „                             | 15             |
| <b>40B-3</b>      | T 671                   | „                             | 12             |
| <b>48B-1</b>      | 679                     | „                             | 10             |
| <b>48B-2</b>      | D 679                   | „                             | 11             |
| <b>48B-3</b>      | T 679                   | „                             | 12             |
| <b>208 B</b>      | 713                     | „                             | 34, 41, 42     |
|                   | 208 B MA                | „ maintenance-free            | 25, 41, 42     |
| <b>208 B</b>      | 713 RF                  | „ stainless steel             | 34, 41, 42     |
| <b>210 B</b>      | 717                     | Roller chain                  | 34, 41, 42     |
|                   | 210 B MA                | „ maintenance-free            | 25, 41, 42     |
| <b>210 B</b>      | 717 RF                  | „ stainless steel             | 34, 41, 42     |
| <b>212 B</b>      | 722                     | „                             | 34, 41, 42     |
|                   | 212 B MA                | „ maintenance-free            | 25, 41, 42     |
| <b>212 B</b>      | 722 RF                  | „ stainless steel             | 34, 41, 42     |
|                   | 722 SF RF               | Accumulator chain „           | 48, 49         |
|                   | 722 SF                  | „                             | 48, 49         |
|                   | 722 SF MA               | „ maintenance-free            | 26, 27         |
| <b>216 B</b>      | 728                     | Roller chain                  | 34, 41, 42     |
|                   | 216 B MA                | Roller chain maintenance-free | 25, 41, 42     |
| <b>216 B</b>      | 728 RF                  | „ stainless steel             | 34, 41, 42     |
|                   | 728 SF RF               | Accumulator chain „           | 48, 49         |
|                   | 728 SF                  | „                             | 48, 49         |
|                   | 728 SF MA               | „ maintenance-free            | 26, 27         |
| <b>220 B</b>      | 734                     | Roller chain                  | 34, 41, 42     |
|                   | 220 B MA                | „ maintenance-free            | 25, 41, 42     |
|                   | 6144                    | Roller chain agricultural     | 33             |
| <b>S 62</b>       | 6146                    | „                             | 37             |
|                   | 01105                   | Hollow pin chain              | 17             |
|                   | 01462                   | „                             | 17             |

[illegible]



| Conditions/Symptoms                                | Possible cause                                                                                                                                                                                                                  | What to do                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| One-sided wear on chains and sprockets             | 1. Shafts not parallel, sprocket and pinion not aligned                                                                                                                                                                         | 1. Realign                                                                                                                                                                                                                                                                                                                 |
| Wear on inner plates or on sides of sprocket teeth | 1. Sprocket and pinion not aligned or shaft wobble                                                                                                                                                                              | 1. Realign sprockets                                                                                                                                                                                                                                                                                                       |
| Wear on tooth heads                                | 1. Chain elongation<br>2. Tooth error                                                                                                                                                                                           | 1. Replace chain<br>2. Replace pinion and sprocket                                                                                                                                                                                                                                                                         |
| Wear on tooth flanks, sprockets                    | 1. Low material strength                                                                                                                                                                                                        | 1. Exchange for hardened sprockets                                                                                                                                                                                                                                                                                         |
| Wear on outer plates                               | 1. Chain striking an obstruction                                                                                                                                                                                                | 1. Make sure chain is not obstructed                                                                                                                                                                                                                                                                                       |
| Chain vibrates with high frequency                 | 1. Eccentricity or sprocket wobble<br>2. Broken chain roller                                                                                                                                                                    | 1. Replace sprockets<br>2. Replace chain links or chain                                                                                                                                                                                                                                                                    |
| Premature elongation                               | 1. Insufficient lubrication or wrong chain size                                                                                                                                                                                 | 1. Increase oil supply and check chain size                                                                                                                                                                                                                                                                                |
| Rust-coloured discolouration of chain and pins     | 1. Insufficient lubrication                                                                                                                                                                                                     | 1. Improve lubrication                                                                                                                                                                                                                                                                                                     |
| Chain jumps off sprocket                           | 1. Excess chain slack<br>2. Chain riding too high on sprocket teeth due to chain wear                                                                                                                                           | 1. Adjust shaft centre distance or jockey sprocket<br>2. Replace chain                                                                                                                                                                                                                                                     |
| Broken chain parts                                 | 1. Drive overloaded<br>2. Excess chain slack and chain jumps off sprocket<br>3. Chain striking solid object<br>4. Chain speed too high<br>5. Imprecise toothing on the sprockets<br>6. Insufficient lubrication<br>7. Corrosion | 1. Select another chain or avoid overload<br>2. Regular check and adjustment of shaft centre distance<br>3. Make sure chain is not obstructed<br>4. Check chain dimensioning<br>5. Change sprockets<br>6. Improve and increase lubrication<br>7. Avoid corrosion or use chains made of stainless material (please enquire) |
| Excessive noise                                    | 1. Chain striking an obstruction<br>2. Insufficient lubrication<br>3. Missing or broken rollers<br>4. Misalignment<br>5. Chain jumps off sprocket                                                                               | 1. Make sure chain is not obstructed<br>2. Improve lubrication<br>3. Replace chain or defective parts<br>4. Align shafts and sprockets<br>5. Re-adjust shaft centre distance                                                                                                                                               |



| Country                                                                    | Adress                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| England                                                                    | <b>Transmission Developments Co (G.B.) Ltd.</b><br>Dawkins Road, Hamworthy, Poole<br>Dorset BH15 4HF                                                                                                                                                                                                                                                                                                           | Phone: +44 (0) 1202-675555<br>Fax: +44 (0) 1202-677466<br>E-mail: sales@transdev.co.uk<br>Internet: www.transdev.co.uk                                                                                                       |
| Finland                                                                    | <b>SKS-mekaniikka Oy</b><br>PL 122<br>FIN-01721 Vantaa                                                                                                                                                                                                                                                                                                                                                         | Phone: +358 (0) 20-76461<br>Fax: +358 (0) 20-7646824<br>E-mail: mekaniikka@sk.fi<br>Internet: www.sks.fi                                                                                                                     |
| France                                                                     | <b>Prud'homme</b><br>Transmissions<br>25, Chemin d'Aubervilliers<br>F-93203 Saint-Denis Cedex                                                                                                                                                                                                                                                                                                                  | Phone: +33 (0) 148-114600<br>Fax: +33 (0) 148-344949<br>E-mail: info@prudhomme-trans.com<br>Internet: www.prudhomme-trans.com                                                                                                |
| Greece                                                                     | <b>MAS Michael Sofikitis &amp; Son S.A.</b><br>295 Monastiriou str.<br>GR-54628 Thessaloniki                                                                                                                                                                                                                                                                                                                   | Phone: +30 (0) 2310-553443<br>Fax: +30 (0) 2310-551439<br>E-mail: sofikitis@the.forthnet.gr                                                                                                                                  |
| Italy                                                                      | <b>Kuhn W. S.r.l.</b><br>Via E. Mattei 84/13<br>I-40138 Bologna                                                                                                                                                                                                                                                                                                                                                | Phone: +39 (0) 51-531584<br>Fax: +39 (0) 51-531611<br>E-mail: info@kuhnw.it<br>Internet: www.kuhnw.it                                                                                                                        |
| The Netherlands                                                            | <b>K&amp;W Transmissies B.V.</b><br>Asfaltstraat 14<br>NL 8211 AC Lelystad                                                                                                                                                                                                                                                                                                                                     | Phone: +31 (0) 320-247370<br>Fax: +31 (0) 320-246594<br>E-mail: info@wippermann.nl<br>Internet: www.wippermann.nl                                                                                                            |
| Norway                                                                     | <b>LM maskin as</b><br>Fernanda Nissensgt. 3<br>N-0484 Oslo                                                                                                                                                                                                                                                                                                                                                    | Phone: +47 23-392250<br>Fax: +47 22-222190<br>E-mail: firmapost@lm-maskin.no<br>Internet: www.lm-maskin.no                                                                                                                   |
| Austria                                                                    | <b>KATENA Stahlgelenkketten Handelsges. m.b.H</b><br>Jedlersdorfer Platz 7<br>A-1210 Wien                                                                                                                                                                                                                                                                                                                      | Phone: +43 (0) 1-2921071<br>Fax: +43 (0) 1-2929762<br>E-mail: office@katena.at<br>Internet: www.katena.at                                                                                                                    |
| Sweden                                                                     | <b>Ingenjöröfirman Kedjeteknik AB</b><br>Baragatan 2<br>SE-21228 Malmö                                                                                                                                                                                                                                                                                                                                         | Phone: +46 (0) 40-181000<br>Fax: +46 (0) 40-932332<br>E-mail: info@kedjeteknik.se<br>Internet: www.kedjeteknik.se                                                                                                            |
| Switzerland                                                                | <b>C. Plüss &amp; Co. AG</b><br>Oberdorfstr. 64<br>CH-8600 Dübendorf                                                                                                                                                                                                                                                                                                                                           | Phone: +41 (0) 44-8248800<br>Fax: +41 (0) 44-8248818<br>E-mail: service@pluss.com<br>Internet: www.pluss.com                                                                                                                 |
| Slovenia<br>Serbia, Croatia<br>Bosnia-Herzegovina<br>Montenegro, Macedonia | <b>BELL d.o.o.</b><br>Ptujška Cesta 13<br>SI 2204 Miklavz na Dravskem polju                                                                                                                                                                                                                                                                                                                                    | Phone: +386 (0) 2-6296920<br>Fax: +386 (0) 2-6292120<br>E-mail: info@bell.si<br>Internet: www.bell.si                                                                                                                        |
| Spain                                                                      | <b>Comercio Industria y Distribución, S.L</b><br>C.T.M. Ctra. Villaverde-Vallecas, km. 3,6<br>Nave S8 - Local 9<br>E-28053 Madrid<br><br><b>Delegacion Norte</b><br>Kaukarreka Bidea, 3 P.109 (Pol.Asua-Berri)<br>E-48950 Erandio (Bizkaia)<br><br><b>Delegacion Cataluña</b><br><b>Suministros Y Cadenas, S.L.</b><br>Pol. Ind. Sur - c/ Industria, s/n. Nave 3, Parcela 445<br>E-08754 El Papiol (Barcelona) | Phone: +34 (0) 91-5072838<br>Fax: +34 (0) 91-5072773<br>E-mail: cid@cid.es<br>Internet: www.cid.es<br><br>Phone: +34 (0) 91-4536029<br>Fax: +34 (0) 91-4535762<br><br>Phone: +34 (0) 91-67308-67<br>Fax: +34 (0) 91-67308-61 |
| Turkey                                                                     | <b>EKINIS TARIM MAKINALARI<br/>TIC ve SAN A.Ş.</b><br>Karaköy Meydani, Tünel Caddesi<br>Perçemli sk., No. 4/1-2-3 Karaköy<br>34420 İstanbul - Türkiye                                                                                                                                                                                                                                                          | Phone: +90 (0) 212-2521921<br>Phone: +90 (0) 212-2455069<br>Fax: +90 (0) 212-2441134<br>E-mail: ekinis@ekinis.com<br>Internet: www.ekinis.com                                                                                |



## 1 WIPPERMANN jr. GmbH Direkt

Service-Stützpunkt  
WIPPERMANN jr. GmbH Direkt  
Im Obrock 153  
D-32278 Kirch Lengern

Phone: +49 (0) 52 23-76 33-30  
Fax: +49 (0) 52 23-76 33-38

E-mail: direkt@wippermann.com

## 2 Donald Mertner

Donald Mertner  
Industrievertretungen  
Johannesweg 17b  
D-33397 Rietberg

Phone: +49 (0) 52 44-90 698-09  
Fax: +49 (0) 52 44-90 698-10  
Mobil: +49 (0) 1 71-620 31 93

E-mail: donald.mertner@freenet.de

## 3 Ing. Michael Topf

Ing. Michael Topf  
Industrievertretungen  
Rheinstraße 7  
D-15732 Eichwalde

Phone: +49 (0) 30-67 53 97-83  
Fax: +49 (0) 30-67 53 97-84  
Mobil: +49 (0) 1 72-30 64 46 9

E-mail: michael.topf@t-online.de

## 4 ATS Antriebstechnik

ATS Antriebstechnik  
Dipl. Ing. (FH) Helmar Sperl  
Schaddeler Dreieck Nr.40  
D-04668 Großbothen

Phone: +49 (0) 34 384-7 33-41  
Fax: +49 (0) 34 384-7 33-42  
Mobil: +49 (0) 1 72-944 46 40

E-mail: ats-sperl@t-online.de

## 5 Siegfried Niethammer

Siegfried Niethammer  
Industrievertretungen  
Storchenweg 12  
D-91220 Schnaittach

Postfach 2  
D-91218 Schnaittach

Phone: +49 (0) 91 53-92 81-0  
Fax: +49 (0) 91 53-87 75  
Mobil: +49 (0) 1 71-77 91 69 7

E-mail: info@niethammer-kette.de

## 6 Rauhut GmbH

Rauhut GmbH  
Industrievertretungen  
Luitpoldstraße 1  
D-82319 Starnberg

Postfach 2170  
D-82311 Starnberg

Phone: +49 (0) 81 51-90 889-0  
Fax: +49 (0) 81 51-90 889-13

E-mail: info@rauhut-gmbh.com

## 7 hohmann GmbH

hohmann GmbH  
Industrievertretungen  
Eltinger Fußweg 2/2  
D-71229 Leonberg

Postfach 1765  
D-71207 Leonberg

Phone: +49 (0) 71 52-33 113-0  
Fax: +49 (0) 71 52-33 113-10

E-mail: info@hohmann-iv.de

## 8 Ing. Büro Wittke

Ing. Büro Wittke  
Inhaber Jan-Dirk Wittke  
Industrievertretungen  
Eppenhauser Str. 161 L  
D-58093 Hagen

Phone: +49 (0) 23 31-30 659-38/39  
Fax: +49 (0) 23 31-30 659-41

E-mail: ingbuero.wittke@t-online.de

## 9 Intest Industrietechnik GmbH

Intest Industrietechnik GmbH  
Stefansbecke 11  
D-45549 Sprockhövel

Phone: +49 (0) 23 39-91 44-0  
Fax: +49 (0) 23 39-91 44-91

E-mail: intest@intest.de

## 10 TechnIQ Ltd. & Co. KG

TechnIQ Ltd. & Co. KG  
An der Strusbek 8A  
D-22926 Ahrensburg

Phone: +49 (0) 41 02-22 12-22  
Fax: +49 (0) 41 02-22 12-20

E-mail: info@techniq.de

Adress

Wippermann jr. GmbH  
Delsterner Straße 133  
58091 Hagen

Postfach 4020  
58040 Hagen

Phone  
Fax

+49 (0) 23 31 - 782 - 0  
+49 (0) 23 31 - 782 - 356

Homepage  
E-mail

[www.wippermann.com](http://www.wippermann.com)  
[info @ wippermann.com](mailto:info@wippermann.com)

