General Description
When used properly, high quality roller chains are powerful and reliable drive systems. They can serve to bridge large centre distances. Various transmission ratios can be realized, independently of the centre distance. In Europe mainly roller chains according to DIN ISO 606 (ex DIN 8187) are used.

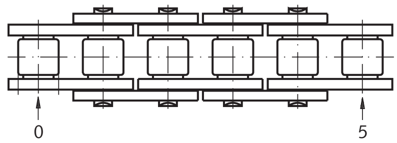
Selection, Dimensioning and Efficiency
The the performance diagram and the calculation given on page 36 can serve to determine a chain drive with a prospective service life of hours. With proper lubrication the degree of efficiency is approx. 98 %.

Note Regarding the Breaking Load
The DIN ISO 606 (ex DIN 8187) specifies the minimum breaking load for each chain size. When this breaking load is exceeded, the chain is destroyed. Roller chains should be loaded with no more than one sixth of the stated breaking load, to avoid an early plastic deformation (permanent elongation).

Mounting and Maintenance
The shafts must be set in parallel. The sprockets must be aligned. The slack span should amount to approx 1% to max 2% of the centre distance. For this purpose we recommend mounting a chain tensioner.

Large centre distances require a support (guide rail) to be used. Chain drives must always be well lubricated. Lubricants and lubrication methods depend on the specific application.

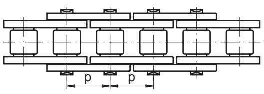
Determining the Chain Length
The chain length can be stated in meter or mm, or by stating the number of links. In the latter case, inner **and** outer links are counted.
The chains are usually delivered open. The last link on both ends is an inner link.
This leads to an uneven number of links.
If a straight connecting ling is used, the closed chain strand has an even number of links. Example of an open chain (without connecting link) with 5 links:



An uneven number of links in a closed strand can only be realized by using a cranked link.
Note: this link reduces the load bearing capacity of the chain by 20%.

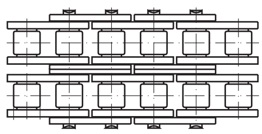
Roller Chains in Catalogue Version

Single-Strand (Simplex-) Roller Chains:
Either as standard version made from special, high-quality steel, or lubrication-free, with additional nickel plating, or in stainless steel.



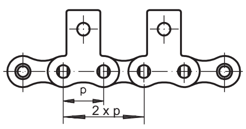
page 37

Double-Strand (Duplex-) Roller Chains:
As standard version made from special, high-quality steel.
The transmission power is 1.75 times higher than single-strand.



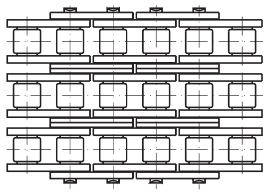
page 43

Single-Strand Chains with Attachments:
In stock as chain with straight and bent attachments, one-sided or two-sided attached to the outer link, as one-whole or two-hole version, with a distance of 2 x p, 4 x p and 6 x p. Other distances available at short notice on request.



page 46

Triple-Strand (Triplex-) Roller Chains:
As standard version made from special, high-quality steel. The transmission power of this chain is 2.5 times higher than single-strand.



page 45

Sprockets in Catalogue Version

Sprockets for roller chains DIN ISO 606 (ex DIN 8187), with main dimension according to DIN 8192 (tooth profile DIN 8196) as well as various tensioning elements are available in large variety straight from stock. Other sprockets and custom-made products on request.

Overview sprockets: page 60.
Mounting options: page 860.

Notes Regarding the Calculation

The dimensioning of a roller-chain drive can be worked out using the performance diagram below.
This diagram shows the calculated transmittable power for a service life of 15,000 hours.
The calculated performance is worked out by multiplying the power to be transmitted with the corrective factors stated below.
The performance diagram is non binding. It is based on empirical values and set at optimum conditions. Special operational conditions can shorten the service life of the chain.

Calculation of the Transmittable Power P_B

$P_B = P_N \times K_1 \times K_2 \times K_3 \times K_4$

P_B: Calculated Transmittable Power [kW]

P_N: Input Power [kW]

K_1: Factor Considering the Number of Teeth (Table 1)

K_2: Factor Considering the Transmission (Table 2)

K_3: Factor Considering the Centre Distance (Table 3)

K_4: Factor Considering the Type of Load (Table 4)

Table 1: Corrective Factor K_1 Considering the Number of Teeth of the Smaller Sprocket

Number of Teeth	11	13	15	17	19	21	23	25	31	37
Factor K_1	2.5	2.0	1.75	1.55	1.35	1.2	1.1	1.0	0.78	0.64

Table 2: Corrective Factor K_2 Considering the Transmission Ratio

Transmission Ratio	1 : 1	2 : 1	3 : 1	5 : 1
Factor K_2	1.22	1.08	1	0.92

Table 3: Corrective Factor K_3 Considering the center distance

Center Distance	10 x p	20 x p	40 x p	80 x p
Factor K_3	1,3	1,15	1	0,85

Table 4: Corrective Factor K_4 Considering the Type of Load (Operating Factor)

	Output (Type of Load of Driven Machine)		
Input	Uniform	Medium Shocks	Strong Shocks
Uniform	1.0	1.4	1.8
Light Shocks	1.1	1.5	1.9
Medium Shocks	1.3	1.7	2.1

Performance Diagram: Calculated Transmittable Power P_B