

Chain Drive Design

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project

Part/Position: no real part

Prepared by: Sample, not released

Open two-sprocket drive, B-series roller chain (DIN 8187)

Overall assessment: OK

Inputs

Load	P = 3 kW
Small sprocket speed n1	1,450 min ⁻¹
Target ratio i	3
Chain	08B, 1-strand
Desired centre distance a0	500 mm
Service factor KA	1

Chain and tooth counts

Chain pitch p	12.7 mm
Tooth counts z1 / z2	19 / 57
Actual ratio i	3
Large sprocket speed n2	483.3 min ⁻¹
Chain mass q	0.7 kg/m
Minimum breaking load FB	18 kN

Geometry and kinematics

Pitch diameter d1	77.16 mm
Pitch diameter d2	230.54 mm
Number of links calculated X0	117.67
Number of links selected X (even)	118
Chain length L	1,498.6 mm
Exact centre distance a	502.13 mm
Chain speed v	5.831 m/s
Tooth engagement frequency	459.2 Hz
Polygon effect non-uniformity	1.36 %

Power and tension forces

Design power PB = P times KA	3 kW
Guideline power PR	6.43 kW
Working tension Ft	514 N
Centrifugal tension Fc	23.8 N
Total tension Fges	538 N

Evaluation criteria

Criterion	Value	Limit	Status
Polygon effect (z1 >= 19 recommended)	1.36 %	-	● within guideline
Guideline utilisation PB/PR	47 %	<= 100 %	● OK
Static safety factor S_stat	33.4	>= 7	● OK

Notes and calculation basis

Lubrication recommendation based on chain speed ($v = 5.8 \text{ m/s}$): oil bath lubrication.

B-series roller chain per ISO 606 / DIN 8187, open two-sprocket drive. Calculation path: ratio and tooth counts, pitch diameters, chain speed, number of links (rounded to an even number) with the exact centre distance, polygon effect, guideline power rating via an ACA approximation with a multi-strand factor, and static safety against the minimum breaking load. Simplifications: no manufacturer chart, span tension from sag neglected, no bearing pressure check included - guideline sizing, not a complete verification.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.