

# ZM 1

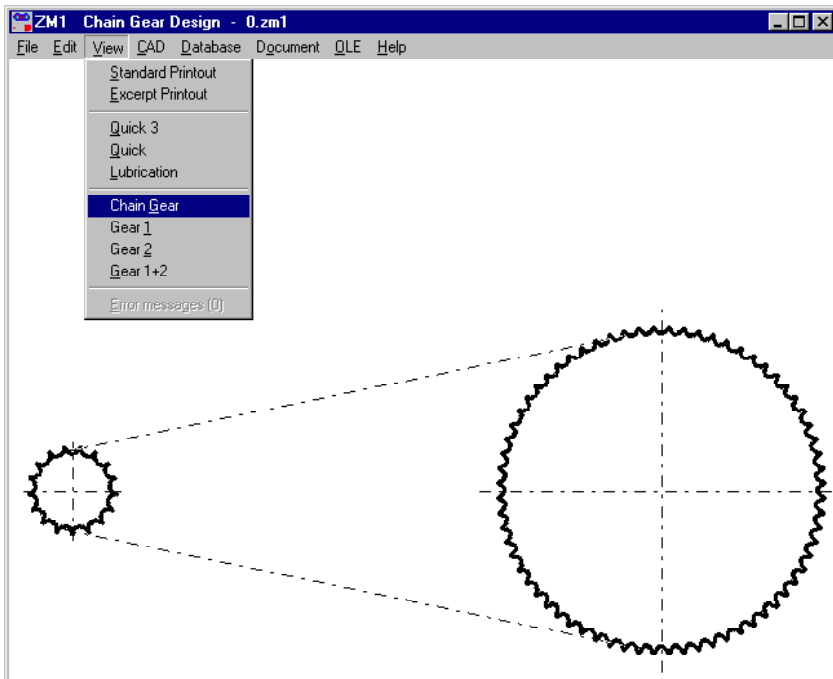


www.hexagon.de

## Roller Chain Gears

Software for Windows

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### Application

ZM1 calculates dimensions and strength of chain gears according to Niemann/Winter and in accordance with DIN 8187/88. Roller chains can be selected from the data base provided.

### Dimensioning

ZM1 searches the data base and suggests an appropriate chain based on ratio relationship, power and drive speed. ZM1 determines the next integer number of links for the chain and calculates the exact dimensions based on the approximate center distance.

### Re-Calculation

The required chain is selected from the data base. ZM1 calculates the dimensions for chain and chain wheels from the number of teeth of the pinion and gear wheel, and also the approximate center distance.

The screenshot shows a data table titled "roller chains acc. to DIN 8187/8188/8181/8154/8164" with the file path "(C:\VOL3\APPS\TP\zm1 disk\ezm1 chain.dbf)". The table has columns for NR, P, B1, DR, E, G, L1, FB1, A1, Q1, and L. The row for NR 28A is highlighted.

NR	P	B1	DR	E	G	L1	FB1	A1	Q1	L
08A	12,7	7,85	7,95	14,38	12	17,8	14,1	0,44	0,6	
10B	15,875	9,65	10,16	16,59	14,73	19,6	22,4	0,67	0,97	
10A	15,875	9,4	10,16	18,11	15	21,8	22,2	0,7	1	
12B	19,05	11,68	12,07	19,46	16,13	22,7	29	0,89	1,25	
12A	19,05	12,57	11,91	22,78	18	26,9	31,8	1,05	1,5	
16B	25,4	17,02	15,88	31,88	21,08	36,1	60	2,1	2,7	
16A	25,4	15,75	15,88	29,29	24,1	33,5	56,7	1,78	2,6	
20B	31,75	19,56	19,05	36,45	26,42	43,2	95	2,96	3,6	
20A	31,75	18,9	19,05	35,76	30,1	41,1	88,5	2,61	3,7	
24B	38,1	25,4	25,4	48,36	33,4	53,4	160	5,54	6,7	
24A	38,1	25,22	22,23	45,44	36,2	50,8	127	3,92	5,5	
28A	44,45	25,22	25,4	48,87	42,2	54	172,4	4,7	7,5	
28B	44,45	30,99	27,94	59,56	37,08	65,1	200	7,39	8,3	
32B	50,8	30,99	29,21	58,55	42,29	67,4	250	8,1	10,5	
32A	50,8	31,55	28,58	58,55	48,2	65,5	226,8	6,42	9,7	
40B	63,5	38,1	39,37	72,29	52,96	82,6	395	12,75	16	
40A	63,5	37,85	39,68	71,55	60,3	80,3	353,8	10,85	15,8	
48B	76,2	45,72	48,26	91,21	63,88	99,1	560	20,61	25	
48A	76,2	47,35	47,63	87,83	72,3	95,5	510,3	16,07	22,6	
56B	89,9	53,34	53,98	106,6	77,85	114	850	27,9	35	
64B	101,6	60,96	63,5	119,89	90,17	130	1120	36,25	60	
72B	114,3	68,58	72,39	136,27	103,63	147	1400	46,19	80	

### Strength Calculation

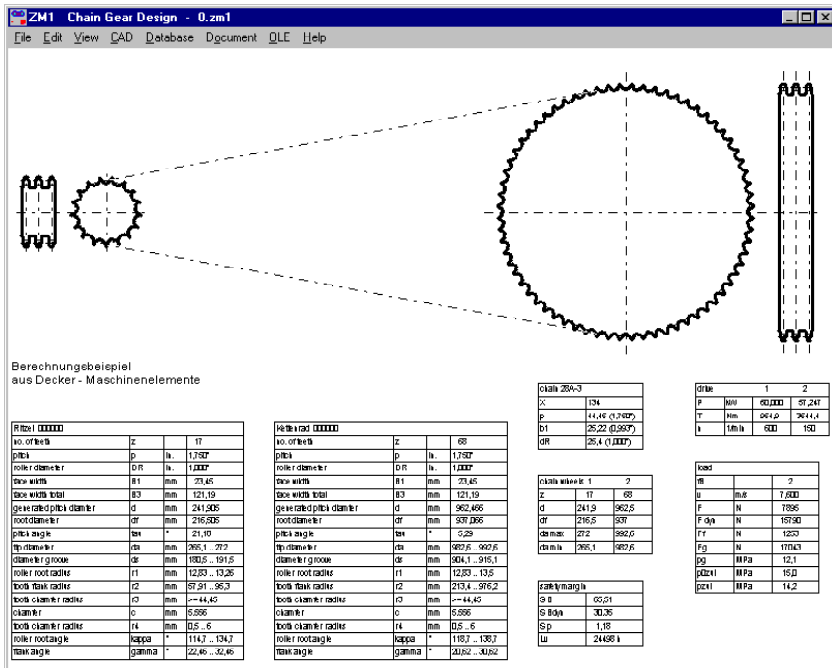
ZM1 calculates the static and dynamic breakage safety margin as well as the safety against permissible surface pressure. ZM1 determines the standard value of the joint surface pressure for roller chains in accordance with DIN 8187/88. The life expectancy (Lv) of the chain is calculated (according to Niemann) from the joint surface pressure.

### Roller Chains

ZM1 calculates single, double or triple roller chains. The data base supplied with the program contains the necessary dimensions and strength values for all sizes in accordance with DIN 8187 (European design type) and DIN 8188 (American design type).

### Efficiency

Loss of power and efficiency are calculated from joint friction and dimensions.



## Lubrication

ZM1 determines the recommended type of lubrication from speed-pitch chart according to Niemann. The calculated operating point is marked in the diagram.

## Text Printout

The calculation results and input data can be printed on any Windows printer. Alternatively, ZM1 can generate a HTML or TXT file, or directly load the results with MS-Excel.

## Quick View

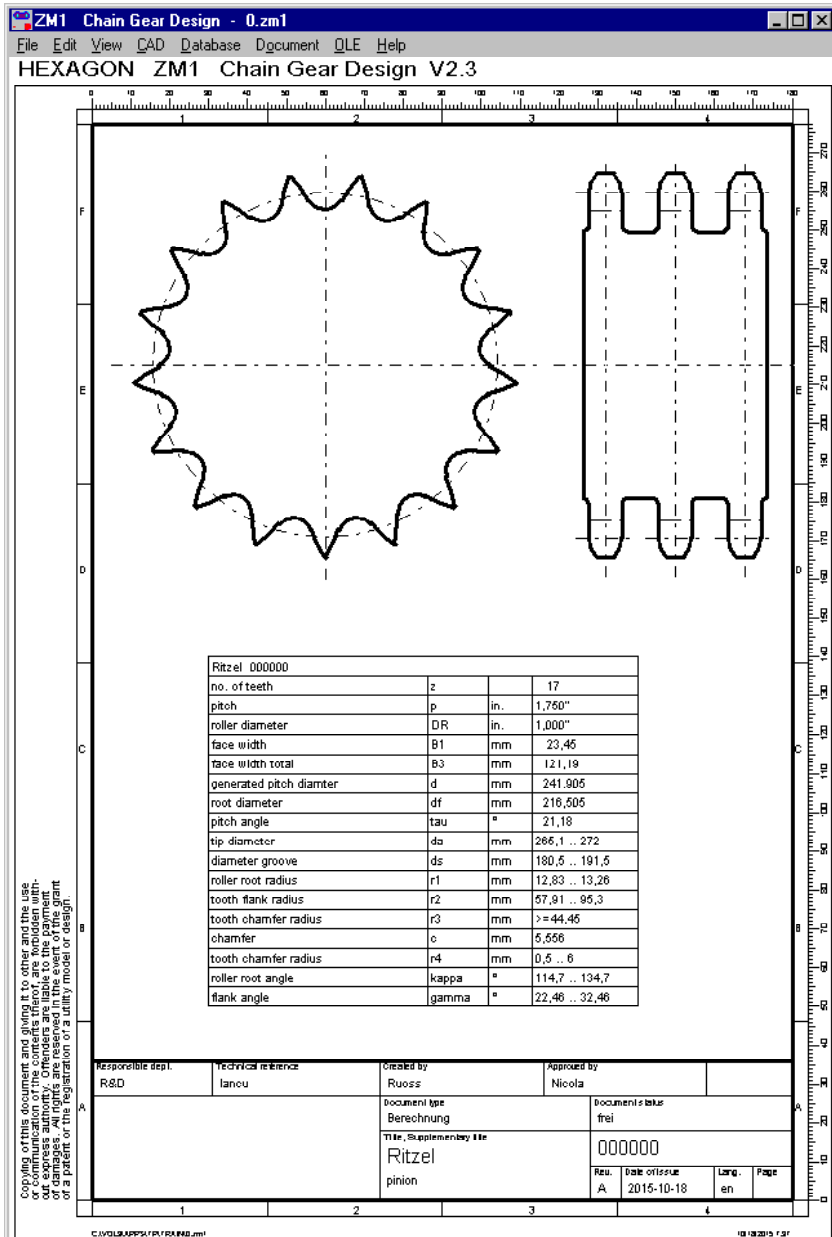
Quick views show calculation results with drawings and diagrams altogether on one screen.

## True-Scale Drawings

Drawings of sprocket and chain wheels can be displayed on screen, printed out or exported as true-scale drawings to CAD via DXF or IGES interfaces.

## Production Drawings

ZM1 generates a complete manufacturing drawing of the chain sprocket and chain wheel, with drawings and tables for the chain drive, and ISO 7200 data field. Drawing info and modifications can be entered in the program. The drawings may be printed directly, or loaded into CAD via DXF or IGES interface.



## CAD Interface

Drawings and diagrams can be exported to CAD via the DXF or IGES interfaces.

## HEXAGON Help System

As with all HEXAGON programs ZM1 can provide you with a help text and auxiliary picture for each input. Help texts and auxiliary pictures can be modified and appended by the user as required. When error messages appear you can have a description and remedy suggestion displayed.

## Units

ZM1 can be switched between metric units (mm, N,MPa) and imperial units (inch, lbf, psi).

## System Requirements

ZM1 is available as 32-bit app or as 64-bit app for Windows XP, Vista, Windows 7, 8, Windows 10.

## Scope of Delivery

Software with user manual (pdf), non-expiring license for unlimited time use with update rights.

## Guarantee

HEXAGON gives a 24 month guarantee on full functionality of the software. We provide help and support by email and hotline without extra charge. HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.