

# GEO1+



www.hexagon.de

## Software for Calculation of Cross-Sections and Profiles

for Windows

© Copyright 1994-2018 by HEXAGON Software, Kirchheim, Berlin

T.S. Trennfuge Pleisselauge B4 - VDI 2230

Cross section area	A	mm²	208,4
Area moment of inertia 1.grd.	Hy	mm²	2628
Area moment of inertia 1.grd.	Hx	mm²	1348
Ax. Area moment of inertia 2.grd.	Iy	mm⁴	45871
Ax. Area moment of inertia 2.grd.	Iz	mm⁴	11221
Mix. Area moment of inertia 2.grd.	Iyz	mm⁴	17048
Pol. Area moment of inertia 2.grd.	Ipo	mm⁴	57083
Ctr. of grav. coordinates	ya	mm	6,468
Ctr. of grav. coordinates	za	mm	12,80
Ax. Area moment of inertia ctr.gv.	Iyza	mm⁴	12793
Ax. Area moment of inertia ctr.gv.	Izaya	mm⁴	2501
Mix. Area moment of inertia ctr.gv.	Iyza	mm⁴	63,00
Pol. Area moment of inertia ctr.gv.	Ips	mm⁴	15284
Main area moment of inertia 1	I1	mm⁴	12793
Main area moment of inertia 2	I2	mm⁴	2501
Main angle	phi	°	-0,356
Mass	m	kg	1,826
Mass moment of inertia	Ja	kgm²	0,000119
Mass moment of inertia	Jo	kgm²	0,000445

### GEO1+

GEO1+ software calculates cross-section areas, surface moment of inertia, center of gravity and mass moment of inertia of any cross-section made up of up to 2000 lines and arcs.

GEO1+ contains an additional database with the most common profile cross-sections according to DIN, and also generates the coordinates of standard profiles like polygon, tube, sectors of circle.

### Geometry Input

The contour is defined by input of the y and z coordinates of the first and last point in the xyz coordinate system. For arcs the opening angle is also required. The outer contour is entered anti-clockwise, apertures and boreholes are entered clockwise. Coordinate positions are saved in a table, import via clipboard from Excel worksheet or other Windows programs is possible.

The contour can also be imported as a polyline from a DXF file, or drawn directly in GEO1+.

RESULTS Profil 1

Cross section area	A	mm²	57,75
Area moment of inertia 1.grd.	Hy	mm²	408,3
Area moment of inertia 1.grd.	Hx	mm²	301,7
Ax. Area moment of inertia 2.grd.	Iy	mm⁴	3492
Ax. Area moment of inertia 2.grd.	Iz	mm⁴	1843
Mix. Area moment of inertia 2.grd.	Iyz	mm⁴	2080
Pol. Area moment of inertia 2.grd.	Ipo	mm⁴	5335
Ctr. of grav. coordinates	ya	mm	5,224
Ctr. of grav. coordinates	za	mm	7,07
Ax. Area moment of inertia ctr.gv.	Iyza	mm⁴	000
Ax. Area moment of inertia ctr.gv.	Izaya	mm⁴	287,0
Mix. Area moment of inertia ctr.gv.	Iyza	mm⁴	72,95
Pol. Area moment of inertia ctr.gv.	Ips	mm⁴	872,0
Main area moment of inertia 1	I1	mm⁴	820
Main area moment of inertia 2	I2	mm⁴	251,9
Main angle	phi	°	11,87

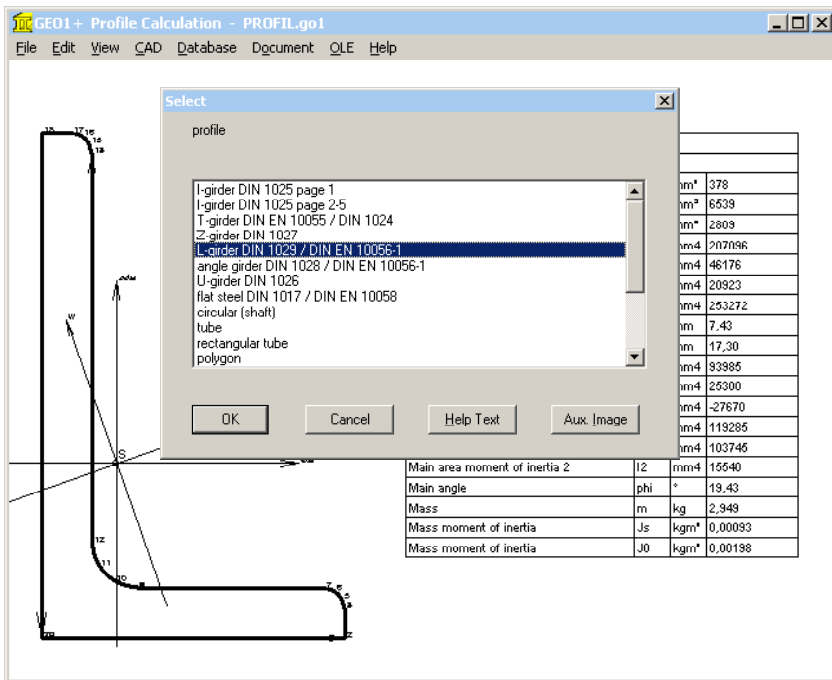
### Calculation

GEO1 calculates the cross-section area, the area moment of inertia 1st and 2nd grade, mixed and polar area moment of inertia in relation to coordinate origin and center of gravity.

GEO1 also calculates the main area moments of inertia and the main gravity angle of the coordinate system. The flat surface becomes a body by entering a contour length Lx and the material density. In this case GEO1 also calculates volume, mass and mass moment of inertia relative to both, center of gravity and coordinate origin. For the calculation, arcs and circles are converted into polygons, the accuracy can be set.

### Graphic Output

The defined contour is displayed on screen along with the coordinates, center of gravity and main axes. The most important result data is shown in a table. Drawings and tables can be printed on each Windows printer, or exported to CAD.



## GEO1+ Profile Database

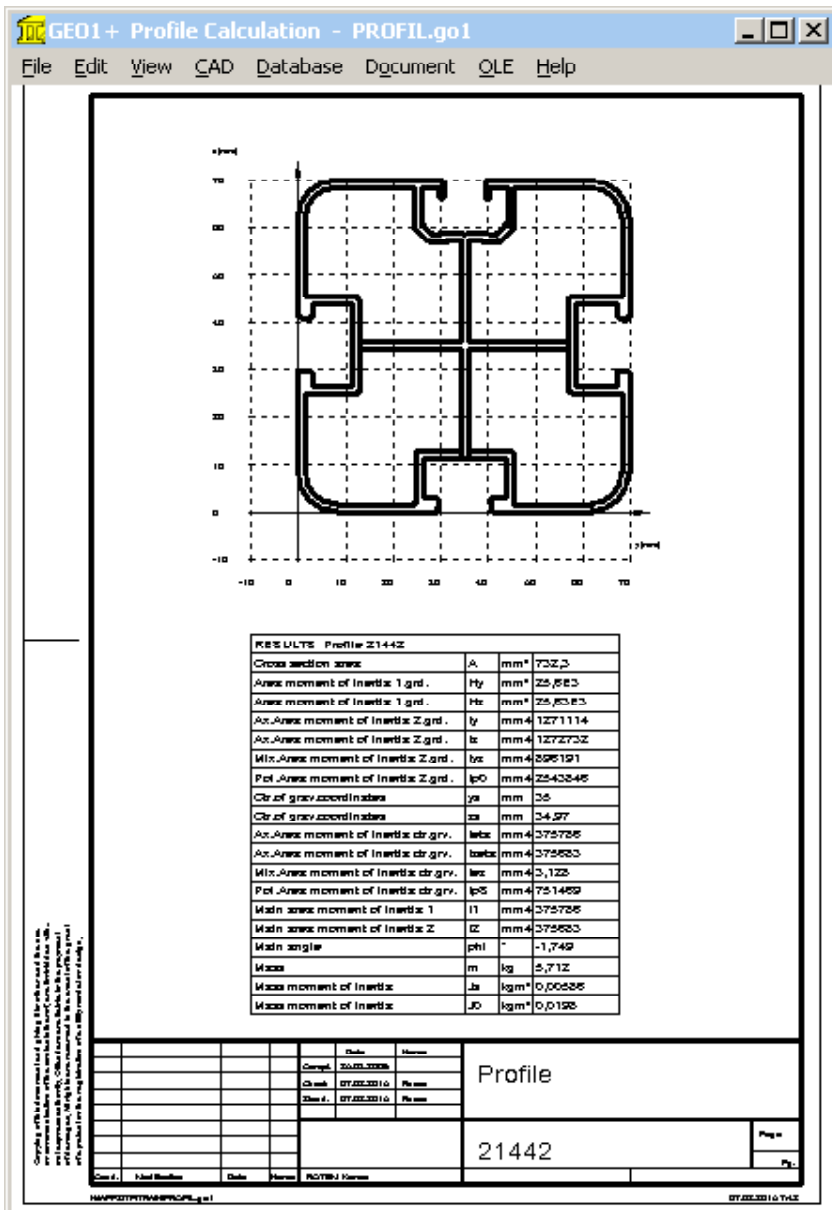
The extended Version GEO1+ contains databases with standard profiles according to DIN: T profiles to DIN 1024, double-T to DIN 1025, L-profile to DIN 1027, angular profile to DIN 1028, U profile to DIN 1026 and rectangular profile to DIN 1017 can be selected from GEO1+ database. GEO1+ generates coordinates from the database values and calculates cross-section.

## Standard Profiles

For circular profile (shaft), tube, rectangular tube, polygon, polygon tube, sector of circle, sector of annulus, sector of annulus with bore, rectangle with bore, and circle with eccentric bore, just enter inner and outer width, diameters etc. and GEO1+ calculates coordinates and cross-section.

## Coordinate transformation

When coordinates have been saved in a table, you have all possibilities to shift, enlarge or reduce, rotate or mirror the cross-section profile.



## CAD Interface

Geometry and result tables are generated by GEO1 as DXF or IGES files. This enables export to CAD systems or word-processing programs. On the other hand the contour need not be input in GEO1, but can be imported as a DXF file if the contour has been drawn as a polyline (POLYLINE command).

## HEXAGON Help System

For each input there is a help text and auxiliary picture available in the HEXAGON Help System. When error messages occur you can have a description and remedy suggestion for the error displayed.

## Import Formats

DXF, DBF, Excel, GO1.

## Export Formats

DXF, IGES, STL, HTML, TXT, DBF, Excel, GO1.

## System Requirements

GEO1+ is available as 32-bit app or as 64-bit app for Windows 7 / Windows 8 / Windows 10.

## Scope of Delivery

GEO1+ program with database files, example applications and help images, user manual (pdf), non-expiring license for unlimited time use.

## Software Maintenance

HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.

## 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.