

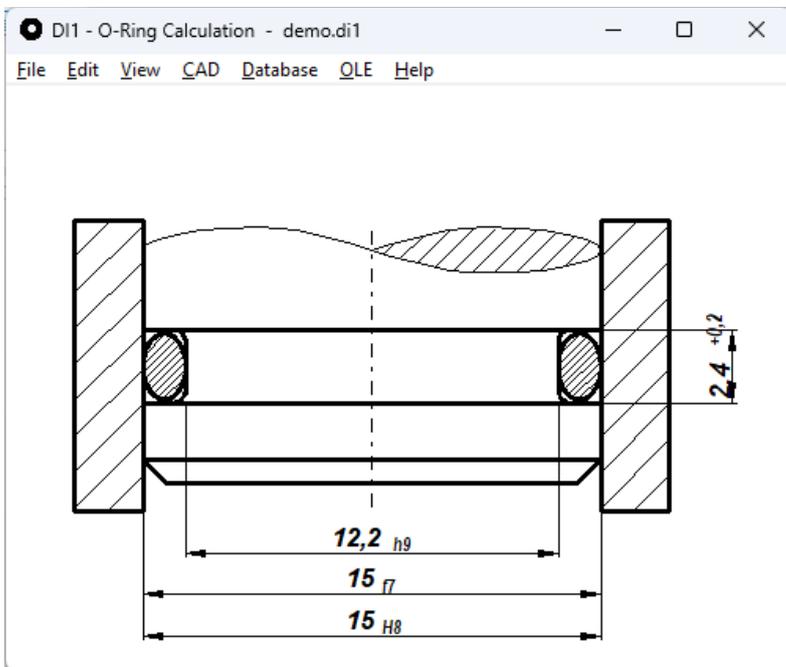
# DI1



## O-Ring Design

for Windows

© Copyright 2012-2024 by HEXAGON Software, Kirchheim, Berlin, Neidlingen



### Application

- DI1 calculates O-Ring seals for these applications:
- radial outer sealings (piston/cylinder)
  - radial inner sealings (shaft/cylinder)
  - axial sealings (case)

### Calculation

DI1 calculates squeeze of the o-ring under consideration of tolerances, reduction of cross section, concentric and eccentric position.

### Database

The O-Ring database delivered with DI1 includes all the sizes according to DIN ISO 3601-1 (class A and B) for industrial applications ( $d_2 = 1.78 / 2.62 / 3.53 / 5.33 / 6.99$  mm) and sizes for aeronautics ( $d_2 = 1.8 / 2.65 / 3.55 / 5.3 / 7.0$  mm). You can modify and extend database records.

CS	STANDARD	TIDYN	TISTAT	B1	HAX	BMAX	R1	D1H
0,5		0	0,35	0,8	0,35	0,8	0,2	
0,74		0	0,5	1	0,5	1	0,2	
1		0	0,7	1,4	0,7	1,4	0,2	
1,02	ISO3601-1	0	0,7	1,4	0,7	1,4	0,2	
1,2		0	0,85	1,7	0,85	1,7	0,2	
1,25		0	0,9	1,7	0,9	1,7	0,2	
1,27	ISO3601-1	0	0,9	1,7	0,9	1,7	0,2	
1,3		0	0,95	1,8	0,95	1,8	0,2	
1,42		0	1,05	1,9	1,05	1,9	0,2	
1,6		1,25	1,1	2	1,1	2,1	0,3	
1,62	ISO3601-1	1,25	1,1	2	1,1	2,1	0,3	
1,6		1,3	1,2	2,1	1,2	2,2	0,3	
1,63		1,3	1,2	2,1	1,2	2,2	0,3	

		min		max	
gap	s	mm	0,008	0,030	
gap ecc	s ecc	mm	0,000	0,061	
Groove depth incl. gap	r	mm	1,400	1,435	
Groove depth incl. gap ecc	r ecc	mm	1,383	1,468	
Reduction cross sect.	QV	%	0,8	3,0	
Squeeze adm	sq adm	%	13,0	28,1	
Squeeze excl. QV	sq-	%	15,6	24,7	
Squeeze excl. QV	sq-	mm	0,27	0,46	
squeeze	sq	%	13,0	24,2	
squeeze	sq	mm	0,21	0,45	
Squeeze ecc	sq ecc	%	11,1	25,2	
Squeeze ecc	sq ecc	mm	0,18	0,47	
Elongation d1 adm	el adm	%	0,5	8,0	
Elongation d1	el	%	0,8	4,3	
Groove fill	gf	%	80,0	82,9	

O-Ring	nom	min	max
d1	mm	11,89 ± 0,19	11,700 / 12,080
d2	mm	1,78 ± 0,06	1,700 / 1,880
d2 QV	mm		1,849 / 1,848

Warning: sq < 13,0 % !  
Warning: sqe < 13,0 % !

### Dimensioning

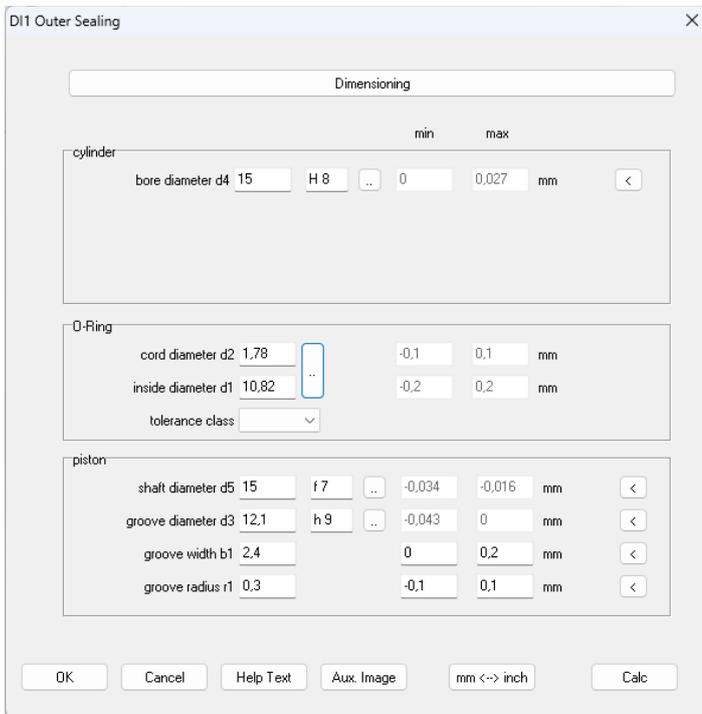
For Dimensioning, enter the main mounting dimensions, and DI1 searches a proper O-ring from database.

### Recalculation

For Recalculation, enter all dimensions and tolerances, and DI1 calculates squeeze and strain. You can also calculate non-standard o-ring seals.

### Limits

Results are checked for min and max values of squeeze, elongation, compression strain and groove filling. If overranged, DI1 reports error messages. In a diagram you can see how your O-ring design lays in the admissible squeeze zone.



### Tolerances

You can directly input ISO tolerance terms according to DIN EN ISO 286, and DI1 converts into dimensions and tolerances.

### Text Printout

Calculation results may be printed, saved as TXT or HTML file, or exported to MS-Excel.

### Tables and Drawings

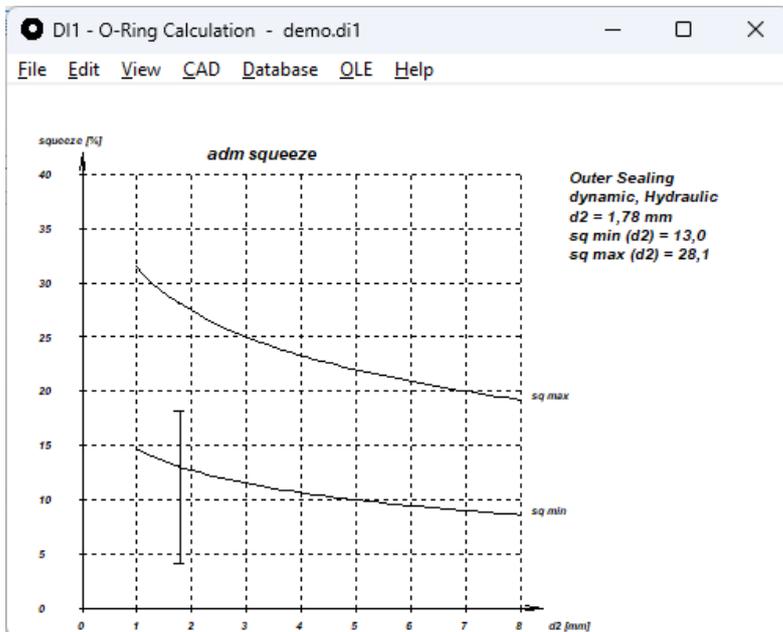
DI1 generates true-scale drawings of O-Ring design which may be exported to CAD via DXF or IGES file. Tables with dimensions and tolerances are also generated.

### Quick View

Quick View displays drawings and diagrams on one screen.

### Interfaces

Drawings and diagrams can be saved as DXF or IGES file to be loaded with CAD programs. The OLE interface lets you import/export data from/ to Excel.



### User Interface

The dialogue windows of DI1 allow even the less experienced PC user to find his way around the program quickly. DI1 provides users with a help text wherever they are in the program. When the demo mode is selected, DI1 runs through a demo in which an example calculation is performed. DI1 contains auxiliary pictures with geometrical signs and formulas used by the program.

### Units

DI1 can be switched between metric units (mm, N, MPa) and imperial units (inch, lbf, psi).

### Export Formats

DXF, IGES, HTML, TXT, DBF, Excel, DI1.

### Import Formats

TXT, DBF, Excel, DI1.

### System Requirements

DI1 is available as 32-bit app or as 64-bit app for Windows 11, Windows 10, Windows 7.

### Scope of Delivery

Program with user manual (pdf), example applications and help images, non-expiring license for unlimited time use with update rights.

### 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 without extra charge.

