



# Gland dimensions for O-Rings

Cross-section $d_2$	Gland depth $t$ (mm)			Gland width in mm $\begin{pmatrix} +0.2 \\ 0 \end{pmatrix}$			Radius $r_1$ mm
	Static	dyn. hyd.	dyn. pneu.	$b$ no Back-Ring	$b_1$ with 1 Back-Ring	$b_2$ with 2 Back-Rings	
1.00	0.65	0.75	0.80	1.4	2.4	3.4	0.2-0.4
1.50	1.05	1.20	1.25	2.0	3.0	4.0	0.2-0.4
1.80	1.30	1.45	1.55	2.4	3.4	4.4	0.2-0.4
2.00	1.50 $\pm 0.05$	1.65 $\pm 0.02$	1.75 $\pm 0.02$	2.7	3.7	4.7	0.2-0.4
2.50	1.95	2.10	2.20	3.4	4.9	6.4	0.2-0.4
2.65	2.05	2.25	2.35	3.6	5.1	6.6	0.2-0.4
3.00	2.40	2.55	2.70	4.2	5.7	7.2	0.2-0.4
3.50	2.80	3.05	3.20	4.8	6.3	7.8	0.3-0.6
3.55	2.85 $\pm 0.07$	3.10	3.25	4.8	6.3	7.8	0.3-0.6
4.00	3.25	3.50 $\pm 0.05$	3.65 $\pm 0.05$	5.4	6.9	8.4	0.3-0.6
5.00	4.15	4.45	4.65	6.8	8.8	10.8	0.3-0.6
5.30	4.40 $\pm 0.10$	4.70	4.90	7.2	9.2	11.2	0.6-1.0
7.00	5.85	6.25	6.55	9.6	12.1	14.6	0.6-1.0

Surface area A	<b>static</b> $R_a = 1.6 \mu\text{m}$ and $R_{\text{max}} = 6.3 \mu\text{m}$ load area $t_p > 50\%$	<b>dynamic</b> $R_a = 0.4 \mu\text{m}$ and $R_{\text{max}} = 1.6 \mu\text{m}$ load area $t_p > 50\%$
Surface area B	<b>static</b> $R_a = 3.2 \mu\text{m}$ and $R_{\text{max}} = 12.5 \mu\text{m}$ load area $t_p > 50\%$	<b>dynamic</b> $R_a = 1.6 \mu\text{m}$ and $R_{\text{max}} = 6.3 \mu\text{m}$ load area $t_p > 50\%$

Minor deviations between the tolerances stated in our O-ring Handbook 5705 are allowable within ISO-tolerance classes which depend on the diameter.

It is recommended that the gland dimensions and tolerances in this table be used when ever possible.

## Tolerances

Parker precision O-rings are manufactured to very fine tolerances. The allowable tolerances are standardized under DIN 3771 and ISO 3601/1 (up to a cross-section

of 7 mm and an inside diameter of 670 mm). The corresponding tolerances make up the following table.

Cross-section Tolerances								
Cross-section (mm) up to	1.80	2.65	3.55	5.30	7.00	8.00	10.00	12.00
Allowable tolerance (mm)	$\pm 0.08$	$\pm 0.09$	$\pm 0.10$	$\pm 0.13$	$\pm 0.15$	$\pm 0.18$	$\pm 0.21$	$\pm 0.25$

  

Inside diameter Tolerances										
Inside diameter (mm)	1.80 to 6.30	6.70 to 11.20	11.8 to 21.2	22.4 to 40.0	41.2 to 80.0	82.5 to 160	165 to 300	300 to 650	670 to 910	910 to 1180
Allowable tolerance (mm)	$\pm 0.13$ mm	$\pm 0.16$ mm	$\pm 0.19$ mm	$\pm 0.95$ %	$\pm 0.86$ %	$\pm 0.78$ %	$\pm 0.74$ %	$\pm 0.67$ %	$\pm 0.80$ %	$\pm 0.55$ %
of corresponding inside diameter										

The tolerances laid out in the table are specific for Nitrile Butadiene Rubber O-rings with hardness 70 IRHD. For other compounds, differing material shrinkage factors can lead to different tolerances and designs. If

with variation of compound and hardness the ability to function is affected, it is necessary to manufacture a corresponding mould in order to remain within the tolerance band.

## Example Order:

For Parker Hannifin precision O-rings  
 Inside diameter: 14.00 mm  
 Cross-section: 1.78 mm  
 Compound: N 674-70 (NBR 70 Shore A)  
**O-Ring, 14 x 1.78, 2-015, N 674-70**

## Surface Imperfections

The allowable surface imperfections are standardized in DIN 3771 and ISO 3601. The Parker standard agrees substantially with these recommendations.