



X-Rings / Quad Rings

For superior sealing performance

Small things make GREAT things possible

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About M Seals

Expert Sealing Solutions Designed for Industrial Performance.

M Seals is an international company founded in 1963 in Denmark, with offices in Sweden, the UK, Poland, Finland and China. Our many years of experience and knowledge make us a preferred sealing solutions supplier for customers worldwide.

We specialise in the design, manufacture and supply of sealing components and offer a comprehensive range of products tailored to different applications and industries. Our products range from standard seals, with thousands in stock for next day delivery, to customised solutions that meet specific requirements and special environmental conditions.

In 2007, M Seals became a part of Diploma PLC, giving us access to extensive resources and support. This affiliation allows us to offer expert advice, innovative solutions, and high-quality service, benefiting from shared knowledge and best practices within the group. This ensures we stay at the forefront of industry developments and deliver exceptional value to our customers.

Knowledge

We have developed extensive knowledge of seals and their applications, including their composition, lifetime and suitability for a specific job. The right choice of seal minimises the risk of unexpected breakdowns, so our team can advise on the best solution to save you from potential future issues.

We can make recommendations from our wide range of stocked seals or work with your specific requirements to design a bespoke sealing solution. Our team use their technical knowledge and experience to provide the best service to our customers.

Quality Assurance

We ensure high-quality sealing products through careful control and evaluation, and we are proud to have achieved several ISO certifications, including ISO9001:2015, ISO14001:2015, ISO45001:2018 and AS EN 9120:2018.

We also conform to many industry specific regulations, ensuring our sealing products comply to specific requirements and full traceability is maintained throughout the product lifecycle.



General Elastomer Guide

	NBR	EPDM	CR	FPM	VMQ	FEP	FFKM
General Properties							
Hardness range Shore A	40-90	50-90	40-80	60-90	40-80	75-95	65-95
Upper continuous operating temp. °C	+100°	+120°	+100°	+200°	+200°	+205°	+326° 1)
Lower ongoing operating temp. °C	-40°	-50°	-40°	-30°	-60°	-60°	-42° 1)
Dynamic operating and wear resistance	••••	••••	•••	•••	•	••	•••
Compression set	•••	••	•••	•••	••••	•	•••
Electrical Properties	••	••••	•••	••	••	•••	••
Fluid Compatibility							
Aldehydes	•	•••	•	•	•••	•••	••••
Alkanes	••	••••	•	•	••	••••	••••
Alcohols	•••	•••	•••	•••	•••	••••	••••
Amines	•	•••	•••	•	••	••••	••• 1)
Animal oils and fats	••••	•••	•••	••••	•••	••••	••••
Pale solutions	•	••••	•	••••	•••	••••	•••• 1)
Diesel	••••	•	••	••••	•	••••	••••
Esters - alkyl phosphate	•	••••	•	•	•••	••••	••••
Esters - aryl phosphate	•	••••	•	••••	•••	••••	••••
Liquefied gas, LPG	••••	•	•••	••••	••	••••	••••
Gas permeability	••	••	••	••••	•	••	••••
Ketones	•	••••	•	•	•	••••	••••
Hydrocarbon fuels - aliphatic	••••	•	••	••••	•	••••	••••
Hydrocarbon fuels - aromatic	••	•	•	••••	•	••••	••••
Air, compressed	••••	••••	••••	••••	••••	••••	••••
Petroleum	••••	•	••	••••	•	••••	••••
Crude oil	•••	•	•	••••	•	••••	••••
Silicon oil	••••	••••	••••	••••	•	••••	••••
Lubricating oils - mineral	••••	•	•••	••••	••	••••	••••
Lubricating oils - synthetic (diester)	•••	•	••	••••	•	••••	••••
Acid - inorganic	••	••	••	••••	•••	••••	••••
Acid - organic	••	•••	••	••	••	••••	••••
Toluol (Toluene)	•	•	•	•••	•	••••	••••
Trichlorethylene	•	•	•	•••	•	••••	••••
Water vapor	•	••••	••	• 1)	•	••••	•••• 1)
Vegetable oils	••••	••	•	••••	•••	••••	••••
Aging - oxygen	••	•••	•••	••••	•••	••••	••••
Aging - Ozon / deterioration ozone	•	••••	•••	••••	•••	••••	••••
Aging - Weather	•	••••	•••	••••	•••	•••	••••
Ether	•	••	•	•	•	••••	••••

1) Depending on the compound ®) A registered trademark of DuPont Performance Elastomers



Suitability/Case	Increase in Volume %	Reduction in Hardness IHRD	Influence on Physical Properties
•••• Excellent	< 10 ²⁾	Max. 10 ²⁾	None or little ²⁾
••• Very Good	10-30 ²⁾	Max. 20 ²⁾	Some ²⁾
•• Fair	30-60 ²⁾	Max. 30 ²⁾	Medium ²⁾
• Poor	>60 ³⁾	Max. 30 ³⁾	Substantial ³⁾

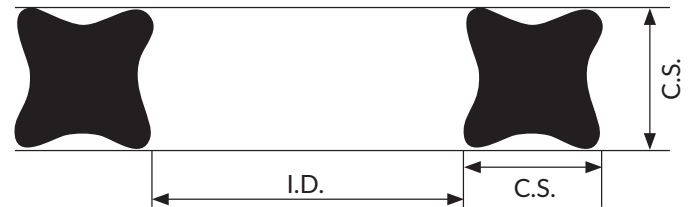
Introduction to X-Rings

The X-ring is a symmetrical 4 lobe seal, with a square fitting cross section. It is similar to 4 tangent O-Rings.

The inner diameter (I.D) and the width of the cross section (C.S.) are the dimensional characteristics of the X-ring.

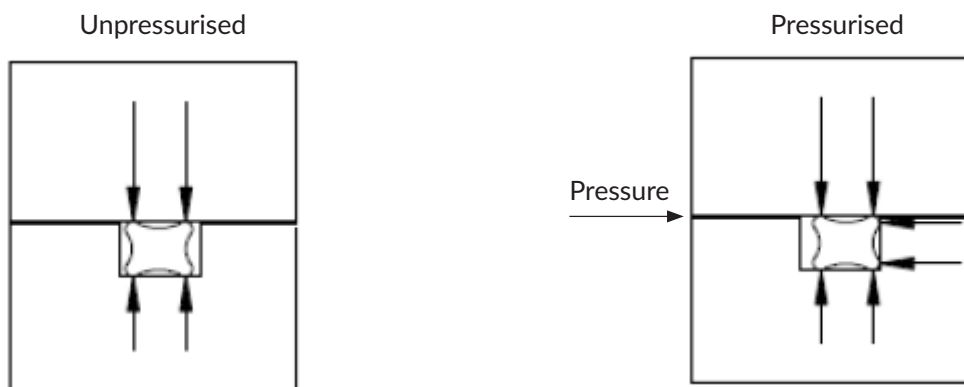
These can be used instead of an O-ring but have a larger range of applications.

They conform to US standard AS 568 A and can on request be delivered in alternative sizes and different materials: NBR,FKM, EPDM, Silicon, CR.



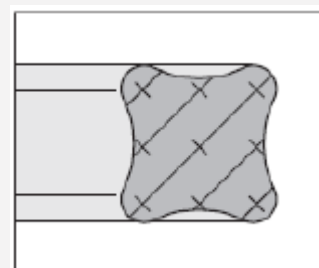
WORKING PRINCIPLES

Because of its symmetrical shape, the X-ring can withstand any stress from any direction. An increase in pressure leads to a radial section increase and then to a progressive constraint of the seal.



ADVANTAGES OVER O-RINGS

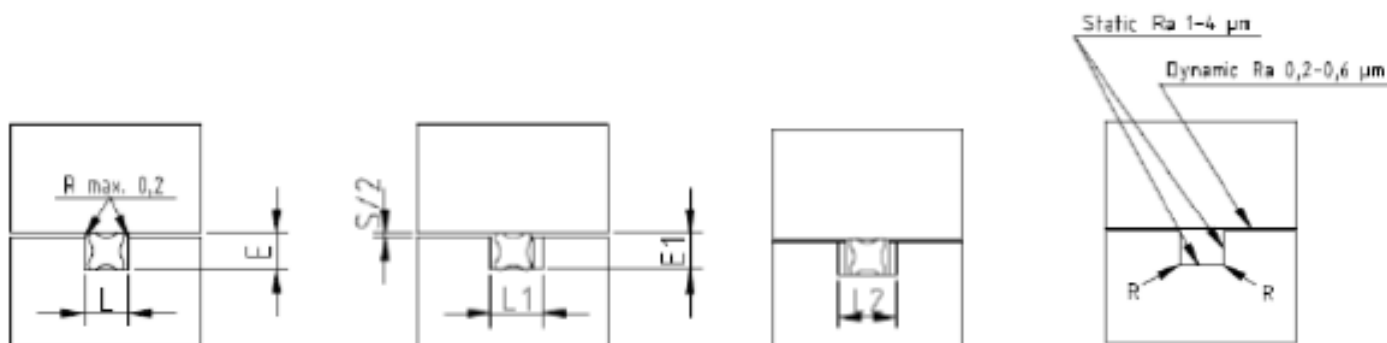
- Low Friction
- Sealing faces without flash
- Do not tend to twist
- Good sealing effect
- A lubrication depot can form between the sealing lips



X-Ring for Static &
Dynamic Application

Introduction to X-Rings

INSTALLATION DIMENSIONS



GROOVE DIMENSIONS

Cross Section W	Groove Depth		Groove Width			Radius	Max. diametrical clearance S max.
	Dynamic E	Static E ₁	Without back- up ring L + 0.2	With 1 back-up ring L + 0.2	With 2 back-up rings L2 + 0.2	R	
1.78 ± 0.08	1.50 + 0.025	1.40 + 0.025	2.0	3.5	5.0	0.25	0.10
2.62 ± 0.08	2.30 + 0.025	2.25 + 0.025	3.0	4.4	5.8	0.40	0.15
3.53 ± 0.10	3.20 + 0.025	3.10 + 0.025	4.0	5.4	6.8	0.40	0.15
5.33 ± 0.13	4.90 + 0.050	4.75 + 0.050	6.0	7.8	9.5	0.60	0.20
7.00 ± 0.15	6.45 + 0.050	6.20 + 0.050	8.0	10.5	13.0	0.60	0.20

APPLICATION CONDITIONS

Application Conditions, Standard Material NBR 70			
Pressure	Dynamic	No back-up ring	≤ 50 bar
		With back-up ring	≤ 300 bar
	Static	No back-up ring	≤ 50 bar
		With back-up ring	≤ 400 bar
Temperature			-30°C to +100°C
Sliding Speed for Linear Movement			≤ 0.5 m/s

Material Selection

NBR

Standard Material

NBR grades have good resistance to mineral oils and fats, especially hydraulic oils, gasoline and similar aliphatic hydrocarbons, water, ethylene glycol, acids and alkalis. Good mechanical properties such as high wear resistance and good compression set ensures this elastomer a wide scope.
Temp. -40° to + 100° C.

FPM

On Request

Extraordinary high resistance to mineral oils, aliphatic, aromatic and chlorinated hydrocarbons, concentrated and dilute acids. Very high temperature, aging resistance, good compression set and good mechanical properties make this elastomer particularly useful, where maximum life of elastomers is required.
Temp. -30° to + 200° C.

EPDM

On Request

Excellent aging and ozone resistance. Good thermal properties. Excellent resistance to hot water and steam. Highly resistant to many organic liquids. Not resistant to petroleum oil and grease.
Temp. -50° to + 120° C.

Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
1.78	± 0.13	1.78	± 0.08
2.90	± 0.13	1.78	± 0.08
3.68	± 0.13	1.78	± 0.08
4.47	± 0.13	1.78	± 0.08
5.28	± 0.13	1.78	± 0.08
6.07	± 0.13	1.78	± 0.08
7.65	± 0.13	1.78	± 0.08
9.25	± 0.13	1.78	± 0.08
10.82	± 0.13	1.78	± 0.08
12.42	± 0.13	1.78	± 0.08
14.00	± 0.18	1.78	± 0.08
15.60	± 0.23	1.78	± 0.08
17.17	± 0.23	1.78	± 0.08
18.77	± 0.23	1.78	± 0.08
20.35	± 0.23	1.78	± 0.08
21.95	± 0.23	1.78	± 0.08
23.52	± 0.23	1.78	± 0.08
25.12	± 0.25	1.78	± 0.08
26.70	± 0.25	1.78	± 0.08
28.30	± 0.25	1.78	± 0.08
29.87	± 0.28	1.78	± 0.08
31.47	± 0.28	1.78	± 0.08
33.05	± 0.28	1.78	± 0.08
34.65	± 0.33	1.78	± 0.08
37.82	± 0.33	1.78	± 0.08
41.00	± 0.33	1.78	± 0.08
44.17	± 0.38	1.78	± 0.08
47.35	± 0.38	1.78	± 0.08
50.52	± 0.46	1.78	± 0.08
53.70	± 0.46	1.78	± 0.08
56.87	± 0.46	1.78	± 0.08
60.05	± 0.46	1.78	± 0.08
63.22	± 0.46	1.78	± 0.08
66.40	± 0.51	1.78	± 0.08
69.57	± 0.51	1.78	± 0.08
72.75	± 0.51	1.78	± 0.08
75.92	± 0.61	1.78	± 0.08
82.27	± 0.61	1.78	± 0.08
88.62	± 0.61	1.78	± 0.08
94.97	± 0.69	1.78	± 0.08
101.32	± 0.69	1.78	± 0.08
107.67	± 0.76	1.78	± 0.08
114.02	± 0.76	1.78	± 0.08
120.37	± 0.76	1.78	± 0.08
126.72	± 0.94	1.78	± 0.08
133.07	± 0.94	1.78	± 0.08

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
004	4004	
006	4006	1
007	4007	2
008	4008	3
009	4009	4
010	4010	5
011	4011	6
012	4012	7
013	4013	113
014	4014	114
015	4015	115
016	4016	116
017	4017	117
018	4018	118
019	4019	119
020	4020	120
021	4021	121
022	4022	122
023	4023	123
024	4024	124
025	4025	125
026	4026	
027	4027	
028	4028	
029	4029	
030	4030	
031	4031	
032	4032	
033	4033	
034	4034	
035	4035	
036	4036	
037	4037	137
038	4038	
039	4039	
040	4040	
041	4041	
042	4042	
043	4043	
044	4044	
045	4045	
046	4046	
047	4047	
048	4048	
049	4049	
050	4050	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
1.24	± 0.13	2.62	± 0.08
2.06	± 0.13	2.62	± 0.08
2.84	± 0.13	2.62	± 0.08
3.63	± 0.13	2.62	± 0.08
4.42	± 0.13	2.62	± 0.08
5.23	± 0.13	2.62	± 0.08
6.02	± 0.13	2.62	± 0.08
7.59	± 0.13	2.62	± 0.08
9.19	± 0.13	2.62	± 0.08
10.77	± 0.13	2.62	± 0.08
12.37	± 0.13	2.62	± 0.08
13.94	± 0.18	2.62	± 0.08
15.54	± 0.23	2.62	± 0.08
17.12	± 0.23	2.62	± 0.08
18.72	± 0.23	2.62	± 0.08
20.29	± 0.25	2.62	± 0.08
21.89	± 0.25	2.62	± 0.08
23.47	± 0.25	2.62	± 0.08
25.07	± 0.25	2.62	± 0.08
26.64	± 0.25	2.62	± 0.08
28.24	± 0.25	2.62	± 0.08
29.82	± 0.30	2.62	± 0.08
31.42	± 0.30	2.62	± 0.08
32.99	± 0.30	2.62	± 0.08
34.59	± 0.30	2.62	± 0.08
36.17	± 0.30	2.62	± 0.08
37.77	± 0.30	2.62	± 0.08
39.34	± 0.38	2.62	± 0.08
40.94	± 0.38	2.62	± 0.08
42.52	± 0.38	2.62	± 0.08
44.12	± 0.38	2.62	± 0.08
45.69	± 0.38	2.62	± 0.08
47.29	± 0.38	2.62	± 0.08
48.90	± 0.43	2.62	± 0.08
50.47	± 0.43	2.62	± 0.08
52.07	± 0.43	2.62	± 0.08
53.64	± 0.43	2.62	± 0.08
55.25	± 0.43	2.62	± 0.08
56.82	± 0.43	2.62	± 0.08

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
102	4102	
103	4103	
104	4104	
105	4105	
106	4106	
107	4107	
108	4108	
109	4109	
110	4110	8
111	4111	9
112	4112	10
113	4113	11
114	4114	12
115	4115	13
116	4116	14
117	4117	217
118	4118	218
119	4119	219
120	4120	220
121	4121	221
122	4122	222
123	4123	223
124	4124	224
125	4125	225
126	4126	226
127	4127	227
128	4128	228
129	4129	229
130	4130	230
131	4131	231
132	4132	
133	4133	
134	4134	
135	4135	
136	4136	
137	4137	
138	4138	
139	4139	
140	4140	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
58.42	± 0.51	2.62	± 0.08
59.99	± 0.51	2.62	± 0.08
61.60	± 0.51	2.62	± 0.08
63.17	± 0.51	2.62	± 0.08
64.77	± 0.51	2.62	± 0.08
66.34	± 0.51	2.62	± 0.08
67.95	± 0.56	2.62	± 0.08
69.52	± 0.56	2.62	± 0.08
71.12	± 0.56	2.62	± 0.08
72.69	± 0.56	2.62	± 0.08
75.87	± 0.61	2.62	± 0.08
82.22	± 0.61	2.62	± 0.08
88.57	± 0.61	2.62	± 0.08
94.92	± 0.71	2.62	± 0.08
101.27	± 0.71	2.62	± 0.08
107.62	± 0.76	2.62	± 0.08
113.97	± 0.76	2.62	± 0.08
120.32	± 0.76	2.62	± 0.08
126.67	± 0.89	2.62	± 0.08
133.02	± 0.89	2.62	± 0.08
139.37	± 0.89	2.62	± 0.08
145.72	± 0.89	2.62	± 0.08
152.07	± 0.89	2.62	± 0.08
158.42	± 1.02	2.62	± 0.08
164.77	± 1.02	2.62	± 0.08
171.12	± 1.02	2.62	± 0.08
177.47	± 1.02	2.62	± 0.08
183.82	± 1.14	2.62	± 0.08
190.17	± 1.14	2.62	± 0.08
196.52	± 1.14	2.62	± 0.08
202.87	± 1.14	2.62	± 0.08
209.22	± 1.27	2.62	± 0.08
215.57	± 1.27	2.62	± 0.08
221.92	± 1.27	2.62	± 0.08
228.27	± 1.27	2.62	± 0.08
234.62	± 1.40	2.62	± 0.08
240.97	± 1.40	2.62	± 0.08
247.32	± 1.40	2.62	± 0.08
4.34	± 0.13	3.53	± 0.10
5.94	± 0.13	3.53	± 0.10
7.52	± 0.13	3.53	± 0.10
9.12	± 0.13	3.53	± 0.10
10.69	± 0.13	3.53	± 0.10

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
141	4141	
142	4142	
143	4143	
144	4144	
145	4145	
146	4146	
147	4147	
148	4148	
149	4149	
150	4150	
151	4151	
152	4152	
153	4153	
154	4154	
155	4155	
156	4156	
157	4157	
158	4158	
159	4159	
160	4160	
161	4161	261
162	4162	
163	4163	
164	4164	
165	4165	
166	4166	
167	4167	
168	4168	
169	4169	
170	4170	
171	4171	
172	4172	
173	4173	
174	4174	
175	4175	
176	4176	
177	4177	
178	4178	
201	4201	
202	4202	
203	4203	
204	4204	
205	4205	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
12.29	± 0.13	3.53	± 0.10
13.87	± 0.18	3.53	± 0.10
15.47	± 0.23	3.53	± 0.10
17.04	± 0.23	3.53	± 0.10
18.64	± 0.25	3.53	± 0.10
20.22	± 0.25	3.53	± 0.10
21.82	± 0.25	3.53	± 0.10
23.39	± 0.25	3.53	± 0.10
24.99	± 0.25	3.53	± 0.10
26.57	± 0.25	3.53	± 0.10
28.17	± 0.30	3.53	± 0.10
29.74	± 0.30	3.53	± 0.10
31.34	± 0.30	3.53	± 0.10
32.92	± 0.30	3.53	± 0.10
34.52	± 0.30	3.53	± 0.10
36.09	± 0.30	3.53	± 0.10
37.69	± 0.38	3.53	± 0.10
40.87	± 0.38	3.53	± 0.10
44.04	± 0.38	3.53	± 0.10
47.22	± 0.46	3.53	± 0.10
50.39	± 0.46	3.53	± 0.10
53.57	± 0.46	3.53	± 0.10
56.74	± 0.51	3.53	± 0.10
59.92	± 0.51	3.53	± 0.10
63.09	± 0.51	3.53	± 0.10
66.27	± 0.51	3.53	± 0.10
69.44	± 0.61	3.53	± 0.10
72.62	± 0.61	3.53	± 0.10
75.79	± 0.61	3.53	± 0.10
78.97	± 0.61	3.53	± 0.10
82.14	± 0.61	3.53	± 0.10
85.32	± 0.61	3.53	± 0.10
88.49	± 0.61	3.53	± 0.10
91.67	± 0.71	3.53	± 0.10
94.84	± 0.71	3.53	± 0.10
98.02	± 0.71	3.53	± 0.10
101.19	± 0.71	3.53	± 0.10
104.37	± 0.71	3.53	± 0.10
107.54	± 0.76	3.53	± 0.10
110.72	± 0.76	3.53	± 0.10
113.89	± 0.76	3.53	± 0.10
117.07	± 0.76	3.53	± 0.10
120.24	± 0.76	3.53	± 0.10
123.42	± 0.89	3.53	± 0.10

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
206	4206	
207	4207	
208	4208	
209	4209	
210	4210	15
211	4211	16
212	4212	17
213	4213	18
214	4214	19
215	4215	20
216	4216	21
217	4217	22
218	4218	23
219	4219	24
220	4220	25
221	4221	26
222	4222	27
223	4223	323
224	4224	324
225	4225	325
226	4226	326
227	4227	327
228	4228	328
229	4229	329
230	4230	330
231	4231	331
232	4232	332
233	4233	333
234	4234	334
235	4235	335
236	4236	336
237	4237	337
238	4238	338
239	4239	339
240	4240	340
241	4241	341
242	4242	342
243	4243	
244	4244	
245	4245	
246	4246	
247	4247	
248	4248	348
249	4249	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
126.59	± 0.89	3.53	± 0.10
129.77	± 0.89	3.53	± 0.10
132.94	± 0.89	3.53	± 0.10
136.12	± 0.89	3.53	± 0.10
139.29	± 0.89	3.53	± 0.10
142.47	± 0.89	3.53	± 0.10
145.64	± 0.89	3.53	± 0.10
148.82	± 0.89	3.53	± 0.10
151.99	± 0.89	3.53	± 0.10
158.34	± 1.02	3.53	± 0.10
164.69	± 1.02	3.53	± 0.10
171.04	± 1.02	3.53	± 0.10
177.39	± 1.02	3.53	± 0.10
183.74	± 1.14	3.53	± 0.10
190.09	± 1.14	3.53	± 0.10
196.44	± 1.14	3.53	± 0.10
202.79	± 1.14	3.53	± 0.10
209.14	± 1.27	3.53	± 0.10
215.49	± 1.27	3.53	± 0.10
221.84	± 1.27	3.53	± 0.10
228.19	± 1.27	3.53	± 0.10
234.54	± 1.40	3.53	± 0.10
240.89	± 1.40	3.53	± 0.10
247.24	± 1.40	3.53	± 0.10
253.59	± 1.40	3.53	± 0.10
266.29	± 1.40	3.53	± 0.10
278.99	± 1.65	3.53	± 0.10
291.69	± 1.65	3.53	± 0.10
304.39	± 1.65	3.53	± 0.10
329.79	± 1.65	3.53	± 0.10
355.19	± 1.65	3.53	± 0.10
380.59	± 1.65	3.53	± 0.10
405.26	± 1.91	3.53	± 0.10
430.66	± 2.03	3.53	± 0.10
456.06	± 2.16	3.53	± 0.10
10.46	± 0.13	5.33	± 0.13
12.07	± 0.13	5.33	± 0.13
13.64	± 0.18	5.33	± 0.13
15.24	± 0.23	5.33	± 0.13
16.81	± 0.23	5.33	± 0.13
18.42	± 0.25	5.33	± 0.13
19.99	± 0.25	5.33	± 0.13
21.59	± 0.25	5.33	± 0.13

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
250	4250	
251	4251	
252	4252	
253	4253	
254	4254	
255	4255	
256	4256	
257	4257	
258	4258	
259	4259	
260	4260	
261	4261	
262	4262	
263	4263	363
264	4264	
265	4265	
266	4266	
267	4267	
268	4268	
269	4269	
270	4270	
271	4271	
272	4272	
273	4273	
274	4274	
275	4275	
276	4276	
277	4277	
278	4278	
279	4279	
280	4280	
281	4281	
282	4282	
283	4283	
284	4284	
309	4309	
310	4310	
311	4311	
312	4312	
313	4313	
314	4314	
315	4315	
316	4316	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
23.16	± 0.25	5.33	± 0.13
24.77	± 0.25	5.33	± 0.13
26.34	± 0.25	5.33	± 0.13
27.94	± 0.30	5.33	± 0.13
29.51	± 0.30	5.33	± 0.13
31.12	± 0.30	5.33	± 0.13
32.69	± 0.30	5.33	± 0.13
34.29	± 0.30	5.33	± 0.13
37.47	± 0.38	5.33	± 0.13
40.64	± 0.38	5.33	± 0.13
43.82	± 0.38	5.33	± 0.13
46.99	± 0.38	5.33	± 0.13
50.17	± 0.46	5.33	± 0.13
53.34	± 0.46	5.33	± 0.13
56.52	± 0.46	5.33	± 0.13
59.69	± 0.46	5.33	± 0.13
62.87	± 0.51	5.33	± 0.13
66.04	± 0.51	5.33	± 0.13
69.22	± 0.51	5.33	± 0.13
72.39	± 0.51	5.33	± 0.13
75.57	± 0.61	5.33	± 0.13
78.74	± 0.61	5.33	± 0.13
81.92	± 0.61	5.33	± 0.13
85.09	± 0.61	5.33	± 0.13
88.27	± 0.61	5.33	± 0.13
91.44	± 0.71	5.33	± 0.13
94.62	± 0.71	5.33	± 0.13
97.79	± 0.71	5.33	± 0.13
100.97	± 0.71	5.33	± 0.13
104.14	± 0.71	5.33	± 0.13
107.32	± 0.76	5.33	± 0.13
110.49	± 0.76	5.33	± 0.13
113.67	± 0.76	5.33	± 0.13
116.84	± 0.76	5.33	± 0.13
120.01	± 0.76	5.33	± 0.13
123.19	± 0.76	5.33	± 0.13
126.37	± 0.94	5.33	± 0.13
129.54	± 0.94	5.33	± 0.13
132.72	± 0.94	5.33	± 0.13
135.89	± 0.94	5.33	± 0.13
139.07	± 0.94	5.33	± 0.13
142.24	± 0.94	5.33	± 0.13
145.42	± 0.94	5.33	± 0.13
148.59	± 0.94	5.33	± 0.13

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
317	4317	
318	4318	
319	4319	
320	4320	
321	4321	
322	4322	
323	4323	
324	4324	
325	4325	28
326	4326	29
327	4327	30
328	4328	31
329	4329	32
330	4330	33
331	4331	34
332	4332	35
333	4333	36
334	4334	37
335	4335	38
336	4336	39
337	4337	40
338	4338	41
339	4339	42
340	4340	43
341	4341	44
342	4342	45
343	4343	46
344	4344	47
345	4345	48
346	4346	49
347	4347	50
348	4348	51
349	4349	52
350	4350	450
351	4351	451
352	4352	452
353	4353	453
354	4354	454
355	4355	455
356	4356	456
357	4357	457
358	4358	
359	4359	
360	4360	



Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
151.77	± 0.94	5.33	± 0.13
158.12	± 1.02	5.33	± 0.13
164.47	± 1.02	5.33	± 0.13
170.82	± 1.02	5.33	± 0.13
177.17	± 1.02	5.33	± 0.13
183.52	± 1.14	5.33	± 0.13
189.87	± 1.14	5.33	± 0.13
196.22	± 1.14	5.33	± 0.13
202.57	± 1.14	5.33	± 0.13
208.92	± 1.27	5.33	± 0.13
215.27	± 1.27	5.33	± 0.13
221.62	± 1.27	5.33	± 0.13
227.97	± 1.27	5.33	± 0.13
234.32	± 1.40	5.33	± 0.13
240.67	± 1.40	5.33	± 0.13
247.02	± 1.40	5.33	± 0.13
253.37	± 1.40	5.33	± 0.13
266.07	± 1.52	5.33	± 0.13
278.77	± 1.52	5.33	± 0.13
291.47	± 1.65	5.33	± 0.13
304.17	± 1.65	5.33	± 0.13
329.57	± 1.65	5.33	± 0.13
354.97	± 1.78	5.33	± 0.13
380.37	± 1.78	5.33	± 0.13
405.26	± 1.91	5.33	± 0.13
430.66	± 2.03	5.33	± 0.13
456.06	± 2.16	5.33	± 0.13
481.46	± 2.29	5.33	± 0.13
506.86	± 2.41	5.33	± 0.13
532.26	± 2.41	5.33	± 0.13
557.66	± 2.54	5.33	± 0.13
582.68	± 2.67	5.33	± 0.13
608.08	± 2.79	5.33	± 0.13
633.48	± 2.92	5.33	± 0.13
658.88	± 3.05	5.33	± 0.13
113.67	± 0.84	6.99	± 0.15
116.84	± 0.84	6.99	± 0.15
120.02	± 0.84	6.99	± 0.15
123.19	± 0.84	6.99	± 0.15
126.37	± 0.94	6.99	± 0.15
129.54	± 0.94	6.99	± 0.15
132.72	± 0.94	6.99	± 0.15
135.89	± 0.94	6.99	± 0.15

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
361	4361	
362	4362	
363	4363	
364	4364	
365	4365	
366	4366	
367	4367	
368	4368	
369	4369	
370	4370	
371	4371	
372	4372	
373	4373	
374	4374	
375	4375	
376	4376	
377	4377	
378	4378	
379	4379	
380	4380	
381	4381	
382	4382	
383	4383	
384	4384	
385	4385	
386	4386	
387	4387	
388	4388	
389	4389	
390	4390	
391	4391	
392	4392	
393	4393	
394	4394	
395	4395	
425	4425	88
426	4426	53
427	4427	54
428	4428	55
429	4429	56
430	4430	57
431	4431	58
432	4432	59

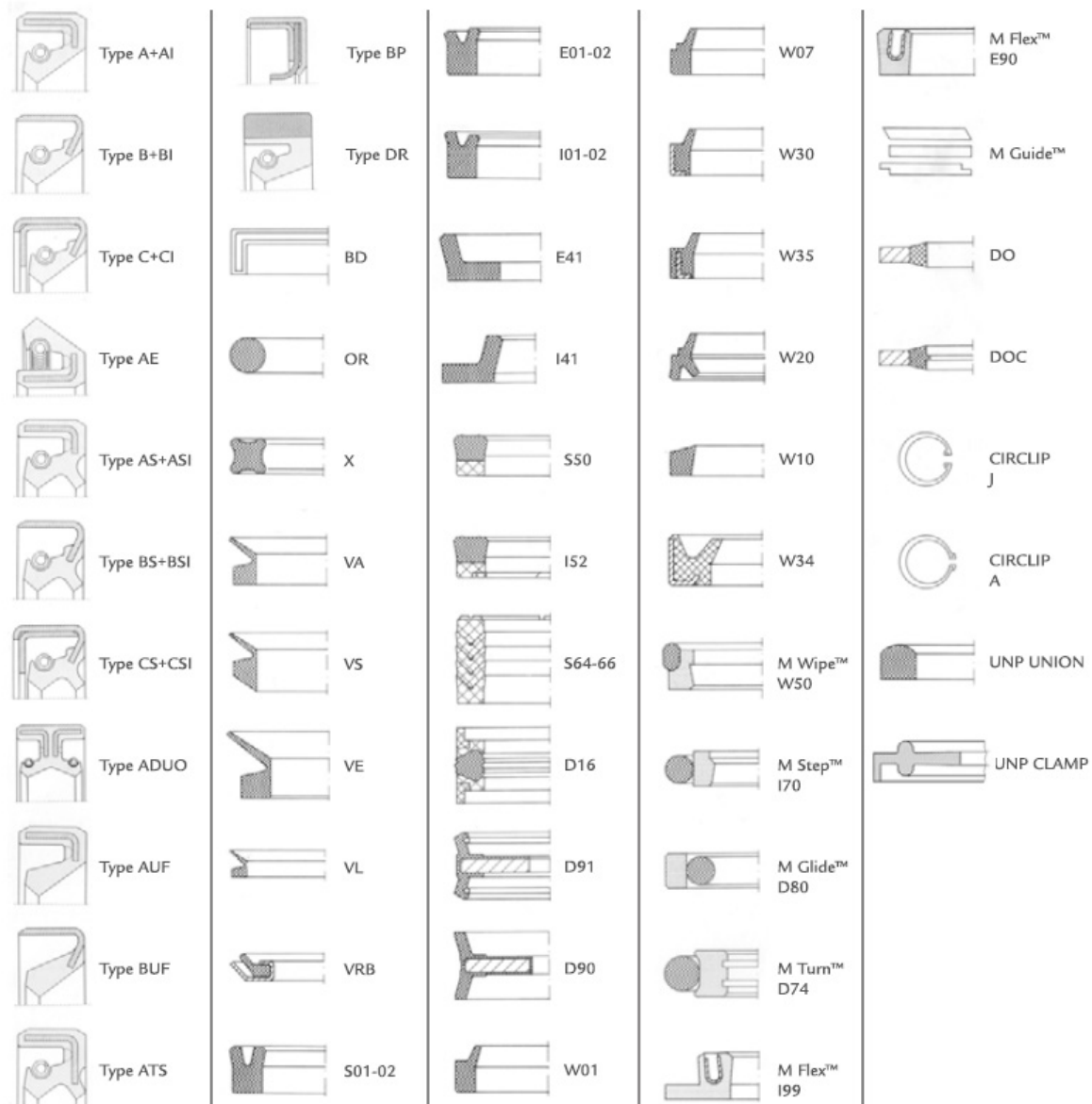


Selection Guide for Standard X-Rings

Dimensions & Tolerances			
Inside Diameter (mm)		Cross Section (mm)	
139.07	± 0.94	6.99	± 0.15
142.24	± 0.94	6.99	± 0.15
145.42	± 0.94	6.99	± 0.15
148.59	± 0.94	6.99	± 0.15
151.77	± 0.94	6.99	± 0.15
158.12	± 1.02	6.99	± 0.15
164.47	± 1.02	6.99	± 0.15
170.82	± 1.02	6.99	± 0.15
177.17	± 1.02	6.99	± 0.15
183.52	± 1.14	6.99	± 0.15
189.87	± 1.14	6.99	± 0.15
196.22	± 1.14	6.99	± 0.15
202.57	± 1.14	6.99	± 0.15
215.27	± 1.40	6.99	± 0.15
227.97	± 1.40	6.99	± 0.15
240.67	± 1.40	6.99	± 0.15
253.37	± 1.40	6.99	± 0.15
266.07	± 1.52	6.99	± 0.15
278.77	± 1.52	6.99	± 0.15
291.47	± 1.52	6.99	± 0.15
304.17	± 1.52	6.99	± 0.15
316.87	± 1.52	6.99	± 0.15
329.57	± 1.52	6.99	± 0.15
342.27	± 1.78	6.99	± 0.15
354.97	± 1.78	6.99	± 0.15
367.67	± 1.78	6.99	± 0.15
380.37	± 1.78	6.99	± 0.15
393.07	± 1.78	6.99	± 0.15
405.26	± 1.91	6.99	± 0.15
417.96	± 1.91	6.99	± 0.15
430.66	± 2.03	6.99	± 0.15
443.36	± 2.16	6.99	± 0.15
456.06	± 2.16	6.99	± 0.15
468.76	± 2.16	6.99	± 0.15
481.46	± 2.29	6.99	± 0.15
494.16	± 2.29	6.99	± 0.15
506.86	± 2.41	6.99	± 0.15
532.26	± 2.41	6.99	± 0.15
557.66	± 2.54	6.99	± 0.15
582.68	± 2.67	6.99	± 0.15
608.08	± 2.79	6.99	± 0.15
633.48	± 2.92	6.99	± 0.15
658.88	± 3.05	6.99	± 0.15

Alternative Reference AS/BS	Alternative Reference	Alternative Reference
433	4433	60
434	4434	61
435	4435	62
436	4436	63
437	4437	64
438	4438	65
439	4439	66
440	4440	67
441	4441	68
442	4442	69
443	4443	70
444	4444	71
445	4445	72
446	4446	73
447	4447	74
448	4448	75
449	4449	76
450	4450	77
451	4451	78
452	4452	79
453	4453	80
454	4454	81
455	4455	82
456	4456	83
457	4457	84
458	4458	85
459	4459	86
460	4460	87
461	4461	
462	4462	
463	4463	
464	4464	
465	4465	
466	4466	
467	4467	
468	4468	
469	4469	
470	4470	
471	4471	
472	4472	
473	4473	
474	4474	
475	4475	





Small things make **GREAT** things possible