

X-RINGS

TOLERANCES AND DIMENSIONS





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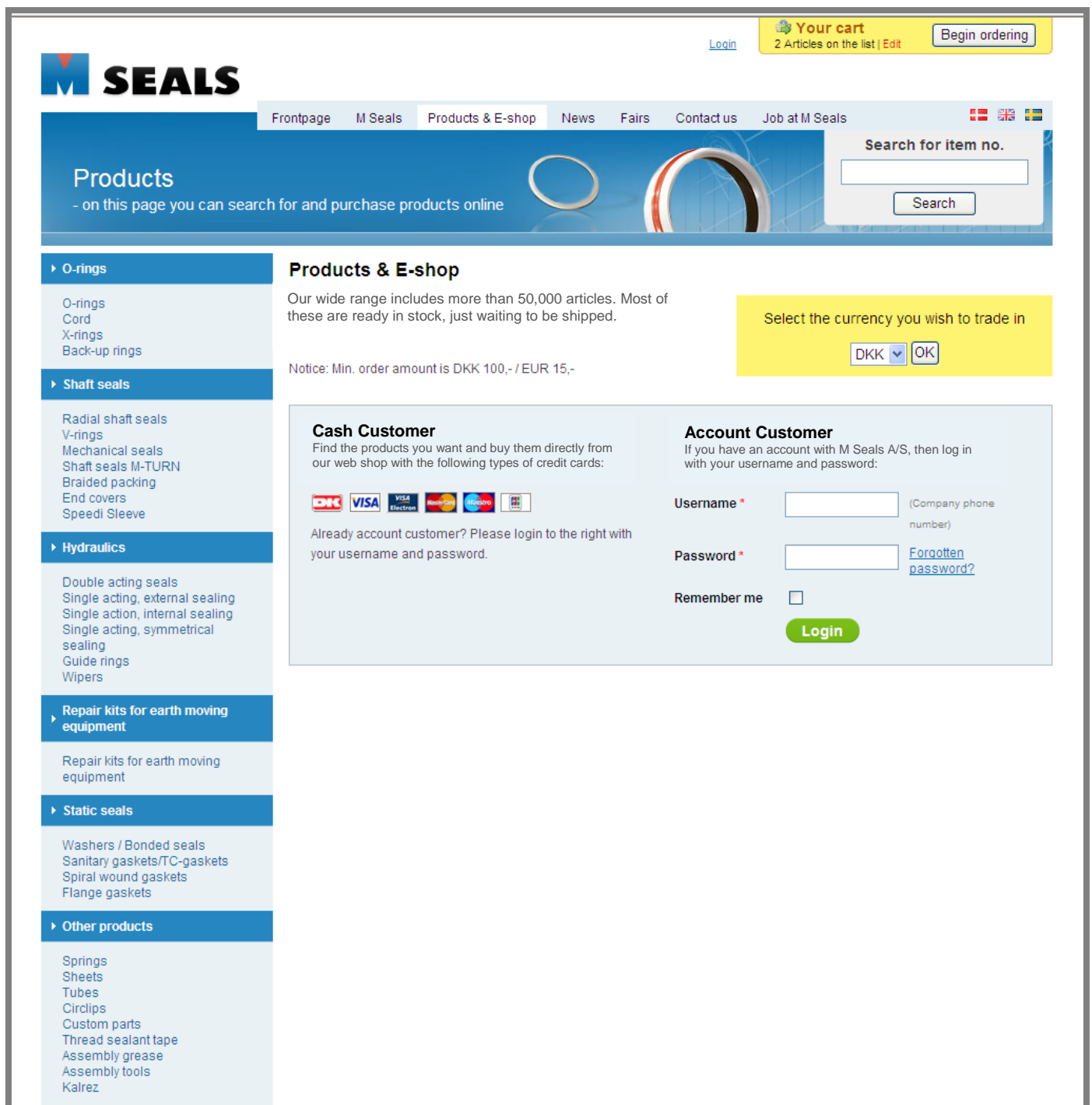
OUR WEB SITE



- Simple, direct access to our stock and the principal range of our products
- Technical information on our products, working principles and fitting advice

➔ Please consult our web site

www.m-seals.com




The screenshot shows the M Seals website homepage. At the top right, there is a 'Your cart' section with '2 Articles on the list | Edit' and a 'Begin ordering' button. The main navigation bar includes 'Frontpage', 'M Seals', 'Products & E-shop', 'News', 'Fairs', 'Contact us', and 'Job at M Seals'. A search bar is located on the right side of the navigation bar. The main content area is divided into a left sidebar with product categories and a main right section. The sidebar categories include O-rings, Shaft seals, Hydraulics, Repair kits for earth moving equipment, Static seals, and Other products. The main right section features a 'Products & E-shop' header, a notice about the minimum order amount, a currency selection dropdown (DKK, OK), and a login section for both Cash and Account customers.

Products
- on this page you can search for and purchase products online

Products & E-shop
Our wide range includes more than 50,000 articles. Most of these are ready in stock, just waiting to be shipped.

Notice: Min. order amount is DKK 100,- / EUR 15,-

Select the currency you wish to trade in
DKK

Cash Customer
Find the products you want and buy them directly from our web shop with the following types of credit cards:

 Already account customer? Please login to the right with your username and password.

Account Customer
If you have an account with M Seals A/S, then log in with your username and password:

Username * (Company phone number)

Password * [Forgotten password?](#)

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Other products
Springs
Sheets
Tubes
Circlips
Custom parts
Thread sealant tape
Assembly grease
Assembly tools
Kalrez

GENERAL ELASTOMER GUIDE



	Nitril NBR	Etylen- propylen EPDM	Cloro- prene Neoprene CR	Fluoro- carbon FPM	Silicone VMQ	Teflon® FEP	Perfluor- elastomer Kalrez® 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 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⁾
●● Good/fair	30-60 ²⁾	Max. 30 ²⁾	Medium ²⁾
● Poor	> 60 ³⁾	Max. 30 ³⁾	Substantial ³⁾

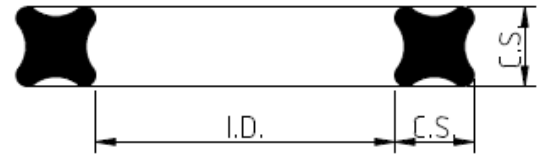
²⁾ In 30 days to 1 year

³⁾ Immediate to 1 year

DESCRIPTION OF THE X-RING



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 the pressure leads to a radial section increase and then to a progressive constraint of the seal.

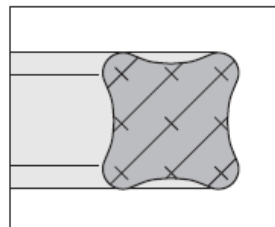


ADVANTAGES

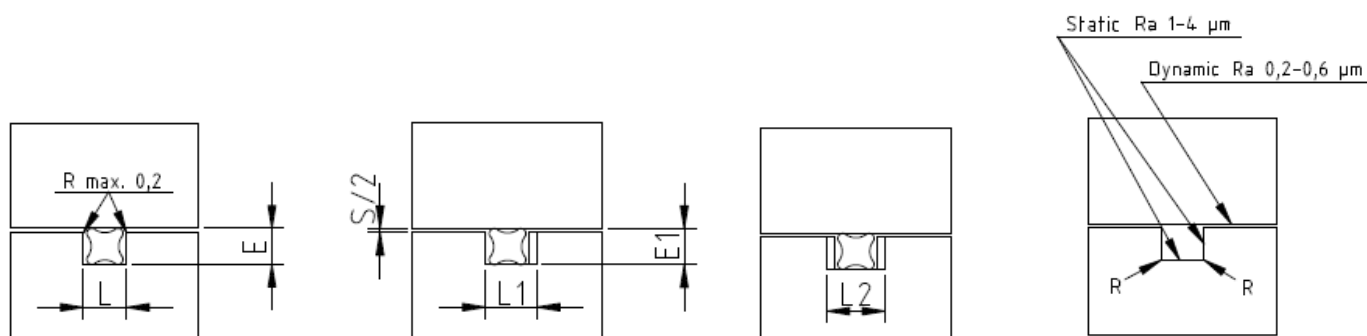
Advantages over O-rings

- 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 and dynamic application



INSTALLATION DIMENSIONS



GROOVE DIMENSIONS							
Cross section W	Groove depth		Groove width			Radius	Max. diametrical clearance S max.
	Dynamic E	Static E₁	Without back-up ring L + 0,2	With 1 back-up ring L1 + 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, standard material NBR 70

Application conditions, standard material NBR 70

Pressure	<i>Dynamic</i>	No back-up ring	≤ 50 bar
		With back-up ring	≤ 300 bar
	<i>Static</i>	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



SELECTING A MATERIAL

The temperature and the fluid to seal must be taken into consideration.

Material	Description
NBR Standard material	<i>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.</i>
FPM On request	<i>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.</i>
EPDM On request	<i>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.</i>

SELECTION GUIDE FOR STANDARD X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
1.78	±0.13	1.78	±0.08	004	4004	
2.90	±0.13	1.78	±0.08	006	4006	1
3.68	±0.13	1.78	±0.08	007	4007	2
4.47	±0.13	1.78	±0.08	008	4008	3
5.28	±0.13	1.78	±0.08	009	4009	4
6.07	±0.13	1.78	±0.08	010	4010	5
7.65	±0.13	1.78	±0.08	011	4011	6
9.25	±0.13	1.78	±0.08	012	4012	7
10.82	±0.13	1.78	±0.08	013	4013	113
12.42	±0.13	1.78	±0.08	014	4014	114
14.00	±0.18	1.78	±0.08	015	4015	115
15.60	±0.23	1.78	±0.08	016	4016	116
17.17	±0.23	1.78	±0.08	017	4017	117
18.77	±0.23	1.78	±0.08	018	4018	118
20.35	±0.23	1.78	±0.08	019	4019	119
21.95	±0.23	1.78	±0.08	020	4020	120
23.52	±0.23	1.78	±0.08	021	4021	121
25.12	±0.25	1.78	±0.08	022	4022	122
26.70	±0.25	1.78	±0.08	023	4023	123
28.30	±0.25	1.78	±0.08	024	4024	124
29.87	±0.28	1.78	±0.08	025	4025	125
31.47	±0.28	1.78	±0.08	026	4026	
33.05	±0.28	1.78	±0.08	027	4027	
34.65	±0.33	1.78	±0.08	028	4028	
37.82	±0.33	1.78	±0.08	029	4029	
41.00	±0.33	1.78	±0.08	030	4030	
44.17	±0.38	1.78	±0.08	031	4031	
47.35	±0.38	1.78	±0.08	032	4032	
50.52	±0.46	1.78	±0.08	033	4033	
53.70	±0.46	1.78	±0.08	034	4034	
56.87	±0.46	1.78	±0.08	035	4035	
60.05	±0.46	1.78	±0.08	036	4036	
63.22	±0.46	1.78	±0.08	037	4037	137
66.40	±0.51	1.78	±0.08	038	4038	
69.57	±0.51	1.78	±0.08	039	4039	
72.75	±0.51	1.78	±0.08	040	4040	
75.92	±0.61	1.78	±0.08	041	4041	
82.27	±0.61	1.78	±0.08	042	4042	
88.62	±0.61	1.78	±0.08	043	4043	
94.97	±0.69	1.78	±0.08	044	4044	
101.32	±0.69	1.78	±0.08	045	4045	
107.67	±0.76	1.78	±0.08	046	4046	



SELECTION GUIDE FOR STANDARD SIZE X-RINGS

- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
114.02	±0.76	1.78	±0.08	047	4047	
120.37	±0.76	1.78	±0.08	048	4048	
126.72	±0.94	1.78	±0.08	049	4049	
133.07	±0.94	1.78	±0.08	050	4050	
1.24	±0.13	2.62	±0.08	102	4102	
2.06	±0.13	2.62	±0.08	103	4103	
2.84	±0.13	2.62	±0.08	104	4104	
3.63	±0.13	2.62	±0.08	105	4105	
4.42	±0.13	2.62	±0.08	106	4106	
5.23	±0.13	2.62	±0.08	107	4107	
6.02	±0.13	2.62	±0.08	108	4108	
7.59	±0.13	2.62	±0.08	109	4109	
9.19	±0.13	2.62	±0.08	110	4110	8
10.77	±0.13	2.62	±0.08	111	4111	9
12.37	±0.13	2.62	±0.08	112	4112	10
13.94	±0.18	2.62	±0.08	113	4113	11
15.54	±0.23	2.62	±0.08	114	4114	12
17.12	±0.23	2.62	±0.08	115	4115	13
18.72	±0.23	2.62	±0.08	116	4116	14
20.29	±0.25	2.62	±0.08	117	4117	217
21.89	±0.25	2.62	±0.08	118	4118	218
23.47	±0.25	2.62	±0.08	119	4119	219
25.07	±0.25	2.62	±0.08	120	4120	220
26.64	±0.25	2.62	±0.08	121	4121	221
28.24	±0.25	2.62	±0.08	122	4122	222
29.82	±0.30	2.62	±0.08	123	4123	223
31.42	±0.30	2.62	±0.08	124	4124	224
32.99	±0.30	2.62	±0.08	125	4125	225
34.59	±0.30	2.62	±0.08	126	4126	226
36.17	±0.30	2.62	±0.08	127	4127	227
37.77	±0.30	2.62	±0.08	128	4128	228
39.34	±0.38	2.62	±0.08	129	4129	229
40.94	±0.38	2.62	±0.08	130	4130	230
42.52	±0.38	2.62	±0.08	131	4131	231
44.12	±0.38	2.62	±0.08	132	4132	
45.69	±0.38	2.62	±0.08	133	4133	
47.29	±0.38	2.62	±0.08	134	4134	
48.90	±0.43	2.62	±0.08	135	4135	
50.47	±0.43	2.62	±0.08	136	4136	
52.07	±0.43	2.62	±0.08	137	4137	
53.64	±0.43	2.62	±0.08	138	4138	
55.25	±0.43	2.62	±0.08	139	4139	
56.82	±0.43	2.62	±0.08	140	4140	

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
58.42	±0.51	2.62	±0.08	141	4141	
59.99	±0.51	2.62	±0.08	142	4142	
61.60	±0.51	2.62	±0.08	143	4143	
63.17	±0.51	2.62	±0.08	144	4144	
64.77	±0.51	2.62	±0.08	145	4145	
66.34	±0.51	2.62	±0.08	146	4146	
67.95	±0.56	2.62	±0.08	147	4147	
69.52	±0.56	2.62	±0.08	148	4148	
71.12	±0.56	2.62	±0.08	149	4149	
72.69	±0.56	2.62	±0.08	150	4150	
75.87	±0.61	2.62	±0.08	151	4151	
82.22	±0.61	2.62	±0.08	152	4152	
88.57	±0.61	2.62	±0.08	153	4153	
94.92	±0.71	2.62	±0.08	154	4154	
101.27	±0.71	2.62	±0.08	155	4155	
107.62	±0.76	2.62	±0.08	156	4156	
113.97	±0.76	2.62	±0.08	157	4157	
120.32	±0.76	2.62	±0.08	158	4158	
126.67	±0.89	2.62	±0.08	159	4159	
133.02	±0.89	2.62	±0.08	160	4160	
139.37	±0.89	2.62	±0.08	161	4161	261
145.72	±0.89	2.62	±0.08	162	4162	
152.07	±0.89	2.62	±0.08	163	4163	
158.42	±1.02	2.62	±0.08	164	4164	
164.77	±1.02	2.62	±0.08	165	4165	
171.12	±1.02	2.62	±0.08	166	4166	
177.47	±1.02	2.62	±0.08	167	4167	
183.82	±1.14	2.62	±0.08	168	4168	
190.17	±1.14	2.62	±0.08	169	4169	
196.52	±1.14	2.62	±0.08	170	4170	
202.87	±1.14	2.62	±0.08	171	4171	
209.22	±1.27	2.62	±0.08	172	4172	
215.57	±1.27	2.62	±0.08	173	4173	
221.92	±1.27	2.62	±0.08	174	4174	
228.27	±1.27	2.62	±0.08	175	4175	
234.62	±1.40	2.62	±0.08	176	4176	
240.97	±1.40	2.62	±0.08	177	4177	
247.32	±1.40	2.62	±0.08	178	4178	
4.34	±0.13	3.53	±0.10	201	4201	
5.94	±0.13	3.53	±0.10	202	4202	
7.52	±0.13	3.53	±0.10	203	4203	
9.12	±0.13	3.53	±0.10	204	4204	
10.69	±0.13	3.53	±0.10	205	4205	

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
12.29	±0.13	3.53	±0.10	206	4206	
13.87	±0.18	3.53	±0.10	207	4207	
15.47	±0.23	3.53	±0.10	208	4208	
17.04	±0.23	3.53	±0.10	209	4209	
18.64	±0.25	3.53	±0.10	210	4210	15
20.22	±0.25	3.53	±0.10	211	4211	16
21.82	±0.25	3.53	±0.10	212	4212	17
23.39	±0.25	3.53	±0.10	213	4213	18
24.99	±0.25	3.53	±0.10	214	4214	19
26.57	±0.25	3.53	±0.10	215	4215	20
28.17	±0.30	3.53	±0.10	216	4216	21
29.74	±0.30	3.53	±0.10	217	4217	22
31.34	±0.30	3.53	±0.10	218	4218	23
32.92	±0.30	3.53	±0.10	219	4219	24
34.52	±0.30	3.53	±0.10	220	4220	25
36.09	±0.30	3.53	±0.10	221	4221	26
37.69	±0.38	3.53	±0.10	222	4222	27
40.87	±0.38	3.53	±0.10	223	4223	323
44.04	±0.38	3.53	±0.10	224	4224	324
47.22	±0.46	3.53	±0.10	225	4225	325
50.39	±0.46	3.53	±0.10	226	4226	326
53.57	±0.46	3.53	±0.10	227	4227	327
56.74	±0.51	3.53	±0.10	228	4228	328
59.92	±0.51	3.53	±0.10	229	4229	329
63.09	±0.51	3.53	±0.10	230	4230	330
66.27	±0.51	3.53	±0.10	231	4231	331
69.44	±0.61	3.53	±0.10	232	4232	332
72.62	±0.61	3.53	±0.10	233	4233	333
75.79	±0.61	3.53	±0.10	234	4234	334
78.97	±0.61	3.53	±0.10	235	4235	335
82.14	±0.61	3.53	±0.10	236	4236	336
85.32	±0.61	3.53	±0.10	237	4237	337
88.49	±0.61	3.53	±0.10	238	4238	338
91.67	±0.71	3.53	±0.10	239	4239	339
94.84	±0.71	3.53	±0.10	240	4240	340
98.02	±0.71	3.53	±0.10	241	4241	341
101.19	±0.71	3.53	±0.10	242	4242	342
104.37	±0.71	3.53	±0.10	243	4243	
107.54	±0.76	3.53	±0.10	244	4244	
110.72	±0.76	3.53	±0.10	245	4245	
113.89	±0.76	3.53	±0.10	246	4246	
117.07	±0.76	3.53	±0.10	247	4247	
120.24	±0.76	3.53	±0.10	248	4248	348
123.42	±0.89	3.53	±0.10	249	4249	

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
126.59	±0.89	3.53	±0.10	250	4250	
129.77	±0.89	3.53	±0.10	251	4251	
132.94	±0.89	3.53	±0.10	252	4252	
136.12	±0.89	3.53	±0.10	253	4253	
139.29	±0.89	3.53	±0.10	254	4254	
142.47	±0.89	3.53	±0.10	255	4255	
145.64	±0.89	3.53	±0.10	256	4256	
148.82	±0.89	3.53	±0.10	257	4257	
151.99	±0.89	3.53	±0.10	258	4258	
158.34	±1.02	3.53	±0.10	259	4259	
164.69	±1.02	3.53	±0.10	260	4260	
171.04	±1.02	3.53	±0.10	261	4261	
177.39	±1.02	3.53	±0.10	262	4262	
183.74	±1.14	3.53	±0.10	263	4263	363
190.09	±1.14	3.53	±0.10	264	4264	
196.44	±1.14	3.53	±0.10	265	4265	
202.79	±1.14	3.53	±0.10	266	4266	
209.14	±1.27	3.53	±0.10	267	4267	
215.49	±1.27	3.53	±0.10	268	4268	
221.84	±1.27	3.53	±0.10	269	4269	
228.19	±1.27	3.53	±0.10	270	4270	
234.54	±1.40	3.53	±0.10	271	4271	
240.89	±1.40	3.53	±0.10	272	4272	
247.24	±1.40	3.53	±0.10	273	4273	
253.59	±1.40	3.53	±0.10	274	4274	
266.29	±1.40	3.53	±0.10	275	4275	
278.99	±1.65	3.53	±0.10	276	4276	
291.69	±1.65	3.53	±0.10	277	4277	
304.39	±1.65	3.53	±0.10	278	4278	
329.79	±1.65	3.53	±0.10	279	4279	
355.19	±1.65	3.53	±0.10	280	4280	
380.59	±1.65	3.53	±0.10	281	4281	
405.26	±1.91	3.53	±0.10	282	4282	
430.66	±2.03	3.53	±0.10	283	4283	
456.06	±2.16	3.53	±0.10	284	4284	
10.46	±0.13	5.33	±0.13	309	4309	
12.07	±0.13	5.33	±0.13	310	4310	
13.64	±0.18	5.33	±0.13	311	4311	
15.24	±0.23	5.33	±0.13	312	4312	
16.81	±0.23	5.33	±0.13	313	4313	
18.42	±0.25	5.33	±0.13	314	4314	
19.99	±0.25	5.33	±0.13	315	4315	
21.59	±0.25	5.33	±0.13	316	4316	

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
23.16	±0.25	5.33	±0.13	317	4317	
24.77	±0.25	5.33	±0.13	318	4318	
26.34	±0.25	5.33	±0.13	319	4319	
27.94	±0.30	5.33	±0.13	320	4320	
29.51	±0.30	5.33	±0.13	321	4321	
31.12	±0.30	5.33	±0.13	322	4322	
32.69	±0.30	5.33	±0.13	323	4323	
34.29	±0.30	5.33	±0.13	324	4324	
37.47	±0.38	5.33	±0.13	325	4325	28
40.64	±0.38	5.33	±0.13	326	4326	29
43.82	±0.38	5.33	±0.13	327	4327	30
46.99	±0.38	5.33	±0.13	328	4328	31
50.17	±0.46	5.33	±0.13	329	4329	32
53.34	±0.46	5.33	±0.13	330	4330	33
56.52	±0.46	5.33	±0.13	331	4331	34
59.69	±0.46	5.33	±0.13	332	4332	35
62.87	±0.51	5.33	±0.13	333	4333	36
66.04	±0.51	5.33	±0.13	334	4334	37
69.22	±0.51	5.33	±0.13	335	4335	38
72.39	±0.51	5.33	±0.13	336	4336	39
75.57	±0.61	5.33	±0.13	337	4337	40
78.74	±0.61	5.33	±0.13	338	4338	41
81.92	±0.61	5.33	±0.13	339	4339	42
85.09	±0.61	5.33	±0.13	340	4340	43
88.27	±0.61	5.33	±0.13	341	4341	44
91.44	±0.71	5.33	±0.13	342	4342	45
94.62	±0.71	5.33	±0.13	343	4343	46
97.79	±0.71	5.33	±0.13	344	4344	47
100.97	±0.71	5.33	±0.13	345	4345	48
104.14	±0.71	5.33	±0.13	346	4346	49
107.32	±0.76	5.33	±0.13	347	4347	50
110.49	±0.76	5.33	±0.13	348	4348	51
113.67	±0.76	5.33	±0.13	349	4349	52
116.84	±0.76	5.33	±0.13	350	4350	450
120.02	±0.76	5.33	±0.13	351	4351	451
123.19	±0.76	5.33	±0.13	352	4352	452
126.37	±0.94	5.33	±0.13	353	4353	453
129.54	±0.94	5.33	±0.13	354	4354	454
132.72	±0.94	5.33	±0.13	355	4355	455
135.89	±0.94	5.33	±0.13	356	4356	456
139.07	±0.94	5.33	±0.13	357	4357	457
142.24	±0.94	5.33	±0.13	358	4358	
145.42	±0.94	5.33	±0.13	359	4359	
148.59	±0.94	5.33	±0.13	360	4360	

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

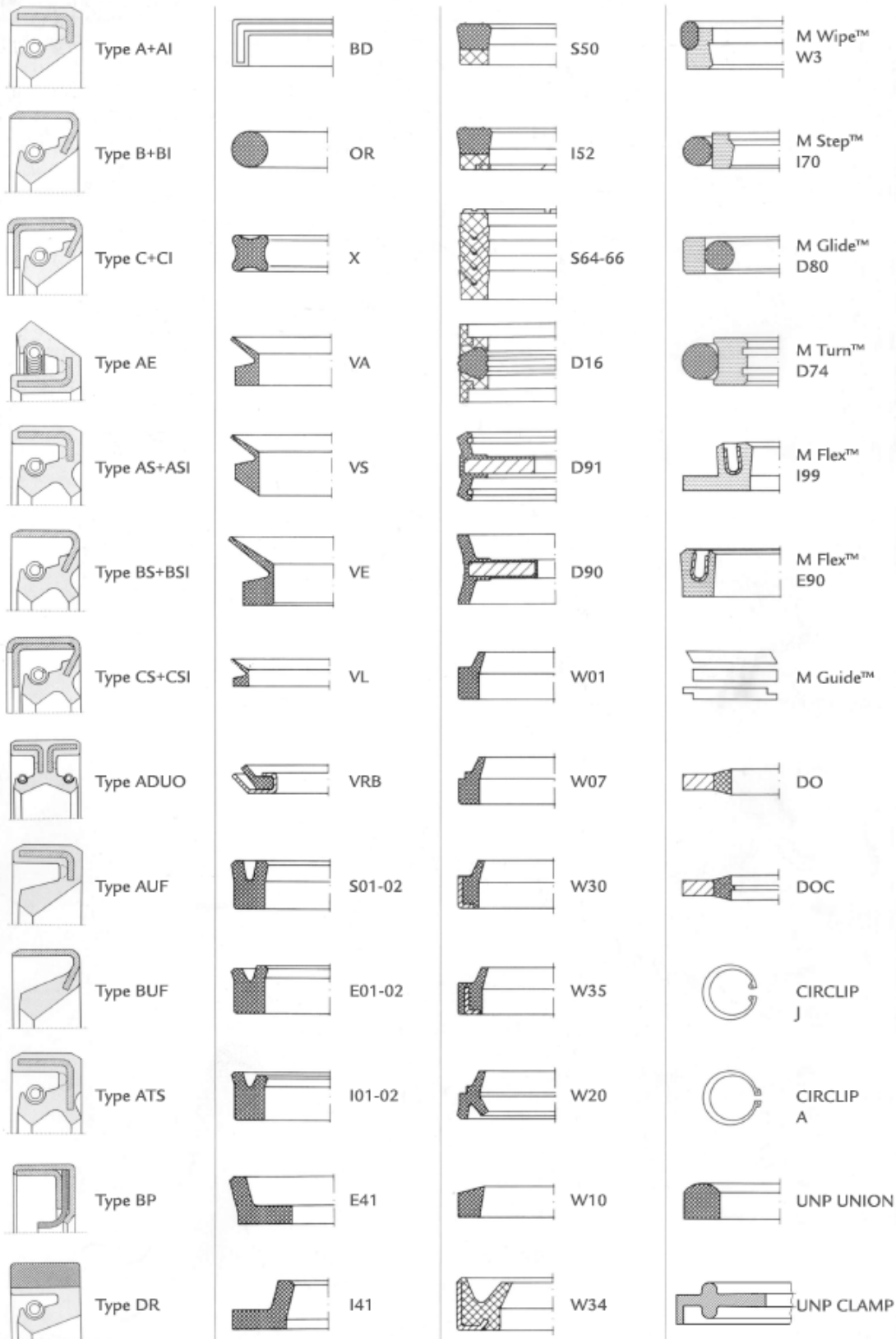
INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
151.77	±0.94	5.33	±0.13	361	4361	
158.12	±1.02	5.33	±0.13	362	4362	
164.47	±1.02	5.33	±0.13	363	4363	
170.82	±1.02	5.33	±0.13	364	4364	
177.17	±1.02	5.33	±0.13	365	4365	
183.52	±1.14	5.33	±0.13	366	4366	
189.87	±1.14	5.33	±0.13	367	4367	
196.22	±1.14	5.33	±0.13	368	4368	
202.57	±1.14	5.33	±0.13	369	4369	
208.92	±1.27	5.33	±0.13	370	4370	
215.27	±1.27	5.33	±0.13	371	4371	
221.62	±1.27	5.33	±0.13	372	4372	
227.97	±1.27	5.33	±0.13	373	4373	
234.32	±1.40	5.33	±0.13	374	4374	
240.67	±1.40	5.33	±0.13	375	4375	
247.02	±1.40	5.33	±0.13	376	4376	
253.37	±1.40	5.33	±0.13	377	4377	
266.07	±1.52	5.33	±0.13	378	4378	
278.77	±1.52	5.33	±0.13	379	4379	
291.47	±1.65	5.33	±0.13	380	4380	
304.17	±1.65	5.33	±0.13	381	4381	
329.57	±1.65	5.33	±0.13	382	4382	
354.97	±1.78	5.33	±0.13	383	4383	
380.37	±1.78	5.33	±0.13	384	4384	
405.26	±1.91	5.33	±0.13	385	4385	
430.66	±2.03	5.33	±0.13	386	4386	
456.06	±2.16	5.33	±0.13	387	4387	
481.46	±2.29	5.33	±0.13	388	4388	
506.86	±2.41	5.33	±0.13	389	4389	
532.26	±2.41	5.33	±0.13	390	4390	
557.66	±2.54	5.33	±0.13	391	4391	
582.68	±2.67	5.33	±0.13	392	4392	
608.08	±2.79	5.33	±0.13	393	4393	
633.48	±2.92	5.33	±0.13	394	4394	
658.88	±3.05	5.33	±0.13	395	4395	
113.67	±0.84	6.99	±0.15	425	4425	88
116.84	±0.84	6.99	±0.15	426	4426	53
120.02	±0.84	6.99	±0.15	427	4427	54
123.19	±0.84	6.99	±0.15	428	4428	55
126.37	±0.94	6.99	±0.15	429	4429	56
129.54	±0.94	6.99	±0.15	430	4430	57
132.72	±0.94	6.99	±0.15	431	4431	58
135.89	±0.94	6.99	±0.15	432	4432	59

SELECTION GUIDE FOR STANDARD SIZE X-RINGS



- Dimensions and tolerances

INSIDE DIAMETER		CROSS SECTION		ALTERNATIVE	ALTERNATIVE	ALTERNATIVE
MM		MM		REFERENCE AS/BS	REFERENCE	REFERENCE
139.07	±0.94	6.99	±0.15	433	4433	60
142.24	±0.94	6.99	±0.15	434	4434	61
145.42	±0.94	6.99	±0.15	435	4435	62
148.59	±0.94	6.99	±0.15	436	4436	63
151.77	±0.94	6.99	±0.15	437	4437	64
158.12	±1.02	6.99	±0.15	438	4438	65
164.47	±1.02	6.99	±0.15	439	4439	66
170.82	±1.02	6.99	±0.15	440	4440	67
177.17	±1.02	6.99	±0.15	441	4441	68
183.52	±1.14	6.99	±0.15	442	4442	69
189.87	±1.14	6.99	±0.15	443	4443	70
196.22	±1.14	6.99	±0.15	444	4444	71
202.57	±1.14	6.99	±0.15	445	4445	72
215.27	±1.40	6.99	±0.15	446	4446	73
227.97	±1.40	6.99	±0.15	447	4447	74
240.67	±1.40	6.99	±0.15	448	4448	75
253.37	±1.40	6.99	±0.15	449	4449	76
266.07	±1.52	6.99	±0.15	450	4450	77
278.77	±1.52	6.99	±0.15	451	4451	78
291.47	±1.52	6.99	±0.15	452	4452	79
304.17	±1.52	6.99	±0.15	453	4453	80
316.87	±1.52	6.99	±0.15	454	4454	81
329.57	±1.52	6.99	±0.15	455	4455	82
342.27	±1.78	6.99	±0.15	456	4456	83
354.97	±1.78	6.99	±0.15	457	4457	84
367.67	±1.78	6.99	±0.15	458	4458	85
380.37	±1.78	6.99	±0.15	459	4459	86
393.07	±1.78	6.99	±0.15	460	4460	87
405.26	±1.91	6.99	±0.15	461	4461	
417.96	±1.91	6.99	±0.15	462	4462	
430.66	±2.03	6.99	±0.15	463	4463	
443.36	±2.16	6.99	±0.15	464	4464	
456.06	±2.16	6.99	±0.15	465	4465	
468.76	±2.16	6.99	±0.15	466	4466	
481.46	±2.29	6.99	±0.15	467	4467	
494.16	±2.29	6.99	±0.15	468	4468	
506.86	±2.41	6.99	±0.15	469	4469	
532.26	±2.41	6.99	±0.15	470	4470	
557.66	±2.54	6.99	±0.15	471	4471	
582.68	±2.67	6.99	±0.15	472	4472	
608.08	±2.79	6.99	±0.15	473	4473	
633.48	±2.92	6.99	±0.15	474	4474	
658.88	±3.05	6.99	±0.15	475	4475	



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