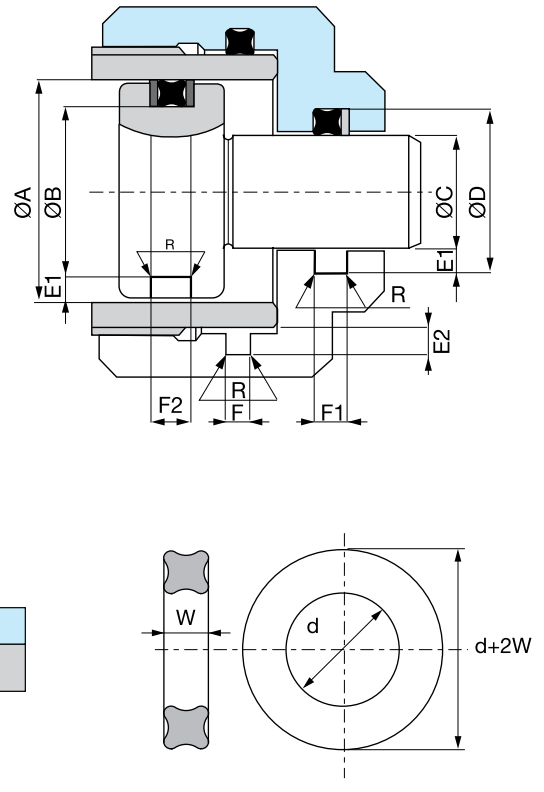


19. A. Gland Designs for Quad-Rings®/X-Rings

Quad-Rings®/X-Rings Gland Design Static/Dynamic (INCHES)

The following table shows the groove dimensions for Quad-Rings®/X-Rings.

- If the Quad-Ring®/X-Ring swells in the application, the groove width can be enlarged up to 15% max.
- For the Quad-Rings®/X-Rings not listed, the groove dimensions are available upon request.



Quad-Ring®/X-Ring dimensions

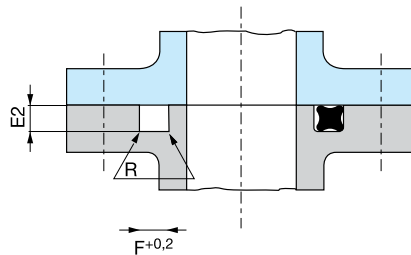


Table AS.8A Gland Dimensions (inches)

Quad-Ring® / X-Ring Size	Cross section	Depth		Width **			Radius	Max. Ø Clearance
	*** W	Dynamic E1	Static E2	No backup ring F+ .008	With Backup ring F1+ .008	With Backup ring F2+ .008	R	S max.
4001	.040 ± .003	.031 ± .001	.030 ± .001	.047	-	-	.004	.002
4002	.050 ± .003	.039 ± .001	.035 ± .001	.055	-	-	.006	.002
4003	.060 ± .003	.051 ± .001	.047 ± .001	.067	-	-	.010	.003
4003 1/2	.040 ± .003	.031 ± .001	.030 ± .001	.047	-	-	.004	.002
4004 - 4050	.070 ± .003	.061 ± .001	.056 ± .001	.080	.140	.200	.010	.004
4102 - 4178	.103 ± .003	.094 ± .001	.089 ± .001	.115	.170	.230	.015	.006
4201 - 4284	.139 ± .004	.128 ± .001	.122 ± .001	.155	.210	.270	.015	.006
4309 - 4395	.210 ± .005	.196 ± .001	.188 ± .001	.240	.310	.375	.020	.008
4425 - 4475	.275 ± .006	.256 ± .001	.244 ± .001	.310	.410	.510	.020	.008

Note:

(**) In case of exceptional bending of the rod or shaft, the diameter of the bottom of the groove can be adjusted both in case of vacuum and high pressure.

(***) Similar to O-rings, the Quad-Rings®/X-Rings need a squeeze of 10 to 15%.

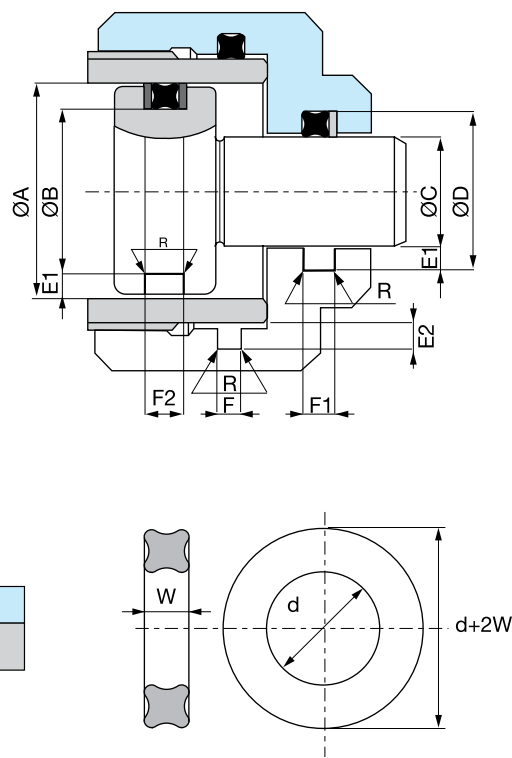
For critical applications in combination with small cross sections it is recommended to compare squeeze with the actual dimensions and tolerances.

19. A. Gland Designs for Quad-Rings®/X-Rings

Quad-Rings®/X-Rings Gland Design Static/Dynamic (METRIC)

The following table shows the groove dimensions for Quad-Rings®/X-Rings.

- If the Quad-Ring®/X-Ring swells in the application, the groove width can be enlarged up to 15% max.
- For the Quad-Rings®/X-Rings not listed, the groove dimensions are available upon request.



Quad-Ring®/X-Ring dimensions

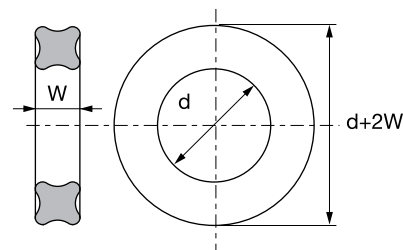
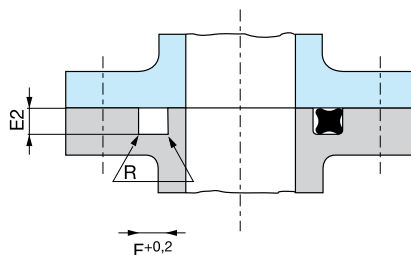


Table AS.8A Gland Dimensions (millimeters)

Quad-Ring® / X-Ring Size	Cross section	Depth		Width **			Radius	Max. Ø Clearance
	*** W	Dynamic E1	Static E2	No backup ring F+ 0,2	With Backup ring F1+ 0,2	With Backup ring F2 + 0,2	R	S max.
4001	1,02 + 0,08	0,8 + 0,025	0,75 + 0,025	1,2	-	-	0,1	0,05
4002	1,27 + 0,08	1,0 + 0,025	0,9 + 0,025	1,4	-	-	0,15	0,05
4003	1,52 + 0,08	1,3 + 0,025	1,2 + 0,025	1,7	-	-	0,25	0,08
4003 1/2	1,02 + 0,08	0,8 + 0,025	0,75 + 0,025	1,2	-	-	0,1	0,05
4004 - 4050	1,78 + 0,08	1,55 + 0,025	1,4 + 0,025	2,0	3,5	5,0	0,25	0,10
4102 - 4178	2,62 + 0,08	2,35 + 0,025	2,25 + 0,025	3,0	4,4	5,8	0,4	0,15
4201 - 4284	3,53 + 0,1	3,25 + 0,025	3,0 + 0,025	4,0	5,4	6,8	0,4	0,15
4309 - 4395	5,33 + 0,13	4,95 + 0,05	4,75 + 0,05	6,0	7,8	9,5	0,6	0,20
4425 - 4475	7,00 + 0,15	6,50 + 0,05	6,2 + 0,05	8,0	10,5	13,0	0,6	0,20

Other dimensions and elastomers are available upon request.

Note:

(**) In case of exceptional bending of the rod or shaft, the diameter of the bottom of the groove can be adjusted both in case of vacuum and high pressure.

(***) Similar to O-rings, the Quad-Rings®/X-Rings need a squeeze of 10 to 15%.

For critical applications in combination with small cross sections it is recommended to compare squeeze with the actual dimensions and tolerances.

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes

Size Only		Nominal Sizes			Actual Sizes							
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4001	.031	.093	1/32	1/32	.029	.004	0,74	0,10	.040	.003	1,02	0,08
4002	.046	.125	3/64	3/64	.042	.004	1,07	0,10	.050	.003	1,27	0,08
4003	.062	.156	1/16	1/16	.056	.004	1,42	0,10	.060	.003	1,52	0,08
4003 1/2	.078	.141	1/16	1/32	.070	.004	1,78	0,10	.040	.003	1,02	0,08
4004	.078	.203	5/64	1/16	.070	.005	1,78	0,13	.070	.003	1,78	0,08
4005	.109	.234	3/32	1/16	.101	.005	2,57	0,13	.070	.003	1,78	0,08
4006	.125	.250	1/8	1/16	.114	.005	2,90	0,13	.070	.003	1,78	0,08
4007	.156	.281	5/32	1/16	.145	.005	3,68	0,13	.070	.003	1,78	0,08
4008	.187	.312	3/16	1/16	.176	.005	4,47	0,13	.070	.003	1,78	0,08
4009	.218	.343	7/32	1/16	.208	.005	5,28	0,13	.070	.003	1,78	0,08
4010	.250	.375	1/4	1/16	.239	.005	6,07	0,13	.070	.003	1,78	0,08
4011	.312	.437	5/16	1/16	.301	.005	7,65	0,13	.070	.003	1,78	0,08
4012	.375	.500	3/8	1/16	.364	.005	9,25	0,13	.070	.003	1,78	0,08
4013	.437	.562	7/16	1/16	.426	.005	10,82	0,13	.070	.003	1,78	0,08
4014	.500	.625	1/2	1/16	.489	.005	12,42	0,13	.070	.003	1,78	0,08
4015	.562	.687	9/16	1/16	.551	.007	14,00	0,18	.070	.003	1,78	0,08
4016	.625	.750	5/8	1/16	.614	.009	15,60	0,23	.070	.003	1,78	0,08
4017	.687	.812	11/16	1/16	.676	.009	17,17	0,23	.070	.003	1,78	0,08
4018	.750	.875	3/4	1/16	.739	.009	18,77	0,23	.070	.003	1,78	0,08
4019	.812	.937	13/16	1/16	.801	.009	20,35	0,23	.070	.003	1,78	0,08
4020	.875	1.000	7/8	1/16	.864	.009	21,95	0,23	.070	.003	1,78	0,08
4021	.937	1.062	15/16	1/16	.926	.009	23,52	0,23	.070	.003	1,78	0,08
4022	1.000	1.125	1	1/16	.989	.010	25,12	0,25	.070	.003	1,78	0,08
4023	1.062	1.187	1-1/16	1/16	1.051	.010	26,70	0,25	.070	.003	1,78	0,08
4024	1.125	1.250	1-1/8	1/16	1.114	.010	28,23	0,25	.070	.003	1,78	0,08
4025	1.187	1.312	1-3/16	1/16	1.176	.011	29,87	0,28	.070	.003	1,78	0,08
4026	1.250	1.375	1-1/4	1/16	1.239	.011	31,47	0,28	.070	.003	1,78	0,08
4027	1.312	1.437	1-5/16	1/16	1.301	.011	33,05	0,28	.070	.003	1,78	0,08
4028	1.375	1.500	1-3/8	1/16	1.364	.013	34,65	0,33	.070	.003	1,78	0,08
4029	1.500	1.625	1-1/2	1/16	1.489	.013	37,82	0,33	.070	.003	1,78	0,08
4030	1.625	1.750	1-5/8	1/16	1.614	.013	41,00	0,33	.070	.003	1,78	0,08
4031	1.750	1.875	1-3/4	1/16	1.739	.015	44,17	0,38	.070	.003	1,78	0,08
4032	1.875	2.000	1-7/8	1/16	1.864	.015	47,35	0,38	.070	.003	1,78	0,08
4033	2.000	2.125	2	1/16	1.989	.018	50,52	0,46	.070	.003	1,78	0,08
4034	2.125	2.250	2-1/8	1/16	2.114	.018	53,70	0,46	.070	.003	1,78	0,08
4035	2.250	2.375	2-1/4	1/16	2.239	.018	56,87	0,46	.070	.003	1,78	0,08
4036	2.375	2.500	2-3/8	1/16	2.364	.018	60,05	0,46	.070	.003	1,78	0,08
4037	2.500	2.625	2-1/2	1/16	2.489	.018	63,22	0,46	.070	.003	1,78	0,08
4038	2.625	2.750	2-5/8	1/16	2.614	.020	66,40	0,51	.070	.003	1,78	0,08
4039	2.750	2.875	2-3/4	1/16	2.739	.020	69,57	0,51	.070	.003	1,78	0,08
4040	2.875	3.000	2-7/8	1/16	2.864	.020	72,75	0,51	.070	.003	1,78	0,08
4041	3.000	3.125	3	1/16	2.989	.024	75,92	0,61	.070	.003	1,78	0,08
4042	3.250	3.375	3-1/4	1/16	3.239	.024	82,27	0,61	.070	.003	1,78	0,08
4043	3.500	3.625	3-1/2	1/16	3.489	.024	88,62	0,61	.070	.003	1,78	0,08
4044	3.750	3.875	3-3/4	1/16	3.739	.027	94,97	0,69	.070	.003	1,78	0,08
4045	4.000	4.125	4	1/16	3.989	.027	101,32	0,69	.070	.003	1,78	0,08
4046	4.250	4.375	4-1/4	1/16	4.239	.030	107,67	0,76	.070	.003	1,78	0,08
4047	4.500	4.625	4-3/4	1/16	4.489	.030	114,02	0,76	.070	.003	1,78	0,08
4048	4.750	4.875	4-3/4	1/16	4.739	.030	120,37	0,76	.070	.003	1,78	0,08
4049	5.000	5.125	5	1/16	4.989	.037	126,72	0,94	.070	.003	1,78	0,08
4050	5.250	5.375	5-1/4	1/16	5.239	.037	133,07	0,94	.070	.003	1,78	0,08

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes												
Size Only		Nominal Sizes				Actual Sizes						
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4102	.062	.250	1/16	3/32	.049	.005	1,24	0,13	.103	.003	2,62	0,08
4103	.094	.281	3/32	3/32	.081	.005	2,06	0,13	.103	.003	2,62	0,08
4104	.125	.312	1/8	3/32	.112	.005	2,85	0,13	.103	.003	2,62	0,08
4105	.156	.343	5/32	3/32	.143	.005	3,63	0,13	.103	.003	2,62	0,08
4106	.187	.375	3/16	3/32	.174	.005	4,42	0,13	.103	.003	2,62	0,08
4107	.219	.406	7/32	3/32	.206	.005	5,23	0,13	.103	.003	2,62	0,08
4108	.250	.437	1/4	3/32	.237	.005	6,02	0,13	.103	.003	2,62	0,08
4109	.312	.500	5/16	3/32	.299	.005	7,60	0,13	.103	.003	2,62	0,08
4110	.375	.562	3/8	3/32	.362	.005	9,20	0,13	.103	.003	2,62	0,08
4111	.437	.625	7/16	3/32	.424	.005	10,77	0,13	.103	.003	2,62	0,08
4112	.500	.687	1/2	3/32	.487	.005	12,37	0,13	.103	.003	2,62	0,08
4113	.562	.750	9/16	3/32	.549	.007	13,95	0,18	.103	.003	2,62	0,08
4114	.625	.812	5/8	3/32	.612	.009	15,55	0,23	.103	.003	2,62	0,08
4115	.687	.875	11/16	3/32	.674	.009	17,12	0,23	.103	.003	2,62	0,08
4116	.750	.937	3/4	3/32	.737	.009	18,72	0,25	.103	.003	2,62	0,08
4117	.812	1.000	13/16	3/32	.799	.010	20,30	0,25	.103	.003	2,62	0,08
4118	.875	1.062	7/8	3/32	.862	.010	21,90	0,25	.103	.003	2,62	0,08
4119	.937	1.125	15/16	3/32	.924	.010	23,47	0,25	.103	.003	2,62	0,08
4120	1.000	1.187	1	3/32	.987	.010	25,07	0,25	.103	.003	2,62	0,08
4121	1.062	1.250	1-1/16	3/32	1.049	.010	26,65	0,25	.103	.003	2,62	0,08
4122	1.125	1.312	1-1/8	3/32	1.112	.010	28,25	0,25	.103	.003	2,62	0,08
4123	1.187	1.375	1-3/16	3/32	1.174	.012	29,82	0,31	.103	.003	2,62	0,08
4124	1.250	1.437	1-1/4	3/32	1.237	.012	31,42	0,31	.103	.003	2,62	0,08
4125	1.312	1.500	1-5/16	3/32	1.299	.012	33,00	0,31	.103	.003	2,62	0,08
4126	1.375	1.562	1-3/8	3/32	1.362	.012	34,60	0,31	.103	.003	2,62	0,08
4127	1.437	1.625	1-7/16	3/32	1.424	.012	36,17	0,31	.103	.003	2,62	0,08
4128	1.500	1.687	1-1/2	3/32	1.487	.012	37,77	0,31	.103	.003	2,62	0,08
4129	1.562	1.750	1-9/16	3/32	1.549	.015	39,35	0,38	.103	.003	2,62	0,08
4130	1.625	1.812	1-5/8	3/32	1.612	.015	41,00	0,38	.103	.003	2,62	0,08
4131	1.687	1.875	1-11/16	3/32	1.674	.015	42,52	0,38	.103	.003	2,62	0,08
4132	1.750	1.937	1-3/4	3/32	1.737	.015	44,12	0,38	.103	.003	2,62	0,08
4133	1.812	2.000	1-13/16	3/32	1.799	.015	45,70	0,38	.103	.003	2,62	0,08
4134	1.875	2.062	1-7/8	3/32	1.862	.015	47,30	0,38	.103	.003	2,62	0,08
4135	1.938	2.125	1-15/16	3/32	1.925	.017	48,90	0,43	.103	.003	2,62	0,08
4136	2.000	2.187	2	3/32	1.987	.017	50,47	0,43	.103	.003	2,62	0,08
4137	2.063	2.250	2-1/16	3/32	2.050	.017	52,07	0,43	.103	.003	2,62	0,08
4138	2.125	2.312	2-1/8	3/32	2.112	.017	53,65	0,43	.103	.003	2,62	0,08
4139	2.188	2.375	2-3/16	3/32	2.175	.017	55,25	0,43	.103	.003	2,62	0,08
4140	2.250	2.437	2-1/4	3/32	2.237	.017	56,82	0,43	.103	.003	2,62	0,08
4141	2.313	2.500	2-6/16	3/32	2.300	.020	58,42	0,51	.103	.003	2,62	0,08
4142	2.375	2.562	2-3/8	3/32	2.362	.020	60,00	0,51	.103	.003	2,62	0,08
4143	2.438	2.625	2-7/16	3/32	2.425	.020	61,60	0,51	.103	.003	2,62	0,08
4144	2.500	2.687	2-1/2	3/32	2.487	.020	63,17	0,51	.103	.003	2,62	0,08
4145	2.563	2.750	2-9/16	3/32	2.550	.020	64,77	0,51	.103	.003	2,62	0,08
4146	2.625	2.812	2-5/8	3/32	2.612	.020	66,34	0,51	.103	.003	2,62	0,08
4147	2.688	2.875	2-11/16	3/32	2.675	.022	67,95	0,56	.103	.003	2,62	0,08
4148	2.750	2.937	2-3/4	3/32	2.737	.022	69,52	0,56	.103	.003	2,62	0,08
4149	2.813	3.000	2-13/16	3/32	2.800	.022	71,12	0,56	.103	.003	2,62	0,08
4150	2.875	3.062	2-7/8	3/32	2.862	.022	72,70	0,56	.103	.003	2,62	0,08
4151	3.000	3.187	3	3/32	2.987	.024	75,87	0,61	.103	.003	2,62	0,08
4152	3.250	3.437	3-1/4	3/32	3.237	.024	82,22	0,61	.103	.003	2,62	0,08

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes												
Size Only			Nominal Sizes		Actual Sizes							
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4153	3.500	3.687	3-1/2	3/32	3.487	.024	88,57	0,61	.103	.003	2,62	0,08
4154	3.750	3.937	3-3/4	3/32	3.737	.028	94,92	0,71	.103	.003	2,62	0,08
4155	4.000	4.187	4	3/32	3.987	.028	101,27	0,71	.103	.003	2,62	0,08
4156	4.250	4.437	4-1/4	3/32	4.237	.030	107,62	0,76	.103	.003	2,62	0,08
4157	4.500	4.687	4-1/2	3/32	4.487	.030	113,97	0,76	.103	.003	2,62	0,08
4158	4.750	4.937	4-3/4	3/32	4.737	.030	120,32	0,76	.103	.003	2,62	0,08
4159	5.000	5.187	5	3/32	4.987	.035	126,67	0,89	.103	.003	2,62	0,08
4160	5.250	5.437	5-1/4	3/32	5.237	.035	133,02	0,89	.103	.003	2,62	0,08
4161	5.500	5.687	5-1/2	3/32	5.487	.035	139,37	0,89	.103	.003	2,62	0,08
4162	5.750	5.937	5-3/4	3/32	5.737	.035	145,72	0,89	.103	.003	2,62	0,08
4163	6.000	6.187	6	3/32	5.987	.035	152,07	0,89	.103	.003	2,62	0,08
4164	6.250	6.437	6-1/4	3/32	6.237	.040	158,42	1,02	.103	.003	2,62	0,08
4165	6.500	6.687	6-1/2	3/32	6.487	.040	164,77	1,02	.103	.003	2,62	0,08
4166	6.750	6.937	6-3/4	3/32	6.737	.040	171,12	1,02	.103	.003	2,62	0,08
4167	7.000	7.187	7	3/32	6.987	.040	177,47	1,02	.103	.003	2,62	0,08
4168	7.250	7.437	7-1/4	3/32	7.237	.045	183,82	1,14	.103	.003	2,62	0,08
4169	7.500	7.687	7-1/2	3/32	7.487	.045	190,17	1,14	.103	.003	2,62	0,08
4170	7.750	7.937	7-3/4	3/32	7.737	.045	196,52	1,14	.103	.003	2,62	0,08
4171	8.000	8.187	8	3/32	7.987	.045	202,87	1,14	.103	.003	2,62	0,08
4172	8.250	8.437	8-1/4	3/32	8.237	.050	209,22	1,27	.103	.003	2,62	0,08
4173	8.500	8.687	8-1/2	3/32	8.487	.050	215,57	1,27	.103	.003	2,62	0,08
4174	8.750	8.937	8-3/4	3/32	8.737	.050	221,92	1,27	.103	.003	2,62	0,08
4175	9.000	9.187	9	3/32	8.987	.050	228,27	1,27	.103	.003	2,62	0,08
4176	9.250	9.437	9-1/4	3/32	9.237	.055	234,62	1,40	.103	.003	2,62	0,08
4177	9.500	9.687	9-1/2	3/32	9.487	.055	240,97	1,40	.103	.003	2,62	0,08
4178	9.750	9.937	9-3/4	3/32	9.737	.055	247,32	1,40	.103	.003	2,62	0,08
4201	.187	.437	3/16	1/8	.171	.005	4,34	0,13	.139	.004	3,53	0,10
4202	.250	.500	1/4	1/8	.234	.005	5,94	0,13	.139	.004	3,53	0,10
4203	.312	.562	5/16	1/8	.296	.005	7,52	0,13	.139	.004	3,53	0,10
4204	.375	.625	3/8	1/8	.359	.005	9,12	0,13	.139	.004	3,53	0,10
4205	.437	.687	7/16	1/8	.421	.005	10,69	0,13	.139	.004	3,53	0,10
4206	.500	.750	1/2	1/8	.484	.005	12,29	0,13	.139	.004	3,53	0,10
4207	.562	.812	9/16	1/8	.546	.007	13,87	0,18	.139	.004	3,53	0,10
4208	.625	.875	5/8	1/8	.609	.009	15,47	0,23	.139	.004	3,53	0,10
4209	.687	.937	11/16	1/8	.671	.009	17,04	0,23	.139	.004	3,53	0,10
4210	.750	1.000	3/4	1/8	.734	.010	18,64	0,25	.139	.004	3,53	0,10
4211	.812	1.062	13/16	1/8	.796	.010	20,22	0,25	.139	.004	3,53	0,10
4212	.875	1.125	7/8	1/8	.859	.010	21,82	0,25	.139	.004	3,53	0,10
4213	.937	1.187	15/16	1/8	.921	.010	23,39	0,25	.139	.004	3,53	0,10
4214	1.000	1.250	1	1/8	.984	.010	24,99	0,25	.139	.004	3,53	0,10
4215	1.062	1.312	1-1/16	1/8	1.046	.010	26,57	0,25	.139	.004	3,53	0,10
4216	1.125	1.375	1-1/8	1/8	1.109	.012	28,17	0,31	.139	.004	3,53	0,10
4217	1.187	1.437	1-3/16	1/8	1.171	.012	29,74	0,31	.139	.004	3,53	0,10
4218	1.250	1.500	1-1/4	1/8	1.234	.012	31,34	0,31	.139	.004	3,53	0,10
4219	1.312	1.562	1-5/16	1/8	1.296	.012	32,92	0,31	.139	.004	3,53	0,10
4220	1.375	1.625	1-3/8	1/8	1.359	.012	34,52	0,31	.139	.004	3,53	0,10
4221	1.437	1.687	1-7/16	1/8	1.421	.012	36,09	0,31	.139	.004	3,53	0,10
4222	1.500	1.750	1-1/2	1/8	1.484	.015	37,69	0,38	.139	.004	3,53	0,10
4223	1.625	1.875	1-5/8	1/8	1.609	.015	40,87	0,38	.139	.004	3,53	0,10
4224	1.750	2.000	1-3/4	1/8	1.734	.015	44,04	0,38	.139	.004	3,53	0,10

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes												
Size Only		Nominal Sizes			Actual Sizes							
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4225	1.875	2.125	1-7/8	1/8	1.859	.018	47,22	0,46	.139	.004	3,53	0,10
4226	2.000	2.250	2	1/8	1.984	.018	50,39	0,46	.139	.004	3,53	0,10
4227	2.125	2.675	2-1/8	1/8	2.109	.018	53,57	0,46	.139	.004	3,53	0,10
4228	2.250	2.500	2-1/4	1/8	2.234	.020	56,74	0,51	.139	.004	3,53	0,10
4229	2.375	2.625	2-3/8	1/8	2.359	.020	59,92	0,51	.139	.004	3,53	0,10
4230	2.500	2.750	2-1/2	1/8	2.484	.020	63,09	0,51	.139	.004	3,53	0,10
4231	2.625	2.875	2-5/8	1/8	2.609	.020	66,27	0,51	.139	.004	3,53	0,10
4232	2.750	3.000	2-3/4	1/8	2.734	.024	69,44	0,61	.139	.004	3,53	0,10
4233	2.875	3.125	2-7/8	1/8	2.859	.024	72,62	0,61	.139	.004	3,53	0,10
4234	3.000	3.250	3	1/8	2.984	.024	75,79	0,61	.139	.004	3,53	0,10
4235	3.125	3.375	3-1/8	1/8	3.109	.024	78,97	0,61	.139	.004	3,53	0,10
4236	3.250	3.500	3-1/4	1/8	3.234	.024	82,14	0,61	.139	.004	3,53	0,10
4237	3.375	3.625	3-3/8	1/8	3.359	.024	85,32	0,61	.139	.004	3,53	0,10
4238	3.500	2.750	3-1/2	1/8	3.484	.024	88,49	0,61	.139	.004	3,53	0,10
4239	3.625	3.875	3-5/8	1/8	3.609	.028	91,67	0,71	.139	.004	3,53	0,10
4240	3.750	4.000	3-3/4	1/8	3.734	.028	94,84	0,71	.139	.004	3,53	0,10
4241	3.875	4.125	3-7/8	1/8	3.859	.028	98,02	0,71	.139	.004	3,53	0,10
4242	4.000	4.250	4	1/8	3.984	.028	101,19	0,71	.139	.004	3,53	0,10
4243	4.125	4.375	4-1/8	1/8	4.109	.028	104,37	0,71	.139	.004	3,53	0,10
4244	4.250	4.500	4-1/4	1/8	4.234	.030	107,54	0,76	.139	.004	3,53	0,10
4245	4.375	4.625	4-3/8	1/8	4.359	.030	110,72	0,76	.139	.004	3,53	0,10
4246	4.500	4.750	4-1/2	1/8	4.484	.030	113,89	0,76	.139	.004	3,53	0,10
4247	4.625	4.875	4-5/8	1/8	4.609	.030	117,07	0,76	.139	.004	3,53	0,10
4248	4.750	5.000	4-3/4	1/8	4.734	.030	120,24	0,76	.139	.004	3,53	0,10
4249	4.875	5.125	4-7/8	1/8	4.859	.035	123,42	0,89	.139	.004	3,53	0,10
4250	5.000	5.250	5	1/8	4.984	.035	126,59	0,89	.139	.004	3,53	0,10
4251	5.125	5.375	5-1/8	1/8	5.109	.035	129,77	0,89	.139	.004	3,53	0,10
4252	5.250	5.500	5-1/4	1/8	5.234	.035	132,94	0,89	.139	.004	3,53	0,10
4253	5.375	5.625	5-3/8	1/8	5.359	.035	136,12	0,89	.139	.004	3,53	0,10
4254	5.500	5.750	5-1/2	1/8	5.484	.035	139,29	0,89	.139	.004	3,53	0,10
4255	5.625	5.875	5-5/8	1/8	5.609	.035	142,47	0,89	.139	.004	3,53	0,10
4256	5.750	6.000	5-3/4	1/8	5.734	.035	145,64	0,89	.139	.004	3,53	0,10
4257	5.875	6.125	5-7/8	1/8	5.859	.035	148,82	0,89	.139	.004	3,53	0,10
4258	6.000	6.250	6	1/8	5.984	.035	151,99	0,89	.139	.004	3,53	0,10
4259	6.250	6.500	6-1/4	1/8	6.234	.040	158,34	1,02	.139	.004	3,53	0,10
4260	6.500	6.750	6-1/2	1/8	6.484	.040	164,69	1,02	.139	.004	3,53	0,10
4261	6.750	7.000	6-3/4	1/8	6.734	.040	171,04	1,02	.139	.004	3,53	0,10
4262	7.000	7.250	7	1/8	6.984	.040	177,39	1,02	.139	.004	3,53	0,10
4263	7.250	7.500	7-1/4	1/8	7.234	.045	183,74	1,14	.139	.004	3,53	0,10
4264	7.500	7.750	7-1/2	1/8	7.484	.045	190,10	1,14	.139	.004	3,53	0,10
4265	7.750	8.000	7-3/4	1/8	7.734	.045	196,44	1,14	.139	.004	3,53	0,10
4266	8.000	8.250	8	1/8	7.984	.045	202,79	1,14	.139	.004	3,53	0,10
4267	8.250	8.500	8-1/4	1/8	8.234	.050	209,14	1,27	.139	.004	3,53	0,10
4268	8.500	8.750	8-1/2	1/8	8.484	.050	215,49	1,27	.139	.004	3,53	0,10
4269	8.750	9.000	8-3/4	1/8	8.734	.050	221,84	1,27	.139	.004	3,53	0,10
4270	9.000	9.250	9	1/8	8.984	.050	228,19	1,27	.139	.004	3,53	0,10
4271	9.250	9.500	9-1/4	1/8	9.234	.055	234,54	1,40	.139	.004	3,53	0,10
4272	9.500	9.750	9-1/2	1/8	9.484	.055	240,89	1,40	.139	.004	3,53	0,10
4273	9.750	10.000	9-3/4	1/8	9.734	.055	247,24	1,40	.139	.004	3,53	0,10
4274	10.000	10.250	10	1/8	9.984	.055	253,59	1,40	.139	.004	3,53	0,10
4275	10.500	10.750	10-1/2	1/8	10.484	.055	266,29	1,40	.139	.004	3,53	0,10

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes												
Size Only	Nominal Sizes		Actual Sizes									
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4276	11.000	11.250	11	1/8	10.984	.065	278,99	1,65	.139	.004	3,53	0,10
4277	11.500	11.750	11-1/2	1/8	11.484	.065	291,69	1,65	.139	.004	3,53	0,10
4278	12.000	12.250	12	1/8	11.984	.065	304,39	1,65	.139	.004	3,53	0,10
4279	13.000	13.250	13	1/8	12.984	.065	329,79	1,65	.139	.004	3,53	0,10
4280	14.000	14.250	14	1/8	13.984	.065	355,19	1,65	.139	.004	3,53	0,10
4281	15.000	15.250	15	1/8	14.984	.065	380,59	1,65	.139	.004	3,53	0,10
4282	16.000	16.250	16	1/8	15.955	.075	405,26	1,91	.139	.004	3,53	0,10
4283	17.000	17.250	17	1/8	16.955	.080	430,66	2,03	.139	.004	3,53	0,10
4284	18.000	18.250	18	1/8	17.955	.085	456,06	2,16	.139	.004	3,53	0,10
4309	.437	.812	7/16	3/16	.412	.005	10,47	0,13	.210	.005	5,33	0,13
4310	.500	.875	1/2	3/16	.475	.005	12,07	0,13	.210	.005	5,33	0,13
4311	.562	.937	9/16	3/16	.537	.007	13,64	0,18	.210	.005	5,33	0,13
4312	.625	1.000	5/8	3/16	.600	.009	15,24	0,23	.210	.005	5,33	0,13
4313	.687	1.062	11/16	3/16	.662	.009	16,82	0,23	.210	.005	5,33	0,13
4314	.750	1.125	3/4	3/16	.725	.010	18,42	0,25	.210	.005	5,33	0,13
4315	.812	1.187	13/16	3/16	.787	.010	19,99	0,25	.210	.005	5,33	0,13
4316	.875	1.250	7/8	3/16	.850	.010	21,59	0,25	.210	.005	5,33	0,13
4317	.937	1.312	15/16	3/16	.912	.010	23,17	0,25	.210	.005	5,33	0,13
4318	1.000	1.375	1	3/16	.975	.010	24,77	0,25	.210	.005	5,33	0,13
4319	1.062	1.437	1-1/16	3/16	1.037	.010	26,34	0,25	.210	.005	5,33	0,13
4320	1.125	1.500	1-1/8	3/16	1.100	.012	27,94	0,31	.210	.005	5,33	0,13
4321	1.187	1.562	1-3/16	3/16	1.162	.012	29,52	0,31	.210	.005	5,33	0,13
4322	1.250	1.625	1-1/4	3/16	1.225	.012	31,12	0,31	.210	.005	5,33	0,13
4323	1.312	1.687	1-5/16	3/16	1.287	.012	32,69	0,31	.210	.005	5,33	0,13
4324	1.375	1.750	1-3/8	3/16	1.350	.012	34,29	0,31	.210	.005	5,33	0,13
4325	1.500	1.875	1-1/2	3/16	1.475	.015	37,47	0,38	.210	.005	5,33	0,13
4326	1.625	2.000	1-5/8	3/16	1.600	.015	40,64	0,38	.210	.005	5,33	0,13
4327	1.750	2.125	1-3/4	3/16	1.725	.015	43,82	0,38	.210	.005	5,33	0,13
4328	1.875	2.250	1-7/8	3/16	1.850	.015	46,99	0,38	.210	.005	5,33	0,13
4329	2.000	2.375	2	3/16	1.975	.018	50,17	0,46	.210	.005	5,33	0,13
4330	2.125	2.500	2-1/8	3/16	2.100	.018	53,34	0,46	.210	.005	5,33	0,13
4331	2.250	2.625	2-1/4	3/16	2.225	.018	56,52	0,46	.210	.005	5,33	0,13
4332	2.375	2.750	2-3/8	3/16	2.350	.018	59,69	0,46	.210	.005	5,33	0,13
4333	2.500	2.875	2-1/2	3/16	2.475	.020	62,87	0,51	.210	.005	5,33	0,13
4334	2.625	3.000	2-5/8	3/16	2.600	.020	66,04	0,51	.210	.005	5,33	0,13
4335	2.750	3.125	2-3/4	3/16	2.725	.020	69,22	0,51	.210	.005	5,33	0,13
4336	2.875	3.250	2-7/8	3/16	2.850	.020	72,39	0,51	.210	.005	5,33	0,13
4337	3.000	3.375	3	3/16	2.975	.024	75,57	0,61	.210	.005	5,33	0,13
4338	3.125	3.500	3-1/8	3/16	3.100	.024	78,74	0,61	.210	.005	5,33	0,13
4339	3.250	3.625	3-1/4	3/16	3.225	.024	81,92	0,61	.210	.005	5,33	0,13
4340	3.375	3.750	3-3/8	3/16	3.350	.024	85,09	0,61	.210	.005	5,33	0,13
4341	3.500	3.875	3-1/2	3/16	3.475	.024	88,27	0,61	.210	.005	5,33	0,13
4342	3.625	4.000	3-5/8	3/16	3.600	.028	91,44	0,71	.210	.005	5,33	0,13
4343	3.750	4.125	3-3/4	3/16	3.725	.028	94,62	0,71	.210	.005	5,33	0,13
4344	3.875	4.250	3-7/8	3/16	3.850	.028	97,79	0,71	.210	.005	5,33	0,13
4345	4.000	4.375	4	3/16	3.975	.028	100,97	0,71	.210	.005	5,33	0,13
4346	4.125	4.500	4-1/8	3/16	4.100	.028	104,14	0,71	.210	.005	5,33	0,13
4347	4.250	4.625	4-1/4	3/16	4.225	.030	107,32	0,76	.210	.005	5,33	0,13
4348	4.375	4.750	4-3/8	3/16	4.350	.030	110,49	0,76	.210	.005	5,33	0,13
4349	4.500	4.875	4-1/2	3/16	4.475	.030	113,67	0,76	.210	.005	5,33	0,13

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes												
Size Only		Nominal Sizes			Actual Sizes							
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4350	4.625	5.000	4-5/8	3/16	4.600	.030	116,84	0,76	.210	.005	5,33	0,13
4351	4.750	5.125	4-3/4	3/16	4.725	.030	120,02	0,76	.210	.005	5,33	0,13
4352	4.875	5.250	4-7/8	3/16	4.850	.030	123,19	0,76	.210	.005	5,33	0,13
4353	5.000	5.375	5	3/16	4.975	.037	126,37	0,94	.210	.005	5,33	0,13
4354	5.125	5.500	5-1/8	3/16	5.100	.037	129,54	0,94	.210	.005	5,33	0,13
4355	5.250	5.625	5-1/4	3/16	5.225	.037	132,72	0,94	.210	.005	5,33	0,13
4356	5.375	5.750	5-3/8	3/16	5.350	.037	135,89	0,94	.210	.005	5,33	0,13
4357	5.500	5.875	5-1/2	3/16	5.475	.037	139,07	0,94	.210	.005	5,33	0,13
4358	5.625	6.000	5-5/8	3/16	5.600	.037	142,24	0,94	.210	.005	5,33	0,13
4359	5.750	6.125	5-3/4	3/16	5.725	.037	145,42	0,94	.210	.005	5,33	0,13
4360	5.875	6.250	5-7/8	3/16	5.850	.037	148,59	0,94	.210	.005	5,33	0,13
4361	6.000	6.375	6	3/16	5.975	.037	151,77	0,94	.210	.005	5,33	0,13
4362	6.250	6.625	6-1/4	3/16	6.225	.040	158,12	1,02	.210	.005	5,33	0,13
4363	6.500	6.875	6-1/2	3/16	6.475	.040	164,47	1,02	.210	.005	5,33	0,13
4364	6.750	7.125	6-3/4	3/16	6.725	.040	170,82	1,02	.210	.005	5,33	0,13
4365	7.000	7.375	7	3/16	6.975	.040	177,17	1,02	.210	.005	5,33	0,13
4366	7.250	7.625	7-1/4	3/16	7.225	.045	183,52	1,14	.210	.005	5,33	0,13
4367	7.500	7.875	7-1/2	3/16	7.475	.045	189,87	1,14	.210	.005	5,33	0,13
4368	7.750	8.125	7-3/4	3/16	7.725	.045	196,22	1,14	.210	.005	5,33	0,13
4369	8.000	8.375	8	3/16	7.975	.045	202,57	1,14	.210	.005	5,33	0,13
4370	8.250	8.625	8-1/4	3/16	8.225	.050	208,92	1,27	.210	.005	5,33	0,13
4371	8.500	8.875	8-1/2	3/16	8.475	.050	215,27	1,27	.210	.005	5,33	0,13
4372	8.750	9.125	8-3/4	3/16	8.725	.050	221,62	1,27	.210	.005	5,33	0,13
4373	9.000	9.375	9	3/16	8.975	.050	227,97	1,27	.210	.005	5,33	0,13
4374	9.250	9.625	9-1/4	3/16	9.225	.055	234,32	0,14	.210	.005	5,33	0,13
4375	9.500	9.875	9-1/2	3/16	9.475	.055	240,67	0,14	.210	.005	5,33	0,13
4376	9.750	10.125	9-3/4	3/16	9.725	.055	247,02	0,14	.210	.005	5,33	0,13
4377	10.000	10.375	10	3/16	9.975	.055	253,37	0,14	.210	.005	5,33	0,13
4378	10.500	10.875	10-1/2	3/16	10.475	.060	266,07	1,52	.210	.005	5,33	0,13
4379	11.000	11.375	11	3/16	10.975	.060	278,77	1,52	.210	.005	5,33	0,13
4380	11.500	11.875	11-1/2	3/16	11.475	.065	291,47	1,65	.210	.005	5,33	0,13
4381	12.000	12.375	12	3/16	11.975	.065	304,17	1,65	.210	.005	5,33	0,13
4382	13.000	13.375	13	3/16	12.975	.065	329,57	1,65	.210	.005	5,33	0,13
4383	14.000	14.375	14	3/16	13.975	.070	354,97	1,78	.210	.005	5,33	0,13
4384	15.000	15.375	15	3/16	14.975	.070	380,37	1,78	.210	.005	5,33	0,13
4385	16.000	16.375	16	3/16	15.955	.075	405,26	1,91	.210	.005	5,33	0,13
4386	17.000	17.375	17	3/16	16.955	.080	430,66	2,03	.210	.005	5,33	0,13
4387	18.000	18.375	18	3/16	17.955	.085	456,06	2,16	.210	.005	5,33	0,13
4388	19.000	19.375	19	3/16	18.955	.090	481,41	2,29	.210	.005	5,33	0,13
4389	20.000	20.375	20	3/16	19.955	.095	506,81	2,41	.210	.005	5,33	0,13
4390	21.000	21.375	21	3/16	20.955	.095	532,21	2,41	.210	.005	5,33	0,13
4391	22.000	22.375	22	3/16	21.955	.100	557,61	2,54	.210	.005	5,33	0,13
4392	23.000	23.375	23	3/16	22.940	.105	582,68	2,67	.210	.005	5,33	0,13
4393	24.000	24.375	24	3/16	23.940	.110	608,08	2,79	.210	.005	5,33	0,13
4394	25.000	25.375	25	3/16	24.940	.115	633,48	2,92	.210	.005	5,33	0,13
4395	26.000	26.375	26	3/16	25.940	.120	658,88	3,05	.210	.005	5,33	0,13
4425	4.500	5.000	4-1/2	1/4	4.475	.033	113,67	0,84	.275	.006	6,99	0,15
4426	4.625	5.125	4-5/8	1/4	4.600	.033	116,84	0,84	.275	.006	6,99	0,15
4427	4.750	5.250	4-3/4	1/4	4.725	.033	120,02	0,84	.275	.006	6,99	0,15
4428	4.875	5.375	4-7/8	1/4	4.850	.033	123,19	0,84	.275	.006	6,99	0,15

19. B. Precision Quad-Rings®/X-Rings Standard Sizes

Standard Quad-Ring® / X-Ring Sizes

Size Only		Nominal Sizes			Actual Sizes							
Part nr.	Rod	Bore	ID (in)	C/S (in)	ID (in)	+/-	ID(mm)	+/-	C/S (in)	+/-	C/S (mm)	+/-
4429	5.000	5.500	5	1/4	4.975	.037	126,37	0,94	.275	.006	6,99	0,15
4430	5.125	5.625	5-1/8	1/4	5.100	.037	129,54	0,94	.275	.006	6,99	0,15
4431	5.250	5.750	5-1/4	1/4	5.225	.037	132,72	0,94	.275	.006	6,99	0,15
4432	5.375	5.875	5-3/8	1/4	5.350	.037	135,89	0,94	.275	.006	6,99	0,15
4433	5.500	6.000	5-1/2	1/4	5.475	.037	139,07	0,94	.275	.006	6,99	0,15
4434	5.625	6.125	5-5/8	1/4	5.600	.037	142,24	0,94	.275	.006	6,99	0,15
4435	5.750	6.250	5-3/4	1/4	5.725	.037	145,42	0,94	.275	.006	6,99	0,15
4436	5.875	6.375	5-7/8	1/4	5.850	.037	148,59	0,94	.275	.006	6,99	0,15
4437	6.000	6.500	6	1/4	5.975	.037	151,77	0,94	.275	.006	6,99	0,15
4438	6.250	6.750	6-1/4	1/4	6.225	.040	158,12	1,02	.275	.006	6,99	0,15
4439	6.500	7.000	6-1/2	1/4	6.475	.040	164,47	1,02	.275	.006	6,99	0,15
4440	6.750	7.250	6-3/4	1/4	6.725	.040	170,82	1,02	.275	.006	6,99	0,15
4441	7.000	7.500	7	1/4	6.975	.040	177,17	1,02	.275	.006	6,99	0,15
4442	7.250	7.750	7-1/4	1/4	7.225	.045	183,52	1,14	.275	.006	6,99	0,15
4443	7.500	8.000	7-1/2	1/4	7.475	.045	189,87	1,14	.275	.006	6,99	0,15
4444	7.750	8.250	7-3/4	1/4	7.725	.045	196,22	1,14	.275	.006	6,99	0,15
4445	8.000	8.500	8	1/4	7.975	.045	202,57	1,14	.275	.006	6,99	0,15
4446	8.500	9.000	8-1/2	1/4	8.475	.055	215,27	1,40	.275	.006	6,99	0,15
4447	9.000	9.500	9	1/4	8.975	.055	227,97	1,40	.275	.006	6,99	0,15
4448	9.500	10.000	9-1/2	1/4	9.475	.055	240,67	1,40	.275	.006	6,99	0,15
4449	10.000	10.500	10	1/4	9.975	.055	253,37	1,40	.275	.006	6,99	0,15
4450	10.500	11.000	10-1/2	1/4	10.475	.060	266,07	1,52	.275	.006	6,99	0,15
4451	11.000	11.500	11	1/4	10.975	.060	278,77	1,52	.275	.006	6,99	0,15
4452	11.500	12.000	11-1/2	1/4	11.475	.065	291,47	1,52	.275	.006	6,99	0,15
4453	12.000	12.500	12	1/4	11.975	.065	304,17	1,52	.275	.006	6,99	0,15
4454	12.500	13.000	12-1/2	1/4	12.475	.065	316,87	1,52	.275	.006	6,99	0,15
4455	13.000	13.500	13	1/4	12.975	.065	329,57	1,52	.275	.006	6,99	0,15
4456	13.500	14.000	13-1/2	1/4	13.475	.070	342,27	1,78	.275	.006	6,99	0,15
4457	14.000	14.500	14	1/4	13.975	.070	354,97	1,78	.275	.006	6,99	0,15
4458	14.500	15.000	14-1/2	1/4	14.475	.070	367,67	1,78	.275	.006	6,99	0,15
4459	15.000	15.500	15	1/4	14.975	.070	380,37	1,78	.275	.006	6,99	0,15
4460	15.500	16.000	15-1/2	1/4	15.475	.070	393,07	1,78	.275	.006	6,99	0,15
4461	16.000	16.500	16	1/4	15.955	.075	405,26	1,91	.275	.006	6,99	0,15
4462	16.500	17.000	16-1/2	1/4	16.455	.075	417,96	1,91	.275	.006	6,99	0,15
4463	17.000	17.500	17	1/4	16.955	.080	430,66	2,03	.275	.006	6,99	0,15
4464	17.500	18.000	17-1/2	1/4	17.455	.085	443,36	2,16	.275	.006	6,99	0,15
4465	18.000	18.500	18	1/4	17.955	.085	456,06	2,16	.275	.006	6,99	0,15
4466	18.500	19.000	18-1/2	1/4	18.455	.085	468,76	2,16	.275	.006	6,99	0,15
4467	19.000	19.500	19	1/4	18.955	.090	481,46	2,29	.275	.006	6,99	0,15
4468	19.500	20.000	19-1/2	1/4	19.455	.090	494,16	2,29	.275	.006	6,99	0,15
4469	20.000	20.500	20	1/4	19.955	.095	506,86	2,41	.275	.006	6,99	0,15
4470	21.000	21.500	21	1/4	20.955	.095	532,26	2,41	.275	.006	6,99	0,15
4471	22.000	22.500	22	1/4	21.955	.100	557,66	2,54	.275	.006	6,99	0,15
4472	23.000	23.500	23	1/4	22.940	.105	582,68	2,67	.275	.006	6,99	0,15
4473	24.000	24.500	24	1/4	23.940	.110	608,08	2,79	.275	.006	6,99	0,15
4474	25.000	25.500	25	1/4	24.940	.115	633,48	2,92	.275	.006	6,99	0,15
4475	26.000	26.500	26	1/4	25.940	.120	658,88	3,05	.275	.006	6,99	0,15