



■ Quad-Ring® Seal dimensions in dependence on the American O-Ring standard AS 568

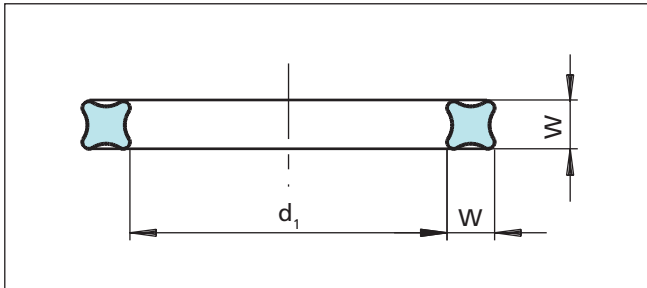


Figure 15 Quad-Ring® Seal

Table V TSS Part Numbers / Dimensions

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04001	0.74	0.10	1.02	0.08
QRAR04002	1.07	0.10	1.27	0.08
QRAR04003	1.42	0.10	1.52	0.08
QRAR04004	1.78	0.13	1.78	0.08
QRAR04005	2.57	0.13	1.78	0.08
QRAR04006	2.90	0.13	1.78	0.08
QRAR04007	3.68	0.13	1.78	0.08
QRAR04008	4.47	0.13	1.78	0.08
QRAR04009	5.28	0.13	1.78	0.08
QRAR04010	6.07	0.13	1.78	0.08
QRAR04011	7.65	0.13	1.78	0.08
QRAR04012	9.25	0.13	1.78	0.08
QRAR04013	10.82	0.13	1.78	0.08
QRAR04014	12.42	0.13	1.78	0.08
QRAR04015	14.00	0.18	1.78	0.08
QRAR04016	15.60	0.23	1.78	0.08
QRAR04017	17.17	0.23	1.78	0.08
QRAR04018	18.77	0.23	1.78	0.08
QRAR04019	20.35	0.23	1.78	0.08
QRAR04020	21.95	0.23	1.78	0.08
QRAR04021	23.52	0.23	1.78	0.08
QRAR04022	25.12	0.25	1.78	0.08
QRAR04023	26.70	0.25	1.78	0.08
QRAR04024	28.30	0.25	1.78	0.08
QRAR04025	29.87	0.28	1.78	0.08
QRAR04026	31.47	0.28	1.78	0.08
QRAR04027	33.05	0.28	1.78	0.08
QRAR04028	34.65	0.33	1.78	0.08
QRAR04029	37.82	0.33	1.78	0.08
QRAR04030	41.00	0.33	1.78	0.08

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04031	44.17	0.38	1.78	0.08
QRAR04032	47.35	0.38	1.78	0.08
QRAR04033	50.52	0.46	1.78	0.08
QRAR04034	53.70	0.46	1.78	0.08
QRAR04035	56.87	0.46	1.78	0.08
QRAR04036	60.05	0.46	1.78	0.08
QRAR04037	63.22	0.46	1.78	0.08
QRAR04038	66.40	0.51	1.78	0.08
QRAR04039	69.57	0.51	1.78	0.08
QRAR04040	72.75	0.51	1.78	0.08
QRAR04041	75.92	0.61	1.78	0.08
QRAR04042	82.27	0.61	1.78	0.08
QRAR04043	88.62	0.61	1.78	0.08
QRAR04044	94.97	0.69	1.78	0.08
QRAR04045	101.32	0.69	1.78	0.08
QRAR04046	107.67	0.76	1.78	0.08
QRAR04047	114.02	0.76	1.78	0.08
QRAR04048	120.37	0.76	1.78	0.08
QRAR04049	126.72	0.94	1.78	0.08
QRAR04050	133.07	0.94	1.78	0.08
QRAR04102	1.24	0.10	2.62	0.08
QRAR04103	2.06	0.10	2.62	0.08
QRAR04104	2.84	0.13	2.62	0.08
QRAR04105	3.63	0.13	2.62	0.08
QRAR04106	4.42	0.13	2.62	0.08
QRAR04107	5.23	0.13	2.62	0.08
QRAR04108	6.02	0.13	2.62	0.08
QRAR04109	7.59	0.13	2.62	0.08
QRAR04110	9.19	0.13	2.62	0.08
QRAR04111	10.77	0.13	2.62	0.08
QRAR04112	12.37	0.13	2.62	0.08
QRAR04113	13.94	0.18	2.62	0.08
QRAR04114	15.54	0.23	2.62	0.08
QRAR04115	17.12	0.23	2.62	0.08
QRAR04116	18.72	0.23	2.62	0.08
QRAR04117	20.29	0.25	2.62	0.08
QRAR04118	21.89	0.25	2.62	0.08
QRAR04119	23.47	0.25	2.62	0.08
QRAR04120	25.07	0.25	2.62	0.08
QRAR04121	26.64	0.25	2.62	0.08
QRAR04122	28.24	0.25	2.62	0.08
QRAR04123	29.82	0.30	2.62	0.08



Quad-Ring® Seal

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04124	31.42	0.30	2.62	0.08
QRAR04125	32.99	0.30	2.62	0.08
QRAR04126	34.59	0.30	2.62	0.08
QRAR04127	36.17	0.30	2.62	0.08
QRAR04128	37.77	0.30	2.62	0.08
QRAR04129	39.34	0.38	2.62	0.08
QRAR04130	40.94	0.38	2.62	0.08
QRAR04131	42.52	0.38	2.62	0.08
QRAR04132	44.12	0.38	2.62	0.08
QRAR04133	45.69	0.38	2.62	0.08
QRAR04134	47.29	0.38	2.62	0.08
QRAR04135	48.90	0.43	2.62	0.08
QRAR04136	50.47	0.43	2.62	0.08
QRAR04137	52.07	0.43	2.62	0.08
QRAR04138	53.64	0.43	2.62	0.08
QRAR04139	55.25	0.43	2.62	0.08
QRAR04140	56.82	0.43	2.62	0.08
QRAR04141	58.42	0.51	2.62	0.08
QRAR04142	59.99	0.51	2.62	0.08
QRAR04143	61.60	0.51	2.62	0.08
QRAR04144	63.17	0.51	2.62	0.08
QRAR04145	64.77	0.51	2.62	0.08
QRAR04146	66.34	0.51	2.62	0.08
QRAR04147	67.95	0.56	2.62	0.08
QRAR04148	69.52	0.56	2.62	0.08
QRAR04149	71.12	0.56	2.62	0.08
QRAR04150	72.69	0.56	2.62	0.08
QRAR04151	75.87	0.61	2.62	0.08
QRAR04152	82.22	0.61	2.62	0.08
QRAR04153	88.57	0.61	2.62	0.08
QRAR04154	94.92	0.71	2.62	0.08
QRAR04155	101.27	0.71	2.62	0.08
QRAR04156	107.62	0.76	2.62	0.08
QRAR04157	113.97	0.76	2.62	0.08
QRAR04158	120.32	0.76	2.62	0.08
QRAR04159	126.67	0.89	2.62	0.08
QRAR04160	133.02	0.89	2.62	0.08
QRAR04161	139.37	0.89	2.62	0.08
QRAR04162	145.72	0.89	2.62	0.08
QRAR04163	152.07	0.89	2.62	0.08
QRAR04164	158.42	1.02	2.62	0.08
QRAR04165	164.77	1.02	2.62	0.08
QRAR04166	171.12	1.02	2.62	0.08
QRAR04167	177.47	1.02	2.62	0.08
QRAR04168	183.82	1.14	2.62	0.08
QRAR04169	190.17	1.14	2.62	0.08

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04170	196.52	1.14	2.62	0.08
QRAR04171	202.87	1.14	2.62	0.08
QRAR04172	209.22	1.27	2.62	0.08
QRAR04173	215.57	1.27	2.62	0.08
QRAR04174	221.92	1.27	2.62	0.08
QRAR04175	228.27	1.27	2.62	0.08
QRAR04176	234.62	1.40	2.62	0.08
QRAR04177	240.97	1.40	2.62	0.08
QRAR04178	247.32	1.40	2.62	0.08
QRAR04202	5.94	0.13	3.53	0.10
QRAR04203	7.52	0.13	3.53	0.10
QRAR04204	9.12	0.13	3.53	0.10
QRAR04205	10.69	0.13	3.53	0.10
QRAR04206	12.29	0.13	3.53	0.10
QRAR04207	13.87	0.18	3.53	0.10
QRAR04208	15.47	0.23	3.53	0.10
QRAR04209	17.04	0.23	3.53	0.10
QRAR04210	18.64	0.25	3.53	0.10
QRAR04211	20.22	0.25	3.53	0.10
QRAR04212	21.82	0.25	3.53	0.10
QRAR04213	23.39	0.25	3.53	0.10
QRAR04214	24.99	0.25	3.53	0.10
QRAR04215	26.57	0.25	3.53	0.10
QRAR04216	28.17	0.30	3.53	0.10
QRAR04217	29.74	0.30	3.53	0.10
QRAR04218	31.34	0.30	3.53	0.10
QRAR04219	32.92	0.30	3.53	0.10
QRAR04220	34.52	0.30	3.53	0.10
QRAR04221	36.09	0.30	3.53	0.10
QRAR04222	37.69	0.38	3.53	0.10
QRAR04223	40.87	0.38	3.53	0.10
QRAR04224	44.04	0.38	3.53	0.10
QRAR04225	47.22	0.46	3.53	0.10
QRAR04226	50.39	0.46	3.53	0.10
QRAR04227	53.57	0.46	3.53	0.10
QRAR04228	56.74	0.51	3.53	0.10
QRAR04229	59.92	0.51	3.53	0.10
QRAR04230	63.09	0.51	3.53	0.10
QRAR04231	66.27	0.51	3.53	0.10
QRAR04232	69.44	0.61	3.53	0.10
QRAR04233	72.62	0.61	3.53	0.10
QRAR04234	75.79	0.61	3.53	0.10
QRAR04235	78.97	0.61	3.53	0.10
QRAR04236	82.14	0.61	3.53	0.10
QRAR04237	85.32	0.61	3.53	0.10



TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04238	88.49	0.61	3.53	0.10
QRAR04239	91.67	0.71	3.53	0.10
QRAR04240	94.84	0.71	3.53	0.10
QRAR04241	98.02	0.71	3.53	0.10
QRAR04242	101.19	0.71	3.53	0.10
QRAR04243	104.37	0.71	3.53	0.10
QRAR04244	107.54	0.76	3.53	0.10
QRAR04245	110.72	0.76	3.53	0.10
QRAR04246	113.89	0.76	3.53	0.10
QRAR04247	117.07	0.76	3.53	0.10
QRAR04248	120.24	0.76	3.53	0.10
QRAR04249	123.42	0.84	3.53	0.10
QRAR04250	126.59	0.84	3.53	0.10
QRAR04251	129.77	0.84	3.53	0.10
QRAR04252	132.94	0.89	3.53	0.10
QRAR04253	136.12	0.89	3.53	0.10
QRAR04254	139.29	0.89	3.53	0.10
QRAR04255	142.47	0.89	3.53	0.10
QRAR04256	145.64	0.89	3.53	0.10
QRAR04257	148.82	0.89	3.53	0.10
QRAR04258	151.99	0.89	3.53	0.10
QRAR04259	158.34	1.02	3.53	0.10
QRAR04260	164.69	1.02	3.53	0.10
QRAR04261	171.04	1.02	3.53	0.10
QRAR04262	177.39	1.02	3.53	0.10
QRAR04263	183.74	1.14	3.53	0.10
QRAR04264	190.09	1.14	3.53	0.10
QRAR04265	196.44	1.14	3.53	0.10
QRAR04266	202.79	1.14	3.53	0.10
QRAR04267	209.14	1.27	3.53	0.10
QRAR04268	215.49	1.27	3.53	0.10
QRAR04269	221.84	1.27	3.53	0.10
QRAR04270	228.19	1.27	3.53	0.10
QRAR04271	234.54	1.40	3.53	0.10
QRAR04272	240.89	1.40	3.53	0.10
QRAR04273	247.24	1.40	3.53	0.10
QRAR04274	253.59	1.40	3.53	0.10
QRAR04275	266.29	1.40	3.53	0.10
QRAR04276	278.99	1.65	3.53	0.10
QRAR04277	291.69	1.65	3.53	0.10
QRAR04278	304.39	1.65	3.53	0.10
QRAR04279	329.79	1.65	3.53	0.10
QRAR04280	355.19	1.65	3.53	0.10
QRAR04281	380.59	1.65	3.53	0.10
QRAR04282	405.26	1.90	3.53	0.10
QRAR04283	430.66	2.16	3.53	0.10

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04284	456.06	2.42	3.53	0.10
QRAR04309	10.46	0.13	5.33	0.13
QRAR04310	12.07	0.13	5.33	0.13
QRAR04311	13.64	0.18	5.33	0.13
QRAR04312	15.24	0.23	5.33	0.13
QRAR04313	16.81	0.23	5.33	0.13
QRAR04314	18.42	0.25	5.33	0.13
QRAR04315	19.99	0.25	5.33	0.13
QRAR04316	21.59	0.25	5.33	0.13
QRAR04317	23.16	0.25	5.33	0.13
QRAR04318	24.77	0.25	5.33	0.13
QRAR04319	26.34	0.25	5.33	0.13
QRAR04320	27.94	0.30	5.33	0.13
QRAR04321	29.51	0.30	5.33	0.13
QRAR04322	31.12	0.30	5.33	0.13
QRAR04323	32.69	0.30	5.33	0.13
QRAR04324	34.29	0.30	5.33	0.13
QRAR04325	37.47	0.38	5.33	0.13
QRAR04326	40.64	0.38	5.33	0.13
QRAR04326	40.64	0.38	5.33	0.13
QRAR04327	43.82	0.38	5.33	0.13
QRAR04328	46.99	0.38	5.33	0.13
QRAR04329	50.17	0.46	5.33	0.13
QRAR04329	50.17	0.46	5.33	0.13
QRAR04330	53.34	0.46	5.33	0.13
QRAR04330	53.34	0.46	5.33	0.13
QRAR04331	56.52	0.46	5.33	0.13
QRAR04331	56.52	0.46	5.33	0.13
QRAR04332	59.69	0.46	5.33	0.13
QRAR04333	62.87	0.51	5.33	0.13
QRAR04334	66.04	0.51	5.33	0.13
QRAR04334	66.04	0.51	5.33	0.13
QRAR04335	69.22	0.51	5.33	0.13
QRAR04336	72.39	0.51	5.33	0.13
QRAR04337	75.57	0.61	5.33	0.13
QRAR04338	78.74	0.61	5.33	0.13
QRAR04339	81.92	0.61	5.33	0.13
QRAR04340	85.09	0.61	5.33	0.13
QRAR04341	88.27	0.61	5.33	0.13
QRAR04342	91.44	0.71	5.33	0.13
QRAR04343	94.62	0.71	5.33	0.13
QRAR04344	97.79	0.71	5.33	0.13
QRAR04345	100.97	0.71	5.33	0.13
QRAR04346	104.14	0.71	5.33	0.13
QRAR04347	107.32	0.76	5.33	0.13



Quad-Ring® Seal

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04348	110.49	0.76	5.33	0.13
QRAR04349	113.67	0.76	5.33	0.13
QRAR04350	116.84	0.76	5.33	0.13
QRAR04351	120.02	0.76	5.33	0.13
QRAR04352	123.19	0.76	5.33	0.13
QRAR04353	126.37	0.94	5.33	0.13
QRAR04354	129.54	0.94	5.33	0.13
QRAR04355	132.72	0.94	5.33	0.13
QRAR04356	135.89	0.94	5.33	0.13
QRAR04357	139.07	0.94	5.33	0.13
QRAR04358	142.24	0.94	5.33	0.13
QRAR04359	145.42	0.94	5.33	0.13
QRAR04360	148.49	0.94	5.33	0.13
QRAR04361	151.77	0.94	5.33	0.13
QRAR04362	158.12	1.02	5.33	0.13
QRAR04363	164.47	1.02	5.33	0.13
QRAR04364	170.82	1.02	5.33	0.13
QRAR04365	177.17	1.02	5.33	0.13
QRAR04366	183.52	1.14	5.33	0.13
QRAR04367	189.87	1.14	5.33	0.13
QRAR04368	196.22	1.14	5.33	0.13
QRAR04369	202.57	1.14	5.33	0.13
QRAR04370	208.92	1.27	5.33	0.13
QRAR04371	215.27	1.27	5.33	0.13
QRAR04372	221.62	1.27	5.33	0.13
QRAR04373	227.97	1.27	5.33	0.13
QRAR04374	234.32	1.40	5.33	0.13
QRAR04375	240.67	1.40	5.33	0.13
QRAR04376	247.02	1.40	5.33	0.13
QRAR04377	253.37	1.40	5.33	0.13
QRAR04378	266.07	1.52	5.33	0.13
QRAR04379	278.77	1.52	5.33	0.13
QRAR04380	291.47	1.65	5.33	0.13
QRAR04381	304.17	1.65	5.33	0.13
QRAR04382	329.57	1.65	5.33	0.13
QRAR04383	354.97	1.78	5.33	0.13
QRAR04384	380.37	1.78	5.33	0.13
QRAR04385	405.26	1.91	5.33	0.13
QRAR04386	430.66	2.03	5.33	0.13
QRAR04387	456.06	2.15	5.33	0.13
QRAR04388	481.41	2.25	5.33	0.13
QRAR04389	506.81	2.41	5.33	0.13
QRAR04390	532.21	2.41	5.33	0.13
QRAR04391	557.61	2.54	5.33	0.13
QRAR04392	582.68	2.67	5.33	0.13
QRAR04393	608.08	2.79	5.33	0.13

TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04394	633.48	2.92	5.33	0.13
QRAR04395	658.88	3.05	5.33	0.13
QRAR04425	113.67	0.84	6.99	0.15
QRAR04426	116.84	0.84	6.99	0.15
QRAR04427	120.02	0.84	6.99	0.15
QRAR04428	123.19	0.84	6.99	0.15
QRAR04429	126.37	0.94	6.99	0.15
QRAR04430	129.54	0.94	6.99	0.15
QRAR04431	132.72	0.94	6.99	0.15
QRAR04432	135.89	0.94	6.99	0.15
QRAR04433	139.07	0.94	6.99	0.15
QRAR04434	142.24	0.94	6.99	0.15
QRAR04435	145.42	0.94	6.99	0.15
QRAR04436	148.59	0.94	6.99	0.15
QRAR04437	151.77	0.94	6.99	0.15
QRAR04438	158.12	1.02	6.99	0.15
QRAR04439	164.47	1.02	6.99	0.15
QRAR04440	170.82	1.02	6.99	0.15
QRAR04441	177.17	1.02	6.99	0.15
QRAR04442	183.52	1.14	6.99	0.15
QRAR04443	189.87	1.14	6.99	0.15
QRAR04444	196.22	1.14	6.99	0.15
QRAR04445	202.57	1.14	6.99	0.15
QRAR04446	215.27	1.40	6.99	0.15
QRAR04446	215.27	1.40	6.99	0.15
QRAR04447	227.97	1.40	6.99	0.15
QRAR04447	227.97	1.40	6.99	0.15
QRAR04448	240.67	1.40	6.99	0.15
QRAR04449	253.37	1.40	6.99	0.15
QRAR04450	266.07	1.52	6.99	0.15
QRAR04451	278.77	1.52	6.99	0.15
QRAR04452	291.47	1.52	6.99	0.15
QRAR04453	304.17	1.52	6.99	0.15
QRAR04454	316.87	1.52	6.99	0.15
QRAR04455	329.57	1.52	6.99	0.15
QRAR04456	342.27	1.79	6.99	0.15
QRAR04457	354.97	1.79	6.99	0.15
QRAR04457	354.97	1.79	6.99	0.15
QRAR04458	367.67	1.79	6.99	0.15
QRAR04459	380.37	1.79	6.99	0.15
QRAR04460	393.07	1.79	6.99	0.15
QRAR04461	405.26	1.90	6.99	0.15
QRAR04462	417.96	1.90	6.99	0.15
QRAR04463	430.66	2.05	6.99	0.15
QRAR04464	443.36	2.15	6.99	0.15



TSS Part No.	Inside-Ø		Cord Diameter	
	d ₁	±	W	±
QRAR04465	456.06	2.15	6.99	0.15
QRAR04466	468.76	2.15	6.99	0.15
QRAR04467	481.46	2.29	6.99	0.15
QRAR04468	494.16	2.29	6.99	0.15
QRAR04469	506.86	2.41	6.99	0.15
QRAR04470	532.26	2.41	6.99	0.15
QRAR04471	557.66	2.55	6.99	0.15
QRAR04472	582.68	2.65	6.99	0.15
QRAR04473	608.08	2.80	6.99	0.15
QRAR04474	633.48	2.90	6.99	0.15
QRAR04475	658.87	3.05	6.99	0.15

Further sizes on request

The specified tolerances for d₁ and W apply only to Quad-Ring® Seals made from the material Nitrile Butadiene Elastomer NBR with a hardness of 70 Shore A. With other elastomer qualities and hardnesses, slight deviations from the values in the tables are possible due to the different shrinkage behaviour.

Ordering Example

Quad-Ring® Seal No. 4214
(in dependence on AS 568)

dimensions: Insider diameter d₁ = 24.99 mm
 Cord diameter W = 3.53 mm

Material: NBR 70
 (Nitrile Butadiene Elastomer, 70 Shore A)

TSS Article No.	QRAR04214	-	N7004
TSS Series No.			
Quality Index (Standard)			
Compound No. (Standard)			

Quad-Ring® Seal dimensions and TSS Part No., see Table V.

Material No., see Table I.

Installation dimensions, see Table IV.

Orders detailing size and material are also possible.



■ Installation Recommendation

Quad-Ring® Seal with Back-up Ring for Radial-Dynamic Application (Reciprocating) - "External Sealing"-

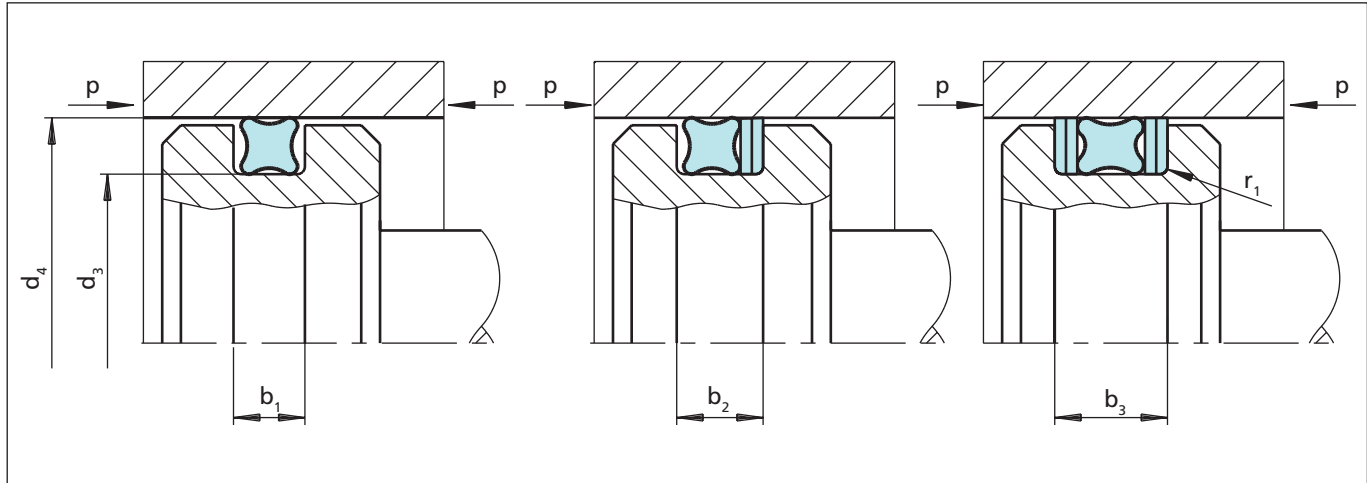


Figure 16 Installation drawing

The following data regarding Back-up Rings and groove widths b_2 and b_3 are exemplary. The use and the suitability of a Back-up Ring type as well as the design of the appropriate groove widths b_2 and b_3 should be verified and adapted regarding the application. For further information please refer to the O-Ring catalogue, chapter "Back-up Rings".

Table VI TSS Part Numbers / Installation Dimensions

Bore	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d_4 H8	TSS Part No.	dimensions	TSS Part No.	d_3 h9	$b_1 + 0.2$	$b_2 + 0.2$	$b_3 + 0.2$	r_1
6.0	QRAR04005	2.57x1.78	BP1500030	3.0	2.0	3.4	4.8	0.2
8.0	QRAR04008	4.47x1.78	BP1500050	5.0	2.0	3.4	4.8	0.2
10.0	QRAR04010	6.07x1.78	BP1500070	7.0	2.0	3.4	4.8	0.2
12.0	QRAR4012A	8.20x1.78	BP1500090	9.0	2.0	3.4	4.8	0.2
14.0	QRAR04013	10.82x1.78	BP1500110	11.0	2.0	3.4	4.8	0.2
15.0	QRAR4111A	10.20x2.62	BP2300104	10.4	3.0	4.4	5.8	0.3
16.0	QRAR04111	10.77x2.62	BP2300114	11.4	3.0	4.4	5.8	0.3
18.0	QRAR04112	12.37x2.62	BP2300134	13.4	3.0	4.4	5.8	0.3
20.0	QRAR4114A	14.70x2.62	BP2300154	15.4	3.0	4.4	5.8	0.3
22.0	QRAR4115A	16.20x2.62	BP2300174	17.4	3.0	4.4	5.8	0.3
25.0	QRAR4210A	18.20x3.53	BP32D0186	18.6	4.0	5.4	6.8	0.4
28.0	QRAR04212	21.82x3.53	BP32D0216	21.6	4.0	5.4	6.8	0.4
30.0	QRAR04213	23.39x3.53	BP32D0236	23.6	4.0	5.4	6.8	0.4
32.0	QRAR04214	24.99x3.53	BP32D0256	25.6	4.0	5.4	6.8	0.4
35.0	QRAR04216	28.17x3.53	BP32D0286	28.6	4.0	5.4	6.8	0.4



Bore	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d ₄ H8	TSS Part No.	dimensions	TSS Part No.	d ₃ h9	b ₁ +0.2	b ₂ +0.2	b ₃ +0.2	r ₁
40.0	QRAR04219	32.92x3.53	BP32D0336	33.6	4.0	5.4	6.8	0.4
42.0	QRAR04220	34.52x3.53	BP32D0356	35.6	4.0	5.4	6.8	0.4
45.0	QRAR04222	37.69x3.53	BP32D0386	38.6	4.0	5.4	6.8	0.4
48.0	QRAR04325	37.46x5.33	BP4900382	38.2	6.0	7.7	9.4	0.4
50.0	QRAR04326A	39.20x5.33	BP4900402	40.2	6.0	7.7	9.4	0.4
52.0	QRAR04326	40.64x5.33	BP4900422	42.2	6.0	7.7	9.4	0.4
55.0	QRAR04327	43.82x5.33	BP4900452	45.2	6.0	7.7	9.4	0.4
60.0	QRAR04329	50.17x5.33	BP4900502	50.2	6.0	7.7	9.4	0.4
63.0	QRAR04330	53.34x5.33	BP4900532	53.2	6.0	7.7	9.4	0.4
65.0	QRAR04330	53.34x5.33	BP4900552	55.2	6.0	7.7	9.4	0.4
70.0	QRAR04332	59.69x5.33	BP4900602	60.2	6.0	7.7	9.4	0.4
75.0	QRAR04333	62.87x5.33	BP4900652	65.2	6.0	7.7	9.4	0.4
80.0	QRAR04335	69.22x5.33	BP4900702	70.2	6.0	7.7	9.4	0.4
85.0	QRAR04337	75.57x5.33	BP4900752	75.2	6.0	7.7	9.4	0.4
90.0	QRAR04338	78.74x5.33	BP4900802	80.2	6.0	7.7	9.4	0.4
95.0	QRAR04340	85.09x5.33	BP4900852	85.2	6.0	7.7	9.4	0.4
100.0	QRAR04342	91.44x5.33	BP4900902	90.2	6.0	7.7	9.4	0.4
105.0	QRAR04343	94.62x5.33	BP4900952	95.2	6.0	7.7	9.4	0.4
110.0	QRAR04345	100.97x5.33	BP4901002	100.2	6.0	7.7	9.4	0.4
115.0	QRAR04346	104.14x5.33	BP4901052	105.2	6.0	7.7	9.4	0.4
120.0	QRAR04348	110.49x5.33	BP4901102	110.2	6.0	7.7	9.4	0.4
125.0	QRAR04349	113.67x5.33	BP4901152	115.2	6.0	7.7	9.4	0.4
130.0	QRAR04351	120.02x5.33	BP4901202	120.2	6.0	7.7	9.4	0.4
135.0	QRAR04427	120.02x6.99	BP64K1222	122.2	8.0	10.5	13.0	0.6
140.0	QRAR04429	126.37x6.99	BP64K1272	127.2	8.0	10.5	13.0	0.6
150.0	QRAR04432	135.89x6.99	BP64K1372	137.2	8.0	10.5	13.0	0.6
160.0	QRAR04435	145.42x6.99	BP64K1472	147.2	8.0	10.5	13.0	0.6
170.0	QRAR04438	158.12x6.99	BP64K1572	157.2	8.0	10.5	13.0	0.6
180.0	QRAR04439	164.47x6.99	BP64K1672	167.2	8.0	10.5	13.0	0.6
190.0	QRAR04441	177.17x6.99	BP64K1772	177.2	8.0	10.5	13.0	0.6
200.0	QRAR04442	183.52x6.99	BP64K1872	187.2	8.0	10.5	13.0	0.6
210.0	QRAR04444	196.22x6.99	BP64K1972	197.2	8.0	10.5	13.0	0.6
220.0	QRAR04445	202.57x6.99	BP64K2072	207.2	8.0	10.5	13.0	0.6
230.0	QRAR04446	215.27x6.99	BP64K2172	217.2	8.0	10.5	13.0	0.6
240.0	QRAR04447	227.97x6.99	BP64K2272	227.2	8.0	10.5	13.0	0.6
250.0	QRAR04447	227.97x6.99	BP64K2372	237.2	8.0	10.5	13.0	0.6



Quad-Ring® Seal

Bore	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d ₄ H8	TSS Part No.	dimensions	TSS Part No.	d ₃ h9	b ₁ +0.2	b ₂ +0.2	b ₃ +0.2	r ₁
280.0	QRAR04450	266.07x6.99	BP64K2672	267.2	8.0	10.5	13.0	0.6
300.0	QRAR04451	278.77x6.99	BP64K2872	287.2	8.0	10.5	13.0	0.6
320.0	QRAR04453	304.17x6.99	BP64K3072	307.2	8.0	10.5	13.0	0.6
350.0	QRAR04455	329.57x6.99	BP64K3372	337.2	8.0	10.5	13.0	0.6
400.0	QRAR04459	380.37x6.99	BP64K3872	387.2	8.0	10.5	13.0	0.6
420.0	QRAR04461	405.26x6.99	BP64K4072	407.2	8.0	10.5	13.0	0.6
450.0	QRAR04463	430.66x6.99	BP64K4372	437.2	8.0	10.5	13.0	0.6
480.0	QRAR04465	456.06x6.99	BP64K4672	467.2	8.0	10.5	13.0	0.6
500.0	QRAR04467	481.46x6.99	BP64K4872	487.2	8.0	10.5	13.0	0.6

1) If a Back-up Ring is used the recommended radius should always be $r_1 = 0.25 \pm 0.2$ mm.

Further sizes on request!

Materials for QUAD-Ring® Seals, see Table I.



■ Installation Recommendation Quad-Ring® Seal with Back-up Ring for Radial-Dynamic Application (Reciprocating) - "Internal Sealing"

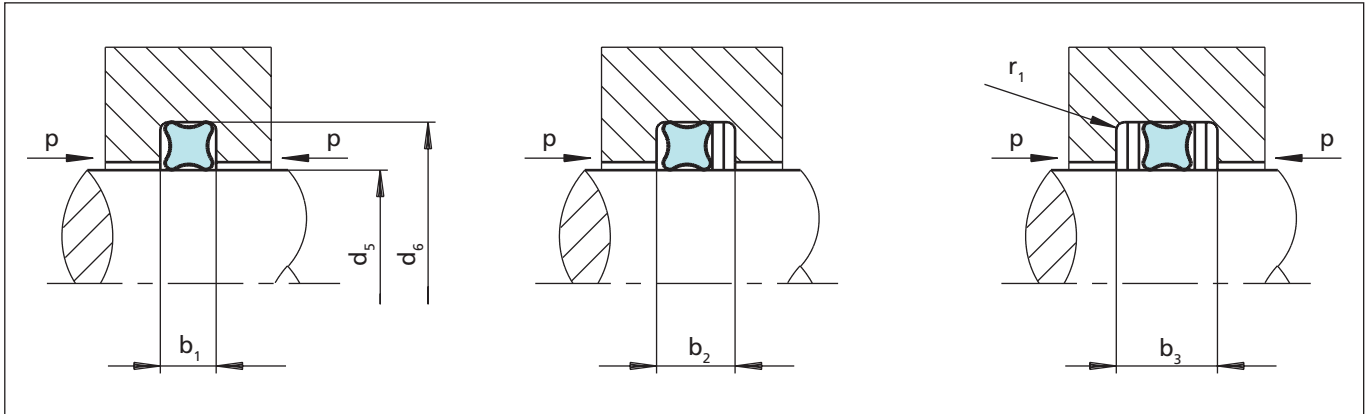


Figure 17 Installation drawing

The following data regarding Back-up Rings and groove widths b_2 and b_3 are exemplary. The use and the suitability of a Back-up Ring type as well as the design of the appropriate groove widths b_2 and b_3 should be verified and adapted regarding the application. For further information please refer to the O-Ring catalogue, chapter "Back-up Rings".

Table VII TSS Part Numbers / Installation Dimensions

Rod	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d_5 f7	TSS Part No.	dimensions	TSS Part No.	d_6 H9	$b_1 + 0.2$	$b_2 + 0.2$	$b_3 + 0.2$	r_1
4.0	QRAR04008	4.47x1.78	BP1500040	7.0	2.0	3.4	4.8	0.2
5.0	QRAR04009	5.28x1.78	BP1500050	8.0	2.0	3.4	4.8	0.2
6.0	QRAR04010	6.07x1.78	BP1500060	9.0	2.0	3.4	4.8	0.2
8.0	QRAR0412A	8.20x1.78	BP1500080	11.0	2.0	3.4	4.8	0.2
10.0	QRAR0411A	10.20x2.62	BP2300100	14.6	3.0	4.4	5.8	0.3
12.0	QRAR04112	12.37x2.62	BP2300120	16.6	3.0	4.4	5.8	0.3
14.0	QRAR04113	13.94x2.62	BP2300140	18.6	3.0	4.4	5.8	0.3
15.0	QRAR04114A	14.70x2.62	BP2300150	19.6	3.0	4.4	5.8	0.3
16.0	QRAR04115A	16.20x2.62	BP2300160	20.6	3.0	4.4	5.8	0.3
18.0	QRAR04210A	18.20x3.53	BP32D0180	24.4	4.0	5.4	6.8	0.4
20.0	QRAR04211	20.22x3.53	BP32D0200	26.4	4.0	5.4	6.8	0.4
22.0	QRAR04212	21.83x3.53	BP32D0220	28.4	4.0	5.4	6.8	0.4
25.0	QRAR04214	24.99x3.53	BP32D0250	31.4	4.0	5.4	6.8	0.4
28.0	QRAR04216	28.17x3.53	BP32D0280	34.4	4.0	5.4	6.8	0.4
30.0	QRAR04217	29.74x3.53	BP32D0300	36.4	4.0	5.4	6.8	0.4
32.0	QRAR04218	31.34x3.53	BP32D0320	38.4	4.0	5.4	6.8	0.4
35.0	QRAR04220	34.52x3.53	BP32D0350	41.4	4.0	5.4	6.8	0.4
36.0	QRAR04221	36.09x3.53	BP32D0360	42.4	4.0	5.4	6.8	0.4



Quad-Ring® Seal

Rod	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d ₅ f7	TSS Part No.	dimensions	TSS Part No.	d ₆ H9	b ₁ +0.2	b ₂ +0.2	b ₃ +0.2	r ₁
40.0	QRAR04326	40.64x5.33	BP4900400	49.8	6.0	7.7	9.4	0.4
42.0	QRAR04326	40.64x5.33	BP4900420	51.8	6.0	7.7	9.4	0.4
45.0	QRAR4328A	45.20x5.33	BP4900450	54.8	6.0	7.7	9.4	0.4
48.0	QRAR04328	46.99x5.33	BP4900480	57.8	6.0	7.7	9.4	0.4
50.0	QRAR04329	50.17x5.33	BP4900500	59.8	6.0	7.7	9.4	0.4
52.0	QRAR04329	50.17x5.33	BP4900520	61.8	6.0	7.7	9.4	0.4
55.0	QRAR04330	53.34x5.33	BP4900550	64.8	6.0	7.7	9.4	0.4
56.0	QRAR04331	56.52x5.33	BP4900560	65.8	6.0	7.7	9.4	0.4
60.0	QRAR04332	59.69x5.33	BP4900600	69.8	6.0	7.7	9.4	0.4
63.0	QRAR04333	62.87x5.33	BP4900630	72.8	6.0	7.7	9.4	0.4
65.0	QRAR04334	66.04x5.33	BP4900650	74.8	6.0	7.7	9.4	0.4
70.0	QRAR04335	69.22x5.33	BP4900700	79.8	6.0	7.7	9.4	0.4
75.0	QRAR04337	75.57x5.33	BP4900750	84.8	6.0	7.7	9.4	0.4
80.0	QRAR04338	78.74x5.33	BP4900800	89.8	6.0	7.7	9.4	0.4
85.0	QRAR04340	85.09x5.33	BP4900850	94.8	6.0	7.7	9.4	0.4
90.0	QRAR04342	91.44x5.33	BP4900900	99.8	6.0	7.7	9.4	0.4
100.0	QRAR04345	100.97x5.33	BP4901000	109.8	6.0	7.7	9.4	0.4
105.0	QRAR04346	104.14x5.33	BP4901050	114.8	6.0	7.7	9.4	0.4
110.0	QRAR04348	110.49x5.33	BP4901100	119.8	6.0	7.7	9.4	0.4
115.0	QRAR04426	116.84x6.99	BP64K1150	127.8	8.0	10.5	13.0	0.6
120.0	QRAR04427	120.02x6.99	BP64K1200	132.8	8.0	10.5	13.0	0.6
125.0	QRAR04429	126.37x6.99	BP64K1250	137.8	8.0	10.5	13.0	0.6
130.0	QRAR04430	129.54x6.99	BP64K1300	142.8	8.0	10.5	13.0	0.6
135.0	QRAR04432	135.89x6.99	BP64K1350	147.8	8.0	10.5	13.0	0.6
140.0	QRAR04433	139.07x6.99	BP64K1400	152.8	8.0	10.5	13.0	0.6
150.0	QRAR04436	148.59x6.99	BP64K1500	162.8	8.0	10.5	13.0	0.6
160.0	QRAR4439A	160.50x6.99	BP64K1600	172.8	8.0	10.5	13.0	0.6
170.0	QRAR04440	170.82x6.99	BP64K1700	182.8	8.0	10.5	13.0	0.6
180.0	QRAR04441	177.17x6.99	BP64K1800	192.8	8.0	10.5	13.0	0.6
190.0	QRAR04443	189.87x6.99	BP64K1900	202.8	8.0	10.5	13.0	0.6
200.0	QRAR04445	202.57x6.99	BP64K2000	212.8	8.0	10.5	13.0	0.6
210.0	QRAR04446	215.27x6.99	BP64K2100	222.8	8.0	10.5	13.0	0.6
220.0	QRAR04446	215.27x6.99	BP64K2200	232.8	8.0	10.5	13.0	0.6
230.0	QRAR04447	227.97x6.99	BP64K2300	242.8	8.0	10.5	13.0	0.6
240.0	QRAR04448	240.67x6.99	BP64K2400	252.8	8.0	10.5	13.0	0.6
250.0	QRAR04449	253.37x6.99	BP64K2500	262.8	8.0	10.5	13.0	0.6



Rod	Quad-Ring® Seal		Back-up Ring, Spiral	Groove-Ø	Groove Width			Radius ¹⁾
d ₅ f7	TSS Part No.	dimensions	TSS Part No.	d ₆ H9	b ₁ +0.2	b ₂ +0.2	b ₃ +0.2	r ₁
280.0	QRAR04451	278.77x6.99	BP64K2800	292.8	8.0	10.5	13.0	0.6
300.0	QRAR04453	304.17x6.99	BP64K3000	312.8	8.0	10.5	13.0	0.6
320.0	QRAR04454	316.87x6.99	BP64K3200	332.8	8.0	10.5	13.0	0.6
350.0	QRAR04457	354.97x6.99	BP64K3500	362.8	8.0	10.5	13.0	0.6
360.0	QRAR04457	354.97x6.99	BP64K3600	372.8	8.0	10.5	13.0	0.6
400.0	QRAR04461	405.26x6.99	BP64K4000	412.8	8.0	10.5	13.0	0.6

1) If a Back-up Ring is used the recommended radius should always be $r_1 = 0.25 \pm 0.2$ mm.

Further sizes on request!

Materials for QUAD-Ring® Seals, see Table I .