

WAVE SPRINGS WASHERS

RONDELLES ONDULEES



Manufactured in high-carbon steel, SPEC wave spring washers are normally used in thrust-loading applications for small deflections, particularly where radial space is limited. A typical example is the axial loading of ball bearings.

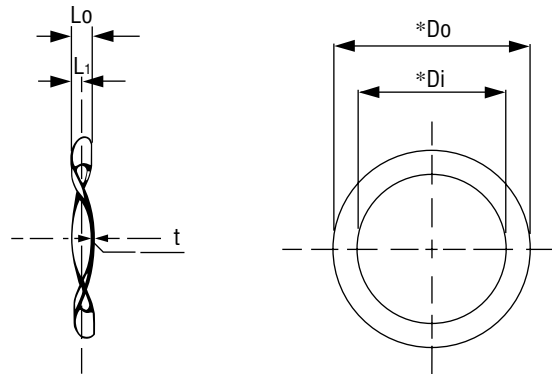
Material

High-carbon finely tempered spring steel. (Part numbers with suffix 'R' are Stainless Steel).

Specification

Washer designs indicated by ‡ have 2 waves. All others have 3 waves.

- Do = Outside diameter
- Di = Inside diameter
- t = Thickness
- Lo = Free height (reference only)
- L1 = Loaded height
- P1 = Load at L1 Newtons



* = Blank size before bending * = Dimensions avant mise en forme

Fabriquées en acier à haute teneur en carbone, les rondelles ondulées SPEC sont spécialement utilisées pour compenser une charge axiale sous une déflexion minimale, surtout si l'espace radial est limité. L'exemple type est celui du chargement axial d'un roulement à billes.

Matériau

Acier à ressort trempé à haute teneur en carbone. Les références du catalogue se terminant par le suffixe 'R' ou 'S' sont en acier inoxydable.

Etat de surface

Bleui.

Spécification

Les modèles de rondelles indiqués par ‡ ont 2 ondulations. Tous les autres modèles ont 3 ondulations.

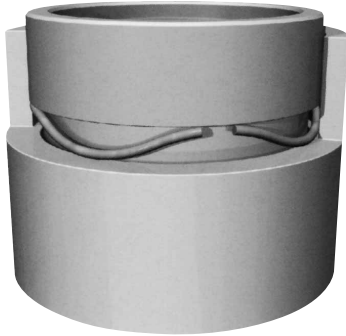
- *Do = Diamètre extérieur
- *Di = Diamètre intérieur
- t = Epaisseur
- Lo = Hauteur libre
- L1 = Hauteur en charge
- P1 = Charge à L1 Newton

Do Outside Dia mm	Di Inside Dia mm	t Thickness mm	Lo Free Height mm	L1 Loaded Height mm	P1 Load at L1 N	Part No.	Equivalent Part No.	Price Group
‡ 4.65	3.40	0.09	0.58	0.30	1.11 ~ 2.22	W61300R	W0183-004-S	C
‡ 6.15	4.92	0.14	0.76	0.38	2.22 ~ 4.45	W61310R	W0242-006-S	C
‡ 7.75	6.17	0.17	0.76	0.38	2.22 ~ 4.45	W61320R	W0305-007-S	C
9.32	6.73	0.15	0.76	0.38	8.9 ~ 17.8	W61330	W0367-006	C
9.32	6.73	0.15	0.76	0.38	8.9 ~ 17.8	W61340R	W0367-006-S	C
12.29	10.08	0.23	0.74	0.51	13.35 ~ 22.25	W61350	W0484-009	C
12.50	8.89	0.18	0.89	0.51	13.35 ~ 22.25	W61360	W0492-007	C
12.50	8.89	0.18	0.89	0.51	13.35 ~ 22.25	W61370R	W0492-007-S	C
15.44	11.66	0.20	0.94	0.64	13.35 ~ 22.25	W61380	W0608-008	C
15.70	11.18	0.20	1.02	0.64	13.35 ~ 22.25	W61390	W0618-008	C
15.70	11.18	0.20	1.02	0.64	13.35 ~ 22.25	W61400R	W0618-008-S	C
18.57	14.94	0.23	1.19	0.76	13.35 ~ 22.25	W61410	W0731-009	C
18.64	13.49	0.23	1.27	0.76	17.8 ~ 31.2	W61420	W0734-009	C
18.64	13.49	0.23	1.27	0.76	17.8 ~ 31.2	W61430R	W0734-009-S	C
21.72	16.51	0.25	1.52	0.76	17.8 ~ 31.2	W61440	W0855-010	C
21.72	16.51	0.25	1.52	0.76	17.8 ~ 31.2	W61450R	W0855-010-S	C
23.50	18.26	0.25	1.68	0.84	26.7 ~ 40.1	W61460	W0925-010	C
25.50	19.81	0.27	1.80	0.89	31.2 ~ 44.5	W61470	W1004-011	C
27.43	21.31	0.29	1.85	0.91	35.6 ~ 53.4	W61480	W1080-012	C
27.99	21.74	0.30	1.91	0.94	40.1 ~ 57.9	W61490	W1102-012	C
29.44	22.89	0.33	2.03	1.02	44.5 ~ 62.3	W61500	W1159-013	C
31.37	24.41	0.36	2.21	1.09	57.9 ~ 75.7	W61510	W1235-014	C
34.32	26.70	0.38	2.51	1.24	71.2 ~ 89	W61520	W1351-015	C
39.19	30.51	0.43	2.67	1.32	84.6 ~ 102.4	W61530	W1543-017	F
39.19	30.51	0.51	3.18	1.57	120.2 ~ 155.7	W61540	W1543-020	F
40.46	31.47	0.46	2.79	1.39	93.5 ~ 120.2	W61550	W1593-018	F
41.17	32.03	0.47	2.84	1.42	97.9 ~ 124.6	W61560	W1621-019	F
46.20	35.66	0.51	3.18	1.57	115.7 ~ 151.3	W61570	W1819-020	H
51.51	40.01	0.56	3.56	1.75	137.9 ~ 173.6	W61580	W2026-022	H
54.15	42.11	0.58	3.76	1.85	146.9 ~ 191.4	W61590	W2132-023	H
61.47	47.55	0.64	4.27	2.08	178 ~ 223	W61600	W2420-025	H
67.18	52.55	0.71	4.67	2.29	223 ~ 285	W61610	W2645-028	H
71.53	55.88	0.76	5.00	2.47	254 ~ 325	W61620	W2816-030	H
79.20	61.47	0.89	5.26	2.64	343 ~ 441	W61630	W3118-035	M
84.53	66.12	0.91	5.77	2.84	352 ~ 450	W61640	W3328-036	M
89.38	69.60	0.97	5.94	2.95	392 ~ 498	W61650	W3519-038	M
99.49	77.39	1.07	6.55	3.25	467 ~ 601	W61660	W3917-042	O
109.22	85.60	1.14	7.67	3.76	547 ~ 699	W61670	W4300-045	O
117.53	91.74	1.19	8.49	4.11	623 ~ 792	W61680	W4627-047	O
126.92	98.81	1.27	9.02	4.37	694 ~ 881	W61690	W4997-050	P
137.36	106.88	1.35	9.86	4.75	770 ~ 983	W61700R	W5408-053	T
147.75	115.06	1.40	11.18	5.31	850 ~ 1081	W61710R	W5817-055	U
156.79	122.00	1.47	11.76	5.59	935 ~ 1193	W61720R	W6173-058	W
166.37	130.05	1.55	12.60	5.97	1019 ~ 1295	W61730R	W6550-061	X
176.40	137.36	1.60	13.65	6.43	1104 ~ 1406	W61740R	W6945-063	X
186.06	144.07	1.65	14.61	6.83	1193 ~ 1522	W61750R	W7325-065	Y

Wave Springs (Round Wire)

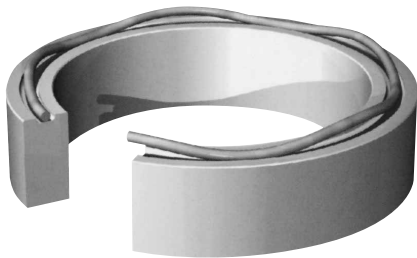
Advantages

- Accurate high force loading with greater deflection than bellvilles
- Economical and stocked in both carbon and stainless steel
- Fits in tight radial and axial spaces with inline force
- Special designs available with No-Tooling-Charges



Applications

- Use in assemblies for variation as a result of tolerance stack-up
- Preload a mechanical assembly with greater force to reduce or eliminate vibration
- Compensate for the looseness that results in assembled components due to thermal expansion



Design

- Fits in 25% of the radial space required of a Belleville
- The theoretical rate is accurate until the spring approaches its solid height; see graph

DEFLECTION CHARACTERISTICS
Theoretical vs. Measured



Catalogue Number	Operates in Bore mm	Clears Shaft mm	Load mm	Work Height mm	Free Height mm	Number of Waves	Wire Diameter mm
RW-0050	12.70	10.36	156	1.32	1.57	3	0.79
RW-0062	15.88	13.13	223	1.63	1.96	3	0.97
RW-0075	19.05	15.95	312	1.93	2.34	3	1.14
RW-0087	22.23	18.80	356	2.18	2.64	3	1.30
RW-0100	25.40	21.72	401	2.41	2.95	3	1.42
RW-0112	28.58	24.56	445	2.59	3.23	3	1.52
RW-0125	31.75	27.46	490	2.79	3.51	3	1.65
RW-0137	34.93	31.06	534	2.41	3.07	4	1.42
RW-0150	38.10	34.01	579	2.59	3.25	4	1.52
RW-0162	41.28	36.68	623	2.79	3.48	4	1.65
RW-0175	44.45	39.73	668	2.87	3.66	4	1.70
RW-0187	47.63	42.72	712	3.02	3.94	4	1.78
RW-0200	50.80	45.80	757	3.15	4.19	4	1.83
RW-0212	53.98	48.41	801	3.28	4.11	4	1.93
RW-0225	57.15	51.38	846	3.45	4.27	4	2.03
RW-0237	60.33	54.38	890	3.58	4.52	4	2.11
RW-0250	63.50	57.43	935	3.66	4.70	4	2.16
RW-0262	66.68	60.30	979	3.89	5.16	4	2.29
RW-0275	69.85	63.42	1024	3.91	5.38	4	2.31
RW-0287	73.03	66.50	1068	4.01	5.33	4	2.36
RW-0300	76.20	70.28	1113	3.58	4.55	5	2.11
RW-0312	79.38	73.10	1157	3.66	4.67	5	2.16
RW-0325	82.55	76.00	1202	3.89	4.83	5	2.29
RW-0337	85.73	79.12	1246	3.91	4.95	5	2.31
RW-0350	88.90	82.19	1291	4.01	5.11	5	2.36
RW-0362	92.08	85.24	1335	4.09	5.23	5	2.41
RW-0375	95.25	88.27	1380	4.22	5.38	5	2.49
RW-0387	98.43	91.31	1424	4.32	5.28	5	2.54
RW-0400	101.60	94.44	1469	4.32	8.72	5	2.54
RW-0412	104.78	97.21	1491	4.45	5.61	5	2.62
RW-0425	107.95	100.28	1535	4.52	5.72	5	2.67
RW-0437	111.13	103.20	1558	4.75	6.10	5	2.79
RW-0450	114.30	106.30	1602	4.75	6.27	5	2.79
RW-0462	117.48	109.47	1624	4.75	6.43	5	2.79
RW-0475	120.65	112.55	1669	4.83	6.53	5	2.84
RW-0487	123.83	115.70	1691	4.83	6.71	5	2.84
RW-0500	127.00	118.67	1736	4.95	6.73	5	2.95
RW-0512	130.18	121.21	1780	5.08	6.96	5	3.00
RW-0525	133.35	124.28	1825	5.18	7.09	5	3.05
RW-0537	136.53	127.94	1869	4.75	6.22	6	2.79
RW-0550	139.70	131.11	1914	4.75	6.38	6	2.79
RW-0562	142.88	134.19	1958	4.83	6.22	6	2.84
RW-0575	146.05	137.31	2003	4.83	6.38	6	2.84
RW-0587	149.23	140.31	2047	5.00	6.65	6	2.95
RW-0600	152.40	143.36	2092	5.08	6.81	6	3.00

