

# CURVED SPRING WASHERS

Precision engineered curved washers are available from Associated Spring Raymond in many stock sizes. These washers are made of finely tempered spring steel with some sizes being made of stainless steel. They come deburred and we have had all set removed during manufacture. Curved washers exert relatively light thrust loads and are often used to absorb axial end play.

The rate is approximately linear between 10% and 80% of available deflection.

## Finish

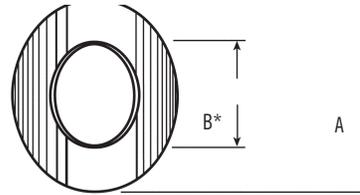
Standard finish for high carbon steel is plain finish. Stainless steel is supplied in plain finish. On special order, high carbon steel washers may be mechanically plated, a process which substantially reduces the possibility of hydrogen embrittlement. Recommendations for specific applications will be made on request. See page 312 for alternative finishes.

## Material

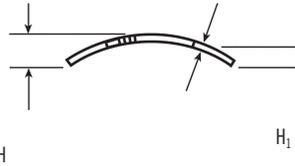
Stainless Steel (Parts with suffix "S")  
Commercial - Type 301 per ASTM-A666 (chemical only).

## High Carbon Steel

Commercial - 1074-1095 per ASTM-A684  
Certificate of compliance available upon request - Certificate of chemical analysis available at extra cost.



\* This is the long axis of the hole in the free position, providing a free fit on the nominal size screw or rod.



- A = Outside Diameter (max)
- B = Inside Diameter
- t = Thickness
- H = Free Height (ref)
- H<sub>1</sub> = Loaded Height
- P<sub>1</sub> = Load at H<sub>1</sub>

CURVED SPRINGS WASHERS																	
Catalog Number*	Free Fit Screw or Rod Size			Min B		Max A		Free fit in hole dia.		H (ref.)		H <sub>1</sub>		Load at H <sub>1</sub> ± 20% (P <sub>1</sub> )		Thickness (t)	
	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	N	in	mm
U093-0045-S	3/32	0.093	2.36	0.100	2.54	0.215	5.46	7/32	5.54	0.028	0.71	0.015	0.38	1.5	6.67	0.0045	0.11
U093-0056-S	3/32	0.093	2.36	0.100	2.54	0.215	5.46	7/32	5.54	0.025	0.64	0.015	0.38	2.25	10.01	0.0056	0.14
U125-0040-S	5	0.125	3.18	0.135	3.43	0.245	6.22	1/4	6.30	0.049	1.24	0.026	0.66	1.0	4.45	0.004	0.10
U125-0060-S	5	0.125	3.18	0.135	3.43	0.245	6.22	1/4	6.30	0.034	0.86	0.020	0.51	2.00	8.90	0.006	0.15
U125-0050-S	5	0.125	3.18	0.135	3.43	0.270	6.86	9/32	6.94	0.038	0.97	0.020	0.51	1.5	6.67	0.005	0.13
U125-0075-S	5	0.125	3.18	0.135	3.43	0.270	6.86	9/32	6.94	0.029	0.74	0.018	0.46	3.0	13.34	0.0075	0.19
U125-0072-S	5	0.125	3.18	0.135	3.43	0.307	7.80	5/16	7.88	0.037	0.94	0.020	0.51	4.0	17.80	0.0072	0.18
U125-0088-S	5	0.125	3.18	0.135	3.43	0.307	7.80	5/16	7.88	0.034	0.86	0.020	0.51	6.0	26.7	0.0088	0.22
U138-0045-S	6	0.138	3.51	0.148	3.76	0.270	6.89	9/32	6.94	0.052	1.32	0.028	0.71	1.25	5.56	0.0045	0.11
U138-0070-S	6	0.138	3.51	0.148	3.76	0.270	6.89	9/32	6.94	0.035	0.89	0.022	0.56	2.5	11.12	0.007	0.18
U138-0082-S	6	0.138	3.51	0.148	3.76	0.322	8.18	11/32	8.26	0.037	0.94	0.021	0.53	5.0	22.2	0.0082	0.21
U138-0100-S	6	0.138	3.51	0.148	3.76	0.322	8.18	11/32	8.26	0.034	0.86	0.021	0.53	7.5	33.4	0.01	0.25
U164-0050-S	8	0.164	4.17	0.174	4.42	0.322	8.18	11/32	8.26	0.064	1.63	0.034	0.86	1.5	6.67	0.005	0.13
U164-0075-S	8	0.164	4.17	0.174	4.42	0.322	8.18	11/32	8.26	0.042	1.07	0.025	0.64	3.0	13.34	0.0075	0.19
U164-0090-S	8	0.164	4.17	0.174	4.42	0.370	9.40	3/8	9.48	0.044	1.12	0.024	0.61	6.0	26.7	0.009	0.23
U164-0113	8	0.164	4.17	0.174	4.42	0.370	9.40	3/8	9.48	0.039	0.99	0.024	0.61	9.0	40.0	0.0113	0.29
U164-0113-S	8	0.164	4.17	0.174	4.42	0.370	9.40	3/8	9.48	0.039	0.99	0.024	0.61	9.0	40.0	0.0113	0.29
U190-0050-S	10	0.190	4.83	0.203	5.16	0.322	8.18	11/32	8.26	0.053	1.35	0.026	0.66	1.12	4.98	0.005	0.13
U190-0065-S	10	0.190	4.83	0.203	5.16	0.322	8.18	11/32	8.26	0.043	1.09	0.025	0.64	1.75	7.79	0.0065	0.17
U190-0060-S	10	0.190	4.83	0.200	5.08	0.370	9.40	3/8	9.48	0.069	1.75	0.035	0.89	2.25	10.01	0.006	0.15
U190-0090-S	10	0.190	4.83	0.200	5.08	0.370	9.40	3/8	9.48	0.047	1.19	0.028	0.71	4.5	20.0	0.009	0.23
U190-0113	10	0.190	4.83	0.200	5.08	0.423	10.74	7/16	10.83	0.047	1.19	0.027	0.69	9.0	40.0	0.0113	0.29
U190-0113-S	10	0.190	4.83	0.200	5.08	0.423	10.74	7/16	10.83	0.047	1.19	0.027	0.69	9.0	40.0	0.0113	0.29
U190-0140	10	0.190	4.83	0.200	5.08	0.423	10.74	7/16	10.83	0.043	1.09	0.027	0.69	13.5	60.1	0.014	0.36
U216-0065-S	12	0.216	5.49	0.231	5.87	0.423	10.74	7/16	10.83	0.081	2.06	0.042	1.07	2.5	11.12	0.0065	0.17
U216-0100-S	12	0.216	5.49	0.231	5.87	0.423	10.74	7/16	10.83	0.053	1.35	0.032	0.81	5.0	22.2	0.01	0.25
U216-0120	12	0.216	5.49	0.231	5.87	0.490	12.45	1/2	12.53	0.057	1.45	0.032	0.81	10.0	44.5	0.012	0.30
U216-0150	12	0.216	5.49	0.231	5.87	0.490	12.45	1/2	12.53	0.050	1.27	0.032	0.81	15.0	66.7	0.015	0.38
U250-0065-S	1/4	0.250	6.35	0.269	6.83	0.423	10.74	7/16	10.83	0.070	1.78	0.037	0.94	1.75	7.78	0.0065	0.17
U250-0082-S	1/4	0.250	6.35	0.269	6.83	0.423	10.74	7/16	10.83	0.055	1.40	0.032	0.81	2.5	11.12	0.0082	0.21
U250-0075-S	1/4	0.250	6.35	0.265	6.73	0.490	12.45	1/2	12.53	0.091	2.31	0.046	1.17	3.5	15.57	0.0075	0.19
U250-0110	1/4	0.250	6.35	0.265	6.73	0.490	12.45	1/2	12.53	0.063	1.60	0.034	0.86	7.0	31.1	0.011	0.28
U250-0110-S	1/4	0.250	6.35	0.265	6.73	0.490	12.45	1/2	12.53	0.063	1.60	0.034	0.86	7.0	31.1	0.011	0.28
U250-0145	1/4	0.250	6.35	0.265	6.73	0.551	14.00	9/16	14.08	0.060	1.52	0.034	0.86	14.0	62.3	0.0145	0.37

TO ORDER: WWW.ASRAYMOND.COM OR SEE PHONE & FAX NUMBERS ON BACK COVER

**SPEC**

\* Numbers with the suffix "S" are stainless steel.

