



TABLE I. DASH NUMBERS AND DIMENSIONS

NOMINAL SIZE	CARBON STEEL				CRES 302 OR 420 2'	PH BRZ OR TIN BRZ	NICKEL COPPER ALLOY	CRES 300 SERIES	CRES 420	ØA (ID)		ØB (OD)	WASHER SECTION		
	PLAIN 2'	CAD OR ZN 2'	CAD	PHOS 2'						MIN	MAX		MAX	MIN	C THICK T + t 2
DASH NUMBERS											MIN	MAX	MAX	MIN	MIN 1/2
NO.2 (.086)	1	20	39	58	77	96	115	134	153	.088	.094	.172	.035	.020	
NO.4 (.112)	2	21	40	59	78	97	116	135	154	.114	.120	.209	.040	.025	
NO.6 (.138)	3	22	41	60	79	98	117	136	155	.141	.148	.250	.047	.031	
NO.8 (.164)	4	23	42	61	80	99	118	137	156	.167	.174	.293	.055	.040	
NO.10 (.190)	5	24	43	62	81	100	119	138	157	.193	.200	.334	.062	.047	
1/4 (.250)	6	25	44	63	82	101	120	139	158	.252	.260	.487	.109	.062	
5/16 (.312)	7	26	45	64	83	102	121	140	159	.314	.322	.583	.125	.078	
3/8 (.375)	8	27	46	65	84	103	122	141	160	.377	.385	.680	.141	.094	
7/16 (.437)	9	28	47	66	85	104	123	142	161	.440	.450	.776	.156	.109	
1/2 (.500)	10	29	48	67	86	105	124	143	162	.502	.512	.869	.171	.125	
9/16 (.562)	11	30	49	68	87	106	125	144	163	.564	.574	.965	.188	.141	
5/8 (.625)	12	31	50	69	88	107	126	145	164	.628	.640	1.072	.203	.156	
3/4 (.750)	13	32	51	70	89	108	127	146	165	.753	.765	1.264	.234	.188	
7/8 (.875)	14	33	52	71	90	109	128	147	166	.878	.890	1.455	.266	.219	
1 (1.000)	15	34	53	72	91	110	129	148	167	1.003	1.015	1.647	.297	.250	
1-1/8 (1.125)	16	35	54	73 2'	92	111	130	149	168	1.129	1.144	1.838	.328	.281	
1-1/4 (1.250)	17	36	55	74 2'	93	112	131	150	169	1.254	1.272	2.028	.359	.312	
1-3/8 (1.375)	18	37	56	75 2'	94	113	132	151	170	1.379	1.399	2.210	.391	.344	
1-1/2 (1.500)	19	38	57	76 2'	95	114	133	152	171	1.504	1.524	2.409	.422	.375	

1/ SEE REQUIREMENT 4

2/ SEE NOTE 2

(J) ENTIRE STANDARD REVISED

INCH - POUND

PREPARING ACTIVITY: ARMY-AR

CUSTODIANS: ARMY- AR NAVY- AS

AIR FORCE- 99 DLA-

REVIEW: AT,AV,QL,M,JS,NS

USER: ER,ME,MC

PROJECT NUMBER: 5310-1809

DISTRIBUTION STATEMENT

MILITARY SPECIFICATION SHEET

TITLE

WASHER, LOCK - SPRING, HELICAL,
REGULAR (MEDIUM) SERIES

SPECIFICATION SHEET NUMBER

MS35338J 30 MARCH 1990

SUPERSEDING
MS35338H 29 NOV 1983 (SEE NOTE 3)

AMSC- N/A

FSC - 8310

A. Approved for public release; distribution is unlimited. Downloaded: 2019-05-24T19:43Z

Check the source to verify that this is the current version before use.

Page 1 of 3

REQUIREMENTS:

1. MATERIAL:

- a. STEEL, CARBON, GRADE 1060 (UNS G10600) THRU 1080 (UNS G10800) IN ACCORDANCE WITH ASTM F25.
- b. CORROSION-RESISTANT STEEL (NON-MAGNETIC) WASHERS SHALL BE TYPE 316 (UNS S31600) THRU 1/4 (.250) AND TYPE 300 SERIES (UNS S30200 TO UNS S31600) FOR ALL OTHER SIZES, AND CORROSION-RESISTANT STEEL (MAGNETIC) WASHERS SHALL BE TYPE 420 (UNS S42000).
- c. PHOSPHOR BRONZE, COPPER ALLOY NO. 510 (UNS C51000) IN ACCORDANCE WITH ASTM B159.
- d. TIN-BRASS, COMPOSITION 425 (UNS C42500) IN ACCORDANCE WITH ASTM B591.
- e. NICKEL-COPPER-ALUMINUM ALLOY, FORM 2 (UNS N05500) IN ACCORDANCE WITH QQ-N-286.

2. PROTECTIVE FINISHES:

- a. CARBON STEEL WASHERS:
 1. PHOSPHATE COATING SHALL BE IN ACCORDANCE WITH MIL-P-16232, TYPE 2, CLASS 2.
 2. CADMIUM PLATING SHALL BE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 2, OR MIL-C-81562, TYPE II, CLASS 2 (NO SUBSTITUTES ALLOWED).
- b. CORROSION-RESISTANT STEEL WASHERS:
 1. PASSIVATION SHALL BE IN ACCORDANCE WITH QQ-P-35.
 2. BLACK OXIDE COATING (FOR CRES 300 SERIES ONLY) SHALL BE IN ACCORDANCE WITH MIL-C-13924, CLASS 4. (SEE REQUIREMENT 6).
- c. PHOSPHOR BRONZE AND TIN-BRASS WASHERS SHALL BE CADMIUM PLATED IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3 AND SHALL BE DYED PREDOMINANTLY YELLOW TO MATCH COLOR 13415 OR 13432 OR 13507 OR 23538 IN ACCORDANCE WITH FLD-STD-595.
- d. NICKEL-COPPER-ALUMINUM ALLOY WASHERS - UNCOATED.

3. HARDNESS:

- a. CARBON STEEL WASHERS SHALL HAVE A HARDNESS OF 38 TO 46HRC.
- b. CORROSION-RESISTANT STEEL WASHERS TYPE 420 (UNS S42000) SHALL HAVE A HARDNESS OF 45-53HRC, AND TYPE 300 (UNS S30200) SERIES WASHERS SHALL HAVE A HARDNESS OF 35-43HRC.
- c. PHOSPHOR BRONZE AND TIN-BRASS WASHERS SHALL HAVE A MINIMUM HARDNESS OF 90HRL.
- d. NICKEL-COPPER-ALUMINUM ALLOY WASHERS SHALL HAVE A HARDNESS OF 33-40HRC.
4. MAXIMUM TOLERANCE FOR NOMINAL SERIES .086 THRU .190 SHALL BE +.006, .250 THRU .750 SHALL BE +.010, AND .875 THRU 1.500 SHALL BE .020 (SEE TABLE I).
5. MAGNETIC PERMEABILITY: CORROSION-RESISTANT STEEL WASHERS (300 SERIES ONLY) SHALL HAVE A MAGNETIC PERMEABILITY OF 2.0 MAXIMUM (AIR = 1.0) FOR FIELD STRENGTH OF H = 200 OERSTEDS USING A MAGNETIC INDICATOR IN ACCORDANCE WITH MIL-I-17214.
6. PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC SPECIFICATION SHEET NUMBER FOLLOWED BY A DASH NUMBER TAKEN FROM TABLE 1. WHEN BLACK OXIDE COATING IS REQUIRED, THE DASH NUMBER SHALL BE FOLLOWED BY THE LETTER "B".

EXAMPLE: MS35338-48

DASH NUMBER

BASIC SPECIFICATION SHEET NUMBER

MS35338-48 INDICATES - WASHER, LOCK-SPRING, HELICAL-SPRING, REGULAR (MEDIUM) SERIES, 1/2 (.500) NOMINAL DIAMETER, CARBON STEEL, CADMIUM PLATED

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. CANCELLED, IN PART, AND INACTIVE FOR DESIGN. FOR SUBSTITUTIONS SEE TABLE II.
3. MS35338 SUPERSEDES MS16214, MS35337, AN935, NMS1061, BECK1 AND BECK2, SEE TABLE II.
4. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.
5. REFERENCED GOVERNMENT (OR NON-GOVERNMENT) DOCUMENTS OF THE ISSUE LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) SPECIFIED IN THE SOLICITATION FORM A PART OF THIS STANDARD TO THE EXTENT SPECIFIED HEREIN.

PREPARING ACTIVITY: ARMY-AR CUSTODIANS: ARMY-AR NAVY- AS AIR FORCE- 89 DIA- REVIEW: AT,AV,GL,M,IS,NS USER: EF,ME,MC PROJECT NUMBER: 5310-1609		MILITARY SPECIFICATION SHEET TITLE WASHER, LOCK - SPRING, HELICAL, REGULAR (MEDIUM) SERIES		SPECIFICATION SHEET NUMBER MS35338J 30 MARCH 1990 SUPERSEDING MS35338H 29 NOV 1983 (SEE NOTE 3) AMSC- N/A FSC- 5310	
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.				Page 2 of 3	

TABLE II. INTERCHANGEABILITY.

After 21 March 1966, (1) washers given on MS16214, MS35337, NAS1061, and this standard in part, are inactive for design and are cancelled, but their existing stocks should be used for maintenance purposes until depleted and (2) washers given on AN935 are inactivated for new design. Use only the following substitutive washers for new design and replacement.

CROSS REFERENCE OF PART NUMBER							
CANCELLED INACTIVATED	SUBSTITUTIVE	CANCELLED INACTIVATED	SUBSTITUTIVE	CANCELLED INACTIVATED	SUBSTITUTIVE	CANCELLED INACTIVATED	SUBSTITUTIVE
MS16214-1	MS35338-135	MS35337-37	MS35338-56	MS35337-108	MS35338-108	AN935-2	MS35337-37
2	136	38	57	109	109	-3	1/
3	137	39	58	110	110	-4	1/
4	138	40	59	111	111	-5	1/
5	139	41	60	112	112	-6	1/
6	140	42	61	113	113	-7	1/
7	141	43	62	114	114	-10	1/
8	142	44	63	MS35338-1	MS35338-39	-12	1/
9	143	45	64	2	40	-116	1/
10	144	46	65	3	41	-516	1/
11	145	47	66	4	42	-116	1/
12	146	48	67	5	43	-116	1/
13	147	49	68	6	44	-116	1/
14	148	50	69	7	45	-1016	1/
15	149	51	70	8	46	-1216	1/
16	150	52	71	9	47	-2L	1/
17	151	53	72	10	48	-3L	1/
18	152	54	73	11	49	-4L	1/
19	98	55	74	12	50	-5L	1/
20	99	56	75	13	51	-6L	1/
21	100	57	76	14	52	-8L	1/
22	101	58	77	15	53	-10L	1/
23	102	59	78	16	54	-12L	1/
24	103	60	79	17	55	-416L	1/
25	104	61	80	18	56	-516L	1/
26	105	62	81	19	57	-616L	1/
27	106	63	82	20	58	-716L	1/
28	107	64	83	21	59	-816L	1/
29	108	65	84	22	60	-916L	1/
30	109	66	85	23	61	-1016L	1/
31	110	67	86	24	62	-1216L	1/
32	111	68	87	25	63	B2	1/
33	112	69	88	26	64	B3	1/
34	113	70	89	27	65	B4	1/
35	114	71	90	28	66	B5	1/
MS35337-1	MS35338-39	72	91	29	67	B6	1/
2	40	73	92	30	68	B7	1/
3	41	74	93	31	69	B8	1/
4	42	75	94	32	70	B9	1/
5	43	76	95	33	71	B10	1/
6	44	77	96	34	72	B11	1/
7	45	78	97	35	73	B12	1/
8	46	79	98	36	74	B13	1/
9	47	80	99	37	75	B14	1/
10	48	81	100	38	76	B15	1/
11	49	82	101	39	77	B16	1/
12	50	83	102	40	78	B17	1/
13	51	84	103	41	79	B18	1/
14	52	85	104	42	80	B19	1/
15	53	86	105	43	81	B20	1/
16	54	87	106	44	82	B21	1/
17	55	88	107	45	83	B22	1/
18	56	89	108	46	84	B23	1/
19	57	90	109	47	85	B24	1/
20	58	91	110	48	86	B25	1/
21	59	92	111	49	87	B26	1/
22	60	93	112	50	88	B27	1/
23	61	94	113	51	89	B28	1/
24	62	95	114	52	90	B29	1/
25	63	96	115	53	91	B30	1/
26	64	97	116	54	92	B31	1/
27	65	98	117	55	93	B32	1/
28	66	99	118	56	94	B33	1/
29	67	100	119	57	95	B34	1/
30	68	101	120	58	96	B35	1/
31	69	102	121	59	97	B36	1/
32	70	103	122	60	98	B37	1/
33	71	104	123	61	99	B38	1/
34	72	105	124	62	100	B39	1/
35	73	106	125	63	101	B40	1/
36	74	107	126	64	102	B41	1/
				65	103	B42	1/
				66	104	B43	1/
				67	105	B44	1/
				68	106	B45	1/
				69	107	B46	1/
				70	108	B47	1/
				71	109	B48	1/
				72	110	B49	1/
				73	111	B50	1/
				74	112	B51	1/
				75	113	B52	1/
				76	114	B53	1/
				77	115	B54	1/
				78	116	B55	1/
				79	117	B56	1/
				80	118	B57	1/
				81	119	B58	1/
				82	120	B59	1/
				83	121	B60	1/
				84	122	B61	1/
				85	123	B62	1/
				86	124	B63	1/
				87	125	B64	1/
				88	126	B65	1/
				89	127	B66	1/
				90	128	B67	1/
				91	129	B68	1/
				92	130	B69	1/
				93	131	B70	1/
				94	132	B71	1/
				95	133	B72	1/
						B73	1/
						B74	1/
						B75	1/
						B76	1/
						B77	1/
						B78	1/
						B79	1/
						B80	1/
						B81	1/
						B82	1/
						B83	1/
						B84	1/
						B85	1/
						B86	1/
						B87	1/
						B88	1/
						B89	1/
						B90	1/
						B91	1/
						B92	1/
						B93	1/
						B94	1/
						B95	1/
						B96	1/
						B97	1/
						B98	1/
						B99	1/
						B100	1/
						B101	1/
						B102	1/
						B103	1/
						B104	1/
						B105	1/
						B106	1/
						B107	1/
						B108	1/
						B109	1/
						B110	1/
						B111	1/
						B112	1/
						B113	1/
						B114	1/
						B115	1/
						B116	1/
						B117	1/
						B118	1/
						B119	1/
						B120	1/
						B121	1/
						B122	1/
						B123	1/
						B124	1/
						B125	1/
						B126	1/
						B127	1/
						B128	1/
						B129	1/
						B130	1/
						B131	1/
						B132	1/
						B133	1/
						B134	1/
						B135	1/
						B136	1/
						B137	1/
						B138	1/
						B139	1/
						B140	1/
						B141	1/
						B142	1/
						B143	1/
						B144	1/
						B145	1/
						B146	1/
						B147	1/
						B148	1/
						B149	1/
						B150	1/
						B151	1/
						B152	1/
						B153	1/
						B154	1/
						B155	1/
						B156	1/
						B157	1/
						B158	1/
						B159	1/
						B160	1/
						B161	1/
						B162	1/
						B163	1/
						B164	1/
						B165	1/
						B166	1/
						B167	1/
						B168	1/
						B169	1/
						B170	1/
						B171	1/
						B172	1/
						B173	1/
						B174	1/
						B175	1/
						B176	1/
						B177	1/
						B178	1/
						B179	1/
						B180	1/
						B181	1/
						B182	1/
						B183	1/
						B184	1/
						B185	1/
						B186	1/
						B187	1/
						B188	1/
						B189	1/
						B190	1/