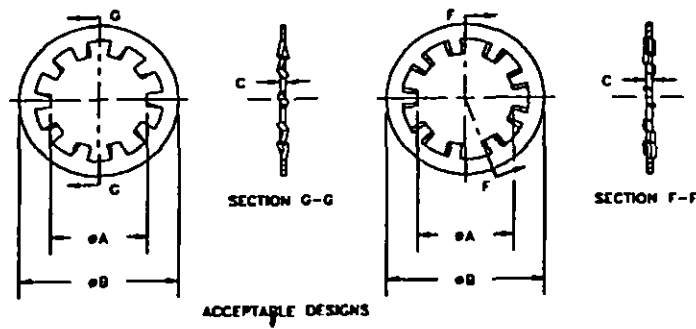


THE REQUIREMENTS FOR ADJOINING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE BOOKS SPECIFIED IN THE SOLUTION: ASME B18.21.1



ACCEPTABLE DESIGNS

TABLE I

NOMINAL SIZE	#A INSIDE DIAMETER		#B OUTSIDE DIAMETER		C THICKNESS		STEEL			TIN-BRASS OR PHOSPHOR BRONZE
							CARBON CAD OR ZINC (K)	CORROSION RES		
								DASH NO.	COMP 410	
#2 .088	.085	.089	.200	.175	.015	.010	35	69		103
#4 .112	.123	.112	.270	.255	.019	.018	38	70	153	104
#6 .136	.150	.141	.285	.275	.021	.017	37	71	154	105
#8 .164	.178	.168	.340	.325	.023	.018	38	72	155	106
#10 .190	.204	.195	.381	.365	.025	.020	39	73		107
1/4 .250	.287	.258	.478	.460	.028	.023	40	74		108
5/16 .312	.332	.320	.610	.594	.034	.028	41	75		109
3/8 .375	.398	.384	.692	.670	.040	.032	42	76		110
7/16 .438	.464	.448	.789	.740	.040	.032	43	77		111
1/2 .500	.530	.512	.900	.887	.045	.037	44	78		113
5/8 .625	.683	.640	1.071	1.045	.050	.042	46	80		115
3/4 .750	.795	.769	1.245	1.220	.055	.047	47	81		116
7/8 .875	.927	.894	1.410	1.364	.060	.052	48	82		117
1 1.000	1.060	1.019	1.637	1.550	.067	.059	49	83		118
1-1/4 1.250	1.325	1.275	1.975	1.921	.067	.059	51	85		120

TABLE II

NOMINAL SIZE	#A INSIDE DIAMETER		#B OUTSIDE DIAMETER		C THICKNESS		STEEL			TIN-BRASS OR PHOSPHOR BRONZE
							CARBON CAD OR ZINC (K)	CORROSION RES		
								DASH NO.	COMP 410	
1/4 .250	.267	.258	.410	.395	.020	.016	125	135	187	145
3/8 .375	.392	.383	.507	.493	.030	.020		134		
7/16 .437	.448	.440	.592	.580	.020	.016	131	141		151
1/2 .500	.480	.472	.607	.593	.023	.013	126	136		146
5/8 .625	.580	.570	.690	.680	.023	.013	127	137		147
3/4 .750	.640	.630	.800	.790	.027	.017	128	138		148
7/8 .875	.785	.775	1.077	1.047	.027	.017	129	139		149
1 1.000	1.020	1.010	1.390	1.360	.028	.023	130	140		150

* Washers shown in Table II are generally to be considered for use in mounting electronic components
 † For carbon steel washers with black finish requirement add "B" after dash number. See requirement 2.1 and note 4.

(K) DENOTES CHANGE(S)

INCH-POUND

THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.

PREPARING ACTIVITY: DLA-15 CUSTODIANS: ARMY- AR NAVY- AS AIR FORCE- 99 DLA-	MILITARY SPECIFICATION SHEET TITLE WASHER, LOCK, FLAT-INTERNAL TOOTH	SPECIFICATION SHEET NUMBER MS35333 13 DEC 83 REV K SUPERSEDING MS35333 J 9 FEB 81 (SEE NOTE 4.) AMSC- N/A FSC 5310
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.		Page <u>1</u> of <u>2</u>

In a direction opposite to that of the other teeth.

REQUIREMENTS:

- (K) 1. **MATERIAL:** Carbon, Steel, Grade 1050 to 1084, hardness 40 to 50 HRC or equivalent.
Corrosion-resistant Steel, Composition 410.
Corrosion-resistant Steel, 300 series (UNS S300XX), hardness 35-43HRC.
Phosphor Bronze, Composition A in accordance with QQ-P-750.
Tin-brass, CDA Alloy 425 (UNS CA42500).
- (K) 2. **PROTECTIVE COATING:** Carbon steel - Cadmium plated in accordance with QQ-P-416 type II, class 2, or Mechanically deposited Zinc in accordance with MIL-C-81562, Type II, Class 6.
Corrosion-resistant steel - Passivate in accordance with QQ-P-35.
- (K) 2.1 **BLACK PROTECTIVE COATING:** When specified, Carbon steel shall be black (Electrodeposited) Chromium (alc) plating in accordance with MIL-C-14538.
- (K) 3. **PART NUMBER:** The MS part number consists of the MS number, plus the dash number, plus the code letter, when applicable.
CODE LETTERS:
Add "B" as suffix to dash number for black finish per requirement 2.1.
Example: MS35333-131B Washer, Carbon Steel, Black Finish.
- (K) 4. **PACKAGING:** Packaging shall be in accordance with ASTM D3951.

NOTES:

- 1. All dimensions are in inches. (K)
- 2. The number of teeth shall be at the option of the Supplier.
- 3. Washer, dash numbers 121 and 112 only, have the alternate teeth twisted.
- 4. MS35333 supersedes AN336 in part, BEAX 1 and BEAX 2.
- 5. In the event of a conflict between the text of this standard and the references cited herein, the text of the standard shall take precedence.
- 6. Referenced government (or non-government) documents of the issue in that issue of the Department of Defense Index of Specifications and Standards (DoDSS) specified in the solicitation form a part of the standard to the extent specified herein.

INTERCHANGEABILITY TABLE

The following dash numbers of MS35333 and AN336 are cancelled after 5 Dec 1963. The cancelled washers cannot always replace the new washers and should be used until existing stocks are depleted. Use only the new washers for design and engineering. Replacement shall be in accordance with this table.

TABLE III

PART NUMBERS											
CANCELLED		NEW	CANCELLED		NEW	CANCELLED		NEW	CANCELLED		NEW
AN336	MS35333	MS35333	AN336	MS35333	MS35333	AN336	MS35333	MS35333	AN336	MS35333	MS35333
A2	1	35	---	57	40	A1016	12	46	---	86	103
---	16	35	A416H	---	41	---	28	46	A48	87	104
---	52	35	A318	7	41	---	43	46	A88	88	105
A3	---	38	---	24	41	A1216	13	47	A88	89	106
A4	2	38	---	58	41	---	30	47	A108	90	107
---	19	36	A816	6	42	---	64	47	A416B	91	108
---	33	36	---	25	42	A1416	14	48	A516B	92	109
A6	3	37	---	59	42	---	31	48	A816B	93	110
---	20	37	A716	8	43	---	65	48	A716B	94	111
---	54	37	---	26	43	A1616	15	49	A716B3	---	112
A8	4	38	---	60	43	---	32	49	---	95	113
---	21	38	A716S	---	121	---	66	49	---	96	114
---	55	38	A816	10	44	---	16	50	---	97	115
A10	5	39	---	27	44	---	33	50	---	98	116
---	22	39	---	61	44	---	67	50	---	99	117
---	56	39	A916	11	45	---	17	51	---	100	118
A416	6	40	---	28	45	---	34	51	---	101	119
---	23	40	---	62	45	---	68	51	---	102	120

**No replacement

PREPARING ACTIVITY: DLA-IS CUSTOMERS: ARMY- AR NAVY- AS AIR FORCE- 99 DLA- REVIEW: AT, AV, ER, ES, GL, MI, NS, YD, 82 USER: MC, ME, OS, YD PROJECT NUMBER: 5310-1901	MILITARY SPECIFICATION SHEET TITLE: WASHER, LOCK, FLAT-INTERNAL TOOTH	SPECIFICATION SHEET NUMBER: MS35333 13 DEC 63 REV K SUPERSIDING: MS35333 J 9 FEB 61 (SEE NOTE 4.) AMSC- N/A FSC 5310
DISTRIBUTION STATEMENT: A. Approved for public release; distribution is unlimited.		Page 2 of 2

DD Form 672, MAY 88

PREVIOUS EDITIONS ARE OBSOLETE

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THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.