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AS24585™

FEDERAL SUPPLY CLASS
5360

RATIONALE

ADD NEW PLATING OPTION AND CORRESPONDING DASH NOS. FOR ZI-NI PLATING PER AMS2461, TYPE 2, GRADE A OR B (DRAWING NOTE 2C AND TABLE 2). ADD PROHIBITION OF POST-TREATMENT CLEANING FOR PASSIVATED PARTS (DRAWING NOTE 2D). GENERAL EDITORIAL REVISIONS (SEE NOTES 1, 2, 15 AND TABLE 2).

NOTICE

THE INITIAL SAE PUBLICATION OF THIS DOCUMENT WAS TAKEN DIRECTLY FROM U.S. MILITARY STANDARD MS24585. THIS SAE STANDARD MAY RETAIN THE SAME PART NUMBERS ESTABLISHED BY THE ORIGINAL MILITARY DOCUMENT.

ANY REQUIREMENTS ASSOCIATED WITH QUALIFIED PRODUCTS LISTS (QPL'S) MAY CONTINUE TO BE MANDATORY FOR DoD CONTRACTS. REQUIREMENTS RELATING TO QPL'S HAVE NOT BEEN ADOPTED BY THE SAE FOR THIS STANDARD AND ARE NOT PART OF THIS SAE DOCUMENT.

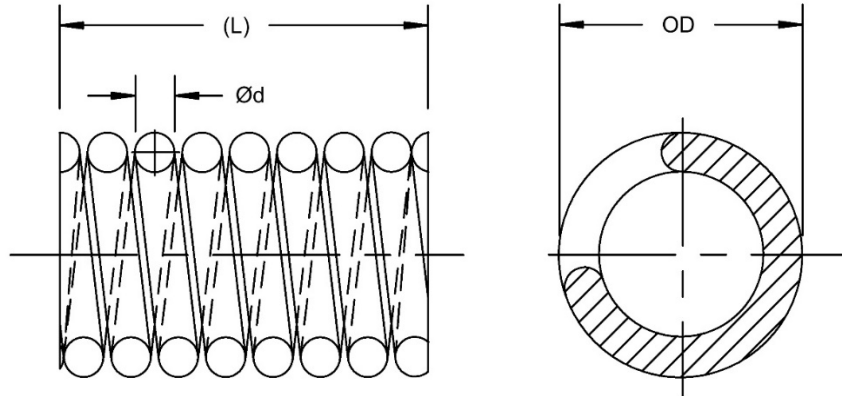


FIGURE 1 - SPRING

NOTES:

NOTICE

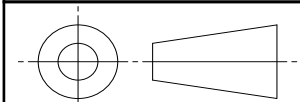
THIS DOCUMENT REFERENCES A PART WHICH CONTAINS CADMIUM AS A PLATING MATERIAL. CONSULT LOCAL OFFICIALS IF YOU HAVE QUESTIONS CONCERNING CADMIUM'S USE.

MATERIAL:

- a. WIRE, STEEL, MUSIC, IN ACCORDANCE WITH ASTM A228/A228M.
- b. WIRE, STEEL, CORROSION-RESISTANT IN ACCORDANCE WITH ASTM A580/A580M OR ASTM A313/A313M.
1. PROTECTIVE PLATING, COATING, OR TREATMENT:
 - a. CADMIUM PLATING IN ACCORDANCE WITH AMS-QQ-P-416, TYPE II, CLASS 2.
 - b. ZINC COATING IN ACCORDANCE WITH ASTM B633, TYPE II, FE/ZN5.
 - c. ZINC-NICKEL PLATING IN ACCORDANCE WITH AMS2461, TYPE 2, GRADE A OR B.
 - d. CORROSION-RESISTANT STEEL WIRE SHALL BE PASSIVATED IN ACCORDANCE WITH AMS2700, EXCEPT POST-CLEANING TREATMENT IS PROHIBITED.

For more information on this standard, visit
<https://www.sae.org/standards/content/AS24585E/>

THIRD ANGLE PROJECTION



CUSTODIAN: E-25

PROCUREMENT SPECIFICATION: AS13572, TYPE I



AEROSPACE STANDARD

SPRING, HELICAL, COMPRESSION:
FOR LOADS BELOW 20 LBF

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3. ENDS: SQUARED AND GROUND. ENDS TO BE SQUARE WITHIN 3° WITH AXIS. (GRADE B OF PROCUREMENT SPECIFICATION.)
4. DIRECTION OF HELIX: OPTIONAL.
5. ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
- /6/ WIRE DIAMETER, ØD, IS IN ACCORDANCE WITH MATERIAL SPECIFICATION.
7. FREE LENGTH "L," ACTIVE COILS "N," AND DEFLECTION PER COIL "F" ARE FOR REFERENCE USE ONLY.
- /8/ LOAD "P" MUST BE ATTAINED AT A COMPRESSED LENGTH DETERMINED BY SUBTRACTING DEFLECTION "F" (WITH TOLERANCE) FROM THE FREE LENGTH "L." FOR CORROSION RESISTANT STEEL, MULTIPLY "P" BY .833.
9. SPRING VALUES SHOWN ARE FOR MUSIC WIRE AND ARE BASED ON A SERVICE LIFE OF 50000 CYCLES AT .50 STRESS RANGE. TO DETERMINE SAFE WORKING DEFLECTION UNDER OTHER OPERATING CONDITIONS, OR WHEN CORROSION RESISTANT STEEL IS USED, MULTIPLY "F" BY THE APPROPRIATE FACTOR SHOWN IN TABLE 1. P1 = LOAD AT ASSEMBLED LENGTH AND P2 = FINAL LOAD.
- /10/ TO DETERMINE LOAD "P" AT ANY DEFLECTION OTHER THAN "F," MULTIPLY THE PROPOSED DEFLECTION BY THE RATE "R."
11. WHEN CORROSION RESISTANT STEEL IS USED, THE VALUE FOR RATE "R" MUST BE CORRECTED BY MULTIPLYING "R" BY .833.
12. MUSIC WIRE SPRINGS ARE NOT RECOMMENDED FOR APPLICATIONS WHERE TEMPERATURE EXCEEDS 250 °F. CORROSION RESISTANT STEEL SPRINGS ARE NOT RECOMMENDED FOR APPLICATIONS WHERE TEMPERATURE EXCEEDS 500 °F.
13. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.
14. FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN.
15. PART NUMBER: THE MS PART NUMBER CONSISTS OF THE MS NUMBER, PLUS THE DASH NUMBER /TABLE 2/.
EXAMPLES OF PART NUMBERS:

MS24585-9	STEEL WIRE PER ASTM A228/A228M, .115-.125 OUTSIDE Ø, .016 WIRE Ø, .75 FREE LENGTH, 16.5 ACTIVE COILS.
MS24585-1043	STEEL WIRE PER ASTM A228/A228M, CADMIUM PLATED, .175-.185 OUTSIDE Ø, .018 WIRE Ø, .56 FREE LENGTH, 6.50 ACTIVE COILS.
MS24585-2217	STEEL WIRE PER ASTM A228/A228M, ZINC COATED, .352-.368 OUTSIDE Ø, .022 WIRE Ø, .88 FREE LENGTH, 3.25 ACTIVE COILS.
MS24585-ZN96	STEEL WIRE PER ASTM A228/A228M, ZINC-NICKEL PLATED, .235-.245 OUTSIDE Ø, .026 WIRE Ø, .88 FREE LENGTH, 8.25 ACTIVE COILS.
MS24585-C284	CRES WIRE PER ASTM A580/A580M OR ASTM A313/A313M, PASSIVATED, .442-.458 OUTSIDE Ø, .038 WIRE Ø, .62 FREE LENGTH, 2.50 ACTIVE COILS.
16. DO NOT USE UNASSIGNED PART NUMBERS.
17. FOR PROCUREMENT AND DRAWING REQUIREMENTS FOR NEW DESIGN, REFER TO AS13572 AND ASME Y14.13M.
18. REVISION INDICATOR: A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES, HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS, NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

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 ASME IS AN AMERICAN SOCIETY OF MECHANICAL ENGINEERS PUBLICATION.
 ASTM IS AN ASTM INTERNATIONAL PUBLICATION.

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	SPRING, HELICAL, COMPRESSION: FOR LOADS BELOW 20 LBF			

 Documents

TABLE 1 - CORRECTION FACTOR FOR STRESS RANGE LIFE CYCLES AND SPRING MATERIAL

MATERIAL	$(P_2 - P_1) / P_2$	CYCLES				
		5000	10000	50000	100000	INFINITE
MUSIC WIRE	.25	1.28	1.23	1.11	1.06	.95
	.50	1.23	1.16	1.00	.93	.76
	.75	1.21	1.12	.93	.84	.65
	1.00	1.17	1.08	.86	.77	.55
CORROSION- RESISTANT STEEL	.25	.92	.90	.83	.81	.77
	.50	.88	.84	.76	.72	.63
	.75	.85	.80	.68	.63	.51
	1.00	.83	.76	.61	.55	.41

TABLE 2 - DASH NUMBERS, MATERIAL, DIMENSIONS, AND CHARACTERISTICS

STEEL UNCOATED DASH NO.	STEEL CADMIUM PLATED DASH NO.	STEEL ZINC COATED DASH NO.	STEEL ZN-NI PLATED DASH NO.	CRES. PASS. DASH NO.	OD OUTSIDE DIA	(Ød) WIRE DIA /6/	(L) FREE LENGTH	(N) ACTIVE COILS	(f) DEFL. PER COIL	P LOAD LBF /8/	F DEFL. ±10%	H SOLID LENGTH MAX	R SPRING RATE LB/IN ±10% /10/
1	1001		ZN1	C1	.115-.125	.016	.25	4.50	.0210	1.837	.095	.104	19.3
2	1002		ZN2	C2	.115-.125	.016	.31	6.25	.0210	1.837	.131	.132	14.0
3	1003		ZN3	C3	.115-.125	.016	.38	7.75	.0210	1.837	.163	.156	11.3
4	1004		ZN4	C4	.115-.125	.016	.44	9.25	.0210	1.837	.194	.180	9.5
5	1005		ZN5	C5	.115-.125	.016	.50	10.50	.0210	1.837	.220	.200	8.3
6	1006		ZN6	C6	.115-.125	.016	.56	12.00	.0210	1.837	.252	.224	7.3
7	1007		ZN7	C7	.115-.125	.016	.62	13.25	.0210	1.837	.278	.244	6.6
8	1008		ZN8	C8	.115-.125	.016	.69	15.00	.0210	1.837	.315	.272	5.8
9	1009		ZN9	C9	.115-.125	.016	.75	16.50	.0210	1.837	.346	.296	5.3
10	1010	2010	ZN10	C10	.115-.125	.018	.25	5.25	.0173	2.564	.091	.130	28.2
11	1011	2011	ZN11	C11	.115-.125	.018	.31	6.75	.0173	2.564	.117	.157	21.9
12	1012	2012	ZN12	C12	.115-.125	.018	.38	8.25	.0173	2.564	.143	.184	17.9
13	1013	2013	ZN13	C13	.115-.125	.018	.44	9.75	.0173	2.564	.169	.211	15.2
14	1014	2014	ZN14	C14	.115-.125	.018	.50	11.25	.0173	2.564	.195	.238	13.1
15	1015	2015	ZN15	C15	.115-.125	.018	.56	13.00	.0173	2.564	.224	.270	11.4
16	1016	2016	ZN16	C16	.115-.125	.018	.62	14.00	.0173	2.564	.242	.288	10.6
17	1017	2017	ZN17	C17	.115-.125	.018	.69	16.00	.0173	2.564	.276	.324	9.3
18	1018	2018	ZN18	C18	.115-.125	.018	.75	17.50	.0173	2.564	.302	.351	8.5
19	1019		ZN19	C19	.115-.125	.022	.25	5.25	.0120	4.481	.063	.159	71.1
20	1020		ZN20	C20	.115-.125	.022	.31	7.00	.0120	4.481	.084	.198	53.3
21	1021		ZN21	C21	.115-.125	.022	.38	9.00	.0120	4.481	.108	.242	41.5
22	1022		ZN22	C22	.115-.125	.022	.44	10.25	.0120	4.481	.123	.269	36.4
23	1023		ZN23	C23	.115-.125	.022	.50	12.00	.0120	4.481	.144	.308	31.1
24	1024		ZN24	C24	.115-.125	.022	.56	13.25	.0120	4.481	.159	.335	28.2
25	1025		ZN25	C25	.115-.125	.022	.62	15.00	.0120	4.481	.180	.374	24.9
26	1026		ZN26	C26	.115-.125	.022	.69	17.00	.0120	4.481	.204	.418	22.0
27	1027		ZN27	C27	.115-.125	.022	.75	18.50	.0120	4.481	.222	.451	20.2
28	1028		ZN28	C28	.115-.125	.022	.81	20.00	.0120	4.481	.240	.484	18.7
29	1029	2029	ZN29	C29	.175-.185	.016	.25	2.50	.0563	1.254	.141	.072	8.9
30	1030	2030	ZN30	C30	.175-.185	.016	.31	3.00	.0563	1.254	.167	.080	7.5
31	1031	2031	ZN31	C31	.175-.185	.016	.38	3.75	.0563	1.254	.211	.092	5.9
32	1032	2032	ZN32	C32	.175-.185	.016	.44	4.50	.0563	1.254	.253	.104	4.9
33	1033	2033	ZN33	C33	.175-.185	.016	.50	5.25	.0563	1.254	.295	.116	4.2
34	1034	2034	ZN34	C34	.175-.185	.016	.56	6.00	.0563	1.254	.337	.128	3.7
35	1035	2035	ZN35	C35	.175-.185	.016	.62	6.50	.0563	1.254	.366	.136	3.4
36	1036	2036	ZN36	C36	.175-.185	.016	.69	7.25	.0563	1.254	.407	.148	3.1
37	1037	2037	ZN37	C37	.175-.185	.016	.75	8.00	.0563	1.254	.450	.160	2.8
38	1038		ZN38	C38	.175-.185	.018	.25	2.75	.0475	1.760	.130	.085	13.5
39	1039		ZN39	C39	.175-.185	.018	.31	3.25	.0475	1.760	.154	.094	11.4
40	1040		ZN40	C40	.175-.185	.018	.38	4.00	.0475	1.760	.190	.108	9.3
41	1041		ZN41	C41	.175-.185	.018	.44	4.75	.0475	1.760	.225	.121	7.8
42	1042		ZN42	C42	.175-.185	.018	.50	5.50	.0475	1.760	.261	.135	6.7
43	1043		ZN43	C43	.175-.185	.018	.56	6.50	.0475	1.760	.308	.153	5.7
44	1044		ZN44	C44	.175-.185	.018	.62	7.25	.0475	1.760	.344	.166	5.1
45	1045		ZN45	C45	.175-.185	.018	.69	8.00	.0475	1.760	.380	.180	4.6
46	1046		ZN46	C46	.175-.185	.018	.75	9.00	.0475	1.760	.427	.198	4.1
47	1047	2047	ZN47	C47	.175-.185	.022	.25	3.00	.0352	3.134	.106	.110	29.6
48	1048	2048	ZN48	C48	.175-.185	.022	.31	3.75	.0352	3.134	.132	.126	23.7

TABLE 2 - DASH NUMBERS, MATERIAL, DIMENSIONS, AND CHARACTERISTICS (CONTINUED)

STEEL UNCOATED DASH NO.	STEEL CADMIUM PLATED DASH NO.	STEEL ZINC COATED DASH NO.	STEEL ZN-NI PLATED DASH NO.	CRES PASS. DASH NO.	OD OUTSIDE DIA	(Ød) WIRE DIA /6/	(L) FREE LENGTH	(N) ACTIVE COILS	(f) DEFL. PER COIL	P LOAD LBF /8/	F DEFL. ±10%	H SOLID LENGTH MAX	R SPRING RATE LB/IN ±10% /10/
49	1049	2049	ZN49	C49	.175-.185	.022	.38	4.50	.0352	3.134	.158	.143	19.8
50	1050	2050	ZN50	C50	.175-.185	.022	.44	5.25	.0352	3.134	.185	.159	16.9
51	1051	2051	ZN51	C51	.175-.185	.022	.50	6.25	.0352	3.134	.220	.181	14.2
52	1052	2052	ZN52	C52	.175-.185	.022	.56	7.50	.0352	3.134	.264	.209	11.9
53	1053	2053	ZN53	C53	.175-.185	.022	.62	8.50	.0352	3.134	.299	.231	10.5
54	1054	2054	ZN54	C54	.175-.185	.022	.69	9.25	.0352	3.134	.325	.247	9.6
55	1055	2055	ZN55	C55	.175-.185	.022	.75	10.25	.0352	3.134	.361	.269	8.7
56	1056	2056	ZN56	C56	.175-.185	.022	.81	11.50	.0352	3.134	.405	.297	7.7
57	1057		ZN57	C57	.175-.185	.026	.25	3.25	.0268	5.032	.087	.136	57.8
58	1058		ZN58	C58	.175-.185	.026	.31	4.00	.0268	5.032	.107	.156	47.0
59	1059		ZN59	C59	.175-.185	.026	.38	5.00	.0268	5.032	.134	.182	37.5
60	1060		ZN60	C60	.175-.185	.026	.44	6.00	.0268	5.032	.161	.208	31.2
61	1061		ZN61	C61	.175-.185	.026	.50	7.00	.0268	5.032	.188	.234	26.8
62	1062		ZN62	C62	.175-.185	.026	.56	8.00	.0268	5.032	.214	.260	23.5
63	1063		ZN63	C63	.175-.185	.026	.62	9.00	.0268	5.032	.241	.286	20.9
64	1064		ZN64	C64	.175-.185	.026	.69	10.00	.0268	5.032	.268	.312	18.8
65	1065		ZN65	C65	.175-.185	.026	.75	11.00	.0268	5.032	.295	.338	17.0
66	1066		ZN66	C66	.175-.185	.026	.81	12.00	.0268	5.032	.322	.364	15.6
67	1067		ZN67	C67	.175-.185	.026	.88	13.00	.0268	5.032	.348	.390	14.4
68	1068	2068	ZN68	C68	.175-.185	.032	.31	4.00	.0182	8.833	.072	.192	122.7
69	1069	2069	ZN69	C69	.175-.185	.032	.38	5.00	.0182	8.833	.091	.224	97.0
70	1070	2070	ZN70	C70	.175-.185	.032	.44	6.25	.0182	8.833	.114	.264	77.5
71	1071	2071	ZN71	C71	.175-.185	.032	.50	7.50	.0182	8.833	.136	.304	64.9
72	1072	2072	ZN72	C72	.175-.185	.032	.56	8.25	.0182	8.833	.150	.328	58.9
73	1073	2073	ZN73	C73	.175-.185	.032	.62	9.50	.0182	8.833	.172	.368	51.3
74	1074	2074	ZN74	C74	.175-.185	.032	.69	10.25	.0182	8.833	.186	.392	47.5
75	1075	2075	ZN75	C75	.175-.185	.032	.75	11.75	.0182	8.833	.214	.440	41.3
76	1076	2076	ZN76	C76	.175-.185	.032	.81	13.00	.0182	8.833	.237	.480	37.3
77	1077	2077	ZN77	C77	.175-.185	.032	.88	14.50	.0182	8.833	.264	.528	33.5
78	1078	2078	ZN78	C78	.175-.185	.032	.94	15.50	.0182	8.833	.282	.560	31.3
79	1079	2079	ZN79	C79	.175-.185	.032	1.00	16.50	.0182	8.833	.300	.592	29.4
80	1080		ZN80	C80	.235-.245	.022	.38	2.75	.0706	2.394	.194	.104	12.3
81	1081		ZN81	C81	.235-.245	.022	.44	3.50	.0706	2.394	.247	.121	9.7
82	1082		ZN82	C82	.235-.245	.022	.50	4.00	.0706	2.394	.282	.132	8.5
83	1083		ZN83	C83	.235-.245	.022	.56	4.50	.0706	2.394	.318	.143	7.5
84	1084		ZN84	C84	.235-.245	.022	.62	5.00	.0706	2.394	.353	.154	6.8
85	1085		ZN85	C85	.235-.245	.022	.69	5.50	.0706	2.394	.388	.165	6.2
86	1086		ZN86	C86	.235-.245	.022	.75	6.00	.0706	2.394	.423	.176	5.6
87	1087		ZN87	C87	.235-.245	.022	.81	6.50	.0706	2.394	.458	.187	5.2
88	1088	2088	ZN88	C88	.235-.245	.026	.38	3.00	.0552	3.846	.165	.130	23.3
89	1089	2089	ZN89	C89	.235-.245	.026	.44	3.50	.0552	3.846	.193	.143	19.9
90	1090	2090	ZN90	C90	.235-.245	.026	.50	4.00	.0552	3.846	.221	.156	17.4
91	1091	2091	ZN91	C91	.235-.245	.026	.56	4.75	.0552	3.846	.262	.175	14.7
92	1092	2092	ZN92	C92	.235-.245	.026	.62	5.50	.0552	3.846	.303	.195	12.7
93	1093	2093	ZN93	C93	.235-.245	.026	.69	6.25	.0552	3.846	.345	.214	11.1
94	1094	2094	ZN94	C94	.235-.245	.026	.75	7.00	.0552	3.846	.386	.234	10.0
95	1095	2095	ZN95	C95	.235-.245	.026	.81	7.50	.0552	3.846	.414	.247	9.3
96	1096	2096	ZN96	C96	.235-.245	.026	.88	8.25	.0552	3.846	.455	.266	8.4



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