

SAE Executive Standards Committee Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

REV.
D

AS24586™

FEDERAL SUPPLY CLASS
5360

RATIONALE

UPDATE MATERIAL CALLOUT FOR STEEL WIRE, ADD DETAILED EXAMPLES OF PART NUMBERS, ADD NEW NOTE FOR DISPOSITION OF EXISTING INVENTORY.

NOTICE

THE INITIAL SAE PUBLICATION OF THIS DOCUMENT WAS TAKEN DIRECTLY FROM U.S. MILITARY STANDARD MS24586. 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.

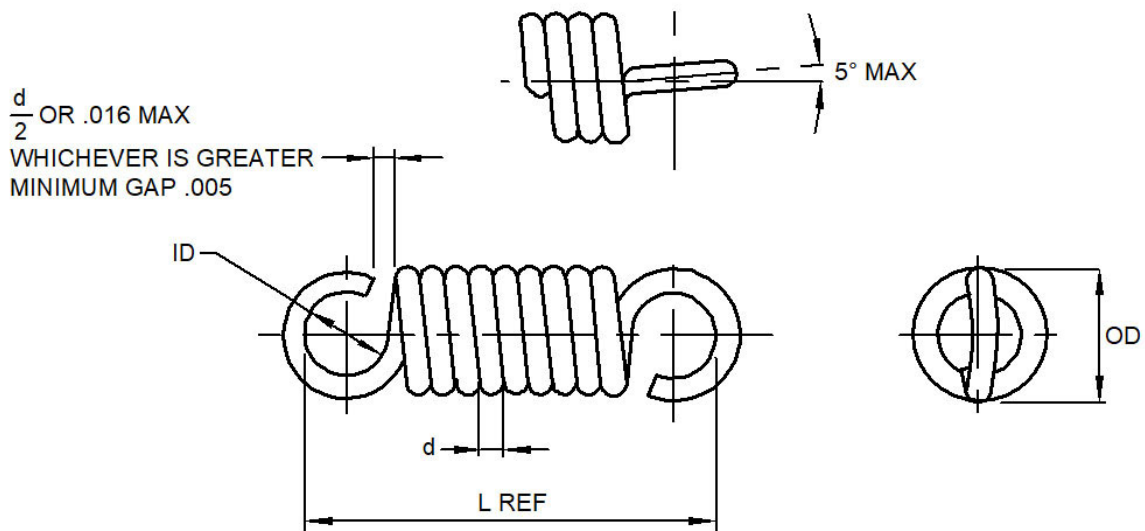
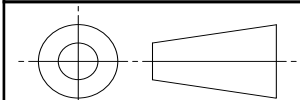


FIGURE 1 - SPRING

For more information on this standard, visit
<https://www.sae.org/standards/content/AS24586D>

THIRD ANGLE PROJECTION



CUSTODIAN: E-25

PROCUREMENT SPECIFICATION: AS13572



AEROSPACE STANDARD

SPRING, HELICAL, EXTENSION
FOR LOADS BELOW 30 LBF

AS24586™
SHEET 1 OF 11

REV.
D

Copyright © 2021 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Fax: 724-776-0790

Tel: +1 724-776-4970 (outside USA)
Email: CustomerService@sae.org

SAE WEB ADDRESS: <http://www.sae.org>

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

MATERIAL	$\frac{P_2 - P_1}{P_2}$	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

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: WIRE, STEEL, MUSIC, IN ACCORDANCE WITH ASTM A228/A228M. WIRE, STEEL, CORROSION-RESISTANT, IN ACCORDANCE WITH ASTM A313/A313M, COMPOSITION FS302 OR FS304, SPRING TEMPER.
- PROTECTIVE COATING: CADMIUM PLATING IN ACCORDANCE WITH AMS-QQ-P-416, TYPE II, CLASS 2.
ZINC COATING IN ACCORDANCE WITH ASTM B633, TYPE II, FE/ZN5.
PASSIVATION TREATMENT IN ACCORDANCE WITH AMS2700.
- ENDS: MACHINE FULL HOOK. END HOOKS SHALL BE PARALLEL WITHIN 22°. RELATIVE POSITION OF END HOOK OPENINGS IS OPTIONAL.
- DIRECTION OF HELIX: OPTIONAL
- TOLERANCE: OUTSIDE DIAMETER "OD" .120 TO .240 ± .005, .300 TO .500 ± .008, .650 TO 1.000 ± .015.
WIRE DIAMETER "D" IN ACCORDANCE WITH MATERIAL SPECIFICATION.
MAX EXTENSION "L₁" ±10% OF (L₁-L).
SPRING RATE "R" ±10%.
- ACTIVE COILS "N", INITIAL TENSION "T", AND DEFLECTION PER COIL "F", ARE FOR REFERENCE ONLY.
- MAX LOAD "P", SHALL BE ATTAINED WITHIN THE TOLERANCE OF EXTENSION "L₁", TO DETERMINE LOAD "P", RATE "R" OR INITIAL TENSION "T", FOR CORROSION-RESISTANT STEEL, MULTIPLY THE VALUE GIVEN IN TABLE 2 BY .833.
- SPRING VALUES SHOWN ARE FOR MUSIC WIRE AND ARE BASED ON A SERVICE LIFE OF 50000 CYCLES AT .50 STRESS RANGE. FOR USE UNDER OTHER OPERATING CONDITIONS, MULTIPLY MAX EXTENSION (L₁-L) BY THE FACTOR SHOWN IN TABLE 1 (SEE NOTE 7). P₁ = LOAD AT ASSEMBLED HEIGHT AND P₂ = FINAL LOAD.
- TO DETERMINE LOAD "P" AT ANY EXTENSION OTHER THAN "L₁", MULTIPLY THE DISTANCE IN INCHES THAT THE SPRING WILL BE EXTENDED FROM THE FREE LENGTH "L", BY THE SPRING RATE "R", AND ADD THE INITIAL TENSION "T" (SEE NOTE 7).
- MUSIC WIRE SPRINGS ARE NOT RECOMMENDED FOR APPLICATIONS WHEREIN THE TEMPERATURE EXCEEDS 250 °F. CORROSION-RESISTING STEEL SPRINGS ARE NOT RECOMMENDED FOR APPLICATIONS WHEREIN THE TEMPERATURE EXCEEDS 500 °F.
- IN THE EVENT OF CONFLICTS BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.
- DIMENSIONS: ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.

	AEROSPACE STANDARD	AS24586™ SHEET 2 OF 11	REV. D 
	SPRING, HELICAL, EXTENSION FOR LOADS BELOW 30 LBF		



Document Sharing Hub

13. PART NUMBER: THE MS PART NUMBER CONSISTS OF THE MS NUMBER PLUS THE DASH NUMBER /TABLE 2/.
EXAMPLES OF PART NUMBERS:

MS24586-9 STEEL WIRE PER ASTM A228/A228M, .115-.125 OUTSIDE Ø, .018 WIRE Ø, 1.500 LENGTH, 73.0 ACTIVE COILS.
MS24586-1043 STEEL WIRE PER ASTM A228/A228M, CADMIUM PLATED, .235-.245 OUTSIDE Ø, .031 WIRE Ø, 1.625 LENGTH, 40.0 ACTIVE COILS.
MS24586-1201 STEEL WIRE PER ASTM A228/A228M, ZINC COATED, .495-.505 OUTSIDE Ø, .063 WIRE Ø, 1.875 LENGTH, 17.0 ACTIVE COILS.
MS24586-C284 CRES WIRE PER ASTM A313/A313M, PASSIVATED, .845-.855 OUTSIDE Ø, .055 WIRE Ø, 2.500 FREE LENGTH, 17.5 ACTIVE COILS.

14. UNLESS OTHERWISE SPECIFIED, PART INVENTORY MANUFACTURED TO PREVIOUS REVISIONS OF THE APPLICABLE DRAWING OR SPECIFICATION MAY BE PROCURED AND USED UNTIL STOCK IS DEPLETED.
15. 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.

AS AND AMS ARE SAE INTERNATIONAL PUBLICATIONS.
ASTM IS AN ASTM INTERNATIONAL PUBLICATION.

	AEROSPACE STANDARD	AS24586™ SHEET 3 OF 11	REV. D
	SPRING, HELICAL, EXTENSION FOR LOADS BELOW 30 LBF		



Documents

Document Sharing Hub

TABLE 2 - DIMENSIONS AND CHARACTERISTICS

Steel				OD	d	L	N	f	P 2/	T	L1 3/	R 2/
Uncoated Dash No.	Cadmium Plated Dash No.	Zinc Plated Dash No.	Corrosion Resisting Dash No.									
1	501		C1	.120	.016	1.000	50.5	.0161	1.6	.20	1.81	1.74
2	502		C2			1.125	58.5				2.07	1.49
3	503		C3			1.250	66.0				2.31	1.32
4	504		C4			1.375	74.0				2.57	1.18
5	505		C5			1.500	82.0				2.82	1.06
6	506	1006	C6		.018	1.000	45.5	.0133	2.2	.20	1.60	3.33
7	507	1007	C7			1.125	52.0				1.81	2.89
8	508	1008	C8			1.250	59.0				2.03	2.55
9	509	1009	C9			1.375	66.5				2.25	2.28
10	510	1010	C10			1.500	73.0				2.47	2.06
11	511	1011	C11			1.625	80.0				2.69	1.88
12	512	1012	C12			1.750	87.0				2.90	1.72
13	513	1013	C13			1.875	94.0				3.12	1.60
14	514	1014	C14			2.000	101.0				3.34	1.49
15	515		C15			1.000	41.0				1.45	6.00
16	516		C16	.120	.020	1.125	47.0	.0111	3.0	.20	1.64	5.24
17	517		C17			1.250	53.5				1.84	4.58
18	518		C18			1.375	60.0				2.04	4.06
19	519		C19			1.500	66.0				2.23	3.70
20	520		C20			1.625	72.5				2.43	3.35
21	521		C21			1.750	78.5	.009	3.9	.40	2.62	3.10
22	522		C22			1.875	84.5				2.81	2.89
23	523		C23			2.000	91.0				3.01	2.67
24	524		C24		.022	1.000	37.5				1.34	10.38
25	525		C25			1.125	43.0				1.51	9.04
26	526		C26			1.250	49.0				1.69	7.94
27	527		C27			1.375	54.5				1.86	7.20
28	528		C28			1.500	60.0				2.04	6.48
29	529		C29			1.625	66.0				2.22	5.89
30	530		C30			1.750	71.5				2.39	5.48
31	531		C31			1.875	77.0				2.57	5.05
32	532		C32			2.000	83.0				2.75	4.68
33	533		C33			2.125	88.5				2.92	4.42
34	534		C34			2.250	94.5				3.10	4.12
35	535		C35			2.375	100.0				3.28	3.89
36	536		C36	.240	.026	2.500	106.5	.0424	3.3	.30	3.45	3.67
37	537	1037	C37			1.000	23.0				1.97	3.08
38	538	1038	C38			1.125	28.0				2.31	2.53
39	539	1039	C39			1.250	32.5				2.64	2.18
40	540	1040	C40			1.375	37.5				2.96	1.89
41	541	1041	C41			1.500	42.0				3.28	1.69
42	542	1042	C42			1.625	47.0				3.62	1.51
43	543	1043	C43			1.750	52.0				3.95	1.36
44	544	1044	C44			1.875	56.5				4.27	1.25
45	545	1045	C45			2.000	61.5				4.60	1.15

2/ SEE NOTE 7.

3/ SEE NOTE 8.



AEROSPACE STANDARD

SPRING, HELICAL, EXTENSION
FOR LOADS BELOW 30 LBFAS24586™
SHEET 4 OF 11REV.
D

Documents

Document Sharing Hub