INCH-POUND
MIL-S-24149/3D(SH)
27 March 1989
SUPERSEDING
MIL-S-24149/3C
1 June 1981

MILITARY SPECIFICATION SHEET

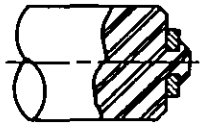
STUDS, WELDING, AND ARC SHIELDS (FERRULES); TYPE V, CLASS 1,4,5,5A, CORROSION-RESISTANT STEEL, FOR DIRECT ENERGY ARC WELDING

The specification sheet is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation: MIL-S-24149(SH).

NOTE: END MAY BE EITHER BEVELED OR AS CUT-OFF FLUSH AND TUMBLED TO BREAK SHARP EDGES.

CORROSION-RESISTANT STEEL STUDS, TYPE V, STYLE B, SOLID FLUX WELD-END.



CORROSION-RESISTANT STEEL STUDS, TYPE V, STYLE C, FLUX RING WELD-END.

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NOTE: 1. See requirement 4.

FIGURE 1. Weld-end styles.

ASMC N/A FSC 5307

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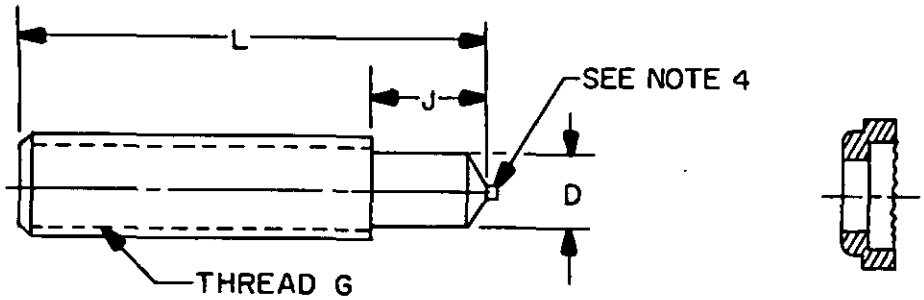


SH 11908

STUD

ARC SHIELD (FERRULE)
(SEE NOTE 2)

FIGURE 2. Type V, class 1, pitch diameter stud.

TABLE I. Tabulated dimensions.

G UNC-2A	J +0.062 -0.000	D +0.005
0.2500-20	0.375	0.215
.3125-18	.375	.275
.3750-16	.385	.330
.4375-14	.437	.387
.5000-13	.500	.448
.6250-11	.625	.562
.7500-10	.791	.680

TABLE II. Configuration part numbers.

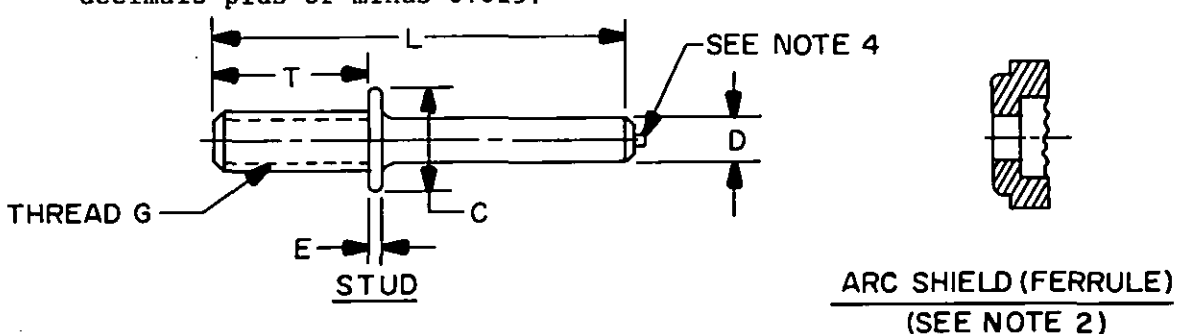
L ±0.031	M24149/3 dash number						
	0.2500-20	0.3125-18	0.3750-16	0.4375-14	0.5000-13	0.6250-11	0.7500-10
0.750	-1	-18	-35	--	--	--	--
.875	-2	-19	-36	--	--	--	--
1.000	-3	-20	-37	-52	-67	--	--
1.125	-4	-21	-38	-53	-68	--	--
1.250	-5	-22	-39	-54	-69	-82	--
1.375	-6	-23	-40	-55	-70	-83	--
1.500	-7	-24	-41	-56	-71	-84	-96
1.625	-8	-25	-42	-57	-72	-85	-97
1.750	-9	-26	-43	-58	-73	-86	-98

TABLE II. Configuration part numbers. - Continued

L +0.031	M24149/3 dash number						
	0.2500-20	0.3125-18	0.3750-16	0.4375-14	0.5000-13	0.6250-11	0.7500-10
1.875	-10	-27	-44	-59	-74	-87	-99
2.000	-11	-28	-45	-60	-75	-88	-100
2.250	-12	-29	-46	-61	-76	-89	-101
2.500	-13	-30	-47	-62	-77	-90	-102
2.750	-14	-31	-48	-63	-78	-91	-103
3.000	-15	-32	-49	-64	-79	-92	-104
3.250	-16	-33	-50	-65	-80	-93	-105
3.500	-17	-34	-51	-66	-81	-94	-106
3.750	-108	--	--	--	--	-95	-107

NOTES:

1. Length "L" shown is the overall length of the stud before welding. The stud will be approximately 1/8 to 3/16 inch shorter after welding.
2. Part number includes the stud and the arc shield (ferrule).
3. Dimensions are in inches. Unless otherwise specified, tolerance: decimals plus or minus 0.015.



SH 11909

FIGURE 3. Type V, class 4, collar stud.

TABLE III. Tabulated dimensions.

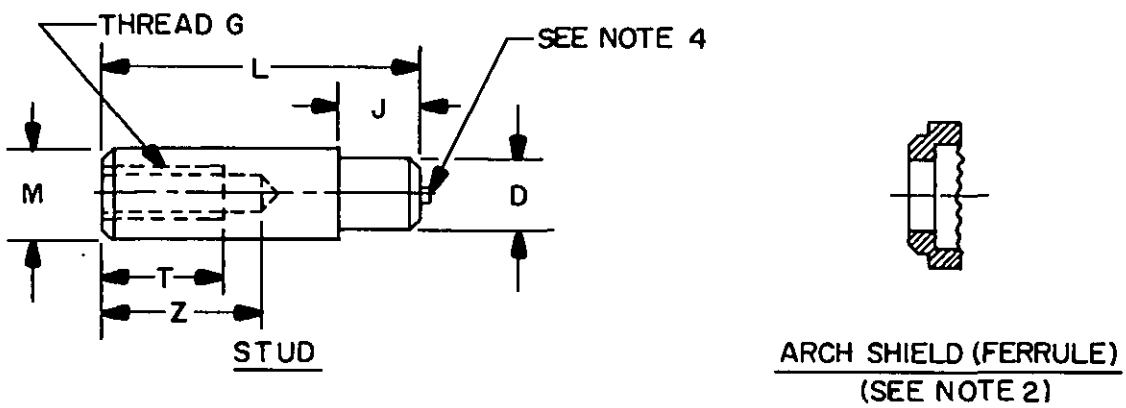
Stud			
G UNC-2A	D ±0.005	C ±0.062 -0.005	E
0.2500-20	0.215	0.500	0.093
.3125-18	.275	.625	.093
.3750-16	.330	.625	.125/.093
.5000-13	.448	.750	.156/.093

TABLE IV. Configuration part numbers.

L +0.031	T 0.2500-20 0.3125-18 0.3750-16	T 0.5000-13	M24149/3 dash number 0.2500-20	0.3125-18	0.3750-16	0.5000-13
1.000	0.500	--	-201	--	--	--
1.125	.625	--	-202	-214	--	--
1.250	.750	--	-203	-215	-230	--
1.375	.750	0.875	-204	-216	-231	-245
1.500	.750	.875	-205	-217	-232	-246
1.625	.750	.875	-206	-218	-233	-247
1.750	.750	.875	-207	-219	-234	-248
1.875	.750	.875	-208	-220	-235	-249
2.000	.750	.875	-209	-221	-236	-250
2.250	.750	.875	-210	-222	-237	-251
2.500	.750	.875	-211	-223	-238	-252
2.750	.750	.875	-212	-224	-239	-253
3.000	.750	.875	-213	-225	-240	-254
3.250	.750	.875	--	-226	-241	-255
3.500	.750	.875	--	-227	-242	-256
3.750	.750	.875	--	-228	-243	-257
4.000	.750	.875	--	-229	-244	-258

NOTES:

1. Length "L" shown is the overall length of the stud before welding. The stud will be approximately 1/8 to 3/16 inch shorter after welding.
2. Part number includes the stud and the arc shield (ferrule).
3. Dimensions are shown in inches. Unless otherwise specified, tolerance: decimals plus or minus 0.015.



SH 11910

FIGURE 4. Type V, class 5, internal thread stud, reduced base.

TABLE V. Tabulated dimensions.

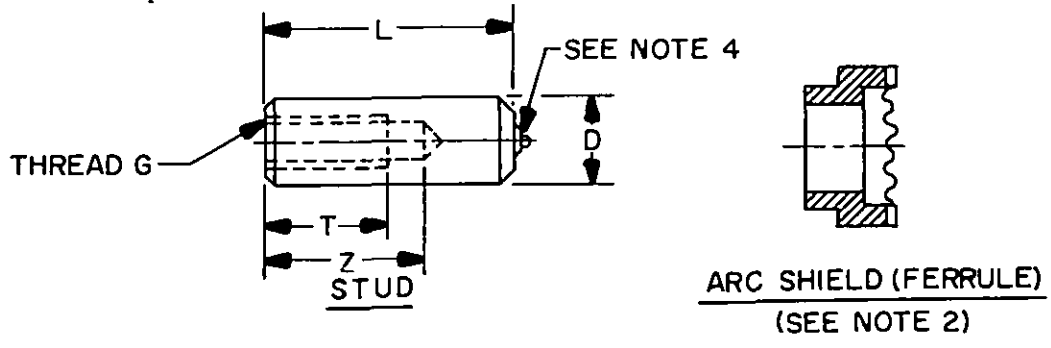
G UNC-2B	D ±0.005	T min	J +0.020 -0.000	M	Z +0.060 -0.000
0.2500-20	0.375	0.375	0.375	0.500	0.515
.3125-18	.437	.468	.437	.562	.624
.3750-16	.500	.562	.437	.625	.733
.5000-13	.500	.750	.437	.750	.753

TABLE VI. Configuration part numbers.

L ±0.031	M24149/3 dash number			
	0.2500-20	0.3125-18	0.3750-16	0.5000-13
1.125	-301	--	--	--
1.250	-302	-314	--	--
1.375	-303	-315	-326	--
1.500	-304	-316	-327	--
1.625	-305	-317	-328	-337
1.750	-306	-318	-329	-338
1.875	-307	-319	-330	-339
2.000	-308	-320	-331	-340
2.250	-309	-321	-332	-341
2.500	-310	-322	-333	-342
2.750	-311	-323	-334	-343
3.000	-312	-324	-335	-344
3.250	-313	-325	-336	-345

NOTES:

1. Length "L" shown is the overall length of the stud before welding. The stud will be approximately 1/8 to 3/16 inch shorter after welding.
2. Part number includes the stud and the arc shield (ferrule).
3. Dimensions are in inches. Unless otherwise specified, tolerance: decimals plus or minus 0.015.



SH 11911

FIGURE 5. Type V, class 5A, internal thread stud, full base.

TABLE VII. Tabulated dimensions.

G UNC-2B	D ±0.005	T min	Z +0.060 -0.000
0.2500-20	0.500	0.375	0.515
.3125-18	.562	.468	.624
.3750-16	.625	.562	.733
.5000-13	.750	.750	.953

TABLE VIII. Configuration part numbers.

L ±0.031	M24149/3 dash number			
	0.2500-20	0.3125-18	0.3750-16	0.5000-13
0.875	-401	--	--	--
1.000	-402	-415	--	--
1.125	-403	-416	-428	--
1.250	-404	-417	-429	--
1.375	-405	-418	-430	-440
1.500	-406	-419	-431	-441
1.625	-407	-420	-432	-442
1.750	-408	-421	-433	-443
1.875	-409	-422	-434	-444
2.000	-410	-423	-435	-445
2.250	-411	-424	-436	-446
2.500	-412	-425	-437	-447
2.750	-413	-426	-438	-448
3.000	-414	-427	-439	-449

NOTES:

1. Length "L" shown is the overall length of the stud before welding. The stud will be approximately 1/8 to 3/16 inch shorter after welding.
2. Part number includes the stud and the arc shield (ferrule).
3. Dimensions are in inches. Unless otherwise specified, tolerance: decimals plus or minus 0.015.

REQUIREMENTS:

1. Materials:

   (a) Studs - corrosion resistant steel.
   (b) Arc shields (ferrules) - heat resistant ceramic.
   (c) Welding flux - solid flux.

2. Tensile strength of stud - 70,000 lb/in^2 minimum.
3. Chemical composition - Studs shall be of the chemical composition indicated in table IX at the option of the contractor.

TABLE IX. Chemical composition.

UNS No.	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Nickel	Chromium	Other elements
S30400	0.08	2.00	0.045	0.030	1.00	8.00-10.50	18.00-20.00	
S30430	.10	2.00	.045	.030	1.00	8.00-10.00	17.00-19.00	Cu 3.00-4.00
S30500	.12	2.00	.045	.030	1.00	10.50-13.00	17.00-19.00	
S30900	.20	2.00	.045	.030	1.00	12.00-15.00	22.00-24.00	
S31000	.25	2.00	.045	.030	1.00	19.00-22.00	24.00-26.00	
S31600	.08	2.00	.045	.030	1.00	10.00-14.00	16.00-18.00	Mo 2.00-3.00

1/ The chemical compositions listed are standard AISI heat analysis and AISI product tolerances shall apply. Unless a range is shown, values are maximum percentages.

4. Weld-end design - The stud manufacturer shall be responsible for design of weld ends that will provide a sound weld when used with the proper ferrule.
5. Part number - The part number consists of the prefix letter "M" and specification sheet number plus the applicable dash number.

Examples:

M24149/3-11 -Type V, class 1 welding stud and arc shield (ferrule), .2500-20 UNC-2A thread, 2.000 inch length, solid flux weld-end.

NOTES:

1. Interchangeability - Where the plate thickness permits, class 5A may be used interchangeably with class 5.
2. Changes from previous issue - Revision letters are not used to denote changes due to the extensiveness of the changes.

Preparing activity:
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