

INCH-POUND

MS20659K

30 June 1995

~~SUPERSEDING~~

MS20659J

15 January 1981

AN659

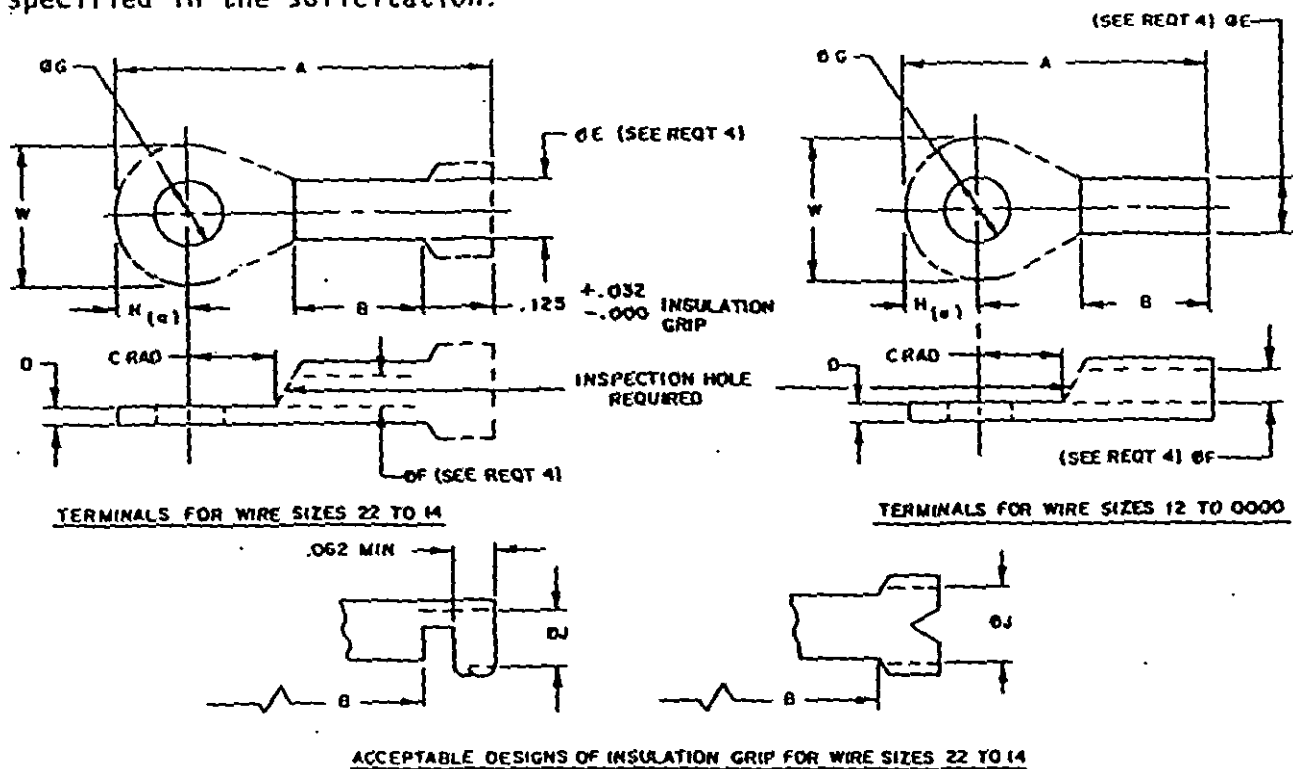
15 January 1981

## DETAIL SPECIFICATION SHEET

TERMINAL, LUG, CRIMP STYLE, COPPER, UNINSULATED,  
RING TONGUE, TYPE I, CLASS I, FOR 175°C TOTAL CONDUCTOR TEMPERATURE

This specification sheet is approved 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 MIL-T-7928 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

FIGURE 1. Insulation grip and terminals.

AMSC N/A

1 of 7

FSC 5940

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

## MS20659K

## NOTES:

1. "H" max and min dimension shall be one-half of "W" max and min dimensions, respectively.
2. Contour indicated by phantom lines may vary from that shown to suit individual manufacturer's design.
3. Where split barrel construction is used, the split shall be permanently sealed and not open as the result of crimping.
4. Dimensions are in inches.
5. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

FIGURE 1. Insulation grip and terminals - Continued.

## REQUIREMENTS:

1. Material: Soft copper, QQ-C-502, Class A.  
Copper tubing, ASTM B75-68.  
Gilding metal, 95 percent copper, 5 percent zinc.
2. Finish: Tin-plated. See acquisition specification.
3. Qualification testing: For qualification, terminals shall be tested with any one of the following wires: MIL-W-5086, MIL-W-16878, MIL-W-22759/1, 9 or 11, or MIL-W-81381/1, 3 or 7. Terminals shall be tested with tooling as follows: MIL-C-22520/24 hand crimping tool for sizes 22 through 10; MS25441 crimping tool and MS90485 crimping dies for size 8 and larger. MIL-C-2194 cables shall be used for testing MS20659-161 through MS20659-166 terminals with MIL-C-22520/25 crimping tool and MIL-C-22520/24 crimping tool.
4. Average diameter of "E" and "F" shall be within specification dimensions; Max and min dimensions due to ovalization shall be within 3% of specification requirements.

## NOTES:

1. Table I shows dash numbers and dimensions. Table II shows the relationship between wire size and Navy cable size.
2. MS20659-1 thru -61 dash numbers covered by revision B, dated 23 May 1963, are cancelled after 1 March 1969.

## MS20659K

3. Interchangeability relationship: Dash numbers MS20659-101 through -161 can replace the cancelled MS20659-1 through -61 parts, respectively. The cancelled MS20659-1 through -61 parts can not always replace the MS20659-101 through -161 parts. Existing Government stock of cancelled parts may be used until exhausted.
4. Certain provisions of this specification sheet are the subject of international standardization agreement (ASCC AIR STD 12/4). When amendment, revision, cancellation of this specification sheet is proposed which will modify the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations.

## MS20659K

TABLE I. Dash numbers and dimensions.

DASH NO.	WIRE SIZE	STUD SIZE	A MAX	B MIN	C MIN RAD	D		$\phi E$	$\phi F$	$\phi G$		$\phi J$ MIN	W		MIL-E-16366 (SHIPS) REFERENCE
						MAX	MIN			MAX	MIN		MAX	MIN	
167		2 (.086)			.115					.098	.090		.260	.178	
168		4 (.112)	.890		.125					.122	.114			.210	L 33, 1-2
169		6 (.138)								.152	.142				L 36, 1-2
170	22-18	10 (.190)	.958	.250	.172	.045	.023	.140	.073	.203	.193	.120	.320	.305	L 65, 1-2
171		5/16 (.312)	1.187		.284			.115	.052	.338	.323		.540	.450	L 66, 1-2
172		3/8 (.375)	1.308		.328					.400	.385		.540	.520	L 67, 1-2
173		1/2 (.500)	1.530		.378					.525	.510		.733	.703	L 67, 1-2
174		4 (.112)	.947		.125					.122	.114		.266	.234	
175		6 (.138)	.955		.172					.152	.142		.327	.297	L 33, 2-1/2-4
176	16-14	10 (.190)	.955	.250	.172	.053	.029	.162	.095	.203	.193	.153	.327	.234	L 35, 2-1/2-4
177		5/16 (.312)	1.219		.284			.145	.081	.338	.323		.540	.450	L 65, 2-1/2-4
178		3/8 (.375)	1.372		.328					.400	.385		.540	.520	L 66, 2-1/2-4
179		1/2 (.500)	1.593		.378					.525	.510		.733	.703	L 67, 2-1/2-4
180		6 (.138)	.955		.202					.152	.142		.317	.290	L 33, 6-9
181	12-10	10 (.190)	.959	.250	.172	.080	.037	.230	.139	.203	.193		.391	.365	L 36, 6-9
182		5/16 (.312)	1.156		.295			.210	.129	.338	.323		.547	.485	L 65, 6-9
183		3/8 (.375)	1.172		.328					.400	.385		.598	.536	L 66, 6-9
184		1/2 (.500)	1.718		.378					.525	.510		.733	.703	L 67, 6-9
185		8 (.164)	1.150		.234					.178	.168		.429	.386	
186		10 (.190)			.265					.203	.193				
187	8	1/4 (.250)	1.219	.315	.265	.084	.038	.272	.186	.275	.260		.478	.435	
188		5/16 (.312)	1.297		.295			.260	.176	.338	.323		.590	.547	
189		3/8 (.375)			.328					.400	.385		.590	.547	
190		1/2 (.500)	1.545		.440					.525	.510		.833	.680	
191		10 (.190)	1.312		.238					.203	.193		.503	.460	
192	6	1/4 (.250)		.375	.265	.084	.043	.316	.232	.275	.260				
193		5/16 (.312)	1.437		.305			.295	.222	.338	.323		.623	.580	
194		3/8 (.375)			.328					.400	.385		.833	.700	
195		1/2 (.500)	1.676		.440					.525	.510				
196		10 (.190)	1.400		.276					.203	.193		.628	.480	
197		1/4 (.250)		.437	.308	.096	.047	.380	.290	.275	.260				
198	4	5/16 (.312)	1.489		.328			.365	.280	.338	.323		.648	.605	
199		3/8 (.375)			.378					.400	.385		.833	.710	
200		1/2 (.500)	1.721		.440					.525	.510				

③ ④

## MS20659K

TABLE I. Dash numbers and dimensions - Continued.

DASH NO.	WIRE SIZE	STUD SIZE	A MAX	B MIN	C MIN RAD	D		ØE	ØF	ØG		ØJ MIN	H	
						MAX	MIN			MAX	MIN		MAX	MIN
146	2	10(.190)	1.732	.505	.343	.109	.054	$\frac{.473}{.450}$	$\frac{.365}{.355}$	.203	.193		.711	.668
147		1/4(.250)								.275	.260			
148		5/16(.312)								.338	.323			
149		3/8(.375)								.400	.385			
150		7/16(.437)								.463	.448			
151	1	1/2(.500)	1.845	.565	.453	.125	.070	$\frac{.527}{.505}$	$\frac{.398}{.388}$	.525	.510		.804	.740
152		1/4(.250)								.275	.260			
153		5/16(.312)								.338	.323			
154		3/8(.375)								.400	.385			
155		7/16(.437)								.463	.448			
156	0	1/2(.500)	2.045	.630	.418	.125	.070	$\frac{.578}{.558}$	$\frac{.458}{.438}$	.525	.510		.903	.860
157		1/4(.250)								.275	.260			
158		5/16(.312)								.338	.323			
159		3/8(.375)								.400	.385			
160		7/16(.437)								.463	.448			
161	00	1/2(.500)	2.320	.700	.473	.129	.075	$\frac{.640}{.620}$	$\frac{.520}{.500}$	.525	.510		.956	.913
162		1/4(.250)								.275	.260			
163		5/16(.312)								.338	.323			
164		3/8(.375)								.400	.385			
165		7/16(.437)								.463	.448			
166	000	1/2(.500)	2.455	.718	.513	.140	.085	$\frac{.714}{.690}$	$\frac{.577}{.557}$	.525	.510		1.053	1.010
167		1/4(.250)								.275	.260			
168		5/16(.312)								.338	.323			
169		3/8(.375)								.400	.385			
170		7/16(.437)								.463	.448			
171	0000	1/2(.500)	2.755	.734	.560	.150	.095	$\frac{.784}{.760}$	$\frac{.645}{.622}$	.525	.510		1.148	1.095
172		1/4(.250)								.275	.260			
173		5/16(.312)								.338	.323			
174		3/8(.375)								.400	.385			
175		7/16(.437)								.463	.448			
176	137	1/2(.500)	2.955	.765	.765	.150	.095	$\frac{.784}{.760}$	$\frac{.645}{.622}$	.525	.510		1.268	1.200
177		1/4(.250)								.275	.260			
178		5/16(.312)								.338	.323			
179		3/8(.375)								.400	.385			
180		7/16(.437)								.463	.448			

## MS20659K

INCH	mm	INCH	mm	INCH	mm
.023	0.58	.297	7.54	.645	16.38
.029	0.74	.305	7.75	.648	16.46
.032	0.81	.308	7.82	.651	16.54
.037	0.94	.312	7.92	.666	16.92
.038	0.97	.315	8.00	.668	16.97
.043	1.09	.316	8.03	.680	17.27
.045	1.14	.317	8.05	.690	17.53
.047	1.19	.320	8.13	.700	17.78
.052	1.32	.323	8.20	.703	17.86
.053	1.35	.327	8.31	.710	18.03
.054	1.37	.328	8.33	.711	18.06
.062	1.57	.338	8.59	.714	18.14
.070	1.78	.343	8.71	.718	18.24
.073	1.85	.365	9.27	.733	18.62
.075	1.91	.375	9.53	.734	18.64
.080	2.03	.378	9.60	.740	18.80
.084	2.13	.380	9.65	.750	19.05
.085	2.16	.385	9.78	.760	19.30
.086	2.18	.386	9.80	.765	19.43
.095	2.41	.388	9.86	.770	19.56
.096	2.44	.391	9.93	.783	19.89
.109	2.77	.398	10.11	.784	19.91
.112	2.84	.400	10.16	.785	19.94
.114	2.90	.418	10.62	.804	20.42
.115	2.92	.429	10.90	.810	20.57
.122	3.10	.435	11.05	.833	21.16
.125	3.18	.437	11.10	.853	21.67
.129	3.28	.438	11.13	.860	21.84
.138	3.51	.440	11.18	.875	22.23
.139	3.53	.448	11.38	.887	22.53
.140	3.56	.450	11.43	.890	22.61
.142	3.61	.453	11.51	.895	22.73
.145	3.68	.458	11.63	.903	22.94
.152	3.86	.460	11.68	.910	23.11
.153	3.89	.463	11.76	.913	23.19
.162	4.11	.473	12.01	.947	24.05
.164	4.17	.478	12.14	.955	24.26
.168	4.27	.480	12.19	.956	24.28
.172	4.37	.485	12.32	.968	24.59
.176	4.47	.500	12.70	.969	24.61
.178	4.52	.503	12.78	1.010	25.65
.186	4.72	.505	12.83	1.053	26.75
.190	4.83	.510	12.95	1.095	27.81
.193	4.90	.520	13.21	1.150	29.21
.202	5.13	.525	13.34	1.156	29.36
.203	5.16	.527	13.39	1.172	29.77
.210	5.33	.536	13.61	1.187	30.15
.216	5.49	.540	13.72	1.200	30.48
.230	5.84	.547	13.89	1.219	30.96
.232	5.89	.558	14.17	1.249	31.72
.234	5.94	.560	14.22	1.268	32.21
.238	6.05	.565	14.35	1.290	32.77
.250	6.35	.577	14.66	1.297	32.94
.260	6.60	.578	14.68	1.308	33.22
.265	6.73	.580	14.73	1.312	33.32
.266	6.76	.590	14.99	1.400	35.56
.272	6.91	.598	15.19	1.437	36.50
.275	6.99	.605	15.37	1.489	37.82
.276	7.01	.620	15.75	1.530	38.86
.280	7.11	.622	15.80	1.545	39.24
.284	7.21	.623	15.82	1.593	40.46
.290	7.37	.625	15.88	1.676	42.57
.296	7.52	.628	15.95	1.718	43.64
		.630	16.00	1.721	43.71
		.640	16.26		

MS20659K

TABLE II. Wire size in relation to Navy cable size.

TABLE II. (REF).	
SIZE	NAVY CABLE SIZE
22-18	1 (1)
	1 (7)
	1 (10)
	1-1/2 (1)
	1-1/2 (7)
	1-1/2 (16)
	1-1/2 (41)
	2 (7)
16-14	2-1/2 (1)
	2-1/2 (19)
	2-1/2 (26)
	3 (7)
	4 (1)
	4 (19)
	4 (7)
	4 (41)
12-10	6 (7)
	6 (19)
	9 (7)
	9 (37)

## Custodians:

Army - ER

Navy - AS

Air Force - 85

## Preparing activity:

Navy - AS

(Project No. 5940-1121)

## Review activities:

Army - AR, AV, MI

Navy - EC, SH

Air Force - 11, 99