

REV. B

AS7928™/9

FEDERAL SUPPLY CLASS  
5940

RATIONALE

FULL REVISION REQUIRED TO ADD BLUE COLOR DESIGNATION FOR IDENTIFICATION OF TIN WHISKER RESISTANT FINISH, MINOR TECHNICAL CHANGES, AND EDITING AS NEEDED.

NOTICE

THE COMPLETE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS7928.

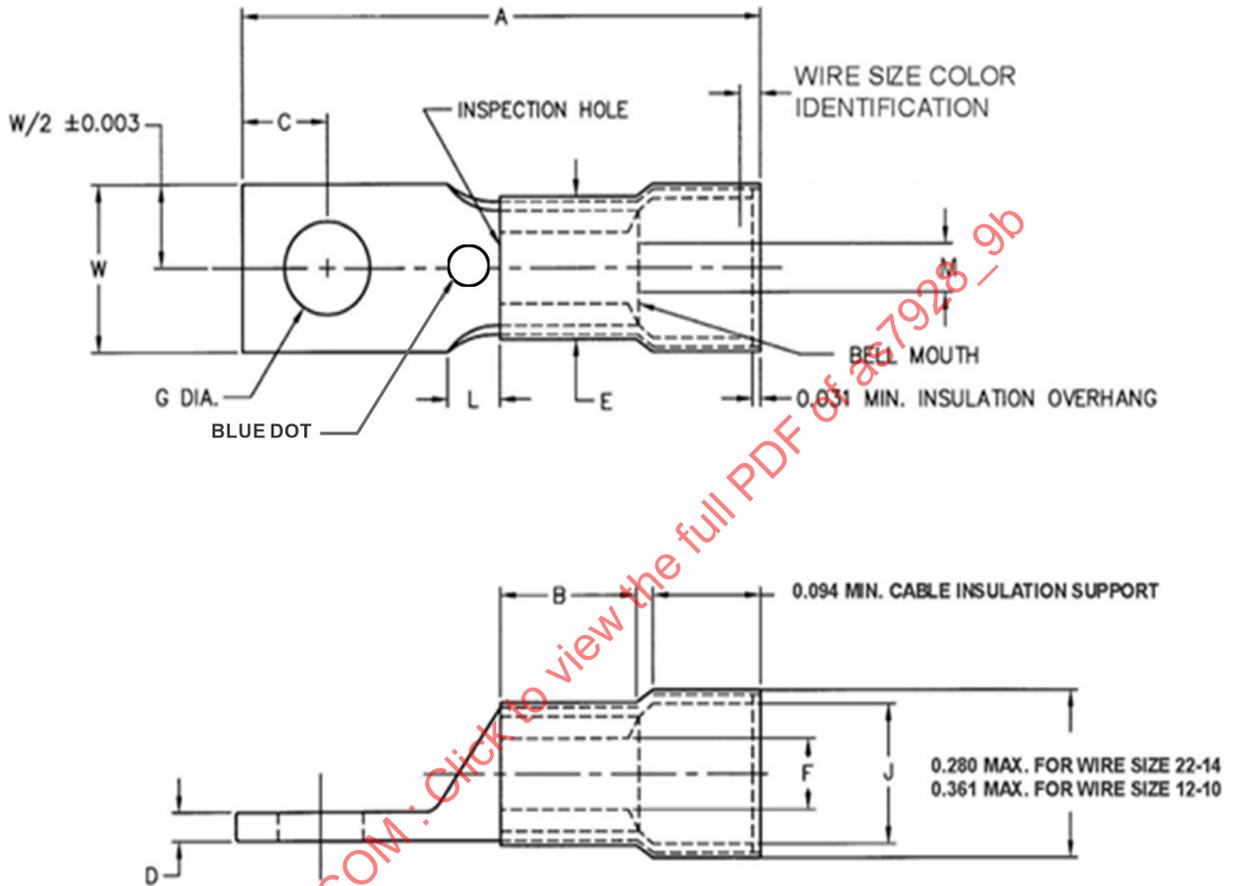
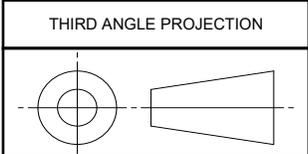


FIGURE 1 - TERMINAL CONSTRUCTION

For more information on this standard, visit  
<https://www.sae.org/standards/content/AS7928/9B/>



CUSTODIAN: AE-8C2

PROCUREMENT SPECIFICATION: AS7928



**AEROSPACE STANDARD**

(R) TERMINALS, LUG AND SPLICES, CONDUCTOR, CRIMP STYLE, COPPER, INSULATED, RECTANGULAR TONGUE, TIN WHISKER RESISTANT FOR THIN WALL WIRE, TYPE II, CLASS 1 FOR 105 °C TOTAL CONDUCTOR TEMPERATURE

**AS7928™/9**  
SHEET 1 OF 5

**REV. B**

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ISSUED 2007-11 REAFFIRMED 2012-08 REVISED 2021-02

TABLE 1 - DIMENSIONS

DASH NO.	WIRE SIZE	STUD SIZE	A MAX	B MAX	C ±.010	D	E DIA	F DIA	G DIA		J MIN DIA	L MAX	M	W ±.005	INSUL. SLEEVE COLOR	WIRE SIZE COLOR	TONGUE SHAPE (REF ONLY)	NAVY TERM. AND WIRE SIZE (REF ONLY)
									MAX	MIN								
1	22	4 (.112)	.842	.156	.143	.037	.215	.070	.122	.114	.110	.125	.039	RED	GREEN	L86P-1	1-2	
2		4 (.112)	1.061		.195				.122	.114		.156						.237
3		5 (.125)	.905		.143				.137	.129		.125						.277
4		6 (.138)	1.061		.195				.152	.142		.156						.237
5		6 (.138)	1.155		.227				.152	.142		.250						.302
6		8 (.164)	1.155		.227				.178	.168		.250						.302
7		8 (.164)	1.405		.310				.178	.168		.281						.390
8		4 (.112)	.842		.143				.122	.114		.125						.237
9	20	4 (.112)	1.061	.156	.195	.037	.215	.070	.122	.114	.130	.156	.048	RED	RED	L86P-1	1-2	
10		4 (.112)	1.061		.195				.122	.114		.156						.237
11		5 (.125)	.905		.143				.137	.129		.125						.277
12		6 (.138)	1.061		.195				.152	.142		.156						.237
13		6 (.138)	1.155		.227				.152	.142		.250						.302
14		8 (.164)	1.155		.227				.178	.168		.250						.302
15		8 (.164)	1.405		.310				.178	.168		.281						.390
16		4 (.112)	.842		.143				.122	.114		.125						.237
17	18	4 (.112)	1.061	.156	.195	.037	.215	.070	.122	.114	.150	.156	.056	RED	WHITE	L86P-1	1-2	
18		4 (.112)	1.061		.195				.122	.114		.156						.237
19		5 (.125)	.905		.143				.137	.129		.125						.277
20		6 (.138)	1.061		.195				.152	.142		.156						.237
21		6 (.138)	1.155		.227				.152	.142		.250						.302
22		8 (.164)	1.155		.227				.178	.168		.250						.302
23		8 (.164)	1.405		.310				.178	.168		.281						.390
24		4 (.112)	.842		.143				.122	.114		.125						.237
25	16	4 (.112)	1.061	.156	.195	.037	.240	.090	.122	.114	.110	.156	.063	BLUE	BLUE	L86P-2	2 1/2 - 4	
26		4 (.112)	1.061		.195				.122	.114		.156						.237
27		5 (.125)	.905		.143				.137	.129		.125						.277
28		6 (.138)	1.061		.195				.152	.142		.156						.237
29		6 (.138)	1.155		.227				.152	.142		.250						.302
30		8 (.164)	1.155		.227				.178	.168		.250						.302
31		8 (.164)	1.405		.310				.178	.168		.281						.390
32		4 (.112)	.842		.143				.122	.114		.125						.237
33	14	4 (.112)	1.061	.156	.195	.037	.240	.090	.122	.114	.130	.156	.078	BLUE	GREEN	L86P-2	2 1/2 - 4	
34		4 (.112)	1.061		.195				.122	.114		.156						.237
35		5 (.125)	.905		.143				.137	.129		.125						.277
36		6 (.138)	1.061		.195				.152	.142		.156						.237
37		6 (.138)	1.155		.227				.152	.142		.250						.302
38		8 (.164)	1.155		.227				.178	.168		.250						.302
39		8 (.164)	1.405		.310				.178	.168		.281						.390
40		4 (.112)	.842		.143				.122	.114		.125						.237
41	12	4 (.112)	1.061	.234	.195	.046	.300	.135	.122	.114	.150	.156	.095	YELLOW	YELLOW	L86P-3	6-9	
42		4 (.112)	1.061		.195				.122	.114		.156						.237
43		5 (.125)	1.124		.143				.137	.129		.125						.277
44		6 (.138)	1.281		.195				.152	.142		.156						.237
45		6 (.138)	1.359		.227				.152	.142		.250						.302
46		8 (.164)	1.359		.227				.178	.168		.250						.302
47		8 (.164)	1.609		.310				.178	.168		.281						.390
48		4 (.112)	1.062		.143				.122	.114		.125						.237
49	10	4 (.112)	1.061	.234	.195	.046	.300	.135	.122	.114	.180	.156	.118	YELLOW	BROWN	L86P-3	6-9	
50		4 (.112)	1.061		.195				.122	.114		.156						.237
51		5 (.125)	1.124		.143				.137	.129		.125						.277
52		6 (.138)	1.281		.195				.152	.142		.156						.237
53		6 (.138)	1.359		.227				.152	.142		.250						.302
54		8 (.164)	1.359		.227				.178	.168		.250						.302
55		8 (.164)	1.609		.310				.178	.168		.281						.390
56		4 (.112)	.842		.143				.122	.114		.125						.237

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS7928.

1. CONFIGURATION:

CONFIGURATION SHALL BE IN ACCORDANCE WITH FIGURE 1 AND TABLE 1.

CONTOUR INDICATED BY PHANTOM LINES IN FIGURE 1 MAY VARY FROM THAT SHOWN TO SUIT INDIVIDUAL MANUFACTURER'S DESIGN INSULATION SUPPORT.

DIMENSIONS ARE INCHES (SEE TABLE 1 AND FIGURE 1).

THE AVERAGE DIAMETER OF "E" AND AVERAGE DIAMETER OF "F" WITHIN THE LENGTH SPECIFIED BY B SHALL BE WITHIN SPECIFICATION DIMENSIONS (SEE FIGURE 1 TABLE 1).

DIMENSION "J" REPRESENTS THE MINIMUM OPENING THAT WILL ACCEPT THE FINISHED WIRE.

THIN WALL INSULATED WIRES WITH AN OUTSIDE DIAMETER SMALLER THAN DIMENSION "F" WILL PERMIT THE INSULATION PORTION OF THE WIRE TO ENTER THE CONDUCTOR CRIMP AREA. THE CONDUCTOR MUST BE POSITION BY EYE SIGHT IN TO THE CRIMP BARREL AREA TO INSURE A RELIABLE CRIMP.

DIMENSION M REPRESENTS THE WIRE INSULATION STOP (DESIGN OPTIONAL). THIS LUG DESIGN WILL NOT STOP INSULATION WITH A WALL THICKNESS OF LESS THAN .005 INCH.

TERMINAL BARREL MAY BE MULTIPLE PIECE CONSTRUCTION. WIRE INSERTION IS FACILITATED BY BELL MOUTH.

BURRS AND EDGES: REMOVE ALL BURRS AND SHARP EDGES.

2. MATERIALS:

MATERIALS SHALL BE IN ACCORDANCE WITH AS7928.

TIN PLATED (WHISKER RESISTANT) FINISH SHALL BE PER ASTM B545 ALLOYED WITH 3% BY WEIGHT, MINIMUM LEAD. PLATING THICKNESS SHALL BE .0002 INCHES MINIMUM (REFER TO AS7928 AND GEIA-STD-0005-02 FOR MORE DETAILS).

3. IDENTIFICATION OF PRODUCT MARKING:

TIN WHISKER RESISTANT PLATING SHALL BE IDENTIFIED BY A BLUE COLOR DOT OR DASH LOCATED NEAR THE INSPECTION HOLE AS SHOWN IN FIGURE 1.

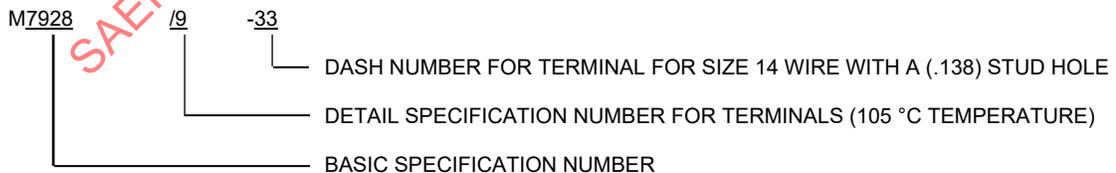
WIRE SIZE COLOR IDENTIFICATION SHALL BE IN ACCORDANCE WITH FIGURE 1 AND TABLE 1.

THE WIRE SIZE COLOR RING SHALL COVER A MINIMUM OF 315° OF THE CABLE INSULATION SUPPORT CIRCUMFERENCE.

IN LIEU OF THE WIRE SIZE COLOR RING, TWO OR MORE LONGITUDINAL STRIPES EQUALLY SPACED ON THE INSULATION PORTION OF THE TERMINAL MAY BE USED. THE STRIPES SHALL BE EXTENDED TO WITHIN 1/16 INCH OF THE END OF THE CABLE INSULATION SUPPORT SLEEVE AND SHALL NOT OBLITERATE THE BASIC SLEEVE COLOR.

TERMINAL WIRE SIZE COLOR SHALL BE IN ACCORDANCE WITH TABLE 1 AND EIA-359-A (CLASS 1). THERE SHALL BE A DISTINCT CONTRAST BETWEEN THE INSULATION SLEEVE COLOR AND THE WIRE SIZE COLOR.

4. PART NUMBER:



5. CRIMPING TOOLS:

CRIMPING TOOLS SHALL BE AS SPECIFIED IN TABLE 2.

	<b>AEROSPACE STANDARD</b>	<b>AS7928™/9</b> SHEET 3 OF 5	<b>REV.</b> <b>B</b>
	(R) TERMINALS, LUG AND SPLICES, CONDUCTOR, CRIMP STYLE, COPPER, INSULATED, RECTANGULAR TONGUE, TIN WHISKER RESISTANT FOR THIN WALL WIRE, TYPE II, CLASS 1 FOR 105 °C TOTAL CONDUCTOR TEMPERATURE		

**TABLE 2 - TERMINAL CRIMPING TOOLS**

WIRE SIZE (SEE TABLE 1)	CRIMP TOOL	CRIMP/CAVITY OR DIE
22-18	M22520/5-01	M22520/5-101 - WHITE (22 & 20 ONLY)
		M22520/5-100 - WHITE
		M22520/5-106 - RED <u>1/</u>
	M22520/10-01	M22520/10-102 - WHITE (22 & 20 ONLY)
	M22520/40-01 (FIXED DIE TOOL)	CAVITY - RED <u>1/</u>
16-14	M22520/5-01	M22520/5-107 DIE - BLUE <u>1/</u>
		M22520/5-100 - WHITE
	M22520/10-01	M22520/10-101 - WHITE
	M22520/40-01 (FIXED DIE TOOL)	CAVITY - BLUE <u>1/</u>
12-10	M22520/5-01	M22520/5-100 DIE - YELLOW
		M22520/5-108 DIE - YELLOW <u>1/</u>
	M22520/10-01	M22520/10-100 DIE YELLOW
	M22520/41-01	CAVITY - NO COLOR <u>1/</u>

1/ TOOL OR DIE WITH WIRE INSULATION SUPPORT (ADJUSTABLE BY THE USER).

6. QUALIFICATION:

QUALIFICATION NOT REQUIRED.

7. QUALITY CONFORMANCE INSPECTION:

TERMINALS SHALL BE TESTED WITH AS22759/87 WIRE (SIZES 26 THROUGH 10) OR AN EQUIVALENT WIRE WITH AS29606 TYPE NCC SMALL DIAMETER NICKEL COATED COPPER CONDUCTOR.

ONLY GROUP A AND B INSPECTIONS ARE REQUIRED.

THREE ADDITIONAL SPECIMENS SHALL BE INSPECTED FOR FINISH COMPOSITION IN GROUP A USING ANALYTICAL METHODS SUCH AS X-RAY FLUORESCENCE, SCANNING ELECTRON MICROSCOPE WITH ENERGY DISPERSION SPECTRO-PHOTOMETRY TECHNIQUE, OR OTHER ATOMIC ABSORPTION METHODS.

FINISH CONTAINING LESS THAN 3% BY WEIGHT LEAD SHALL BE CAUSE FOR REJECTION OF THE ENTIRE LOT.

FOR EACH LOT DELIVERED, A CERTIFICATE OF QUALITY CONFORMANCE INSPECTION COMPLIANCE SHALL BE PROVIDED FROM THE SUPPLIER.

APPLICATIONS:

- AS7928 PERMITS PURE TIN PLATING FINISHES. THIS DETAIL SPECIFICATION DELIBERATELY ALLOYS THE TIN FINISH TO MITIGATE WHISKER GROWTH. REFER TO GEIA-STD-0005-2 STANDARD FOR MITIGATING THE EFFECTS OF TIN WHISKERS IN AEROSPACE AND HIGH-PERFORMANCE ELECTRONIC SYSTEMS.
- PURE TIN COATINGS ARE NOT NECESSARILY ADVOCATED FOR USE ON ELECTRONIC EQUIPMENT WHERE COMPONENTS ARE CLOSELY SPACED. CO-DEPOSITION WITH A MINIMUM OF 3% LEAD BY WEIGHT WITHIN THE TIN HAS BEEN RECOMMENDED FOR COATINGS APPLIED ON OR NEAR MINIATURIZED LOW VOLTAGE ELECTRONICS (REFER TO GEIA-STD-0005-2).
- THE TERMINAL DEFINED BY THIS SPECIFICATION IS THE TIN WHISKER RESISTANT VERSION OF THE AS7928/2 TERMINAL. A BLUE DOT AS SHOWN IN FIGURE 1 INDICATES A TIN WHISKER RESISTANT VERSION OF THE AS7928/2.
- TO DETERMINE AN APPLICABLE WASHER SIZE FOR SPECIFIED DASH NUMBER, THE TERMINAL TONGUE MUST MEASURED PRIOR TO APPLICATION.

	<b>AEROSPACE STANDARD</b>	<b>AS7928™/9</b> SHEET 4 OF 5	<b>REV.</b> <b>B</b>
	(R) TERMINALS, LUG AND SPLICES, CONDUCTOR, CRIMP STYLE, COPPER, INSULATED, RECTANGULAR TONGUE, TIN WHISKER RESISTANT FOR THIN WALL WIRE, TYPE II, CLASS 1 FOR 105 °C TOTAL CONDUCTOR TEMPERATURE		