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REV.
A

SAE AS39029/27

FEDERAL SUPPLY CLASS
5935

RATIONALE

REVISE TO INCLUDE COMMENTS RECEIVED BY THE GOVERNMENT AND INDUSTRY, REMOVE GOVERNMENT JARGON, UPDATE REFERENCES, ALIGN SPECIFICATION WITH SAE GUIDELINES, AND REVIEW SPECIFICATION FOR KNOWN TECHNICAL PROBLEMS.

NOTICE

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE OF SAE AS39029.

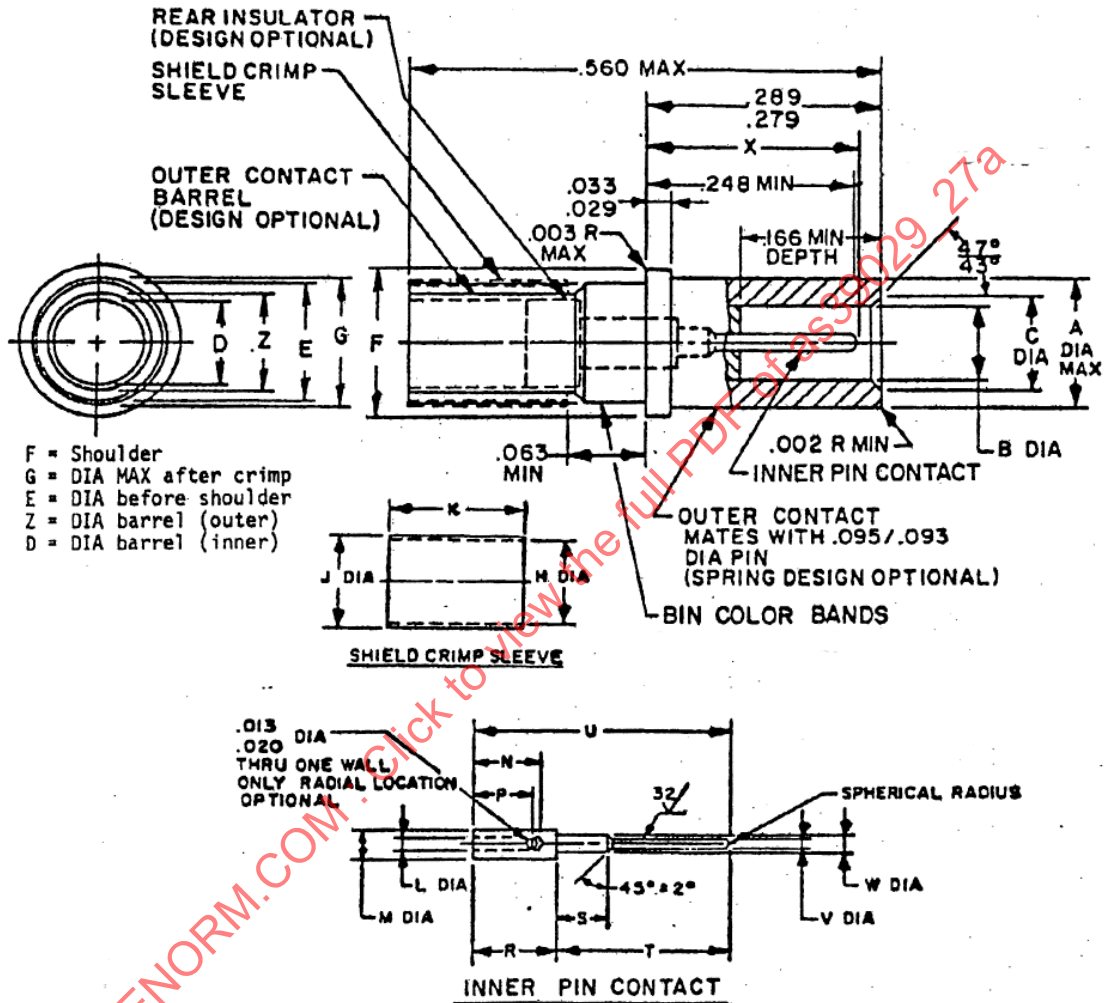
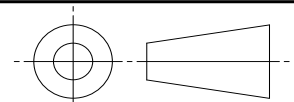


FIGURE 1 - SOCKET CONTACTS

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THIRD ANGLE PROJECTION



CUSTODIAN: AE-8C1

PROCUREMENT SPECIFICATION: AS39029

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD
(R) CONTACTS, ELECTRICAL CONNECTOR,
SOCKET, CRIMP REMOVABLE, SHIELDED, SIZE 12
(FOR MIL-DTL-38999 SERIES II CONNECTORS)

SAE AS39029/27
SHEET 1 OF 7

**REV.
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ISSUED 2000-06 REVISED 2010-10

TABLE 1A - DIMENSIONS

BIN CODE	A DIA MAX	B DIA	C DIA	D DIA MIN	E DIA	F DIA	G DIA MAX	H DIA MIN	J DIA MAX	K	L DIA MIN					
210	.161 (4.09)	.100 (2.54) .097(2.46)	.123 (3.12) .118 (3.00)	.090 (2.29)	.151 (3.84) .148 (3.76)	.182 (4.62) .179 (4.55)	.156 (3.96)	.127 (3.23)	.169 (4.29)	.125 (3.18) .115 (2.92)	.0225 (.57)					
402				.108 (2.74)				.144 (3.66)								
403				.090 (2.29)				.127 (3.23)			.0355 (.90)					
404																
405				.117 (2.97)				.156 (3.96)	.174 (4.42)		.0225 (.57)					
406																
407				.090 (2.29)				.144 (3.66)	.169 (4.29)		.0225 (.57)					
408				.108 (2.74)				.156 (3.96)	.174 (4.42)		.0355 (.90)					

TABLE 1B – DIMENSIONS (CONTINUED)

BIN CODE	M DIA MAX	N MIN	P	R	S	T	U REF.	V DIA	W DIA	X	Z DIA MAX
210	.052 (1.32)	.112 (2.84)	.103 (2.62) .096 (2.44)	.146 (3.71) .140 (3.56)	.039 (.99) .033 (.84)	.222 (5.64) .219 (5.56)	.3635 (9.23)	.0205 (.52) .0195 (.50)	.035 (.89) .033 (.84)	.276 (7.01) .266 (6.76)	.110 (2.79)
402											.127 (3.23)
403											.110 (2.79)
404											
405											.136 (3.45)
406											
407											.110 (2.79)
408											.127 (3.23)

TABLE 2 – DESIGN CHARACTERISTICS

BIN CODE	COLOR BANDS			CABLE ACCOMMODATED	CONTACT CAVITY SIZE	TYPE	CLASS
	1 ST	2 ND	3 RD				
210	RED	BROWN	BLACK	M17/119-RG174 M17/113-RG316 M17/094-RG179 1/ 2/ TIMES AA3248 1/ 2/ TELEDYNE 11299 1/ 2/ THERMAX 75-738-BCCWXE 1/ 2/ TENSOLITE 30888/L707YX-1 1/ 2/ HAVEG 8100207	12	B	B
402	YELLOW	BLACK	RED	M17/095-RG180 1/ RAYCHEM 9527D1514-2L 1/ RAYCHEM 9528A1318 1/ MICRODOT 293-3922			
403	YELLOW	BLACK	ORANGE	1/ MICRODOT 250-4070			
404	YELLOW	BLACK	YELLOW	1/ RAYCHEM 48-502 1/ 5022E5111			
405	YELLOW	BLACK	GREEN	1/ RAYCHEM 48-950 1/ 9530D5117			
406	YELLOW	BLACK	BLUE	1/ RAYCHEM 7624D1311 1/ RAYCHEM 9527A1318			
407	YELLOW	BLACK	VIOLET	1/ GORE GWN1159A M17/152-00001			
408	YELLOW	BLACK	GRAY	1S50MU-16, -20, -40, -70 MIL-DTL-24643/28			

1/ OR EQUIVALENT

2/ HIGH TENSILE STRENGTH COPPER ALLOY WIRE

TABLE 3 – TOOLS

BIN CODE	INNER CONTACT		OUTER CONTACT		INSTALLING TOOL	REMOVAL TOOL
	BASIC CRIMPING TOOL	POSITIONER	BASIC CRIMPING TOOL	POSITIONER		
210, 402, 403, 404, 405, 406, 407, 408	M22520/2-01	M22520/2-34	M22520/31-01	M22520/31-02	M81969/8-09 OR M81969/14-04	M81969/8-10 OR M81969/14-04

TABLE 4 – CONTACT ENGAGEMENT AND SEPARATION FORCES

TEST PIN DIAMETER (INCH)	MINIMUM SEPARATION FORCE (OUNCES)		MAXIMUM ENGAGEMENT FORCE (OUNCES)		MAXIMUM AVERAGE ENGAGEMENT FORCE (OUNCES)
	INITIAL	AFTER CONDITIONING	INITIAL	AFTER CONDITIONING	
.0950 (2.41) +.0002 (0.01) -.0000 (0.00)	N/A	N/A	30	36	N/A
.0930 (2.36) +.0000 (0.00) -.0002 (0.01)	3.0	2.5	N/A	N/A	N/A

TABLE 5 – CONTACT RESISTANCE

BIN CODE	CABLE ACCOMMODATED	MAXIMUM VOLTAGE DROP (MILLIVOLTS)						MAXIMUM AVERAGE VOLTAGE DROP
		25° C +3°, -0°C		25° C +3°, -0°C 1/		200° C +3°, -0°C		
		INNER CONTACT	OUTER CONTACT	INNER CONTACT	OUTER CONTACT	INNER CONTACT	OUTER CONTACT	
210	M17/119-RG174	55	85	66	102	94 4/	145 4/	N/A
	M17/113-RG316	55	75	66	90	94	128	
	M17/094-RG179	120	70	144	84	204	119	
	2/ 3/ TIMES AA3248	170	150	204	180	290	255	
	2/ 3/ TELEDYNE 11299	170	150	204	180	290	255	
	2/ 3/ THERMAX 75-738-BCCWXE	170	150	204	180	290	255	
	2/ 3/ TENSOLITE 30888/L707YX-1	170	150	204	180	290	255	
	2/ 3/ HAVEG 8100207	170	150	204	180	290	255	
402	M17/095-RG180	120	60	144	72	204	102	
	2/ RAYCHEM 9527D1514-2L	120	60	144	72	204 5/	102 5/	
	2/ RAYCHEM 9528A1318	120	60	144	72	204 5/	102 5/	
	2/ MICRODOT 293-3922	120	60	144	72	204	102	
403	2/ MICRODOT 250-4070	120	60	144	72	204	102	
404	2/ RAYCHEM 48-502	55	60	66	72	94 5/	102 5/	
	2/ 5022E5111	55	60	66	72	94 5/	102 5/	
405	2/ RAYCHEM 48-950	120	60	144	72	204 5/	102 5/	
	2/ 9530D5117	120	60	144	72	204 5/	102 5/	
406	2/ RAYCHEM 7624D1311	55	60	66	72	94 5/	102 5/	
	2/ RAYCHEM 9527A1318	120	60	144	72	204 5/	102 5/	
407	2/ GORE GWN1159A	120	60	144	72	204	102	
	M17/152-00001	120	60	144	72	204	102	
408	1S50MU-16, -20, -40, -70	55	60	66	72	94 4/	102 4/	
	MIL-DTL-24643/28	55	60	66	72	94 4/	102 4/	

1/ AFTER CONDITIONING,
4/ 85° C +3°C, -0°C

2/ OR EQUIVALENT
5/ 115° C +3°C, -0°C

3/ HIGH TENSILE STRENGTH COPPER ALLOY WIRE

TABLE 6 – LOW SIGNAL LEVEL CONTACT RESISTANCE (INNER CONTACT ONLY) AND TENSILE STRENGTH

BIN CODE	CABLE ACCOMMODATED	MAXIMUM CONTACT RESISTANCE (MILLIOHMS)		TENSILE LOAD (POUNDS MINIMUM)	
		INITIAL	AFTER CONDITIONING	INNER CONTACT	OUTER CONTACT
210	M17/119-RG174	55	66	15.0	15.0
	M17/113-RG316	55	66	10.0	15.0
	M17/094-RG179	120	144	3.5	15.0
	1/ 2/ TIMES AA3248	170	204	7.0	35.0
	1/ 2/ TELEDYNE 11299	170	204	7.0	35.0
	1/ 2/ THERMAX 75-738-BCCWXE	170	204	7.0	35.0
	1/ 2/ TENSOLITE 30888/L707YX-1	170	204	7.0	35.0
	1/ 2/ HAVEG 8100207	170	204	7.0	35.0
402	M17/095-RG180	120	144	3.5	20.0
	1/ RAYCHEM 9527D1514-2L	120	144	6.0	20.0
	1/ RAYCHEM 9528A1318	120	144	6.0	20.0
	1/ MICRODOT 293-3922	120	144	3.5	20.0
403	1/ MICRODOT 250-4070	120	144	4.0	20.0
404	1/ RAYCHEM 48-502	55	66	10.0	20.0
	1/ 5022E5111	55	66	10.0	20.0
405	1/ RAYCHEM 48-950	120	144	3.5	20.0
	1/ 9530D5117	120	144	3.5	20.0
406	1/ RAYCHEM 7624D1311	55	66	6.0	20.0
	1/ RAYCHEM 9527A1318	120	144	6.0	20.0
407	1/ GORE GWN1159A	120	144	4.0	20.0
	M17/152-00001	120	144	4.0	20.0
408	1S50MU-16, -20, -40, -70	55	66	15.0	20.0
	MIL-DTL-24643/28	55	66	15.0	20.0

1/ OR EQUIVALENT

2/ HIGH TENSILE STRENGTH COPPER ALLOY WIRE

 <i>An SAE International Group</i>	AEROSPACE STANDARD		SAE AS39029/27 SHEET 4 OF 7	REV. A
	(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE, SHIELDED, SIZE 12 (FOR MIL -DTL -38999 SERIES II CONNECTORS)			

TABLE 7 – PART NUMBER AND BIN CODE

PART NUMBER	BIN CODE	SUPERSEDED PART NUMBER
M39029/27-210	210	M39029/27-12A
M39029/27-402	402	M39029/27-12B
M39029/27-403	403	M39029/27-12C
M39029/27-404	404	M39029/27-12D
M39029/27-405	405	M39029/27-12E
M39029/27-406	406	M39029/27-12F
M39029/27-407	407	M39029/27-12G
M39029/27-408	408	M39029/27-12H

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS39029.

1. DESIGN:

CONTACTS SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1, TABLES 1 AND 2. DIMENSIONS ARE IN INCHES, METRIC EQUIVALENTS ARE GIVEN FOR GENERAL INFORMATION ONLY. DIMENSIONS SHOWN APPLY AFTER PLATING. THE .248 MIN DIMENSION IS THE POINT AT WHICH A SQUARE ENDED PIN OF THE SAME BASIC DIAMETER AS THE MATING CONTACT FIRST ENGAGES THE OUTER CONTACT SPRING. PROVISION FOR CLEARANCE HOLE SHALL BE PROVIDED. CRIMP DEFORMATION: THE MAXIMUM DIAMETER OVER THE CRIMPED PORTION OF THE SHIELD CRIMP SLEEVE SHALL NOT EXCEED G DIAMETER.

2. TOOLS:

TOOLS REQUIRED FOR CRIMPING CONTACTS TO THE WIRE/CABLE AND THE INSTALLING/REMOVAL FROM THE CONNECTOR SHALL BE IN ACCORDANCE WITH TABLE 3. INNER CONTACT TOOL SELECTOR SETTING IN ACCORDANCE WITH TABLE 9.

3. PART NUMBERS:

CONTACT PART NUMBERS SHALL BE IN ACCORDANCE WITH TABLE 7. SUPERSEDED PART NUMBERS ARE AS SPECIFIED.

4. MATERIALS:

MATERIALS AND PLATING SHALL BE IN ACCORDANCE WITH AS39029.

5. MECHANICAL:

MECHANICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029. CONTACT ENGAGEMENT AND SEPARATION FORCES (OUTER SOCKET CONTACT ONLY): THE ENGAGEMENT DEPTH SHALL BE AS ENCOUNTERED IN NORMAL SERVICE. THE TEST PINS SHALL BE IN ACCORDANCE WITH AS31971 EXCEPT THE DIAMETERS SHALL BE AS SPECIFIED IN TABLE 4, AND SURFACE ROUGHNESS SHALL NOT EXCEED 3 MICROINCHES. PROVISION FOR CLEARANCE HOLE SHALL BE PROVIDED. TENSILE STRENGTH (INNER AND OUTER CONTACT CRIMP JOINT): SEE TABLE 6.

6. ELECTRICAL:

ELECTRICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029. LOW SIGNAL LEVEL CONTACT RESISTANCE (INNER CONTACT ONLY): SEE TABLE 6. CONTACT RESISTANCE: SEE TABLE 5. TEST CURRENT: INNER CONTACT - 1 AMPERE, OUTER CONTACT - 12 AMPERES. DIELECTRIC WITHSTANDING VOLTAGE (APPLIED BETWEEN INNER AND OUTER CONTACT): TEST VOLTAGE- AT SEA LEVEL - 1000 VAC RMS, AT 50,000 FEET - 250 VAC RMS.

7. ENVIRONMENTAL:

ENVIRONMENTAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

RANDOM VIBRATION: CONNECTORS/CONTACTS SHALL BE TESTED IN ACCORDANCE WITH EIA-364-28.. THE FOLLOWING DETAILS SHALL APPLY:

- a. TEST CONDITION VI, LETTER J.
- b. VIBRATION TO BE CONDUCTED AT STANDARD TEST CONDITIONS.
- c. DURATION SHALL BE 8 HOURS IN THE LONGITUDINAL DIRECTION AND 8 HOURS IN A PERPENDICULAR DIRECTION FOR A TOTAL OF 16 HOURS.

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	(R) CONTACTS, ELECTRICAL CONNECTOR, SOCKET, CRIMP REMOVABLE, SHIELDED, SIZE 12 (FOR MIL -DTL -38999 SERIES II CONNECTORS)			