FEDERAL SUPPLY CLASS
5999

RATIONALE

REVISION IS REQUIRED TO INCLUDE THE ADDITIONAL ELECTRICAL AND QUALIFICATION REQUIREMENTS TO ALIGN THIS DETAIL SHEET WITH THE APPLICABLE MIL-DTL-38999 SERIES III CONNECTOR REQUIREMENTS, TO REPLACE THE BIN 624 COMMERCIAL TOOL PART NUMBERS WITH THE AS22520/45-01 PART NUMBER AND TO INCORPORATE THE AS39029 BASE SPEC DETAIL SHEET EXCEPTIONS.

NOTICE

THE COMPLETE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS39029.

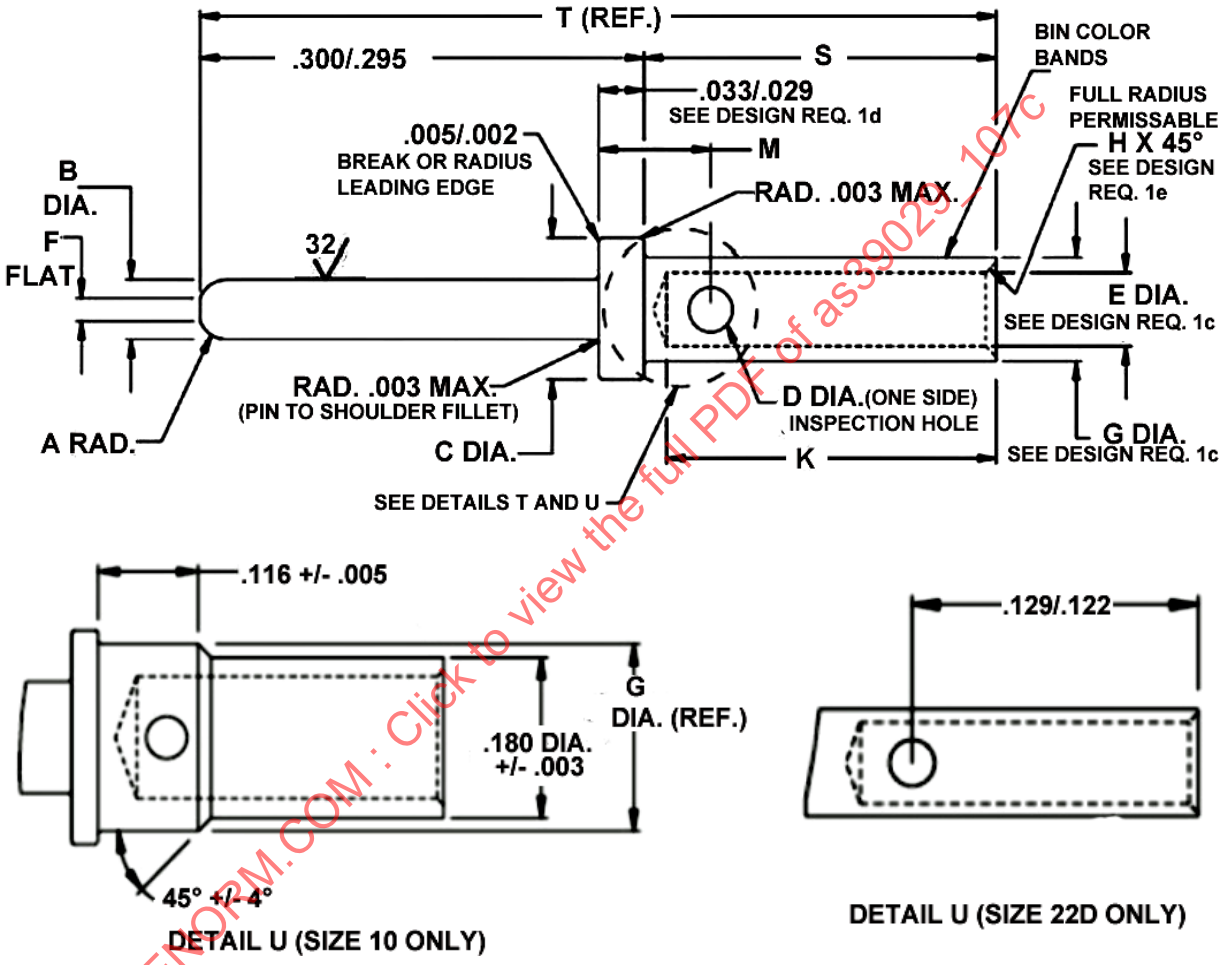
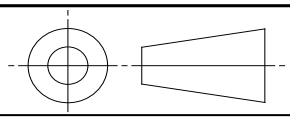


FIGURE 1 - AS39029/107 PIN CONTACT CONFIGURATIONS

For more information on this standard, visit
https://www.sae.org/standards/content/AS39029/107C

THIRD ANGLE PROJECTION



ISSUED 2001-03 REVISED 2016-07 REAFFIRMED 2021-05

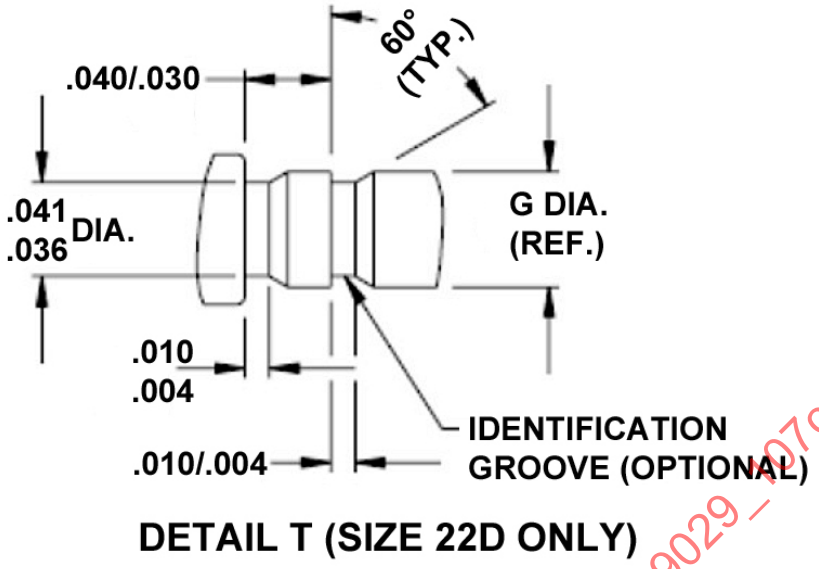
CUSTODIAN: AE-8/AE-8C1

PROCUREMENT SPECIFICATION: AS39029

SAE INTERNATIONAL

AEROSPACE STANDARD

(R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE (FOR MIL-DTL-38999 SERIES I, III, IV, MIL-DTL-55302, AND AS29600 SERIES A CONNECTORS)



DETAIL T (SIZE 22D ONLY)

FIGURE 1 - AS39029/107 PIN CONTACT CONFIGURATIONS (CONTINUED)

TABLE 1 – FIGURE 1 METRIC EQUIVALENTS

INCHES	MILLIMETERS	INCHES	MILLIMETERS	INCHES	MILLIMETERS	INCHES	MILLIMETERS
.001	0.03	.006	0.15	.036	0.91	.129	3.28
.002	0.05	.010	0.25	.040	1.02	.180	4.57
.003	0.08	.029	0.74	.041	1.04	.295	7.49
.004	0.10	.030	0.76	.116	2.95	.300	7.62
.005	0.13	.033	0.84	.122	3.10		

TABLE 2 – FIGURE 1 DIMENSIONS

BIN CODE	A RADIUS	B DIA.	C DIA.	D DIA.	E DIA.	F DIA.	G DIA.	H 1/	K MIN.	M	S	T REF.
620	.020 (0.508) .010 (0.254)	.0305 (0.775) .0295 (0.749)	.062 (1.57) .060 (1.52)	.022 (0.559) .018 (0.457)	.0355 (0.902) .0335 (0.851)	.011 (0.279) MAX	.048 (1.22) .046 (1.17)	.005 (0.127) .003 (0.076)	.141 (3.58)	-- --	.237 (6.02) .231 (5.87)	.531 (13.49)
621	.025 (0.635) .015 (0.381)	.041 (1.04) .039 (0.991)	.094 (2.39) .091 (2.31)	.032 (0.813) .026 (0.660)	.048 (1.22) .046 (1.17)	.015 (0.381) MAX	.070 (1.78) .068 (1.73)	.010 (0.254) .005 (0.127)	.209 (5.31)	.078 (1.98) .072 (1.83)		
622	.025 (0.635) .020 (0.508)	.0635 (1.61) .0615 (1.56)	.130 (3.30) .127 (3.23)	.042 (1.07) .036 (0.914)	.068 (1.73) .066 (1.68)	.030 (0.762) .011 (0.279)	.103 (2.62) .101 (2.57)			.088 (2.24) .082 (2.08)		
623		.095 (2.43) .093 (2.36)	.182 (4.62) .179 (4.55)		.102 (2.59) .098 (2.49)	.062 (1.57) .043 (1.09)	.151 (3.84) .148 (3.76)	.016 (0.406) .005 (0.127)				
624		.126 (3.20) .124 (3.15)	.242 (6.15) .238 (6.05)	.052 (1.32) .040 (1.02)	.140 (3.56) .134 (3.40)	.094 (2.39) .074 (1.88)	.213 (5.41) .207 (5.26)		.355 (9.02)	.115 (2.92) .108 (2.74)	.405 (10.29) .395 (10.03)	.695 (17.65)

1/ FULL RADIUS PERMISSIBLE.

TABLE 3 - MARKING AND DESIGN CHARACTERISTICS

BIN CODE	COLOR BANDS			MATING END SIZE	WIRE BARREL SIZE	TYPE	CLASS
	1 ST	2 ND	3 RD				
620	BLUE	RED	BLACK	22	22D	A	B
621	BLUE	RED	BROWN	20	20		
622	BLUE	RED	RED	16	16		
623	BLUE	RED	ORANGE	12	12		
624	BLUE	RED	YELLOW	10	10		

TABLE 4 - TOOL REQUIREMENTS

BIN CODE	BASIC CRIMPING TOOL	POSITIONER	INSTALLING TOOL	REMOVAL TOOL
620	M22520/2-01	M22520/2-09	M81969/14-01	M81969/14-01
	M22520/7-01	M22520/7-07	M81969/8-01	M81969/8-02
621	M22520/1-01	M22520/1-04 RED	M81969/14-10	M81969/14-10
	M22520/2-01	M22520/2-10	M81969/8-05	M81969/8-06
	M22520/7-01	M22520/7-08		
622	M22520/1-01	M22520/1-04 BLUE	M81969/14-03	M81969/14-03
	M22520/7-01	M22520/7-04	M81969/8-07	M81969/8-08
623	M22520/1-01	M22520/1-04 YELLOW	M81969/14-04 M81969/8-09	M81969/14-04 M81969/8-10
624	AS22520/45-01	--	M81969/14-05 M81969/8-11	M81969/14-05 M81969/8-12

1/ ASTRO TOOL CORP. PART NUMBER (OR EQUIVALENT).
2/ DANIELS MANUFACTURING CORP. PART NUMBER (OR EQUIVALENT).

TABLE 5 - PART NUMBERS

AS39029 PART NUMBER	BIN CODE	SUPERSEDED PART NUMBER(S)
M39029/107-620	620	---
M39029/107-621	621	---
M39029/107-622	622	---
M39029/107-623	623	---
M39029/107-624	624	---

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

1. DESIGN:

CONTACT SHALL BE DESIGNED IN ACCORDANCE WITH FIGURE 1 AND TABLES 2 AND 3.

A. ALL DIMENSIONS ARE IN INCHES AND APPLY AFTER PLATING. DIMENSIONS IN PARENTHESES ARE METRIC EQUIVALENTS AND PROVIDED FOR GENERAL INFORMATION ONLY (SEE AS39029 SECTION 6.0). UNLESS OTHERWISE SPECIFIED, SPHERICAL END DIMENSIONS SHALL CONFORM TO AS39029.

B. MANUFACTURER'S SYMBOL IN ACCORDANCE WITH AIR1351 (LOCATION OPTIONAL).

C. FOR BIN CODE 620 ONLY, E AND G TO BE CONCENTRIC WITHIN .003 FULL INDICATOR MOVEMENT (FIM) REGARDLESS OF FEATURE SIZE. FOR ALL OTHER BIN CODES, DIAMETERS E AND G TO BE CONCENTRIC WITHIN .001 FULL INDICATOR MOVEMENT AT MAXIMUM MATERIAL CONDITION.

D. FOR DIMENSION H, THE FOLLOWING BLEND RADIUS DIMENSIONS ARE OPTIONAL:

SIZE 22 - BLEND RADIUS .010 INCHES ± .005 INCHES.
SIZE 20 - BLEND RADIUS .015 INCHES ± .005 INCHES.
SIZE 16 - BLEND RADIUS .020 INCHES ± .005 INCHES.
SIZE 12 - BLEND RADIUS .020 INCHES ± .010 INCHES.
SIZE 10 - BLEND RADIUS .020 INCHES ± .010 INCHES.

2. TOOLS:

   TOOLS REQUIRED FOR CRIMPING CONTACTS TO WIRE/CABLE AND THE INSTALLING/REMOVAL FROM THE CONNECTOR SHALL BE IN ACCORDANCE WITH TABLE 4.

3. PART NUMBERS:

   CONTACT PART NUMBERS SHALL BE IN ACCORDANCE WITH TABLE 5. SUPERSEDED PART NUMBERS ARE AS SPECIFIED.

4. MATERIALS:

   MATERIALS SHALL BE IN ACCORDANCE WITH AS39029.

   CONTACT FINISH SHALL BE .000005 INCHES MINIMUM GOLD ALLOY OVER .000045 INCHES MINIMUM PALLADIUM-NICKEL ALLOY OVER NICKEL, IN ACCORDANCE WITH ASTM B867, TYPE II, CLASS 1.3, GRADE 1 OR 2, AND COMPATIBLE WITH GOLD FINISH AS DEFINED IN AS39029.

5. MECHANICAL:

   MECHANICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

   CONTACT DURABILITY SHALL BE 1500 CYCLES.

6. ELECTRICAL:

   ELECTRICAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

7. ENVIRONMENTAL (SEE REQUIREMENT 8)

   ENVIRONMENTAL PROPERTIES SHALL BE IN ACCORDANCE WITH AS39029.

   VIBRATION: THE FOLLOWING VIBRATION TESTS SHALL BE PERFORMED ON SEPARATE SAMPLES FOR EACH TEST. EACH TEST SAMPLE MUST COMPLY WITH THE AS39029 BASIC SPECIFICATION SAMPLE REQUIREMENTS.

   SAMPLE PREPARATION:

   THE SAMPLE SIZE OF CONTACTS FOR GROUP 2 SHALL BE TRIPLED TO ALLOW FOR 3 GROUPS OF CONTACTS TO BE SUBJECTED TO THE VIBRATION TEST. THE CONTACTS SHALL BE DIVIDED INTO 3 SUB-GROUPS AND MOUNTED IN MIL-DTL-38999 CONNECTORS (MATING FREE PLUG AND RECEPTACLE) RATED AT 200 °C. HIGH STRENGTH WIRE MAY BE USED FOR VIBRATION TESTING.

   VIBRATION TESTS:

   A. THE FIRST SUB-GROUP SHALL BE TESTED TO THE VIBRATION REQUIREMENTS OF MIL-DTL-38999 SINE VIBRATION PARAGRAPH APPLICABLE TO SERIES II ONLY. THE HIGH TEMPERATURE PART OF THE TEST SHALL BE PERFORMED AT A TEMPERATURE OF 200 °C.

   B. THE SECOND SUB-GROUP SHALL BE TESTED TO THE VIBRATION REQUIREMENTS OF MIL-DTL-38999 RANDOM VIBRATION PARAGRAPH APPLICABLE TO SERIES I, III, AND IV ONLY AT A TEMPERATURE OF 200 °C.

   C. THE THIRD SUB-GROUP SHALL BE TESTED TO THE VIBRATION REQUIREMENTS OF MIL-DTL-38999 RANDOM VIBRATION PARAGRAPH APPLICABLE TO SERIES I, III, AND IV ONLY, TEST CONDITION 5 USING THE VIBRATION ENVELOPE SHOWN IN THE APPLICABLE FIGURE, AT AMBIENT TEMPERATURE.

   D. DURING EACH OF THE ABOVE VIBRATION TESTS THE CONTACTS SHALL BE MONITORED FOR ELECTRICAL DISCONTINUITY TO THE REQUIREMENTS OF EIA364-46. THERE SHALL BE NO DISCONTINUITIES IN EXCESS OF 1 MICROSECOND.

   E. FOLLOWING THE VIBRATION TESTS ABOVE, THE CONTACTS SHALL BE INDIVIDUALLY MEASURED FOR CONTACT RESISTANCE IN ACCORDANCE WITH EIA364-06. THE CONTACTS SHALL BE MEASURED AT AMBIENT TEMPERATURE AND UNDISTURBED WHILE STILL WITHIN THE CONNECTOR. THE MEASURING POINTS SHALL BE AT A TOTAL DISTANCE OF 6 INCHES APART. THE CONTACT RESISTANCE SHALL MEET THE REQUIREMENTS OF AS39029 TABLES 5 OR 6 (WHERE APPROPRIATE) AT THE CURRENTS SHOWN IN THE TABLES.

   SHOCK: CONNECTORS/CONTACTS SHALL BE TESTED IN ACCORDANCE WITH EIA-364-27, TEST CONDITION D. THE FOLLOWING DETAILS SHALL APPLY:

   A. THE PULSE SHALL BE AN APPROXIMATE HALF SINE WAVE OF 300 G ± 15% MAGNITUDE WITH A DURATION OF 3 MILLISECONDS ± 1 MILLISECONDS.

   B. THE WIRE BUNDLE SHALL BE CLAMPED TO FIXED POINTS AT LEAST 8 INCHES FROM THE REAR OF THE CONNECTOR.