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REV.  
A

SAE AS39029/58

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.

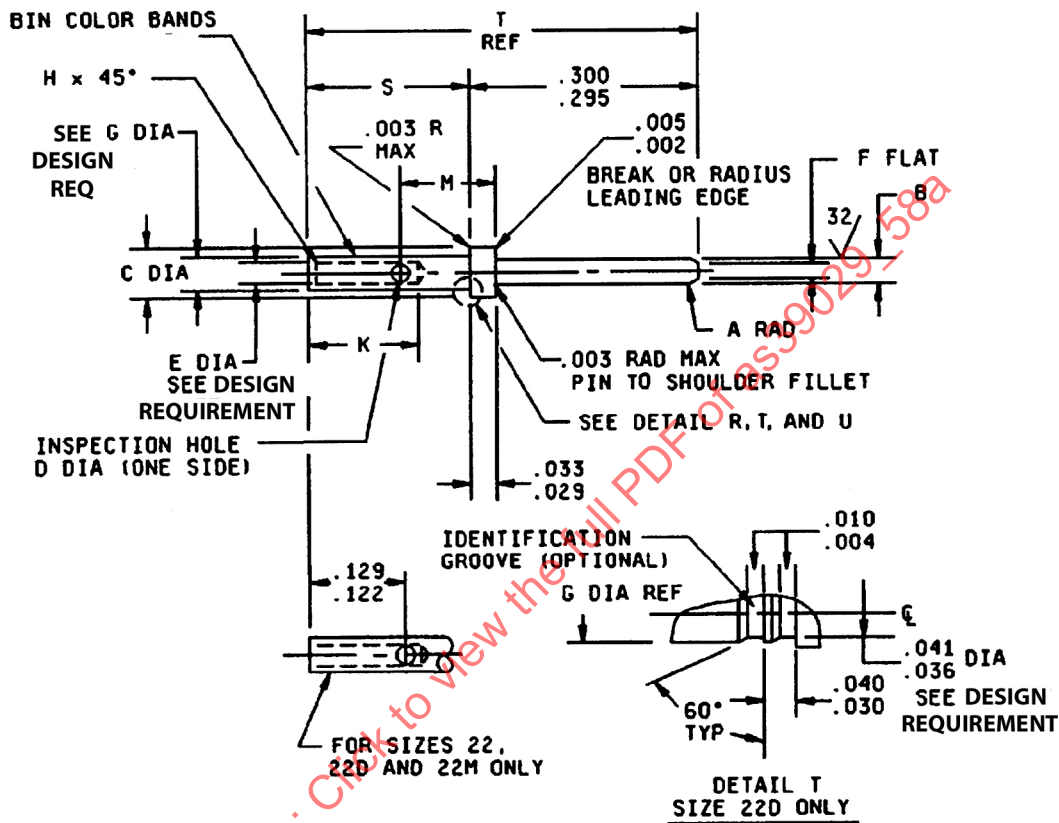
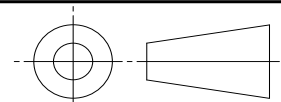


FIGURE 1 - CONNECTOR CONTACT

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THIRD ANGLE PROJECTION



CUSTODIAN: AE-8C1

PROCUREMENT SPECIFICATION: AS39029

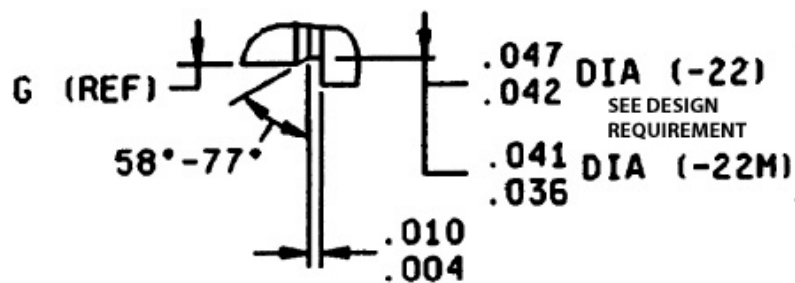
**SAE Aerospace**  
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## AEROSPACE STANDARD

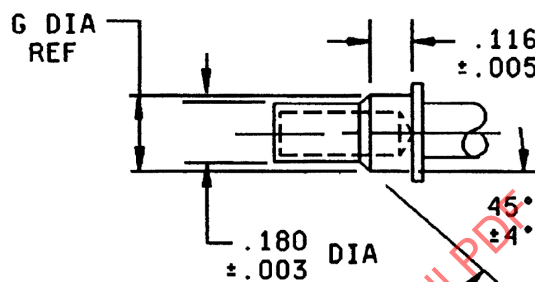
(R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE (FOR MIL-DTL-24308, MIL-DTL-38999 SERIES I, II, III, AND IV, AND MIL-DTL-55302/69 AND MIL-DTL-83733 CONNECTORS)

**SAE AS39029/58**  
SHEET 1 OF 7

**REV. A**



**DETAIL R**  
**SIZES 22, 22M ONLY**



**DETAIL U (SIZE 10 ONLY)**

FIGURE 1 - CONNECTOR CONTACT (CONTINUED)

TABLE 1 - DIMENSIONS

| BIN CODE | A<br>RADIUS                      | B DIA                          | C DIA                      | D DIA                      | E DIA                      | F DIA                      | G DIA                      | H                        |
|----------|----------------------------------|--------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------|
| 360, 663 | .020<br>(.508)                   | .0305 (.774)<br>.0295 (.749)   | .062 (1.57)                | .022 (.56)<br>.018 (.46)   | .0355 (.90)<br>.0335 (.85) | .011 (.28)<br>MAX          | .048 (1.22)<br>.046 (1.17) | .005 (.13)<br>.003 (.08) |
| 361      | .010<br>(.254)                   |                                | .060 (1.52)                |                            | .029 (.74)<br>.027 (.69)   |                            | .046 (1.17)<br>.044 (1.12) |                          |
| 362      |                                  |                                | .071 (1.80)<br>.069 (1.75) |                            | .0375 (.95)<br>.0355 (.90) |                            | .052 (1.32)<br>.050 (1.27) |                          |
| 363, 659 | .025<br>(.635)<br>.015<br>(.381) | .041 (1.04)<br>.039 (.991)     | .094 (2.39)<br>.091 (2.31) | .032 (.81)<br>.026 (.66)   | .048 (1.22)<br>.046 (1.17) | .015 (.38)<br>MAX          | .070 (1.78)<br>.068 (1.73) | .010 (.25)<br>.005 (.13) |
| 364      |                                  | .0635 (1.613)<br>.0615 (1.562) | .130 (3.30)<br>.127 (3.23) | .042 (1.07)<br>.036 (.914) | .068 (1.73)<br>.066 (1.68) |                            | .103 (2.62)<br>.101 (2.57) |                          |
| 365      | .025<br>(.635)<br>.020<br>(.508) | .095 (2.41)<br>.093 (2.36)     | .182 (4.62)<br>.179 (4.55) |                            | .102 (2.59)<br>.098 (2.49) |                            | .151 (3.84)<br>.148 (3.76) |                          |
| 528      |                                  | .126 (3.20)<br>.124 (3.15)     | .242 (6.15)<br>.238 (6.05) | .052 (1.32)<br>.040 (1.02) | .140 (3.56)<br>.134 (3.40) | .094 (2.39)<br>.074 (1.88) | .213 (5.41)<br>.207 (5.26) | .016 (.41)<br>.005 (.13) |

TABLE 1 - DIMENSIONS (CONTINUED)

| BIN CODE | K MIN       | M                          | S                                  | T<br>(REF)      |
|----------|-------------|----------------------------|------------------------------------|-----------------|
| 360, 663 | .141 (3.58) | -----                      | .237 (6.02)<br>.231 (5.87)         | .531<br>(13.49) |
| 361      |             | -----                      |                                    |                 |
| 362      |             | -----                      |                                    |                 |
| 363, 659 | .209 (5.31) | .078 (1.98)<br>.072 (1.83) |                                    |                 |
| 364      |             | .088 (2.24)<br>.082 (2.08) |                                    |                 |
| 365      |             |                            |                                    |                 |
| 528      | .355 (9.02) | .115 (2.92)<br>.108 (2.74) | .405<br>(10.29)<br>.395<br>(10.03) | .647<br>(16.43) |

TABLE 2 - DESIGN CHARACTERISTICS

| BIN CODE | COLOR BANDS     |                 |                 | MATING<br>END SIZE | WIRE<br>BARRELL<br>SIZE | TYPE | CLASS |
|----------|-----------------|-----------------|-----------------|--------------------|-------------------------|------|-------|
|          | 1 <sup>ST</sup> | 2 <sup>ND</sup> | 3 <sup>RD</sup> |                    |                         |      |       |
| 360      | ORANGE          | BLUE            | BLACK           | 22                 | 22D                     | A    | B     |
| 361      | ORANGE          | BLUE            | BROWN           | 22                 | 22M                     |      |       |
| 362      | ORANGE          | BLUE            | RED             | 22                 | 22                      |      |       |
| 363      | ORANGE          | BLUE            | ORANGE          | 20                 | 20                      |      |       |
| 364      | ORANGE          | BLUE            | YELLOW          | 16                 | 16                      |      |       |
| 365      | ORANGE          | BLUE            | GREEN           | 12                 | 12                      |      |       |
| 528      | GREEN           | RED             | GRAY            | 10                 | 10                      |      |       |
| 659 1/   | BLUE            | GREEN           | WHITE           | 20                 | 20                      |      |       |
| 663 1/   | BLUE            | BLUE            | ORANGE          | 22                 | 22D                     |      |       |

1/ FINISH SHALL BE GOLD PLATING IN ACCORDANCE WITH ASTM B 488, TYPE II, CODE C, CLASS 1.27 OVER A SUITABLE UNDERPLATE. SILVER AND NICKEL SHALL NOT BE USED AS AN UNDERPLATE ON CLASSES M & N. THIS FINISH IS INTENDED FOR USE WITH MIL-DTL-24308 NON-MAGNETIC CONNECTORS, CLASS M AND N ONLY.

TABLE 3 - TOOLS

| BIN CODE | BASIC CRIMPING TOOL                                          | POSITIONER                                      | INSTALLING TOOL <sup>1/</sup> | REMOVAL TOOL <sup>1/</sup>  |
|----------|--------------------------------------------------------------|-------------------------------------------------|-------------------------------|-----------------------------|
| 360, 663 | M22520/2-01<br>M22520/7-01                                   | M22520/2-09<br>M22520/7-07                      | M81969/14-01<br>M81969/8-01   | M81969/14-01<br>M81969/8-02 |
| 361      | M22520/2-01<br>M22520/7-01                                   | M22520/2-09<br>M22520/7-07                      | M81969/14-01<br>M81969/8-01   | M81969/14-01<br>M81969/8-02 |
| 362      | M22520/2-01<br>M22520/7-01                                   | M22520/2-09<br>M22520/7-07                      | M81969/8-03                   | M81969/8-04                 |
| 363, 659 | M22520/2-01<br>M22520/7-01<br>M22520/1-01                    | M22520/2-10<br>M22520/7-08<br>M22520/1-04 (RED) | M81969/14-10<br>M81969/8-05   | M81969/14-10<br>M81969/8-06 |
| 364      | M22520/1-01<br>M22520/7-01                                   | M22520/1-04 (BLUE)<br>M22520/7-04               | M81969/14-03<br>M81969/8-07   | M81969/14-03<br>M81969/8-08 |
| 365      | M22520/1-01                                                  | M22520/1-04 (YELLOW)                            | M81969/14-04<br>M81969/8-09   | M81969/14-04<br>M81969/8-10 |
| 528      | 1716P (DANIELS) <sup>2/</sup><br>AL114 (ASTRO) <sup>2/</sup> | POSITIONER BUILT INTO<br>BASIC TOOL             | M81969/8-11<br>M81969/14-05   | M81969/8-12<br>M81969/14-05 |

<sup>1/</sup> SEE APPLICATION NOTE 2.

<sup>2/</sup> OR EQUIVALENT

TABLE 4 – PART NUMBERS

| PART NUMBER                                                 | BIN CODE | SUPERSEDED  |
|-------------------------------------------------------------|----------|-------------|
| M39029/58-360                                               | 360      | MS27493-22D |
| M39029/58-361 <sup>1/</sup> , <sup>2/</sup> , <sup>3/</sup> | 361      | MS27493-22M |
| M39029/58-362 <sup>1/</sup> , <sup>2/</sup> , <sup>3/</sup> | 362      | MS27493-22  |
| M39029/58-363 <sup>2/</sup>                                 | 363      | MS27493-20  |
| M39029/58-364 <sup>2/</sup> , <sup>3/</sup>                 | 364      | MS27493-16  |
| M39029/58-365 <sup>2/</sup> , <sup>3/</sup>                 | 365      | MS27493-12  |
| M39029/58-528 <sup>2/</sup> , <sup>3/</sup>                 | 528      |             |
| M39029/58-659                                               | 659      |             |
| M39029/58-663                                               | 663      |             |

<sup>1/</sup> INACTIVE FOR NEW DESIGN.

<sup>2/</sup> NOT FOR USE WITH MIL-DTL-83733 OR MIL-DTL-24308 CONNECTORS. (FOR MIL-DTL-83733 USAGE, CONTACT SIZES 20, 16, AND 12, SEE AS39029/4 AND /5.)

<sup>3/</sup> NOT FOR USE WITH MIL-DTL-55302 CONNECTORS.

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 AND TABLE 1 AND 2. DIMENSIONS ARE IN INCHES. METRIC EQUIVALENTS ARE GIVEN FOR GENERAL INFORMATION ONLY. DIMENSIONS SHOWN APPLY AFTER PLATING. OPERATING TEMPERATURE RANGE: -65 °C (-85 °F) TO 200 °C (392 °F). FOR BIN CODE 360 ONLY, DIAMETERS E AND G ARE TO BE CONCENTRIC WITHIN .003 (TIR) REGARDLESS OF FEATURE SIZE (RFS); FOR ALL OTHER CONTACT SIZES, DIAMETERS E AND G TO BE CONCENTRIC WITH .001 (TIR) OF MAXIMUM MATERIAL CONDITION (MMC). THE .036-.041 DIAMETER IN DETAIL "T" AND THE .042-.047/.036-.041 DIAMETERS IN DETAIL "R" SHALL BE CONCENTRIC TO G DIAMETER WITHIN .003 TIR (RFS).

#### 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.

#### 3. PART NUMBERS:

CONTACT PART NUMBERS SHALL BE IN ACCORDANCE WITH TABLE 4. SUPERSEDED PART NUMBERS ARE AS SPECIFIED.

#### 4. MATERIALS:

MATERIALS SHALL BE IN ACCORDANCE WITH SAE AS39029.

|                                                                                                                          |                                                                                                                                                                                |                                       |                         |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------|
| <br><i>An SAE International Group</i> | <b>AEROSPACE STANDARD</b>                                                                                                                                                      | <b>SAE AS39029/58</b><br>SHEET 4 OF 7 | <b>REV.</b><br><b>A</b> |
|                                                                                                                          | (R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP<br>REMOVABLE (FOR MIL-DTL-24308, MIL-DTL-38999 SERIES I, II, III,<br>AND IV, AND MIL-DTL-55302/69 AND MIL-DTL-83733 CONNECTORS) |                                       |                         |

OUTGASSING REQUIREMENT:

PART NUMBERS M39029/58-659 AND M39029/58-663 SHALL MEET THE OUTGASSING REQUIREMENTS OF ASTM-E595. THE REQUIREMENT MAY BE VERIFIED BY CERTIFICATION. CONTACT THE QUALIFYING ACTIVITY FOR DETAILS CONCERNING THE CERTIFICATION PROCESS.

RESIDUAL MAGNETISM REQUIREMENT:

PART NUMBERS M39029/58-659 AND M39029/58-663 SHALL ALSO MEET THE RESIDUAL MAGNETISM. CONTACT HOODS MAY BE OF AN ALTERNATE MATERIAL TO MEET THE RESIDUAL MAGNETISM REQUIREMENT, HOWEVER THE CONTACTS MUST MEET ALL OTHER REQUIREMENTS OF AS39029 AND THIS DETAIL SHEET. WHEN TESTED WITH THE APPLICABLE MIL-DTL-24308 CONNECTOR, THE RESIDUAL MAGNETISM SHALL NOT EXCEED 200 GAMMA. THE FOLLOWING DETAILS SHALL APPLY:

ACCEPTABLE TEST METHOD.

CONNECTOR SHALL BE FULLY ASSEMBLED BEFORE TESTING. THE RESIDUAL MAGNETISM TEST SHALL BE PERFORMED IN A MAGNETICALLY QUIET AREA, I.E., WHERE MACHINES, ELECTRONIC EQUIPMENT, VEHICLES, AND PERSONNEL TRAFFIC ARE RESTRICTED. REFER TO THE TEST ARRANGEMENT OF FIGURE 2 BELOW AND PROCEED AS FOLLOWS:

- A. WARM UP THE MILLIAMMETER OR FLUX METER FOR A MINIMUM OF FIFTEEN MINUTES
- B. MOUNT THE MAGNETOMETER PROBE IN A NON-MAGNETIC STAND IN A HORIZONTAL POSITION AT FULL CABLE LENGTH FROM THE MILLIAMMETER.
- C. WITH THE METER PRESET TO THE APPROPRIATE SCALE, ALIGN THE PROBE IN A MAGNETIC E-W DIRECTION OR ORIENT TO OBTAIN A ZERO READING ON THE METER.
- D. PASS THE CONNECTOR SPECIMEN THREE TIMES BETWEEN THE POLES OF A MAGNET WITH A FIELD STRENGTH OF 5000 GAUSS, ± 5 PERCENT. THE CONNECTOR SHALL NOT CONTACT THE POLE PIECES.
- E. IMMEDIATELY PLACE THE CONNECTOR TO WITHIN ONE-EIGHT (1/8) INCH OF THE PROBE TIP AND ORIENT THE SPECIMEN FOR A MAXIMUM MAGNETISM READING. THE MEASUREMENT UNIT SHALL BE IN GAMMA, WHERE ONE GAMMA IS EQUIVALENT TO  $1 \times 10^{-5}$  GAUSS.

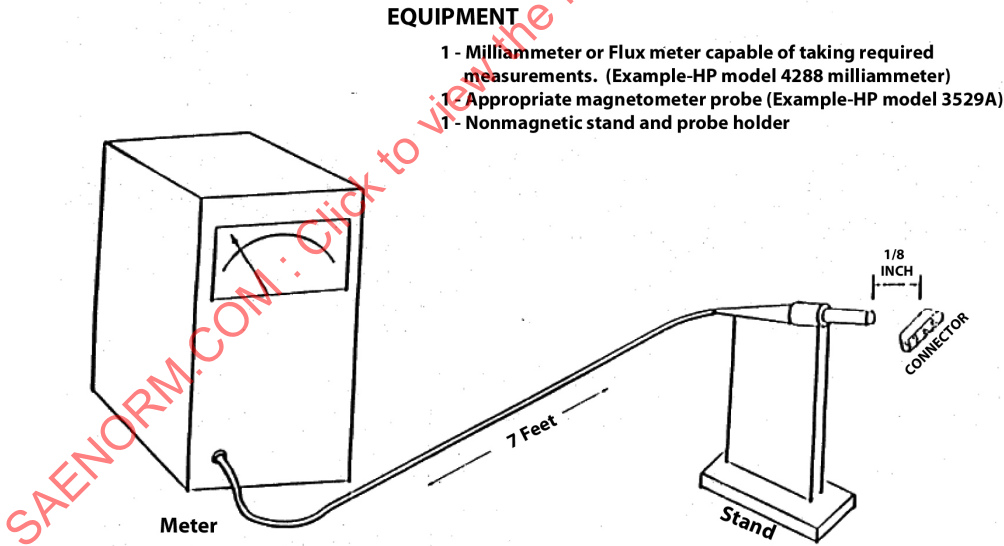


FIGURE 2 – RESIDUAL MAGNETISM TEST ARRANGEMENT

AN ALTERNATIVE RESIDUAL MAGNETISM TEST METHOD MAY BE USED WITH APPROVAL FROM THE QUALIFYING ACTIVITY.

5. MECHANICAL:

MECHANICAL PROPERTIES SHALL BE IN ACCORDANCE WITH SAE AS39029.

|                                                                                                                   |                                                                                                                                                                          |                                       |                         |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------|
| <br>An SAE International Group | <b>AEROSPACE STANDARD</b>                                                                                                                                                | <b>SAE AS39029/58</b><br>SHEET 5 OF 7 | <b>REV.</b><br><b>A</b> |
|                                                                                                                   | (R) CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE (FOR MIL-DTL-24308, MIL-DTL-38999 SERIES I, II, III, AND IV, AND MIL-DTL-55302/69 AND MIL-DTL-83733 CONNECTORS) |                                       |                         |