

# SPECIFICATION CONTROL DRAWING

CONTACTS, ELECTRICAL CONNECTOR, PIN  
 SOLDERTACT<sup>®</sup>, REMOVABLE, TWISTED PAIR, SHIELDED,  
 SIZE 12, M39029/28 TYPE  
 (FOR MIL-C-38999 SERIES I, II, III AND IV CONNECTORS)

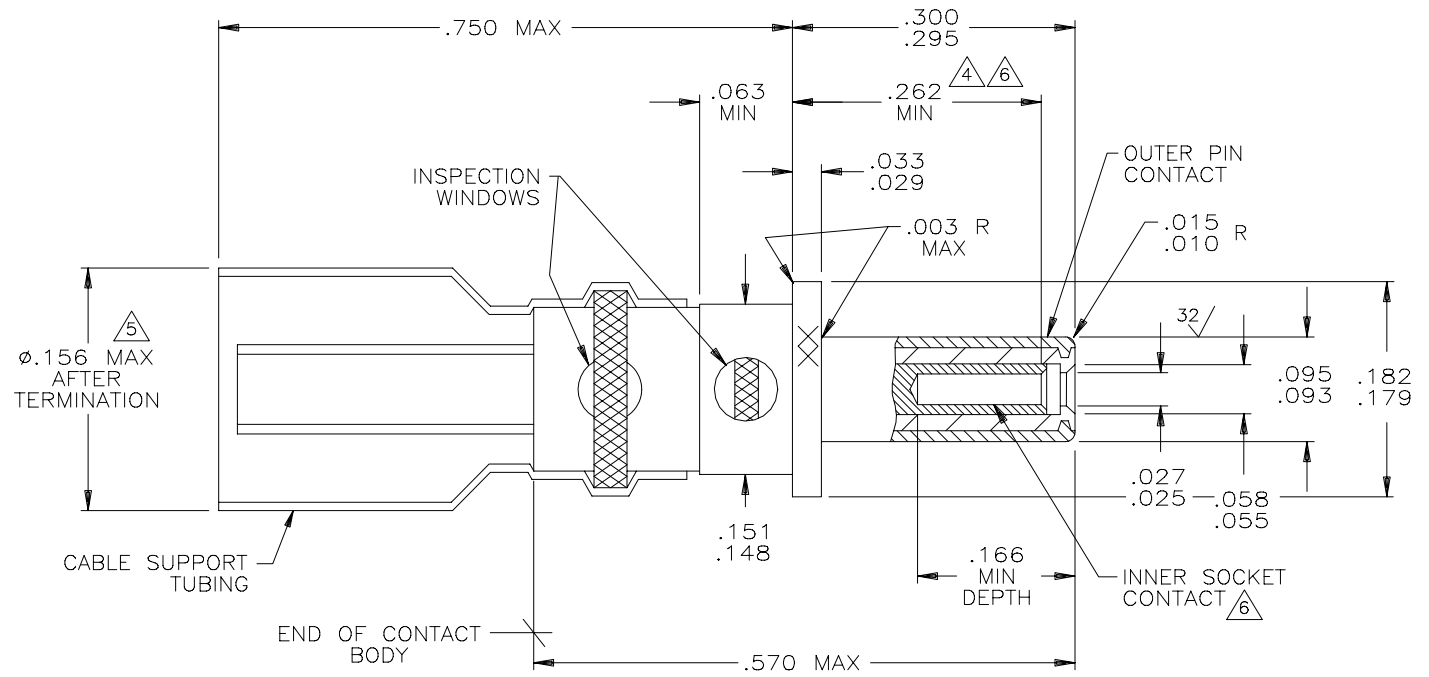


FIGURE 1.

1. DIMENSIONS ARE IN INCHES.
2. METRIC EQUIVALENTS CAN BE CALCULATED BASED UPON 1.00 INCH=25.4 m.m.
3. DIMENSIONS SHOWN APPLY AFTER PLATING.
- ④ POINT AT WHICH A SQUARE ENDED PIN OF THE SAME BASIC DIAMETER AS THE MATING CONTACT FIRST ENGAGES THE INNER CONTACT SPRING. PROVISION FOR CLEARANCE HOLE SHALL BE PROVIDED.
- ⑤ SLEEVE RECOVERY: THE DIAMETER OF THE SHRINK TUBING OVER THE CABLE SHALL NOT EXCEED THE DIAMETER SHOWN.
- ⑥ MATES WITH .0205/.0195 DIAMETER PIN.
7. CONTACT WEIGHT: 0.560 GRAMS MAXIMUM UNTERMINATED.

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UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES.  
 METRIC DIMENSIONS ARE  
 IN BRACKETS.

DECIMALS  
 .XXX ± [ mm]  
 .XX ± [ mm]  
 ANGLES ±

|                           |                              |                       |                                    |                                       |
|---------------------------|------------------------------|-----------------------|------------------------------------|---------------------------------------|
| PREPARED BY:<br><i>TJ</i> | CAD NAME:<br><i>XX1462-1</i> | CHECKED:<br><i>ZT</i> | APPROVED:<br><i>CP</i><br>DEV MGR. | DOCUMENT NUMBER:<br><i>D-602-0146</i> |
| DATE:                     | DATE:                        | DATE:                 | DATE:                              | SHEET 1 of 5                          |

# SPECIFICATION CONTROL DRAWING

**REQUIREMENTS:**

DIMENSIONS (FIGURE 1), DESIGN CHARACTERISTICS, AND CONFIGURATION MEET THE REQUIREMENTS OF M39029/28 EXCEPT THAT THE TEMPERATURE RATING IS 125°C INSTEAD OF 200°C, TERMINATION IS BY SOLDERING INSTEAD OF CRIMPING, AND THE CABLE ACCOMODATED IS TWISTED PAIR INSTEAD OF COAXIAL. SEE TABLE I FOR CABLE ACCOMODATIONS.

THIS CONTACT IS QUALIFIED TO RAYCHEM SPECIFICATION D-6002.

MATING CONTACT: D-602-0147 (M39029/75)

TOOLS: SEE TABLE II.

TABLE I. DESIGN CHARACTERISTICS

| CABLE ACCOMODATED <u>1/</u>                                       | CONTACT CAVITY SIZE | TYPE | CLASS |
|---|---------------------|------|-------|
| TWISTED PAIR 22 AWG<br>TWISTED PAIR 24 AWG<br>TWISTED PAIR 26 AWG | 12                  | D    | A     |

1/ OTHER APPLICATIONS USING DIFFERENT CABLES MAY BE ACCOMODATED. CONSULT CONTACT MANUFACTURER FOR DETAILS.

TABLE II. TOOLS

| HEATING TOOLS<br><u>2/</u> | REFLECTORS<br><u>2/</u>          | STANDARD FIXTURE <u>2/</u> |            | REPAIR FIXTURE<br><u>2/</u> | INSTALLING TOOLS                  | REMOVAL TOOLS                     | FOLDING TOOL |
|----------------------------|----------------------------------|----------------------------|------------|-----------------------------|-----------------------------------|-----------------------------------|--------------|
|                            |                                  | BASIC FIXTURE              | ADAPTER    |                             |                                   |                                   |              |
| AA-400<br>SUPER<br>HEATER  | #979663<br>MINI SOLDER<br>SLEEVE | AD-1319<br>OR<br>AD1567    | AT-1319-24 | AD-1566                     | M81969/8-09<br>OR<br>M81969/14-04 | M81969/8-10<br>OR<br>M81969/14-04 | AD-1575-1    |
| CV-5300<br>MINI GUN        | MG-1<br>SOLDERSLEEVE             |                            |            |                             |                                   |                                   |              |

2/ SEE TERMINATION PROCEDURE: RAYCHEM ES-61218

# SPECIFICATION CONTROL DRAWING

## ASSEMBLY INSTRUCTIONS

1. STRIP CABLE AS SHOWN ON FIGURE 2.
2. INSERT CABLE INTO CONTACT UNTIL IT IS FULLY SEATED.
3. HEAT CONTACT WITH APPROPRIATE TOOLS AS SHOWN ON TABLE II UNTIL SOLDER MELTS AND FLOWS AND STRAIN RELIEF TUBING CONFORMS TO CABLE.
4. SEE TABLE I FOR CABLE ACCOMMODATION.

### TWISTED PAIR CABLE ACCOMODATION

1. SOLDERCONTACTS CONTACTS CAN BE TERMINATED TO TWISTED-PAIR CABLE OF THE FOLLOWING CONSTRUCTION

SIZE.....AWG 22 THROUGH AWG 26  
 PLATING.....TIN OR SILVER  
 CONSTRUCTION.....SOLID OR STRANDED  
 INSULATION DIAMETER.....0.055 INCH, MAXIMUM

### PREPARATION OF TWISTED PAIR CABLE

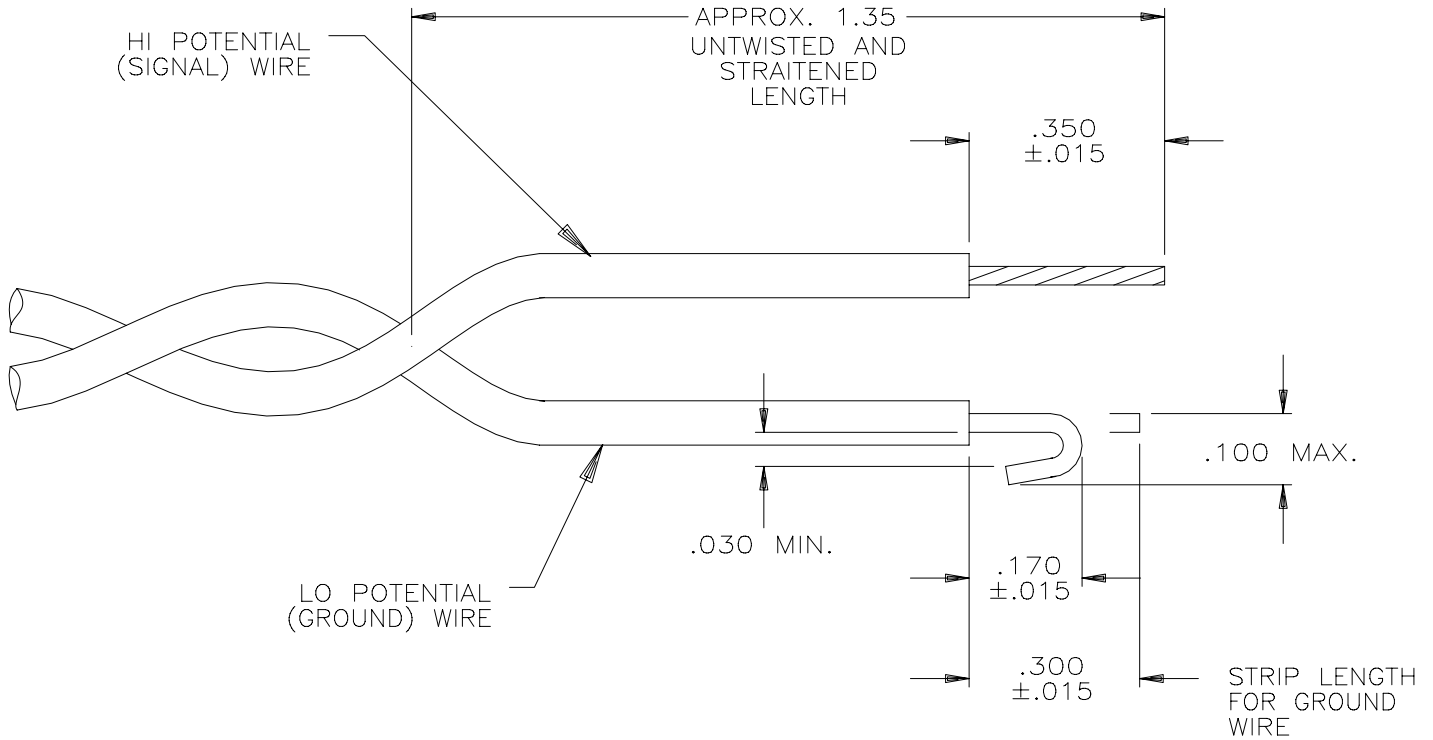


FIGURE 2

|                                       |              |
|---------------------------------------|--------------|
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## SPECIFICATION CONTROL DRAWING

CONTACT ENGAGEMENT AND SEPARATION FORCES (INNER SOCKET CONTACT ONLY): THE ENGAGEMENT DEPTH SHALL BE AS ENCOUNTERED IN NORMAL SERVICE. THE TEST PINS SHALL BE IN ACCORDANCE WITH MS3197 EXCEPT THE DIAMETERS SHALL BE AS SPECIFIED IN THE FOLLOWING, AND SURFACE ROUGHNESS SHALL NOT EXCEED 3 MICROINCHES. PROVISIONS FOR CLEARANCE HOLE SHALL BE PROVIDED.

TABLE III

| TEST PIN DIAMETER (INCH)                             | MINIMUM SEPERATION FORCE (OUNCES) |                    | MAXIMUM ENGAGEMENT FORCE (OUNCES) |                    |
|--|-----------------------------------|--------------------|-----------------------------------|--------------------|
|  | INITIAL                           | AFTER CONDITIONING | INITIAL                           | AFTER CONDITIONING |
| .0205 $\begin{matrix} +.0002 \\ -.0000 \end{matrix}$ | N/A                               | N/A                | 12.0                              | 14.0               |
| .0195 $\begin{matrix} +.0000 \\ -.0002 \end{matrix}$ | 0.5                               | 0.4                | N/A                               | N/A                |

DIELECTRIC WITHSTANDING VOLTAGE (APPLIED BETWEEN INNER AND OUTER CONTACT):  
TEST VOLTAGE:

AT SEA LEVEL:            1000 VAC. RMS.  
AT 50,000 FEET:         250 VAC. RMS.

CONTACT RESISTANCE: SEE TABLE IV.

TABLE IV. CONTACT RESISTANCE

| TEST CABLE       | MAXIMUM VOLTAGE DROP (MILLIVOLTS)                                   |       |   |       |  |       | TEST CURRENT (AMPS) |       |
|------------------|---|-------|---|-------|--|-------|---------------------|-------|
|                  | $25^{\circ} \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} C$ |       | $25^{\circ} \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} C$ <u>3/</u> |       | $125^{\circ} \begin{matrix} +3^{\circ} \\ -0^{\circ} \end{matrix} C$ |       |                     |       |
|                  | CONTACT   |       | CONTACT   |       | CONTACT  |       | CONTACT             |       |
|                  | INNER   | OUTER | INNER   | OUTER | INNER  | OUTER | INNER               | OUTER |
| 22 AWG T.P./TC   | 73  | 73    | 88  | 88    | 110  | 110   | 5                   | 5     |
| 24 AWG T.P./TC   | 55  | 55    | 66  | 66    | 83   | 83    | 3                   | 3     |
| 26 AWG T.P./TC   | 52  | 52    | 63  | 63    | 80   | 80    | 2                   | 2     |
| 22 AWG T.P./SHSC | 73  | 73    | 88  | 88    | 110  | 110   | 5                   | 5     |
| 24 AWG T.P./SHSC | 55  | 55    | 66  | 66    | 83   | 83    | 3                   | 3     |
| 26 AWG T.P./SHSC | 52  | 52    | 63  | 63    | 80   | 80    | 2                   | 2     |

3/ AFTER CONDITIONING.

TC = TIN PLATED COPPER  
 TP = TWISTED PAIR WIRE  
 SHSC = SILVER PLATED HIGH STRENGTH COPPER

DOCUMENT NUMBER:

D-602-0146

# SPECIFICATION CONTROL DRAWING

LOW SIGNAL LEVEL CONTACT RESISTANCE (INNER CONTACT ONLY): SEE TABLE V.  
TENSILE STRENGTH (INNER AND OUTER CONTACT SOLDER JOINT): SEE TABLE V.

TABLE V. LOW SIGNAL LEVEL CONTACT RESISTANCE  
(INNER CONTACT ONLY) AND TENSILE STRENGTH

| TEST CABLE       | MAXIMUM CONTACT RESISTANCE (MILLIOHMS) |                    | MINIMUM TENSILE STRENGTH (POUNDS) |               |
|------------------|--|--------------------|-----------------------------------|---------------|
|                  | INITIAL                                | AFTER CONDITIONING | INNER CONTACT                     | OUTER CONTACT |
| 22 AWG T.P./TC   | 15                                     | 18                 | 12                                | 12            |
| 24 AWG T.P./TC   | 20                                     | 24                 | 8                                 | 8             |
| 26 AWG T.P./TC   | 31                                     | 38                 | 5                                 | 5             |
| 22 AWG T.P./SHSC | 15                                     | 18                 | 12                                | 12            |
| 24 AWG T.P./SHSC | 20                                     | 24                 | 8                                 | 8             |
| 26 AWG T.P./SHSC | 31                                     | 38                 | 5                                 | 5             |

TC = TIN PLATED COPPER  
TP = TWISTED PAIR WIRE  
SHSC = SILVER PLATED HIGH STRENGTH COPPER

|           |   |   |
|-----------|---|---|
| MATERIAL: | CONTACT BODY                                | BERYLLIUM COPPER, ALLOY 173, CONDITION H PER ASTM B196  |
|           | INNER CONTACT                               | BERYLLIUM COPPER, ALLOY 173, CONDITION H PER ASTM B196  |
|           | PLATING<br>(CONTACT BODY AND INNER CONTACT) | GOLD PLATE PER MIL-G-45204 TYPE II, GRADE C 50 MICROINCHES MINIMUM OVER<br>NICKEL PER QQ-N-290A 50 MICROINCHES MINIMUM OVER<br>COPPER STRIKE - 40 MICROINCHES MAXIMUM |
|           | SOLDER                                      | Sn63 PER QQ-S-571   |
|           | FLUX  | TYPE RMA PER QQ-S-571   |
|           | SHRINK TUBING                               | HEAT-SHRINKABLE, RADIATION-CROSSLINKED POLYVINYLIDENE FLUORIDE  |
|           | DIELECTRIC                                  | ETFE FLUOROPOLYMER PER ASTM D3159   |

SHIPPING      FIGURE 1 INDICATES THE ONE-PIECE ASSEMBLY. TERMINATION INSTRUCTIONS ARE TO BE SHIPPED WITH THE UNIT PACKAGE.

|   |              |
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