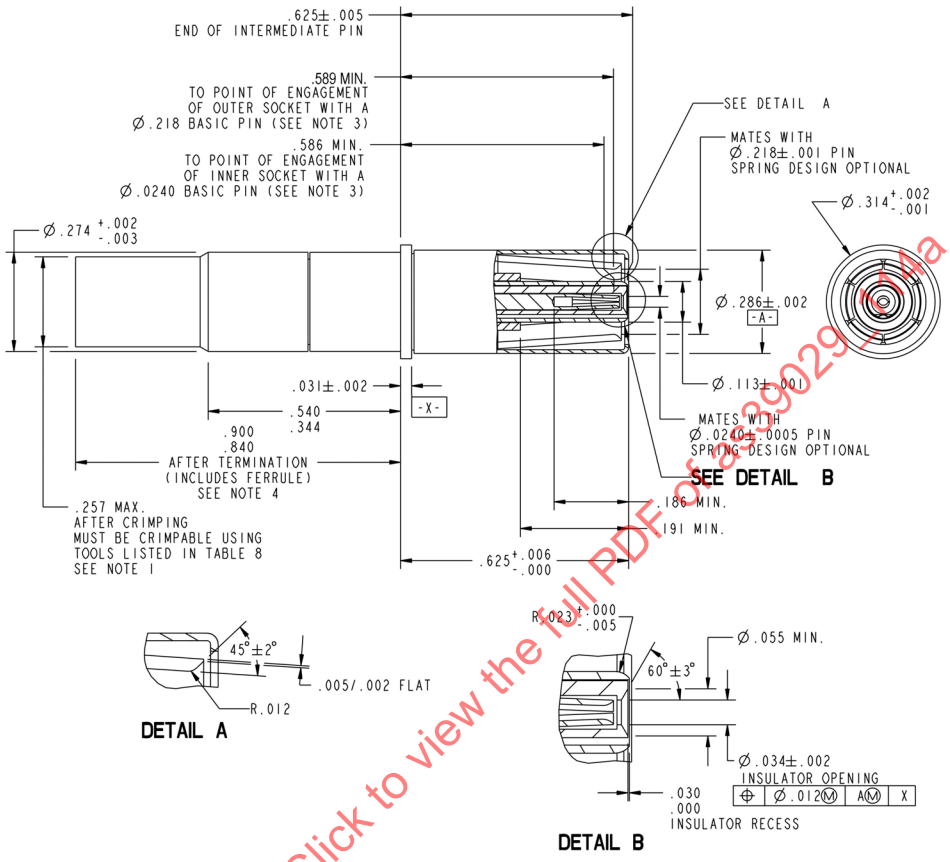
FEDERAL SUPPLY CLASS
5935

RATIONALE

THIS DOCUMENT UPDATED TO ADD GO/NO-GO CALIBRATION PINS FOR CRIMP TOOLS, ADD AS9100 REQUIREMENTS, AND CHANGE TO HOODED CONTACT DESIGN.

NOTICE

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



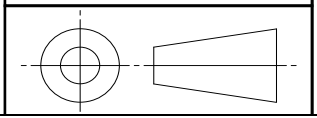
NOTES:

1. DIAMETER SHALL NOT EXCEED 0.276 IN (7.01 MM) OVER RECOVERED HEAT SHRINK BOOT. THIS MEASUREMENT TO BE MADE AFTER THE INSTALLATION OF THE BOOT. (SEE DRAWING AND FIGURE 5.)
2. DIMENSIONS SHOWN AFTER PLATING. THE DIMENSIONS OF CONTACT BIN CODE 628 AND CONTACT BIN CODE 629 ARE THE SAME. THE DIFFERENCE BETWEEN THE TWO CONTACTS IS THE TOOLING REQUIRED TO TERMINATE THEM. (SEE TABLE 8 AND REQUIREMENT 2.)
3. POINT AT WHICH SQUARE ENDED PIN OF THE SAME BASIC DIAMETER AS THE MATING CONTACT FIRST ENGAGES THE INNER AND OUTER SOCKET CONTACT SPRINGS. (SEE REQUIREMENT 5.) PROVISIONS FOR CLEARANCE HOLE SHALL BE PROVIDED FOR THE OUTER CONTACT TEST PIN. (SEE DRAWING AND FIGURE 6.)
4. MEASUREMENT SHALL BE TAKEN AFTER ASSEMBLY BUT BEFORE INSTALLATION OF THE HEAT SHRINK BOOT. MEASUREMENT SHALL INCLUDE CRIMP FERRULE. (SEE DRAWING.)
5. THE MINIMUM HARDNESS OF THE INSULATOR BETWEEN THE CENTER CONTACT AND THE INTERMEDIATE CONTACT SHALL BE ROCKWELL HARDNESS M90 WHEN TESTED PER ASTM D 785. FOR QUALIFICATON, CERTIFICATION IS REQUIRED. (SEE REQUIREMENT 3.)

FIGURE 1 - CONCENTRIC TWINAX FINAL ASSEMBLY
(SEE REQUIREMENT 2)

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS39029/114A

THIRD ANGLE PROJECTION



ISSUED 2007-01 REVISED 2008-10

CUSTODIAN: SAE AE-8/AE-8C1

PROCUREMENT SPECIFICATION: AS39029

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) CONTACT, ELECTRICAL CONNECTOR, CONCENTRIC TWINAX, SOCKET, SIZE 8, MIL-DTL-38999 SERIES I, III, AND IV

SAE AS39029/114
SHEET 1 OF 12

REV. A

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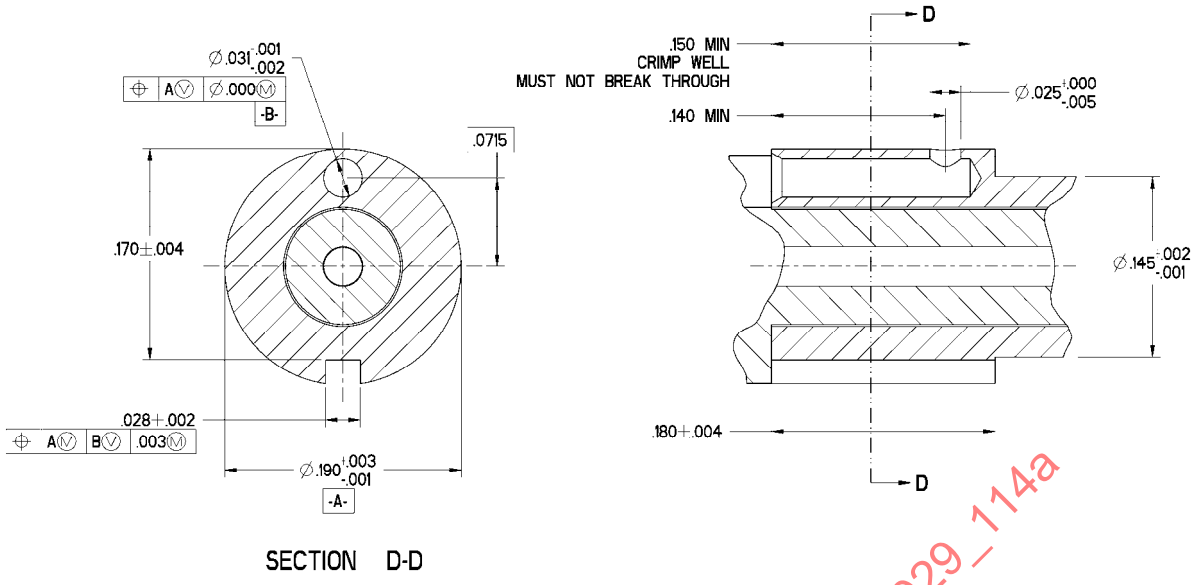


FIGURE 2 - BIN CODE 628: UNASSEMBLED CONCENTRIC TWINAX INTERMEDIATE CONTACT PIECE PART
(SEE REQUIREMENT 2)

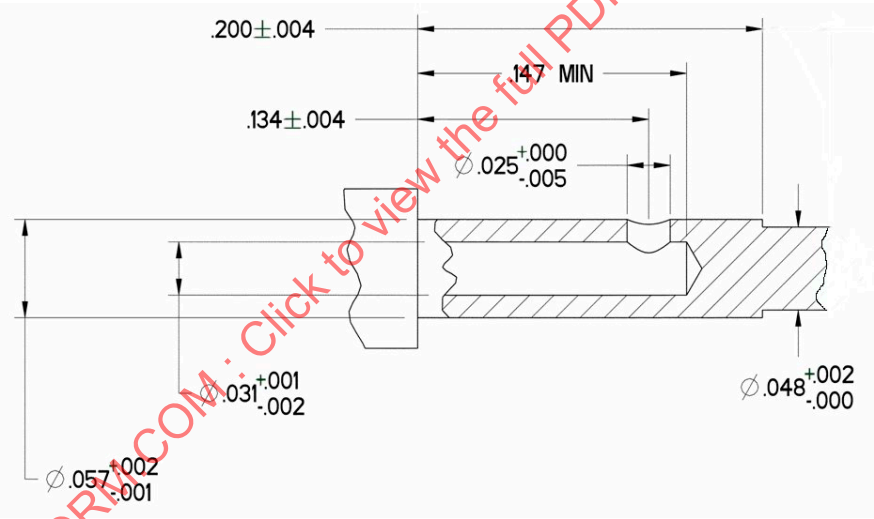
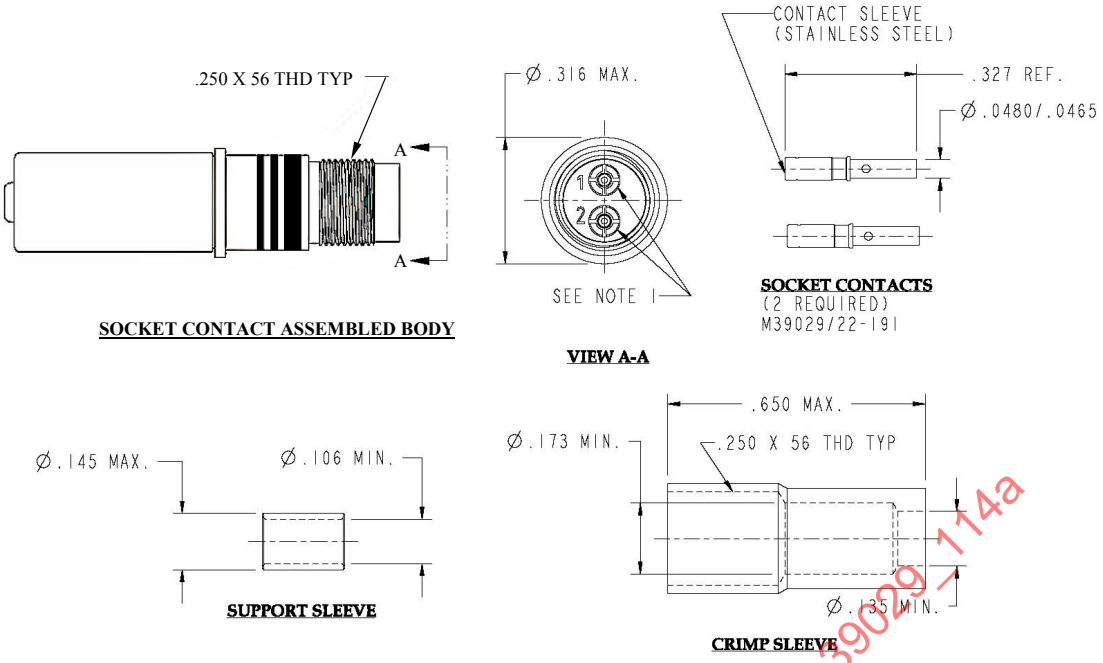


FIGURE 3 - BIN CODE 628: UNASSEMBLED CONCENTRIC TWINAX CENTER CONTACT PIECE PART-CRIMP AREA DETAILS
(SEE REQUIREMENT 2)



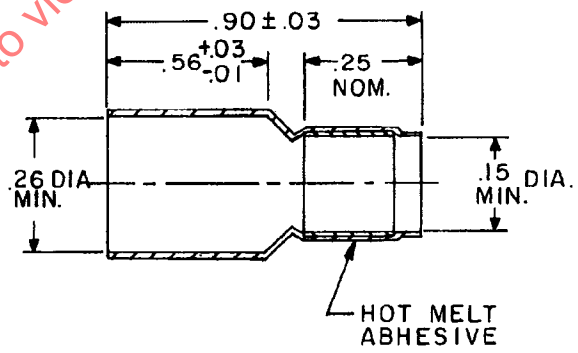
NOTES:

1. CAVITY MARKED "1" CONNECTS TO INNER CONTACT. CONTACT MARKED "2" CONNECTS TO INTERMEDIATE CONTACT.

2. CONTACTS MAY BE INSERTED BY HAND. CONTACTS MAY BE REMOVED USING MIL-I-81969/14-1 INSERTION/EXTRACTION TOOL.

FIGURE 4 - BIN CODE 629: UNASSEMBLED CONCENTRIC TWINAX PIECE PARTS (SEE REQUIREMENT 2)

INCHES	MM
.00	0.
.010	0.25
.03	0.8
.15	3.8
.25	6.4
.56	14.2
.90	22.9



NOTES:

1. DIMENSIONS ARE IN INCHES.

2. METRIC EQUIVALENTS ARE GIVEN FOR GENERAL INFORMATION ONLY.

3. ONE BOOT SHALL BE PROVIDED WITH EACH ASSEMBLY (FIGURE 1). REPLACEMENT BOOTS MAY BE ORDERED BY THE PART NUMBER SPECIFIED IN TABLE 9.

FIGURE 5 - HEAT SHRINK BOOT

REQUIREMENTS:

1. QUALIFICATION: CONTACTS SHALL COMPLY WITH THE REQUIREMENTS OF AS39029. CONTACTS SHALL BE QUALIFIED USING THE TOOLING DEFINED IN TABLE 8. MATERIAL CERTIFICATIONS ARE REQUIRED.

   THE MANUFACTURER'S RELIABILITY ASSURANCE PROGRAM FOR AS39029/114 AND ASSEMBLY PROCEDURES SHALL COMPLY WITH THE AS9100 AEROSPACE STANDARD FOR QUALITY MANAGEMENT SYSTEM REQUIREMENTS. OTHER ESTABLISHED AND INDUSTRY RECOGNIZED QUALITY ASSURANCE STANDARDS THAT ASSURE ALL PRODUCTS PRODUCED CONFORM TO THE CONTRACT REQUIREMENTS ARE ACCEPTABLE. HOWEVER, IF USED, IT IS THE RESPONSIBILITY OF THE MANUFACTURER TO PROVIDE EVIDENCE OF COMPLIANCE TO AS9100. THE QUALIFYING ACTIVITY (QA) AUTHORITY RESERVES THE RIGHT TO MONITOR, MEASURE, AND VALIDATE COMPLIANCE AT THEIR DISCRETION.

2. DESIGN AND CONSTRUCTION:

   THE MAXIMUM NUMBER OF PIECE PARTS IN THE ASSEMBLED CONTACT (FIGURE 1), EXCLUDING THE HEAT SHRINK BOOT, SHALL NOT EXCEED FIVE. THE CONTACT SHALL BE PROVIDED AS UNASSEMBLED PIECE PARTS IN ONE OF TWO DIFFERENT CONFIGURATIONS (BIN CODE 628 OR 629). BOTH CONFIGURATIONS ARE INTERCHANGEABLE IN THE FINAL ASSEMBLY (FIGURE 1). SOME PIECE PARTS OF BIN CODE 628 (FIGURES 2 AND 3) AND BIN CODE 629 (FIGURE 4) REQUIRES DIFFERENT CRIMP TOOLS PRIOR TO FINAL ASSEMBLY (SEE TABLE 8). SEE TABLE 1 FOR DESIGN CHARACTERISTICS.

   ALL DIMENSIONS SHOWN AS INCHES AND APPLY AFTER PLATING.

TABLE 1 - DESIGN CHARACTERISTICS

BIN CODE	COLOR BANDS			CONTACT CAVITY SIZE	CABLE ACCOMMODATED	TYPE	CLASS
	1ST	2ND	3RD				
628	BLUE	RED	VIOLET	8	M17/176-00002	D	B
629	BLUE	RED	GRAY	8	M17/176-00002	D	B

   ASSEMBLY PROCEDURE: MANUFACTURER'S RECOMMENDED ASSEMBLY INSTRUCTIONS, INCLUDING AN EXPLODED VIEW OF THE ASSEMBLY, SHALL BE SHIPPED WITH UNIT PACKAGE.

3. MATERIAL:

   THE MINIMUM HARDNESS OF THE INSULATOR BETWEEN THE CENTER CONTACT AND THE INTERMEDIATE CONTACT SHALL BE ROCKWELL HARDNESS M90 WHEN TESTED PER ASTM D 785.

   HEAT SHRINK BOOT: SHALL BE IN ACCORDANCE WITH SAE AMS-DTL-23053/8.

4. ELECTRICAL:

   LOW SIGNAL LEVEL CONTACT RESISTANCE (CENTER AND INTERMEDIATE CONTACTS ONLY): SEE TABLE 2.

TABLE 2 - LOW SIGNAL LEVEL CONTACT RESISTANCE (CENTER AND INTERMEDIATE CONTACTS ONLY)

BIN CODE	CABLE ACCOMMODATED	MAXIMUM CONTACT RESISTANCE (MILLIOHMS)	
		INITIAL	AFTER CONDITIONING
ALL	M17/176-00002	55	66

   CONTACT RESISTANCE: SEE TABLE 3.

TABLE 3 - CONTACT RESISTANCE

BIN CODE	CONTACT	CABLE ACCOMMODATED	TEST CURRENT (AMPERES)	MAXIMUM VOLTAGE DROP (MILLIVOLTS)		
				25 °C, +3 °C, -0 °C		+175 °C, +3 °C, -0 °C
				INITIAL	AFTER CONDITIONING	AFTER CONDITIONING
ALL	CENTER	M17/176-00002	1.0	55	66	94
ALL	INTERMEDIATE	M17/176-00002	1.0	55	66	94
ALL	OUTER	M17/176-00002	12.0	75	90	128

DIELECTRIC WITHSTANDING VOLTAGE: SHALL BE AS SPECIFIED IN TABLE 4.

TABLE 4 - DIELECTRIC WITHSTANDING VOLTAGE

CONTACTS	TEST VOLTAGE (AC RMS)	
	SEA LEVEL	70000 FEET
CENTER TO INTERMEDIATE	1000	250
INTERMEDIATE TO OUTER	500	250

5. MECHANICAL:

CONTACT ENGAGEMENT AND SEPARATION FORCE: THE ENGAGEMENT AND SEPARATION FORCES SHALL BE TESTED WITH PINS INSERTED A MINIMUM OF .070 IN. THE TEST PINS SHALL BE IN ACCORDANCE WITH FIGURES 6 AND 7. ENGAGEMENT AND SEPARATION FORCES SHALL BE IN AS SPECIFIED IN TABLE 5

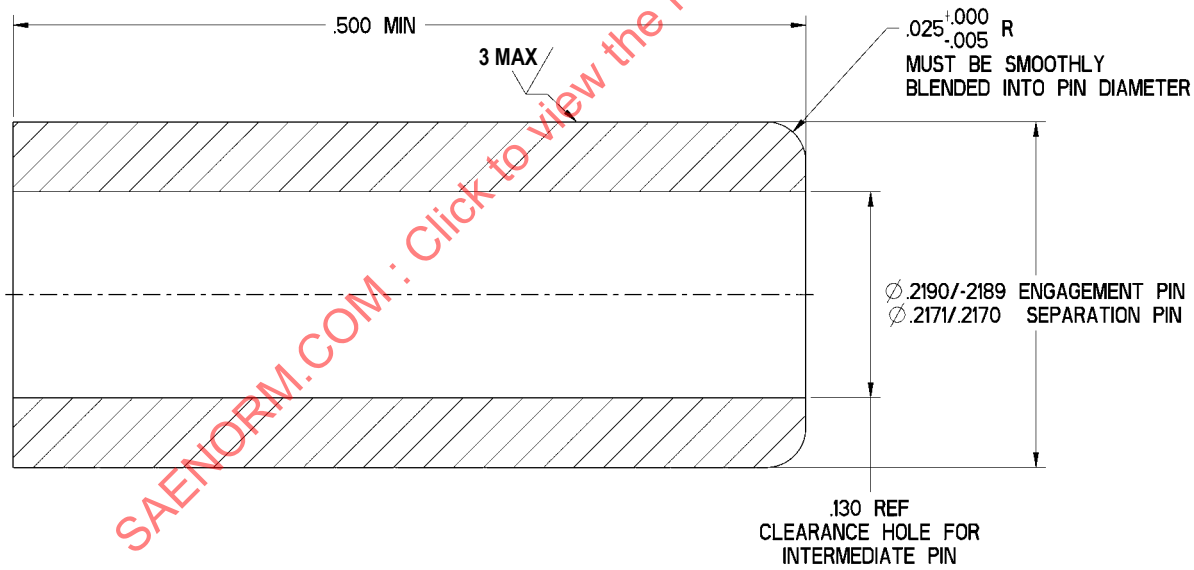


FIGURE 6 - OUTER SOCKET ENGAGEMENT AND SEPARATION TEST PIN DIMENSIONS

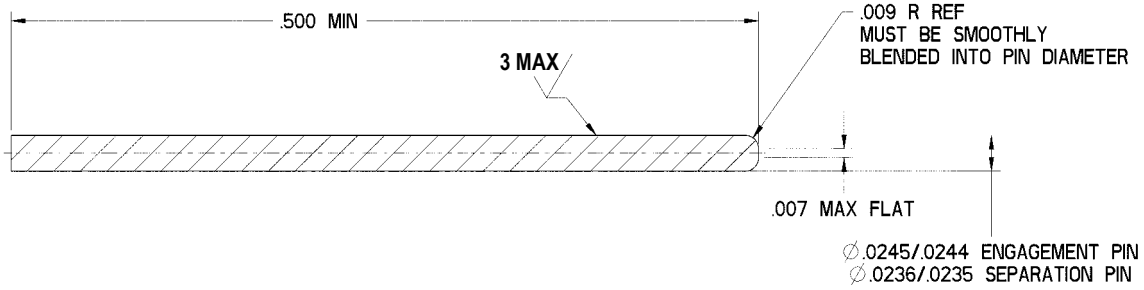


FIGURE 7 - INNER SOCKET ENGAGEMENT AND SEPARATION TEST PIN DIMENSIONS

TABLE 5 - CONTACT ENGAGEMENT AND SEPARATION FORCE

TEST PIN DIAMETER (INCH)	MINIMUM SEPARATION FORCE (OUNCES)		MAXIMUM ENGAGEMENT FORCE (OUNCES)		MAXIMUM AVERAGE ENGAGEMENT FORCE
	INITIAL	AFTER CONDITIONING	INITIAL	AFTER CONDITIONING	
.2190 +.0000 −.0001	NA	NA	48	60	NA
.2170 +.0001 −.0000	3.0	2.0	NA	NA	NA
.0245 +.0000 −.0001	NA	NA	12	14	NA
.0235 +.0001 −.0000	0.5	0.4	NA	NA	NA

CRIMP TENSILE STRENGTH (CENTER, INTERMEDIATE, AND OUTER CONTACT CRIMP JOINT): SEE TABLE 6.

TABLE 6 - CRIMP TENSILE STRENGTH (AT AMBIENT)

BIN CODE	CABLE ACCOMMODATED	AXIAL LOAD (POUNDS, MINIMUM)		
		CENTER CONTACT	INTERMEDIATE CONTACT	OUTER CONTACT
628	M17/176-00002	8	8	25
629	M17/176-00002	8	8	25

6. VIBRATION: THE VIBRATION SHALL BE IN ACCORDANCE WITH AS39029 EXCEPT TEST CONDITION IV SHALL BE TEST CONDITION V. USE THE VIBRATION ENVELOPE SHOWN ON FIGURE 8.

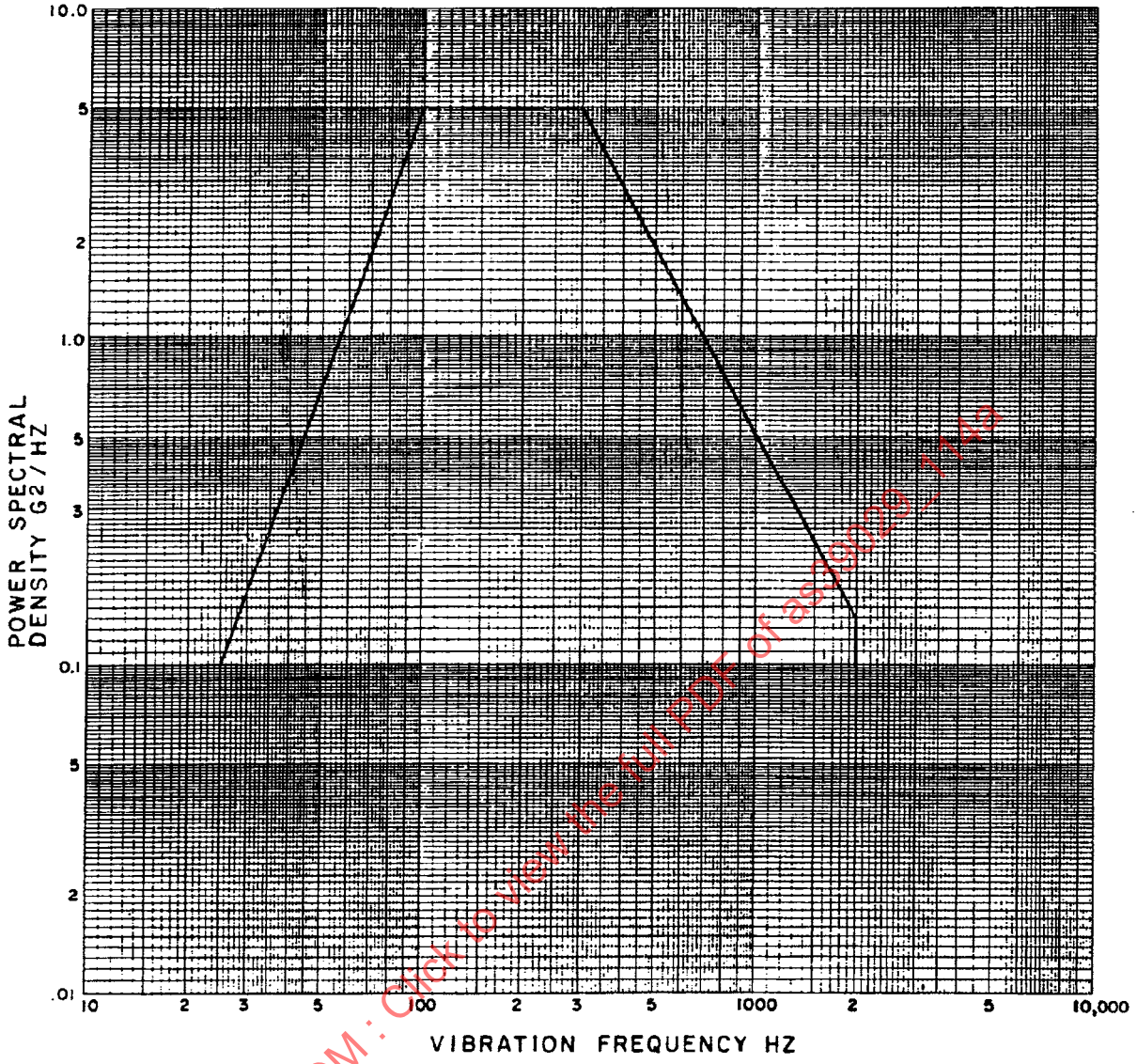


FIGURE 8 - VIBRATION ENVELOPE

7. SHOCK: THE SHOCK TEST SHALL BE RUN PER THE REQUIREMENTS OF MIL-DTL-38999 FOR SERIES III CONNECTORS. THE TEST SHALL BE RUN USING A MATED CONNECTOR PAIR WITH 25-20 INSERTS PER MIL-STD-1560. ALL THREE SIZE 8 CAVITIES ON THE PIN SIDE OF THE INTERFACE SHALL CONTAIN AS39029/113 CONTACTS AND ALL THREE SIZE 8 CAVITIES ON THE SOCKET SIDE OF THE INTERFACE SHALL CONTAIN AS39029/114 CONTACTS. AT LEAST 80% OF THE REMAINING CONTACTS MUST BE WIRED.

8. TOOLS: SHALL BE AS SPECIFIED IN TABLES 7 AND 8

TABLE 7 - TOOLS (INSTALLING AND REMOVAL)

BIN CODE	INSTALLING AND REMOVAL TOOL
ALL	M81969/14-12

TABLE 8 - CRIMPING TOOLS (SEE APPENDIX A)

BIN CODE	CENTER CONTACT TOOLING		INTERMEDIATE CONTACT TOOLING		OUTER CRIMP SLEEVE TOOLING	
	BASIC CRIMPING TOOL	CONTACT POSITIONER	BASIC CRIMPING TOOL	DIE PART NO.	BASIC CRIMPING TOOL	DIE PART NO.
628	M22520/2-01	M22520/2-37	M22520/5-01	M22520/5-105	M22520/5-01	M22520/5-105

BIN CODE	WIRE CONTACT TOOLING		CRIMP SLEEVE TOOLING	
	BASIC CRIMPING TOOL	CONTACT POSITIONER	BASIC CRIMPING TOOL	DIE PART NO.
629	M22520/2-01	M22520/2-38	M22520/5-01	M22520/5-106

9. PART NUMBER: SEE TABLE 9.

TABLE 9 - PART NUMBER

BIN CODE	PART NUMBER	BOOT PART NUMBER
628	M39029/114-628	M39029/114-BT1
629	M39029/114-629	M39029/114-BT1

APPLICATION NOTES:

1. THIS CONTACT IS DESIGNED FOR USE IN MIL-DTL-38999 SERIES I, III, AND IV CONNECTORS WITH 25-20 INSERTS PER MIL-STD-1560.

2. TEMPERATURE RATING: -65 TO +175 °C

3. CONTACT M39029/114-628 AND M39029/114-629 MAY BE USED IN PLACE OF M39029/91-530 WHERE THE LATTER IS SPECIFIED ON THE ENGINEERING DRAWING. CONTACT M39029/114-629 USES DIFFERENT TERMINATION TOOLING THAN THAT REQUIRED BY THE M39029/91-530 AND M39029/114-628.

4. CONTACT MATES DIRECTLY INTO AN AS39029/113 PIN AS SHOWN IN TABLE 10.

TABLE 10 - CONTACT MATING PART NUMBERS

AS39029/114 BIN CODE	MATING AS39029 BIN CODE
628	M39029/113-625 M39029/113-626 M39029/90-529
629	M39029/113-625 M39029/113-626 M39029/90-529

5. INSERTION LOSS NOT APPLICABLE.

SPECIFICATION NOTE:

1. A CHANGE BAR (I) LOCATED IN THE LEFT MARGIN IS FOR THE CONVENIENCE OF THE USER IN LOCATING AREAS WHERE TECHNICAL REVISIONS, NOT EDITORIAL CHANGES, HAVE BEEN MADE TO THE PREVIOUS ISSUE OF THIS DOCUMENT. AN (R) SYMBOL TO THE LEFT OF THE DOCUMENT TITLE INDICATES A COMPLETE REVISION OF THE DOCUMENT, INCLUDING TECHNICAL REVISIONS. CHANGE BARS AND (R) ARE NOT USED IN ORIGINAL PUBLICATIONS, NOR IN DOCUMENTS THAT CONTAIN EDITORIAL CHANGES ONLY.

APPENDIX A - REQUIRED TOOLING

POSITIONERS, DIES, AND GAGES ARE INCLUDED IN THIS SPECIFICATION FOR REFERENCE ONLY. WHEN THEY BECOME PUBLISHED IN MIL-DTL-22520, AND A QPL SOURCE IS ESTABLISHED, APPENDIX A WILL BE SUPERSEEDED, AND NO LONGER VALID. UNTIL THAT TIME, POSITIONERS, DIES, AND GAGES OBTAINED FROM KNOWN MIL-DTL-22520 SOURCES MAY BE USED WITH QPL LISTED TOOL FRAMES TO TERMINATE THESE CONTACTS.

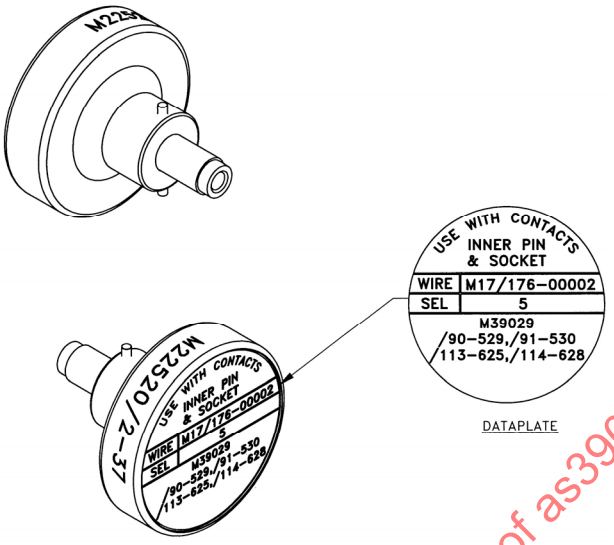


FIGURE 1 - GRAPHIC OF M22520/2-37 POSITIONER

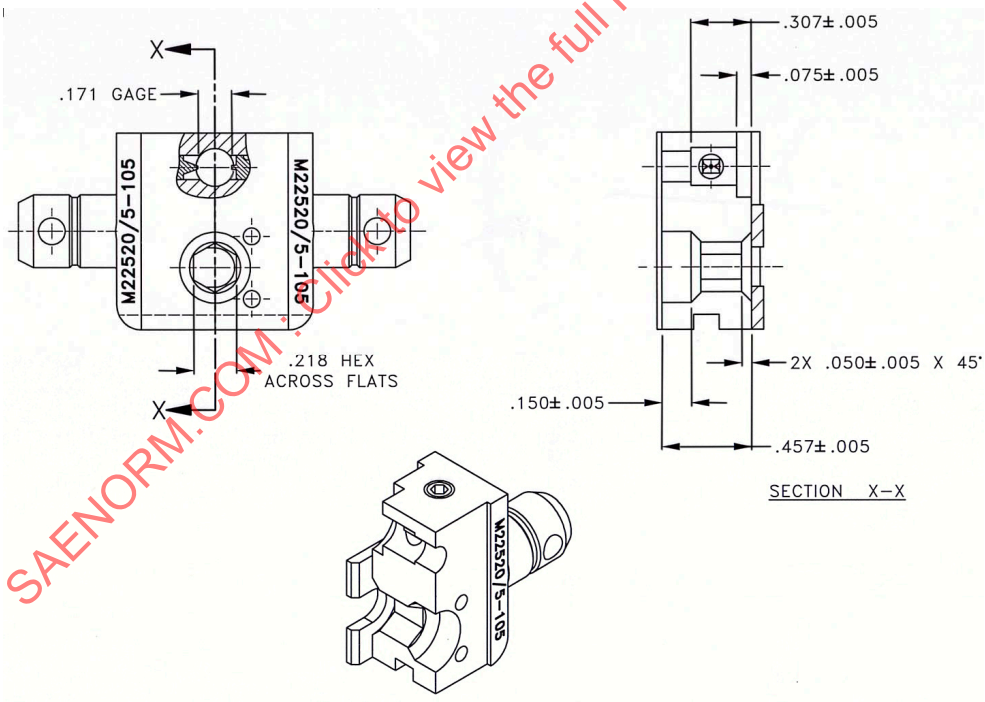


FIGURE 2 - GRAPHIC OF M22520/5-105 DIE