

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
-	RELEASED	3/16/92	<i>[Signature]</i>

SHEET REVISION STATUS																				
SH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SH	41	42	43	44	45	46	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV	--	--	--	--																

ORIGINATOR T.J. Perry/Paramax	<i>T.J. Perry</i>	DATE 3/6/92	FSC: 5935
APPROVED S.E. Archer-Davies/Paramax	<i>[Signature]</i>	3/6/92	Contacts, Power and Coaxial, Removable, for Electrical Connectors, (Sizes 1, 2 and 3) For Space Flight Use, Detail Specification For
CODE 311 APPROVAL S.A. Naus/GSEC	<i>[Signature]</i>	3/4/92	
CODE 311 SUPERVISORY APVL G.P. Kramer, Jr./GSFC	<i>[Signature]</i>	3/16/92	
ADDITIONAL APPROVAL			S-311-P-718/2

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 GODDARD SPACE FLIGHT CENTER
 GREENBELT, MARYLAND 20771

CAGE CODE: 25306

1. SCOPE

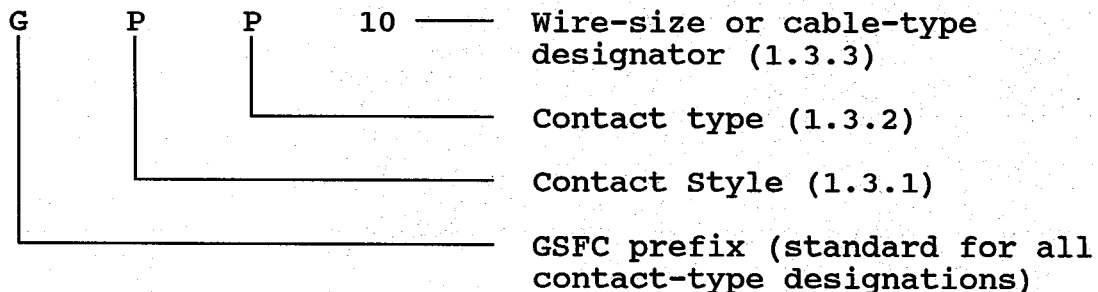
1.1 Purpose. This specification covers the detail provisions for rear-insertable and rear-removable contacts for use with electrical connectors covered by detail specification GSFC S-311-P-718/1, GSFC S-311-P-718/3, S-311-P-718/5, and S-311-P-718/6. Table I lists the contact styles and the method of conductor attachments.

Table I. Conductor - contact attachment.

Contact Style	Method of Attachment	
	Solder	Crimp
Power (Size 8) (Size 16) (Size 20) (Size 22)	Not Applicable	X
Coaxial (Connector sizes 1 & 3)	Center Contact	Outer Braid
Triaxial (Connector Size 2)	Not Applicable	X
Data Bus (Connector Size 2)	Not Applicable	X
Coaxial (Connector Size 2)	Not Applicable	X

1.2 GSFC specifications. Unless otherwise noted, all contact provisions and requirements of general specifications GSFC S-311-P-718 and detail specifications GSFC S-311-P-718/1, GSFC S-311-P-718/3, GSFC S-311-P-718/5 and GSFC S-311-P-718/6 apply to this specification.

1.3 Contact-type designations. Contacts shall ordered only by the following type designations:



1.3.1 Contact style. Select contact style from Table I (P for power, C for coaxial, T for triaxial, D for data bus).

1.3.2 Contact type. (See Table II) Select the contact type from the following tabulation:

- a. Power; P for pin; S for socket (Figures 1, 2, 3, 4, 7, 8, 9 and 10)
- b. Coaxial, triaxial and data bus; P for pin; S for socket (Figures 5, 6, 11, 12, 13, and 14)

NOTE

1. The coaxial, triaxial, and data bus plugs contain the pin center contact; the receptacle (jack) contains the socket center contact.
2. All Coaxial, Connector Sizes 1 & 3, and Coaxial (RG-122/U), Connector Size 2.
Coaxial plugs (center pin contacts) shall only be installed in plug connector halves. Coaxial receptacles (jacks) (center socket contacts) shall only be installed in receptacle connector halves.
3. All Coaxial, Triaxial and Data Bus, Connector Size 2, except Coaxial (RG-122/U).
Coaxial, triaxial and data bus (except coaxial RG-122/U) plugs (center pin contact) shall only be installed in receptacle connector halves. Coaxial, triaxial and data bus receptacles (except RG-122/U) jacks (center socket contacts) shall only be installed in plug connector halves.

1.3.3 Wire-size or cable-type accommodation. Select the wire size or cable-type designator from Table II.

1.3.4 Contact inactivation.

- a. After 1/1/87, contact-type designations GPP10; GPP11; GPP16; GPP12; and GPP13 are inactivated for new design. They are replaced by GPP17; GPP18; GPP19; GPP20 and GPP21 respectively. The replacement contacts are interchangeable and intermateable with their counterparts.
- b. After 9/1/89, contact-type designations GPS12 and GPS13 are inactivated for new design. They are replaced by GPS20 and GPS21 respectively. The replacement contacts are interchangeable and intermateable with their counterparts.

2. APPLICABLE DOCUMENTS (1.2)

The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

2.1 Specifications.

2.1.1 Federal.

L-P-403	Plastic, Molding, Polytetrafluorethylene (TFE-Fluorocarbon)
QQ-C-530	Copper, Beryllium Alloy Bar, Rod and Wire (Copper Alloy Numbers 172 and 173)

2.1.2 Military.

MIL-C-17	Cables, Radio Frequency; Coaxial, Dual Coaxial, Twin Conductor, and Twin Lead
MIL-C-14550	Copper Plating (Electrodeposited)
MIL-W-16878	Wire, Electrical, Insulated, High Temperature
MIL-C-22520	Crimping Tools, Contact, Electric, Hand, General Specification for
MIL-T-22910	Tools, Crimping, Hand, for Crimp Style Electric Terminals and Shield Ferrules
MIL-C-39029	Contacts, Electrical Connector, General Specification for
MIL-I-43553	Ink, Marking, Epoxy Base
MIL-G-45204	Gold Plating (Electrodeposited)
MIL-T-10727	Tin Plating; Electrodeposited or Hot-dipped for Ferrous and Nonferrous Metals

2.1.3 NASA/Goddard.

GSFC S-311-P-718	Connectors, Electrical, Rectangular, (Power and Coaxial Contacts Including EMI Shielding) for Space Flight Use, General Specification for
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GSFC S-311-P-718/1	Connectors, Electrical, Rectangular Polarized Shell, for Space Flight Use, Detail Specification for
GSFC S-311-P-718/3	Connectors, Electrical, Rectangular Polarized Shell, EMI Shielding, (Size 1), for Space Flight Use, Detail Specification for
GSFC S-311-P-718/5	Connectors, Electrical, Rectangular, Polarized Shell, EMI Shielding (Size 2) for Space Flight Use, Specification for
GSFC S-311-P-718/6	Connectors, Electrical, Rectangular, Polarized Shell, EMI Shielding (Size 3) for Space Flight Use, Detail Specification for

2.2 Standards.

MS3197	Gage Pin, for Socket Contact Engagement Test
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-202	Testing Methods for Electronics and Electrical Parts

2.3 Other publications

ASTM B 75	Seamless Copper Tube, Specification for
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2.4 Order of precedence. The order of precedence delineated in the general specification shall apply.

3. REQUIREMENTS (1.2)

3.1 Materials, design and construction. Contacts shall be of the materials, design, construction, and physical dimension as specified herein. They shall be constructed to be used with connectors conforming to specification GSFC S-311-P-718/1, GSFC S-311-P-718/3, GSFC S-311-P-718/5, and GSFC S-311-P-718/6.

3.1.1 Power contact design. The contacts shall be so designed that they will not be damaged while inserting, removal, or by mating and unmating the connectors. They shall be designed for a maximum current rating of 46, 13, 7.5 and 5 amperes for sizes 8, 16, 20 and 22 respectively. Crimp barrels shall be designed to be crimped by the following tools:

Connector Size	Contact Style	Crimp Tool	Positioner
1	8-1	*Pico No. 400	*Pico No. 414/DA-8N
1	8-2	with No. 4354	Pico No. 414/DA-12N
1	8-3		Pico No. 414/DA-8N
1	16-1	M22520/1-01	M22520/1-02
1	16-2	M22520/7-01	M22520/7-04
2,3	16-1	M22520/1-01	M22520/1-02
2,3	16-2	M22520/7-01	M22520/7-04
2,3	20-1	M22520/1-01	M22520/1-02
2,3	22-1	**Astro #612118	**Astro #615507

*Pico Crimping Tool Co.
Code Ident. No. 29268

**Astro Tool Co. (Formerly Buchanan Crimp Tool Products)
Code Ident. No. 58164

3.1.1.1 Power contact materials and finish. The contacts shall be made from beryllium copper, selected from raw materials with a minimum of impurities. The entire contact shall be heat treated to a hardness of 115,000 psi min. The crimp barrel shall be so annealed that the crimp requirements are met. (The heat treatment of the size 8 pin contact only is optional.) The contact plating shall be gold as specified in MIL-G-45204, Type II, Grade C, Class 2 over copper in accordance with MIL-C-14550. Copper shall be 0.000020 inch thick, minimum to 0.00010 inch thick maximum. A gold plating as specified in MIL-G-45204, Type I, Grade A, Class 1 shall be used as an intermediate plating. Plating thickness shall be measured in accordance with MIL-G-45204. The microscopic test shall be the referee method.

3.1.1.2 Socket-contact sleeve material and finish. The sleeve shall be 304 Cres per ASTM-A-269 or 305 Cres per QQ-S-766. The sleeve shall be passivated per MIL-S-5002 and have a finish of 63 or better. The sleeve material shall not jeopardize compliance with the residual magnetism requirement of Paragraph 3.6.11 in the basic specification, GSFC S-311-P-718.

3.1.1.3 Pin-engaging end. The entering end of pin contacts shall be either conical to form a maximum-included angle of 90 degrees, or shall be formed with a spherical radius approximately one-half the diameter of the pin.

3.1.1.4 Socket-engaging end. The engaging end of socket contacts shall be rounded or chamfered to allow for directing and centering of the entering pin contact. The socket contact shall provide the spring-action for maintaining the contact pressure

between the pin and socket. Socket contacts shall be of the closed-entry design to exclude the entry of oversized pins.

3.1.1.5 Color identifier. (Size 1 connectors) Size 8 and 16 power contacts shall be identified by a band (s) of colored ink on the outer circumference of the wire well. Identifying colors are as follows: - Also See 3.1.1.6 and 1.3.4 (Prior to 1/1/87)

GP P S 10	Contact Style 8-1	Red (2 bands)
GP P S 11	Contact Style 8-2	Yellow (2 bands)
GP P S 16	Contact Style 8-3	White (2 bands)
GP P S 12	Contact Style 16-1	Blue (1 band)
GP P S 13	Contact Style 16-2	Green (1 band)

Ink shall be epoxy per MIL-I-43553, and the ink band location shall be as shown in Figures 1, 2, 3, and 4.

3.1.1.6 Color identifier (size 1 connector) (after 1/1/87). Size 8 and 16 power contact pins shall be identified as follows: (Also see 3.1.1.5 and 1.3.4)

GP P 17	Contact Style 8-1	Red (1 band)
GP P 18	Contact Style 8-2	Yellow (1 band)
GP P 19	Contact Style 8-3	White (1 band)
GP P S 20	Contact Style 16-1	Blue (2 bands)
GP P S 21	Contact Style 16-2	Green (2 bands)

Ink shall be epoxy per MIL-I-43553, and the ink band locations shall be as shown in Figures 7 and 8.

3.1.1.7 Color identifier (Size 2 and 3 connectors). Size 16, 20 and 22 power contacts shall be identified as follows:

GP P S 22	Contact style 16-1	blue/yellow
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GP P S 23	Contact style 16-2	blue/red
GP P S 24	Contact style 20-1	green/white
GP P S 25	Contact style 22-1	blue/white

3.1.2 Coaxial contact (size 1 & 3 connectors).

3.1.2.1 Design (size 1 & 3 connectors). Coaxial contacts shall meet the applicable requirements of this specification. Center contacts shall be captivated (Figures 5 and 6). Other requirements are as follows:

- a. Nominal impedance: 50 ohms.
- b. Frequency range: DC to 4 GHz.
- c. Voltage standing wave ratio (VSWR):

Coaxial
Designator VSWR:(maximum over frequency range) (Mated Pair)

14	1.10
15	1.20

- d. Insulation resistance: 5,000 megohms minimum (4.1.3)
- e. Dielectric withstanding voltage: 1,000 Vrms, 60 cycle at sea level. (4.1.4)
- f. The coaxial connectors shall be capable of continuous operation, without degradation, while conducting RF power as follows within the frequency range specified in b above:

Contact Designation RF Power (watts)

14	25
15	15

- g. Coaxial contacts shall be designed to be crimped by the following tools: (Center contacts shall be solderable.)

Contact Type	Crimp Tool	Positioner
Coax (RG-393/U)	M22910/1	613807*
Coax (RG-142 B/U)	M22910/1	612700*

*Astro Tool Co. (Formerly Buchanan Crimp Tool Products) Code Ident. No. 58164

3.1.2.2 Material and finish (contact designators 14 & 15) (connector sizes 1 & 3). The material and finish shall be as follows:

- a. Outer contact: Beryllium copper: QQ-C-530
Center contact: Beryllium copper: QQ-C-530
- b. Dielectric: Teflon: L-P-403
- c. Ferrule: ASTM-B-75 - Finish shall be Tin plated per MIL-T-10727 Type I .0001-.0004
- d. The finish of all other coaxial contact metal surfaces shall be as in 3.1.1.1.

3.1.3 Coaxial, triaxial and data bus contacts (size 2 connector).

3.1.3.1 Design (size 2 connector).

- (a) RG-122/U Coax Contact (Figures 13, 14) (Contact Arrangement No. 1)
 - 1) Nominal Impedance: 50 ohms
 - 2) Frequency Range: TBD
 - 3) VSWR: TBD
 - 4) Insulation Resistance: 5000 megohms minimum
 - 5) Dielectric Withstanding Voltage: 1000 VRMS at sea level
- (b) RG-142 B/U Coax Contact (Figures 11, 12) (Contact Arrangement No. 2)
 - 1) Nominal Impedance: 50 ohms
 - 2) Frequency Range: TBD
 - 3) VSWR: TBD
 - 4) Insulation Resistance: 5000 megohms minimum
 - 5) Dielectric Withstanding Voltage: 1000 VRMS at sea level

(c) Triaxial (Figures 11, 12) (Contact Arrangement No. 2)

- 1) Nominal Impedance: 95 ohms
- 2) Frequency Range: TBD
- 3) VSWR: TBD
- 4) Insulation Resistance: 5000 megohms minimum
- 5) Dielectric Withstanding Voltage at sea level:
Intermediate to Outer - 500 VRMS
Center to Intermediate - 1000 VRMS

(d) Data Bus (Concentric Twin Ax)
(Figures 11, 12) (Contact Arrangement No. 2)

- 1) Nominal Impedance: 77 ohms
- 2) Frequency Range: 0-20 MHz
- 3) VSWR: TBD
- 4) Insulation Resistance: 5000 megohms minimum
- 5) Dielectric Withstanding Voltage at sea level:
Intermediate to Outer - 500 VRMS
Center to Intermediate - 1000 VRMS

(e) Coaxial contacts shall be designed to be crimped by the following tools:

NOTE: C = Center Contact
I = Inner Contact
O = Outer Contact

<u>Coax Contact</u>	<u>Contact Style</u>	<u>Crimp Tool</u>	<u>Positioner</u>
RG-122/U	29	M22520/5-01	M22520/5-05
Triax	26	C-M22520/2-01 I-M22520/5-01 O-M22520/5-01	K709* Y631 (Closure B) Y631 (Closure A)
Data Bus	27	C-M22520/2-01 I-M22520/5-01 O-M22520/5-01	K709* Y631 (Closure B) Y631 (Closure A)

RG-142B/U

28

C-M22520/5-01

K709*

O-M22520/5-01

Y631 (Closure A)

*Daniels

Code Ident. No. 11851

3.1.3.2 Materials and finish (contact designation 26, 27, 28 and 29). The material and finish shall be as follows:

- a. Outer Contact Beryllium
Intermediate Contact (as applicable) Copper per:
Center Contact QQ-C-530
- b. Dielectric: Teflon L-P-403
- c. Ferrule: Beryllium Copper per QQ-C-530, except RG 122/U (Contact Designator GCP/S 29) Aluminum per ASTM-B-75 with a tin plated finish per MIL-T-10727 Type I .0001-.0004 thick.
- d. The finish of all other coaxial contact metal surfaces shall be gold per MIL-G-45204, Class 1 (.000050 minimum).

3.1.4 Contact removal. The design of all contacts shall permit individual insertion and removal from the connector with the use of manufacturer approved tools.

3.2 Performance. (1.2)

3.2.1 Crimp-tensile strength. When tested in accordance with 4.1.1, the tensile strength of crimped joints for individual contacts shall not be less than that indicated in Table III. Ten contact pairs shall be tested for each contact type.

4. QUALITY ASSURANCE PROVISIONS (1.2)

4.1 Test methods.

4.1.1 Crimp-tensile strength. Specimens of contacts crimped to wires shall be placed in a standard tensile-testing machine and an axial load shall be applied. The wire shall not pull out of the contact nor break nor become distorted to such an extent that it is unfit for use before the minimum tensile strength, as specified in Table III is reached. Wire breakage not due to crimping, at less than the tensile loads specified, shall not constitute a failure.

4.1.2 Contact engagement and separation. The maximum and minimum test pins used shall be in accordance with MS3197 except as noted. The test pin shall not bottom in the socket.

Table III. Crimp-tensile strength.

Contact Type	Test Wire or Cable	Tensile Strength (min) (lb)
SIZE 1 CONNECTOR		
GPS 10 GPP 10 GPP 17	Size 8(1)	220
GPS 11 GPP 11 GPP 18	Size 12(1)	110
GPS 16 GPP 16 GPP 19	Size 10(1)	150
GPS 12 GPP 12 GPP 20 GPS 20	Size 16(1) 20	50 50 20 20
GPS 13 GPP 13 GPP 21 GPS 21	Size 22(1) 26	12 12 5 5
GCP 14 GCS 14	RG-393/U(2)	90 (Overall) 40 (Center contact soldered)
GCP 15 GCS 15	RG-142B/U(3)	50 (Overall) 20 (Center contact soldered)
SIZE 2 & 3 CONNECTORS		
GPP 22 GPS 22	Size 16 ⁽¹⁾	50
GPP 23 GPS 23	Size 22 ⁽¹⁾	12
GPP 24 GPS 24	Size 20 ⁽¹⁾	20
GPP 25 GPS 25	Size 22 ⁽¹⁾	12
GTP 26 GTS 26	9530D5117 ⁽⁵⁾	center - 8 inner - 8 outer -25
GDP 27 GDS 27	51-05091 ⁽⁶⁾	center - 3 inner - 8 outer -25
GCP 28 GCS 28	RG-142B/U ⁽³⁾	center - 8 outer -25
GCP 29 GCS 29	RG-122/U ⁽⁴⁾	center - 8 outer -25
GCP 14 GCS 14	RG-393/U ⁽²⁾	90 (Overall) 40 (Center contact soldered)

- (1) MIL-W-16878, Type E or EE
- (2) MIL-C-17/127
- (3) MIL-C-17/60
- (4) MIL-C-17/54 - Do not use for space flight. (Space grade cables, compatible with contact designator 29, should be considered for use.)
- (5) Raychem FSCM 06090
- (6) Champlain Cable Inc. FSCM 05973

4.1.3 Insulation resistance. Coaxial contacts shall be tested in accordance with method 302, test condition B of MIL-STD-202. Measure between the center contact and body. Contacts not meeting the minimum insulation resistance in 3.1.2.1 shall be rejected.

4.1.4 Dielectric withstanding voltage. Coaxial contacts shall be tested in accordance with method 301 of MIL-STD-202. The magnitude of the test voltage is as stated in 3.1.2.1 and the points of application are between the center contact and body. Contacts showing evidence of damage, arcing or breakdown shall be rejected.

4.2 Final inspection. As a minimum and prior to connector qualification or shipment, individual contacts shall be 100-percent inspected for:

- a. Workmanship as delineated in the general specification (1.2)
- b. All socket contacts shall be tested by inserting a weighted, minimum diameter test pin one time into each contact. The gage test pin shall be per MS3197 except as noted. The weight shall be as specified in Table IV. Contacts failing to retain the weighted test pin shall be rejected.
- c. Each contact (part number) shall be checked for critical dimensions. The examination shall be performed using statistical sampling in accordance with MIL-STD-105, special inspection level S-4; the acceptable quality level (normal) (AQL) shall be one percent.

5. PREPARATION FOR DELIVERY (1.2)

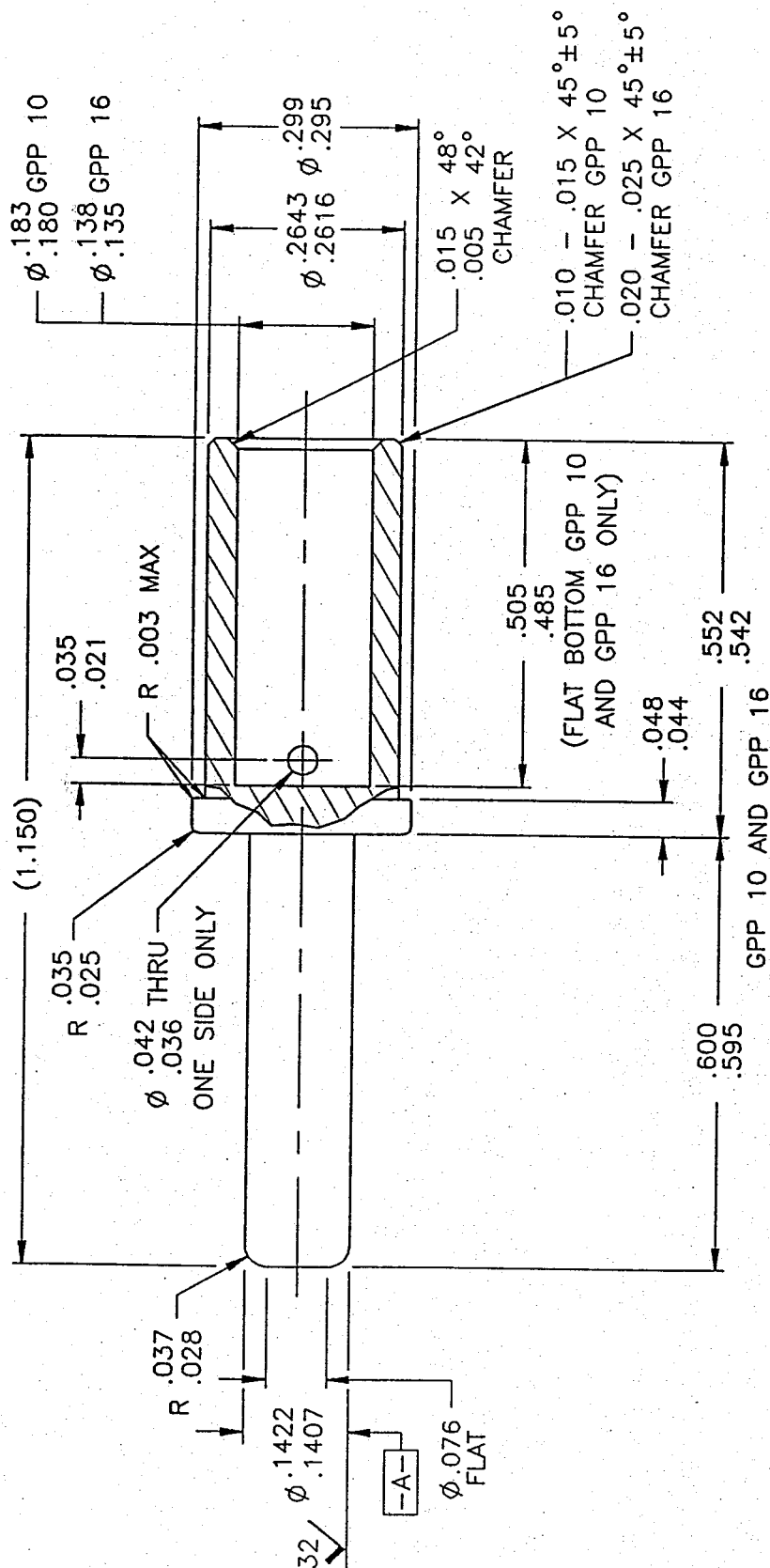
6. NOTES (1.2)

Table IV
Minimum Contact Separation Forces

Contact Type	Weight in Ounces	Min. Test Pin Dia in In.
CONNECTOR SIZE 1		
Size 8	5.0	MS3197 - 8X1
Size 16	2.0	MS3197 - 16X1
Coaxial RG393/U Center Contact	1.0	0.0630 +0.0001 -0.0000
Coaxial RG142B/U Center Contact	1.0	0.0480 +0.0001 -0.0000
CONNECTOR SIZE 2 and SIZE 3		
Size 16	2.0	MS3197-16X1
Size 20	0.7	MS3197-20X1
Size 22	0.7	MS3197-22X1
Triaxial (Center Contact)	0.5	0.0235 +0.0001 -0.0000
Data Bus (Center Contact)	0.5	0.0235 +0.0001 -0.0000
Coaxial (RG-142B/U) (Center Contact)	0.5	0.0235 +0.0001 -0.0000
Coaxial (RG-122/U) (Center Contact)	0.5	0.0235 +0.0001 -0.0000
Coaxial RG393/U (Center Contact)	1.0	0.0630 +0.0001 -0.0000

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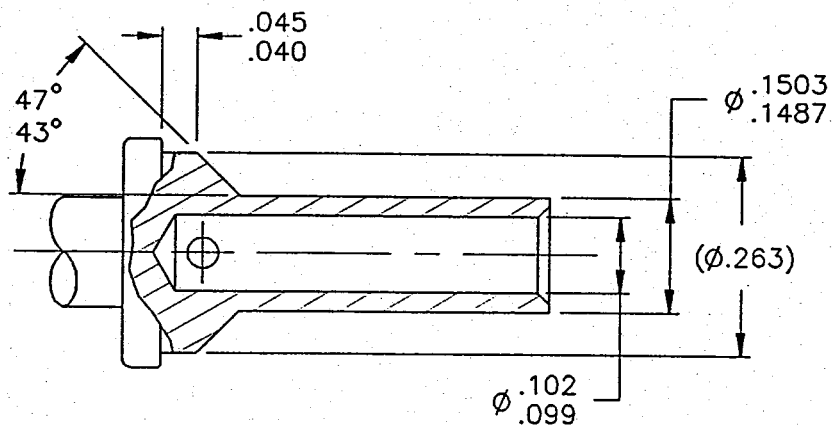
Code 311.2
Goddard Space Flight Center
Greenbelt, MD 20771



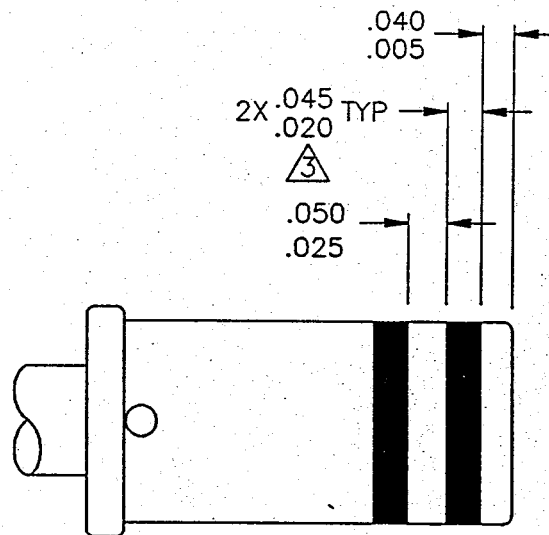
NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET PER DOD-STD-100.
2. ALL DIAMETERS \varnothing A \varnothing .003
3. PAINT STRIPE INDICATED TO BE COLORED AS FOLLOWS:
 RED FOR GPP 10; YELLOW FOR GPP 11; WHITE FOR GPP 16.
 \varnothing .268 MAX OVER PAINT FOR GPP 10 AND GPP 16.
4. MACHINED DIMENSIONS ARE BEFORE PLATING.

FIGURE 1 - PIN CONTACT CONFIGURATION SIZE 8
 (CONNECTOR SIZE 1)
 (GPP 10; GPP 11; GPP 16)
 (PAGE 1 OF 2)

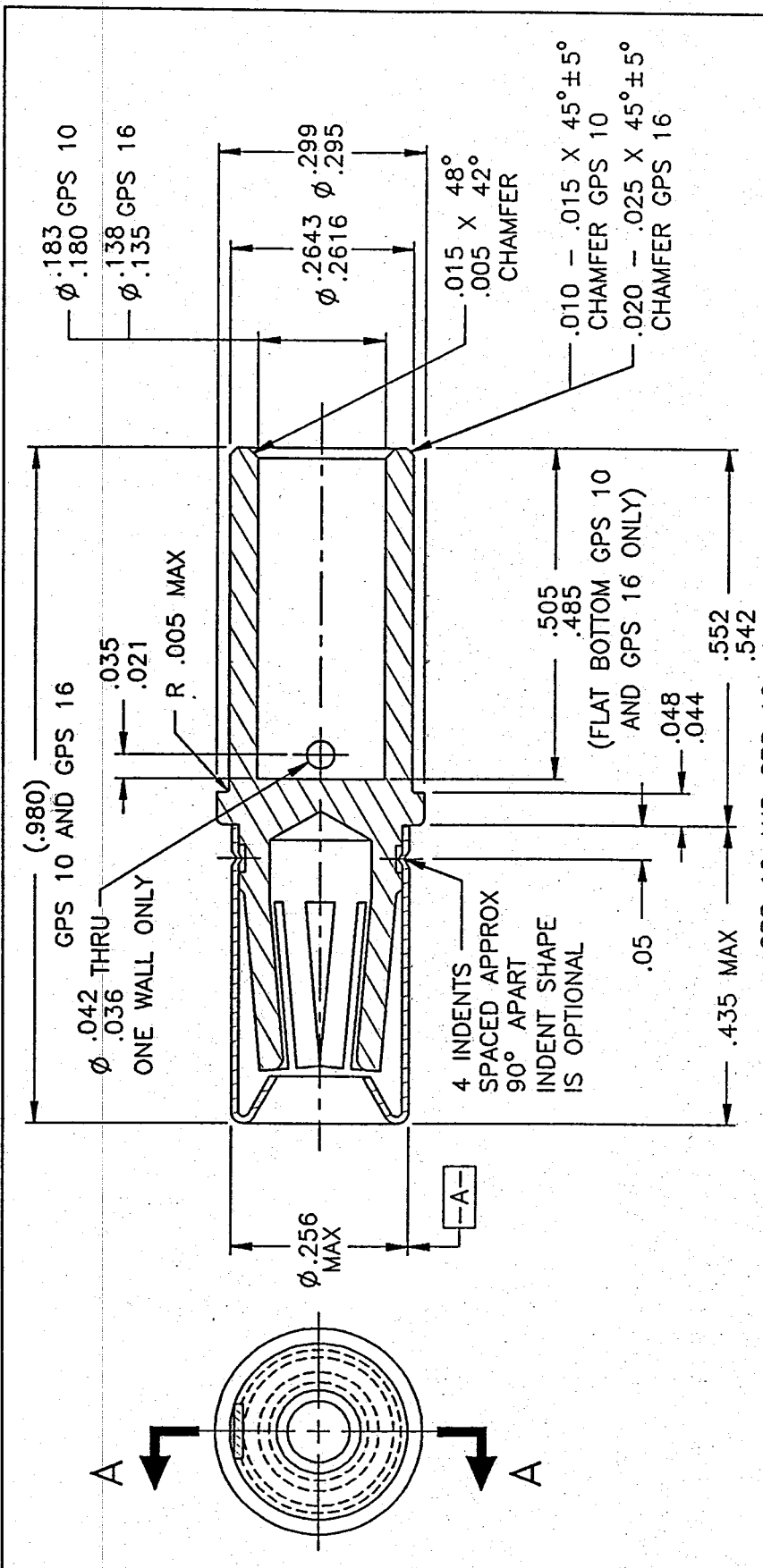


GPP 11 ONLY
 ALL DIMENSIONS SAME AS GPP 10
 EXCEPT AS NOTED



COLOR CODE TYP VIEW

FIGURE 1 - PIN CONTACT CONFIGURATION SIZE 8 (CONTD)
 (CONNECTOR SIZE 1)
 (GPP 10; GPP 11; GPP 16)
 (PAGE 2 OF 2)



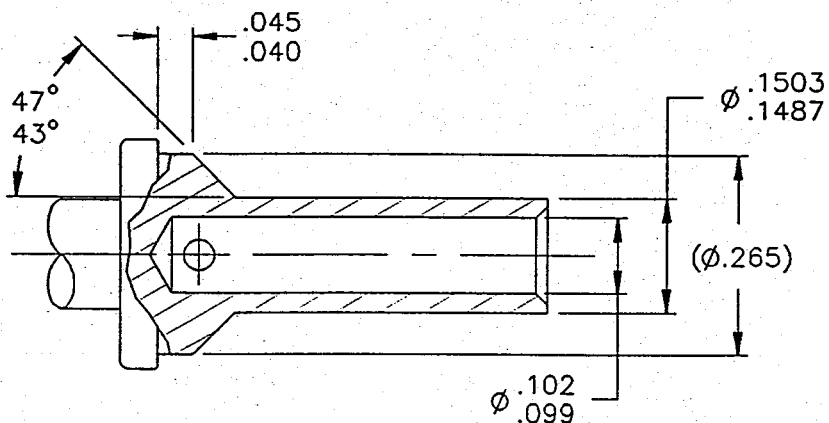
GPS 10 AND GPS 16

SECTION A-A

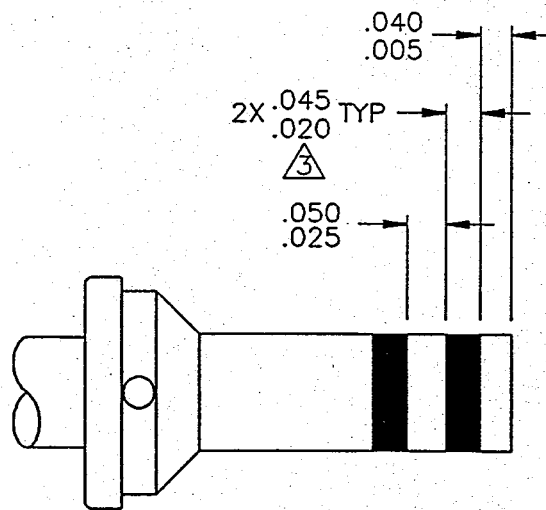
GPS 10 AND GPS 16

- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET PER DOD-STD-100.
 2. ALL DIAMETERS $\text{⊗} | A | \text{⊗} \phi .003$
 3. DIAMETER OVER LENGTH INDICATED TO BE COLORED AS FOLLOWS:
RED FOR GPS 10; YELLOW FOR GPS 11; WHITE FOR GPS 16.
COLOR BAND LOCATIONS ARE TYPICAL.
 $\phi .268$ MAX OVER PAINT FOR GPS 10 AND GPS 16.
 4. MACHINED DIMENSIONS ARE BEFORE PLATING.

FIGURE 2 - SOCKET CONTACT CONFIGURATION SIZE 8
(CONNECTOR SIZE 1)
(GPS 10; GPS 11; GPS 16)
(PAGE 1 OF 2)

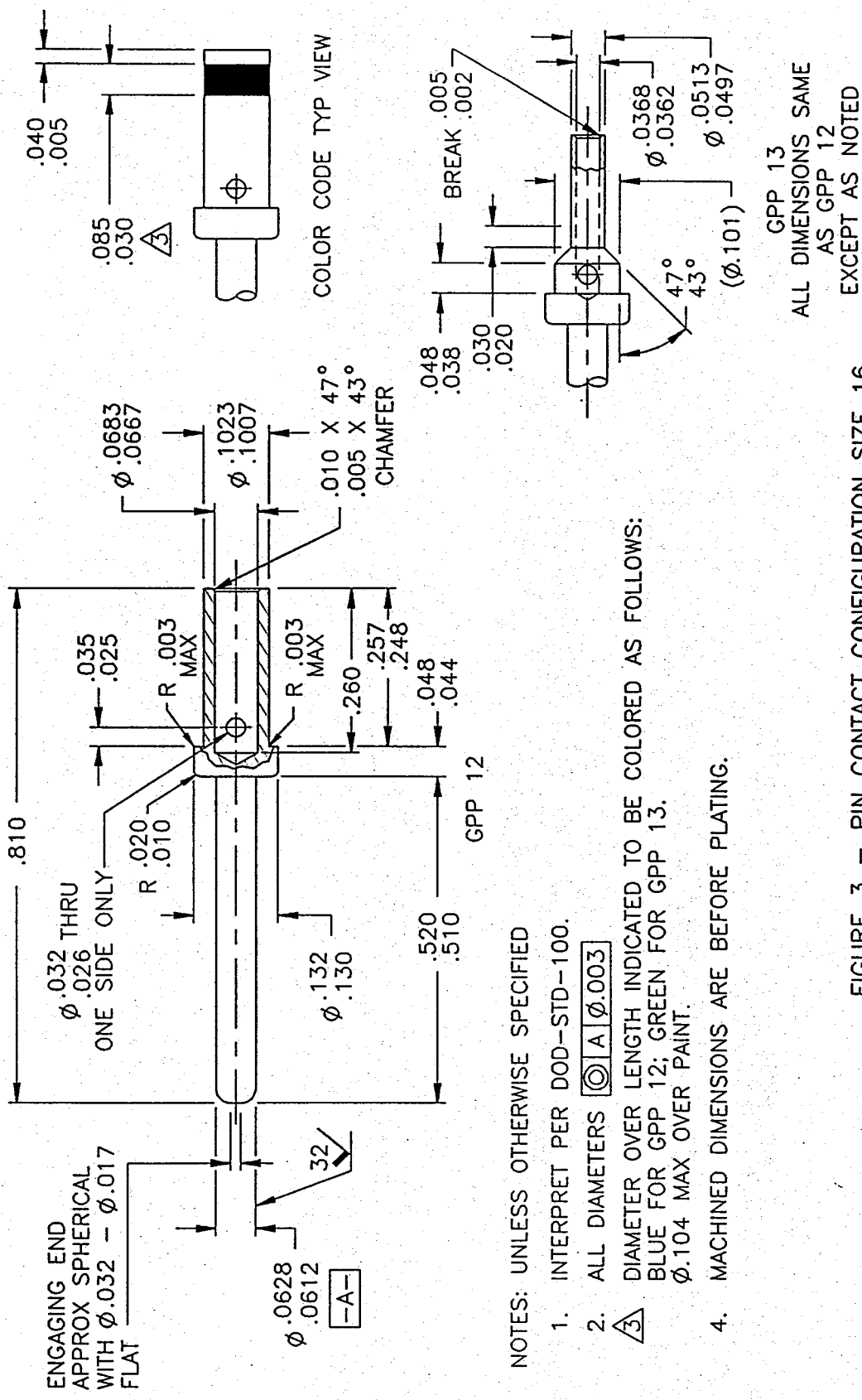


GPS 11 ONLY
 ALL DIMENSIONS SAME AS GPS 10
 EXCEPT AS NOTED



COLOR CODE TYP VIEW

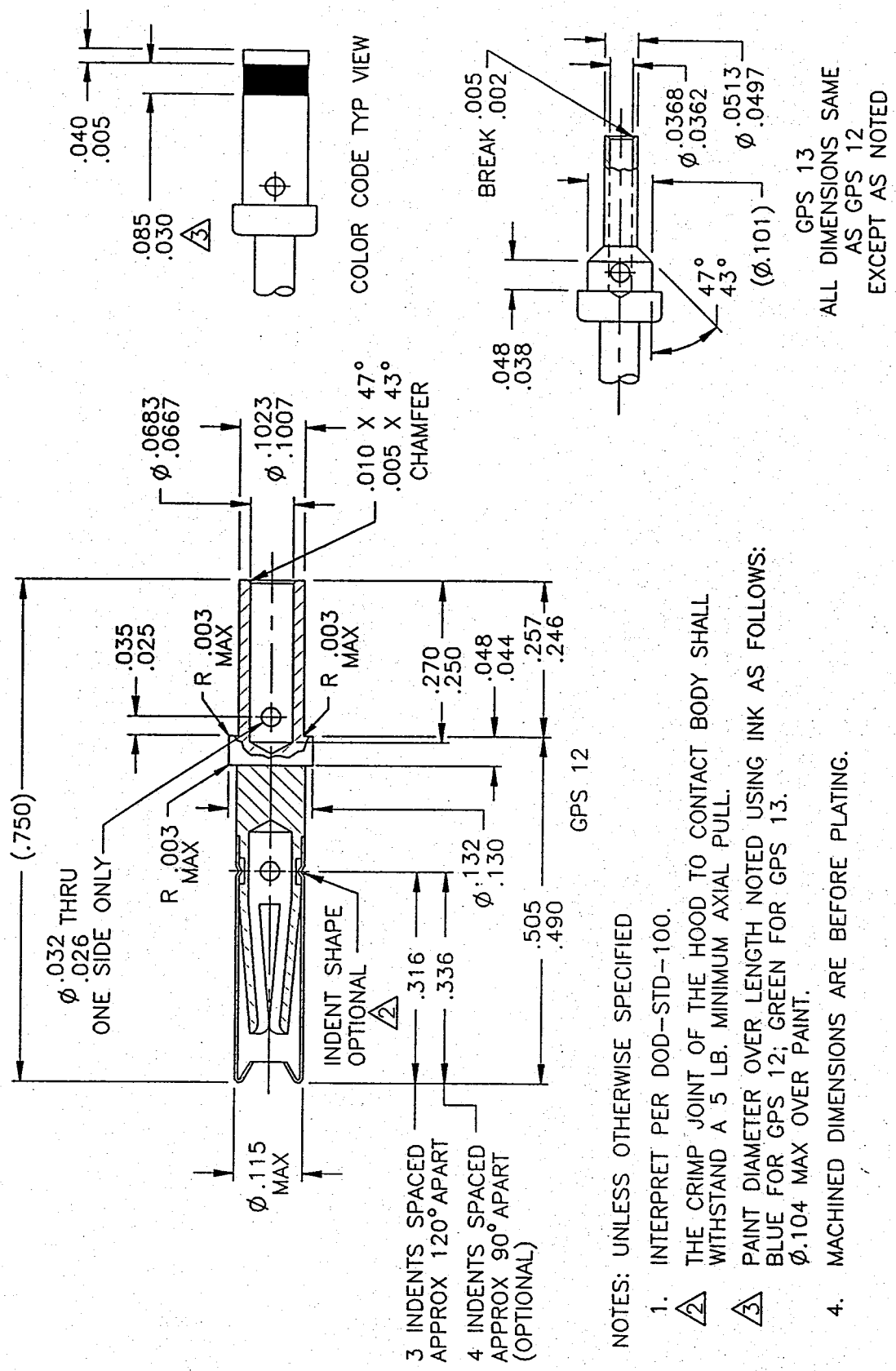
FIGURE 2 - SOCKET CONTACT CONFIGURATION SIZE 8 (CONTD)
 (CONNECTOR SIZE 1)
 (GPS 10; GPS 11; GPS 16)
 (PAGE 2 OF 2)



- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET PER DOD-STD-100.
 2. ALL DIAMETERS $\text{A } \phi .003$
DIAMETER OVER LENGTH INDICATED TO BE COLORED AS FOLLOWS:
BLUE FOR GPP 12; GREEN FOR GPP 13.
 $\phi .104$ MAX OVER PAINT.
 3. \triangle MACHINED DIMENSIONS ARE BEFORE PLATING.

FIGURE 3 - PIN CONTACT CONFIGURATION SIZE 16
(CONNECTOR SIZE 1)
(GPP 12; GPP 13)

GPP 13
ALL DIMENSIONS SAME
AS GPP 12
EXCEPT AS NOTED



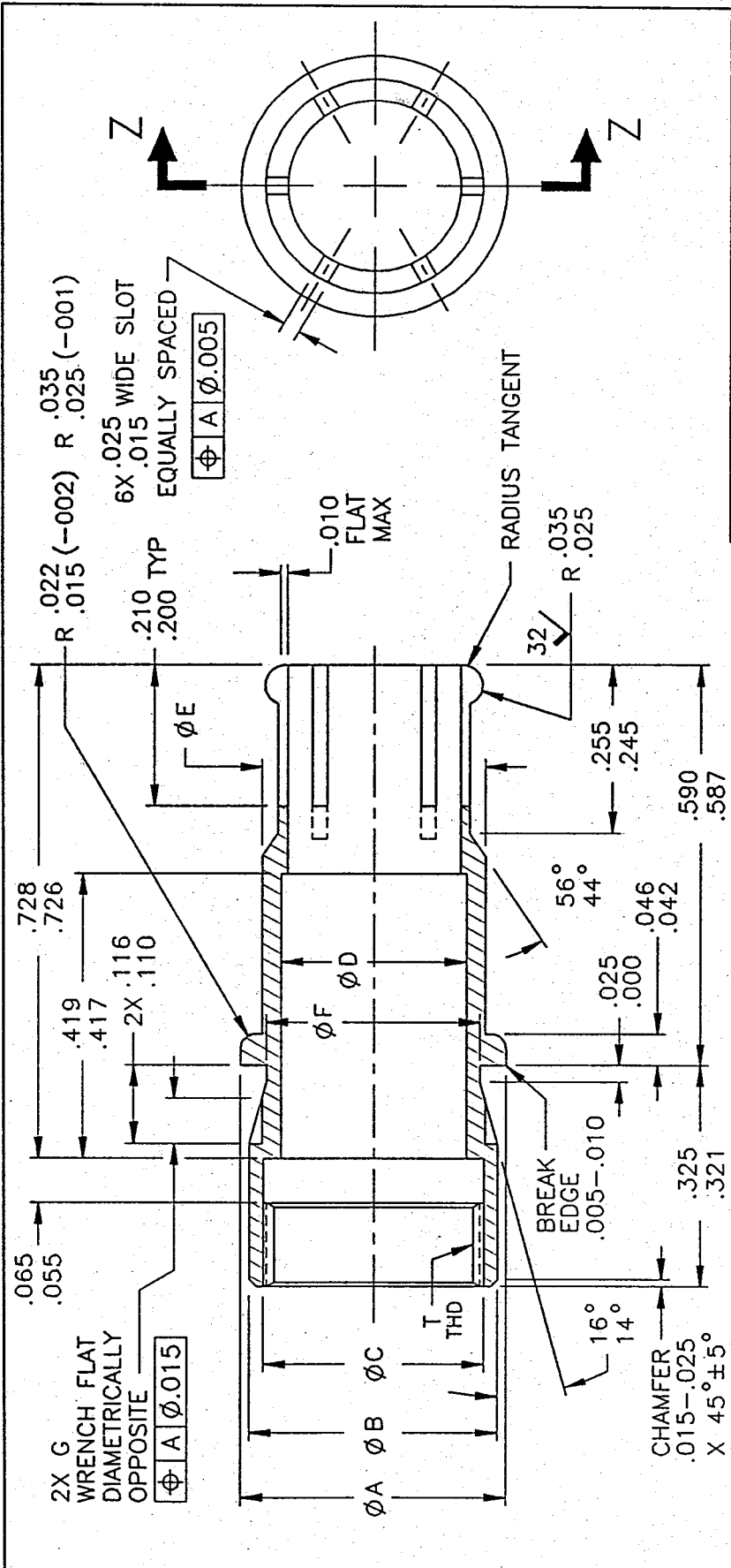
GPS 13
 ALL DIMENSIONS SAME
 AS GPS 12
 EXCEPT AS NOTED

FIGURE 4 - SOCKET CONTACT CONFIGURATION SIZE 16
 (CONNECTOR SIZE 1)
 (GPS 12; GPS 13)

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET PER DOD-STD-100.
2. THE CRIMP JOINT OF THE HOOD TO CONTACT BODY SHALL WITHSTAND A 5 LB. MINIMUM AXIAL PULL.
3. PAINT DIAMETER OVER LENGTH NOTED USING INK AS FOLLOWS:
 BLUE FOR GPS 12; GREEN FOR GPS 13.
 Ø.104 MAX OVER PAINT.
4. MACHINED DIMENSIONS ARE BEFORE PLATING.

- 3 INDENTS SPACED APPROX 120° APART
- 4 INDENTS SPACED APPROX 90° APART (OPTIONAL)



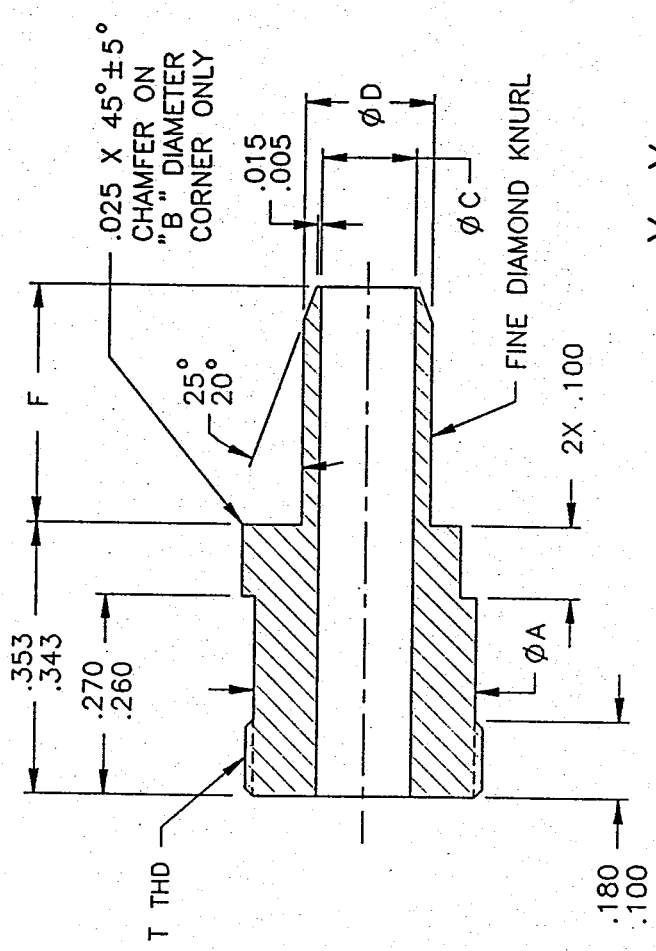
PART NO.	USAGE	ØA	ØB	ØC	ØD	ØE	ØF	ØG
GCP 14-2	RG 393	.573	.548	.510	.422	.433	.502	.500
GCP 15-2	RG 142	.570	.543	.500	.420	.430	.498	.495
		.387	.362	.322	.280	.313	.312	.312
		.384	.359	.312	.278	.310	.308	.307
PART NO.	NOMINAL THREAD SIZE AND SERIES	THREAD FORM	DIAMETER	THD DIMENSIONS AFTER PLATING				
GCP 14-2	.500-32 UN-2B	MAJOR PITCH MINOR	MAJOR PITCH MINOR					
GCP 15-2	.312-48 UNS-2B	MAJOR PITCH MINOR	MAJOR PITCH MINOR					

SECTION Z-Z
FRONT SHELL

GCP 14-2 AND GCP 15-2
FOR MATERIALS AND FINISHES, SEE PARA 3.1.2.2.

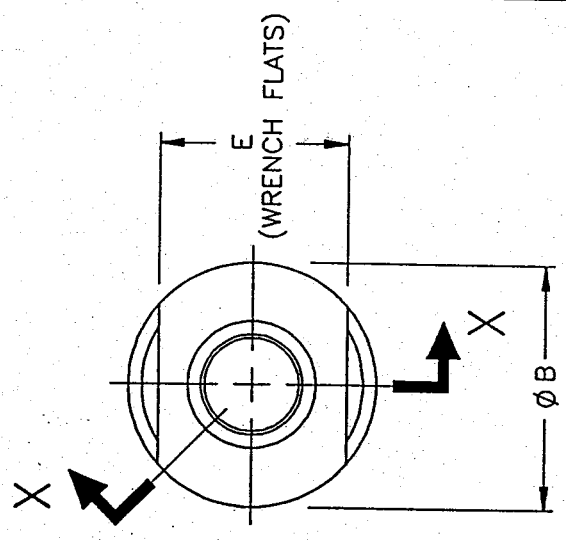
- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET PER DOD-STD-100.
 2. ALL DIAMETERS (A) Ø .003
 3. FOR MATERIALS AND FINISHES, SEE PARA 3.1.2.2.
RG-393/U-MIL-C-17/127
RG-142 B/U-MIL-C-17/60
 4. MACHINED DIMENSIONS ARE BEFORE PLATING.

FIGURE 5 -- PIN CONTACT COAX PLUG
(GCP 14 AND GCP 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 1 OF 5)



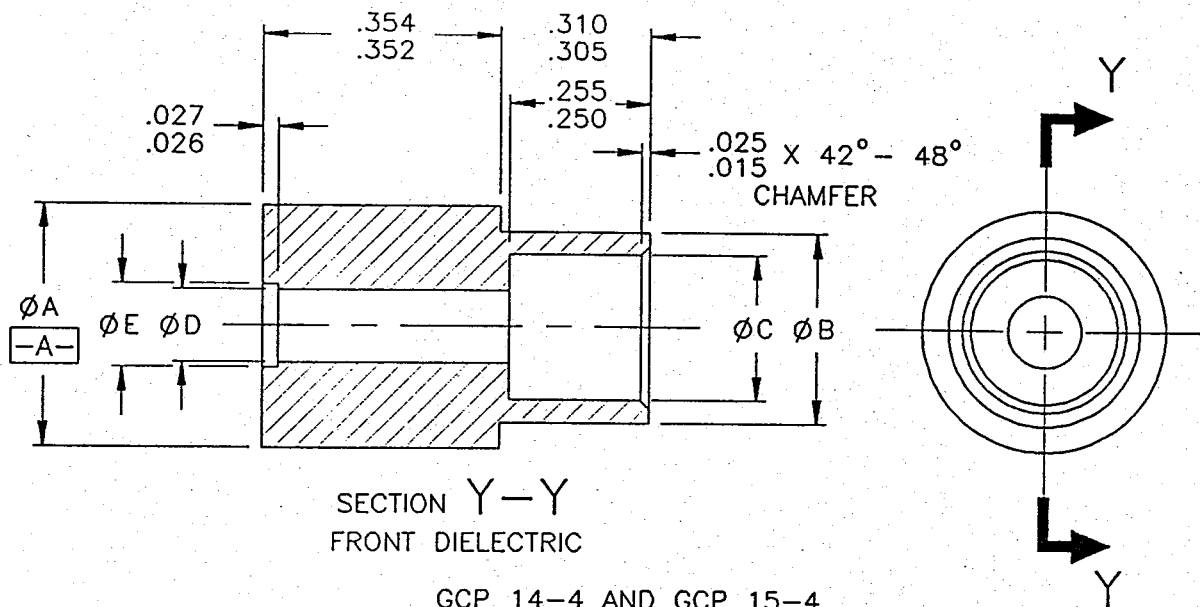
SECTION X-X
REAR SHELL

GCP 14-3 AND GCP 15-3



PART NO.	USAGE A	ØA	ØB	ØC	ØD	E	F	T	
								NOMINAL THREAD SIZE AND SERIES	THD FORM AND SERIES
GCP 14-3	RG	.463	.505	.294	.350	.438	.310	MAJOR	.4930-.4990
	393	.455	.495	.290	MAX .433	MAX .290			
GCP 15-3	RG	.286	.320	.122	.167	.250	.260	MAJOR	.3072-.3117
	142	.280	.310	.120	MAX .245	MAX .240			
								MINOR	.4545-.4607
								MAJOR	.3072-.3117
								MINOR	.2822-.2861

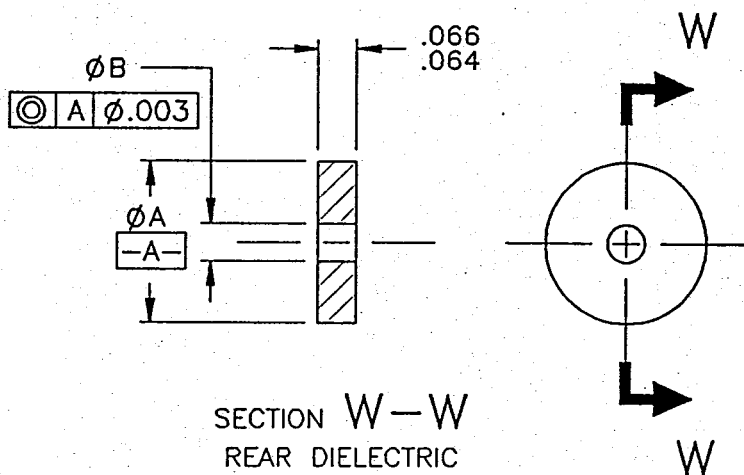
FIGURE 5 - PIN CONTACT COAX PLUG (CONTD)
(GCP 14 AND GCP 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 2 OF 5)



SECTION Y-Y
FRONT DIELECTRIC

GCP 14-4 AND GCP 15-4

PART NO.	USAGE	ϕA	ϕB	ϕC	ϕD	ϕE
GCP 14-4	RG 393	.420 .418	.331 .327	.252 .248	.125 .123	.145 .143
GCP 15-4	RG 142	.278 .276	.201 .199	.141 .139	.095 .093	.114 .112

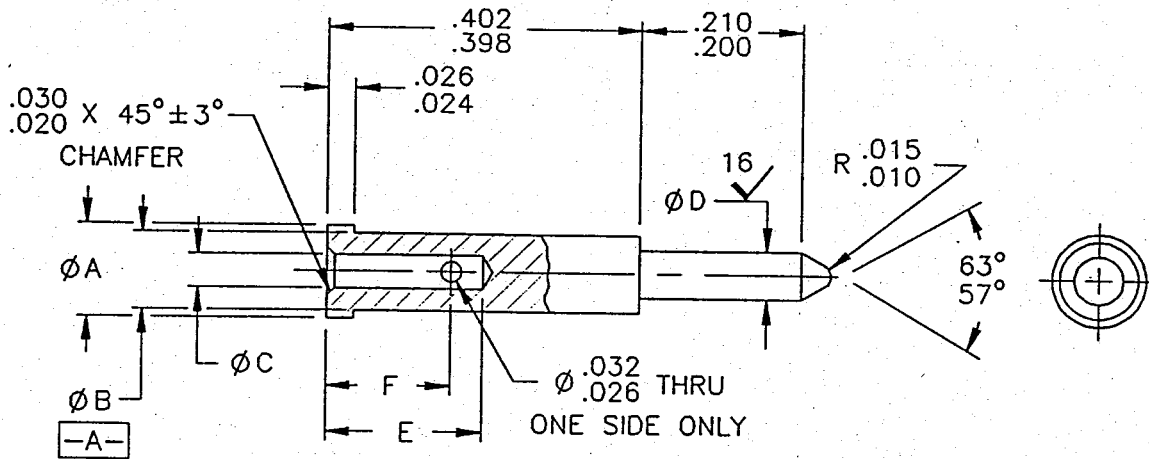


SECTION W-W
REAR DIELECTRIC

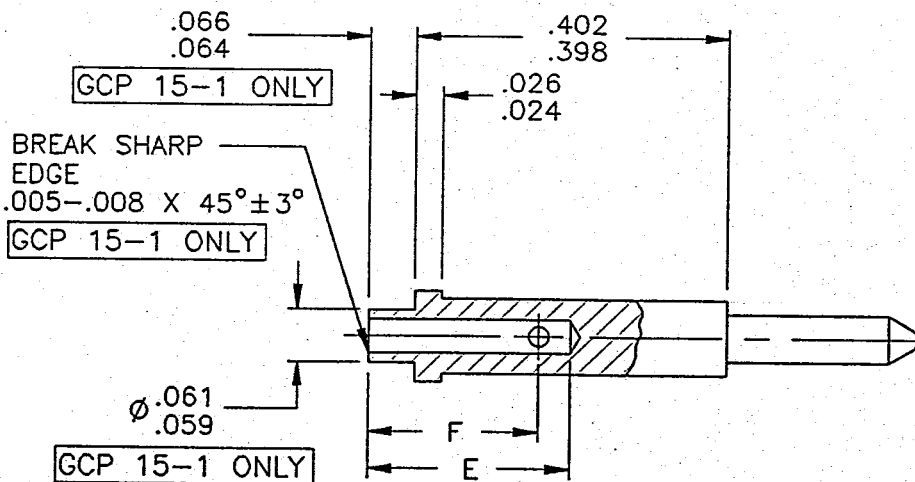
PART NO.	USAGE	ϕA	ϕB
GCP 14-5	RG 393	.343 .341	.099 .096
GCP 15-5	RG 142	.278 .276	.064 .062

GCP 14-5 AND GCP 15-5

FIGURE 5 - PIN CONTACT COAX PLUG (CONTD)
(GCP 14 AND GCP 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 3 OF 5)



GCP 14-1



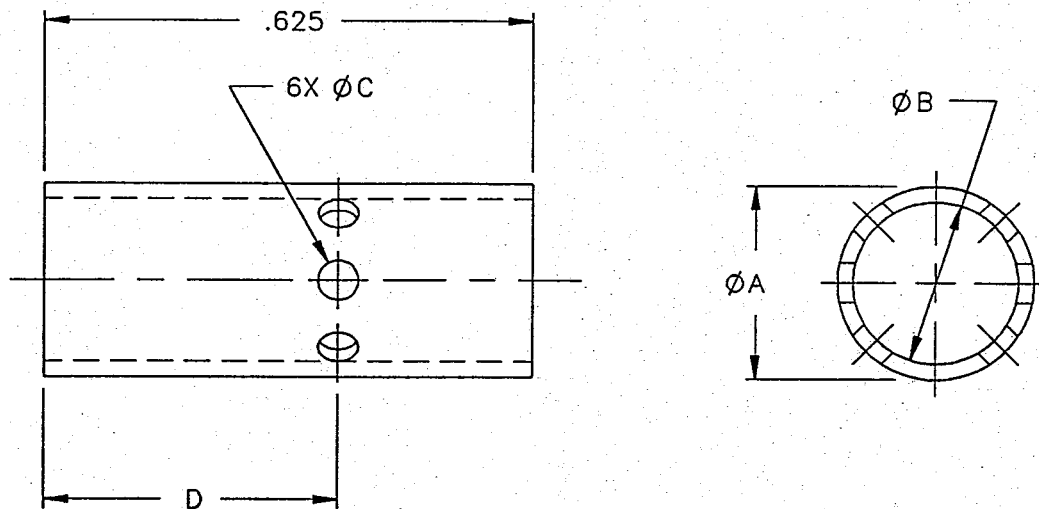
GCP 15-1

(CONFIGURATION SAME AS GCP 14-1 EXCEPT AS SHOWN)

CENTER PIN CONTACT

PART NO.	USAGE ▲	Ø A	Ø B	Ø C	Ø D	E	F
GCP 14-1	RG 393	.142 .140	.123 .121	.101 .098	.064 .063	.200 .190	.160 .150
GCP 15-1	RG 142	.111 .109	.094 .092	.044 .042	.049 .048	.190 .180	.150 .140

FIGURE 5 - PIN CONTACT COAX PLUG (CONTD)
(GCP 14 AND GCP 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 4 OF 5)

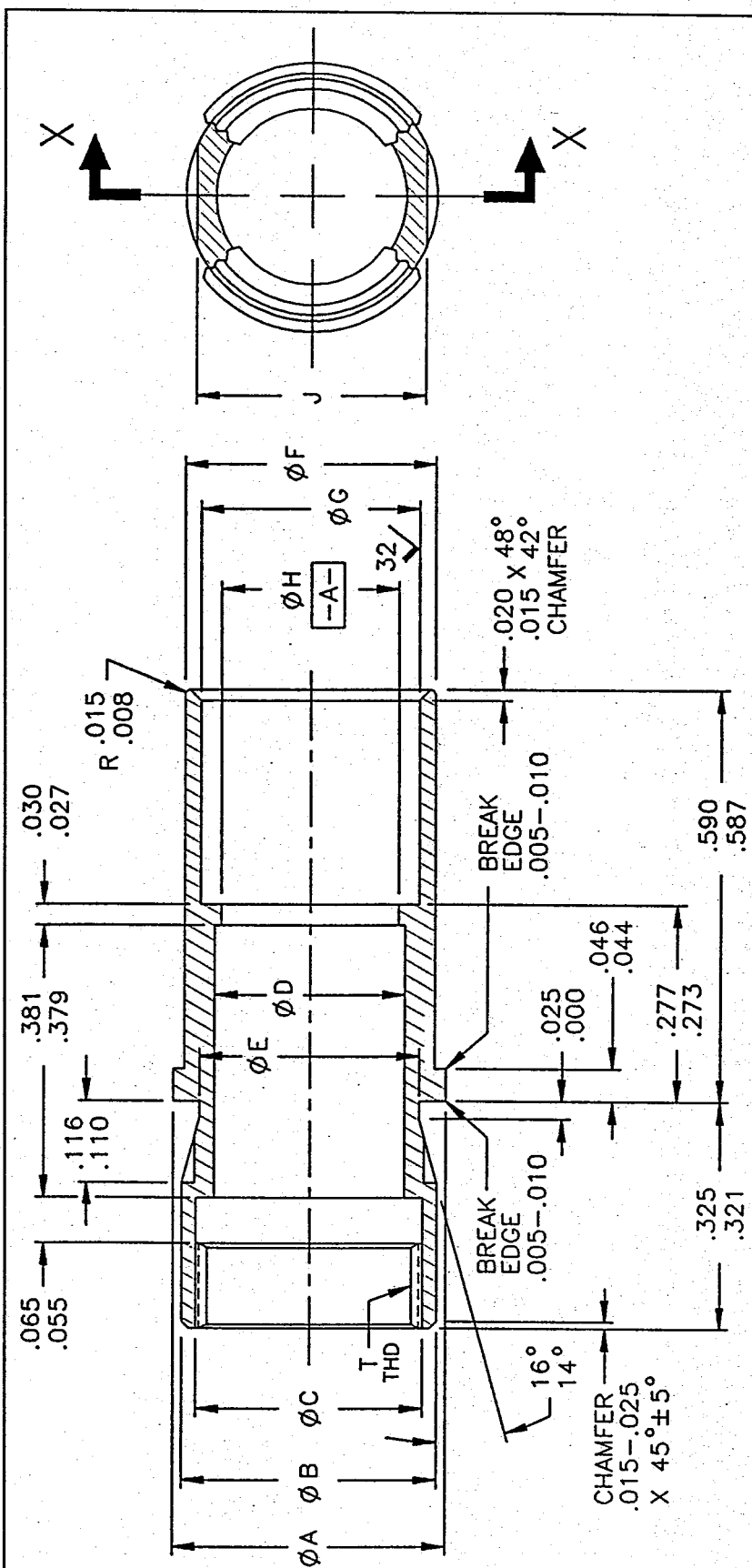


GCP 14-6 AND GCP 15-6

CRIMP FERULE

PART NO.	USAGE ▲	ØA	ØB	ØC	D
GCP 14-6	RG 393	.488 .478	.437 .427	.159	.453
GCP 15-6	RG 142	.255 .245	.224 .214	.094	.375

FIGURE 5 - PIN CONTACT COAX PLUG (CONTD)
 (GCP 14 AND GCP 15)
 (CONNECTOR SIZE 1)
 (RG-393/U AND RG-142 B/U)
 (PAGE 5 OF 5)

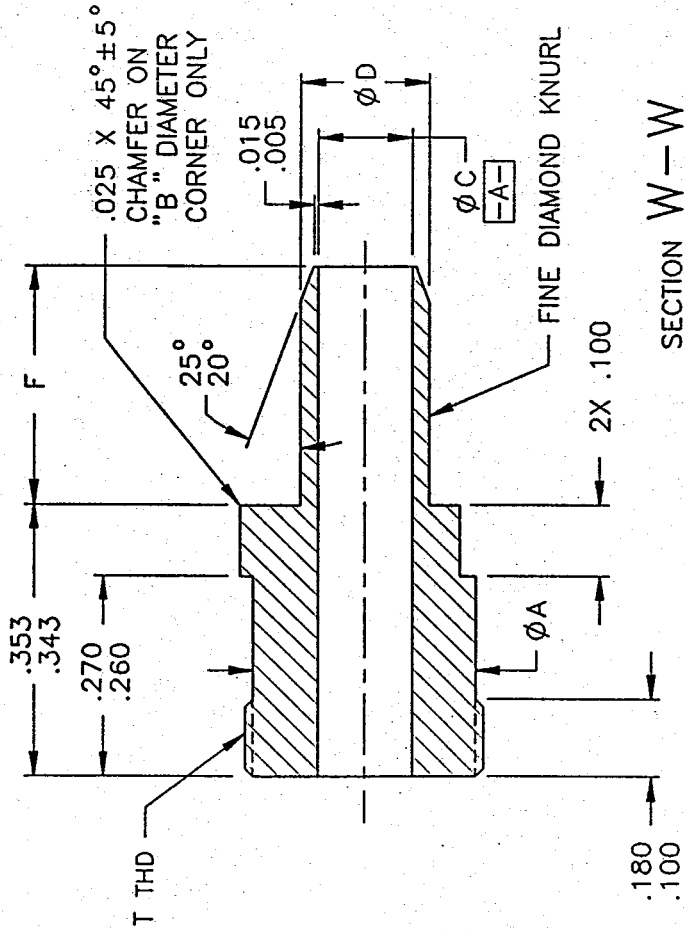


PART NO.	USAGE	ØA	ØB	ØC	ØD	ØE	ØF	ØG	ØH	J
GCS 14-2	RG 393	.573	.548	.510	.422	.502	.505	.436	.372	.500
GCS 15-2	RG 142	.387	.362	.322	.280	.312	.370	.315	.252	.312
		.384	.359	.312	.278	.308	.365	.313	.250	.307

PART NO.	NOMINAL THREAD SIZE AND SERIES	THREAD FORM	THD DIMENSIONS AFTER PLATING	
			MAJOR PITCH	MINOR PITCH
GCS 14-2	.500-32 UN-2B	MAJOR PITCH	.5000-.5090	.4797-.4842
GCS 15-2	.312-48 UNS-2B	MAJOR PITCH	.3125-.3191	.2990-.3026
		MINOR PITCH	.466-.474	.290-.295

NOTE: UNLESS OTHERWISE SPECIFIED
 1. INTERPRET PER DOD-STD-100.
 2. ALL DIAMETERS $\text{⊙} \text{ A } \text{⊙} \text{ } \phi .003$
 3. FOR MATERIALS AND FINISHES, SEE PARA 3.1.2.2.
 RG-393/U-MIL-C-17/127
 RG-142 B/U-MIL-C-17/60
 5. MACHINED DIMENSIONS ARE BEFORE PLATING.

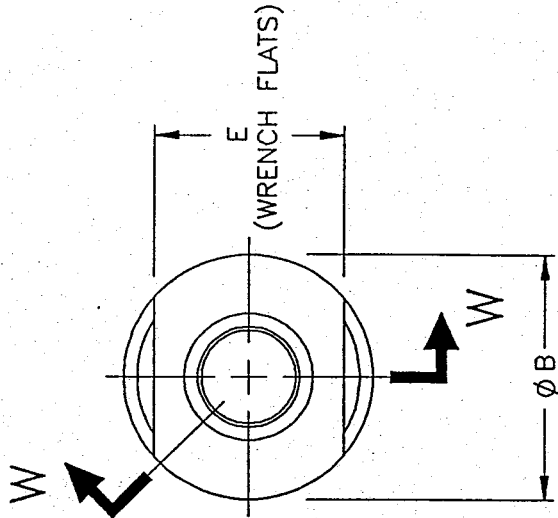
FIGURE 6 - SOCKET CONTACT COAX (GCS 14 AND GCS 15) (CONNECTOR SIZE 1) (RG-393/U AND RG-142 B/U) (PAGE 1 OF 5)



SECTION W-W

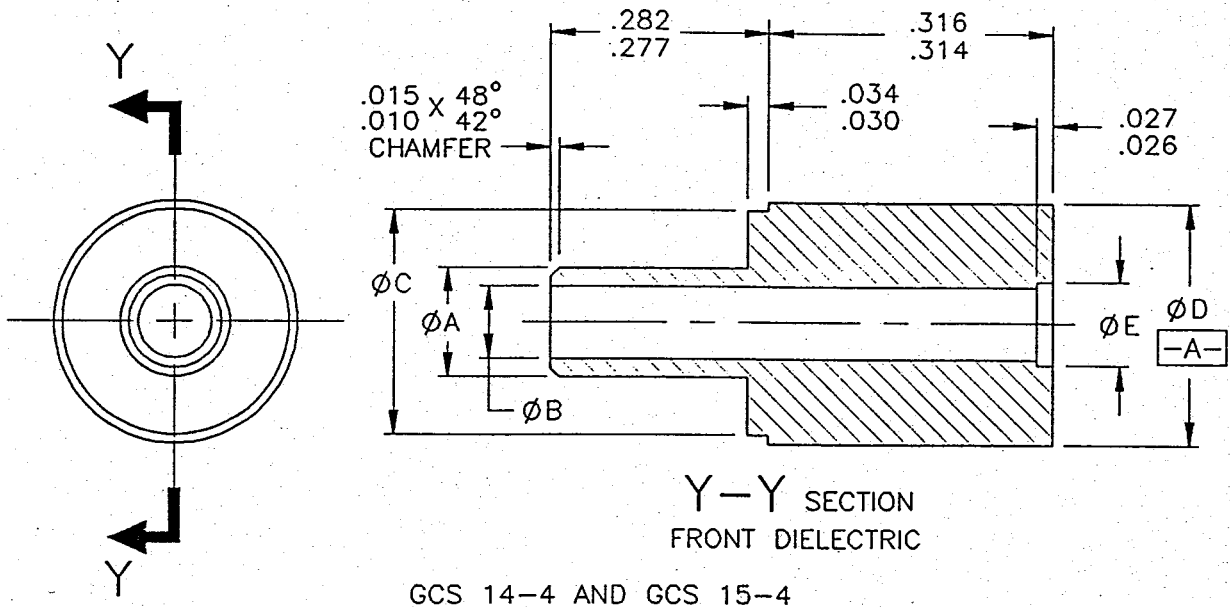
REAR SHELL

GCS 14-3 AND GCS 15-3



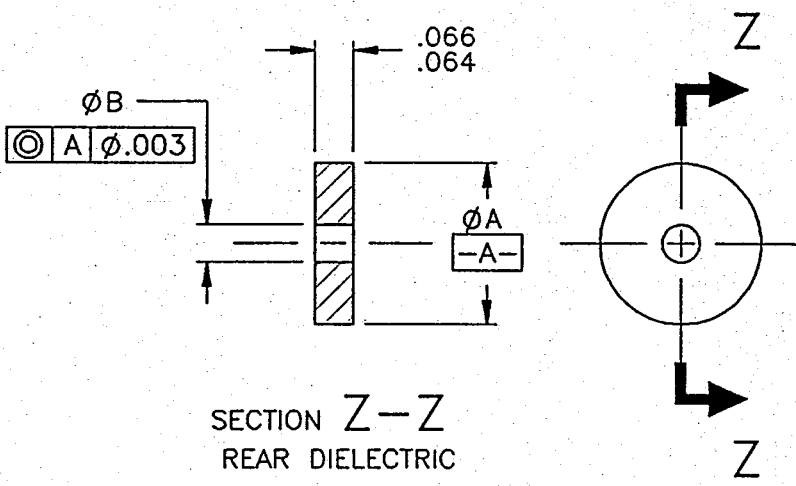
PART NO.	USAGE A	φA	φB	φC	φD	E	F	THD DIMENSIONS AFTER PLATING	
								MAJOR PITCH MINOR	MAJOR PITCH MINOR
GCS 14-3	RG 393	.463 .455	.505 .495	.294 .290	.350 MAX .433	.438 .433	.310 .290	.4930-.4990 .4752-.4787 .4545-.4607	.310 .290
GCS 15-3	RG 142	.286 .280	.320 .310	.122 .120	.167 MAX .245	.250 .245	.260 .240	.3072-.3117 .2955-.2982 .2822-.2861	.260 .240
PART NO.	NOMINAL THREAD SIZE AND SERIES	φA	φB	φC	φD	E	F	THD DIMENSIONS AFTER PLATING	
GCS 14-3	.500-32 UN-2A	.463 .455	.505 .495	.294 .290	.350 MAX .433	.438 .433	.310 .290	.4930-.4990 .4752-.4787 .4545-.4607	.310 .290
GCS 15-3	.312-48 UNS-2A	.286 .280	.320 .310	.122 .120	.167 MAX .245	.250 .245	.260 .240	.3072-.3117 .2955-.2982 .2822-.2861	.260 .240

FIGURE 6 -- SOCKET CONTACT COAX (CONTD)
(GCS 14 AND GCS 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 2 OF 5)



GCS 14-4 AND GCS 15-4

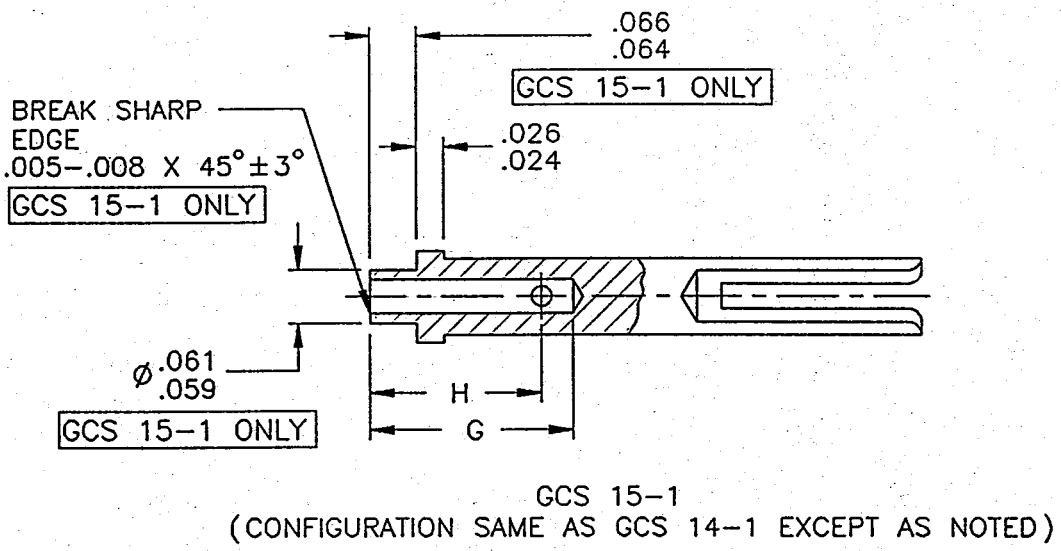
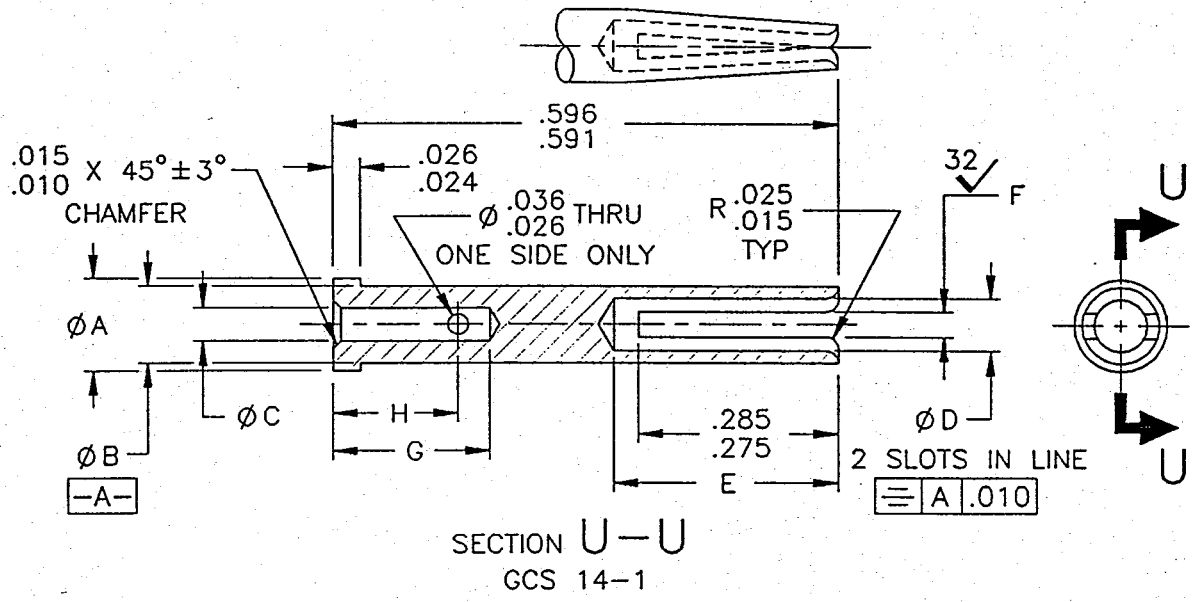
PART NO.	USAGE	ØA	ØB	ØC	ØD	ØE
GCS 14-4	RG 393	.248 .244	.125 .123	.370 .366	.420 .418	.145 .143
GCS 15-4	RG 142	.136 .134	.095 .093	.250 .246	.278 .276	.114 .112



PART NO.	USAGE	ØA	ØB
GCS 14-5	RG 393	.343 .341	.099 .096
GCS 15-5	RG 142	.278 .276	.064 .062

GCS 14-5 AND GCS 15-5

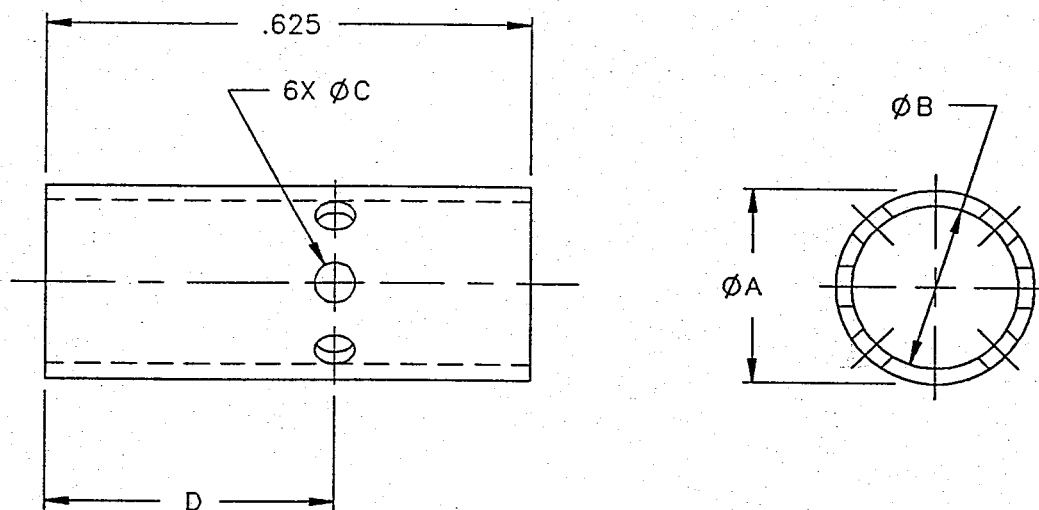
FIGURE 6 - SOCKET CONTACT COAX (CONTD)
(GCS 14 AND GCS 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 3 OF 5)



CENTER SOCKET CONTACT

PART NO.	USAGE	ØA	ØB	ØC	ØD	E	F	G	H
GCS 14-1	RG 393	.142	.123	.101	.074	.305	.030	.200	.160
		.140	.121	.098	.072	.295	.026	.190	.150
GCS 15-1	RG 142	.111	.094	.044	.055	.295	.020	.190	.150
		.109	.092	.042	.053	.285	.016	.180	.140

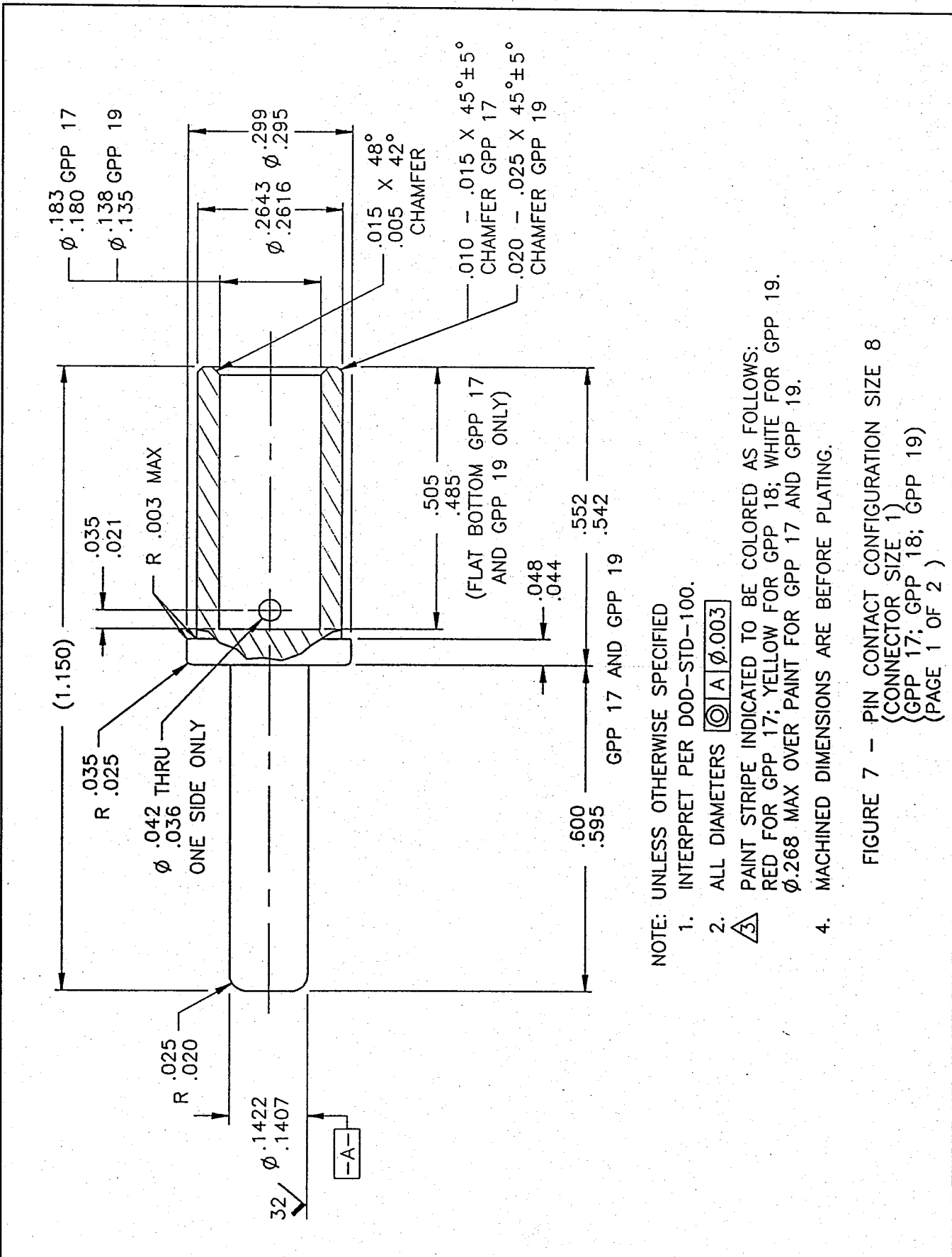
FIGURE 6 - SOCKET CONTACT COAX (CONTD)
(GCS 14 AND GCS 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 4 OF 5)



GCS 14-6 AND GCS 15-6
CRIMP FERULE

PART NO.	USAGE △	ØA	ØB	ØC	D
GCS 14-6	RG 393	.488 .478	.437 .427	.159	.459
GCS 15-6	RG 142	.255 .245	.224 .214	.094	.375

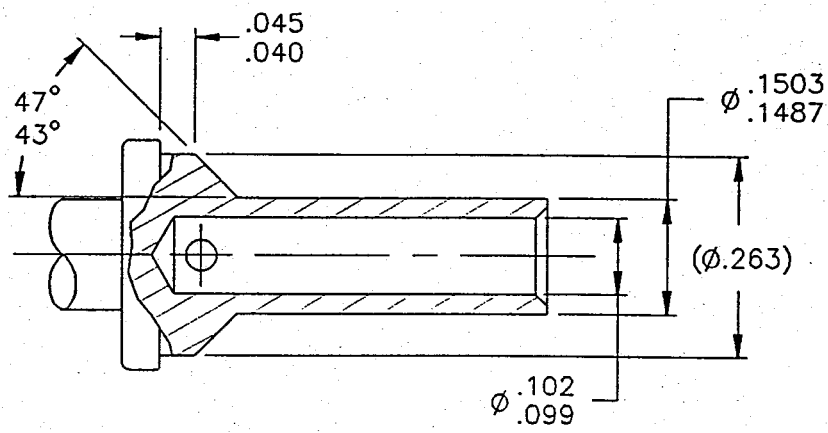
FIGURE 6 - SOCKET CONTACT COAX (CONTD)
(GCS 14 AND GCS 15)
(CONNECTOR SIZE 1)
(RG-393/U AND RG-142 B/U)
(PAGE 5 OF 5)



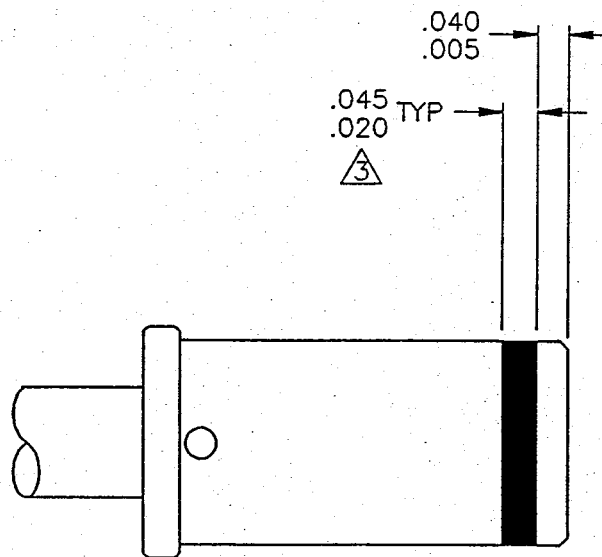
NOTE: UNLESS OTHERWISE SPECIFIED

1. INTERPRET PER DOD-STD-100.
2. ALL DIAMETERS \varnothing A | \varnothing .003
3. \triangle PAINT STRIPE INDICATED TO BE COLORED AS FOLLOWS:
 RED FOR GPP 17; YELLOW FOR GPP 18; WHITE FOR GPP 19.
 \varnothing .268 MAX OVER PAINT FOR GPP 17 AND GPP 19.
4. MACHINED DIMENSIONS ARE BEFORE PLATING.

FIGURE 7 - PIN CONTACT CONFIGURATION SIZE 8
 (CONNECTOR SIZE 1)
 (GPP 17; GPP 18; GPP 19)
 (PAGE 1 OF 2)

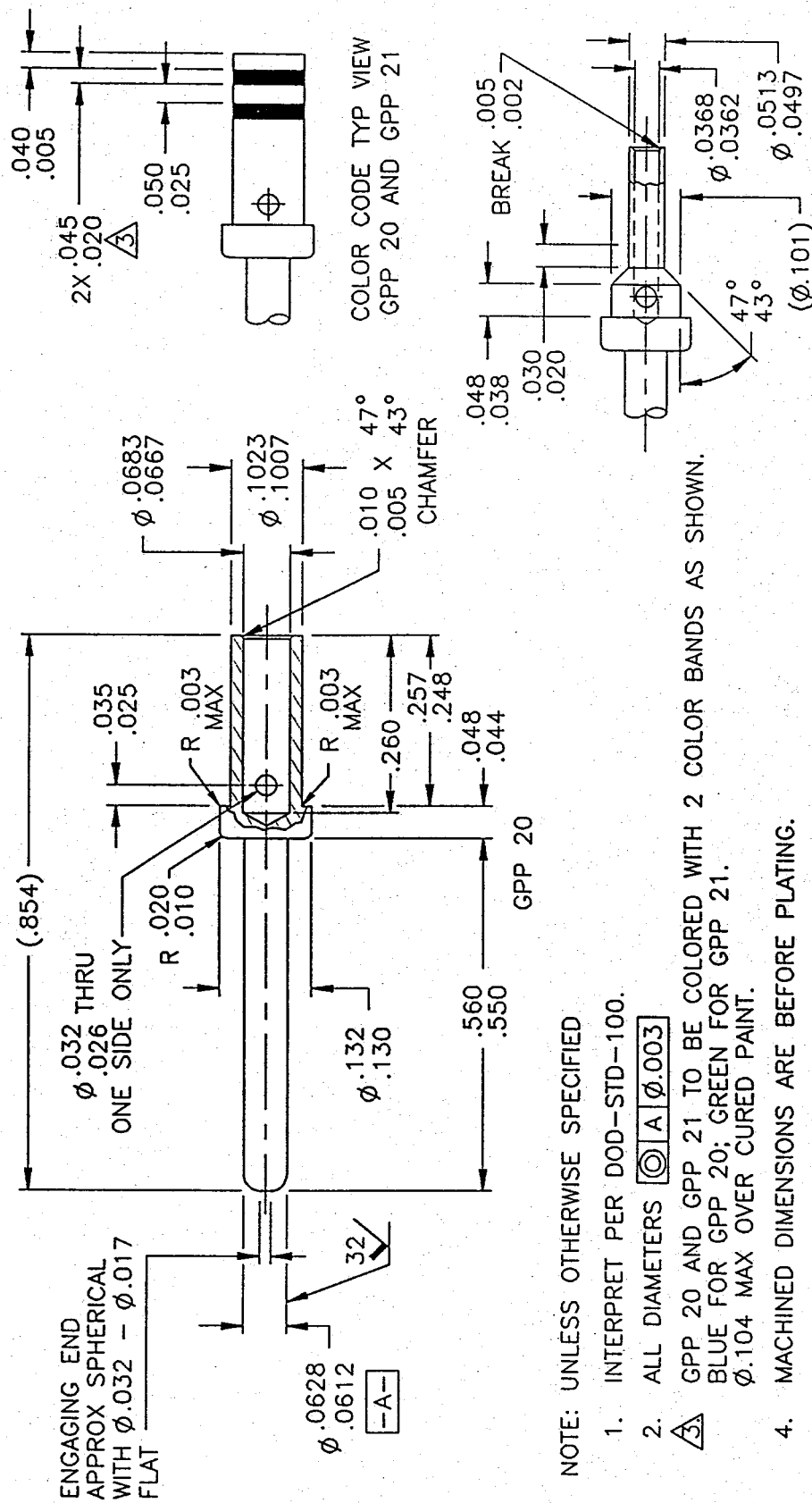


GPP 18 ONLY
 ALL DIMENSIONS SAME AS GPP 17
 EXCEPT AS NOTED



COLOR CODE TYP VIEW

FIGURE 7 - PIN CONTACT CONFIGURATION SIZE 8 (CONTD)
 (CONNECTOR SIZE 1)
 (GPP 17; GPP 18; GPP 19)
 (PAGE 2 OF 2)

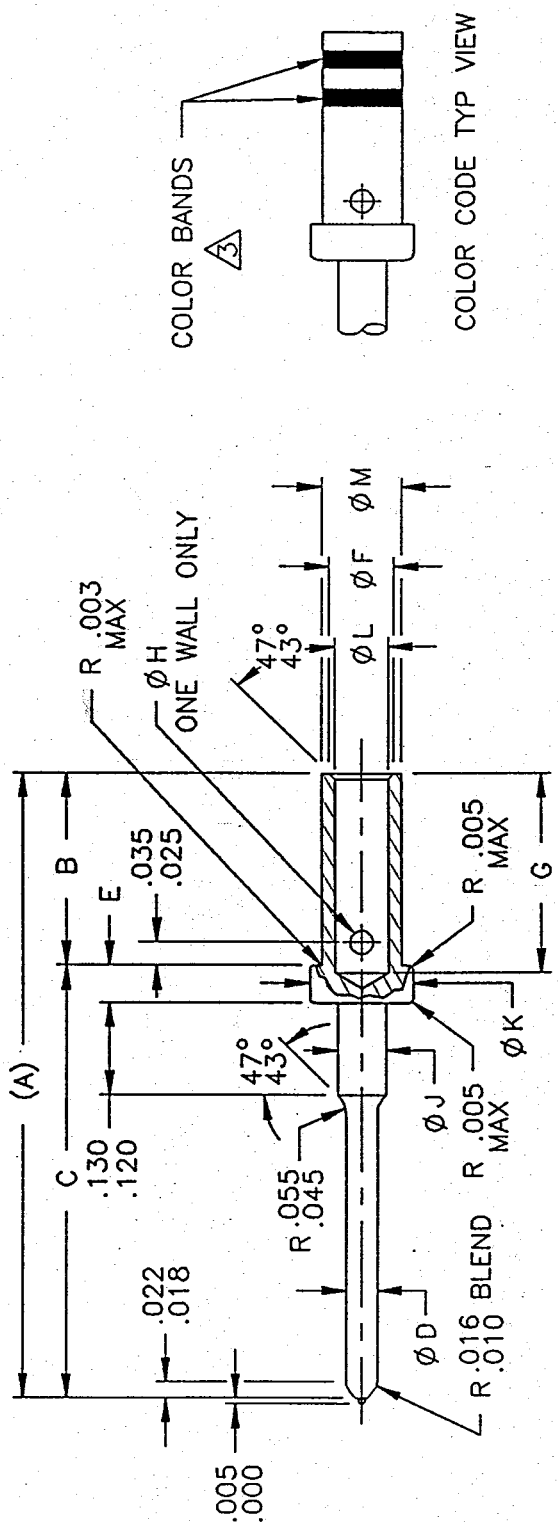


NOTE: UNLESS OTHERWISE SPECIFIED

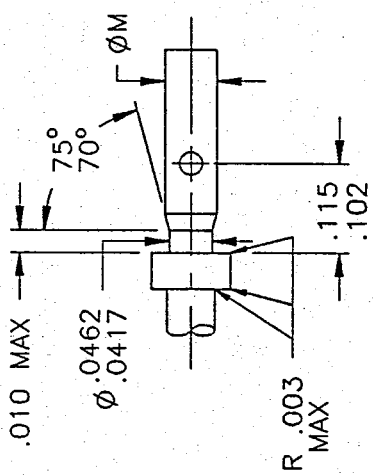
1. INTERPRET PER DOD-STD-100.
2. ALL DIAMETERS $\text{A} \phi .003$
3. GPP 20 AND GPP 21 TO BE COLORED WITH 2 COLOR BANDS AS SHOWN. BLUE FOR GPP 20; GREEN FOR GPP 21. $\phi .104$ MAX OVER CURED PAINT.
4. MACHINED DIMENSIONS ARE BEFORE PLATING.

GPP 21
ALL DIMENSIONS SAME
AS GPP 20
EXCEPT AS NOTED

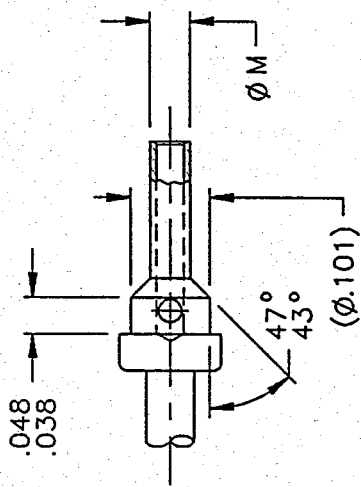
FIGURE 8 - PIN CONTACT CONFIGURATION SIZE 16
(CONNECTOR SIZE 1)
(GPP 20; GPP 21)



GPP 22, GPP 23, GPP 24 AND GPP 25 EXCEPT AS NOTED BELOW



GPP 25
CONTACT ONLY



GPP 23
CONTACT ONLY

FIGURE 9 - PIN CONTACT CONFIGURATION SIZES 16-20-22
(CONNECTOR SIZE 2 AND SIZE 3)
(GPP 22, GPP 23, GPP 24 AND GPP 25)
(PAGE 1 OF 2)

TABLE I

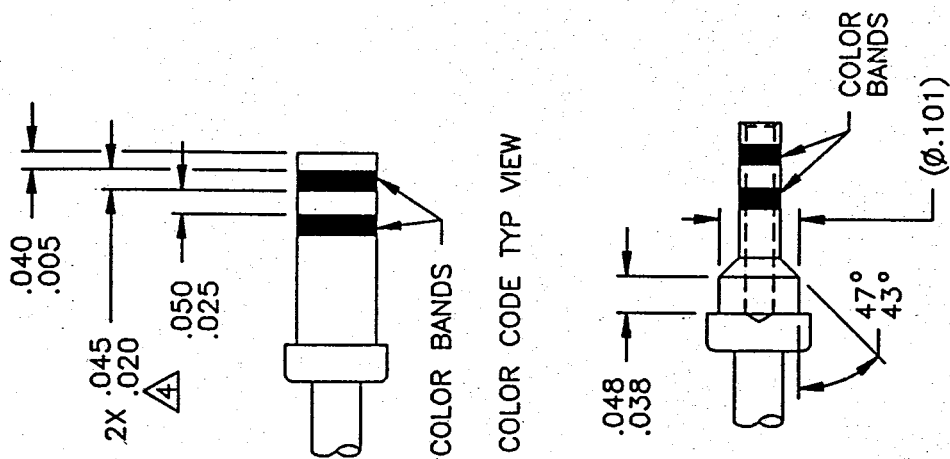
CONTACT SIZE	A REF	B	C	ØD	E	ØF	G	ØH	ØJ	ØK	ØL	ØM	COLOR BAND	GSFC TYPE DESIGNATION
22-1	.830	.237	.593	.0297	.032	.047	.157	.022	.060	.0702	.0378	.0512	BLUE/ WHITE	GPP25
	MAX	.231	.587	.0292	.029	.041	.147	.019	.055	.0687	.0363	.0492		
20-1	.764	.171	.593	.0402	.032	.066	.186	.032	.0772	.1022	.0503	.0772	GREEN/ WHITE	GPP24
	MAX	.160	.587	.0387	.029	.062	.157	.027	.0757	.0997	.0488	.0757		
16-1	.865	.257	.608	.0627	.047	.089	.284	.042	.1022	.1320	.0683	.1022	BLUE / YELLOW	GPP22
	MAX	.246	.602	.0612	.044	.083	.250	.037	.1007	.1297	.0668	.1007		
16-2	.865	.257	.608	.0627	.047	.0428	.270	.032	.1022	.1320	.0378	.0513	BLUE/ RED	GPP23
	MAX	.248	.602	.0612	.044	.0382	.250	.026	.1007	.1297	.0668	.0497		

NOTES: UNLESS OTHERWISE SPECIFIED

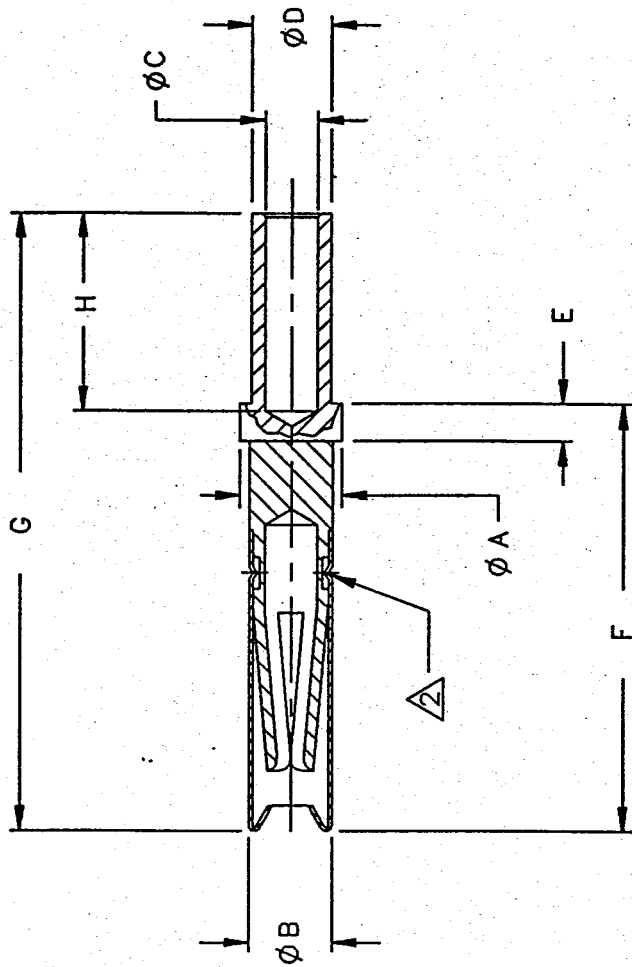
1. INTERPRET PER DOD-STD-100.
2. MACHINED DIMENSION BEFORE PLATING.

△ COLOR BAND INFORMATION PER TABLE.

FIGURE 9 - PIN CONTACT CONFIGURATION SIZES 16-20-22 (CONTD)
(CONNECTOR SIZE 2 AND SIZE 3)
(GPP 22, GPP 23, GPP 24 AND GPP 25)
(PAGE 2 OF 2)



GPS 23 ONLY



GPS 22, GPS 23, GPS 24 AND GPS 25

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET PER DOD-STD-100.

2. THE CRIMP JOINT OF THE HOOD TO THE BODY SHALL WITHSTAND A 5 LB PULL, 3 OR 4 INDENTATIONS 120° OR 90° APART (AS APPLICABLE).

3. MACHINED DIMENSIONS ARE BEFORE PLATING.

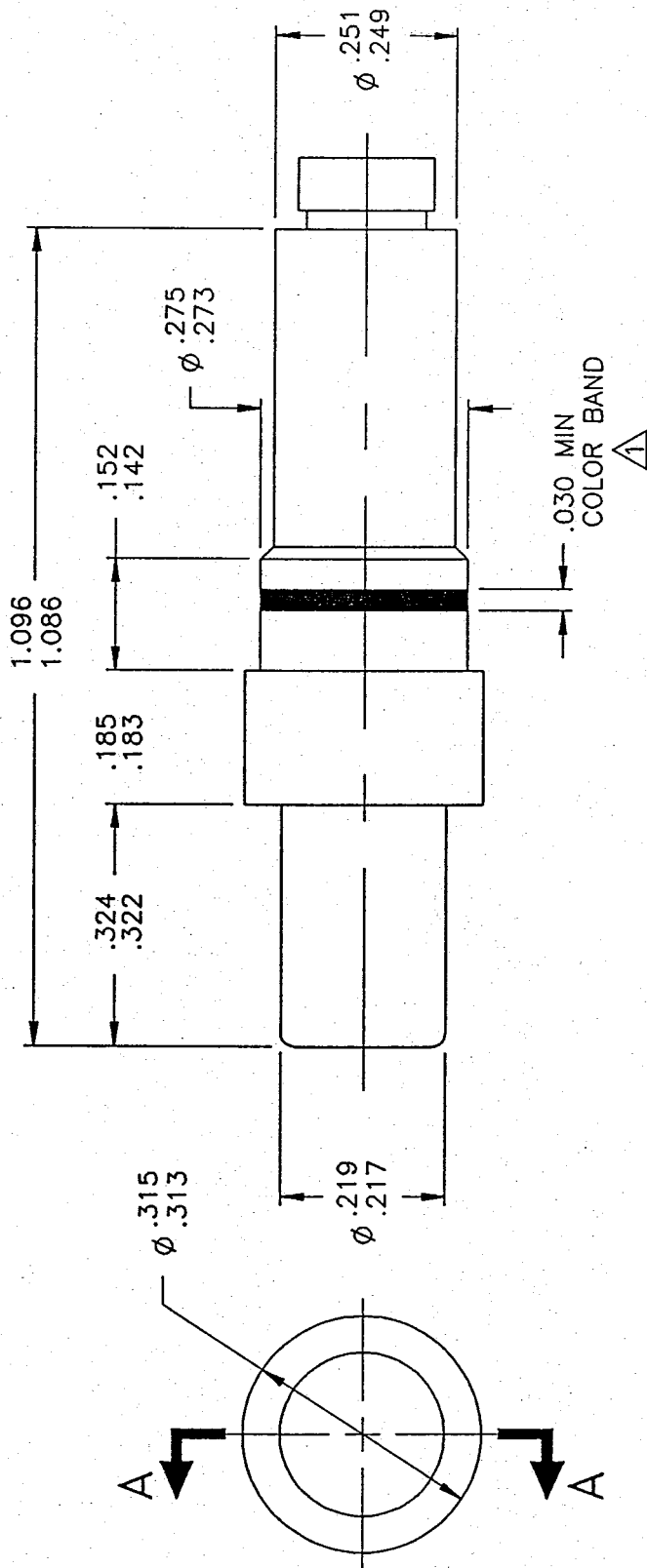
4. COLOR BAND IDENTIFICATION PER TABLE I.

FIGURE 10 - SOCKET CONTACT CONFIGURATION SIZES 16-20-22 (CONNECTOR SIZE 2 AND SIZE 3) (GPS 22, GPS 23, GPS 24 AND GPS 25) (PAGE 1 OF 2)

TABLE I. POWER SOCKET CONTACTS (SIZE 2 AND SIZE 3)

CONTACT SIZE	ØA	ØB	ØC	ØD	E	F	G	H	COLOR BAND	GSFC TYPE DESIGNATION
16-1	.133	.113	.068	.103	.048	.500	.767	.284	BLUE/ YELLOW	GPS22
	.130	.110	.065	.101	.044	.493	.730	.250		
16-2	.133	.113	.0378	.0513	.048	.510	.757	.284	BLUE/ RED	GPS23
	.130	.110	.0362	.0497	.044	.483	.740	.250		
20-1	.103	.078	.050	.078	.048	.500	.656	.186	GREEN/ WHITE	GPS24
	.100	.076	.048	.076	.044	.493	.636	.157		
22-1	.0702	.062	.0378	.0513	.032	.488	.721	.157	BLUE/ WHITE	GPS25
	.0687	.061	.0362	.0497	.029	.478	.708	.142		

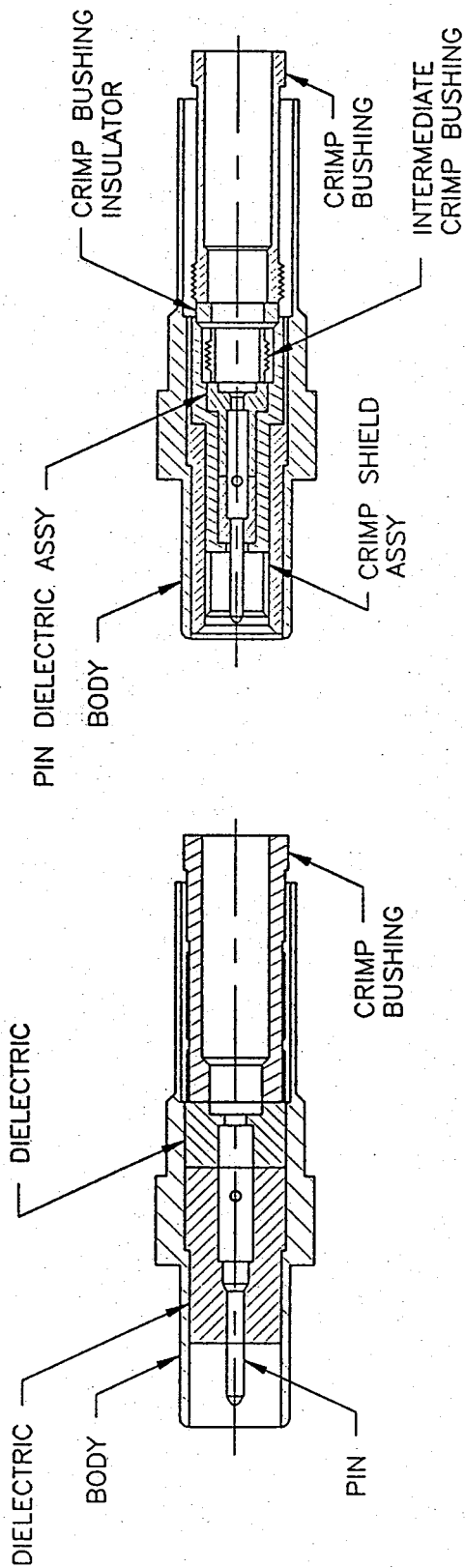
FIGURE 10 - SOCKET CONTACT CONFIGURATION SIZES 16-20-22 (CONTD)
(CONNECTOR SIZE 2 AND SIZE 3)
(GPS 22, GPS 23, GPS 24 AND GPS 25)
(PAGE 2 OF 2)



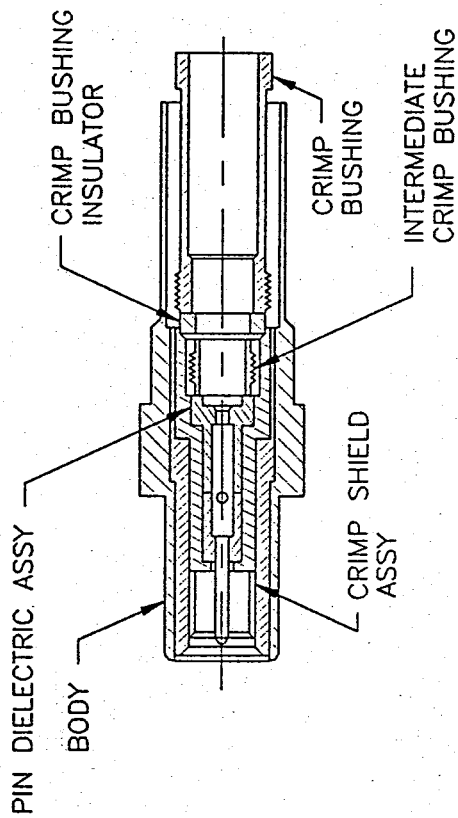
△ APPROPRIATE COLOR BAND (SEE TABLE) TO BE LOCATED ON .273 - .275 DIAMETER.

GSFC TYPE DESIGNATION	NOMENCLATURE	COLOR BAND
GCP 28	CONTACT PIN, COAX	GREEN
GTP 26	CONTACT PIN, TRIAX	YELLOW
GDP 27	CONTACT PIN, DATA BUS	BLACK

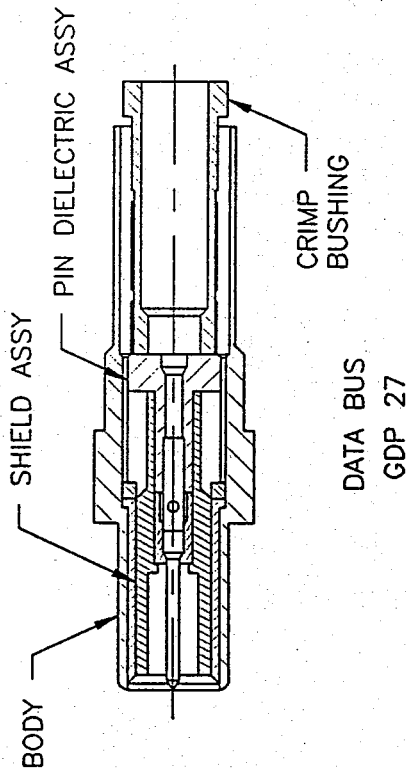
FIGURE 11 - PIN CONTACT CONFIGURATION (PLUG)
 TRIAXIAL, COAXIAL (RG-142 B/U)
 DATA BUS
 (GTP 26, GCP 28 AND GDP 27)
 (PAGE 1 OF 2)



COAX (RG-142 B/U)
GCP 28



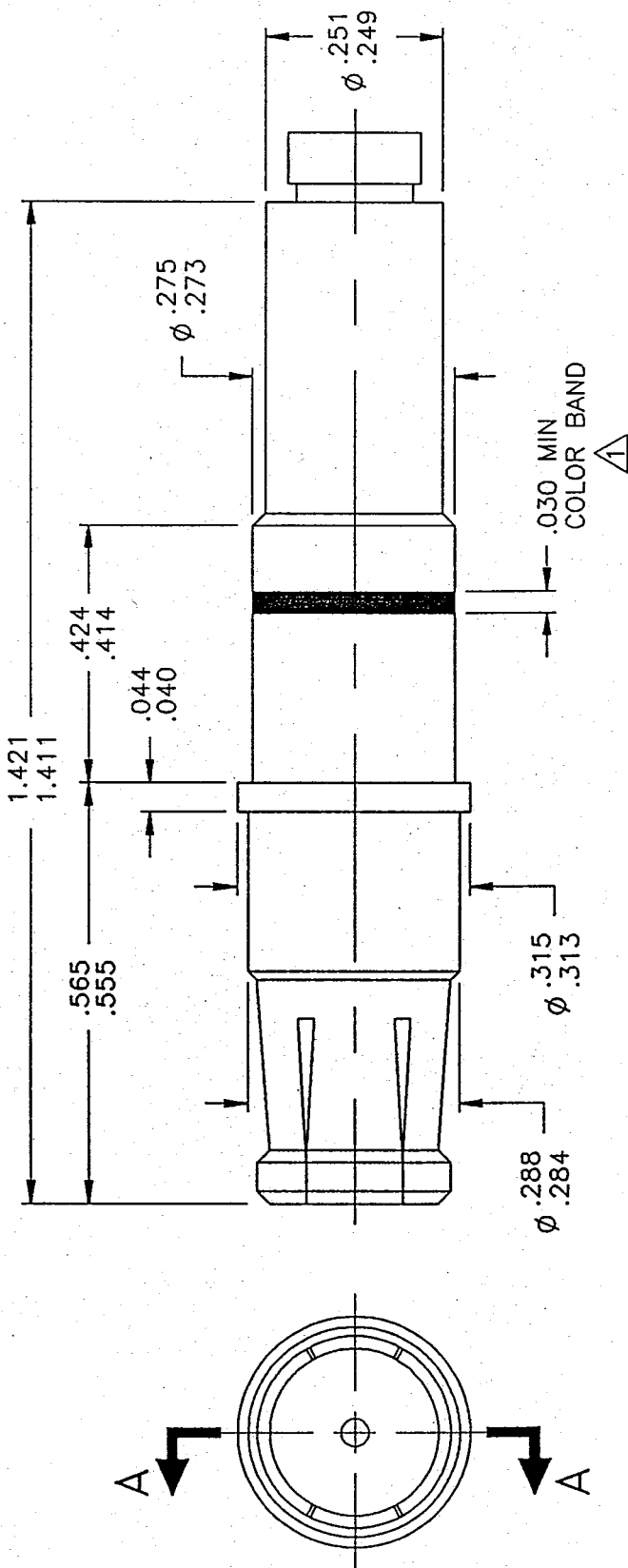
TRIAX
GTP 26



DATA BUS
GDP 27

SECTION A-A

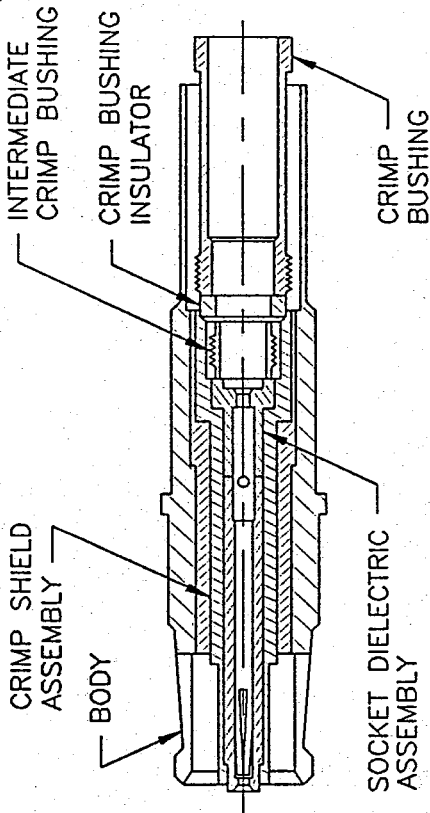
FIGURE 11 - PIN CONTACT CONFIGURATION (PLUG) (CONTD)
TRIAXIAL, COAXIAL (RG-142 B/U)
DATA BUS
(GTP 26, GCP 28 AND GDP 27)
(PAGE 2 OF 2)



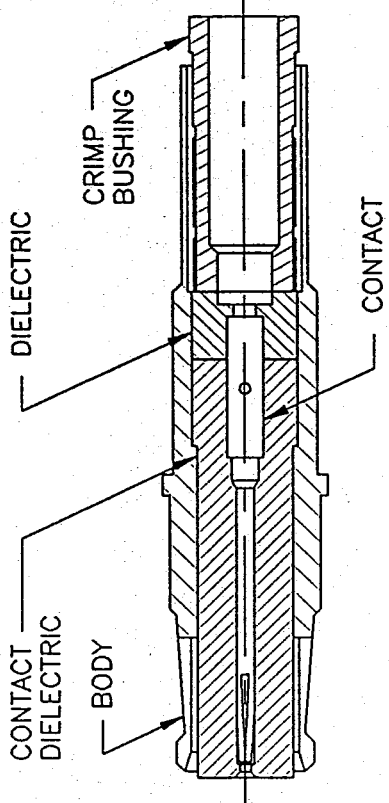
△ APPROPRIATE COLOR BAND (SEE TABLE) TO BE LOCATED ON .273 - .275 DIAMETER.

GSFC TYPE DESIGNATION	NOMENCLATURE	COLOR BAND
GCS 28	CONTACT SOCKET, COAX	GREEN
GTS 26	CONTACT SOCKET, TRIAX	YELLOW
GDS 27	CONTACT SOCKET, DATA BUS	BLACK

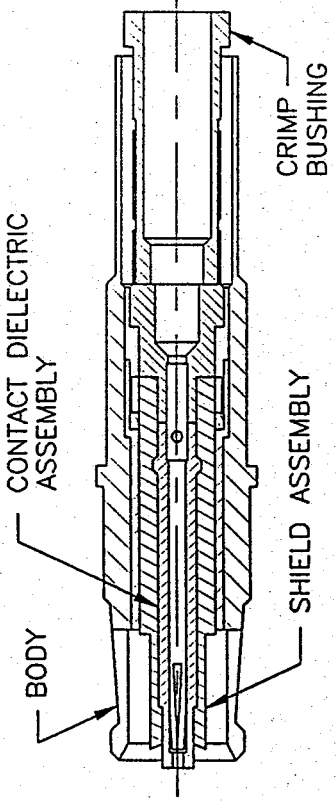
FIGURE 12 - SOCKET CONTACT CONFIGURATION (JACK)
 TRIAXIAL, COAXIAL (RG-142 B/U)
 DATA BUS
 (GTS 26, GCS 28 AND GDS 27)
 (PAGE 1 OF 2)



TRIAX
GTS 26



COAX (RG-142 B/U)
GCS 28



DATA BUS
GDS 27

SECTION A-A

FIGURE 12 - SOCKET CONTACT CONFIGURATION (JACK) (CONTD)
TRIAXIAL, COAXIAL (RG-142 B/U)
DATA BUS
(GTS 26, GCS 28 AND GDS 27)
(PAGE 2 OF 2)

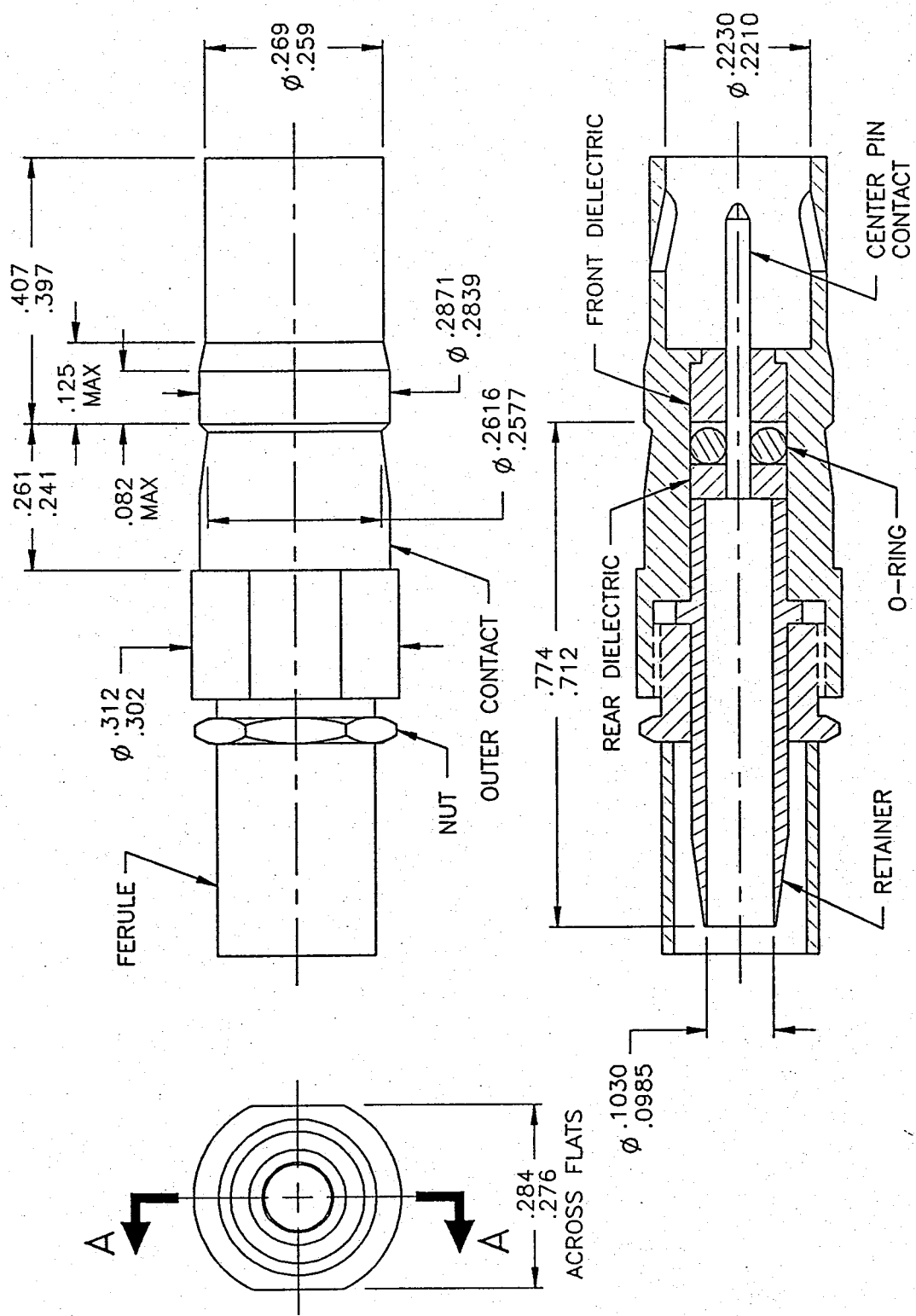


FIGURE 13 - PIN CONTACT CONFIGURATION (COAXIAL PLUG)
(RG-122/U)
(GCP 29)

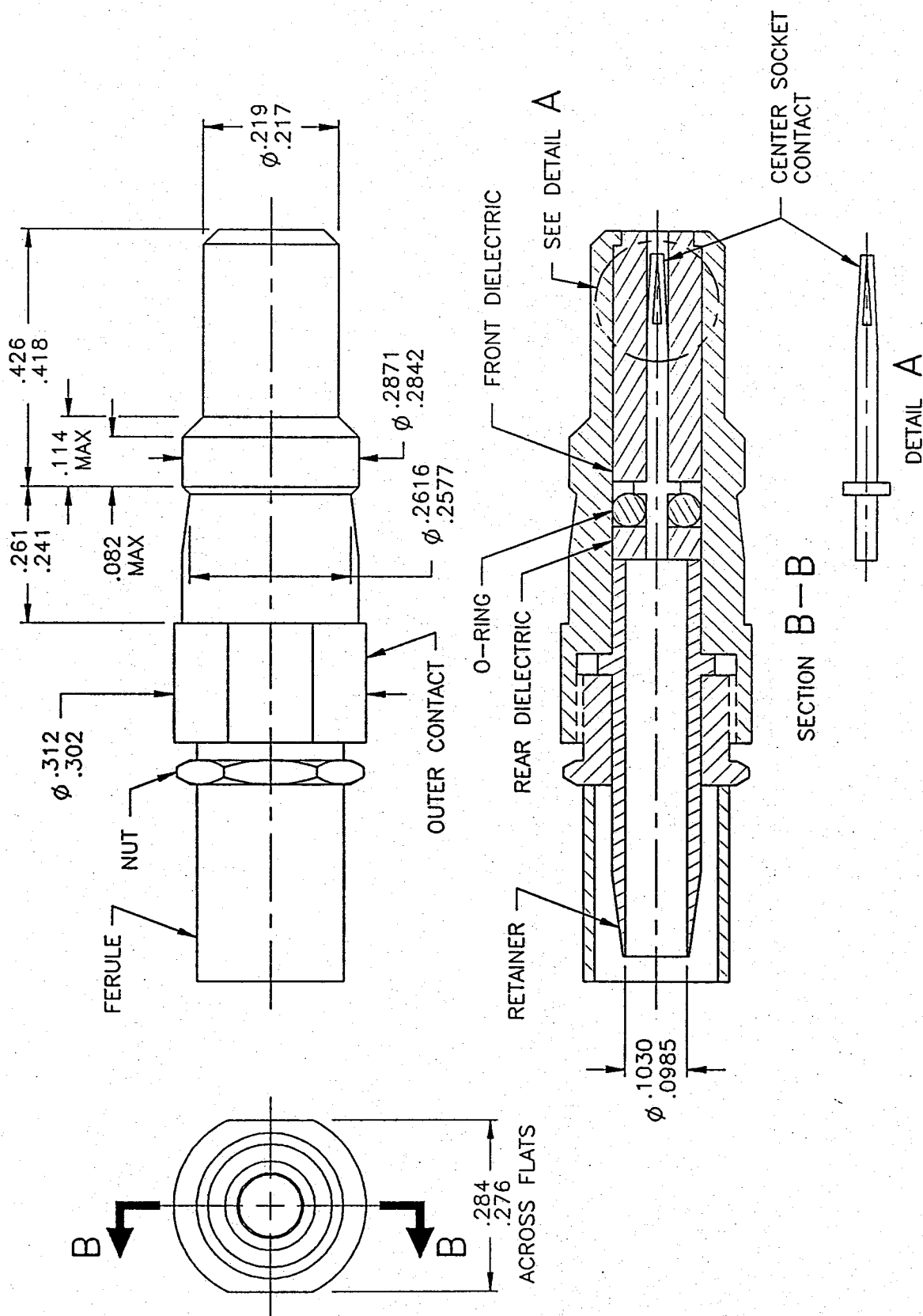
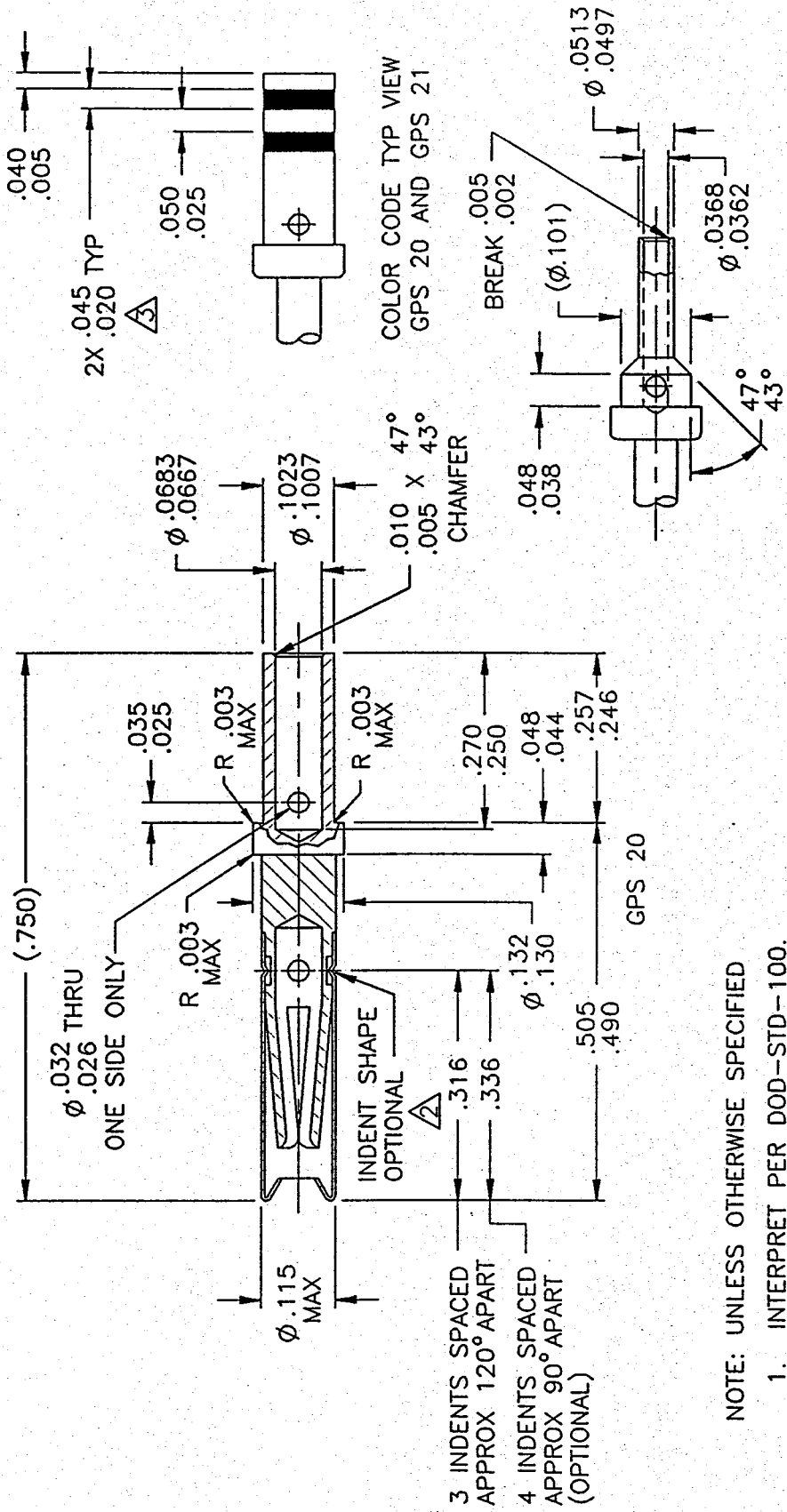


FIGURE 14 - SOCKET CONTACT CONFIGURATION (COAXIAL JACK)
(RG-122/U)
(GCS 29)



- NOTE: UNLESS OTHERWISE SPECIFIED
1. INTERPRET PER DOD-STD-100.
 2. THE CRIMP JOINT OF THE HOOD TO CONTACT BODY SHALL WITHSTAND A 5 LB MINIMUM AXIAL PULL.
 3. DIAMETER OVER LENGTH NOTED USING INK AS FOLLOWS:
2 BLUE FOR GPS 20; 2 GREEN FOR GPS 21.
φ.104 MAX OVER PAINT.
 4. MACHINED DIMENSIONS ARE BEFORE PLATING.

GPS 21
SAME AS GPS 20
EXCEPT AS NOTED

FIGURE 15 - SOCKET CONTACT CONFIGURATION SIZE 16
(CONNECTOR SIZE 1)
(GPS 20; GPS 21)