

LM
GRUMMAN STANDARD SPECIFICATION

TITLE: Assembly of Deutsch DC and
NDC 500000 Series RF Coaxial
Connectors



Spec. No. LSP-14-13310B

Date: 5-29-69

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CODE IDENT NO. 26512

1. SCOPE

This specification establishes the requirements for the assembly of Deutsch DC (Environmental) and NDC (Non-Environmental) 500000 Series RF Coaxial Connectors.

- 1.1 Superseding Data. - This specification supersedes and cancels LSP-14-13310A dated 10-20-66 including Amendments 1 and 2.

2. APPLICABLE DOCUMENTS

The following documents shall form a part of this specification to the extent specified herein:

GRUMMAN

LSP-14-13306

Stripping of Electrical Wire and Cable.

LSP-380-601

Cables, RF Coaxial Communications Sub-System Design Control Specification

GT535AE

Tape, Teflon, Pressure Sensitive Adhesive

GT835D

Tape, Polyimide, Pressure Sensitive Adhesive

3. REQUIREMENTS

Where Engineering drawings or specifications require the assembly of coaxial cable to Deutsch DC or NDC 500000 Series RF coaxial connectors, it shall be accomplished as follows:

- 3.1 Restrictions. - The Deutsch NDC 500000 Series RF coaxial connectors are a non-environmental type and therefore are restricted to Ground Support Equipment.
- 3.2 Materials. - Unless otherwise specified on the Engineering drawing or specification, the following materials shall be used:

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3.2 (Continued)

- (a) Coaxial Connectors - DC and NDC 500000 Series, The Deutsch Co., Banning, Calif.
- (b) Coaxial Cable per LSP-380-601.
- (c) Tape - Teflon per GT535AE-4
H-Film per GT835D-8

3.3 Equipment. - Only the following equipment or equivalent, as approved by Manufacturing Engineering shall be used.

- (a) Crimp Tools, Deutsch #15500-25-1, 20052, 20055 and 20059.
The Deutsch Company, Banning, Calif.
- (b) Crimp Tools and Nests, Thomas Betts #WT-206-08-09E, with GSC-187 or 205, WT-230 with GSC-128, WT-231 with GSC-261 and WT-232 with GSC-175.
The Thomas and Betts Co., Elizabeth, N.J.
- (c) Collet Pliers, Falcon Model FBCT Modified.
Falcon Laboratories, Descanso, Calif.
- (d) Torque Wrench, Model-Cal-30-Roto-Torq with M13648-1 adapter.
Richmont Inc., Monrovia, Calif.

3.4 Work Area. - The work area and work bench shall be maintained in a clean and orderly condition.

3.5 Procedure. -

- 3.5.1 Assembly of Deutsch DC 500000 Series RF Coaxial Connectors to Coaxial Cables. - Utilizing the components (Figure 1) supplied with the applicable coaxial connector specified in Table I the DC connector shall be assembled to the coaxial cable in accordance with the following:

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3.5.1

(Continued)

- (a) Strip the cable to the applicable dimensions of Figures 2 and 3 and in accordance with LSP-14-13306
- (b) Slide the crimp sleeve and seal retainer nut onto the cable. (Figure 3)
- (c) Insert the inner contact into the Deutsch Crimp Tool No. 15500-25-1 until it is fully seated in the positioner. (Figure 4)
- (d) Insert the inner conductor into the contact until the inner insulation butts against the back of the contact. (Figure 4)
- (e) Crimp the contact to the wire by squeezing the handles until the crimping cycle has been completed.
- (f) The wire will be visible in the contact inspection hole, after removing the contact-wire assembly from the tool, if the cable has been properly prepared.
- (g) Slide the crimp support sleeve over the inner insulation and under the shielding braid until the braid butts against the support sleeve shoulder. (Figure 5)
- (h) Slide the teflon sleeve over the inner contact and past the contact ridge. (Figure 5)
- (i) Insert the entire assembly through the back of the connector shell, and tighten the seal retainer nut.
- (j) Slide the crimp sleeve over the shielding braid until it butts against the shoulder of the crimp support sleeve. (Figure 6)
- (k) Using the applicable crimping tool specified in Table I, crimp the sleeve by squeezing the handles until the crimping cycle has been completed. (Figure 7)

3.5.2

Assembly of Deutsch NDC 500000 Series RF Coaxial
Connectors to Coaxial Cables. - Utilizing the com-
ponents supplied with the applicable connector specified in Table II,
the NDC connector shall be assembled to a coaxial cable in accordance
with the following:

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3.5.2 (Continued)

- (a) Strip the cable to the dimensions shown in Figure 8, and in accordance with LSP-14-13306.
- (b) Slide the crimp sleeve onto the cable.
- (c) Insert the inner contact into the Deutsch Crimp Tool No. 15500-25-1 until it is fully seated in the positioner.
- (d) Insert the inner conductor into the contact until the inner insulation butts against the back of the contact.
- (e) Crimp the contact to the wire by squeezing the handle until the crimping cycle has been completed.
- (f) The wire will be visible in the contact inspection hole, after removing the contact wire assembly from the tool, if the cable has been properly prepared.
- (g) Insert the rubber grommet into the front of the crimp support sleeve until it rests on the inside shoulder.

NOTE: The rubber grommet is not used with coaxial cables larger than 0.195 inch O.D..

- (h) Slide the crimp support sleeve over the inner insulation and under the shielding braid until the braid butts against the crimp support sleeve shoulder. (Figure 9)
- (i) Push the teflon sleeve over the inner contact and past the connector ridge.
- (j) Screw the crimp support sleeve hand tight, into the connector shell. (Figure 10)
- (k) Grasp the front of the connector shell with the modified Falcon Collet Pliers. With the torque wrench set at 5 to 6 inch pounds, tighten the crimp support sleeve to the shell taking care that the shell does not slip.
- (l) Slide the crimp sleeve over the shielding braid until it butts against the crimp support sleeve shoulder. (Figure 11)

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3.5.2 (Continued)

- (m) Using the applicable crimp tool specified in Table II, crimp the sleeve by squeezing the handle until the crimping cycle has been completed.

3.6 Sealing Connector Against Water and Glycol. - When specified on the Engineering drawing, connectors shall be sealed as follows:

3.6.1 Application of GT535AE-4 Tape. - Spiral Wrap 9 to 10 inches of tape on all DC & NDC 500000 series connectors assembled to coaxial cables. Wrapping shall be accomplished as follows:

- (a) Wind one complete wrap of tape around the connector backshell.
- (b) Gently stretch the tape and spiral wrap the connector towards the coaxial cable.
- (c) Apply sufficient tape over the connector interface to assure complete coverage with no holes or tears. Continue to spiral wrap until $3/4$ to 1 inch of the coaxial cable behind the connector crimp sleeve is covered.
- (d) Terminate the wrap with one complete turn of the tape on itself around the cable. Cut off excess tape and press the end down to assure adhesion.

3.6.2 Application of GT835D-8 Tape. - Wrap $1\ 1/4$ to $1\ 3/4$ inches of tape around the cable, so that the tape approximately covers $1/2$ the end of the GT535AE-4 tape and $1/2$ is on the cable jacket as shown in Figure 12.

3.7 Packaging. - Prior to storing or stocking, cable assemblies shall be packaged in clean polyethylene bag or film.

3.8 Mating and Disconnecting DC and NDC Connectors. - Mating and disconnecting DC and NDC connectors shall be accomplished as follows:

3.8.1 DC Connectors. -

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3.8.1.1 Mating DC Connectors. -

- (a) Align the colored key on the plug with the colored keyway of the receptacle.
- (b) Grasp the plug in the middle and push straight forward until an audible click is heard and the colored ring appears at the rear of the plug.

3.8.1.2 Disconnecting DC Connectors. -

- (a) Grasp the plug in the middle and pull straight back.

3.8.2 NDC Connectors. -

3.8.2.1 Mating NDC Connectors. -

- (a) Slide plug over the receptacle.
- (b) Grasp plug in the middle and push straight forward until an audible click is heard and the blue ring appears at the rear of the plug.

3.8.2.2 Disconnecting NDC Connectors. -

- (a) Grasp the plug in the middle and pull straight back.

4. QUALITY ASSURANCE PROVISIONS

Quality Control shall be responsible for assuring compliance with the requirements of this specification.

- 4.1 Receiving. - Each batch of material required by this specification shall be inspected in accordance with the applicable procurement document and identified upon receipt.

- 4.2 In-Process Inspection. - Contacts shall be subjected to the following in-process inspection:

- (a) After crimping the contact to the inner conductor they shall be visually inspected for the following.
 - (1) The wire shall be visible through the contact inspection hole.

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4.2 (continued)

(a) (Continued)

- (2) There shall be no loose or damaged wire and no damaged contacts.
- (3) The crimp shall have been performed on the proper portion of the contact.

4.3 End Product Inspection. - Connector assemblies shall be subjected to the following inspection and tests.

4.3.1 Visual Inspection. - Connector assemblies shall be visually inspected for the following:

- (a) There shall be no cut, broken, or loose cables; no damaged contacts or connectors.

4.3.2 Electrical Tests. - Unless otherwise specified on the Engineering drawing or specification connector assemblies shall be subjected to the following electrical tests:

- (a) Continuity Test - Continuity test shall be performed to insure compliance with the Engineering drawing.
- (b) Breakdown Test - Breakdown test 500 volts dc between pin and case and when applicable between pin and shield.

4.3.2.1 To avoid damage to vehicle equipment, repairs and changes made to potting and/or wiring on cable or connector assemblies installed in the vehicle subsequent to the installation of vehicle equipment, shall not be tested to the requirements of 4.3.2(b).

4.4 Connector assemblies not meeting the requirements of this specification shall be subjected to rejection or Material Review Board action.

5. NOTES

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5.1

Suppliers (Sellers). - This specification
shall be applicable for Supplier (Seller)

compliance as specified by the Contract, Engineering drawings or
specifications. All deviation requests must be submitted in writing,
via the Purchasing Department, to the Grumman Standard Specifications
Committee for approval.

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TABLE I

DC COAXIAL CONNECTORS AND CRIMP TOOLS

Coaxial Connector Part No. <u>1/</u>	Crimp Tool (Crimp Sleeve) <u>2/</u>			Stripping Dimension "L" +1/32", -0
	Deutsch	Thomas & Berts		
	Tool No.	Tool No.	Nest No.	
DC 500000 DC 500001	20055	WT-230	GSC-128	9/16 inch on all cables up to .110 O. D.
DC 500002 DC 500003 DC 500006	20055	WT-206-08 -09E	GSC-187	11/16 inch on all cables larger than .110 inch O. D.
DC 500004	20055	WT-231	GSC-261	
DC 500005 DC 500007	20059	WT-206-08 -09E	GSC-205	

1/ DC3-500000 designates plug; DC4-500000 designates receptacle.

2/ Inner contacts are crimped with Deutsch Crimp Tool No. 15500-25-1.

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TABLE II

NDC COAXIAL CONNECTORS AND CRIMP TOOLS

Coaxial Connectors		Crimp Tool (Crimp Sleeve) ^{1/}		
Type	Deutsch No.	Deutsch	Thomas & Betts	
		Tool No.	Tool No.	Nest No.
Plug	NDC3 - 500000	20055	WT-230	GSC-128
Recept	NDC4 - 500000			
Plug	NDC3 - 500006	20055	WT-206-08 -09E	GSC-187
Recept	NDC4 - 500006			
Plug	NDC3 - 500003	20052	WT-232	GSC-175
Recept	NDC4 - 500003			

^{1/} Inner contacts are crimped with Deutsch Crimp Tool No. 15500-25-1.

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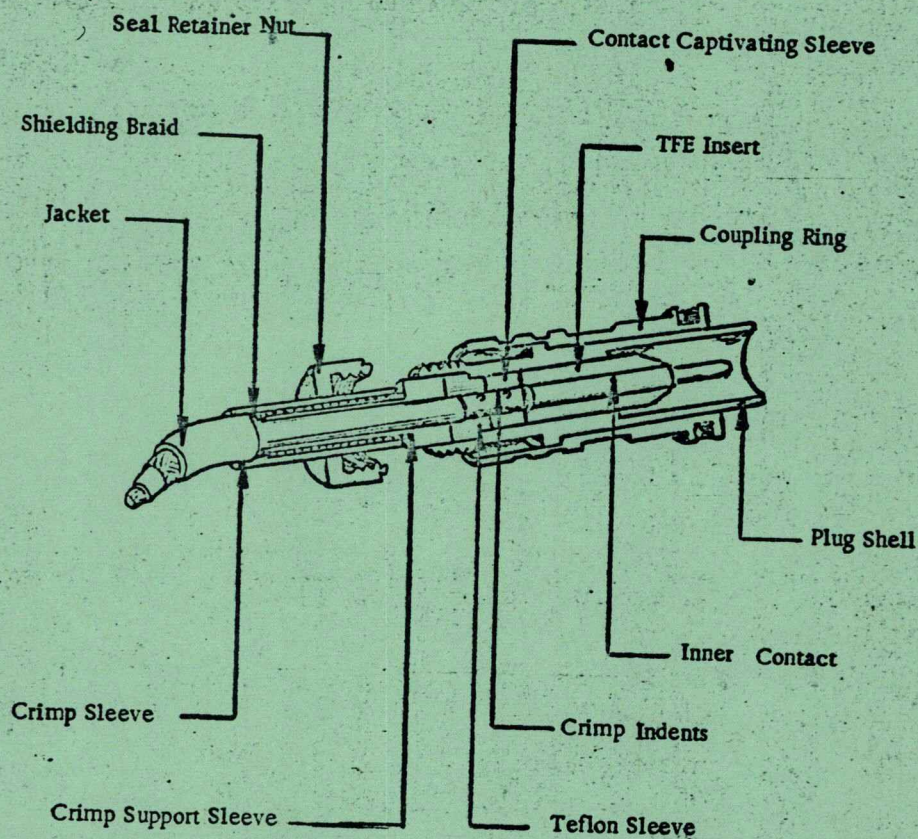


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Cutaway Drawing Showing Components of DC 500000
Series Connector

Figure 1

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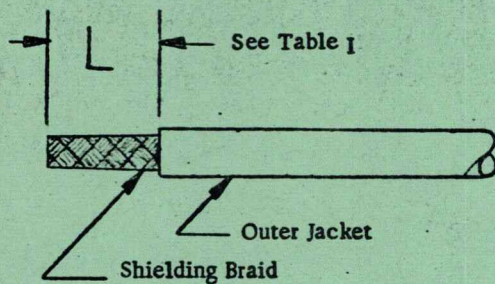


Figure 2

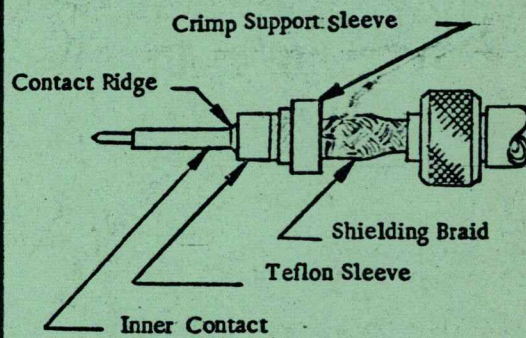


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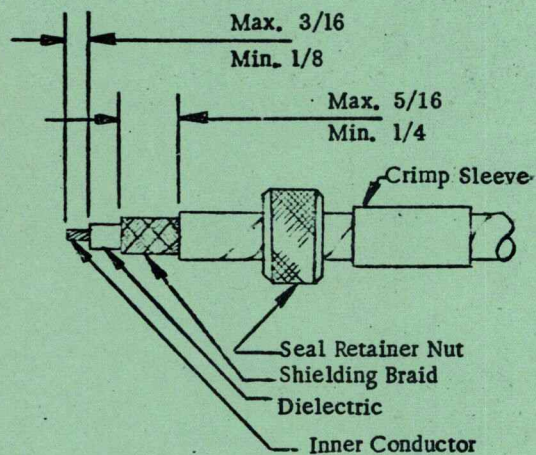


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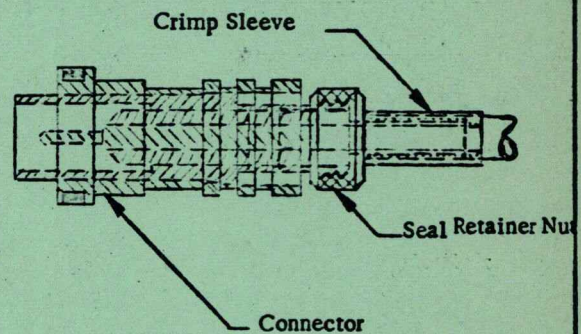


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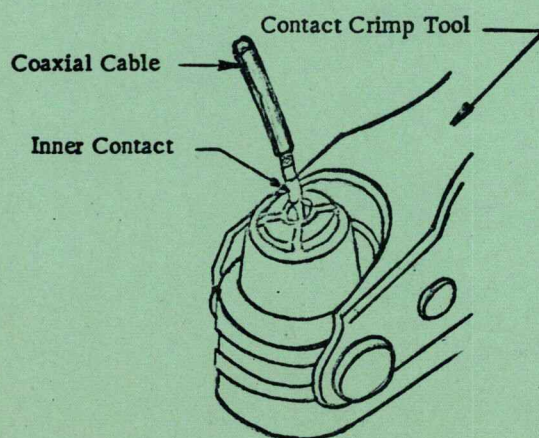


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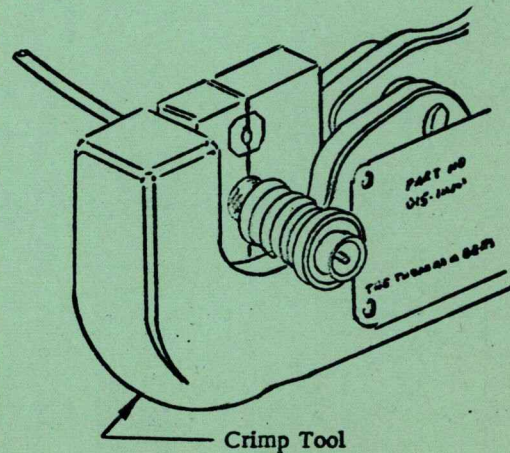


Figure 7

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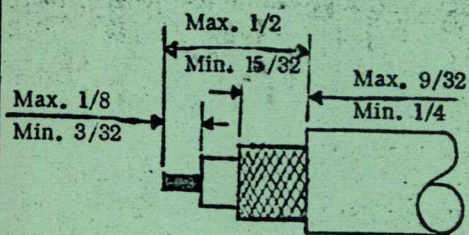


FIGURE 8

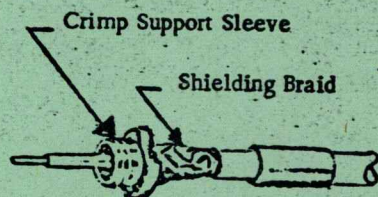


FIGURE 9

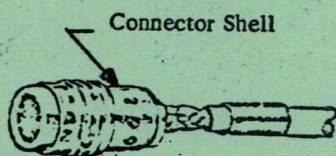


FIGURE 10

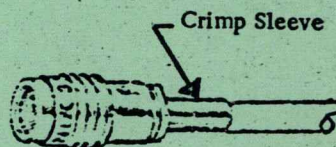


FIGURE 11

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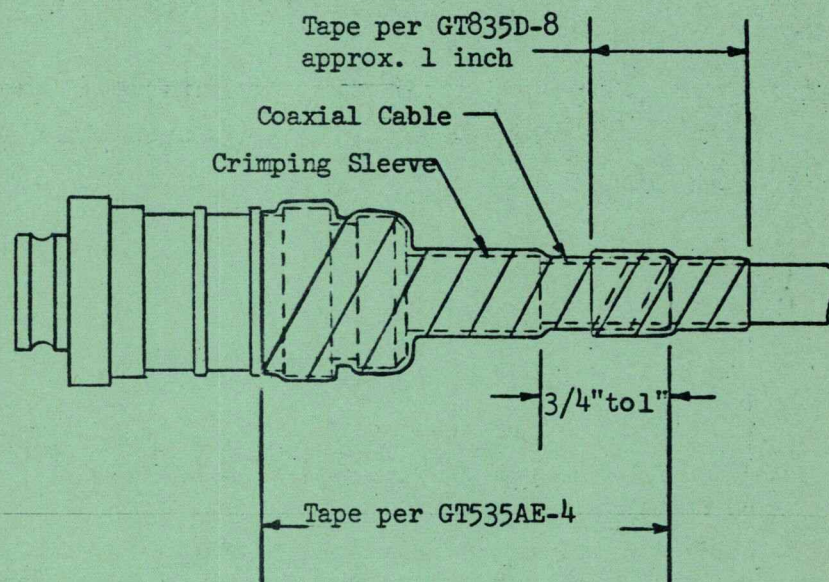


Figure 12

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Information pertaining to this specification may be obtained
from Engineering Specifications, Grumman Aircraft
Engineering Corporation, Bethpage, Long Island, New York.

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Contract No. NAS 9-1100

Exhibit E; Para. 6.9

Document Type II

Work Package
Function No. 930

Primary No. 921