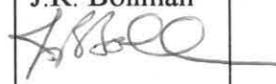


**REVISIONS**

<b>SYMBOL</b>	<b>DESCRIPTION</b>	<b>DATE</b>	<b>APPROVAL</b>
-	Original Issue	5/15/97	J.R. Bollman
A	RN number A-114 incorporated	7/25/97	J.R. Bollman
B	RN number A-117 incorporated	3/5/98	

**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	B	—	—	B	B	B	B	B	A											
SH	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REV																				

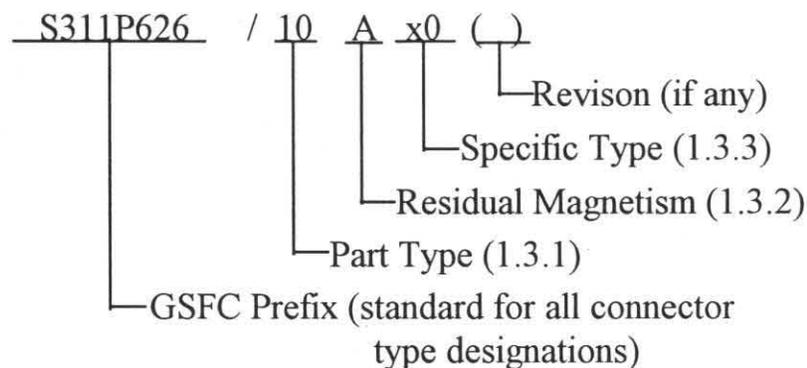
<b>ORIGINATOR:</b> T. R. Duffy/Unisys	<b>DATE</b> 4/23/97	<b>FSC: 5935</b>
<b>APPROVED:</b> H. B. Milteer/Unisys	4/23/97	Connector, Electric, Circular Polarized Shell, Electromagnetic Interference Filter Contact
<b>CODE 311 APPROVAL:</b> J. M. Lohr/GSFC	4/29/97	
<b>CODE 311 SUPERVISORY APPROVAL:</b> R. L. Chinnapongse/GSFC	5/15/97	
<b>ADDITIONAL APPROVAL:</b> Oscar Gonzalez/GSFC Code 735	4/30/97	S-311-P-626/10

**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 circular EMI filter connectors having multiple non-removable contacts. These connectors are similar to connector savers and are intended for use in level 2 or lower space flight hardware and ground support equipment (GSE) applications.
- 1.2 **GSFC General Specification.** Unless otherwise noted, all provisions of GSFC Specification S-311-P-626 apply to this specification.
- 1.3 **Connector Type Designation.** The connector type designation shall be as follows:



- 1.3.1 **Part Type.** A two digit number referring to this detail specification (10).
- 1.3.2 **Residual Magnetism.** A single letter which indicates the maximum level of residual magnetism in accordance with the latest issue of GSFC S-311-P-626. For these parts, the designation shall be A (not specified).
- 1.3.3 **Specific Type.** A two placed numerical identifier. The first place is a single digit indicating the size and physical configuration as listed in Table I. The second place is a single digit which indicates the specific parameters listed in Table II.

## 2. APPLICABLE DOCUMENTS

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

## SPECIFICATIONS

### Military

MIL-C-38999	Connectors, Electric, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General Specification for
MIL-G-45204	Gold Plating, Electrodeposited, TYPE II, Class I
MS27472	Connector, Receptacle, Electrical, Wall Mounting Flange, Crimp Type, Bayonet Coupling, Series II
MS27484	Connector, Plug, Electrical, Straight, Crimp Type, Bayonet Coupling, Series II

### NASA

GSFC S-311-P-626	Connectors, Electric, Miniature Polarized Shell, Rack and Panel, Pin Electromagnetic Interference Filter Contact, Nonmagnetic, Solder Type
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## STANDARDS

### Military

MIL-STD-220	Method of Insertion-Loss Measurement
MIL-STD-1285	Marking of Electrical and Electronic Parts

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

## 3. REQUIREMENTS

- 3.1 Qualification. Connectors furnished under this specification shall be products which are qualified to the requirements of GSFC S-311-P-626 and this detail specification.
- 3.2 Materials. Connectors shall be constructed of materials as specified herein.

3.2.1 Contact Materials and Plating. The contacts shall be made from a copper base alloy. Contact bodies shall be overall gold-plated 50 microinches thick minimum in accordance with MIL-G-45204, Type 2, Grade C, Class 1, over nickel.

3.2.2 Shell Material and Finish. The shell material and finish shall be in accordance with MIL-C-38999 for the style shown in Table 1. Finishes known to sublime in a hard vacuum, such as cadmium and zinc shall not be used.

3.2.2.1 Shell Material. Connector shells shall be non magnetic.

3.2.2.2 Shell Finish. All exposed metallic surfaces shall be suitably protected against any corrosion by plating or other means. The finish shall:

(a) Provide good electrical contact when used as a terminal or conductor.

(b) Have uniform texture and appearance.

(c) Be adherent.

(d) Be free from blisters, pinholes, and other defects that may affect the protective value of the finish.

3.2.3 Filter Components. Filter components shall be Pi filters.

Table I. Design Standards

Type 1/	Plug MS Number	Receptacle MS Number	Figure
1	MS27484T14F35P	MS27472T14F35S	1
2	MS27484T16F35P	MS27472T16F35S	2
3	MS27484T14F35S	MS27472T14F35P	1
4	MS27484T16F35S	MS27472T16F35P	2

1/ Use for the first digit in the specific type designator (1.3.3)

3.3 Design and Physical Dimensions. The design and physical dimensions shall conform to the design standards indicated in Table I.

3.3.1 Contact Design. Contacts shall be in accordance with the requirements indicated in Table I.

3.3.2 Contact Arrangement. The contact arrangement shall be per Table I.

- 3.3.3 Shell Design. The shell shall be designed to positively retain the insert and shall be so constructed that the insert cannot be removed. These connectors shall mate with similar connectors.
- 3.3.3.1 Shell Polarization. Polarization shall be accomplished by a prominent index key with polarization accomplished before engagement of the contacts
- 3.3.4 Connector Sleeve. The plug and receptacle shall be connected by a connector sleeve. The sleeve shall be designed as to positively retain the connector components after assembly.
- 3.3.4.1 Sleeve Dimensions. The sleeve dimensions shall be in accordance with the configuration shown in Figures 1 and 2.
- 3.3.4.2 Sleeve Material. The sleeve shall be nickel plated copper alloy.
- 3.3.5 Dimensions. The dimensions of the finished connector adapter shall be those defined in the applicable military specifications listed in Table I above and those shown in Figures 1 and 2 herein.
- 3.3.6 Interchangeability. These connector adapters have the effect of adding a second connector pair which is identical to the pair to which it is mated. All connectors of a given type designation, as defined under this specification, shall be capable of a reliable connection with the plug or receptacle shown for that type designation (defined in Table I) from any manufacturer listed on the Qualified Products List for that military specification.

TABLE II. Electrical Characteristics

Type 1/	Capacitance pf		Minimum Insertion Loss (dB) 25°C (No Load)			
	Min	Max	Test Frequencies (MHz)			
0	900	1100	10	100	500	1000
			4	31	57	68

1/ Use for the second digit in the specific type designator (1.3.1)

3.4 Performance.

- 3.4.1 Capacitance. Capacitance shall be within the parameters as specified in Table II.

Table III

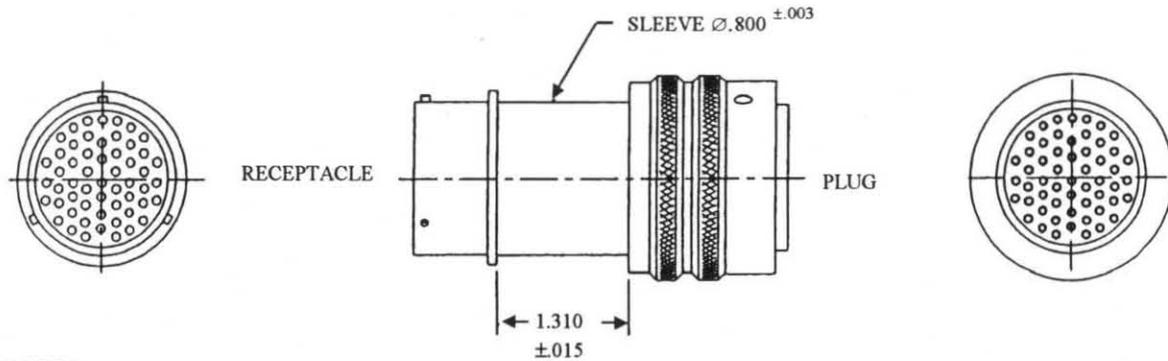
Part Designation	Contact Matching Requirements				
	Pair No.	Contacts		Pair No.	Contacts
S311P626/10A10 S311P626/10A30	1	1,2		11	21,22
	2	3,4		12	23,24
	3	5,6		13	25,26
	4	7,8		14	27,28
	5	9,10		15	29,30
	6	11,12		16	31,32
	7	13,14		17	33,34
	8	15,16		18	34,36
	9	17,18		single	37
	10	19,20			
S311P626/10A20 S311P626/10A40	1	1,4		15	26,34
	2	2,3		16	27,35
	3	5,6		17	29,36
	4	7,8		18	31,38
	5	9,16		19	32,40
	6	10,17		20	37,44
	7	11,18		21	41,48
	8	12,19		22	42,43
	9	13,14		23	45,51
	10	15,23		24	46,52
	11	20,21		25	47,53
	12	22,30		26	49,50
	13	24,39		27	54,55
	14	25,33		single	28

3.5 Marking.

3.5.1 Insert Marking. Raised or depressed characters may be used. Markings shall be in accordance with insert arrangement listed in Table I and MIL-STD-1285.

- 3.4.1.1 Capacitance Matching. Capacitance matching between contacts shall be in accordance with Table III for each specific part type. Capacitance shall be matched within 10% between the matched contacts.
- 3.4.2 Dissipation Factor. The dissipation factor shall be 5% maximum.
- 3.4.3 Dielectric Withstanding Voltage. The dielectric withstanding voltage shall meet or exceed twice the rated voltage specified 3.4.8. Charging current shall not exceed 50 milliamperes.
- 3.4.4 Insulation Resistance.
- 3.4.4.1 Insulation Resistance at 25°C. 1000 megohms minimum between any pair of contacts and between any contact and the shell.
- 3.4.4.2 Insulation Resistance at 125°C. 100 megohms minimum between any pair of contacts and between any contact and the shell.
- 3.4.5 Current Rating. The current rating shall be 5.0 amps maximum per contact.
- 3.4.6 Attenuation. The attenuation shall be not less than the values specified in Table II when tested in accordance with MIL-STD-220.
- 3.4.7 Contact Resistance. 20 milliohms maximum at a contact current of 5 amps DC.
- 3.4.8 Rated Voltage. 200 volts DC maximum.
- 3.4.9 Temperature Range. -55°C to +125°C.

- 3.4.1.1 Capacitance Matching. Capacitance matching between contacts shall be in accordance with Table III for each specific part type. Capacitance shall be matched within 10% between the matched contacts.
- 3.4.2 Dissipation Factor. The dissipation factor shall be 5% maximum.
- 3.4.3 Dielectric Withstanding Voltage. The dielectric withstanding voltage shall meet or exceed twice the rated voltage specified 3.4.8. Charging current shall not exceed 50 milliamperes.
- 3.4.4 Insulation Resistance.
- 3.4.4.1 Insulation Resistance at 25°C. 1000 megohms minimum between any pair of contacts and between any contact and the shell.
- 3.4.4.2 Insulation Resistance at 125°C. 100 megohms minimum between any pair of contacts and between any contact and the shell.
- 3.4.5 Current Rating. The current rating shall be 5.0 amps maximum per contact.
- 3.4.6 Attenuation. The attenuation shall be not less than the values specified in Table II when tested in accordance with MIL-STD-220.
- 3.4.7 Contact Resistance. 20 milliohms maximum at a contact current of 5 amps DC.
- 3.4.8 Rated Voltage. 200 volts DC maximum.
- 3.4.9 Temperature Range. -55°C to +125°C.



NOTES:

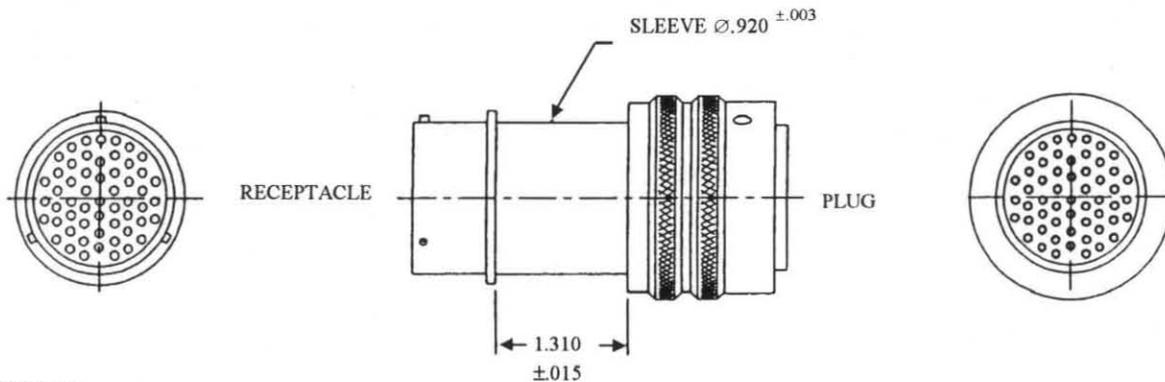
1. CONNECTOR: Part Number S311P626/10A10: PLUG - MS27484T14F35P  
RECEPTACLE - MS27472T14F35S

Part Number S311P626/10A30: PLUG - MS27484T14F35S  
RECEPTACLE - MS27472T14F35P

2. CAPACITANCE SHALL BE MATCHED WITHIN 10% FOR EACH PAIR. PIN 37 WILL NOT BE MATCHED.

3. SLEEVE: MATERIAL - COPPER ALLOY.  
FINISH - NICKEL PLATED.

**Figure 1**



NOTES:

1. CONNECTOR: Part Number S311P626/10A20: PLUG - MS27484T16F35P  
RECEPTACLE - MS27472T16F35S

Part Number S311P626/10A40: PLUG - MS27484T16F35S  
RECEPTACLE - MS27472T16F35P

2. CAPACITANCE SHALL BE MATCHED WITHIN 10% FOR EACH PAIR. PIN 28 WILL NOT BE MATCHED.

3. SLEEVE: MATERIAL - COPPER ALLOY.  
FINISH - NICKEL PLATED.

**Figure 2**

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Quantity of Samples for Qualification or Requalification. A total of four samples shall be used for qualification or requalification.

4.1.1 Salt Spray. Salt spray qualification testing is not applicable.

4.2 Quality Conformance Inspection. Quality conformance inspection shall be performed on 100% of the parts to be delivered.

4.2.1 Thermal Cycling. Thermal cycling shall be performed on 100% of the parts in accordance with 4.8.12 of S-311-P-626 before voltage conditioning.

4.2.2 Mating and Unmating Force. Each connector supplied to this specification shall be tested in accordance with paragraph 4.8.13 of S-311-P-626. The maximum engagement force for the size 14 shell is 20 in-lb and is 24 in-lb for the size 16 shell. The minimum disengagement force for the size 14 and size 16 shell is 4 in-lb.

4.3 Methods of Examination and Test. Connectors and contacts shall be examined in accordance with GSFC-S-311-P-626 including the applicable requirements of this specification.

#### 5. PREPARATION FOR DELIVERY

5.1 Applicable Documents. All connectors manufactured to this specification shall be delivered in accordance with the requirements of the latest revision of GSFC S-311-P-626 and the purchase document.

#### 6. NOTES

6.1 Ordering Data. Procurement documents shall be in accordance with GSFC S-311-P-626 and include the connector shell material and finish listed in 3.2.2 of this specification.

Custodian:  
Code 311  
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Greenbelt, Maryland 20771