REVISIONS

SYMBOL	DESCRIPTION	DATE	APPROVAL
--	Original Issue	9/13/95	

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																				

ORIGINATOR: T. R. Duffy / Unisys	**DATE** 8-13-95	**FSC: 5935**
APPROVED: S. Archer-Davies / Unisys	8/30/95	**Connectors, Electric, Polarized Shell, Rack and Panel, Pin, Electromagnetic Interference Filter Contact, Nonmagnetic, Solder Type, D Subminiature**
CODE 311 APPROVAL: P. J. Jones / GSFC	8-31-95	
CODE 311 SUPERVISORY APPROVAL: G. P. Kramer Jr. / GSFC	9/6/95	
ADDITIONAL APPROVAL:		**S-311-P-626/01**

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

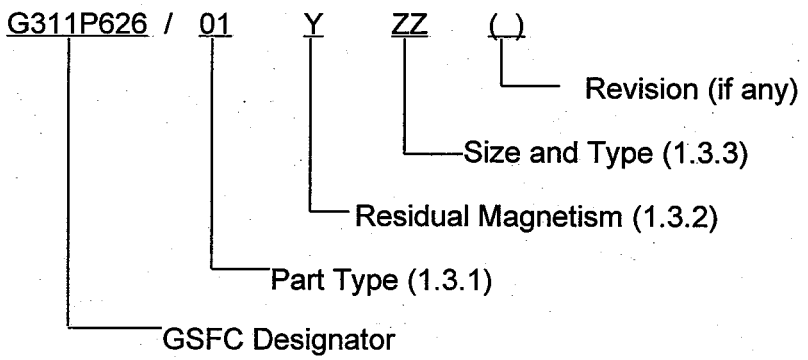
CAGE CODE: 25306

1. SCOPE

1.1 Purpose. This specification covers the detail provisions for D type EMI filter connectors having multiple non-removable contacts. These connectors are for use in space flight hardware and critical ground support equipment (GSE) applications.

1.2 GSFC General Specification. Unless otherwise noted, all connector 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.

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.

1.3.3 Size and Type. A two placed identifier the first place of which is a single digit indicating the shell size as listed in Table I. The second place is a single digit which indicates the type as 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-24308	Connectors, Electric, Rectangular, Miniature, Polarized Shell, Rack and Panel, General Specification for

MIL-C-32029	Contacts, Electrical Connector, General Specification for
MIL-G-45204	Gold Plating, Electrodeposited, TYPE II, Class I

NASA

GSFC-S-311-P-4	Connectors, Electrical, Polarized Shell for Space Flight use, Detailed Specification
GSFC-S-311-P-626	Connectors, Electric, Miniature Polarized Shell, Rack and Panel, Pin Electromagnetic Interference Filter Contact, Nonmagnetic, Solder Type

STANDARDS

Military

MIL-STD-220	Method of Insertion-Loss Measurement
MIL-STD-1285	Marking of Electrical and Electronic Parts
MIL-STD-2120	Connectors, Electromagnetic Interference (EMI) Filter Contact Type
MS 18273	Insert Arrangements, Electrical Connector, Shell Size 1
MS 18274	Insert Arrangements, Electrical Connector, Shell Size 2
MS 18275	Insert Arrangements, Electrical Connector, Shell Size 3
MS 18276	Insert Arrangements, Electrical Connector, Shell Size 4
MS 18277	Insert Arrangements, Electrical Connector, Shell Size 5
MS 18281	Contacts, Pin and Socket, Classes G, N, and H, Solder Type, Non-removable

(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.)

2.2 Other Publications

ASTM

E595 Material from Outgassing in a Vacuum Environment, Total Mass Loss and Collected Volatile Condensable, Standard Test Method for

(Application for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19013)

3. REQUIREMENTS

3.1 Qualification. Connectors furnished under this specification shall be products which are qualified to the requirements of GSFC S-311-626 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. The plating shall be gold over nickel in accordance with MIL-G-45204, Type II.

3.2.2 Shell Material and finish. The shall material and finish shall be specified in the purchase document. Finishes known to sublimate in a hard vacuum, such as cadmium 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, lead alloy coating, 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.

3.3 Design and Physical Dimensions. The design and physical dimensions shall conform to the design standards (MS numbers) indicated in Table I except the rear extension shall be .795 inch, maximum.

Table I. Design Standards

Shell Size 1/	Shell MS Number	Insert Arrangement MS Number
1	MS1826801	MS18273-1
2	MS18268-2	MS18274-1
3	MS18268-3	MS18275-1
4	MS18268-4	MS18276-1
5	MS18268-5	MS18277-1

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

3.3.1 Contact Design. Contacts shall be #20 AWG in accordance with MS 18281-2.

3.3.2 Contact Arrangement. The contact arrangement shall be per the respective MS numbers as listed in 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 as specified in GSFC S-311-P-4 or MIL-C-24308.

3.3.3.1 Shell Polarization. Polarization shall be accomplished by a keystone-shaped shell design with polarization accomplished before engagement of the contacts.

3.3.4 Dimensions. Dimensions shall be in accordance with MS numbers listed in Table I.

3.3.5 Interchangeability. All connectors of a given type designation shall be capable of being mated with the associated receptacle manufactured by any other source. Connectors having the same type designation shall be completely interchangeable with each other under this specification.

3.4 Performance.

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

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. Leakage current shall not exceed 500 microamperes.

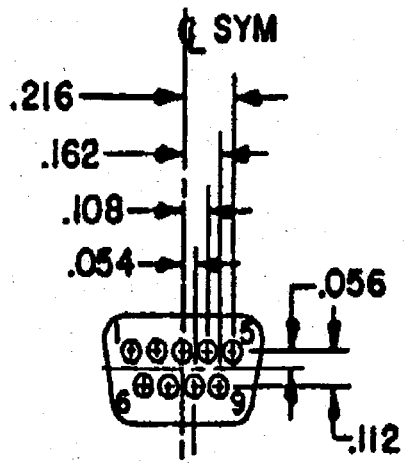


Figure 1

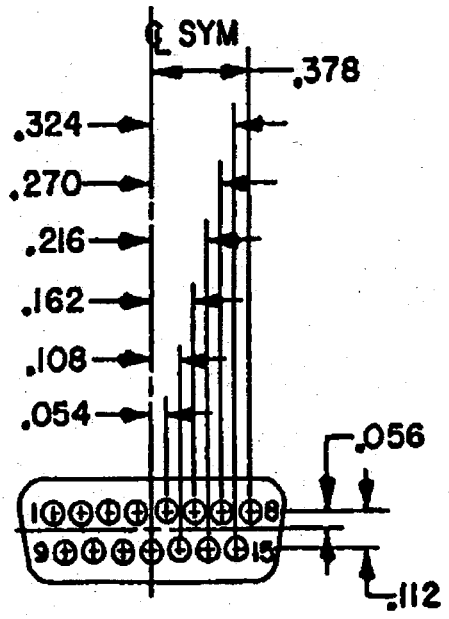


Figure 2

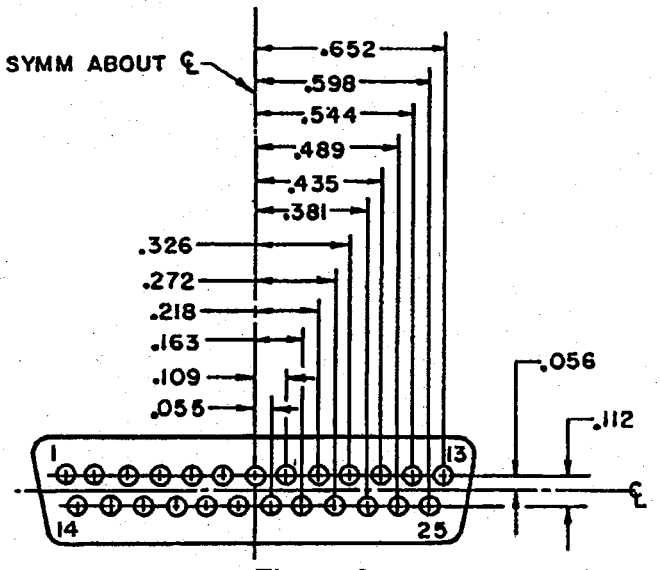


Figure 3

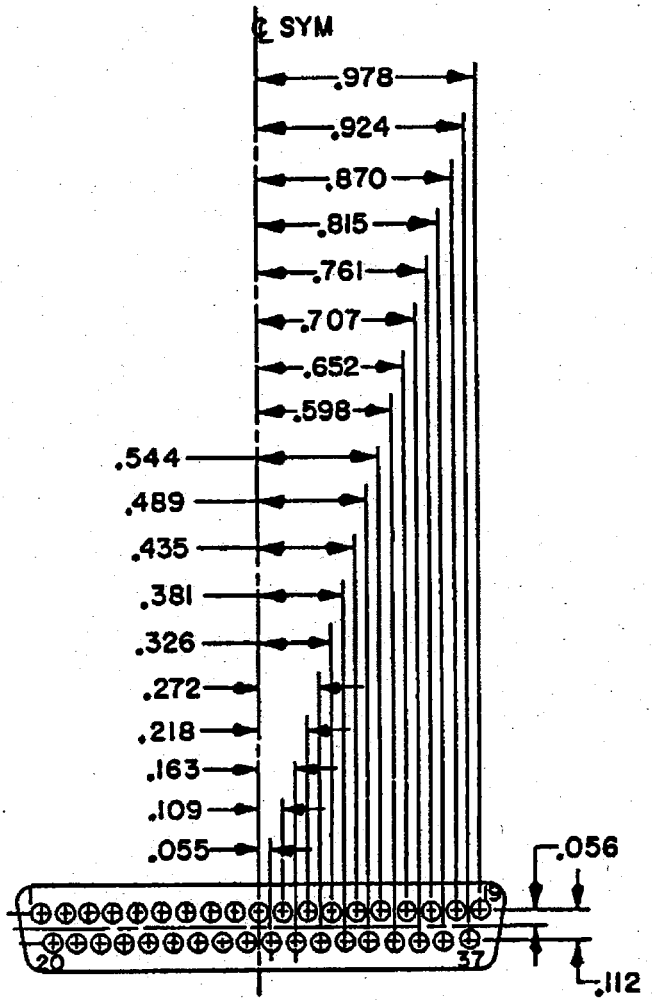


Figure 4

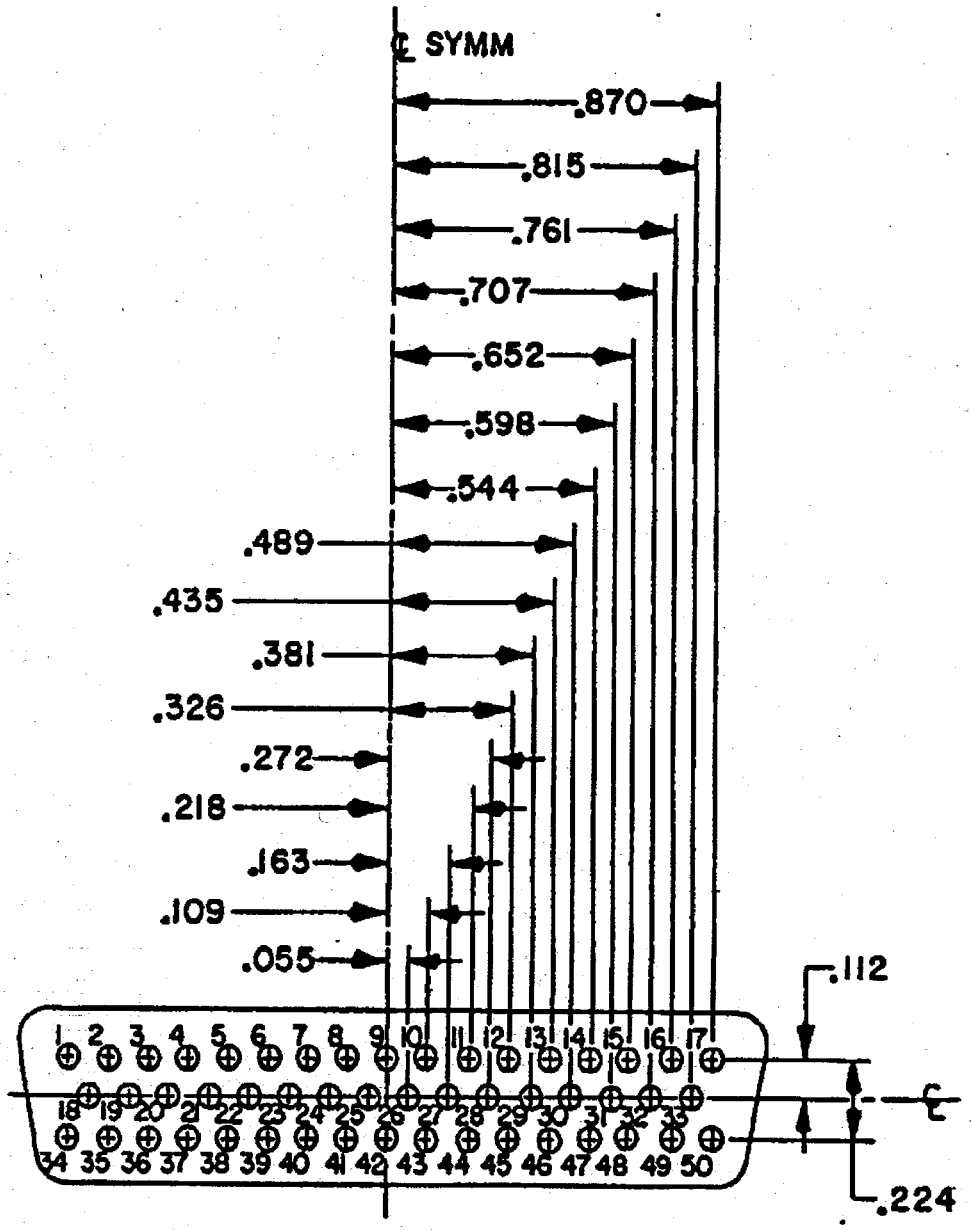

℄ SYMM
.870
.815
.761
.707
.652
.598
.544
.489
.435
.381
.326
.272
.218
.163
.109
.055
.112
.224
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Figure 5

3.4.4 Insulation Resistance.

3.4.4.1 Insulation Resistance at 25°C. 5000 meghoms minimum, between any pair of contacts and between any contact and the shell.

3.4.4.2 Insulation Resistance at 125°C. 50 megohms minimum.

3.4.5 Radio Frequency (RF) Current Rating. The RF current rating shall be 0.25 amps, maximum.

3.4.6 Attenuation. The attenuation shall be not less than the values specified in Table II.

Table II. Electrical Characteristics

Connector Type 1/	Capacitance (pf)		Minimum Insertion Loss (db) 25°C (No Load)			
	Min	Max	Test Frequencies (MHz)			
			1	10	100	1000
0	32000	45000	10	40	60	70
1	8000	16000	2	18	55	65
2	4000	12000	1	12	48	70
3	4000	8000	1	12	48	70
4	1900	5000	---	7	38	65
5	1800	3600	---	7	38	65
6	500	1300	---	2	19	54
7	400	800	---	1	16	50
8	300	600	---	---	12	47

1/ Use for second place in the specific type designator (1.3.3)

3.4.7 Contact Resistance. 20 milliohms at a contact current of 7.5 amps DC.

3.4.8 Rated Voltage. 100 volts DC for connector type 0 and 200 volts DC for connector types 1 through 8.

3.4.9 Temperature Range. -55°C to +125°C.

3.4.10 Residual Magnetism. The residual magnetism of connectors, with contacts installed but unwired, shall not exceed 20 gamma.

3.5 Marking.

3.5.1 Insert Marking. Raised or depressed characters may be used. Markings shall be in accordance with inset arrangement MS numbers in Table I.

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. The samples shall consist of two each of the highest and lowest capacitance in the most complicated shell configuration.

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

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:
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