



**RF COAXIAL CONNECTORS, TYPE TNC,  
50 OHMS (FEMALE CONTACT)**

**ESCC Detail Specification No. 3402/009**

**ISSUE 1  
October 2002**



	ESCC Detail Specification		PAGE ii ISSUE 1
---	---------------------------	--	--------------------

### **LEGAL DISCLAIMER AND COPYRIGHT**

European Space Agency, Copyright © 2002. All rights reserved.

The European Space Agency disclaims any liability or responsibility, to any person or entity, with respect to any loss or damage caused, or alleged to be caused, directly or indirectly by the use and application of this ESCC publication.

This publication, without the prior permission of the European Space Agency and provided that it is not used for a commercial purpose, may be:

- copied in whole in any medium without alteration or modification.
- copied in part, in any medium, provided that the ESCC document identification, comprising the ESCC symbol, document number and document issue, is removed.



europaean space agency  
agence spatiale européenne

Pages 1 to 26

**RF COAXIAL CONNECTORS, TYPE TNC,**

**50 OHMS (FEMALE CONTACT)**

**ESA/SCC Detail Specification No. 3402/009**

**SCC**

**space components  
coordination group**

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 1	September 1994	<i>Ponomarev</i>	<i>[Signature]</i>
Revision 'A'	August 1995	<i>Ponomarev</i>	<i>[Signature]</i>
Revision 'B'	November 1995	<i>Ponomarev</i>	<i>[Signature]</i>
Revision 'C'	November 1997	<i>[Signature]</i>	<i>[Signature]</i>

**SCC**ESA/SCC Detail Specification  
No. 3402/009

Rev. 'C'

PAGE 2

ISSUE 1

**DOCUMENTATION CHANGE NOTICE**

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
'A'	Aug. '95	P1. Cover page P2. DCN P24. Figure 2(b)	: Rapid Change of Temperature amended : Operating Temperature Range amended	None None 221278 221278
'B'	Nov. '95	P1. Cover page P2. DCN P6. Table 1(b) P19. Para. 4.8.6	: No. 7, Maximum Ratings amended : Note 1 deleted : Second sentence amended	None None 23776 23776 23776
'C'	Nov. '97	P1. Cover page P2. DCN P24. Figure 2(b)	: Variant 03 VSWR value corrected	None None 23846

**ESCC**

ESA/SCC Detail Specification

No. 3402/009

PAGE 3

ISSUE 1

**TABLE OF CONTENTS**

	<u>Page</u>
<b>1. <u>GENERAL</u></b>	<b>5</b>
1.1 Scope	5
1.2 Type Variants	5
1.3 Maximum Ratings	5
1.4 Parameter Derating Information	5
1.5 Physical Dimensions	5
1.6 Standard Test Connector Interface	5
<b>2. <u>APPLICABLE DOCUMENTS</u></b>	<b>13</b>
<b>3. <u>TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS</u></b>	<b>13</b>
<b>4. <u>REQUIREMENTS</u></b>	<b>13</b>
4.1 General	13
4.2 Deviations from Generic Specification	13
4.2.1 Deviations from Special In-process Controls	13
4.2.2 Deviations from Final Production Tests	13
4.2.3 Deviations from Burn-in Tests	13
4.2.4 Deviations from Qualification Tests	13
4.2.5 Deviations from Lot Acceptance Tests	13
4.3 Mechanical Requirements	14
4.3.1 Dimension Check	14
4.3.2 Weight	14
4.3.3 Coupling Proof Torque	14
4.3.4 Cable Retention Force	14
4.3.5 Mating and Unmating Forces	14
4.3.6 Connector Durability	14
4.3.7 Residual Magnetism	14
4.3.8 Contact Insertion and Withdrawl Forces	15
4.3.9 Contact Retention	15
4.4 Materials and Finishes	15
4.4.1 Shell	16
4.4.2 Centre Contact	16
4.4.3 Inserts	16
4.4.4 Gaskets	16
4.4.5 Accessories	16
4.5 Marking	16
4.5.1 General	16
4.5.2 The SCC Component Number	16
4.5.3 Characteristics	17
4.5.4 Traceability Information	18
4.5.5 Marking of Small Components	18
4.6 Electrical Measurements	18
4.6.1 Electrical Measurements at Room Temperature	18
4.6.2 Electrical Measurements at High and Low Temperatures	18
4.6.3 Circuits for Electrical Measurements	18
4.7 Burn-in Tests	18
4.8 Environmental and Endurance Tests	19
4.8.1 Measurements and Inspections on Completion of Environmental Tests	19
4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests	19
4.8.3 Measurements and Inspections on Completion of Endurance Tests	19



	<u>Page</u>
4.8.4 Conditions for Operating Life Tests	19
4.8.5 Electrical Circuits for Operating Life Tests	19
4.8.6 Conditions for High Temperature Storage Test	19

**TABLES**

1(a) Type Variants	6
1(b) Maximum Ratings	6
2 Electrical Measurements at Room Temperature	19
3 Not applicable	N/A
4 Not applicable	N/A
5 Not applicable	N/A
6 Measurements and Inspections on Completion of Environmental and Endurance Tests	20

**FIGURES**

1 Parameter Derating Information	7
2 Physical Dimensions	9
2(a) Connector Interface	9
2(b) Variants	22
3 Standard Test Connector Interface - Female Contact	11
4 Test Pin Configuration	15

**APPENDICES (Applicable to specific Manufacturers only)**

None.

**1. GENERAL****1.1 SCOPE**

This specification details the ratings, physical and electrical characteristics, test and inspection data for RF Coaxial Connectors, Type TNC, 50 Ohms (Female Contact). It shall be read in conjunction with ESA/SCC Generic Specification No. 3402, the requirements of which are supplemented herein.

**1.2 TYPE VARIANTS**

A list of the type variants of the connectors specified herein, which are also covered by this specification, is given in Table 1(a).

For each type variant, the full electrical and physical characteristics are given in individual Figures 2(b) at the end of this specification.

**1.3 MAXIMUM RATINGS**

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the connectors specified herein, are as scheduled in Table 1.

**1.4 PARAMETER DERATING INFORMATION (FIGURE 1)**

The derating information applicable to the connectors specified herein is shown in Figure 1.

**1.5 PHYSICAL DIMENSIONS**

The physical dimensions of the connectors specified herein are shown in Figures 2(a) and 2(b).

**1.6 STANDARD TEST CONNECTOR INTERFACE**

Whenever gauges are required for mating with the connectors under test, their physical dimensions shall be in accordance with those specified in Figure 3.

**SCC**ESA/SCC Detail Specification  
No. 3402/009

Rev. 'B'

PAGE 6

ISSUE 1

**TABLE 1(a) - TYPE VARIANTS**

VARIANT	DESCRIPTION
01	Straight Jack, Solder Type, for Semi-Rigid Cable Ø3.58mm (0.141")
02	Straight Jack, Solder Type, for Semi-Rigid Cable Ø6.35mm (0.250")
03	Square Flange Receptacle
04	Straight Bulkhead Jack, Solder Type for SHF 5 Cable
05	Straight Bulkhead Jack, Solder Type, for SHF 8 Cable

**NOTES**

1. The Variants are described in Figure 2(b).
2. For finishes, see Para. 4.4.

**TABLE 1(b) - MAXIMUM RATINGS**

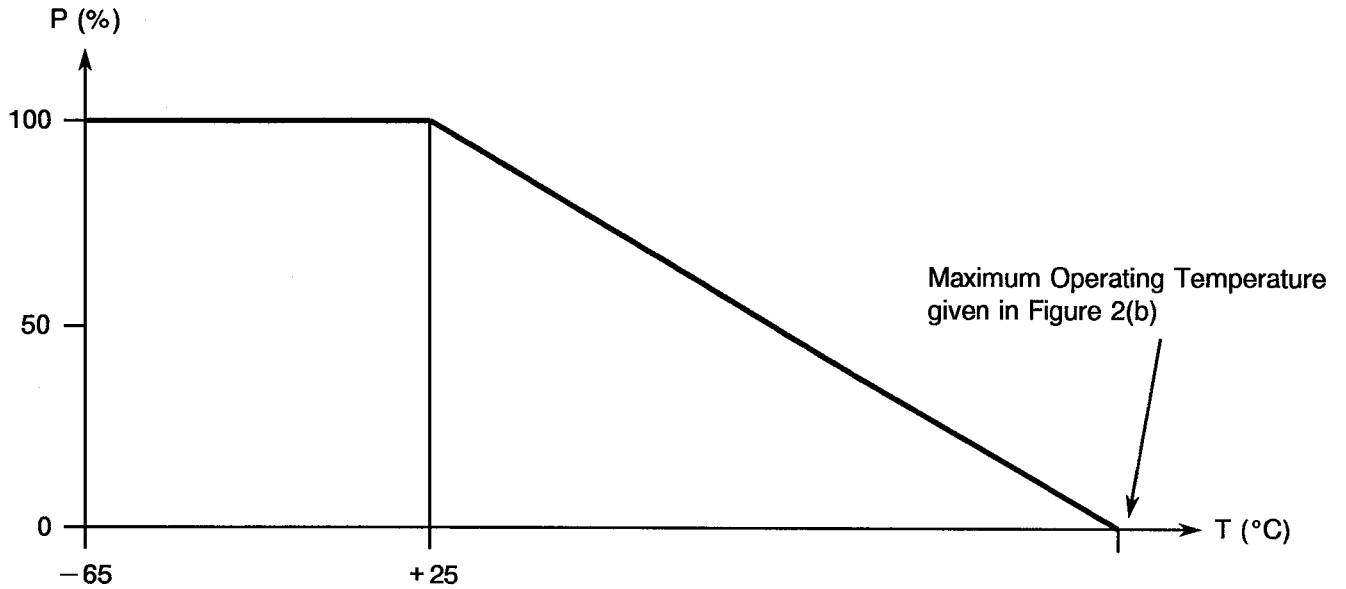
No.	CHARACTERISTICS	SYMBOL	MAXIMUM RATINGS	UNIT	REMARKS
1	Peak Power at +25°C	P <sub>max</sub>	20	kW	1.0µs max.
2	Power	P	See Figure 2(b)	kW	See Figures 1(a), 1(b) and 1(c)
3	Nominal Impedance	Z	50	Ω	-
4	Frequency Range	f	See Figure 2(b)	GHz	-
5	Operating Voltage	V <sub>op</sub>	500	V <sub>rms</sub>	-
6	Operating Temperature Range	T <sub>op</sub>	See Figure 2(b)	°C	-
7	Storage Temperature Range	T <sub>stg</sub>	As per Operating Temperature Range	°C	-



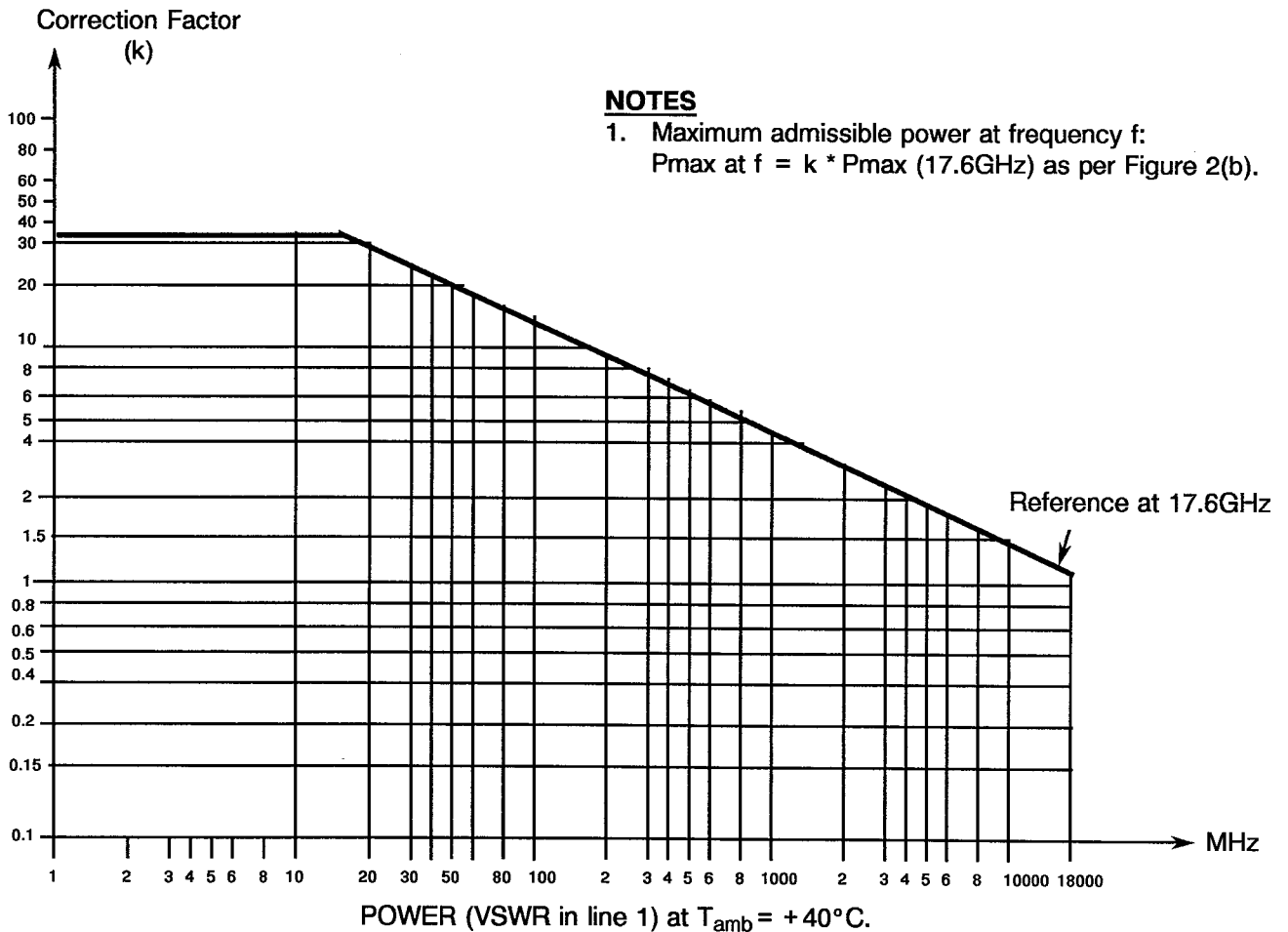


**FIGURE 1 - PARAMETER DERATING INFORMATION**

**FIGURE 1(a) - POWER VERSUS TEMPERATURE**



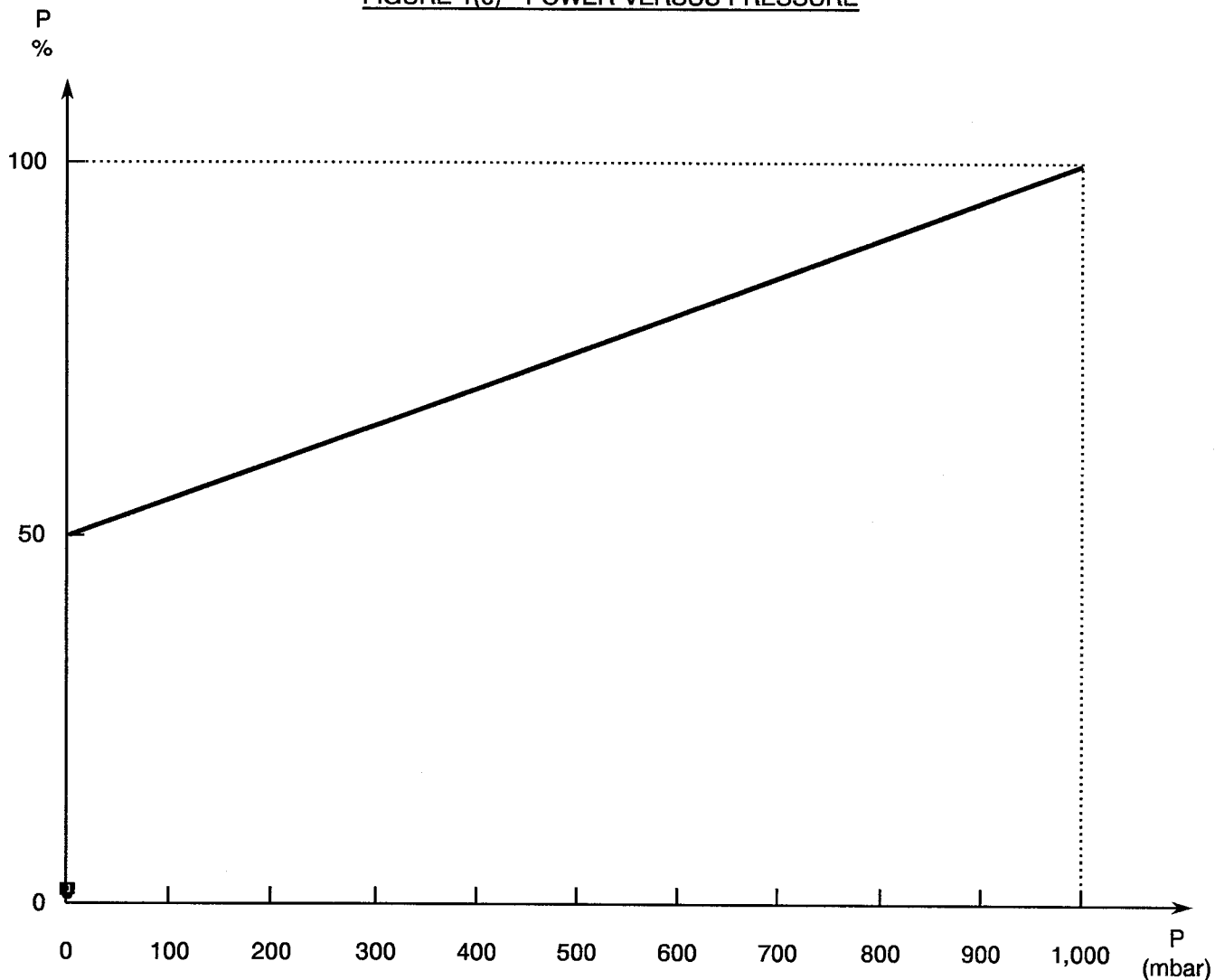
**FIGURE 1(b) - POWER VERSUS FREQUENCY**





**FIGURE 1 - PARAMETER DERATING INFORMATION (CONTINUED)**

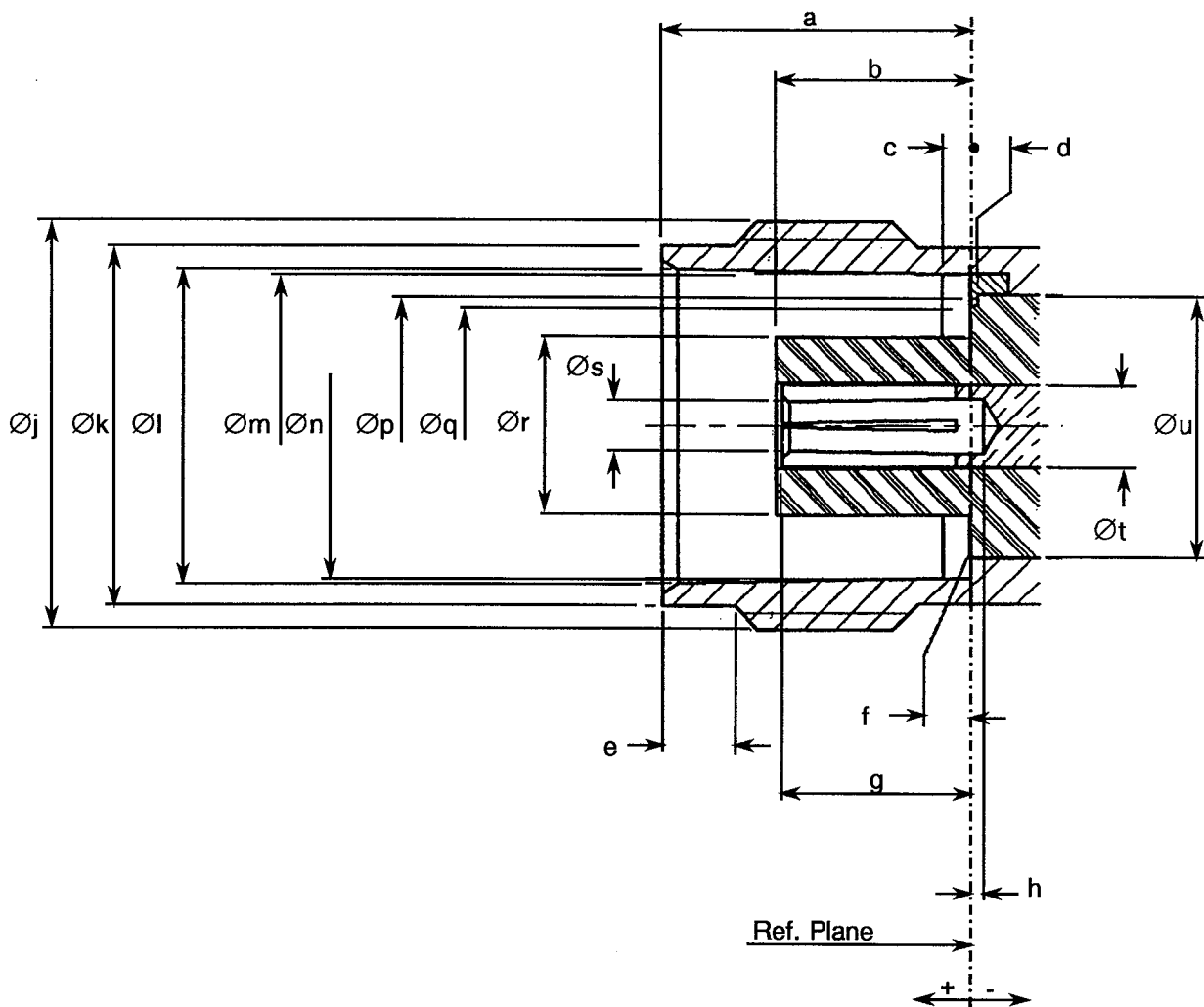
FIGURE 1(c) - POWER VERSUS PRESSURE





**FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)**

**FIGURE 2(a) - CONNECTOR INTERFACE, FEMALE CONTACT**

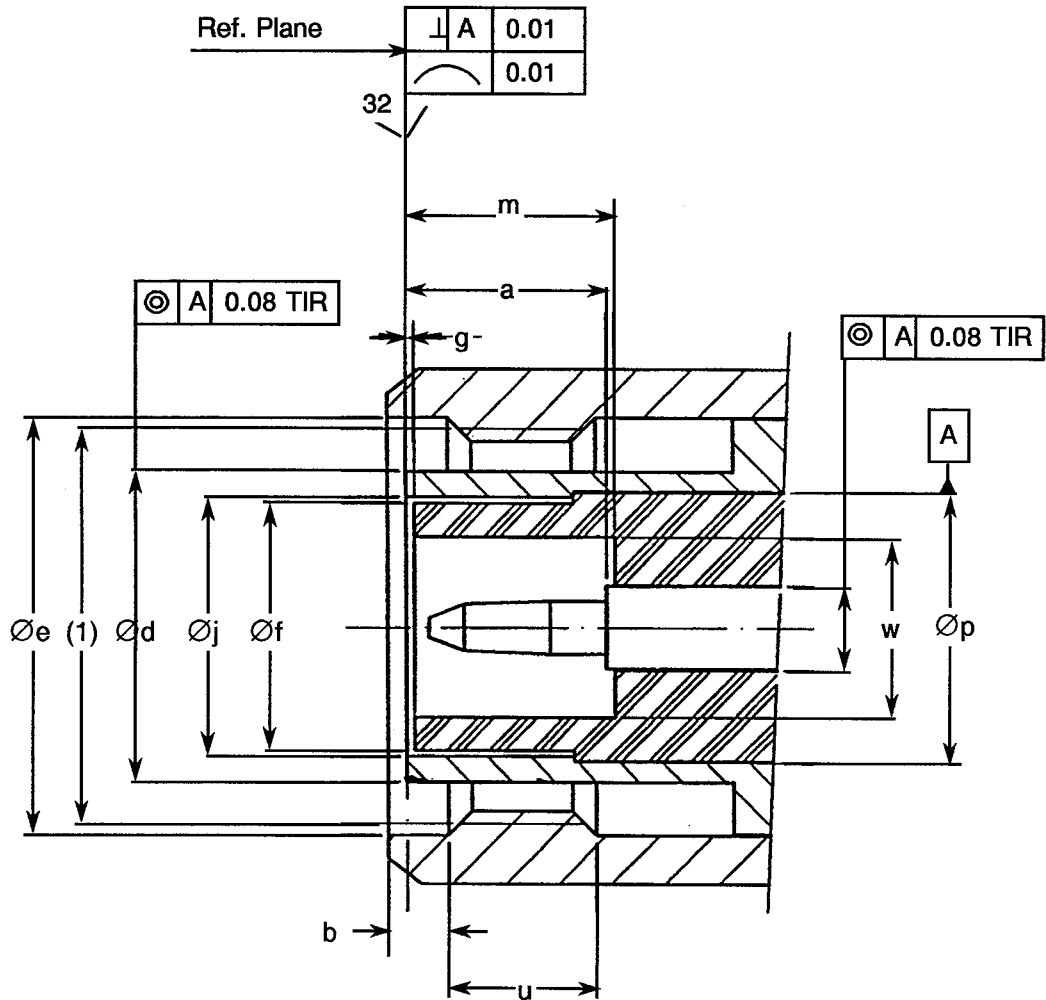


**FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)****FIGURE 2(a) - CONNECTOR INTERFACE, FEMALE CONTACT (CONTINUED)**

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	8.36	8.46	
b	5.18	5.28	
c	0.48	1.02	
d	0.17	0.23	
e	1.80	2.20	
f	-0.1	+0.05	
g	4.98	5.23	
h	-0.72	+0.03	
Øj	7/16.28UNEF2A		
Øk	9.61	9.68	
Øl	9.32	9.46	
Øm	8.09	8.14	
Øn	8.10	8.15	
Øp	6.73	6.78	
Øq	6.05	6.15	
Ør	4.68	4.72	
Øs	1.43	1.47	
Øt	2.14	2.18	
Øu	6.975	7.025	



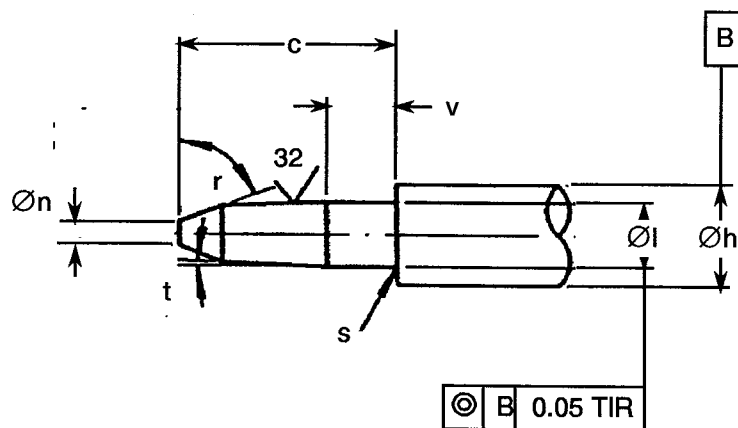
**FIGURE 3 - STANDARD TEST CONNECTOR INTERFACE - MALE CONTACT**



**NOTES**

1. 4375 -28UNEF-2B

Detail of inner Contact



**FIGURE 3 - STANDARD TEST CONNECTOR INTERFACE, MALE CONTACT (CONTINUED)**

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	5.31	5.38	
b	1.60	-	
c	4.62	4.88	
Ød	8.06	8.09	
Øe	11.18	-	
Øf	6.60	6.65	
g	0.15	0.30	
Øh	2.16	2.18	
Øj	6.72	6.74	
Øl	1.35	1.37	
m	5.38	5.54	
Øp	6.99	7.01	
r	55°	65°	
s	-	0.13	Radius
t	1°	3°	
u	3.96	-	Full thread
v	1.40	1.65	
Øw	4.88	4.93	

**2. APPLICABLE DOCUMENTS**

The following documents form part of this specification and shall be read in conjunction with it:-

- (a) ESA/SCC Generic Specification No. 3402 for RF Coaxial Connectors.
- (b) MIL-G-45204, Gold Plating, Electrodeposited.

**3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS**

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESA/SCC Basic Specification No. 21300 shall apply.

**4. REQUIREMENTS****4.1 GENERAL**

The complete requirements for procurement of the connectors specified herein are stated in this specification and ESA/SCC Generic Specification No. 3402. Deviations from the Generic Specification applicable to this specification only, are listed in Para. 4.2.

Deviations from the applicable Generic Specification and this Detail Specification, formally agreed with specific Manufacturers on the basis that the alternative requirements are equivalent to the ESA/SCC requirements and do not affect the components' reliability, are listed in the appendices attached to this specification.

**4.2 DEVIATIONS FROM GENERIC SPECIFICATION****4.2.1 Deviations from Special In-process Controls**

None.

**4.2.2 Deviations from Final Production Tests (Chart II)**

None.

**4.2.3 Deviations from Burn-in Tests (Chart III)**

Not applicable.

**4.2.4 Deviations from Qualification Tests (Chart IV)**

None.

**4.2.5 Deviations from Lot Acceptance Tests (Chart V)**

None.



### 4.3 MECHANICAL REQUIREMENTS

#### 4.3.1 Dimension Check

The dimensions of the connectors specified herein shall be verified in accordance with the requirements set out in Para. 9.25 of ESA/SCC Generic Specification No. 3402 and shall conform to those shown in Figures 2(a) and 2(b) of this specification.

#### 4.3.2 Weight

The maximum weight of the connectors specified herein shall be as specified in Figure 2(b).

#### 4.3.3 Coupling Proof Torque

The requirements for testing of the coupling proof torque are specified in Section 9 of ESA/SCC Generic Specification No. 3402. The applied torque shall be 339N.cm.

#### 4.3.4 Cable Retention Force

The requirements for testing of the cable retention force are specified in Section 9 of ESA/SCC Generic Specification No. 3402. Figure 2(b) specifies the values for axial loads. Torque shall be applied as follows:-

##### 4.3.4.1 Flexible Cables

Flexible cables shall be rotated 180° in both directions.  
Rotational movement shall be applied at 15cm from the connector.

##### 4.3.4.2 Semi-rigid Cables

The torque value shall be as follows:-

RG 405/U : 11.28N.cm.  
RG 402/U : 38.85N.cm.  
RG 401/U : 38.85N.cm.

#### 4.3.5 Mating and Unmating Forces

The applicable measurement requirements are specified in Section 9 of ESA/SCC Generic Specification No. 3402. The maximum torque during mating and unmating shall not exceed 22.6N.cm.

Whenever a test is performed on mated pairs of connectors, the pairs shall be torqued at 265N.cm.

#### 4.3.6 Connector Durability

The applicable test requirements are specified in Section 9 of ESA/SCC Generic Specification No. 3402. The test conditions shall be as follows:-

- (a) Number of cycles : 500 for qualification; 100 for lot acceptance.
- (b) Rate : 12 cycles maximum/minute.

#### 4.3.7 Residual Magnetism

The applicable measurement requirements are specified in Section 9 of ESA/SCC Generic Specification No. 3402.

4.3.7.1 Beryllium copper, nickel underplate, gold-plated connectors. There are no requirements in respect of residual magnetism. This version is made such that the residual magnetism does not exceed 2000 gammas.





4.3.7.2 Residual magnetism is not applicable to stainless steel versions.

#### 4.3.8 Contact Engagement and Separation Forces

The requirements for these measurements are specified in Section 9 of ESA/SCC Generic Specification No. 3402 and apply to female contacts only.

##### (a) **Oversize Pin**

Steel test pin diameter : 1.384/1.388 mm.  
Engagement depth : 2.0/2.5 mm.  
Number of engagements : 3.

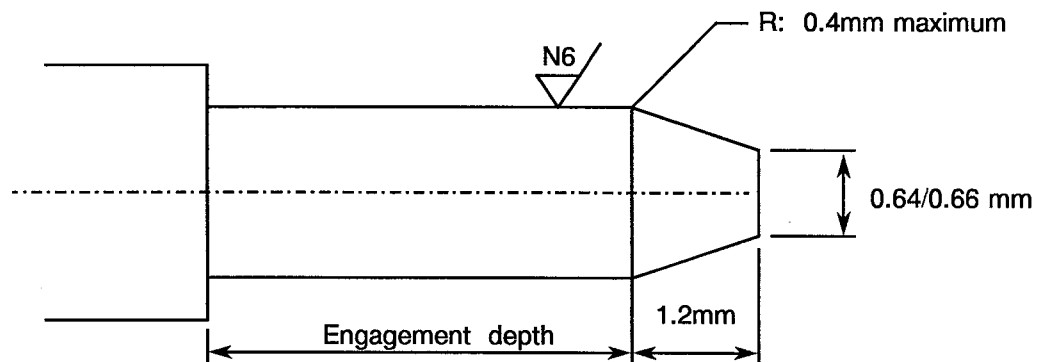
##### (b) **Engagement Force Test (Maximum Diameter Test Pin)**

Steel test pin diameter : 1.372/1.376 mm.  
Engagement depth : 3.0/3.5 mm.  
Engagement force : 9.0N max.

##### (c) **Separation Force Test (Minimum Diameter Test Pin)**

Steel test pin diameter : 1.308/1.321 mm.  
Separation depth : 3.0/3.5 mm.  
Separation force : 0.56N min.

**FIGURE 4 - TEST PIN CONFIGURATION**



#### 4.3.9 Contact Retention

The requirements for this test are specified in Section 9 of ESA/SCC Generic Specification No. 3402. The test conditions are given in Figure 2(b). After testing, the connector interface dimensions shall be within the limits of Figure 2(a).

#### 4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the connectors specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.



4.4.1 Shell

Material : Amagnetic stainless steel, electro-passivated.  
For solder-type connectors: rear part of shell shall be protected by an adequate coating for solderability.

4.4.2 Centre Contact

Material : Copper alloy.  
Underplate : Nickel, 2.0µm minimum.  
Plating : Gold, 1.27µm minimum, Type 2 Grade C of MIL-G-45204.

4.4.3 Inserts

Material : PTFE and polyetherimid resin.  
Baking conditions : 10 cycles (-10, +55 °C). 1 cycle=15 minutes minimum at each temperature with 5 minutes maximum transfer time.

4.4.4 Gaskets

Material : Silicone and fluoro silicone.

4.4.5 Accessories

- Crimping and soldering elements:-

Material : Brass and amagnetic stainless steel.  
Underplate : Nickel, 2.0µm minimum.  
Adequate coating for good solderability.

- Nut:-

Material : Amagnetic stainless steel, electro-passivated.

- Washers and Clip:-

Material : Copper alloy.  
Plating : Nickel, 2.0µm minimum.

4.5 MARKING

4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESA/SCC Basic Specification No. 21700 and the following paragraphs. Each component shall be marked in respect of:-

- (a) The SCC Component Number.
- (b) Characteristics.
- (c) Traceability Information.

4.5.2 The SCC Component Number

Each component shall bear the SCC Component Number which shall be constituted and marked as follows:-

Detail Specification Number	_____	340200901B
Type Variant (see Table 1(a))	_____	
Testing Level (B or C, as applicable)	_____	



4.5.3 Characteristics

Characteristics cover the type of plating/material and 2 different dimensional aspects:

- (a) Variants of fixed configuration.
- (b) Variants where the rear end (length of contact A and length of insert B) may vary within a range limited by a specified maximum value.

4.5.3.1 Variants of Fixed Configuration

Each component shall be marked in respect of:-

- (a) Type of plating/material.
- (b) Number.

The information shall be constituted and marked as follows:

Type of plating/material (see Para. 4.5.3.3) \_\_\_\_\_ 3 01  
 Number (shall always be 01) \_\_\_\_\_

4.5.3.2 Variants where Dimensions A and B of Figure 2(b) are Indicated by a Maximum Only

Each component shall be marked in respect of:-

- (a) Type of plating/material.
- (b) Length and tolerance of centre contact (dimension A).
- (c) Length and tolerance of insert (dimension B).

The information shall be constituted and marked as follows:

Type of plating/material (see Para. 4.5.3.3) \_\_\_\_\_ 213D0A 02D5C  
 Contact length A: 13mm (see Para. 4.5.3.4) \_\_\_\_\_  
 Tolerance on A: ±0.05mm (see Para. 4.5.3.5) \_\_\_\_\_  
 Insert length B: 2.5mm (see Para. 4.5.3.4) \_\_\_\_\_  
 Tolerance on B: ±0.25mm (see Para. 4.5.3.5) \_\_\_\_\_

**NOTES**

1. Dimension A shall always be greater than B. Both values shall always be positive.
2. When dimension B (insert) is flush with the flange (B = 0), the insert length shall be marked 00D0 with the appropriate tolerance.
3. When applicable, Figure 2(b) makes reference to Para. 4.5.3.

4.5.3.3 Type of Plating/Material

The type of plating/material shall be identified by means of the following code:-

CODE	TYPE OF PLATING/MATERIAL	PARA.
3	Amagnetic stainless steel	4.4



#### 4.5.3.4 Length Values

Length values shall be expressed by means of the following codes.

The unit quantity for marking shall be millimetres.

LENGTH VALUE	CODE
XX.X	XXDX

#### 4.5.3.5 Tolerance

The tolerances on length values shall be indicated by the letter codes specified hereafter:-

TOLERANCE (mm)	CODE LETTER
$\pm 0.05$	A
$\pm 0.10$	B
$\pm 0.25$	C

#### 4.5.4 Traceability Information

Each component shall be marked in respect of traceability information in accordance with the requirements of ESA/SCC Basic Specification No. 21700.

#### 4.5.5 Marking of Small Components

When it is considered that the component is too small to accommodate the marking as specified above, as much as space permits shall be marked. The order of precedence shall be as specified in Para. 4.5.1. The marking information in full shall accompany each component in its primary package.

### 4.6 ELECTRICAL MEASUREMENTS

#### 4.6.1 Electrical Measurements at Room Temperature

The parameters to be measured in respect of electrical characteristics are scheduled in Table 2. Unless otherwise specified, the measurements shall be performed at  $T_{amb} = +22 \pm 3$  °C.

#### 4.6.2 Electrical Measurements at High and Low Temperatures (Table 3)

Not applicable.

#### 4.6.3 Circuits for Electrical Measurements

Not applicable.

#### 4.7 BURN-IN TESTS (TABLES 4 AND 5)

Not applicable.

**TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE**

No.	CHARACTERISTICS	SYMBOL	SPEC. AND/OR TEST METHOD	TEST CONDITIONS	LIMITS		UNIT
					MIN	MAX	
1	Insulation Resistance	R <sub>i</sub>	ESA/SCC 3402, Para. 9.1	500 Vdc	5000	-	MΩ
2	Voltage Proof Leakage Current	I <sub>L</sub>	ESA/SCC 3402, Para. 9.2	See Figure 2(b)	-	2.0	mA

**TABLES 3, 4 AND 5**

Not applicable.

**4.8 ENVIRONMENTAL AND ENDURANCE TESTS****4.8.1 Measurements and Inspections on Completion of Environmental Tests**

The parameters to be measured on completion of environmental tests are scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at T<sub>amb</sub> = +22 ± 3 °C.

**4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests**

Not applicable.

**4.8.3 Measurements and Inspections on Completion of Endurance Tests**

The parameters to be measured on completion of endurance tests are scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at T<sub>amb</sub> = +22 ± 3 °C.

**4.8.4 Conditions for Operating Life Tests (Part of Endurance Testing)**

Not applicable.

**4.8.5 Electrical Circuits for Operating Life Tests**

Not applicable.

**4.8.6 Conditions for High Temperature Storage Test (Part of Endurance Testing)**

The requirements for the high temperature storage test are specified in Section 9 of ESA/SCC Generic Specification No. 3402. The conditions for high temperature storage shall be the maximum operating temperature as specified in Figure 2(b).



**TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL AND ENDURANCE TESTS**

NO.	ESA/SCC GENERIC SPECIFICATION NO. 3402		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN.	MAX.	
01	Contact Resistance	Para. 9.9	Contact Resistance	Centre Contact (20mV 10mA) Shell		-	1.5	mΩ
						-	0.7	mΩ
02	Vibration	Para. 9.10	Full Engagement Contact Resistance  Visual Examination	Centre Contact (20mV 10mA) -		-	1.5	mΩ
03	Shock or Bump	Para. 9.11	Full Engagement Contact Resistance  Visual Examination	Centre Contact (20mV 10mA) -		-	1.5	mΩ
04	Rapid Change of Temperature	Para. 9.12	Contact Resistance  Voltage Proof Visual Examination	Centre Contact (20mV 10mA) Figure 2(b) -	I <sub>L</sub>	-	1.5	mΩ
						Table 2 Item 2		
05	Climatic Sequence	Para. 9.13	Low Air Pressure Voltage Proof After Damp Heat (within 1 to 24 hrs) Insulation Resistance (after 24 hrs) Voltage Proof External Visual Inspection	0.1X value Figure 2(b)  Table 2 Item 1  Figure 2(b) Gen. 3402 Para. 9.8	No Breakdown or flashover  R <sub>i</sub>  I <sub>L</sub>	200	-	MΩ
						Table 2 Item 2		
06	Cable Retention Force	Para's. 9.14 and this spec 4.3.4	Continuity					
07	Coupling Proof Torque	Para. 9.4	Interface Dimensions Visual Examination	-		Figure 2(a)		
08	Mating/Unmating Forces	Para. 9.5	Torque	Para. 4.3.5		-	22.6	N.cm
09	Seal Test	Para. 9.7	Leakage External Visual Inspection	As applicable Gen. 3402 Para. 9.8		No Bubbles		
10	Cabling and Crimping Capability	Para. 9.15	Visual Examination Dimensions Insulation Resistance Voltage Proof	Gen. 3402 Para. 9.15 Gen. 3402 Para. 9.15 Table 2 Item 1 Figure 2(b)	R <sub>i</sub>  I <sub>L</sub>	5000	-	MΩ
						Table 2 Item 2		

**NOTES**

1. The tests in this table refer to either Chart IV or V and shall be used as applicable.



**TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL AND ENDURANCE TESTS (CONTINUED)**

NO.	ESA/SCC GENERIC SPECIFICATION NO. 3402		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN.	MAX.	
11	VSWR or Reflection Coefficient	Para. 9.16	VSWR	Gen. 3402 Para. 9.16		Figure 2(b)		
12	Corona Level	Para. 9.17	Corona	Gen. 3402 Para. 9.17		Figure 2(b)		
13	Endurance	Para's. 9.18 and this spec 4.3.6	Mating/Unmating Forces Contact Resist. Drift  Visual Examination	Para. 4.3.5 Centre Contact (20mV 10mA) Shell (20mV 10mA)		-	22.6	N.cm
						-	2.0	mΩ
						-	2.0	mΩ
14	RF Insertion Loss	Para. 9.19	Insertion Loss	Gen. 3402 Para. 9.19		Figure 2(b)		
15	Corrosion	Para. 9.20	Visual Examination	-		No exposure of base metal		
16	Residual Magnetism	Para. 9.21	Magnetism			Para. 4.3.7		
17	Soldering Proof	Para. 9.22	Interface Dimensions Mating/Unmating Forces Insulation Resistance Voltage Proof Contact Resistance  External Visual Inspection	Para. 4.3.5 Table 2 Item 1 Figure 2(b) Centre Contact (20mV 10mA) Shell (20mV 10mA) Gen. 3402 Para. 9.8	R <sub>i</sub> I <sub>L</sub>	Figure 2(b) - 5000	22.6 - -	N.cm MΩ
						-	1.5	mΩ
						-	0.7	mΩ
18	RF Leakage	Para. 9.23	Leakage			Figure 2(b)		
19	High Temperature Storage	Para's. 9.24 and this spec 4.8.6	Mating/Unmating Forces Insulation Resistance Voltage Proof Contact Retention Visual Examination Contact Resistance  External Visual Inspection	Para. 4.3.5 Table 2 Item 1 Figure 2(b) Para. 4.3.9 - Centre Contact (20mV 10mA) Shell (20mV 10mA) Gen. 3402 Para. 9.8	R <sub>i</sub> I <sub>L</sub>	- 5000	22.6 - -	N.cm MΩ
						Table 2 Item 2 Para. 4.3.9	- -	
						-	3.0	mΩ
						-	3.0	mΩ
20	External Visual Inspection	Para. 9.8				-	-	-
21	Permanence of Marking	Para. 9.27				-	-	-

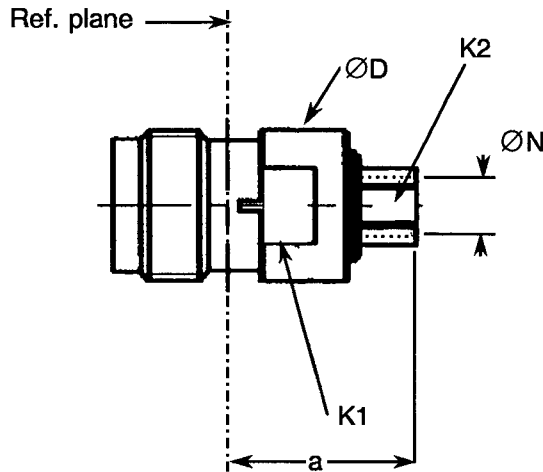
**NOTES**

1. The tests in this table refer to either Chart IV or V and shall be used as applicable.



**FIGURE 2(b) - VARIANTS (CONTINUED)**

VARIANT 01 - STRAIGHT JACK, SOLDER TYPE, FOR SEMI-RIGID CABLE Ø3.58mm (0.141")



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	13.73	14.08	2 flats Hexagon
ØD	-	11.00	
K1	-	9.50	
K2	-	5.00	
ØN	3.65	3.70	

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Continuous max. power at 17.6 GHz at +22°C	75	W
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.10 + 0.005 f (GHz) upto 12.4 GHz 1.16 + 0.008 f(GHz) upto 18 GHz	
Maximum insertion loss	0.06√ f (GHz)	dB
RF leakage	- 115 + 20 log f(GHz)	dB
Voltage proof	1500	Vrms
Corona level	375	Vrms

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	Not applicable	N
Mini centre contact retention torque	Not applicable	N.cm
Mini cable retention force	272	N
Mini cable retention torque value	40	N.cm
Maximum weight	8.0	g

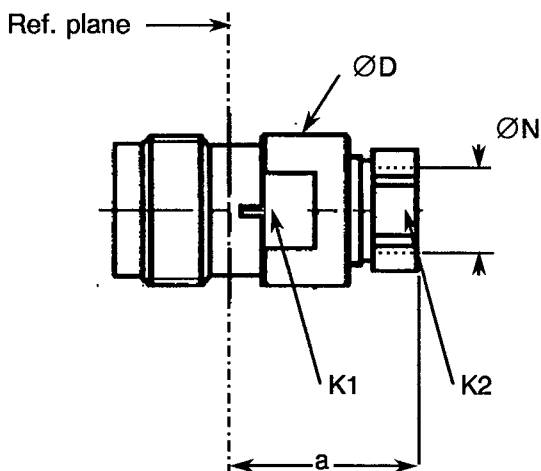
OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 115	°C
Operating temperature range	- 65 to + 105	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	KS 2, RG 402	





**FIGURE 2(b) - VARIANTS (CONTINUED)**

VARIANT 02 - STRAIGHT JACK, SOLDER TYPE, FOR SEMI-RIGID CABLE Ø6.35mm (0.250")



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	13.73	14.08	
ØD	-	11.00	
K1	-	9.50	2 flats
K2	-	8.00	Hexagon
ØN	6.45	6.50	

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Continuous max. power at 17.6 GHz at +22°C	90	W
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.10 + 0.005 f (GHz) upto 12.4 GHz 1.16 + 0.008 f(GHz) upto 18 GHz	
Maximum insertion loss	0.06√f (GHz)	dB
RF leakage	- 115 + 20 log f(GHz)	dB
Voltage proof	1500	Vrms
Corona level	500	Vrms

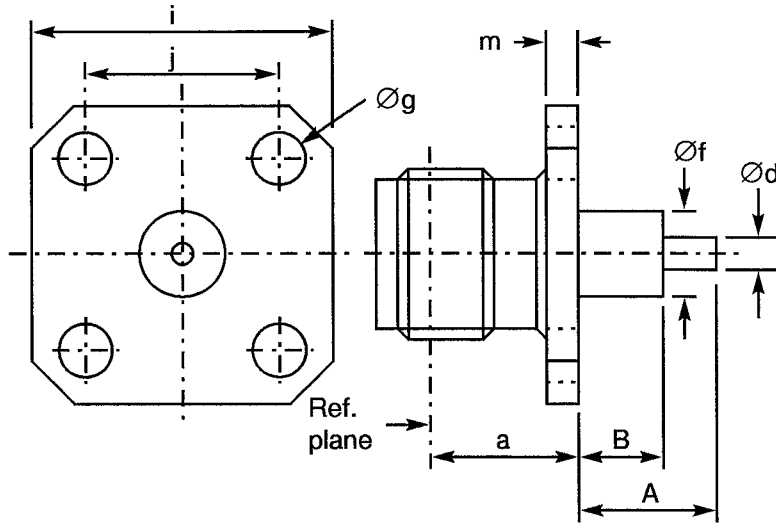
MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	Not applicable	N
Mini centre contact retention torque	Not applicable	N.cm
Mini cable retention force	408	N
Mini cable retention torque value	50	N.cm
Maximum weight	9.0	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 90	°C
Operating temperature range	- 65 to + 90	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	KS 3, RG 402	



**FIGURE 2(b) - VARIANTS (CONTINUED)**

**VARIANT 03 - SQUARE FLANGE RECEPTACLE**



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	6.26	6.34	
A	-	40.00	Note 1
B	-	20.00	Note 1
Ød	1.59	1.69	
Øf	5.15	5.35	
Øg	3.10	3.30	4 holes
i	18.90	19.10	
j	13.45	13.55	
m	1.90	2.10	

**NOTES**

- To specify dimensions, see Para. 4.5.3.

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Continuous max. power at 17.6 GHz at +22°C	100	W
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.10 + 0.01 f (GHz)	
Maximum insertion loss	0.06√f (GHz)	dB
RF leakage	-80 + 20 log f(GHz)	dB
Voltage proof	1500	Vrms
Corona level	Not applicable	Vrms

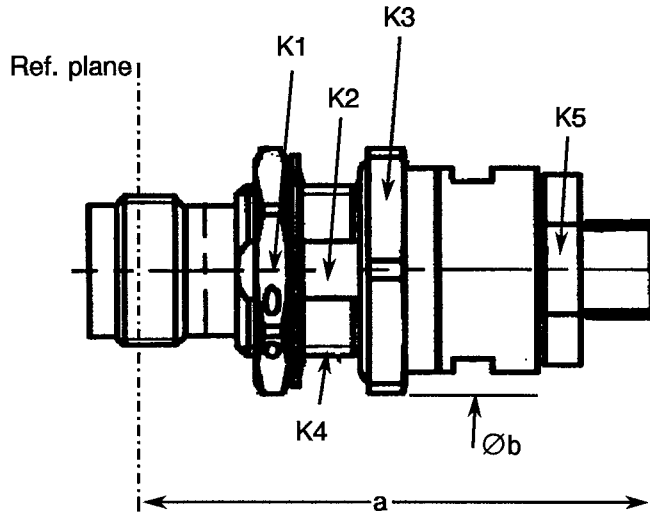
MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	27.2	N
Mini centre contact retention torque	2.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	12	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 115	°C
Operating temperature range	-65 to +105	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	Not applicable	



**FIGURE 2(b) - VARIANTS (CONTINUED)**

**VARIANT 04 - STRAIGHT BULKHEAD JACK, SOLDER TYPE, FOR CABLE SHF 5**



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	32.94	33.30	
Øb	-	20.20	
K1	-	16.00	Hexagon
K2	-	11.90	1 Flat
K3	-	18.00	Hexagon
K4	1/2. 28UNEF-2A		
K5	-	12.00	2 Flats

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Continuous max. power at 17.6 GHz at +22°C	90	W
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.30	
Maximum insertion loss	$0.06\sqrt{f}$ (GHz)	dB
RF leakage	$-90 + 20 \log f$ (GHz)	dB
Voltage proof	1000	Vrms
Corona level	250	Vrms

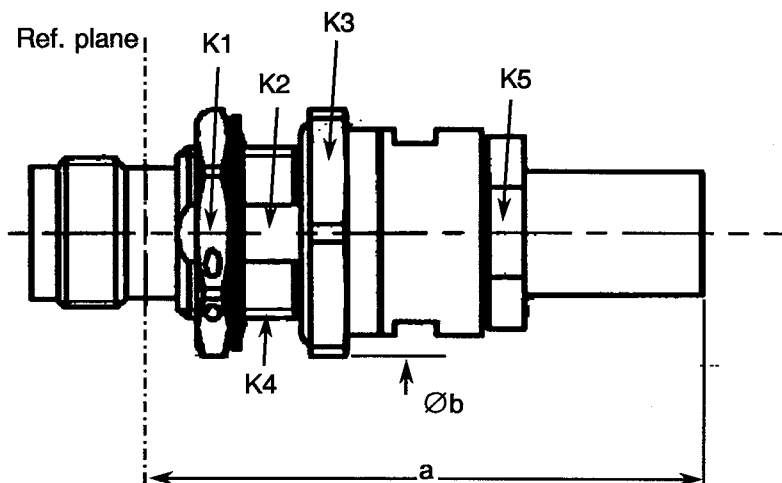
MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	27.2	N
Mini centre contact retention torque	Not applicable	N.cm
Mini cable retention force	50	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	31	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 165	°C
Operating temperature range	- 65 to + 165	°C
Maxi leakage (panel sealed connectors)	Applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	F1703.145	



**FIGURE 2(b) - VARIANTS (CONTINUED)**

**VARIANT 05 - STRAIGHT BULKHEAD JACK, SOLDER TYPE, FOR CABLE SHF 8**



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	40.84	41.40	
Øb	-	20.20	
K1	-	16.00	Hexagon
K2	-	11.90	1 Flat
K3	-	18.00	Hexagon
K4	-	1/2. 28UNEF-2A	
K5	-	12.00	2 Flats

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Continuous max. power at 17.6 GHz at +22°C	120	W
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.30	
Maximum insertion loss	$0.06\sqrt{f}$ (GHz)	dB
RF leakage	$-90 + 20 \log f$ (GHz)	dB
Voltage proof	1000	Vrms
Corona level	250	Vrms

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	27.2	N
Mini centre contact retention torque	Not applicable	N.cm
Mini cable retention force	50	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	33	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 165	°C
Operating temperature range	-65 to +165	°C
Maxi leakage (panel sealed connectors)	Applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	F1703.148	