RF COAXIAL CONNECTORS, TYPE SSMA

(FEMALE CONTACT)

ESCC Detail Specification No. 3402/005

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Pages 1 to 35

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ESA/SCC Detail Specification No. 3402/005

space components
coordination group

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DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
		This Issue supersedes Issue 2 and incorporates all modifications defined in Revision 'A' to Issue 2 and the changes agreed in the following DCR's:-		
		Cover page		None
		DCN		None
		Para. 2	: Additional reference document added	23761
		Table 1(a)	: Type Variant added	23761
		Table 1(b)	: Renumbered from old Table 1	23761
		Figure 2(a)	: Redrawn and Table added	23761
		Figure 3(b)	: Redrawn and Table added	23761
		Para. 4.2.3	: Heading revised	23761
		Para. 4.3.4.2	: Reference to MIL-C-17/133 added	23761
		Para. 4.3.5	: Heading amended to "Mating and Unmating Forces"	23556
		Para. 4.3.6	: Heading amended to "Endurance"	23556
		Para. 4.3.8	: Heading amended to "Contact Engagement and Separation Forces"	23556
		Para. 4.5.1	: First paragraph rewritten	23761
		Para. 4.5.5	: Deleted in toto	23761
		Para. 4.8	: Section rewritten	23761
		Table 6	: Restructured	23761
			: "Engage/Separation Forces" amended to "Mating and Unmating Forces"	23556
			: "Connector Durability" amended to "Endurance"	23556
		Figure 2(b)	: Drawings redrawn and associated dimension tables added	23761
			: Variants 15, 17, 29, 30, 31 and 58, Rapid change of temperature - peak value changed to read "115°C". Operating temperature range changed to read "−65°C to +105°C"	221278
'A'	Nov. '95	P1. Cover page		None
		P2. DCN		None
		P6. Table 1(b)	: No. 7, Maximum Ratings amended and Remarks deleted	23776
		P18. Para. 4.8.6	: Second sentence amended	23776

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4	Not applicable	N/A
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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 SSMA (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(b).

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.

TABLE 1(a) - TYPE VARIANTS

VARIANT	DESCRIPTION
01	Straight Jack, Solder Type, for Semi-Rigid Cable ∅2.20mm (0.085")
06	Straight Jack, Crimp-Type
09	Straight Jack, Solder Type, Flange-Mounted, for Semi-Rigid Cable ∅2.20mm (0.085")
15	Square Flange Receptacle, Front Mounting
17	2-Hole Flange Receptacle, Front Mounting
27	Elbow Receptacle, Square Flange
29	Square Flange Receptacle
30	2-Hole Flange Receptacle
31	Square Flange Receptacle
58	Bulkhead Receptacle
59	Bulkhead Receptacle for Semi-Rigid Cable ∅2.20mm (0.085")
60	Hermetic Receptacle, Solder Type

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	Pmax	1.0	kW	1.0μs max.
2	Power	P	0.8	kW	See Figures 1(a) and 1(b)
3	Nominal Impedance	Z	50	Ω	-
4	Frequency Range	f	See Figure 2(b)	GHz	-
5	Voltage Rating	U_R	See Figure 2(b) (Voltage Proof)	Vrms	See Figure 1(c)
6	Operating Temperature Range	T_{op}	See Figure 2(b)	°C	-
7	Storage Temperature Range	T_{stg}	As per Operating Temperature Range	°C	-

FIGURE 1 - PARAMETER DERATING INFORMATION

FIGURE 1(a) - POWER VERSUS TEMPERATURE

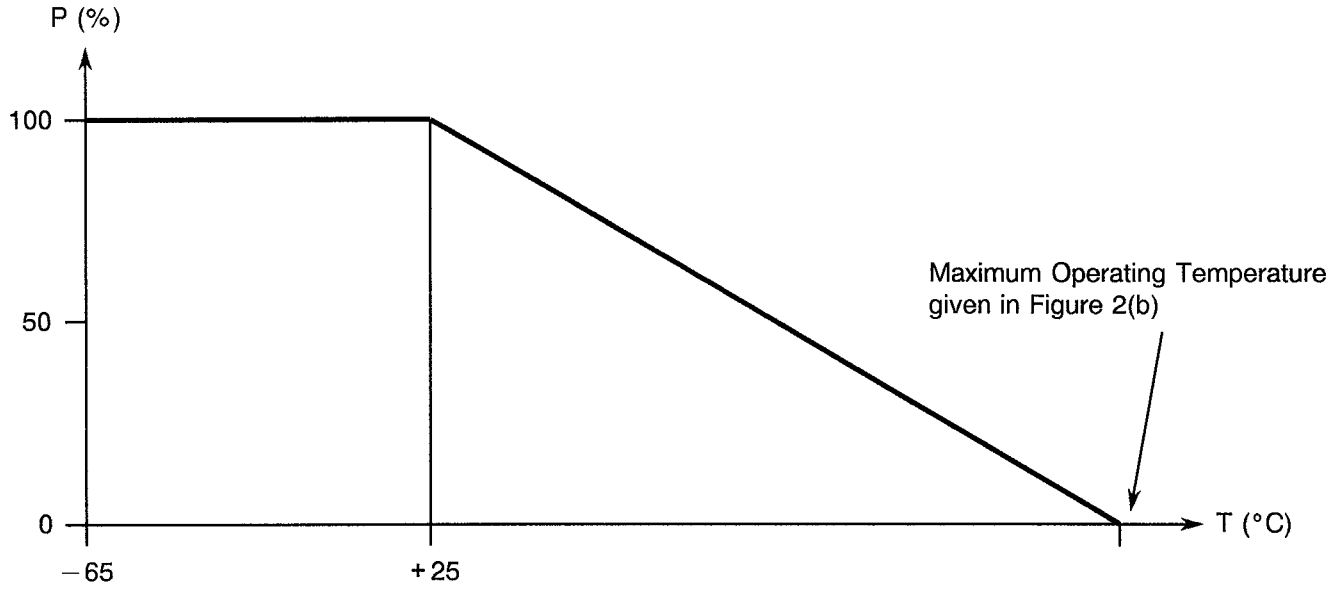
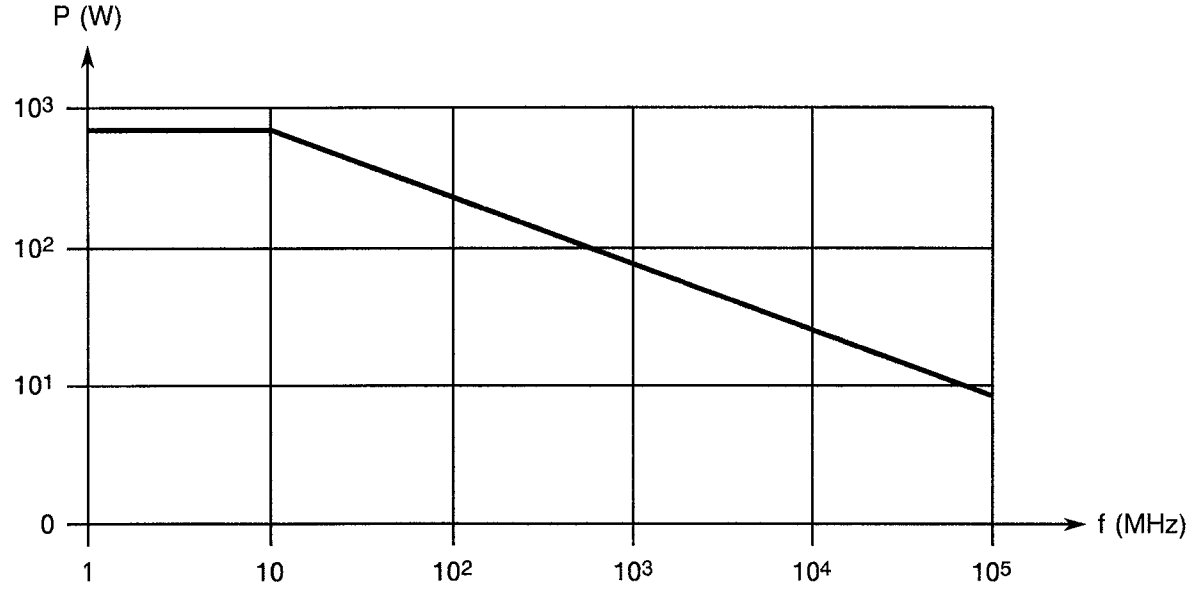


FIGURE 1(b) - POWER VERSUS FREQUENCY



POWER (VSWR in line 1) at T_{amb} = +40°C.

FIGURE 1 - PARAMETER DERATING INFORMATION (CONTINUED)

FIGURE 1(c) - VOLTAGE DERATING AT LOW AIR PRESSURE

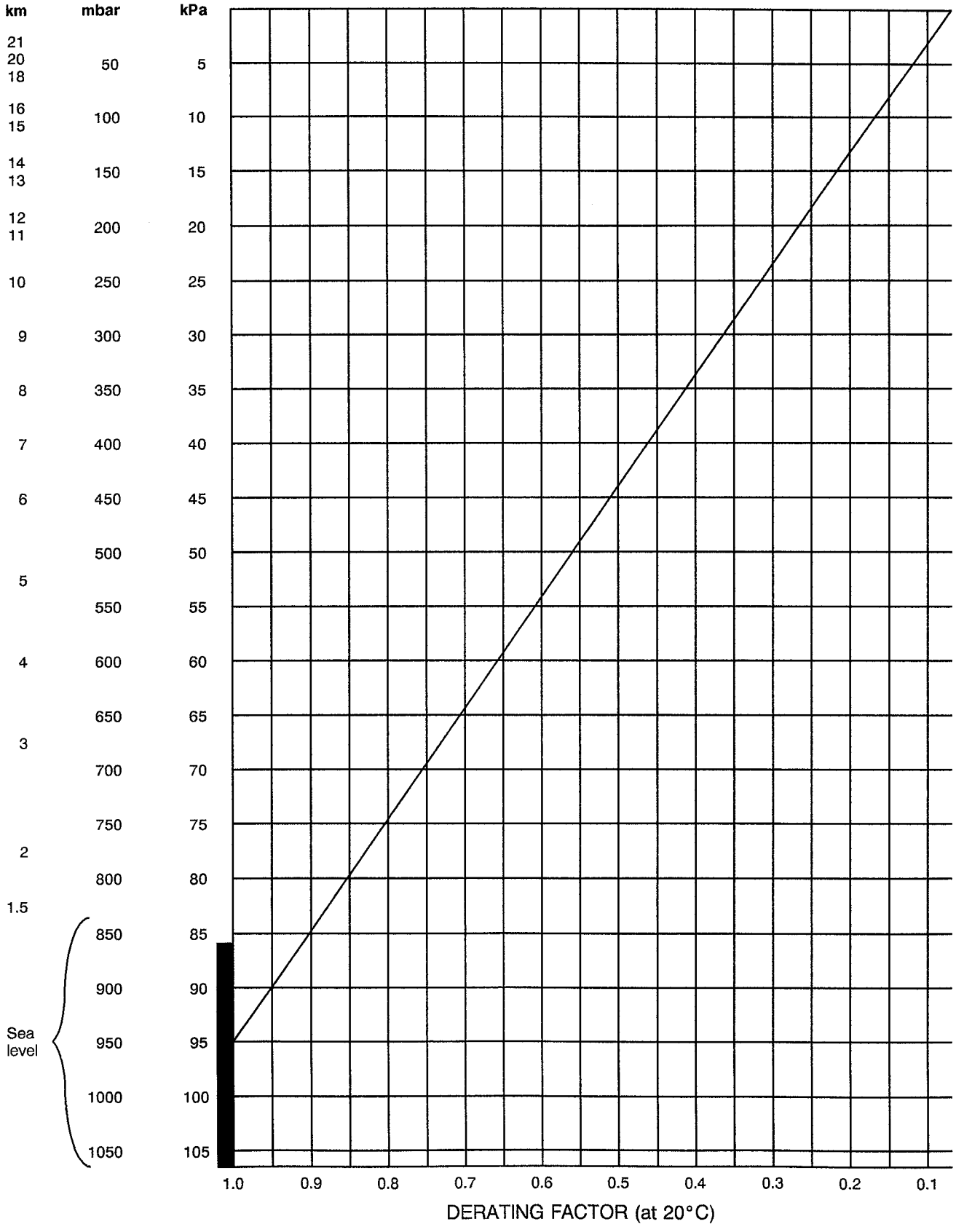
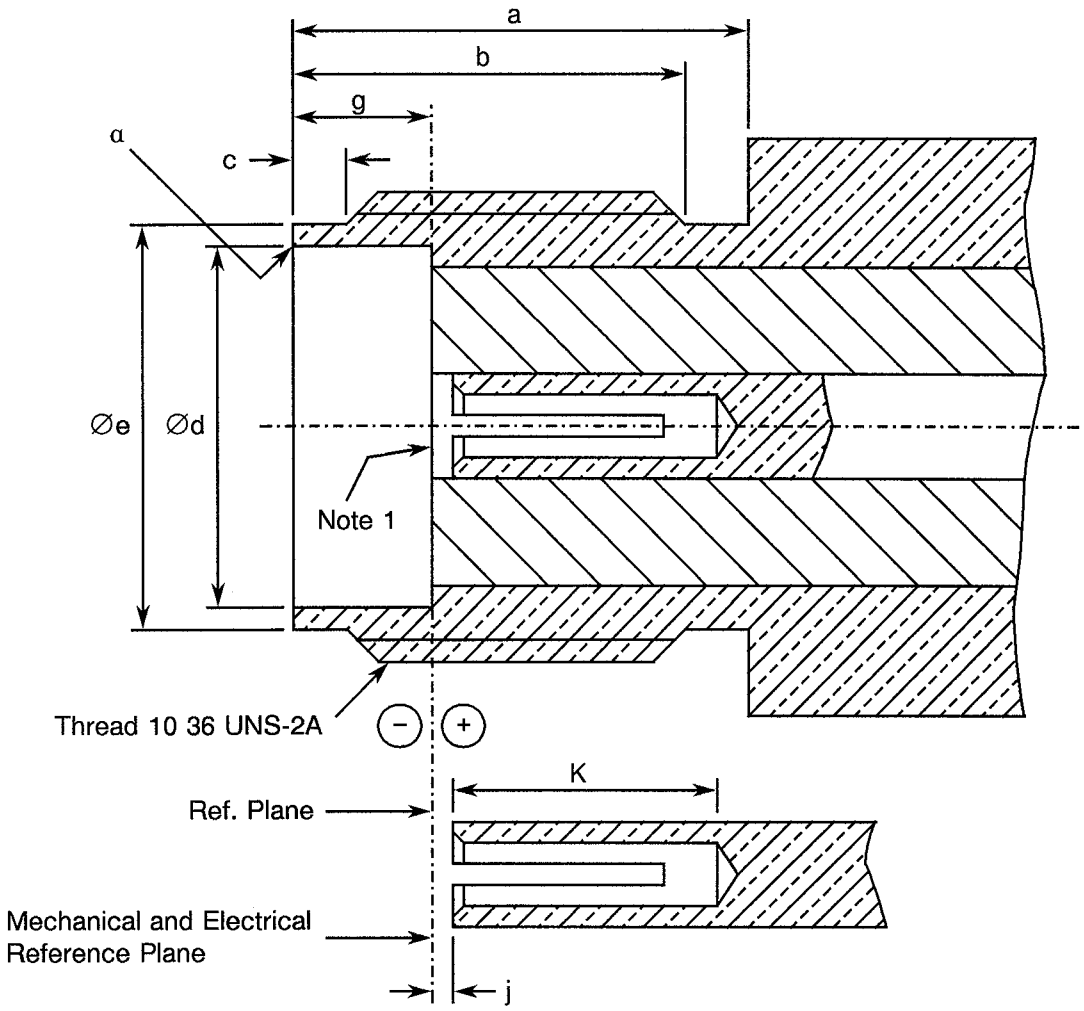


FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - CONNECTOR INTERFACE, FEMALE CONTACT

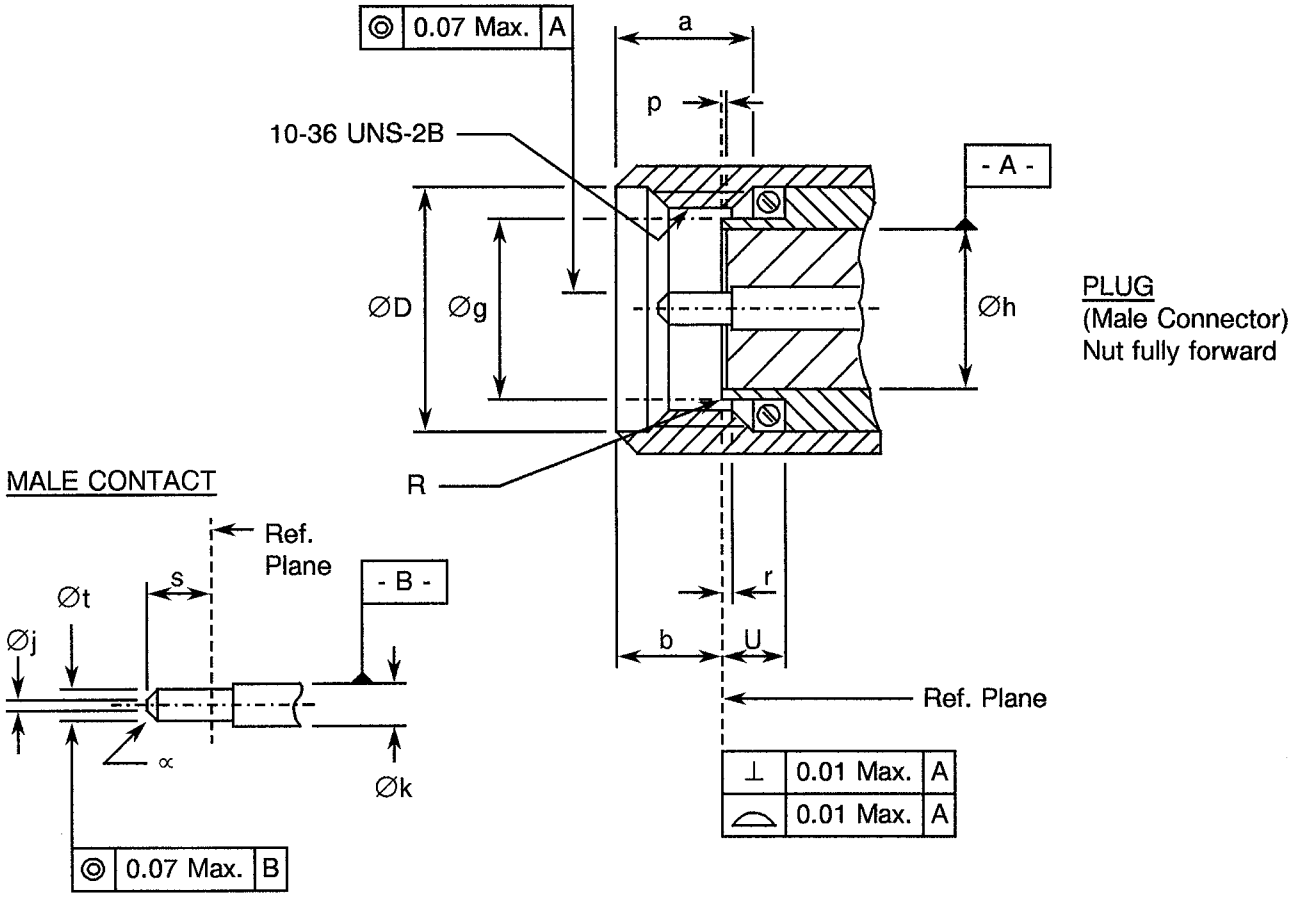


SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	3.56	-	
b	4.32	-	
c	0.38	1.14	
Ød	3.23	3.30	
Øe	3.89	4.06	
g	1.88	1.98	
j	0.00	0.41	
K	2.92	-	
α	-	0.13	45° Chamfer, no sharp edge

NOTES

1. Face position relative to reference plane shall be within the limits of +0.00mm to −0.18mm.

FIGURE 3 - STANDARD TEST CONNECTOR INTERFACE
MALE CONTACT



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	2.54	4.32	
b	2.59	3.35	
ØD	5.05	5.21	
Øg	3.17	3.22	
Øh	2.79 NOM.		
Øj	-	0.25	Flat
Øk	-	-	Note 1
p	0.00	0.05	Insert recess
r	0.00	0.076	Contact recessed
R	-	0.08	Radius or chamfer
s	1.40	1.65	
Øt	0.498	0.518	
U	2.03	-	
∝	-	-	45 ± 3° Chamfer

NOTES
1. Choose to give required performance.

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.

(c) MIL-C-17/133, Cables, Radio Frequency, Coaxial, 0.0865 inch (2.20mm) Diameter, Semirigid, 50 Ohms.

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 and Electrical Measurements (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 110N.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:-

M17/133-RG 405/U (MIL-C-17/133) : 11.28N.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 12N.cm.

Whenever a test is performed on mated pairs of connectors, the pairs shall be torqued at 60-80N.cm.

4.3.6 Endurance

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, copper underplate, gold-plated connectors. The maximum allowable value shall not exceed 20 gammas.

4.3.7.2 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.

4.3.7.3 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.

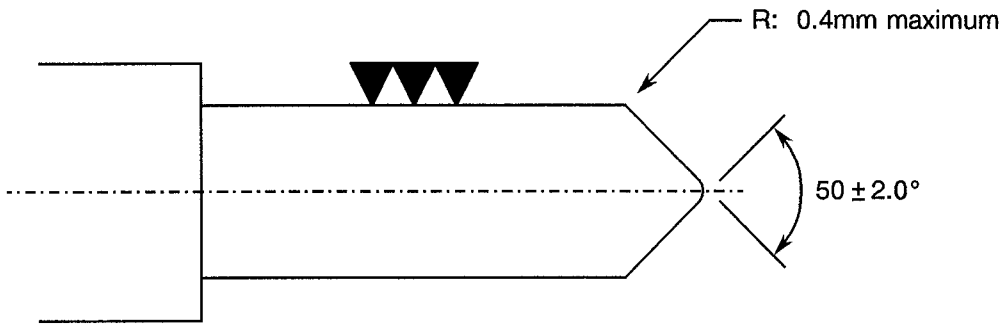
(a) Oversize Pin

Steel test pin diamater	:	0.528/0.533 mm.
Insertion depth	:	1.35 mm max.
Number of insertions	:	3.

(b) Withdrawal Force Test (Minimum Diameter Test Pin)

Steel test pin diamater	:	0.492/0.495 mm.
Insertion depth	:	1.25 mm min.
Withdrawal force	:	25g 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 Gold-plated Versions

4.4.1.1 Normal Types

(a) Shell, Coupling Nut, Centre Contact

Material : Beryllium copper.
Underplate : Nickel, 2.0µm minimum, or copper, 2.5µm minimum.
Plating : Gold, 2.5µm minimum, Class 2, Type 2 of MIL-G-45204.

(b) Inserts

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

(c) Gaskets

Material : Silicone rubber.

(d) Accessories (ferrule, crimping sleeve and nut)

Material : Brass.
Underplate : Nickel, 2.0µm minimum, or copper, 2.5µm minimum.
Plating : Gold, 2.5µm minimum, Class 2, Type 2 of MIL-G-45204.

4.4.1.2 Hermetic Types

(a) Shell

Material : FN 42.
Underplate : Nickel, 2.0µm minimum.
Plating : Gold, 2.5µm minimum, Class 2, Type 2 of MIL-G-45204.

(b) Insert

Material : Glass, Sovirel 747-01.

(c) Centre Contact

Material : Steel, Dilver P.
Underplate : Nickel, 2.0µm minimum.
Plating : Gold, 2.5µm minimum, Class 2, Type 2 of MIL-G-45204.

4.4.2 Stainless Steel Versions

(a) Shell, Coupling Nut

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

(b) Centre Contact

Material : Beryllium copper.
Underplate : Nickel, 2.0µm minimum.
Plating : Gold, 2.5µm minimum, Class 2, Type 2 of MIL-G-45204.

(c) Inserts

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

(d) Gaskets

Material : Silicone.

(e) Accessories

- Crimping elements:-

  Material : Brass.
  Underplate : Nickel, 2.0µm minimum.
  Plating : Adequate for good solderability.

- Nut:-

  Material : Amagnetic stainless steel, electro-passivated.

- Washers:-

  Material : Beryllium copper.
  Plating : Nickel, 2.0µm minimum.

4.5 MARKING

4.5.1 General

The marking of components delivered to this specification shall be in accordance with the requirements of ESA/SCC Basic Specification No. 21700 and the following paragraphs. When the component is too small to accommodate all of the marking specified, as much as space permits shall be marked and the marking information, in full, shall accompany the component in its primary package.

The information to be marked and the order of precedence, shall be as follows:-

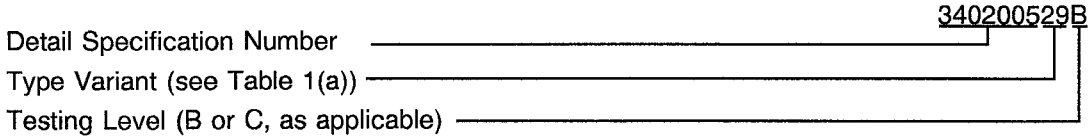
(a) The SCC Component Number.

(b) Electrical Characteristics and Ratings.

(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:-



4.5.3 Characteristics

Each component shall be marked in respect of:-

(a) Type of plating/material.

(b) Subvariant.

The information shall be constituted and marked as follows:-

102
Plating/Material Type
Subvariant

4.5.3.1 Type of Plating/Material

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

CODE	TYPE OF PLATING/MATERIAL	PARA.
1	Gold plate, copper underplate	4.4.1
2	Gold plate, nickel underplate	4.4.1
3	Amagnetic stainless steel	4.4.2

For hermetic types (see Para. 4.4.1.2), only plating code 2 is available.

4.5.3.2 Subvariants

Subvariants are identified by 2 digits and are specified where applicable in Figure 2(b). When no subvariant is shown, the 2 digits shall be '01'.

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.

4.6 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	Ri	ESA/SCC 3402, Para. 9.1	500 Vdc	5000	-	MΩ
2	Voltage Proof	Vp	ESA/SCC 3402, Para. 9.2	-	See Figure 2(b)		

TABLES 3, 4 AND 5

Not applicable

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESA/SCC GENERIC SPECIFICATION NO. 3402)

4.8.1 Measurements and Inspections on Completion of Environmental Tests

The parameters to be measured and inspections to be performed on completion of environmental tests are scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °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 and inspections to be performed on completion of endurance tests are scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °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 SPEC. NO. 3402		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN.	MAX.	
01	Coupling Proof Torque	Para. 9.4	**Final Measurements** Interface Dimensions Visual Examination	 - Para. 9.4 of ESA/SCC 3402	 - -	 Figure 2(a) -	 -	 - -
02	Mating and Unmating Forces	Para. 9.5	**During Test** Torque	 Para. 4.3.5	 -	 -	 12	 N.cm
03	Seal Test	Para. 9.7	Hermeticity Leakage	If applicable As applicable	- -	- No Bubbles	1.10^{-8}	cm^3/s -
04	Contact Resistance	Para. 9.9 6V 10mA	**During Test** Contact Resistance	 Centre Contact Shell Hermetic Centre Contact	 - - -	 - - -	 6.5 2.0 22	 mΩ mΩ mΩ
05	Vibration	Para. 9.10 Full Engagement	**During Test** Electrical Measurements **Final Measurements** Contact Resistance Visual Examination	**Last cycle in each direction** No open or short circuits Centre Contact 6V 10mA No evidence of damage	 - - -	 - - -	 - 6.5 -	 - mΩ -
06	Shock or Bump	Para. 9.11 Full Engagement	**Final Measurements** Contact Resistance Visual Examination	 Centre Contact 6V 10mA No evidence of damage	 - -	 - -	 6.5 -	 mΩ -
07	Rapid Change of Temperature	Para. 9.12	**Final Measurements** Contact Resistance Voltage Proof Visual Examination	**After a recovery period of 24 ± 2 hrs** Centre Contact 6V 10mA Table 2 Item 2 -	 - Vp -	 - Figure 2(b) -	 6.5 -	 mΩ - -
08	Climatic Sequence	Para. 9.13	**During Test** Voltage Proof **Final Measurements** Insulation Resistance Voltage Proof External Visual Inspection	**At Low Air Pressure** No flashover/breakdown **After final Damp Heat cycle (within 1 to 24 hrs recovery)** Table 2 Item 1 Table 2 Item 2 Para. 9.8 of ESA/SCC 3402	 Ri Vp -	 200 Figure 2(b) -	 - -	 MΩ -
09	Cable Retention Force	Para's. 9.14 and this spec 4.3.4	**During Test** Continuity	 -	 -	 -	 -	 -
10	Cabling and Crimping Capability	Para. 9.15	Visual Examination Dimensions Insulation Resistance Voltage Proof	Para. 9.15 of ESA/SCC 3402 Para. 9.15 of ESA/SCC 3402 Table 2 Item 1 Table 2 Item 2	- Ri Vp	 Fig. 2(a) & 2(b) 5000 Figure 2(b)	 - 	- MΩ -

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 (CONT'D)

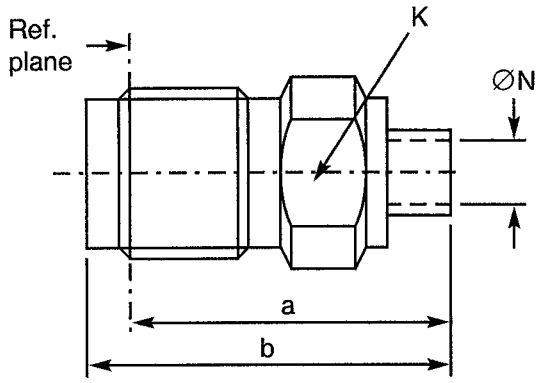
NO.	ESA/SCC GENERIC SPEC. NO. 3402		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN.	MAX.	
11	VSWR or Reflection Coefficient	Para. 9.16	VSWR	Para. 9.16 of ESA/SCC 3402	-	Figure 2(b)		-
12	Corona Level	Para. 9.17	Corona	Para. 9.17 of ESA/SCC 3402	-	Figure 2(b)		-
13	Endurance	Para's. 9.18 and this spec 4.3.6	**Final Measurements**					
			Mating/Unmating Forces	Para. 4.3.5	-	-	12	N.cm
			Contact Res. (6V 10mA)	Centre Contact	-	-	9.0	mΩ
				Shell		-	3.0	mΩ
				Hermetic Centre Contact		-	27	mΩ
			Visual Examination	Para. 9.18 of ESA/SCC 3402	-	-	-	-
14	RF Insertion Loss	Para. 9.19	Insertion Loss	Para. 9.19 of ESA/SCC 3402	-	Figure 2(b)		-
15	Corrosion	Para. 9.20	Visual Examination	Para. 9.20 of ESA/SCC 3402 No exposure of base metal	-	-	-	-
16	Residual Magnetism	Para. 9.21	Magnetism	-	-	Para. 4.3.7		-
17	Soldering Proof	Para. 9.22	**Final Measurements**					
			Interface Dimensions	-	-	Figure 2(b)		-
			Mating/Unmating Forces	Para. 4.3.5	-	-	12	N.cm
			Insulation Resistance	Table 2 Item 1	Ri	5000	-	MΩ
			Voltage Proof	Table 2 Item 2	Vp	Figure 2(b)		-
			Contact Resistance	Centre Contact		-	6.5	mΩ
				Shell		-	2.0	mΩ
				Hermetic Centre Contact	-	-	22	mΩ
			External Visual Inspection	Para. 9.8 of ESA/SCC 3402	-	-	-	-
18	RF Leakage	Para. 9.23	Leakage	-	-	Figure 2(b)		-
19	High Temperature Storage	Para's. 9.24 and this spec 4.8.6	**Final Measurements**					
			Mating/Unmating Forces	Para. 4.3.5	-	-	12	N.cm
			Insulation Resistance	Table 2 Item 1	Ri	5000	-	MΩ
			Voltage Proof	Table 2 Item 2	Vp	Figure 2(b)		-
			Contact Retention	Para. 4.3.9	-	Para. 4.3.9		-
			Visual Examination	-	-	-	-	-
			Contact Resistance	Centre Contact	-	-	18	mΩ
				Shell		-	7.5	mΩ
				Hermetic Centre Contact		-	34	mΩ
			External Visual Inspection	Para. 9.8 of ESA/SCC 3402	-	-	-	-

NOTES

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

FIGURE 2(b) - VARIANTS

VARIANT 01 - STRAIGHT JACK, SOLDER TYPE, FOR SEMI-RIGID CABLE Ø2.20mm (0.085")



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	10.50 NOM.		
b	12.50 NOM.		
K	6.35 NOM.		flats
ØN	2.25 NOM.		

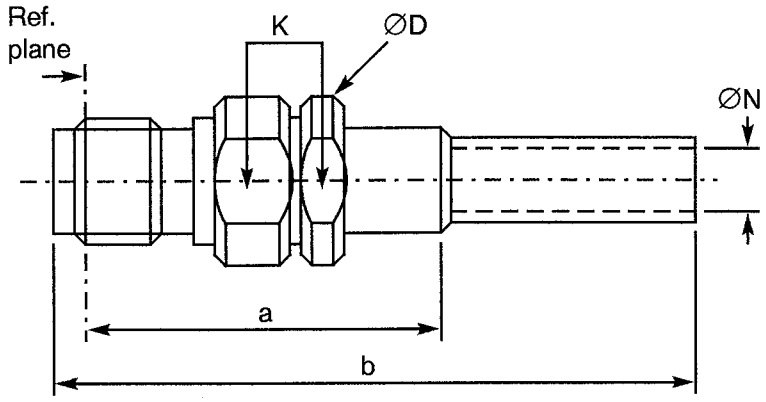
ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.05 + 0.015 f (GHz)	
Maximum reflection coefficient	0.024 + 0.0063 f (GHz)	
Maximum insertion loss	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	−[100 - f (GHz)]	dB
Voltage proof	750	Vrms
Corona level	190	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	200	N
Mini cable retention torque value	11.5	N.cm
Maximum weight	1.3	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 115	°C
Operating temperature range	−55 to + 105	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Not applicable	
Cables used	KS 1, RG 405/U, (Ø2.20mm)	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 06 - STRAIGHT JACK, CRIMP-TYPE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	22.50 NOM.		
b	36.40 NOM.		
ØD	7.00 NOM.		
K	6.35 NOM.		2 flats
ØN			Note 1

NOTES

1. Shall accept cables specified in the table below.

ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Frequency range	0 to 12.4	GHz
Maximum voltage standing wave ratio (VSWR)	1.20 + 0.025 f (GHz)	
Maximum reflection coefficient	0.090 + 0.01 f (GHz)	
Maximum insertion loss	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	− [95 - f (GHz)]	dB
Voltage proof	750	Vrms
Corona level	190	Vrms

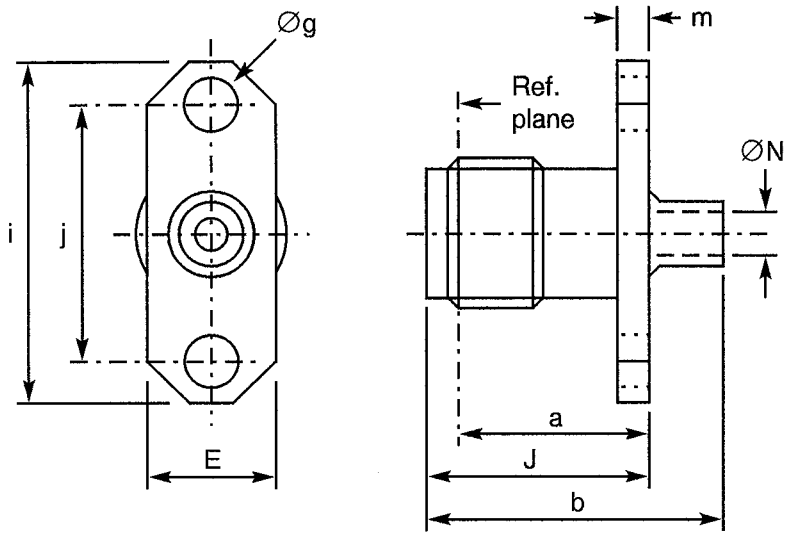
MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	0.5	N.cm
Mini cable retention force	(1) 80; (2) 110	N
Mini cable retention torque value	2 × 180° applic. point 50 × ØN	
Maximum weight	2.3	g

OTHER CHARACTERISTICS		VALUES	UNITS
Rapid change of temperature - peak value		+ 200 (see cables used)	°C
Operating temperature range		− 55 to + 155	°C
Maxi leakage (panel sealed connectors)		Not applicable	
Maxi leakage (hermetic sealed connector)		Not applicable	
Solderability		Applicable	
Soldering proof		Not applicable	
Cables used	(1) Filotex 50 CIS (2) KX 3B, KX 22A RG 174/U, RG 316/U	ØN = 2.10 ± 0.1 ØN = 3.25 ± 0.1	mm

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 09 - STRAIGHT JACK, SOLDER TYPE, FLANGE-MOUNTED, FOR SEMI-RIGID CABLE ∅2.20mm (0.085")

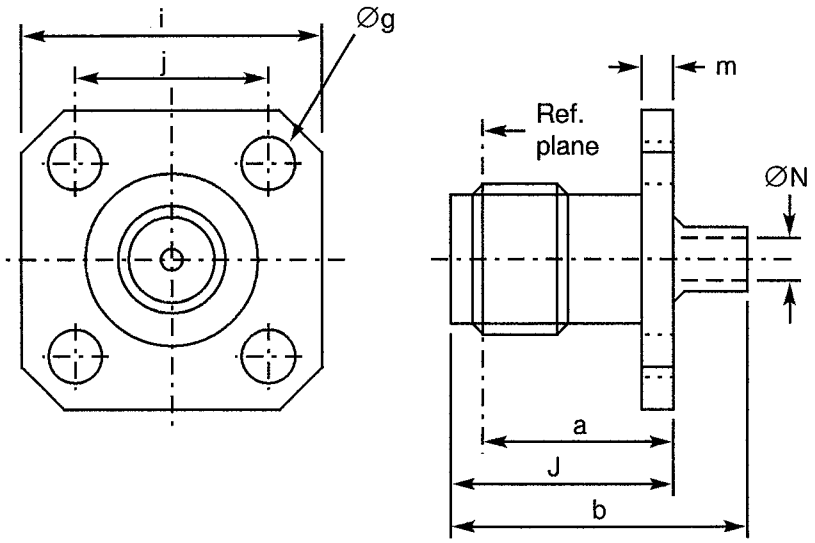
Subvariant 01 - 2-Hole Flange Version



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
b	12.50 NOM.		
E	4.70 NOM.		
∅g	2.40 NOM.		2 holes
i	12.00 NOM.		
j	8.34 NOM.		
J	9.50 NOM.		
m	1.70 NOM.		
∅N	2.25 NOM.		

NOTES
1. Maximum panel thickness: 2.30mm.

Subvariant 02 - Square Flange Version



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
b	12.50 NOM.		
∅g	2.40 NOM.		
i	9.50 NOM.		Square
j	5.90 NOM.		Square
J	9.50 NOM.		
m	1.70 NOM.		
∅N	2.25 NOM.		

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 09 - STRAIGHT JACK, SOLDER TYPE, FLANGE-MOUNTED, FOR SEMI-RIGID CABLE ∅2.20mm (0.085") (CONTINUED)

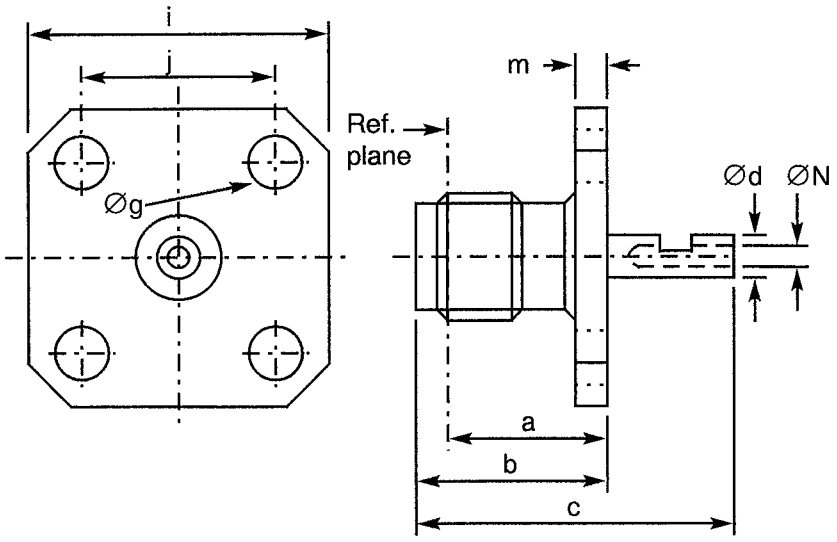
ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.05 + 0.015 f (GHz)	
Maximum reflection coefficient	0.024 + 0.0063 f (GHz)	
Maximum insertion loss	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	−[100 - f (GHz)]	dB
Voltage proof	750	Vrms
Corona level	190	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		200	N
Mini cable retention torque value		11.5	N.cm
Maximum weight	Subvariant	01: 2.5 02: 3.0	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+115	°C
Operating temperature range	−55 to +105	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Not applicable	
Cables used	KS 1, RG 405/U (∅2.20mm)	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 15 - SQUARE FLANGE RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
b	9.50 NOM.		
c	12.50 NOM.		
Ød	0.85 NOM.		
Øg	2.40 NOM.		4 holes
i	9.50 NOM.		Square
j	5.90 NOM.		Square
m	1.70 NOM.		
ØN	0.60 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	(1)	1.07 + 0.01 f (GHz)	
Maximum reflection coefficient	(1)	0.034 + 0.004 f (GHz)	
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

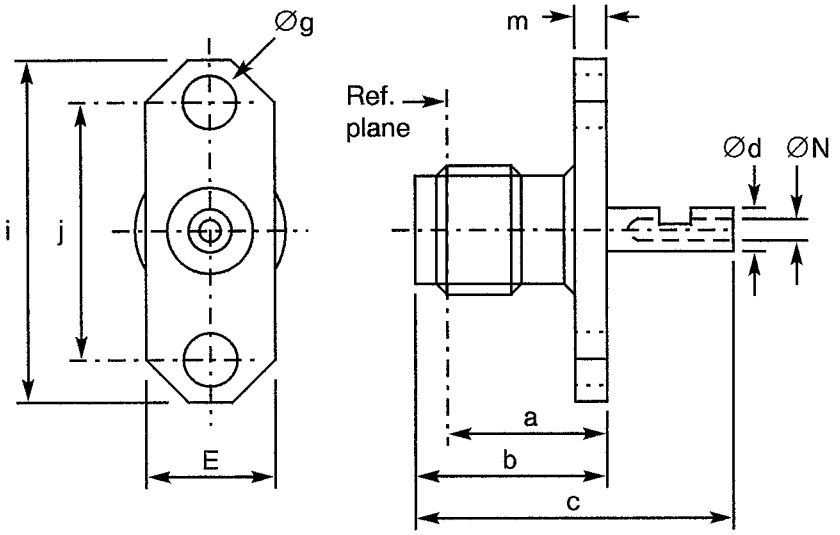
1. For information only.

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	1.3	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	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 17 - 2-HOLE FLANGE RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
b	9.50 NOM.		
c	12.50 NOM.		
Ød	0.85 NOM.		
E	4.70 NOM.		
Øg	2.40 NOM.		2 holes
i	12.00 NOM.		
j	8.34 NOM.		
m	1.70 NOM.		
ØN	0.60 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	(1)	1.07 + 0.01 f (GHz)	
Maximum reflection coefficient	(1)	0.034 + 0.004 f (GHz)	
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

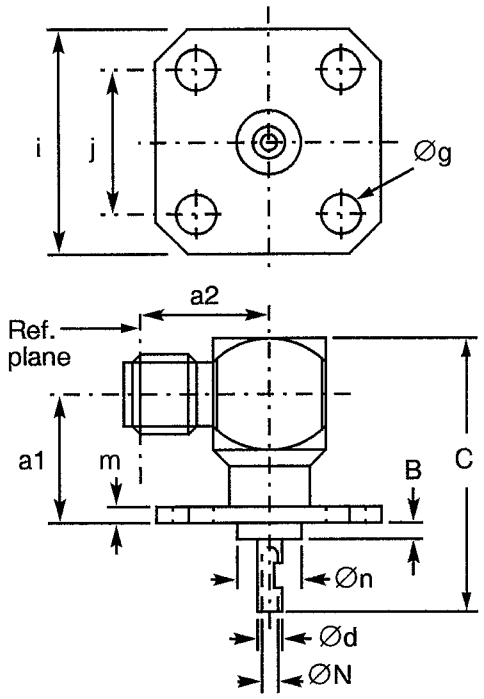
1. For information only.

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	1.1	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	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 27 - ELBOW RECEPTACLE, SQUARE FLANGE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a1	7.40 NOM.		
a2	8.30 NOM.		
B	1.60 NOM.		
C	14.50 NOM.		
Ød	0.85 NOM.		
Øg	2.40 NOM.		4 holes
i	9.50 NOM.		Square
j	5.90 NOM.		Square
m	1.70 NOM.		
Øn	2.70 NOM.		
ØN	0.60 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	(1)	1.10 + 0.025 f (GHz)	
Maximum reflection coefficient	(1)	0.047 + 0.01 f (GHz)	
Maximum insertion loss	(1)	0.03 $\sqrt{f}$ (GHz)	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

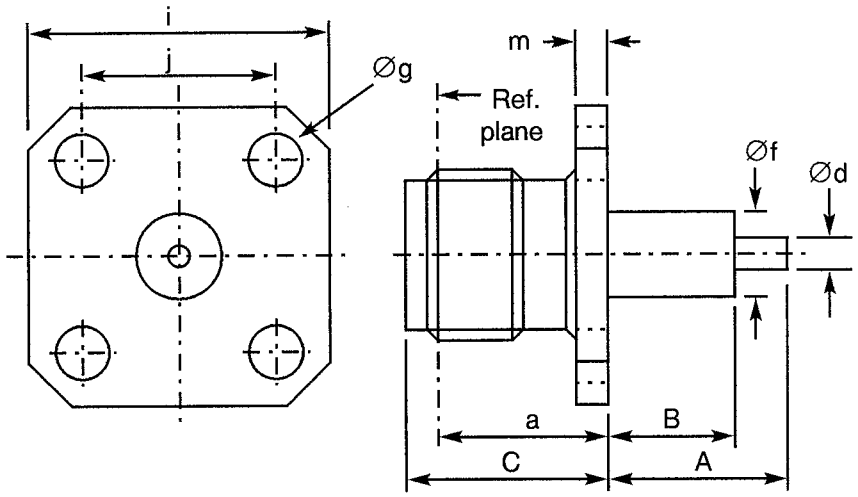
1. For information only.

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	2.5	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 200	°C
Operating temperature range	− 55 to + 155	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 29 - SQUARE FLANGE RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
A	See Next Page		
B	See Next Page		
C	9.50 NOM.		
Ød	0.85 NOM.		
Øf	2.70 NOM.		
Øg	2.40 NOM.		4 holes
i	9.50 NOM.		Square
j	5.90 NOM.		Square
m	1.70 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)		1.07 + 0.01 f (GHz)	
Maximum reflection coefficient		0.034 + 0.004 f (GHz)	
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

1. For information only.

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	2.0	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	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 29 - SQUARE FLANGE RECEPTACLE (CONTINUED)

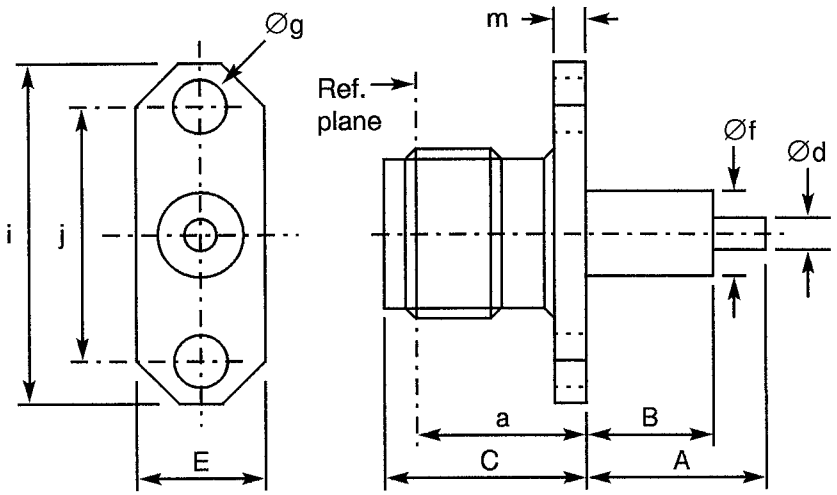
SUBVARIANT No.	A (CONTACT)		B (INSERT)	
	MIN.	MAX.	MIN.	MAX.
01	11.83	11.87	5.90	6.10
02	26.40	26.60	−0.05	+0.05
03	15.80	16.60	12.60	12.80
04	3.10	3.20	1.55	1.75
05	2.50	2.70	0.25	0.30
06	9.20	9.30	4.00	4.20
07	20.40	20.60	4.00	4.20
08	8.90	9.10	2.90	3.10
09	9.90	10.10	4.80	4.90
10	12.78	12.88	−0.05	+0.05
11	5.90	6.10	1.90	2.10
12	7.60	7.80	2.85	3.05
13	15.90	16.10	2.85	3.05
14	4.10	4.30	−0.05	+0.05
15	10.90	11.00	7.90	8.00
16	4.55	4.65	3.25	3.35
17	5.90	6.10	2.45	2.55
18	8.30	8.50	1.27	1.37
19	4.05	4.15	1.24	1.30
20	-	-	-	-
21	20.40	20.60	17.90	18.10
22	14.80	15.20	11.80	12.20
23	8.40	8.45	−0.05	+0.05
24	17.80	18.00	14.90	15.10
25	13.95	14.05	3.90	3.95
26	10.00	10.10	5.76	5.81
27	2.50	2.70	2.40	2.60
28	4.00	4.20	3.90	4.10
29	8.40	8.60	8.30	8.50
30	6.985	7.035	3.92	4.08
31	39.90	40.10	−0.05	+0.05
32	-	-	-	-
33	-	-	-	-
34	9.90	10.10	3.02	3.10

NOTES

1. All dimensions in millimetres.

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 30 - 2-HOLE FLANGE RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
A	See Next Page		
B	See Next Page		
C	9.50 NOM.		
Ød	0.85 NOM.		
E	4.70 NOM.		
Øf	2.70 NOM.		
Øg	2.40 NOM.		2 holes
i	12.00 NOM.		
j	8.34 NOM.		
m	1.70 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)		1.07 + 0.01 f (GHz)	for B = 0
Maximum reflection coefficient		0.034 + 0.004 f (GHz)	for B = 0
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

1. For information only.

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	1.50	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	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 30 - 2-HOLE FLANGE RECEPTACLE (CONTINUED)

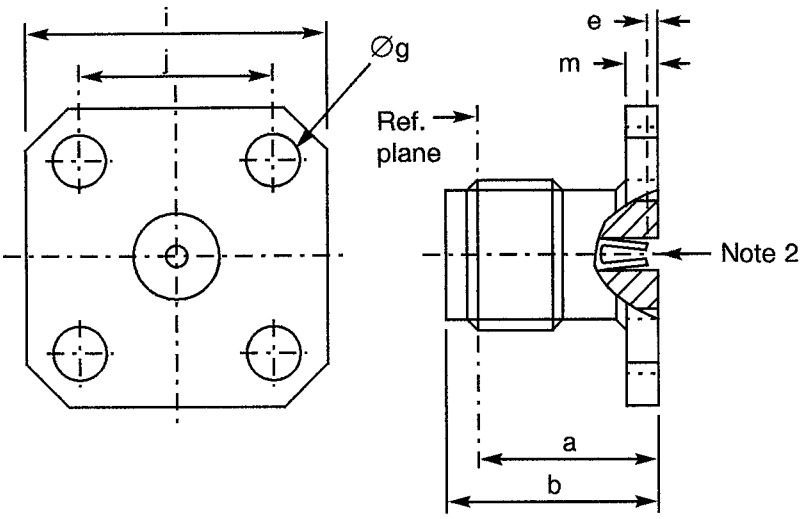
SUBVARIANT No.	A (CONTACT)		B (INSERT)	
	MIN.	MAX.	MIN.	MAX.
01	12.30	12.70	4.80	4.90
02	15.80	16.00	0.40	0.60
03	10.90	11.00	0.90	1.00
04	11.90	12.10	2.90	3.10
05	17.80	18.00	14.90	15.10
06	2.20	2.40	−0.05	+0.05
07	4.20	4.60	−0.05	+0.05
08	-	-	-	-
09	4.70	5.30	2.30	2.50
10	6.90	7.10	6.80	7.00
11	3.00	3.20	1.00	1.10
12	-	-	-	-
13	6.90	7.10	3.10	3.30
14	7.40	7.60	4.90	5.10

NOTES

1. All dimensions in millimetres.

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 31 - SQUARE FLANGE RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	7.60 NOM.		
b	9.50 NOM.		
e	0.18	0.41	
Øg	2.55	2.70	4 holes
i	9.50 NOM.		Square
j	5.90 NOM.		Square
m	1.70 NOM.		

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)		1.05 + 0.03 f (GHz)	for B = 0
Maximum reflection coefficient		0.024 + 0.013 f (GHz)	for B = 0
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

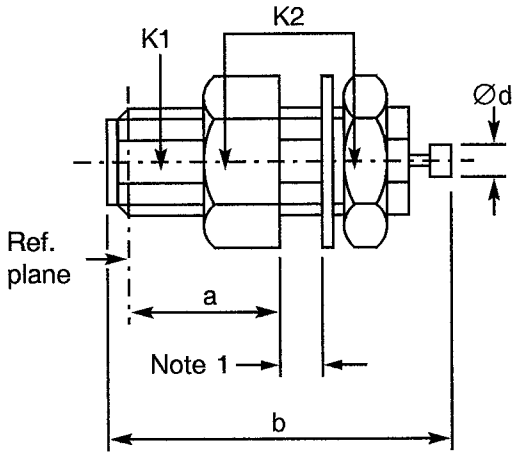
1. For information only.
2. Contact insertion and withdrawal forces shall be measured on the rear contact (see Para. 4.3.8).

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	Not applicable	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	1.3	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	Not applicable	
Soldering proof	Not applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 58 - BULKHEAD RECEPTACLE



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	6.10 NOM.		
b	15.20 NOM.		
Ød	1.30 NOM.		
K1	-	-	2 flats
K2	6.35 NOM.		Hex flats

NOTES

1. Maximum panel thickness: 1.60mm.

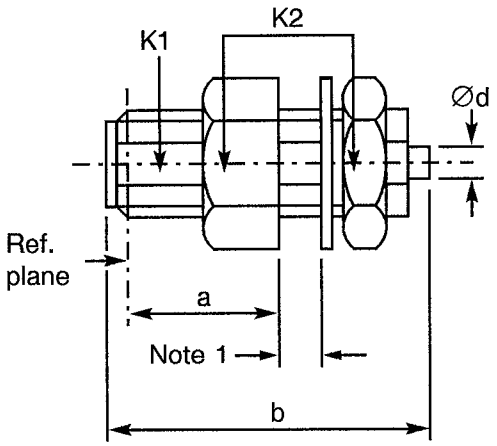
ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	Not applicable	
Maximum reflection coefficient	Not applicable	
Maximum insertion loss	Not applicable	dB
RF leakage	Not applicable	dB
Voltage proof	750	Vrms
Corona level	Not applicable	Vrms

MECHANICAL CHARACTERISTICS	VALUES	UNITS
Mini centre contact retention force (axial)	22	N
Mini centre contact retention torque	1.8	N.cm
Mini cable retention force	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	2.0	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	On centre contact only	
Soldering proof	Applicable	
Cables used	Not applicable	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 59 - BULKHEAD RECEPTACLE FOR SEMI-RIGID CABLE, ∅2.20mm (0.09")



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
a	6.10 NOM.		
b	15.00 NOM.		
∅d	2.25 NOM.		
K1	-	-	2 flats
K2	6.35 NOM.		Hex flats

NOTES

1. Maximum panel thickness: 2.00mm.

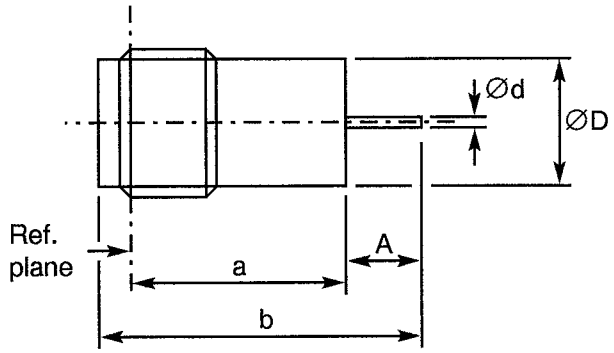
ELECTRICAL CHARACTERISTICS	VALUES	UNITS
Frequency range	0 to 18	GHz
Maximum voltage standing wave ratio (VSWR)	1.05 + 0.015 f (GHz)	
Maximum reflection coefficient	0.024 + 0.0063 f (GHz)	
Maximum insertion loss	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	−[100 - f (GHz)]	dB
Voltage proof	750	Vrms
Corona level	190	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	200	N
Mini cable retention torque value	11.5	N.cm
Maximum weight	2.0	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 115	°C
Operating temperature range	−55 to + 105	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Not applicable	
Solderability	Applicable	
Soldering proof	Not applicable	
Cables used	KS 1, RG 405/U	

FIGURE 2(b) - VARIANTS (CONTINUED)

VARIANT 60 - HERMETIC RECEPTACLE, SOLDER TYPE



SYMBOL	MILLIMETRES	
	MIN.	MAX.
a	8.30 NOM.	
A	2.90 NOM.	
b	13.10 NOM.	
Ød	0.40 NOM.	
ØD	3.70 NOM.	

ELECTRICAL CHARACTERISTICS		VALUES	UNITS
Frequency range		0 to 12.4	GHz
Maximum voltage standing wave ratio (VSWR)	(1)	1.10 + 0.05 f (GHz)	
Maximum reflection coefficient	(1)	0.047 + 0.023 f (GHz)	
Maximum insertion loss	(1)	$0.03\sqrt{f\ (GHz)}$	dB
RF leakage	(1)	− [95 - f (GHz)]	dB
Voltage proof		750	Vrms
Corona level		Not applicable	Vrms

NOTES

1. For information only.

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	Not applicable	N
Mini cable retention torque value	Not applicable	N.cm
Maximum weight	1.0	g

OTHER CHARACTERISTICS	VALUES	UNITS
Rapid change of temperature - peak value	+ 125	°C
Operating temperature range	− 40 to + 100	°C
Maxi leakage (panel sealed connectors)	Not applicable	
Maxi leakage (hermetic sealed connector)	Applicable	
Solderability	Applicable	
Soldering proof	Applicable	
Cables used	Not applicable	