



**RF POWER DIVIDERS, UNSEALED,
4-PORT QUADRATURE,
SMA CONNECTORS, 3 dB, 1 - 18 GHz,
ESCC Detail Specification No. 3404/004**

**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 22

**RF POWER DIVIDERS, UNSEALED,
4-PORT QUADRATURE,
SMA CONNECTORS, 3 dB, 1 - 18 GHz,
ESA/SCC Detail Specification No. 3404/004**



**space components
coordination group**

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 2	October 1991	<i>P. Ponomarev</i>	<i>J. Labeyrie</i>

**DOCUMENTATION CHANGE NOTICE**

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
		This Issue supersedes Issue 1 and incorporates all modifications agreed on the basis of the following DCR's:-		
		Cover Page		None
		DCN		None
		Table 5(b)	: No. 2, Unit column amended	22906
			: Note 2 added	22906
		Table 1(a)	: Type Variant 01, in table, No. 12, Symbol C and K amended	22906
			: Type Variant 02, in table, No. 12, Symbol C and K amended	22906
			: Type Variant 03, in table, No. 12, Symbol C and K amended.	22906
			: Type Variant 04, in table, No. 12, Symbol C and K amended	22906
			: Type Variant 05, in table, No. 12, Symbol C and K amended	22906
			: Type Variant 06, in table, No. 12, Symbol C amended	22906
			: Type Variant 07, in table, No. 12, Symbol C amended	22906
			: Type Variant 08, in table, No. 12, Symbol C amended	22906

**TABLE OF CONTENTS**

	<u>Page</u>
1. <u>GENERAL</u>	5
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 Functional Diagram	5
1.7 Storage Precautions	5
2. <u>APPLICABLE DOCUMENTS</u>	8
3. <u>TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS</u>	8
4. <u>REQUIREMENTS</u>	9
4.1 General	9
4.2 Deviations from Generic Specification	9
4.2.1 Deviations from Special In-process Controls	9
4.2.2 Deviations from Final Production Tests	9
4.2.3 Deviations from Burn-in Tests	9
4.2.4 Deviations from Qualification Tests	9
4.2.5 Deviations from Lot Acceptance Tests	9
4.3 Mechanical Requirements	9
4.3.1 Dimension Check	9
4.3.2 Weight	9
4.3.3 Female Contact Retention	9
4.4 Materials and Finishes	10
4.4.1 Connector Receptacles	10
4.4.2 Body	10
4.5 Marking	10
4.5.1 General	10
4.5.2 The SCC Component Number	10
4.5.3 Traceability information	10
4.6 Electrical Measurements	10
4.6.1 Electrical Measurements at Room Temperature	10
4.6.2 Electrical Measurements at High and Low Temperatures	10
4.6.3 Circuit for Electrical Measurements	10
4.7 Burn-in and Electrical Measurements	12
4.7.1 Parameter Drift Values	12
4.7.2 Conditions for Burn-in	12
4.7.3 Electrical Circuit for Burn-in	12
4.8 Environmental and Endurance Tests	13
4.8.1 Measurements and Inspections on Completion of Environmental Tests	13
4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests	13
4.8.3 Measurements and Inspections on Completion of Endurance Tests	13
4.8.4 Conditions for Operating Life Test	13
4.8.5 Electrical Circuits for Operating Life Test	13
4.8.6 Conditions for High Temperature Storage Test	13

	<u>Page</u>
1(a) <u>TABLES</u>	
Type Variant Summary	6



	Type Variant Detailed Information	16
1(b)	Maximum Ratings	6
1(c)	Format for Individual Tables 1(a)	7
2	Electrical Measurements at Room Temperature	11
3	Electrical Measurements at High and Low Temperatures	11
4	Parameter Drift Values	12
5(a)	Conditions for Burn-in	12
5(b)	Conditions for Operating Life Test	12
6	Measurements and Inspections on Completion of Environmental Tests and at Intermediate Points and on Completion of Endurance Testing	14

FIGURES

1	Parameter Derating Information	6
2	Physical Dimensions	8
3	Functional Diagram	8

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 Power Dividers, Unsealed, 4-Port Quadrature, SMA Connectors, 3 dB, 1-18 GHz. It shall be read in conjunction with ESA/SCC Generic Specification No. 3404, Power Dividers, Couplers, RF, Coaxial, the requirements of which are supplemented herein.

1.2 TYPE VARIANTS

A list of variants of the basic type power dividers specified herein, which are also covered by this specification, is given in "Table 1(a) - Type Variant Summary".

For each type variant, the full electrical and physical characteristics are given in individual Tables 1(a) "Type Variant Detailed Information" at the end of this specification.

The contents of the individual Tables 1(a) shall be as shown in Table 1(c) and the characteristics therein listed shall relate to the design parameters of the individual power dividers, optimised for the intended application.

The specific characteristics shall be negotiated between the Manufacturer and the Orderer. The Manufacturer shall then apply to the ESA/SCC Secretariat for a type variant number for each individual power divider concerned, by sending a finalised Table 1(a) which shall also be copied to the Qualifying Space Agency (QSA).

1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the power dividers specified herein, are scheduled in Table 1(b).

1.4 PARAMETER DERATING INFORMATION

The derating information for the power dividers specified herein is shown in Figure 1.

1.5 PHYSICAL DIMENSIONS

The physical dimensions of the power dividers specified herein are shown in Figure 2.

1.6 FUNCTIONAL DIAGRAM

The functional diagram of the power dividers specified herein is shown in Figure 3.

1.7 STORAGE PRECAUTIONS

These components being unsealed require protection against humidity as specified in Para. 4.2 of ESA/SCC Basic Specification No. 20600.



TABLE 1(a) - TYPE VARIANT SUMMARY (1)

VARIANT	FREQUENCY RANGE (GHz)	
	MIN	MAX
01	1	2
02	2	4
03	4	8
04	8	12.4
05	12.4	18
06	5.9	6.5
07	7.9	8.4
08	3.7	4.2

NOTES

1. Full electrical and physical characteristics are given in the individual Tables 1(a) at the end of this specification.

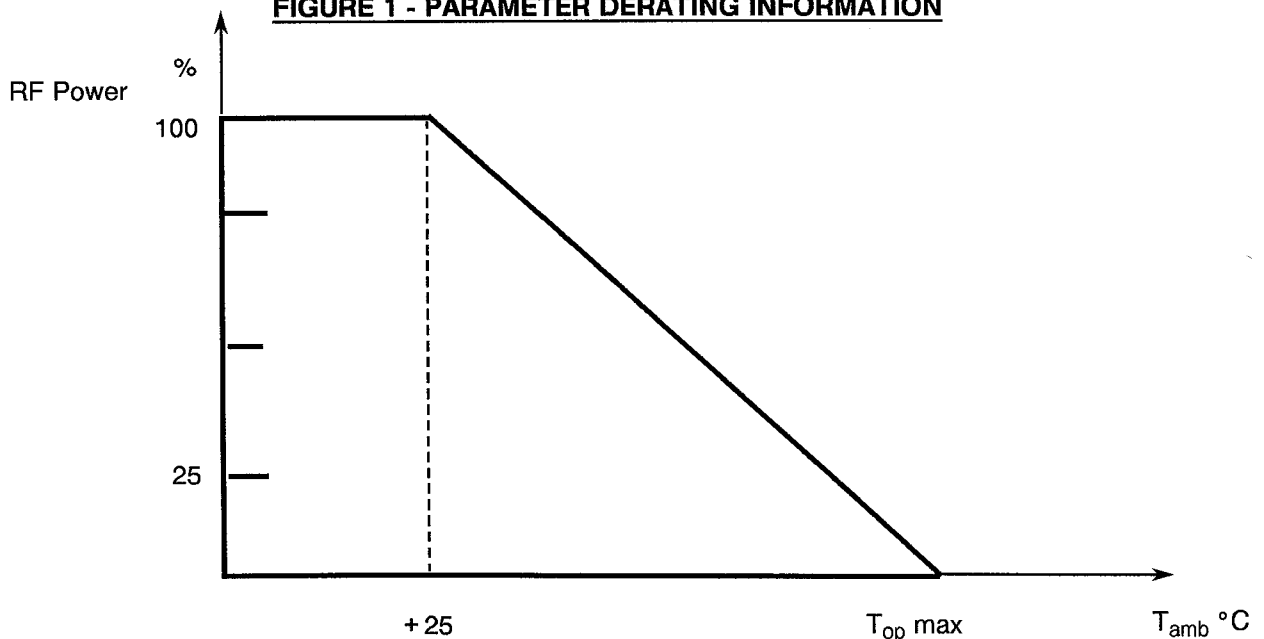
TABLE 1(b) - MAXIMUM RATINGS

NO.	CHARACTERISTICS	SYMBOL	MAXIMUM RATINGS		UNITS
			MIN	MAX	
1	Rated RF Power	P	See Tables 1(a)		W (1)
2	RF Leakage	E	See Tables 1(a)		dB
3	Operating Temperature Range	T _{op}	See Tables 1(a)		°C
4	Storage Temperature Range	T _{stg}	-40	+85	°C

NOTES

1. At T_{amb} = +25°C. For derating at T_{amb} > +25°C, see Figure 1.

FIGURE 1 - PARAMETER DERATING INFORMATION

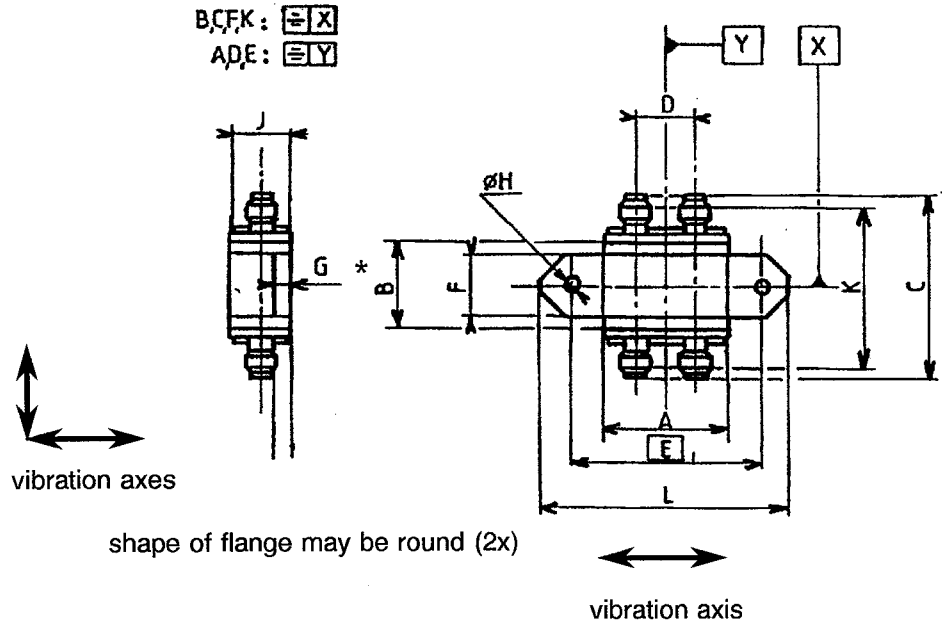


RATED RF POWER VERSUS TEMPERATURE



TABLE 1(c) - FORMAT FOR INDIVIDUAL TABLES 1(a)
TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. _____



No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR Input	RLi	-		-
	Output	RLo	-		-
2	Amplitude Balance	AMb			dB
3	Phase Balance	PHb			°
4	Isolation Input	ISOi			dB
	Output	ISOo			dB
5	Insertion Loss	IL	-		dB
6	Frequency Range	f			GHz
7	RF Power	P	-		W
8	RF Leakage	E		-	dB
9	Weight	W	-		g
10	Interfaces Input	-	340200XXXB Char XXX(2)		-
	Output	-	340200XXXB Char XXX(2)		-
11	Operating Temperature Range	Top			°C
12	Physical Dimensions	A			mm
		B			
		C			
		D			
		E			
		F			
		G			
		φH			
		J			
		K			
		L			

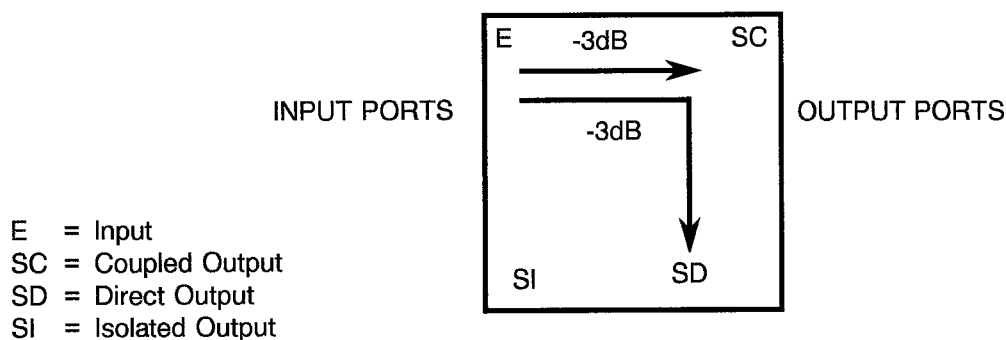
NOTES: See Page 8.

**NOTES TO TABLE 1(c)**

1. Drawing shown as on example only.
2. The missing information shall be derived as follows:
 - The first X denotes the last figure of the Detail Specification Number.
 - The next XX denotes the Variant Number selected.
 - The final XXX denotes the Characteristics selected.

FIGURE 2 - PHYSICAL DIMENSIONS

See Tables 1(a)

FIGURE 3 - FUNCTIONAL DIAGRAM

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. 3404 for Power Dividers, Couplers, RF, Coaxial.
- (b) ESA/SCC Detail Specification No. 3402/001, RF Coaxial Connectors, Type SMA (Male Contacts).
- (c) ESA/SCC Detail Specification No. 3402/002, RF Coaxial Connectors, Type SMA (Female Contacts).
- (d) IEC Publication 410, Sampling Procedures and Tables for Inspection by Attributes.
- (e) ESA PSS-01-702, A Thermal Vacuum Test for the Screening of Space Materials.

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.

In addition, the following symbols shall be used :

- RLi : VSWR at Input
RLo : VSWR at Output
AMb : Amplitude Balance
PHb : Phase Balance
ISOi : Isolation at Input
ISOo : Isolation at Output
IL : Insertion Loss
E : RF Leakage
W : Weight



4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the power dividers specified herein are stated in this specification and ESA/SCC Generic Specification No. 3404, for Power Dividers, Couplers, RF, Coaxial. Deviations from the Generic Specification, applicable to this specification only, are detailed 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)

None.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para's 9.10.3 and 9.10.6, Damp Heat, Accelerated : Not applicable.

(b) Para 9.11, Corrosion : Not applicable.

(c) Para 9.16, Peak Power : Not applicable.

(d) Subgroup III : Add Para 9.5.3, Electrical Measurements at High and Low Temperatures after the Power Level Test.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para's 9.10.3 and 9.10.6, Damp Heat, Accelerated : Not applicable.

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the power dividers specified herein shall be verified in accordance with the requirements set out in Para 9.18 of ESA/SCC Generic Specification No. 3404 and shall conform to those shown in the Tables 1(a) of this specification.

4.3.2 Weight

The maximum weight of the power dividers specified herein shall be as specified in the Tables 1(a) of this specification.

4.3.3 Female Contact Retention

The requirements for this test are specified in Para 9.6 of ESA/SCC Generic Specification No. 3404. Female contacts shall be capable of meeting the requirements of Para 4.3.8. (c) of ESA/SCC Detail Specification No. 3402/002.



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 power dividers 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 Connector Receptacles

As per ESA/SCC Detail Specifications 3402/001 or 3402/002 and as specified in the Tables 1(a) of this specification.

4.4.2 Body

The body shall be made of aluminium. The finish shall be a matt black paint meeting the outgassing requirements of ESA-PSS-01-702. A 7mm diameter area without paint shall be left at each mounting hole on both sides of the body or flange.

4.5 MARKING

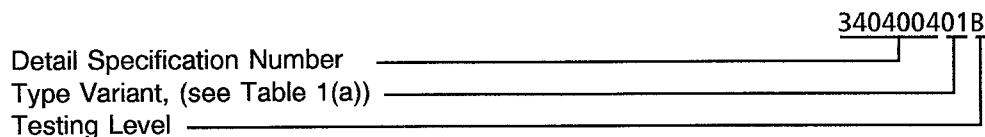
4.5.1 General

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 subparagraphs. Each component shall be marked in respect of:-

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

Traceability information shall be marked 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 $T_{amb} = +22 \pm 3 \text{ }^\circ\text{C}$.

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

The parameters to be measured at high and low temperatures are scheduled in Table 3. Unless otherwise specified, the measurements shall be performed at the operating temperature extremes specified in the individual Tables 1(a) at the end of this specification.

4.6.3 Circuit for Electrical Measurements

Circuits for electrical measurements are given in ESA/SCC Generic Specification No. 3404.

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

No	CHARACTERISTICS	SYMBOL	SPEC. AND/OR TEST METHOD	TEST CONDITION	LIMITS		UNIT
					MIN	MAX	
1	VSWR	RL	ESA/SCC No 3404, Para 9.5.1.2.4	Para 9.5.1.2.4	See Tables 1(a)		-
2	Amplitude Balance	AMb	ESA/SCC No 3404, Para 9.5.1.2.2	Para 9.5.1.2.2	See Tables 1(a)		dB
3	Phase Balance	PHb	ESA/SCC No 3404, Para 9.5.1.2.3	Para 9.5.1.2.3	See Tables 1(a)		°
4	Isolation	ISO	ESA/SCC No 3404, Para 9.5.1.2.6	Para 9.5.1.2.6	See Tables 1(a)		dB
5	Insertion Loss	IL	ESA/SCC No 3404, Para 9.5.1.2.5	Para 9.5.1.2.5	See Tables 1(a)		dB
6	Contact Resistance	RC	ESA/SCC No 3404, Para 9.15.1	Para 9.15.1	-	200	mΩ

TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES (1)

No	CHARACTERISTICS	SYMBOL	SPEC. AND/OR TEST METHOD	TEST CONDITION	LIMITS		UNIT
					MIN	MAX	
1	VSWR	RL	ESA/SCC No 3404, Para 9.5.1.2.4	Para 9.5.1.2.4	See Tables 1(a)		-
2	Amplitude Balance	AMb	ESA/SCC No 3404, Para 9.5.1.2.2	Para 9.5.1.2.2	See Tables 1(a)		dB
3	Phase Balance	PHb	ESA/SCC No 3404, Para 9.5.1.2.3	Para 9.5.1.2.3	See Tables 1(a)		°
4	Isolation	ISO	ESA/SCC No 3404, Para 9.5.1.2.6	Para 9.5.1.2.6	See Tables 1(a)		dB
5	Insertion Loss	IL	ESA/SCC No 3404, Para 9.5.1.2.5	Para 9.5.1.2.5	See Tables 1(a)		dB

NOTES

1. Sampling IEC Publication 410 General Inspection Level II AQL 1.5%.

**4.7 BURN-IN AND ELECTRICAL MEASUREMENTS****4.7.1 Parameter Drift Values**

The parameter drift values applicable to burn-in are specified in Table 4 of this specification. Unless otherwise specified, these measurements shall be performed at $T_{amb} = +22 \pm 3 \text{ }^\circ\text{C}$.

The parameter drift value (Δ) applicable to the parameter scheduled shall not be exceeded. In addition to these drift value requirements, the appropriate limit value specified in Table 2 shall not be exceeded.

4.7.2 Conditions for Burn-in

The requirements for burn-in are specified in Section 7 of ESA/SCC Generic Specification No. 3404. The conditions for burn-in shall be as specified in Table 5(a) of this specification.

Upon completion of burn-in, a recovery period of 24 ± 2 hours is necessary before performance of the end measurements.

4.7.3 Electrical Circuit for Burn-in

Not applicable.

TABLE 4 - PARAMETER DRIFT VALUES

No	CHARACTERISTICS	SYMBOL	SPECS AND/OR TEST METHOD	TEST CONDITIONS	LIMITS	UNIT
2	Amplitude Balance Drift	ΔAMb	As per Table 2	As per Table 2	± 0.1	dB
6	Contact Resistance Drift	$\frac{\Delta RC}{RC}$	As per Table 2	As per Table 2	120	%

TABLE 5(a) - CONDITIONS FOR BURN-IN

No	CHARACTERISTICS	SYMBOL	LIMITS	UNIT
1	Input Power	P	0	W
2	Ambient Temperature	T_{amb}	$+85 (+0-5)$	$^\circ\text{C}$

TABLE 5(b) - CONDITIONS FOR OPERATING LIFE TEST

No	CHARACTERISTICS	SYMBOL	LIMITS	UNIT
1	RF Power	P	See Figure 1 and Tables 1(a)	W(1)
2	Ambient Temperature	T_{amb}	+70	$^\circ\text{C}(2)$

NOTES

1. If $P < 5W$, a test power divider of the same design shall be manufactured at the same time as the ordered lot. The substrate shall be at a fixed frequency in the range 8.2 - 12.4 GHz and made from the same substrate lot. This test power divider shall have the same RF power rating as the ordered component.
2. The ambient temperature will not be greater than the maximum operating temperature defined in Table 1(a).



4.8 ENVIRONMENTAL AND ENDURANCE TESTS (Charts IV and V of ESA/SCC Generic Specification No. 3404)

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. Unless otherwise specified, the measurements shall be performed at $T_{amb} = +22 \pm 3 \text{ }^{\circ}\text{C}$.

4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests

The parameters to be measured and inspections to be performed at intermediate points during endurance tests are scheduled in Table 6. Unless otherwise specified, the measurements shall be performed at $T_{amb} = +22 \pm 3 \text{ }^{\circ}\text{C}$.

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 shall be those specified in Table 6. Unless otherwise specified, the measurements shall be performed at $T_{amb} = +22 \pm 3 \text{ }^{\circ}\text{C}$.

4.8.4 Conditions for Operating Life Test (Part of Endurance Testing)

The requirements for operating life test are specified in Section 9 of ESA/SCC Generic Specification No. 3404. The conditions for operating life test shall be as specified in Table 5(b) of this specification.

4.8.5 Electrical Circuits for Operating Life Test

Not applicable.

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

The requirements for high temperature storage test are specified in Section 9 of ESA/SCC Generic Specification No. 3404.

The conditions for high temperature storage testing shall be as specified in Table 5(a) of this specification.



TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING

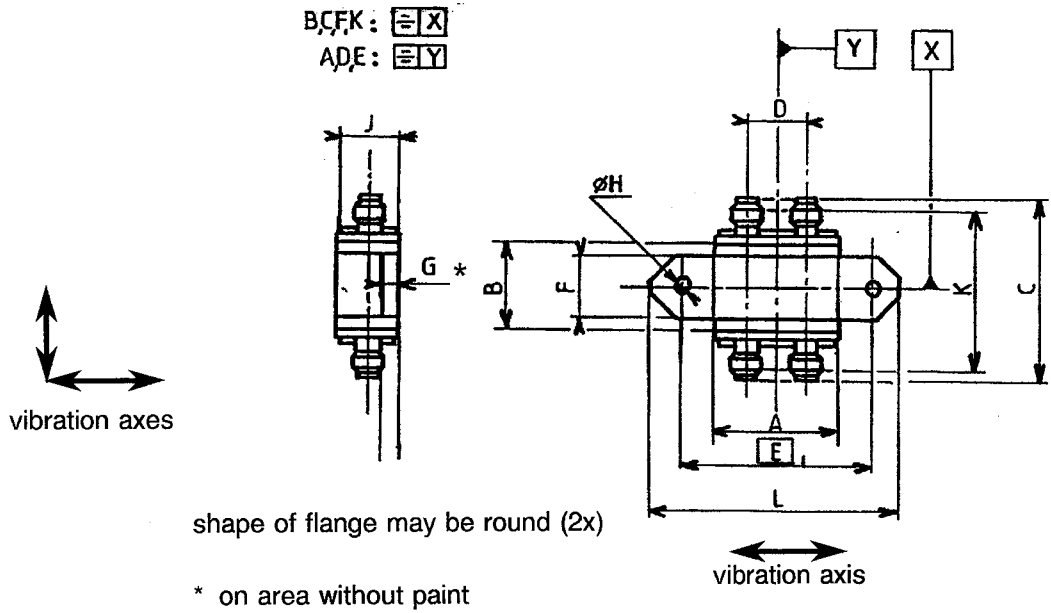
NO	ESA/SCC GENERIC SPEC. No. 3404		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT	
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND COND.	IDENTIFICATION	CONDITIONS		MIN	MAX		
01	Vibration	Para 9.7	Visual Examination	-		-	-	-	
02	Shock or Bump	Para 9.8	Electrical Measur. Visual Examination	Table 2 Damage		Tables 1(a) -	-	-	
03	Rapid Change of Temperature	Para 9.9	After 24 ± 2 hours Electrical Measur. Visual Examination	Table 2 Damage		Tables 1(a)		-	
04	Climatic Sequence	Para 9.10	Electrical Measur. Not applicable	Table 3		Tables 1(a)		-	
	Dry Heat	Para 9.10.2							
	Damp Heat, Accelerated	Para 9.10.3							
	Cold Test	Para 9.10.4	At low Temperat. Electrical Measur.	Table 3		Tables 1(a)		-	
04	Low Air Pressure	Para 9.10.5	Not applicable	-		-	-	-	
		Temp + 35°C							
		Power see Figure 1							
04	Damp Heat, Accelerated	Para 9.10.6	After 1 to 24 hours Electrical Measur. Visual Inspection	Table 2 Mechanical Damage		Tables 1(a) -	-	-	
	Final Measurements	Para 9.10.7							
05	Corrosion	Para 9.11	Not applicable	-		-	-	-	
06	Operating Life	Para 9.12	Electrical Measur.	At 168, 500 & 1000 Hours		Table 4		-	
		Table 5(b)		At 1000 Hours		Tables 1(a)		-	
06			Electrical Measur. Visual Examination	Table 2 Damage		-	-	-	
07	RF Leakage	Para 9.13	RF Leakage	Para 9.13		Tables 1(a)		-	
08	Power Level	Para 9.14	Electrical Measur.	Table 2		Tables 1(a)		-	
09	High Temperature Storage	Para 9.15	Contact Resist.	At 1000 Hours Gen. 3404 Para 9.15	$\frac{\Delta R_c}{R_c}$	Table 4		-	
		Table 5(a)	Electrical Measur. Visual Examination	Table 2			Tables 1(a)		-
09				-		-	-	-	
10	Peak Power	Para 9.16	Not applicable						
11	Perman. of Marking	Para 9.17	-	-		-	-	-	
12	Dimension Check	Para 9.18	Dimensions	-		Tables 1(a)		-	
13	Weight	Para 9.19	Weight	-		Tables 1(a)		-	

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



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 01

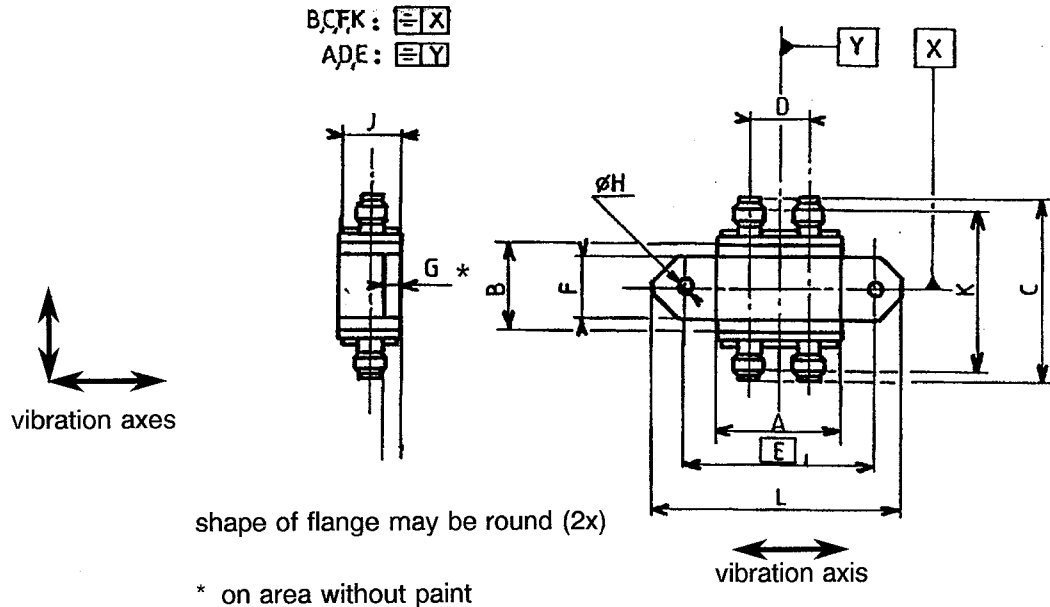


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR Input Output	RLi	-	1.25	-
		RLo	-	1.25	-
2	Amplitude Balance	AMb	-0.5	+0.5	dB
3	Phase Balance	PHb	+86	+94	°
4	Isolation Input Output	ISOi	18	-	dB
		ISOo	18	-	dB
5	Insertion Loss	IL	-	0.25	dB
6	Frequency Range	f	1	2	GHz
7	RF Power	P	-	50	W
8	RF Leakage	E	65	-	dB
9	Weight	W	-	65	g
10	Interfaces Input Output	-	340200242B	301	-
		-	340200242B	301	-
11	Operating Temperature Range	Top	-40	+85	°C
12	Physical Dimensions	A	-	49.5	mm
		B	17.5	18.5	
		C	36.5	37.5	
		D	32.5	33.5	
		E	63	64	
		F	12	13.5	
		G	2.5	3.5	
		ϕH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
L	-	77			



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 02

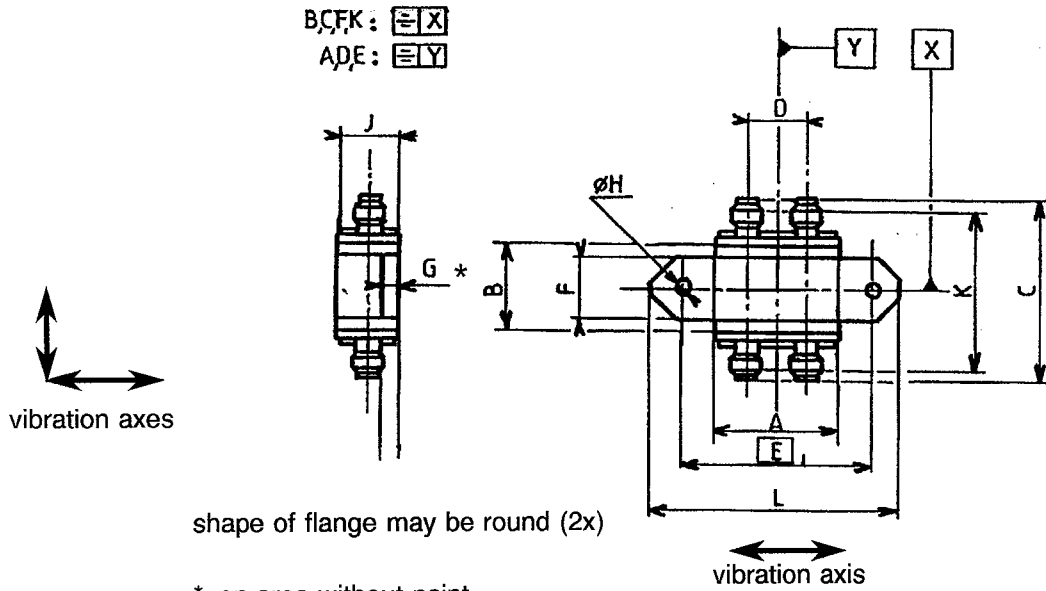


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR Input	RLi	-	1.25	-
	Output	RLo	-	1.25	-
2	Amplitude Balance	AMb	-0.5	+0.5	dB
3	Phase Balance	PHb	+86	+94	°
4	Isolation Input	ISOi	18	-	dB
	Output	ISOo	18	-	dB
5	Insertion Loss	IL	-	0.25	dB
6	Frequency Range	f	2	4	GHz
7	RF Power	P	-	50	W
8	RF Leakage	E	65	-	dB
9	Weight	W	-	50	g
10	Interfaces Input	-	340200242B 301		-
	Output	-	340200242B 301		-
11	Operating Temperature Range	Top	-40	+85	°C
12	Physical Dimensions	A	-	33.5	mm
		B	17.5	18.5	
		C	36.5	37.5	
		D	16.5	17.5	
		E	47	48	
		F	12	13.5	
		G	2.5	3.5	
		φH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
		L	-	61	



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 03

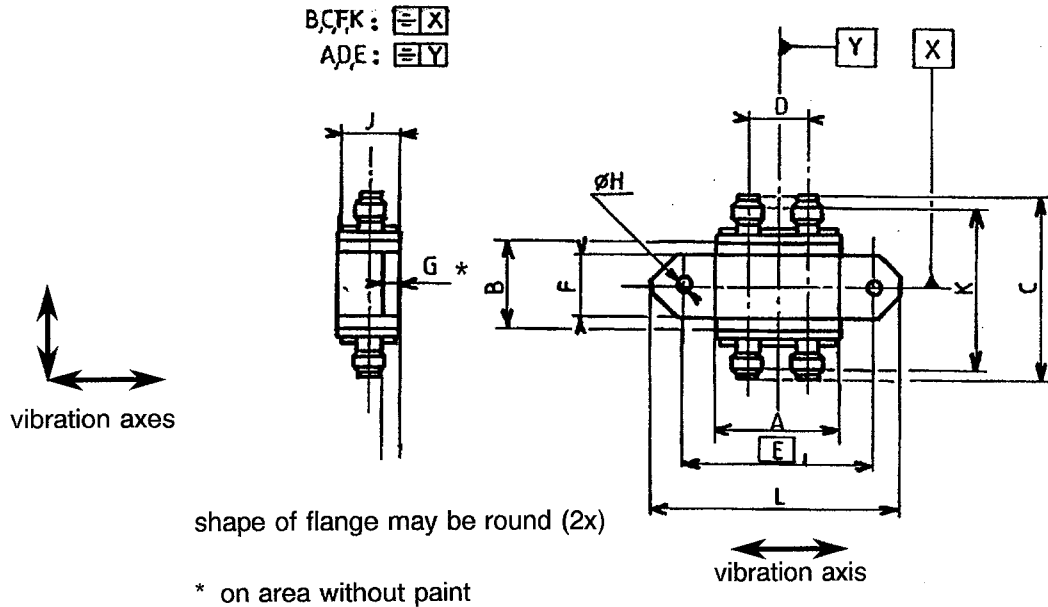


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR	RLi	-	1.25	-
	Input	RLo	-	1.25	-
2	Amplitude Balance	AMb	-0.5	+0.5	dB
3	Phase Balance	PHb	+86	+94	°
4	Isolation	ISOi	18	-	dB
	Input	ISOo	18	-	dB
5	Insertion Loss	IL	-	0.35	dB
6	Frequency Range	f	4	8	GHz
7	RF Power	P	-	50	W
8	RF Leakage	E	65	-	dB
9	Weight	W	-	40	g
10	Interfaces	-	340200242B	301	-
	Input	-	340200242B	301	-
	Output	-			-
11	Operating Temperature Range	Top	-40	+85	°C
12	Physical Dimensions	A	-	27	mm
		B	17.5	18.5	
		C	36.5	37.5	
		D	12.2	13.2	
		E	39.5	40.5	
		F	12	13.5	
		G	2.5	3.5	
		φH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
		L	-	54	



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 04

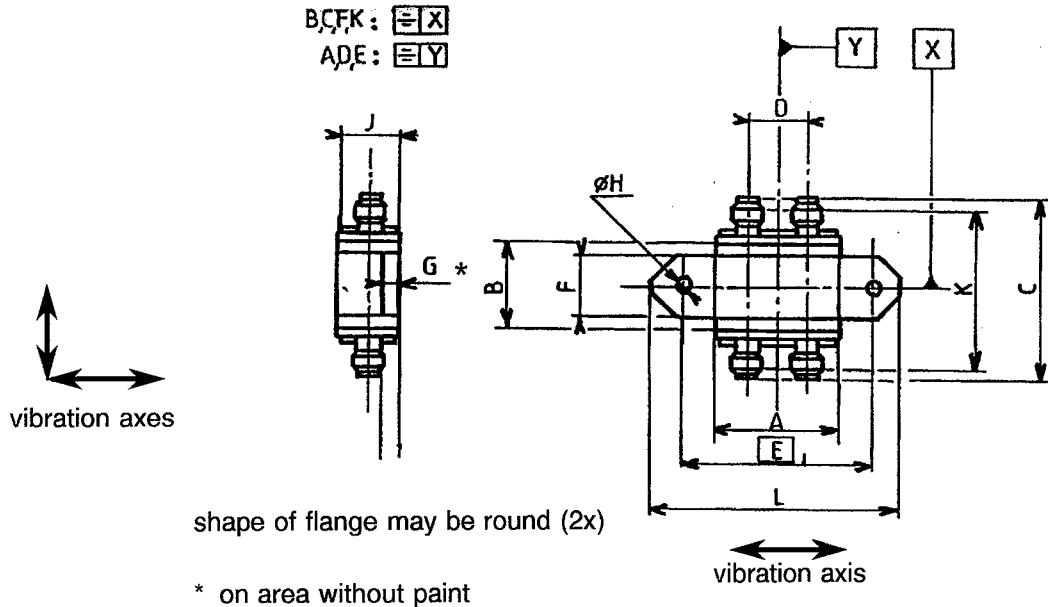


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR	Input	-	1.30	-
		Output	-	1.30	-
2	Amplitude Balance	AMB	-0.5	+0.5	dB
3	Phase Balance	PHB	+86	+94	°
4	Isolation	Input	15	-	dB
		Output	15	-	dB
5	Insertion Loss	IL	-	0.4	dB
6	Frequency Range	f	8	12.4	GHz
7	RF Power	P	-	50	W
8	RF Leakage	E	65	-	dB
9	Weight	W	-	40	g
10	Interfaces	Input	340200242B 301		-
		Output	340200242B 301		-
11	Operating Temperature Range	Top	-40	+85	°C
12	Physical Dimensions	A	-	27	mm
		B	17.5	18.5	
		C	36.5	37.5	
		D	12.2	13.2	
		E	39.5	40.5	
		F	12	13.5	
		G	2.5	3.5	
		ϕH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
L	-	54			



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 05

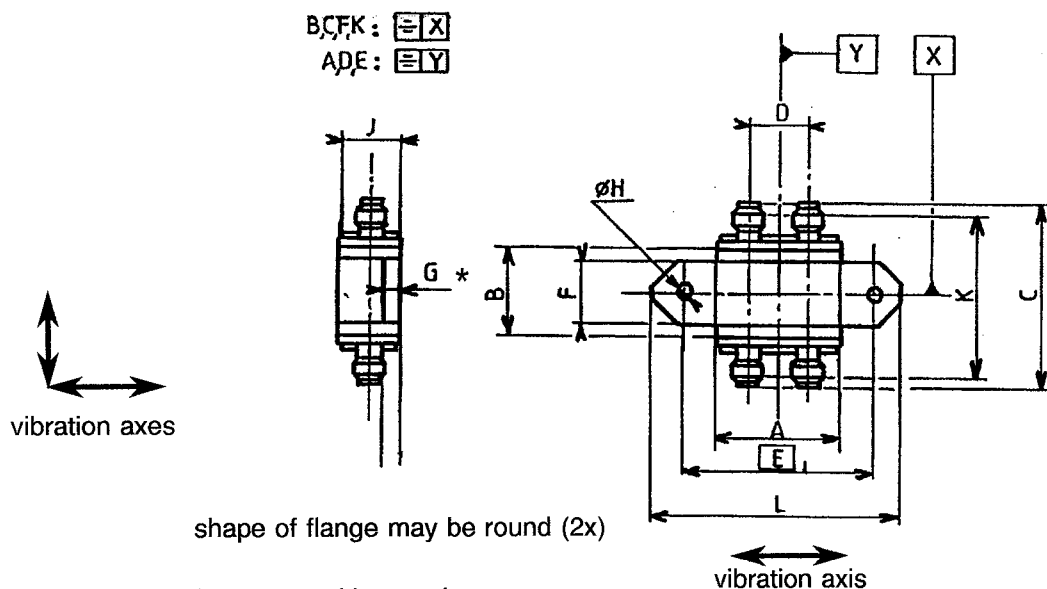


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR Input Output	RLi	-	1.35	-
		RLo	-	1.35	-
2	Amplitude Balance	AMb	-0.5	+0.5	dB
3	Phase Balance	PHb	+85	+95	°
4	Isolation Input Output	ISOi	15	-	dB
		ISOo	15	-	dB
5	Insertion Loss	IL	-	0.6	dB
6	Frequency Range	f	12.4	18	GHz
7	RF Power	P	-	50	W
8	RF Leakage	E	65	-	dB
9	Weight	W	-	40	g
10	Interfaces Input Output	-	340200242B 301		-
		-	340200242B 301		-
11	Operating Temperature Range	Top	-40	+85	°C
12	Physical Dimensions	A	-	27	mm
		B	17.5	18.5	
		C	36.5	37.5	
		D	12.2	13.2	
		E	39.5	40.5	
		F	12	13.5	
		G	2.5	3.5	
		φH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
		L	-	54	



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 06

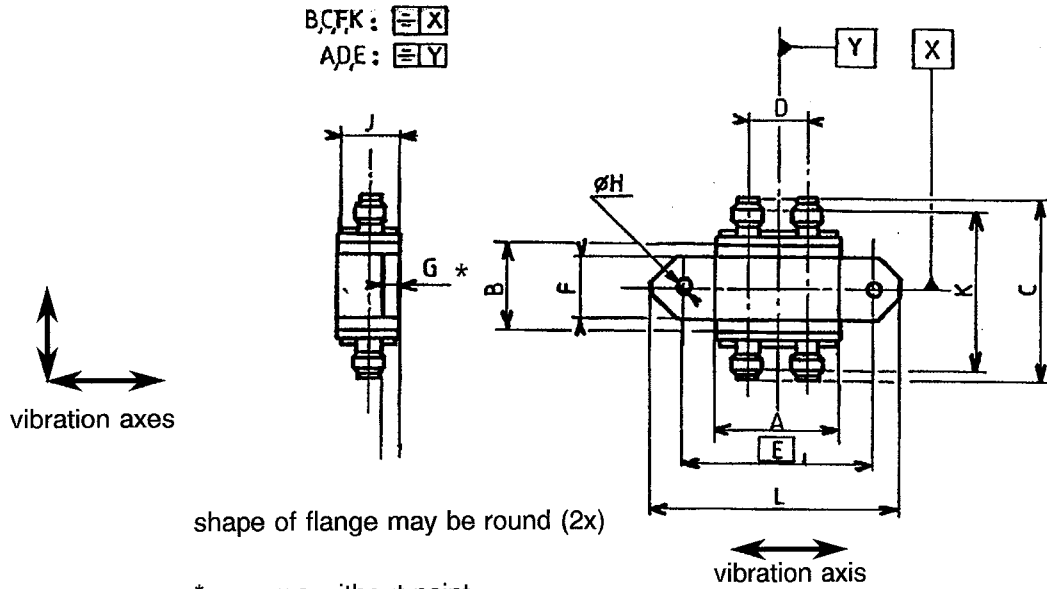


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR Input	RLi	-	1.22	-
	Output	RLo	-	1.22	-
2	Amplitude Balance	AMb	-0.3	+0.3	dB
3	Phase Balance	PHb	-	-	°
4	Isolation Input	ISOi	25	-	dB
	Output	ISOo	25	-	dB
5	Insertion Loss	IL	-	0.5	dB
6	Frequency Range	f	5.9	6.5	GHz
7	RF Power	P	-	1	W
8	RF Leakage	E	85	-	dB
9	Weight	W	-	40	g
10	Interfaces Input	-	340200242B 301		-
	Output	-	340200242B 301		-
11	Operating Temperature Range	Top	-10	+50	°C
12	Physical Dimensions	A	-	26.6	mm
		B	17.8	18.7	
		C	36.5	37.5	
		D	12.5	13	
		E	39.5	40.5	
		F	12	13.5	
		G	2.8	3.2	
		φH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
L	-	54			



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 07

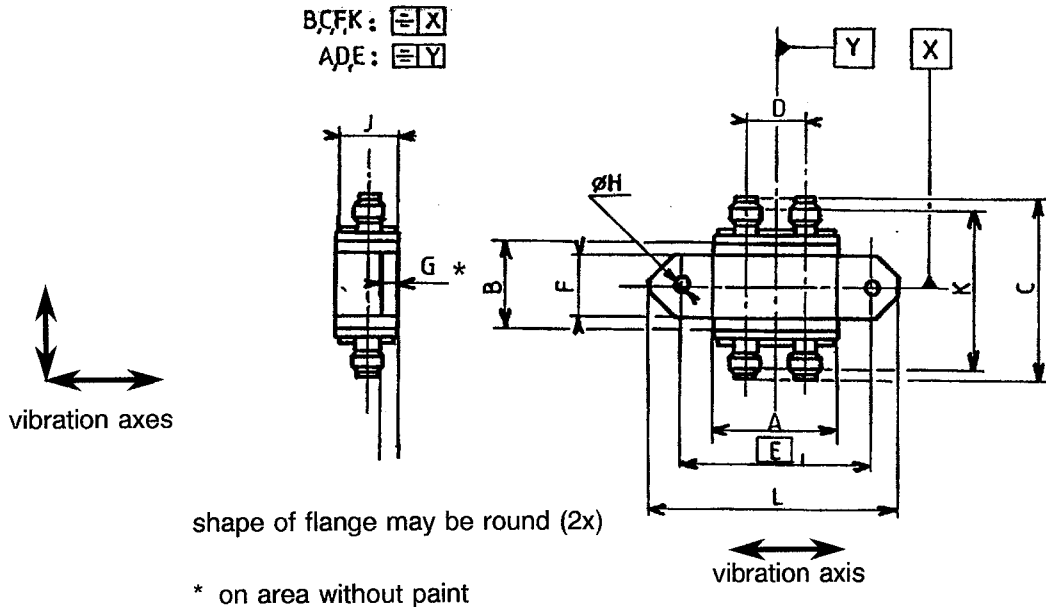


No	CHARACTERISTICS	SYMBOL	VALUES		UNIT
			MIN	MAX	
1	VSWR	Input	-	1.22	-
		Output	-	1.22	-
2	Amplitude Balance	AMB	-0.3	+0.3	dB
3	Phase Balance	PHB	-	-	°
4	Isolation	Input	25	-	dB
		Output	25	-	dB
5	Insertion Loss	IL	-	0.5	dB
6	Frequency Range	f	7.9	8.4	GHz
7	RF Power	P	-	1	W
8	RF Leakage	E	85	-	dB
9	Weight	W	-	40	g
10	Interfaces	Input	340200242B 301		-
		Output	340200242B 301		-
11	Operating Temperature Range	Top	-10	+50	°C
12	Physical Dimensions	A	-	26.5	mm
		B	17.8	18.7	
		C	36.5	37.5	
		D	12.5	13.0	
		E	39.5	40.5	
		F	12	13.5	
		G	2.8	3.2	
		φH	4.4	4.6	
		J	-	13.5	
		K	32.9	33.5	
L	-	54			



TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

TYPE VARIANT No. 08



No	CHARACTERISTICS	SYMBOL	VALUES		UNIT	
			MIN	MAX		
1	VSWR	Input	RLi	-	1.22	-
		Output	RLo	-	1.22	-
2	Amplitude Balance	AMb	-0.3	+0.3	dB	
3	Phase Balance	PHb	-	-	°	
4	Isolation	Input	ISOi	25	-	dB
		Output	ISOo	25	-	dB
5	Insertion Loss	IL	-	0.5	dB	
6	Frequency Range	f	3.7	4.2	GHz	
7	RF Power	P	-	1	W	
8	RF Leakage	E	85	-	dB	
9	Weight	W	-	40	g	
10	Interfaces	Input	-	340200242B 301	-	
		Output	-	340200242B 301	-	
11	Operating Temperature Range	Top	-10	+50	°C	
12	Physical Dimensions	A	-	28.5	mm	
		B	17.8	18.7		
		C	36.5	37.5		
		D	14.8	15.4		
		E	39.5	40.5		
		F	12	13.5		
		G	2.8	3.2		
		φH	4.4	4.6		
		J	-	13.5		
		K	32.9	33.5		
		L	-	54		