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Pages 1 to 41

CONNECTORS, ELECTRICAL, FOR PRINTED CIRCUIT BOARDS, NON-REMOVABLE SOLDER AND WIRE-WRAP CONTACTS AND CONNECTOR SAVERS, BASED ON TYPE KMC

ESA/SCC Detail Specification No. 3401/039

space components
coordination group

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 4	April 1998		

DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
		This Issue supersedes Issue 3 and incorporates the changes agreed in the following DCR's:-		
		Cover page		None
		DCN		None
		Para. 1.5	: "are shown in Figure 2" deleted from end of text	221421
		Figure 2(a)	: For all receptacles, in Note 1 "Torque 2.2N.cm." added at the end of the sentence	221421
			: For receptacle, 80 contacts, contact cavities identification numbers corrected at right-hand side	221421
			: For plug, 80 contacts, contact cavities identification numbers corrected at right-hand side	221421
			: For connector savers, Dimension "L" position corrected in drawings and in Note 1, "Torque 2.2N.cm." added to the end of the sentence	221421
			: For connector saver, 80 contacts, cavities identification numbers corrected at right-hand side	221421
			: For connector saver, 144 contacts, cavity identification "73" added in the centre	221421
		Figure 2(b)	: In the Drawing and Table, Dimension "D" added for Code 110	221421
			: In the Table, Dimension "A" Min. value amended to "10.80" for Code 201	221421
			: In the Drawing, Dimension "B" modified for Code 206	221421
			: In the Table, Dimension "∅C" value amended for Code 703	221421
		Para. 4.2.2	: Deviation "(b)" deleted and all subsequent deviations renumbered	221421
		Para. 4.3.3	: Last sentence deleted.	221421
		Para. 4.3.4	: In the text, "shal" corrected to "shall"	221421
		Para. 4.3.9	: In the Table, 3rd column heading amended to read "Engagement and Separation"	221421
		Table 2	: Nos. 4 and 5, Max. Limit amended to "12"	221421
		Table 6	: Nos. 10 and 13, ΔRcl Max. Limit amended to "6.0"	221421

TABLE OF CONTENTS

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data of Electrical Connectors for Printed Circuit Boards, Non-removable Contacts, Wire-wrap, Solder and Saver, Based on Type KMC. It shall be read in conjunction with:

- ESA/SCC Generic Specification No. 3401, Connectors, Electrical, Non-Filtered, Circular and Rectangular,

the requirements of which are supplemented herein.

1.2 RANGE OF COMPONENTS

The different configurations of the connectors and contacts specified herein, guiding and locking devices, compatibilities between inserts and guiding devices and between inserts and locking devices are given in Table 1(a).

1.3 MAXIMUM RATINGS

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

1.4 PARAMETER DERATING INFORMATION

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

1.5 PHYSICAL DIMENSIONS

The physical dimensions of the connectors, plugs and receptacles, guiding and locking devices specified herein and the contact mounting configurations are shown in Figures 2(a), 2(b) and 2(c).

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. 3401, Connectors, Electrical, Non-Filtered, Circular and Rectangular.

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.

TABLE 1(a) - RANGE OF COMPONENTS

INSERT SIZES

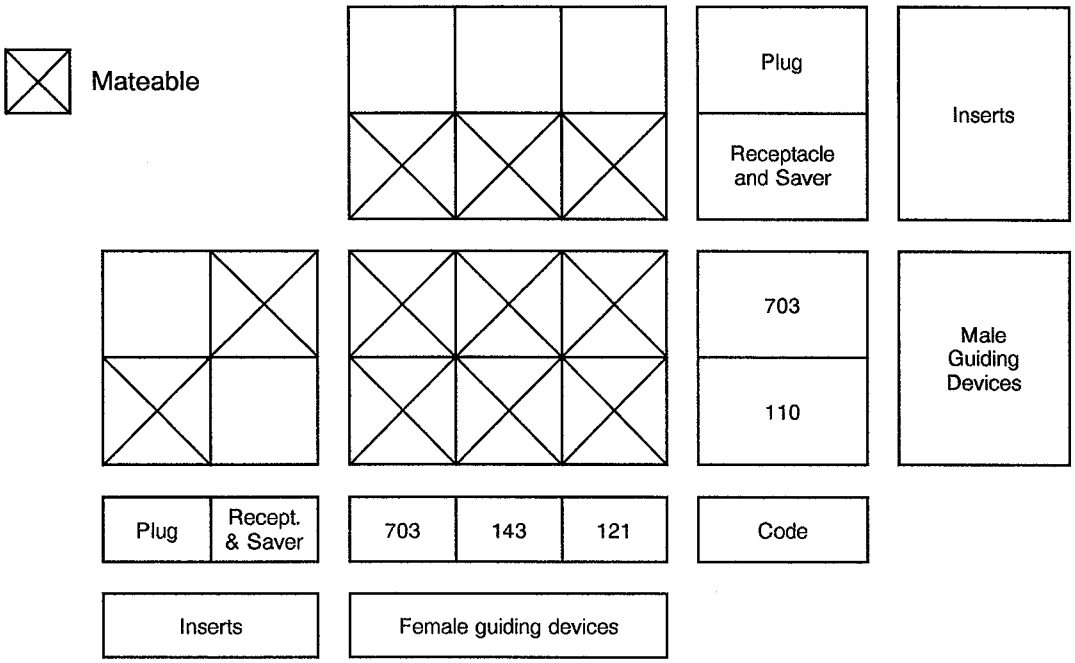
INSERT	NO. OF CONTACTS	MAX. WEIGHT (g)	MAX. ENGAGEMENT FORCE (N)	SEPARATION FORCE (N)	
				MIN.	MAX.
Receptacle and Connector Saver	26	9.8	18.20	3.12	18.20
	44	12.6	30.80	5.28	30.80
	62	15.5	43.40	7.44	43.40
	80	18.4	56.00	9.60	56.00
	98	21.0	68.60	11.76	68.60
	144	30.0	100.80	17.28	100.80
Plug	26	8.2	18.20	3.12	18.20
	44	11.6	30.80	5.28	30.80
	62	14.9	43.40	7.44	43.40
	80	18.2	56.00	9.60	56.00
	98	21.4	68.60	11.76	68.60
	144	31.6	100.80	17.28	100.80

CONTACT TYPES

CONTACT CODES	CONTACT TYPES	ACCEPTED WIRE SIZE (AWG)
10	Solder, 90° for PCB	-
30	Solder, straight for PCB	-
31	Solder, straight long for PCB	-
40	Solder pot	28
50	Wire-wrap, 2 wrapping levels	28-30
51	Wire-wrap, 3 wrapping levels	28-30
91	Contact for connector saver	-

TABLE 1(a) - RANGE OF COMPONENTS (CONTINUED)

INTERMATEABILITY CHART, INSERTS AND GUIDING DEVICES



INTERMATEABILITY CHART, INSERTS AND LOCKING DEVICES

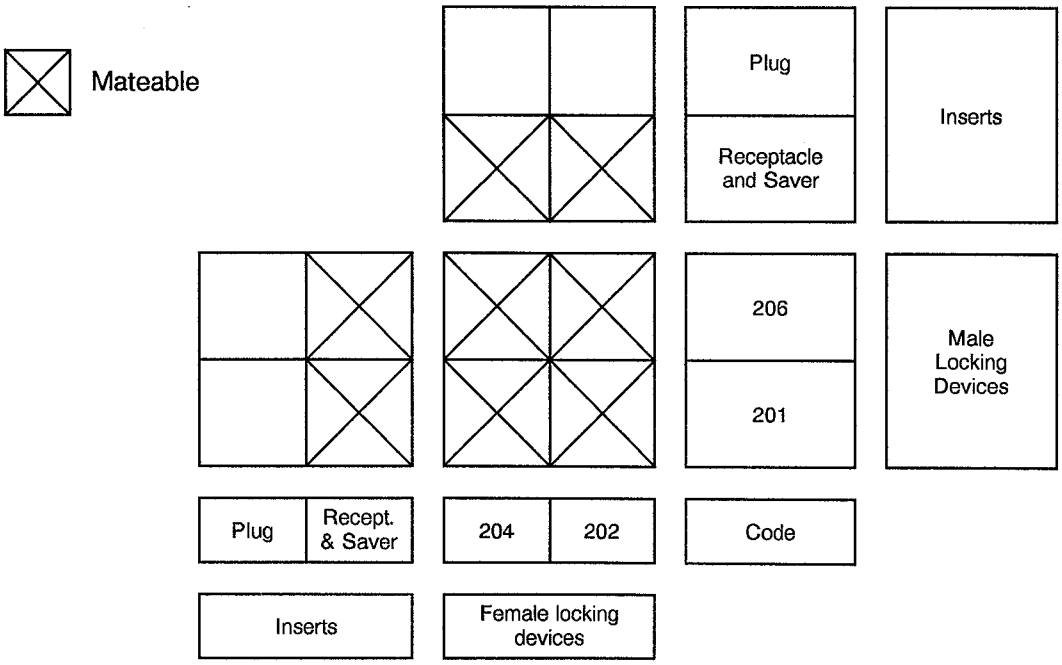


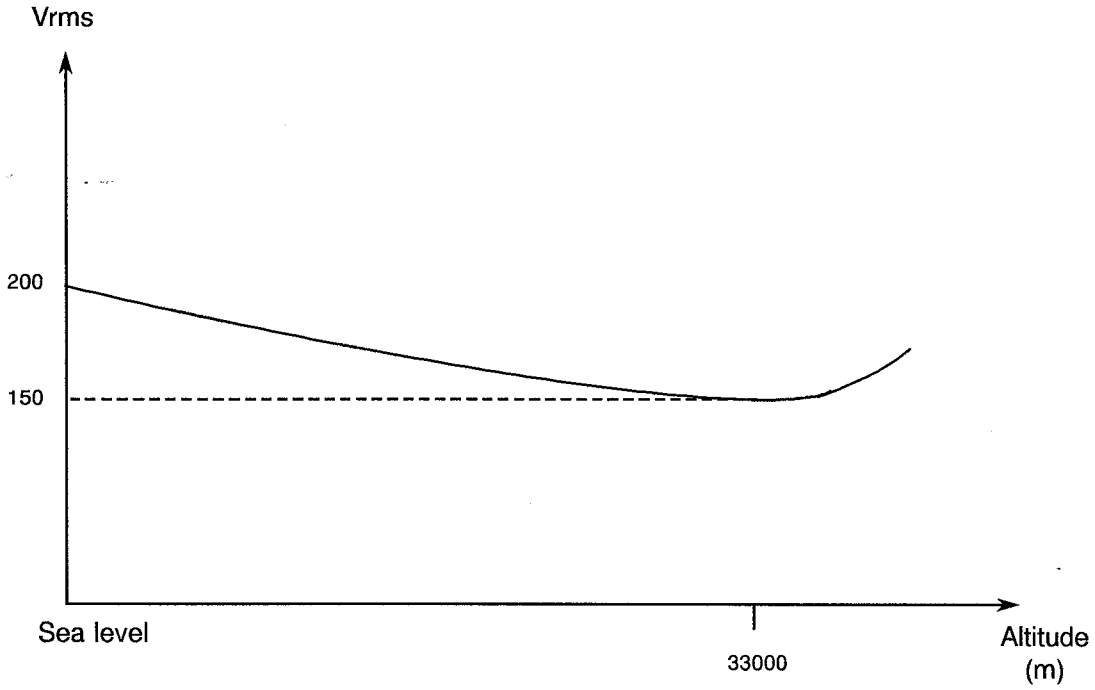
TABLE 1(b) - MAXIMUM RATINGS

No.	CHARACTERISTIC	SYMBOL	MAXIMUM RATING	UNIT	REMARKS
1	Working Voltage Sea Level	V	200	Vrms	Note 1
2	Rated Current	I_R	2.0	A	
3	Operating Temperature Range	T_{op}	−55 to +125	°C	T_{amb}
4	Storage Temperature Range	T_{stg}	−55 to +125	°C	
5	Soldering Temperature	T_{sol}	+260	°C	Note 2

NOTES

1. Between contacts.
2. Duration 10 seconds maximum and the same contact shall not be resoldered until 3 minutes have elapsed.

FIGURE 1 - PARAMETER DERATING INFORMATION

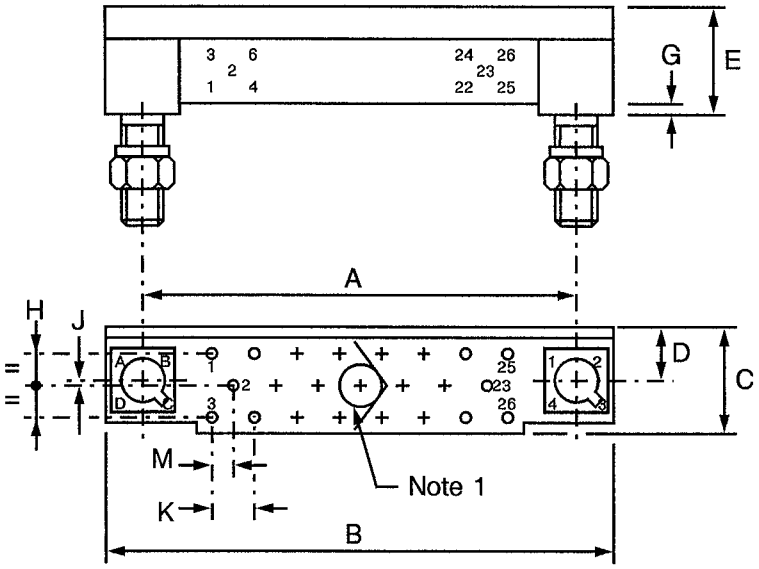


Working Voltage versus Altitude

FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS

RECEPTACLE, 3 ROWS, 26 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	30.43	30.53	
B	38.10	38.50	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

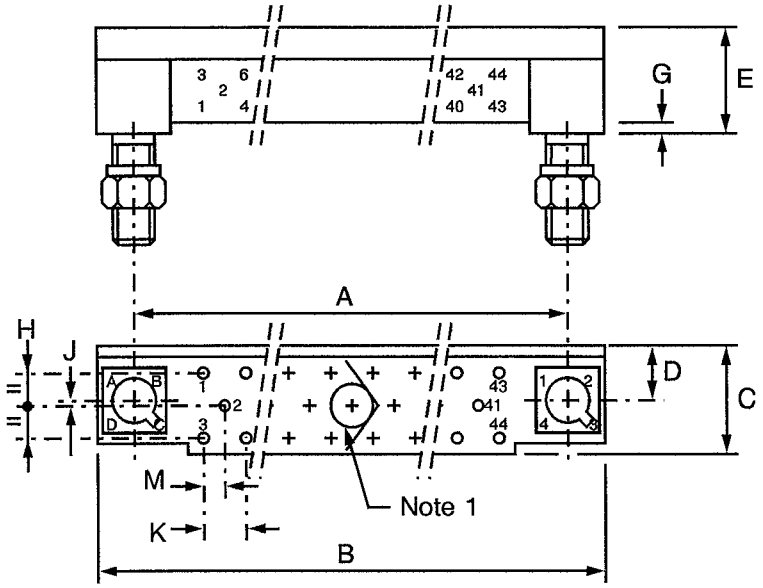
NOTES

1. Screw ∅2.25mm at contact location No. 11, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

RECEPTACLE, 3 ROWS, 44 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	45.67	45.77	
B	53.30	53.70	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

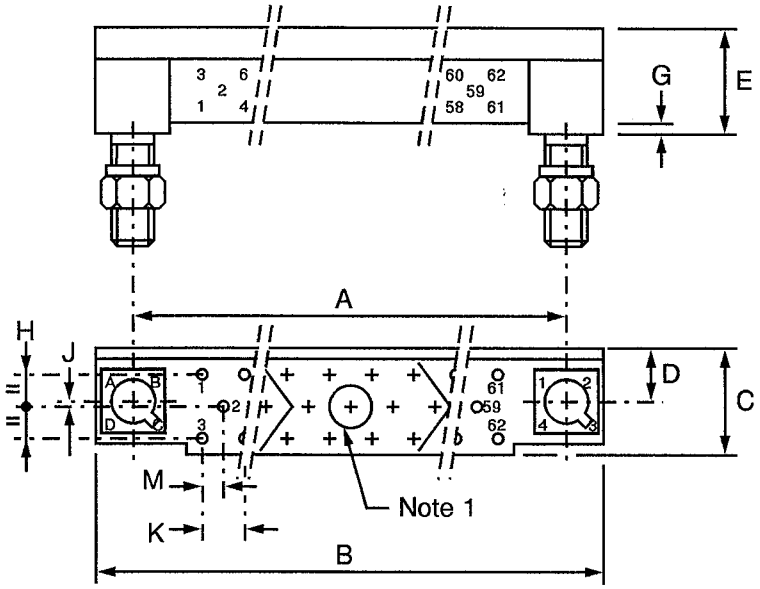
NOTES

1. Screw ∅2.25mm at contact location No. 20, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

RECEPTACLE, 3 ROWS, 62 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	60.91	61.01	
B	68.60	69.00	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

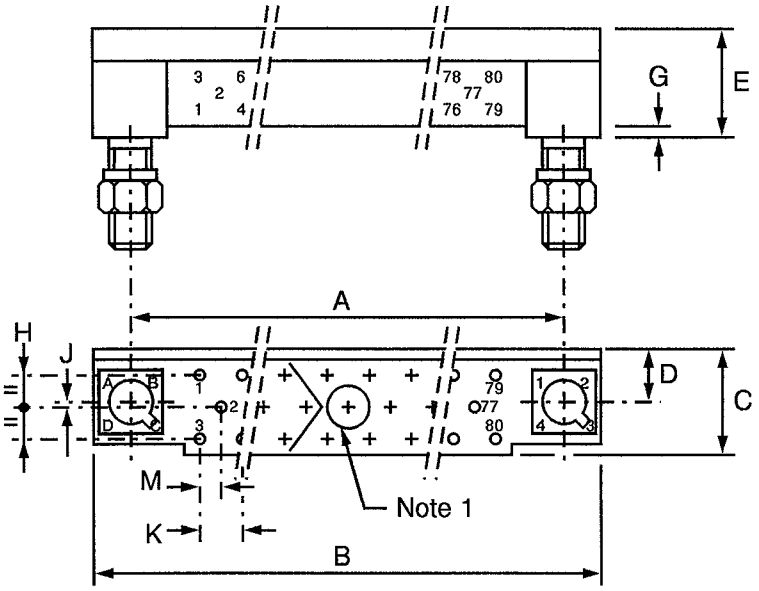
NOTES

1. Screw ∅2.25mm at contact location No. 29, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

RECEPTACLE, 3 ROWS, 80 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	76.15	76.25	
B	83.80	84.20	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

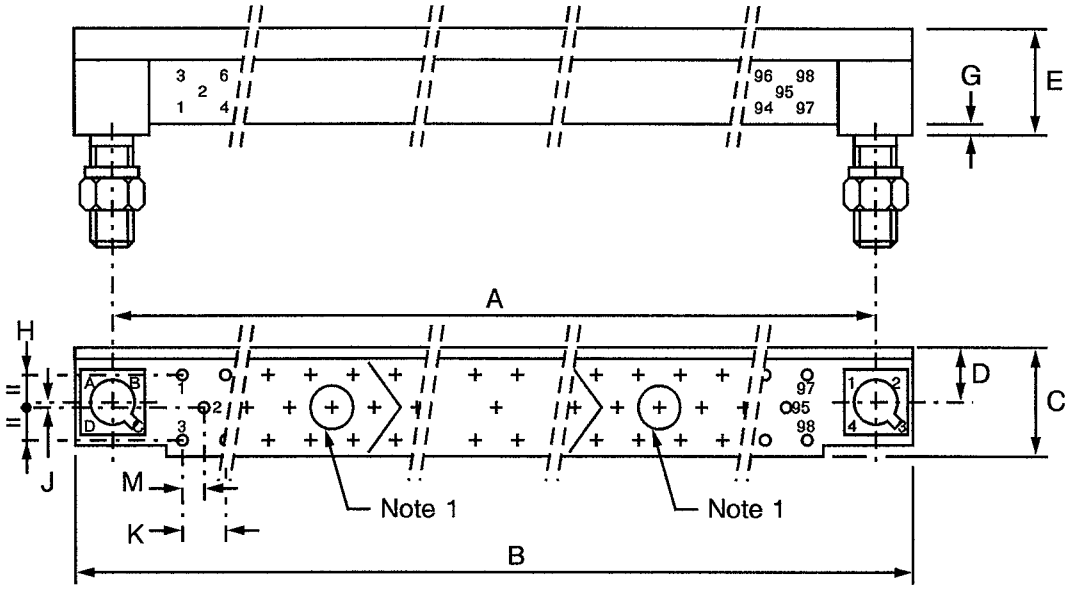
NOTES

1. Screw ∅2.25mm at contact location No. 38, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

RECEPTACLE, 3 ROWS, 98 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	91.39	91.49	
B	99.10	99.50	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

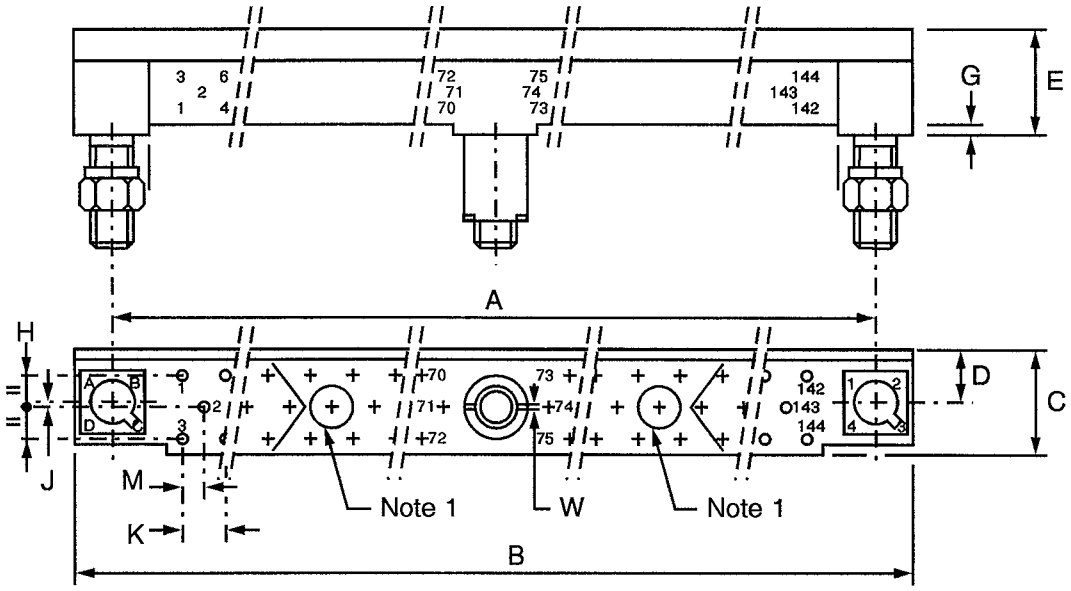
NOTES

1. Screw ∅2.25mm at contact locations No. 32 and 65, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

RECEPTACLE, 3 ROWS, 144 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	137.11	137.21	
B	144.80	145.20	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
W	0.85	1.15	

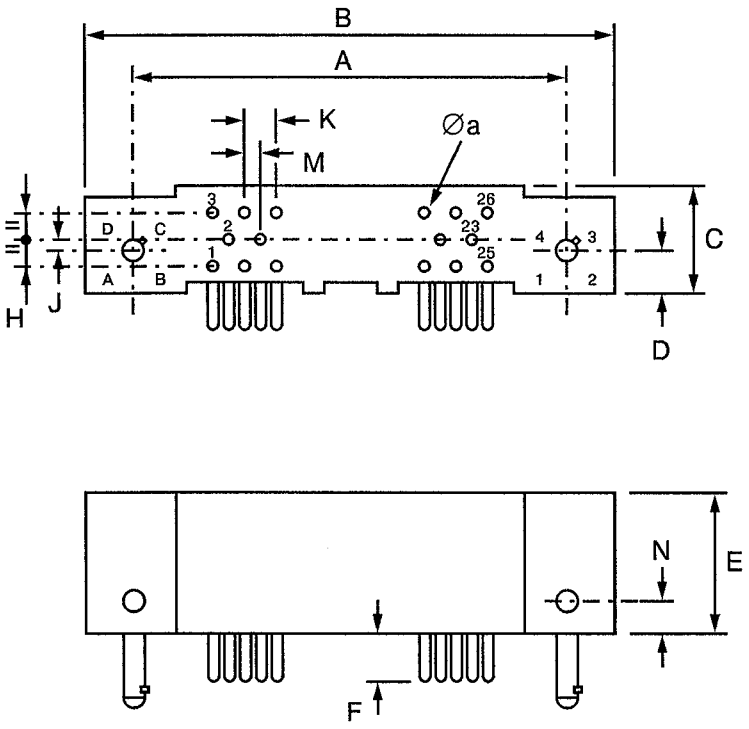
NOTES

1. Screw ∅2.25mm at contact locations No. 38 and 107, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 26 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
∅a	0.48	0.50	
A	30.43	30.53	
B	38.10	38.50	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
N	3.80	4.00	

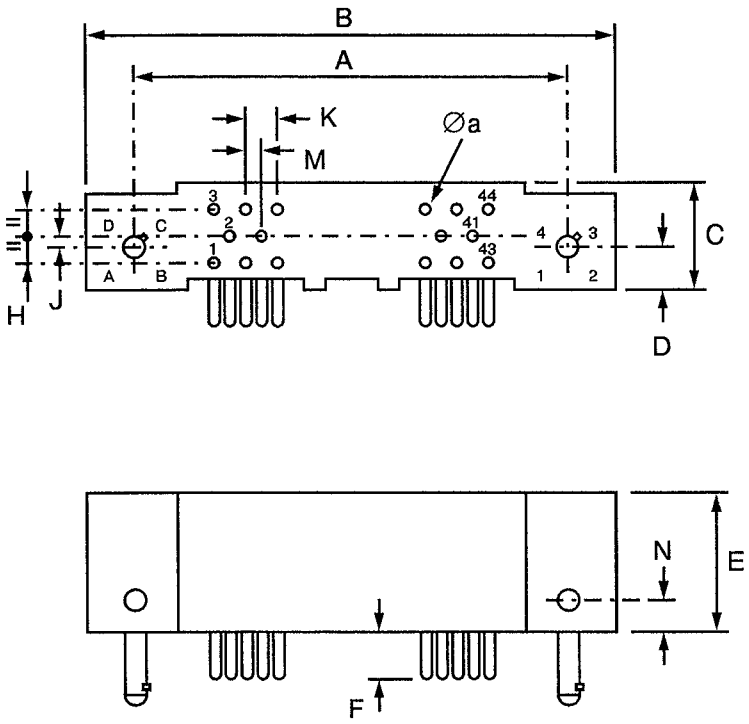
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 44 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
∅a	0.48	0.50	
A	45.67	45.77	
B	53.30	53.70	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
N	3.80	4.00	

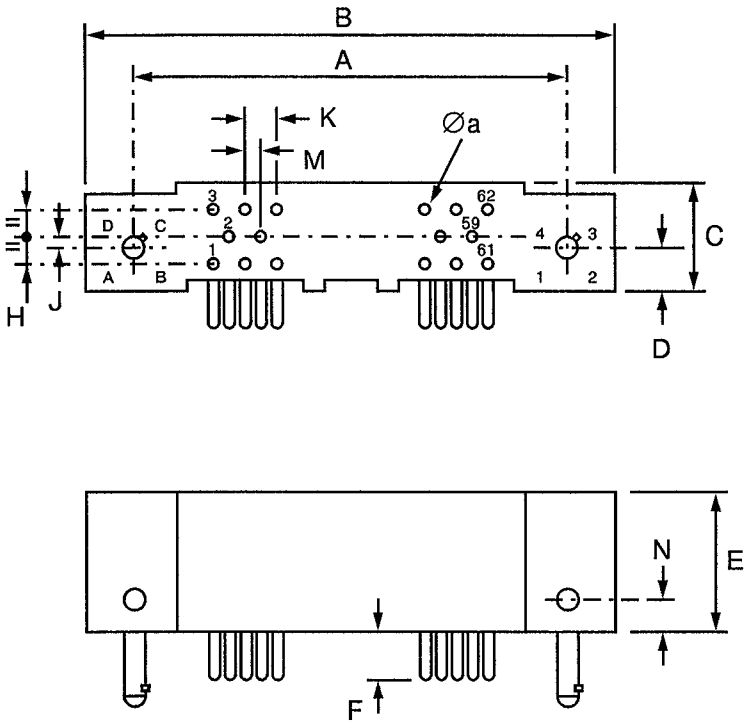
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 62 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
∅a	0.48	0.50	
A	60.91	61.01	
B	68.60	69.00	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	

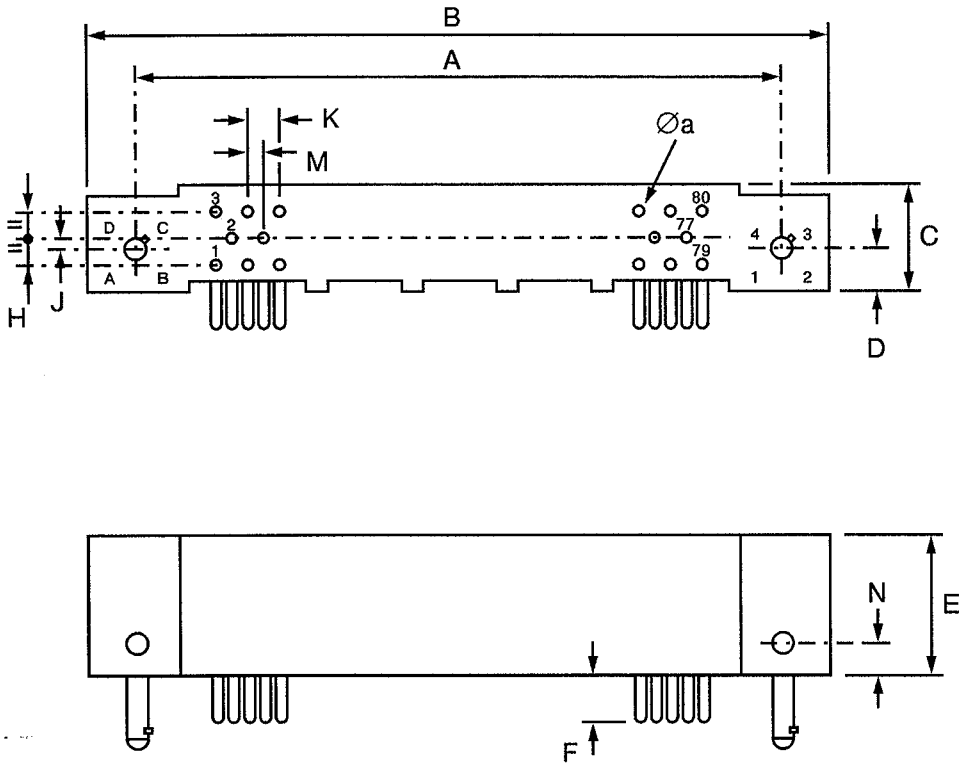
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 80 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	76.15	76.25	
B	83.80	84.20	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
N	3.80	4.00	

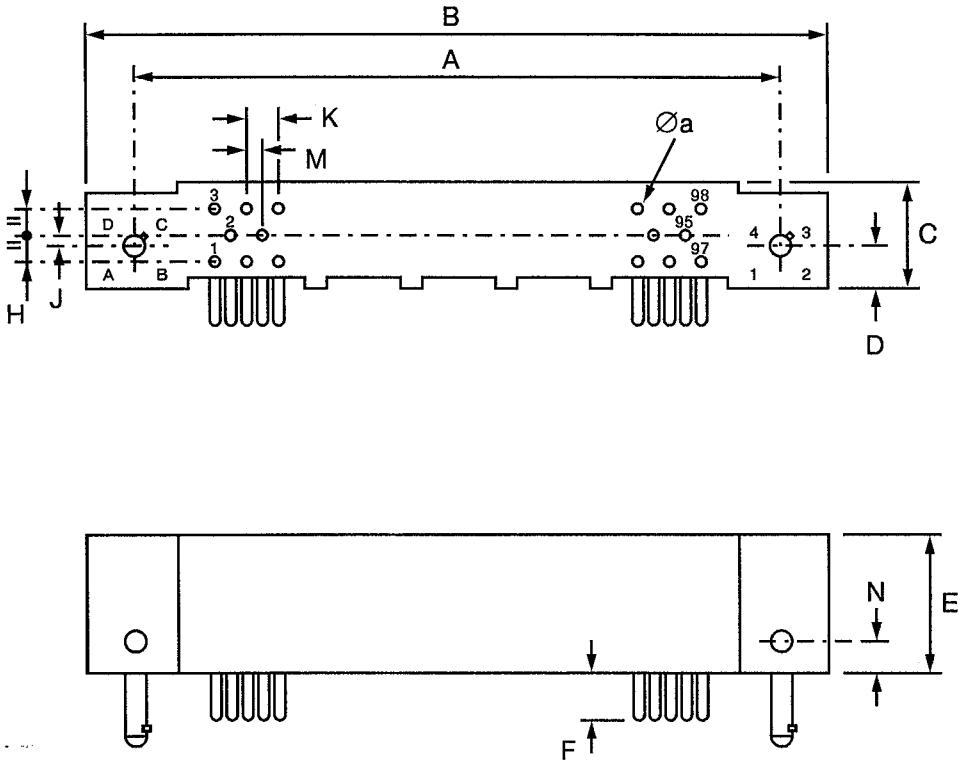
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 98 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	91.39	91.49	
B	99.10	99.50	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
N	3.80	4.00	

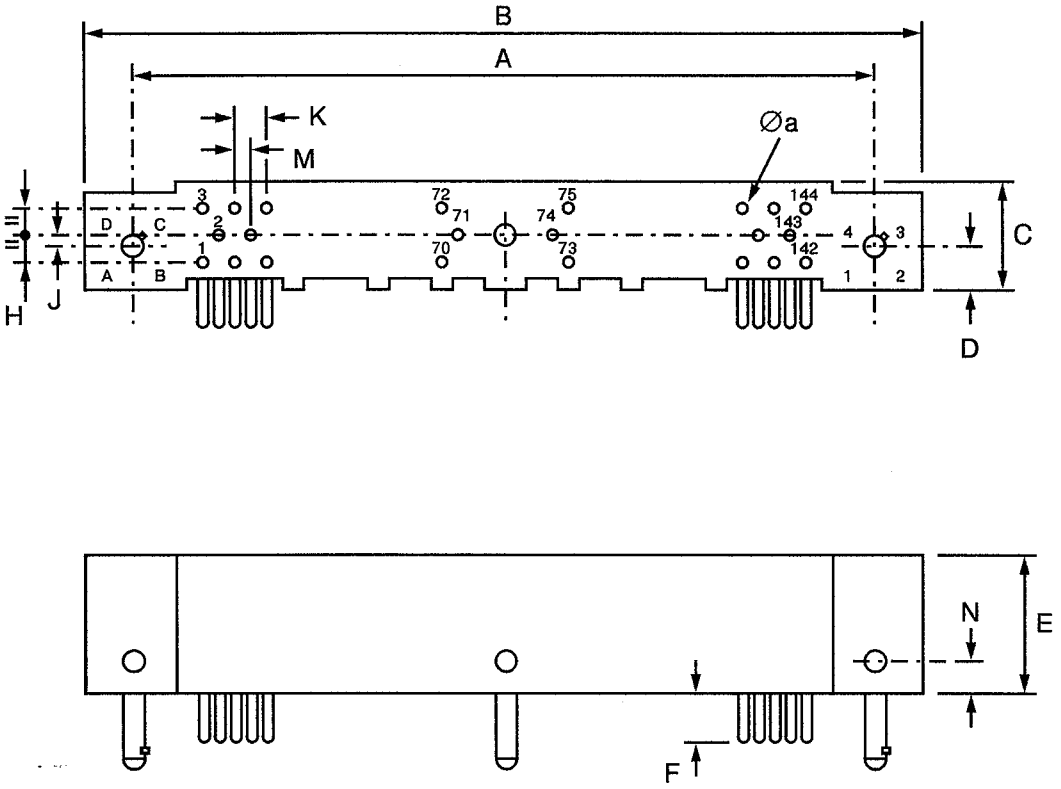
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

PLUG, 3 ROWS, 144 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	137.11	137.21	
B	144.80	145.20	
C	6.60	7.00	
D	3.10	3.20	
E	11.65	11.95	
F	4.20	5.20	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
M	1.12	1.42	
N	3.80	4.00	

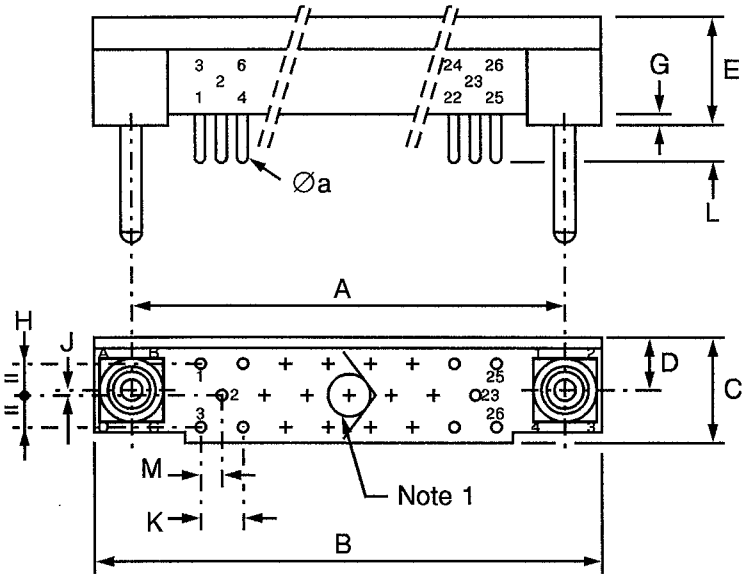
NOTES

1. Orientation of labelling of contacts and guiding devices is not a true representation.
2. The front of the insert shall be marked with the minimum marking shown.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVERS, 3 ROWS, 26 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	30.43	30.53	
B	38.10	38.50	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

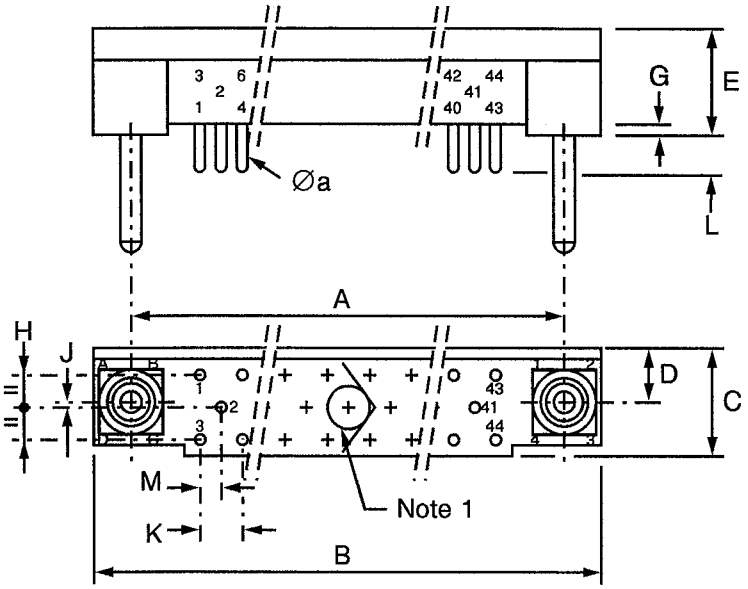
NOTES

1. Screw Ø2.25mm at contact location No. 11, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVERS, 3 ROWS, 44 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	45.67	45.77	
B	53.30	53.70	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

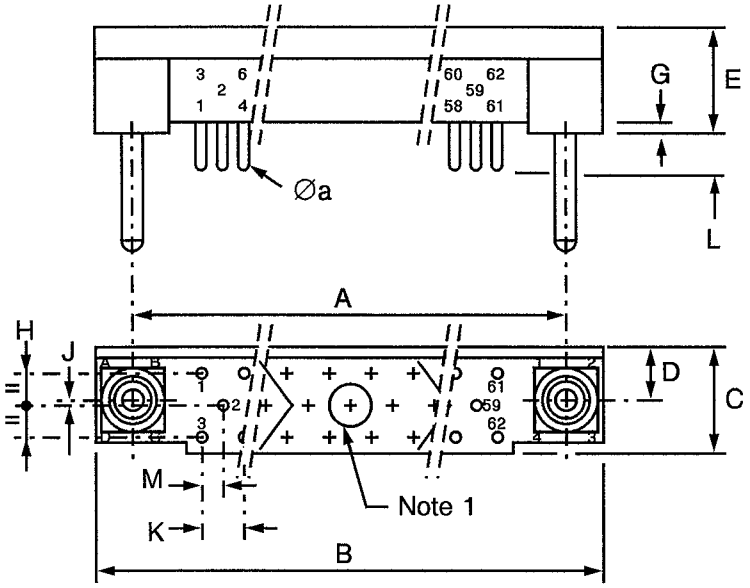
NOTES

1. Screw Ø2.25mm at contact location No. 20, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVER, 3 ROWS, 62 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	60.91	61.01	
B	68.60	69.00	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

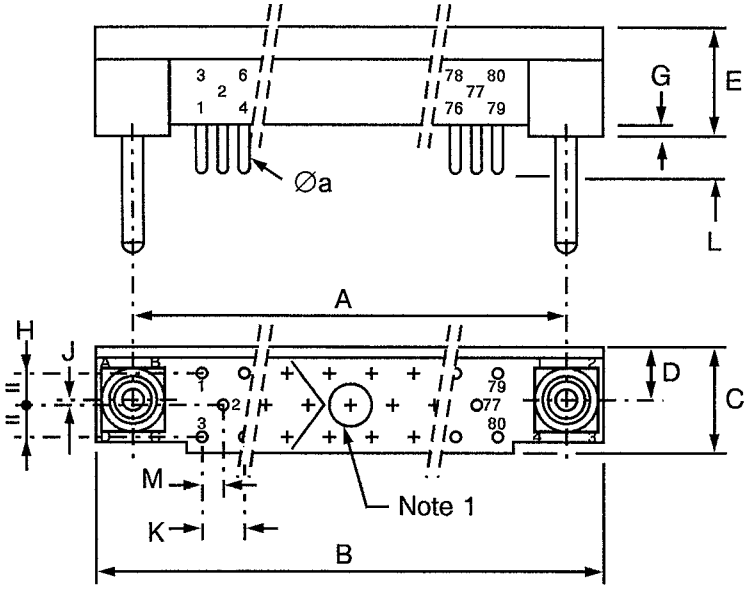
NOTES

1. Screw Ø2.25mm at contact location No. 29, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVER, 3 ROWS, 80 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	76.15	76.25	
B	83.80	84.20	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

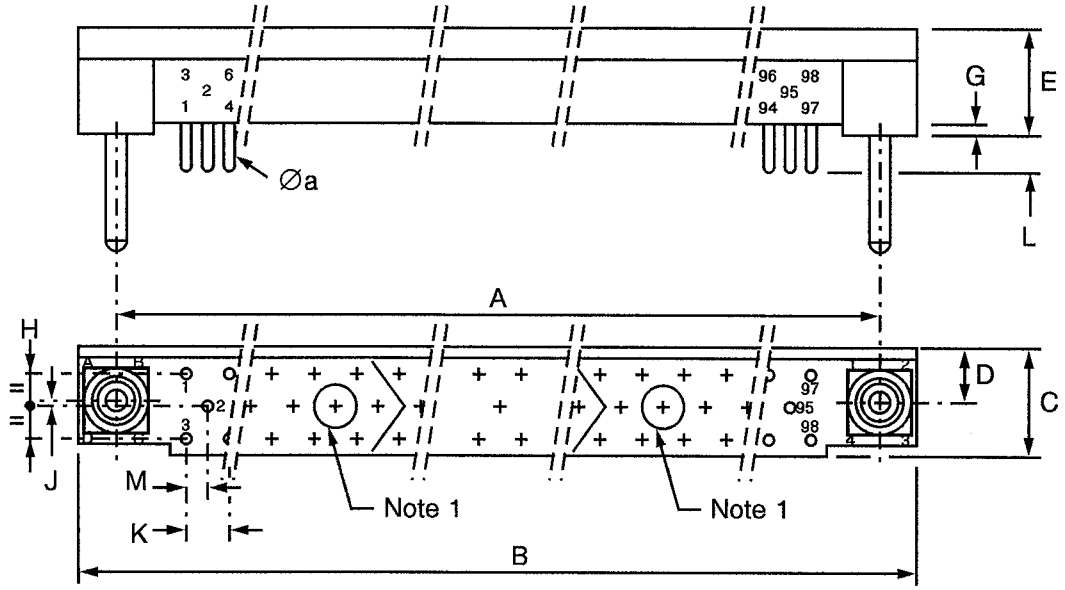
NOTES

1. Screw Ø2.25mm at contact location No. 38, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVER, 3 ROWS, 98 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	91.39	91.49	
B	99.10	99.50	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

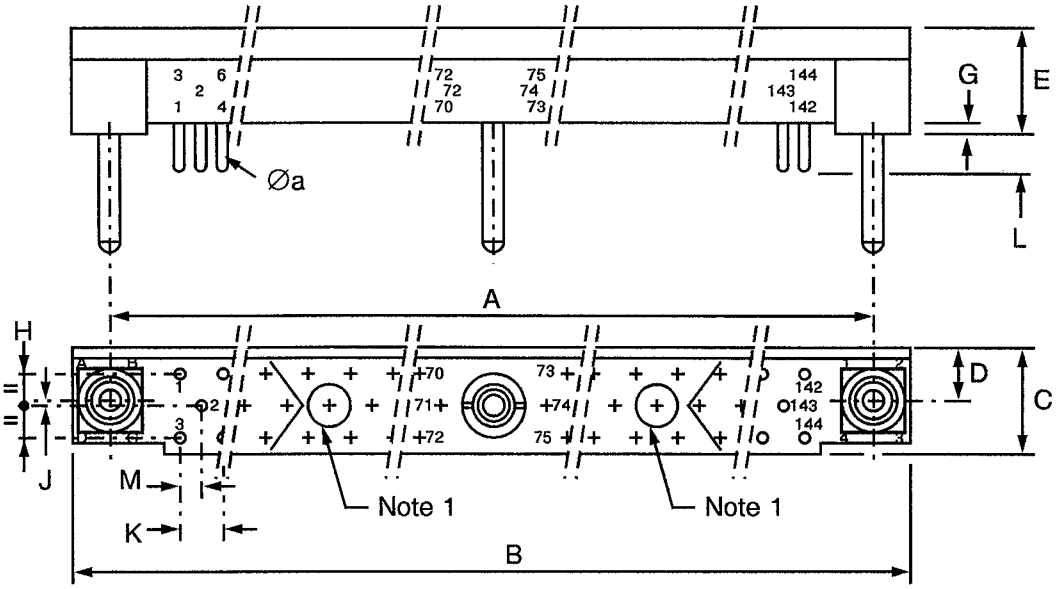
NOTES

1. Screw Ø2.25mm at contact locations No. 32 and 65, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - INSERTS: PLUGS, RECEPTACLES AND SAVERS (CONTINUED)

CONNECTOR SAVERS, 3 ROWS, 144 CONTACTS



SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
Øa	0.48	0.50	
A	137.11	137.21	
B	144.80	145.20	
C	6.60	7.00	
D	3.00	3.10	
E	7.75	8.05	
G	0.25	0.36	
H	3.76	3.86	
J	0.26	0.36	
K	2.39	2.69	
L	4.20	5.20	
M	1.12	1.42	

NOTES

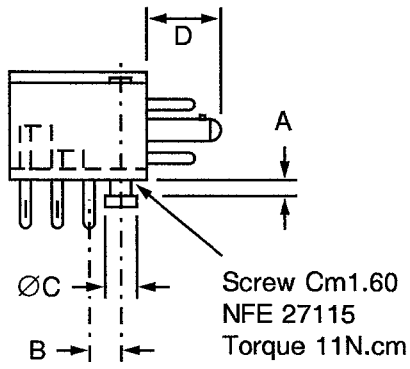
1. Screw Ø2.25mm at contact locations No. 38 and 107, Torque 2.2N.cm.
2. Orientation of labelling of contacts and guiding devices is not a true representation.
3. The front of the insert shall be marked with the minimum marking shown. The top of the insert shall be marked with every contact location.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - GUIDING AND LOCKING DEVICES

CODE 110

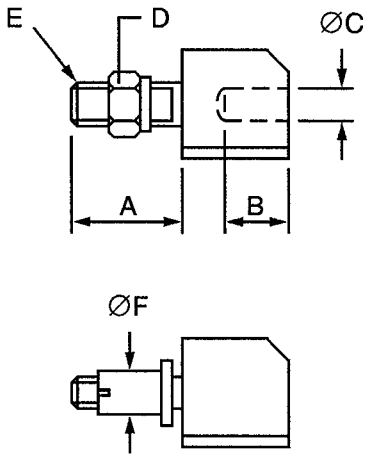
SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	-	1.60	1
B	2.34	2.74	
ØC	2.90	3.00	
D	6.40	7.00	



NOTES
1. Allowable printed circuit board thickness.

CODE 121

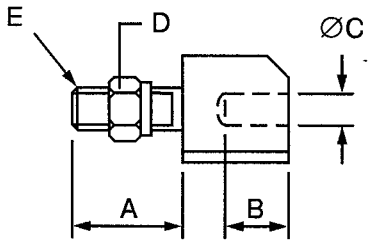
SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	6.50	7.50	
B	7.00	7.15	
ØC	1.98	2.03	
D	3.95	4.05	1
E	M 2.50		
ØF	3.95	4.05	



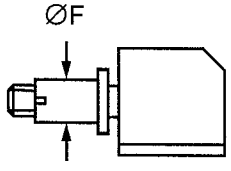
NOTES
1. Across flats. Torque 25N.cm

CODE 143

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	4.50	5.50	
B	7.00	7.15	
ØC	1.98	2.03	
D	3.95	4.05	1
E	M 2.50		
ØF	3.95	4.05	2



Centre guide for 144 contact connector



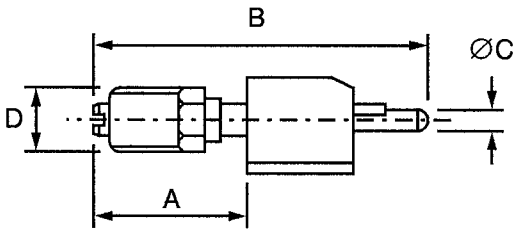
NOTES
1. Across flats. Torque 25N.cm.
2. Torque 15N.cm.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - GUIDING AND LOCKING DEVICES (CONTINUED)

CODE 201

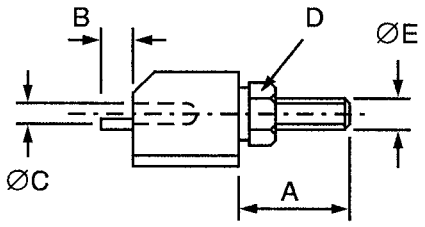
SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	10.80	14.80	1
B	24.30	24.70	
ØC	M 1.60		
D	5.40	5.60	2



NOTES
1. Max. dimension when unlocked.
2. Across flats. Torque 25N.cm.

CODE 202

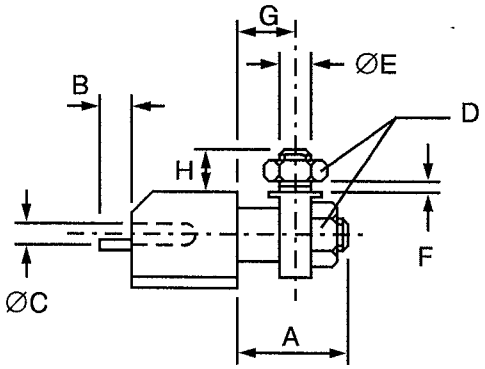
SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	6.50	7.50	
B	2.40	2.80	
ØC	M 1.60		
D	3.95	4.05	1
ØE	M 2.50		



NOTES
1. Across flats. Torque 25N.cm.

CODE 204

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	6.50	7.50	
B	2.40	2.80	
ØC	M 1.60		
D	3.95	4.05	1
ØE	M 2.50		
F	-	1.60	2
G	3.50	3.65	
H	3.80	4.20	



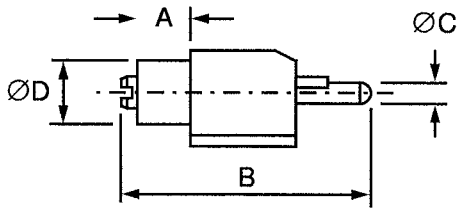
NOTES
1. Across flats. Torque 25N.cm.
2. Allowable printed circuit board thickness.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - GUIDING AND LOCKING DEVICES (CONTINUED)

CODE 206

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	4.60	5.00	
B	18.05	18.35	
ØC	M 1.60		
ØD	4.30	4.70	



CODE 703

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	6.40	7.00	
B	7.00	7.15	
ØC	2.57	2.63	
ØD	1.75	1.80	

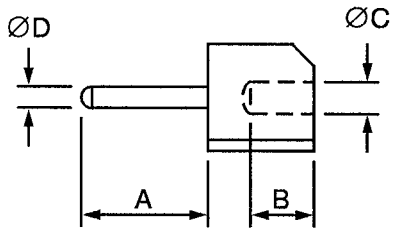
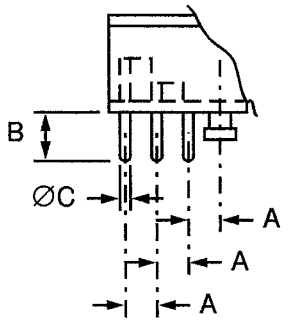


FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - CONTACT MOUNTING CONFIGURATIONS
VIEW OF REAR PART OF CONNECTOR

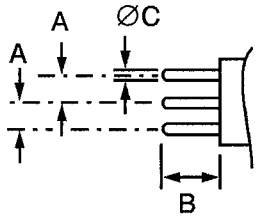
CODE 10

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.34	2.74	
B	2.60	3.20	
∅C	0.46	0.54	



CODE 30

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.39	2.69	
B	4.00	5.00	
∅C	0.46	0.54	



CODE 31

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.39	2.69	
B	5.10	6.10	
∅C	0.46	0.54	

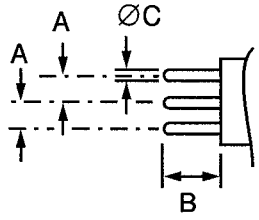
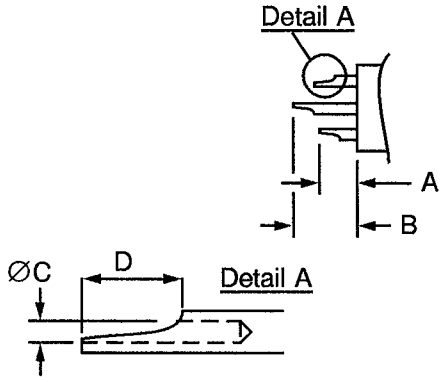


FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - CONTACT MOUNTING CONFIGURATIONS
VIEW OF REAR PART OF CONNECTOR (CONTINUED)

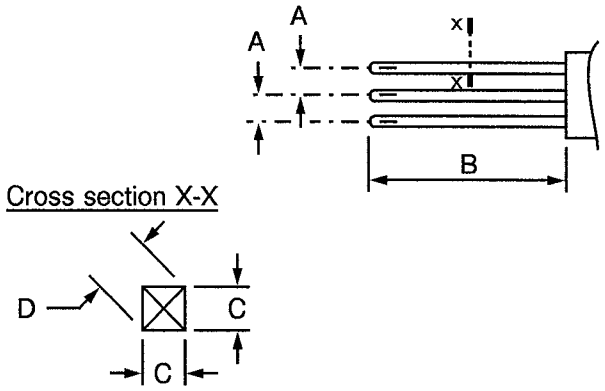
CODE 40

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.00	3.00	
B	3.70	4.70	
∅C	0.55	0.59	
D	1.40	2.00	



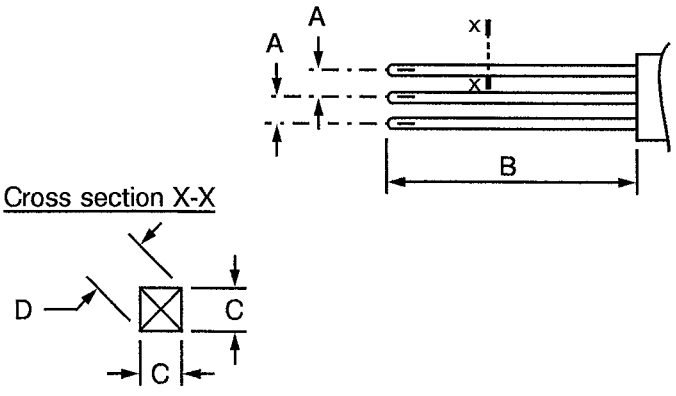
CODE 50

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.39	2.69	
B	9.20	11.00	
C	0.60 NOM.		
D	0.76	0.864	



CODE 51

SYMBOL	MILLIMETRES		NOTES
	MIN.	MAX.	
A	2.39	2.69	
B	13.20	15.00	
C	0.60 NOM.		
D	0.76	0.864	



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. 3401. 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)

(a) Para. 9.1.1.4, Mated Shell Conductivity: Not applicable.

(b) Para. 9.4, Contact Capability: Sampling in accordance with Para. 9.6 of ESA/SCC 3401.

(c) Para. 9.5, Magnetism Level: Not applicable.

(d) Para. 9.9, Seal Test: Not applicable.

4.2.3 Deviations from Burn-in and Electrical Measurements (Chart III)

Not applicable.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.1.1.4, Mated Shell Conductivity: Not applicable.

(b) Para. 9.9, Seal Test: Not applicable.

(c) Para. 9.17, Contact Retention: For solder 90° PCB contacts, the force applied to the engagement end of the contact shall be compression only.

(d) Para. 9.22, Corrosion: Not applicable.

(e) Para. 9.23, Insert Retention (in shell): Not applicable.

(f) Para. 9.24, Jackscrew Retention: Not applicable.

(g) Para. 9.27, Maintenance Ageing: Not applicable.

(h) Para. 9.30, Probe Damage: Not applicable.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.1.1.4, Mated Shell Conductivity: Not applicable.

(b) Para. 9.9, Seal Test: Not applicable.

(c) Para. 9.17, Contact Retention: For solder 90° PCB contacts, the force applied to the engagement end of the contact shall be compression only.

(d) Para. 9.22, Corrosion: Not applicable.

(e) Para. 9.27, Maintenance Ageing: Not applicable.

(f) Para. 9.30, Probe Damage: Not applicable.

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. 9.6 of ESA/SCC Generic Specification No. 3401 and shall conform to those shown in Figure 2 of this specification. Only the following dimensions shall be checked during procurement:

Figure 2(a) - Between centres of guiding or locking device. (Dimension A).
- Dimension D (where applicable).

Figure 2(b) - Protrusion of guiding/locking devices.
- Overall dimensions of guiding/locking devices.

Figure 2(c) - All dimensions.

4.3.2 Weight

The maximum weight of the connectors with contacts, guiding and locking devices specified herein shall be as specified in Table 1(a).

4.3.3 Contact Capability

For the purpose of this test, the pick-up and drop weights shall be as follows.

	Pick-up Weight	Drop Weight
Weight (g)	12	90
Pin Diameter (mm)	0.475 - 0.480	0.500 - 0.505
Insertion Depth (mm)	5.0	5.0

4.3.4 Contact Retention (in insert)

The contact retention force within the insert shall be 40N minimum (compression) and 25N maximum (tension).

4.3.5 Mating and Unmating Forces

The forces applied for mating and unmating of the connectors shall not be more than 0.7N per contact.

4.3.6 Insert Retention (in shell)

Not applicable.

4.3.7 Jackscrew Retention

Not applicable.

4.3.8 Contact Insertion and Withdrawal Forces

Not applicable.

4.3.9 Engagement and Separation Forces

The diameter of the test pin and the engagement and separation forces of the female contact shall be as specified hereunder.

	Diameter (mm)		Engagement and Separation Max. (N)	Separation Min. (N)
	Min.	Max.		
Minimum Diameter Test Pin	0.475	0.480	-	0.12
Maximum Diameter Test Pin	0.500	0.505	0.90	-

4.3.10 Oversize Pin Exclusion

The diameter of the test pin shall be 0.60 ± 0.002mm and the force applied to it shall be 90 grammes.

4.3.11 Probe Damage

Not applicable.

4.3.12 Solderability

Size B soldering iron shall be used. Only applicable to contact code numbers 10, 30, 31 and 40. (See Table 1(b)).

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 Shells

Not applicable.

4.4.2 Inserts

The inserts shall be made of glass fibre-filled diallylphthalate resin.

4.4.3 Contacts

4.4.3.1 Body

The contact body shall be made of copper alloy:

- Male Contact and Saver

  The plating shall be 1.27µm minimum gold over 1.27µm minimum nickel.

- Female Contact

  The plating shall be 0.25µm minimum gold over 1.27µm minimum nickel.

4.4.3.2 Female Contact Wire

The wire shall be made of copper alloy.

The plating shall be 1.27µm minimum gold over 0.20µm minimum nickel.

4.4.3.1 Female Contact Sleeve

The sleeve shall be made of copper alloy. The plating shall be 0.25µm minimum gold over 0.80µm minimum nickel.

4.4.4 Contact Retaining Clip

Not applicable.

4.4.5 Guiding and Locking Devices

Guiding and locking devices shall be made of brass (nickel-plated), stainless steel or arcap alloy.

4.4.6 Magnetism Level

Not applicable.

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. 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) Contact Identification.

(b) The SCC Component Number.

(c) Characteristics.

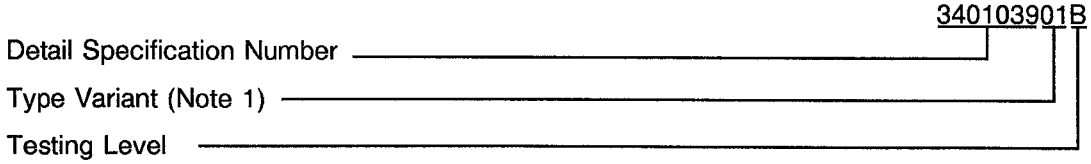
(d) Traceability Information.

4.5.2 Contact Position

Contact position shall be marked on the inserts in accordance with Figure 2(a).

4.5.3 The SCC Component Number

The SCC Component Number shall be constituted and marked as follows:

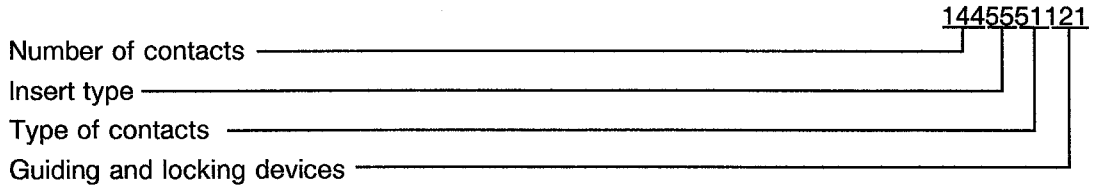


NOTES

1. Marking of the Type Variant is mandatory. No further reference to type variants is made in this specification.

4.5.4 Characteristics

The characteristics to be marked in the following order of precedence are:-



4.5.4.1 Number of Contacts

026 - 044 - 062 - 080 - 098 - 144.

4.5.4.2 Insert

Inserts shall be designated by the following code numbers.

Code No.	Description
44	Receptacle equipped with female contacts
55	Plug equipped with male contacts

4.5.4.3 Contacts

Contacts shall be designated by the following code numbers.

Code No.	Contact Description	
10	Solder 90° for printed circuit board	- Male
30	Solder straight for printed circuit board	- Female
31	Long solder straight for printed circuit board	- Female
40	Solder pot	- Female
50	Wire-wrap, 2 wrapping levels	- Female
51	Wire-wrap, 3 wrapping levels	- Female
91	Contact for connector saver	- Female - Male

4.5.4.4 Guiding and Locking Devices

Guiding and locking devices shall be designated by the following code numbers.

Code No.	Contact Description
110	Male Guide/Lock for plug
121	Female Guide/Lock (axial) for receptacle
143	Female Guide/Lock for receptacle
201	Male Guide/Lock with jackscrew
202	Female Guide/Lock with jackscrew
204	Female Guide/Lock with jackscrew, 90° mounting
206	Male Guide/Lock with jackscrew
703	Guide for connector saver

If the Purchase Order does not specify any guiding or locking devices, guiding devices 110 for plugs and 121 for receptacles shall be delivered.

4.5.5 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 $T_{amb} = +22 \pm 3$ °C.

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

Not applicable.

4.6.3 Circuits for Electrical Measurements (Figure 4)

Not applicable.

4.7 BURN-IN AND ELECTRICAL MEASUREMENTS

Not applicable.

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESA/SCC GENERIC SPECIFICATION No. 3401)

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 testing are scheduled in Table 6. Unless otherwise specified, 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 testing are scheduled in Table 6. Unless otherwise specified, 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 Circuit for Operating Life Tests (Figure 5)

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. 3401. The conditions for high temperature storage testing shall be the maximum storage temperature specified in Table 1(b) of this specification.

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

No.	CHARACTERISTIC	SYMBOL	ESA/SCC 3401 TEST METHOD	TEST CONDITION	LIMITS		UNIT
					MIN.	MAX.	
1	Insulation Resistance	Ri	Para. 9.1.1.1	Para. 9.1.1.1	10 000	-	MΩ
2	Voltage Proof Leakage Current (Sea Level)	I_L	Para. 9.1.1.2	800Vrms	-	1.0	mA
3	Mated Shell Conductivity (Voltage Drop)	Vd	Para. 9.1.1.4	Para. 9.1.1.4	Not applicable		mV
4	Contact Resistance (Low Level Current)	Rcl	Para. 9.1.1.3	All	-	12	mΩ
5	Contact Resistance (Rated Current)	Rcr	Para. 9.1.1.3	All 2.0A	-	12	mΩ

TABLES 3, 4 AND 5

Not applicable.

TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL AND ENDURANCE TESTING

NO.	ESA/SCC GENERIC NO. 3401		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN	MAX	
01	Seal Test	Para. 9.9	ESA/SCC 3401 Para. 9.9			Not applicable		
02	Wiring	Para. 9.10				-	-	
03	Vibration	Para. 9.11	**Initial Measurements**					
			Coupling Screw(s) Unlocking Torque	-	-	Record Values		
			Final Measurements					
			Full Engagement	-	-	-	-	
			Coupling Screw(s) Unlocking Torque Drift	-	Δ	-25	+25	%
			Visual Examination	-	-	-	-	
04	Shock or Bump	Para. 9.12	Full Engagement	-	-	-	-	
			Visual Examination	-	-	-	-	
05	Climatic Sequence	Para. 9.13	**Dry Heat**					
			Insulation Resistance	Table 2 Item 1	Ri	1 000	-	MΩ
			Low Air Pressure					
			Voltage Proof Leakage Curr.	Figure 1	I_L	ESA/SCC 3401 Para. 9.13.5		
			Damp Heat	Immediately after test				
			Insulation Resistance	Table 2 Item 1	Ri	100	-	MΩ
			Final Measurements	After 1-24 hrs Recovery				
			External Visual Inspection	ESA/SCC 3401 Para. 9.7	-	ESA/SCC 3401 Para. 9.7		
			Insulation Resistance	Table 2 Item 1	Ri	Table 2 Item 1		
			Voltage Proof Leakage Curr.	Table 2 Item 2	I_L	Table 2 Item 2		
06	Plating Thickness	Para. 9.14	Thickness	-	-	Para. 4.4.3 of this spec.		
07	Joint Strength	Para. 9.15	ESA/SCC 3401 Para. 9.15	-	-	ESA/SCC 3401 Para. 9.15		
08	Rapid Change of Temperature	Para. 9.16	**Final Measurements**					
			Visual Examination	-	-	-	-	
			Insulation Resistance	Table 2 Item 1	Ri	Table 2 Item 1		
			Voltage Proof Leakage Curr.	Table 2 Item 2	I_L	Table 2 Item 2		
09	Contact Retention (in insert)	Para. 9.17 & Para. 4.3.4 of this spec.	Contact Displacement	-	-	ESA/SCC 3401 Para. 9.17		
10	Endurance	Para. 9.18	**Initial Measurements**					
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec.		
			Low Level Contact Resist	Table 2 Item 4	Rcl	Record Values		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Not applicable		
			Final Measurements					
			Visual Examination	-	-	-	-	
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec.		
			Low Level Contact Resistance Drift	Table 2 Item 4	ΔRcl	-	6.0	mΩ
			Mated Shell Conductivity	Table 2 Item 3	Vd	Not applicable		
			Insulation Resistance	Table 2 Item 1	Ri	Table 2 Item 1		
			Voltage Proof Leakage Curr.	Table 2 Item 2	I_L	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 TESTING (CONT'D)

NO.	ESA/SCC GENERIC NO. 3401		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN	MAX	
11	Permanence of Marking	Para. 9.19	As applicable	-	-	-	-	
12	Mating/Unmating Forces	Para. 9.20	Force	-	F	Para. 4.3.5 of this spec.		
13	High Temperature Storage	Para. 9.21	**Initial Measurements**					
			Low Level Contact Resis.	Table 2 Item 4	Rcl	Record Values		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Not applicable		
			Final Measurements					
			Visual Examination	-	-	-	-	
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec.		
			Low Level Contact Resistance Drift	Table 2 Item 4	ΔRcl	-	6.0	mΩ
			Rated Current Contact Resis.	Table 2 Item 5	Rcr	Table 2 Item 5		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Not applicable		
			Insulation Resistance	Table 2 Item 1	Ri	Table 2 Item 1		
			Voltage Proof Leakage Curr.	Table 2 Item 2	I_L	Table 2 Item 2		
			Contact Retention (in insert)	Para. 4.3.4 of this spec.		ESA/SCC 3401 Para. 9.17		
14	Corrosion	Para. 9.22	Visual Examination	-	-	Not applicable		
15	Insert Retention (in shell)	Para. 9.23 & Para. 4.3.6 of this spec.	Visual Examination	-	-	Not applicable		
16	Jackscrew Retention	Para. 9.24 & Para. 4.3.7 of this spec.	Visual Examination	-	-	Not applicable		
17	High Temperature Measurements	Para. 9.25	Insulation Resistance	Table 2 Item 1	Ri	500	-	MΩ
18	Overload Test	Para. 9.26	Internal Temperature	-	T	-	+100	°C
			Rated Current Contact Resis.	Table 2 Item 5	Rcr	Table 2 Item 5		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Not applicable		
			Insulation Resistance	Table 2 Item 1	Ri	Table 2 Item 1		
			Voltage Proof Leakage Curr.	Table 2 Item 2	I_L	Table 2 Item 2		
19	Maintenance Aging	Para. 9.27	Visual Examination	-	-	-	-	-
			Contact Retention	Para. 4.3.4 of this spec		Not applicable		
			Contact Insertion & Withdrawal Forces	Para. 4.3.8 of this spec		Not applicable		
20	Engage/Separation Forces	Para. 9.28 & Para. 4.3.9 of this spec.	Force	-	-	Para. 4.3.9		
21	Oversize Pin Exclusion	Para. 9.29 & Para. 4.3.10 of this spec.	-	-	-	ESA/SCC 3401 Para. 9.29		

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 TESTING (CONT'D)

NO.	ESA/SCC GENERIC NO. 3401		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN	MAX	
22	Probe Damage	Para. 9.30 & Para. 4.3.11 of this spec.	Contact Separation Force	Para. 4.3.9 of this spec.	-	Not applicable		
23	Solderability	Para. 9.31 & Para. 4.3.12 of this spec.	-	-	-	ESA/SCC 3401 Para. 9.31		

NOTES

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