DOCUMENT CHANGE REQUEST

DCR number 315	Changes required for: N/A	Originator: Olivier Masson Chief
Date: 2007/02/01	Date sent: 2007/02/01	Organisation: CNES
Status: IMPLEMENTED		

Title:	Connectors Electrical Rectangular Non-Removable Solder Bucket PCB and Wire-Wrap Contacts		
Number:	3401/001	Issue:	3

Other documents affected:

Page:

3 pages to be added in the 3401/001 specification for new variantes introduction :
Gauge 22 90° PCB solder contacts for size F connector (code 1D0N)
Gauge 22 90° PCB solder contacts with 90Â° brackets and screw locks for size F connector (code 1D7N and 1

Paragraph:

3 pages to be added in the 3401/001 specification for new variantes introduction :
Gauge 22 90° PCB solder contacts for size F connector (code 1D0N)
Gauge 22 90° PCB solder contacts with 90Â° brackets and screw locks for size F connector (code 1D7N and 1

Original wording:

Proposed wording:

See attached draft of the 3 pages to be added

Justification:

Size F 90°PC connectors ESA qualified requested by European Customers (SAAB Space for example)
Gauge 22 solder bucket also requested by Customers.

ITT current ESA qualification is valid until August 2007.
We would like to introduce these variantes in our requalification programm.

Attachments:

DCR315_new_DCR315attachment.pdf, 3401001_new2.pdf, 3401001_new1.pdf, 3401001_new3.pdf, null

Modifications:

The following additional changes are included in order to be clear, consistent and complete. The new attachment indicates the details of all the proposed changes:

1 - The spec titles for 3401/040 & 3401/004, per DCR316 & 317, amended in 3401/001 paras 1.1 & 2

2 - Applicable Document number MIL-C-24308 (which is obsolete) in para 2 & Figure 2(b) Note 1 amended to be MIL-DTL-24308.

3 - Table 1(a) Range of Components - Shell Sizes, Note 3 specifying how to calculate the total weight of a connector is amended as detailed in the attachment to include all contacts, accessories, etc, as applicable.

4 - Table 1(a) Range of Components - Contact Types, Table and notes re-written & amended as detailed in the attachment to include all shell sizes and both contact gauges as well as correct the maximum weights for some of the contacts. See attachment for details.

5 - Table 1(b) item 1 & 2 (UR & IR) amended to reflect the different types of contacts specified:
- Gauge 20 Contacts
- Gauge 22 Contacts
- Power Contacts
- Coaxial Contacts

Add new notes 2 & 3 for power & coaxial ratings per the applicable ESCC detail specs (old note 2 becomes note 4)
Delete reference to 'High Voltage contacts' in item 1.
Delete reference to "(PCB Contacts)" for Gauge 22 contacts in item 2 (also on Page 38 Table 2 Electrical Measurements).

6 - Figure 1 delete reference to coaxial contacts (which are covered by ESCC 3401/040)

7 - Add the connector body type to all the dimension tables in Figure 2(a) such that :
"Plug" connector type applies to male contact type.
"Receptacle" connector type applies to female contact type.

8 - Amend some specific dimension limits in Figure 2(a) as follows:
Shell Size E (page 9);
Male & Female Dimension A to be 31.19mm max (was 31.26mm)
Male Dimension K to be 6.05mm max (was 6.13mm)
Female Dimension K to be 6.05mm min (was 5.87mm)

Shell Size A (page 10);
Male Dimension K to be 6.05mm max (was 6.13mm)
Female Dimension K to be 6.05mm min (was 5.87mm)

Shell Size B (page 11);
Male Dimension K to be 5.99mm max (was 6.13mm)
Female Dimension K to be 6.05mm min (was 5.87mm)

Shell Size C (page 12);
Male Dimension K to be 5.99mm max (was 6.13mm)
Female Dimension K to be 6.05mm min (was 5.87mm)

Shell Size D (page 13);

Male Dimension D to be 11.07mm min (was 10.95mm)
Male Dimension K to be 5.99mm max (was 6.13mm)
Female Dimension K to be 6.05mm min (was 5.87mm)

Shell Size F (page 14);
Male & Female Dimension G to be 57.25mm min / 57.75mm max (was 58.75mm min / 59.25mm max)

Floating Mount type "Y" (page 15)
amend shell F outline as shown in the attachment.

Captive Nut Type "E" (page 15)
Male & Female Dimension P to be 0mm min (was 0.2mm min)

9 - New Figure 2(c) for Gauge 22 Solder bucket
Correct typographic error: "size" to be "sizes"

10 - The titles of Figure 2(c) should be corrected on pages 23, 24, 26, 27 and the new fig (Code 1D7N & 1D9N) to read (as applicable):
"Gauge 20 90deg PCB Solder Contacts with 90deg Bracket and Screw Locks ...etc"
or
"Gauge 22 90deg PCB Solder Contacts with 90deg Bracket and Screw Locks ...etc"

11 - Figure 2(c) Power and Coaxial Contacts (pages 29 & 30)
Figures for Straight Coaxial, 90deg Coaxial, Power Solder & Power Crimp contacts amended as shown in the attachment.
Addition of new figures for Straight Coaxial PCB, 90deg Coaxial PCB, Straight Power PCB & 90deg Power PCB contacts as shown in the attachment.

12 - Para 4.2.4(d) and Table 6; fix spelling to read "aging" (was ageing)

Justification for additional changes are as follows:

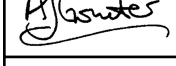
General Changes (items 1 2 3 4 5 7 9 10 11 12):
Corrections of editorial errors plus changes for the purposes of clarification and consistency.

Specific Technical Changes (items 4 5 6 8):
Item 4 - addition of new contact types per original DCR315 plus amended maximum weights of some contact types (also brackets & nuts) to reflect the actual production of Manufacturer C&K.

Items 5 & 6: To be consistent with the ratings specified in the applicable ESCC detail spec for power & coaxial contacts.

Item 8: Dimensions amended to be consistent with MIL-DTL-24308 dimension specifications as well as the actual production of Manufacturer C&K.

Approval signature:



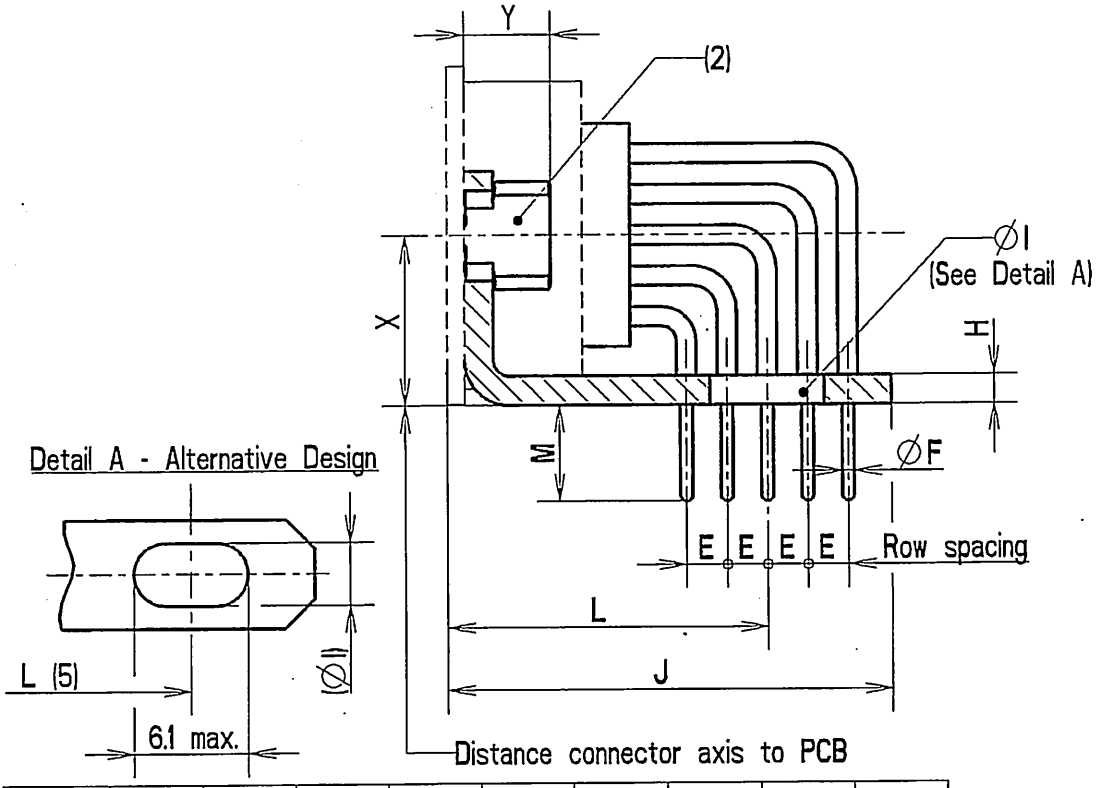
Date signed:

2007-02-01

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 90° PCB Solder Contacts with 90° Brackets and Screw Locks (Size F) (Code 1D7N and 1D9N)



Symbol/ Dim.	E (3)	∅F	∅I	H	J	L	M	X (4)	Y
min.	2.03	0.50	3.12	1	-	16.15	4.6	8.6	-
max.	2.13	0.65	3.32	3.2	23.5	16.85	5.4	8.8	7.0

NOTES

1. All dimensions are in mm.
2. Code 1D7N : Nut 4-40
   Code 1D9N : Nut M3
3. Typical = 2.08
4. Typical = 8.70
5. This alternative design takes into account the different possible values of L.

DRAFT

ATTACHMENT/MARK-UP FOR DCR 315 (modified per change wording) including C&K orgind changes. new + changed pages only. S.I — 21/8/08.

European Space Components Coordination

Pages 1 to 42

CONNECTORS, ELECTRICAL, RECTANGULAR, NON-REMOVABLE SOLDER BUCKET, PCB AND WIRE-WRAP CONTACTS AND REMOVABLE COAXIAL AND POWER CONTACTS, BASED ON TYPE D*M

ESCC Detail Specification No. 3401/001

ISSUE ~~3~~ 4

~~December 2006~~ August 2008

esa

Document Custodian: European Space Agency - see https://escies.org

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for Connectors, Electrical, Rectangular, Non-removable Solder Bucket, PCB and Wire-wrap Contacts and removable Coaxial and Power Contacts, based on type D*M. It shall be read in conjunction with:-

ESCC Generic Specification No. 3401, Connectors, Electrical, Non-Filtered, Circular and Rectangular.

ESCC Detail Specification No. 3401/004, Contacts, Coaxial, ~~Crimp and Solder~~ Crimp-Type, Solder-Type and PCB-Type, for 3401/001 Connectors.

ESCC Detail Specification No. 3401/022, Accessories for Rectangular Connectors 3401/001, 3401/002 and Connector Savers 3401/020.

ESCC Detail Specification No. 3401/040, Contacts, Power, ~~Crimp and Solder~~ Crimp-Type, Solder-Type and PCB-Type, for 3401/001 Connectors.

the requirements of which are supplemented herein.

1.2 RANGE OF COMPONENTS

The different sizes of the connectors and contact types specified herein, which are also covered by this specification, together with their mechanical characteristics, are given in Table 1(a).

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 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 specified herein are shown in Figure 2.

2. APPLICABLE DOCUMENTS

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

(a) ESCC Generic Specification No. 3401 for Connectors, Electrical, Non-Filtered, Circular and Rectangular.

(b) ESCC Detail Specification No. 3401/004, Contacts, Coaxial, ~~Crimp and Solder~~ ditto for 3401/001 Connectors.

(c) ESCC Detail Specification No. 3401/022, Accessories for Rectangular Connectors, 3401/001, 3401/002 and Connector Savers 3401/020. ditto

(d) ESCC Detail Specification No. 3401/040, Contacts, Power, ~~Crimp and Solder~~ ditto for 3401/001 Connectors.

(e) MIL-~~C~~-24308, Rack and Panel Connectors, Miniature.

(f) MIL-G-45204, Gold Plating, Electo-deposited.

(g) MIL-C-14550, Copper Plating, Electro-deposited.

3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

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

TABLE 1(a) – RANGE OF COMPONENTS
SHELL SIZES

VARIANT	SHELL SIZE (1)	MAX. WEIGHT (g) (2) (3)		MATING FORCE (N. max)	UNMATING FORCE	
		Male	Female		N. min	N. max
01 (Gauge 20 Contacts)	E	4.5	5.0	30	3.5	20
	A	5.5	7.0	50	4.5	34
	B	9.0	10.0	83	8.0	55
	C	12.5	13.5	123	11.0	83
	D	13.5	16.0	166	14.5	120
02 (Gauge 22 Contacts)	E	5.2	6.0	46	3.4	28
	A	7.4	8.0	77	4.5	46
	B	11.0	12.0	127	7.9	77
	C	15.6	17.0	177	11.3	109
	D	18.2	20.0	222	14.7	136
	F	23.0	25.0	295	20.3	177

NOTES
1. See Figure 2(b)
2. Weights without contacts or accessories
3. ~~Total connectors weights shall be calculated with:~~
   - connector weight (see table 1(a) SHELL SIZES)
   - Number of Signal Contact used according to figure 2(b) and weight of contacts (see table 1(b)).
   - Number of Power or Coaxial Contacts according to figure 2(b) and weight of contacts given in ESCC Detail Specification No.3401/040 or 3401/004 (if applicable)
   - ~~Accessories weight given in ESCC Detail Specification No.3401/022 (if applicable)~~

TABLE 1(a) – RANGE OF COMPONENTS (CONTD)
CONTACT TYPES

CONTACT CODES		CONTACT TYPES (1)	Max. Weight of contacts (g) Variant 01 Male	Variant 01 Female	Variant 02 Male	Variant 02 Female
-		Gauge 20 solder bucket for wire sizes AWG 20 to 24	0.19	0.22	-	-
		Gauge 22 solder bucket for wire sizes AWG 22 to 26	-	-	0.14 (9)	0.19 (9)
			-	-	0.16(10)	0.21(10)
			-	-	0.18(11)	0.23(11)
PCB Contacts (ø)						
Tail 0,60	Tail 0,76					
OL3	-	Straight PCB solder contact gauges 20 and 22	0.17	0.20	0.14	0.19
-	Z	Straight PCB solder contact gauges 20	0.17	0.20	-	-
1AON	2AON	Gauge 20 90° PCB solder contact (2,54mm row spacing)	0.24(4)	0.29(4)	-	-
1BON	2BON	Gauge 20 90° PCB solder contact (2,84mm row spacing)	0.28(5)	0.34(5)	-	-
			0.32(6)	0.37(6)	-	-
1CON	-	Gauge 22 90° PCB solder contact (1,98mm row spacing shell sizes E,A,B and C)	-	-	0.16(12)	0.21(12)
1DON	-	Gauge 22 90° PCB solder contact (2,08mm row spacing shell sizes D and F)	-	-	0.18(13)	0.23(13)
			-	-	0.2(14)	0.25(14)
			-	-	0.22(15)	0.27(15)
			-	-	0.24(16)	0.29(16)
1(7)7N	2(7)7N	Gauge 20 90° PCB solder contact equipped with 90° bracket and screwlocks 4-40 (2)	0.24(4)	0.29(4)	-	-
1(7)9N	2(7)9N	Gauge 20 90° PCB solder contact equipped with 90° bracket and screwlocks M3 (2)	0.28(5)	0.34(5)	-	-
			0.32(6)	0.37(6)	-	-
1(8)7N	-	Gauge 22 90° PCB solder contact equipped with 90° bracket and screwlocks 4-40 (2)	-	-	0.16(12)	0.21(12)
1(8)9N	-	Gauge 22 90° PCB solder contact equipped with 90° bracket and screwlocks M3 (2)	-	-	0.18(13)	0.23(13)
			-	-	0.2(14)	0.25(14)
			-	-	0.22(15)	0.27(15)
			-	-	0.24(16)	0.29(16)
F179A		Gauge 20 wire-wrap contacts for wire sizes AWG 26 to 30	0.28	0.34	-	-
-		Power and coaxial contacts (See relevant Detail specification)	(3)	(3)	-	-

NOTES
1. See Figure 2(c)
2. Weight of brackets and nuts:
   Maximum Shell sizes E,A,B and C : 3,10gr (Var.01) - 3,95gr (Var.02)
   Shell size D : 3,80gr (Var.01) - 4,40gr (Var.02)
   Shell size F : 5,00gr (Var.02)

3. Total maximum weight may be calculated from:
   - connector weight.
   - contact weight for all contacts including brackets and nuts (as applicable) (see Table 1(a) - Contact Types and/or the relevant Detail Specification.
   - Accessories weight given in ESCC Detail Specification No. 3401/022 (if applicable).

NOTES (CONTD):

3. See Figure 2(b). Power and coaxial contacts shall be ordered separately in accordance with ESCC Detail Specification Nos. 3401/040 and 3401/004 respectively.
4. Weight of contact in row nearest the connector mounting plane (Ref. Plane)
5. Weight of contact in row farthest from connector mounting plane (Ref. Plane), except for size D, where it is the middle row.
6. For size D only, weight of contact in row farthest from connector mounting plane (Ref. Plane).
7. A or B, as applicable.
8. C or D, as applicable.
9. Weight of contact for the external rows (all sizes).
10. Weight of contact for the middle rows except for the middle row of size F.
11. For size F only, weight of contact in the middle row.
12. Weight of contact in row nearest the connector mounting plane (Ref. Plane)
13. Weight of contact in row after the row specified in (12).
14. Weight of contact in row after the row specified in (13).
15. Weight of contact in row after the row specified in (14).
16. For size F only, weight of contact in row farthest from connector mounting plane (Ref. Plane).

TABLE 1(b) – MAXIMUM RATINGS

No.	CHARACTERISTICS	SYMBOL	MAXIMUM RATING	UNIT	REMARKS
1	Working Voltage Sea Level - Gauge 20 Contacts ~~(Mat. 01)~~ - Gauge 22 Contacts ~~(Mat. 02)~~ - Power, ~~High Voltage and~~ Contacts ~~Straight Coaxial Contacts~~ - ~~[illegible]~~ Coaxial Contacts	U_R	 300 250 250 ~~200~~ Note 2	Vrms	Note 1
2	Rated Current - Gauge 20 ~~and Coaxial~~ Contacts ~~Centre Contacts~~ - Gauge 22 Contacts - Power Contacts	I_R	 7.5 3.0 ~~4.0~~ Note 2 Note 3	A	-
3	Operating Temperature Range	T_{op}	-55 to +125	°C	T_{amb}
4	Storage Temperature Range	T_{stg}	-65 to +125	°C	
5	Soldering Temperature	T_{sol}	+260	°C	Note ~~2~~ 4

– Coaxial Contacts

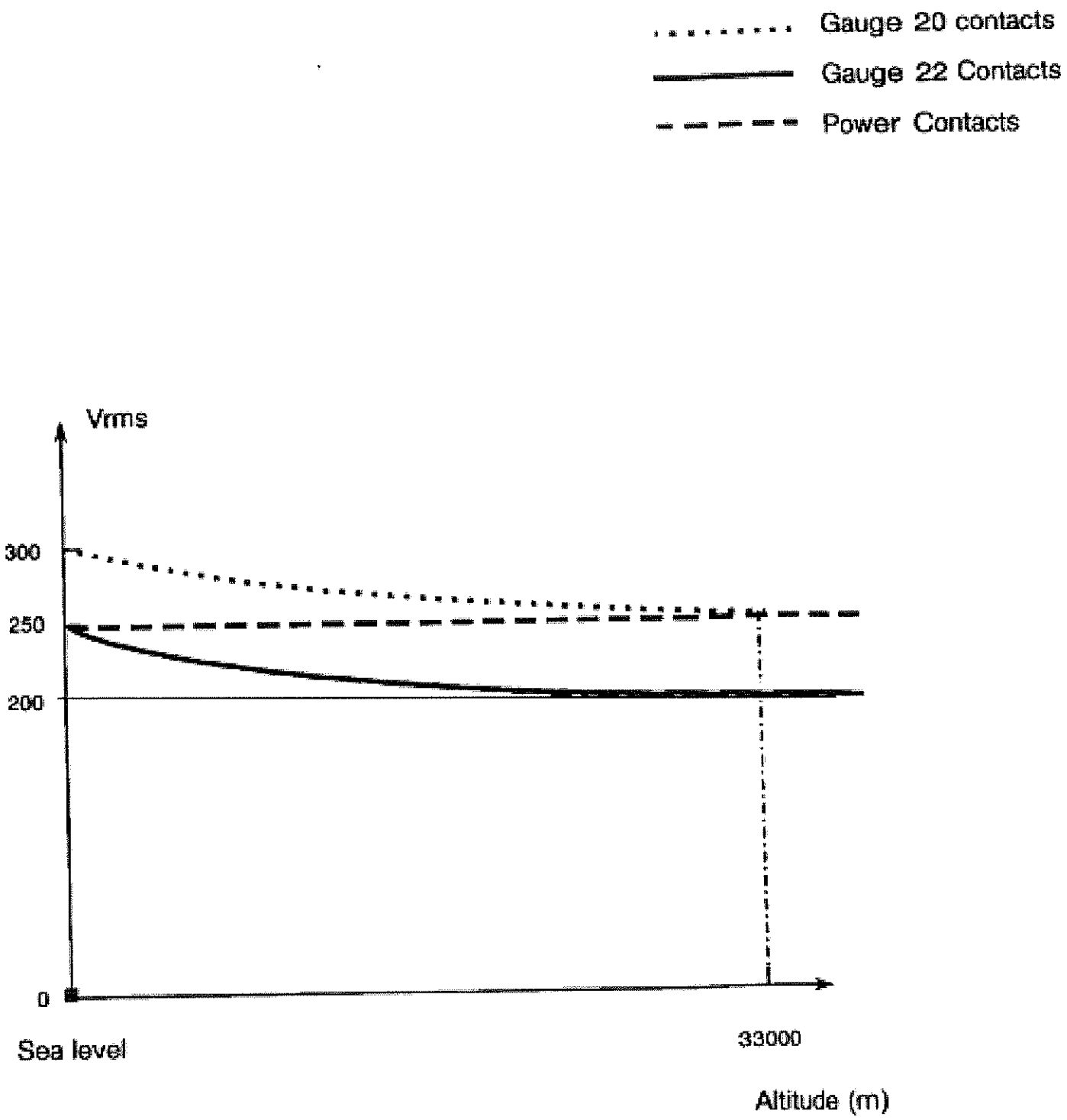
NOTES

1. Between contact and shell.
4 2. Duration 10 seconds maximum and the same contact shall not be resoldered until 3 minutes have elapsed.
2. See ESCC Detail Specification No. 3401/004 for coaxial contacts.
3. See ESCC Detail Specification No. 3401/040 for power contacts.

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FIGURE 1 - PARAMETER DERATING INFORMATION

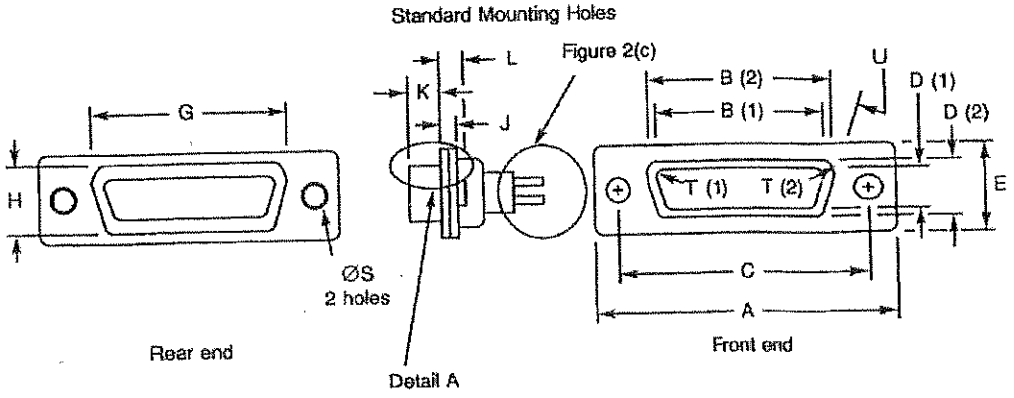


Working Voltage versus Altitude

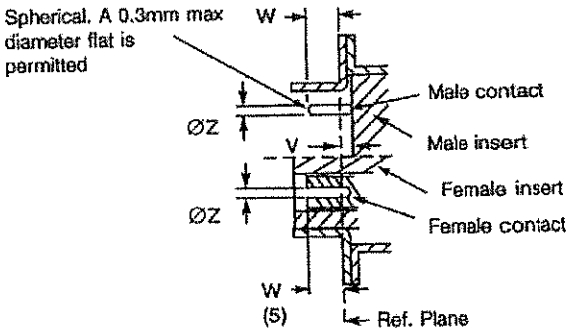
FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - RECEPTACLES AND PLUGS

SHELL SIZE E



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	G	H	J	K	L	ØS	T	U °	V	W	ØZ V.01	ØZ V.02
PLUG	Male	min.	30.43	16.79	24.87	8.23	12.17	19.02	10.46	0.51	5.62	0.89	2.92	2.59	9.0	0	4.03	0.99	0.75
		max.	31.19	17.04	25.12	8.48	12.93	19.53	10.97	1.02	6.05	1.52	3.20	2.69	11.0	0.4	-	1.04	0.77
RECEPTACLE	Female	min.	30.43	16.21	24.87	7.77	12.17	19.02	10.46	0.51	6.05	0.89	2.92	2.46	9.0	-	3.63	1.07	0.89
		max.	31.19	16.46	25.12	8.03	12.93	19.53	10.97	1.02	6.30	1.52	3.20	2.62	11.0	-	-	1.14	0.95

NOTES

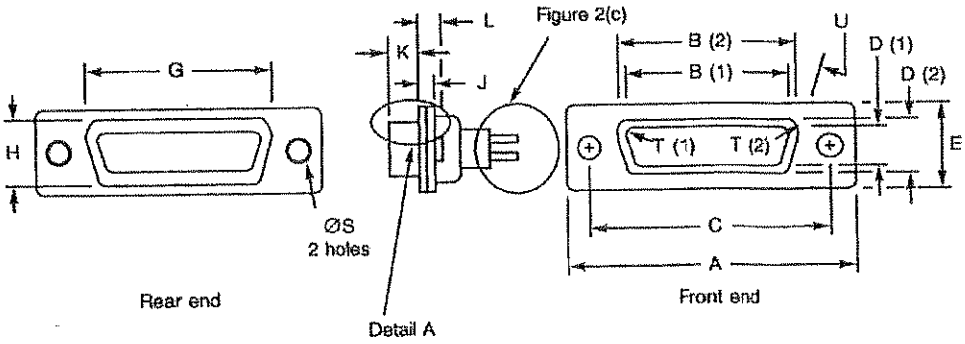
1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

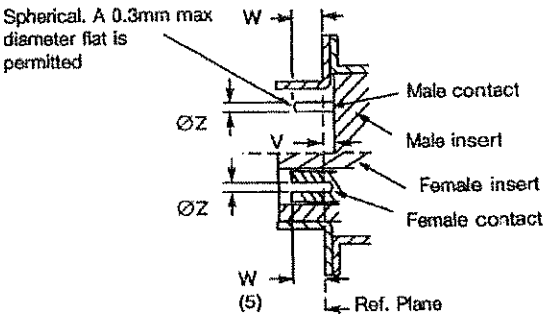
FIGURE 2(a) - RECEPTACLES AND PLUGS

SHELL SIZE A

Standard Mounting Holes



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	G	H	J	K	L	ØS	T	U °	V	W	ØZ V.01	ØZ V.02
PLUG	Male	min.	38.76	25.12	33.20	8.23	12.17	27.25	10.46	0.51	5.82	0.89	2.92	2.59	9.0	0	4.03	0.99	0.75
		max.	39.52	25.37	33.45	8.48	12.93	27.76	10.97	1.02	6.05	1.52	3.20	2.69	11.0	0.4	-	1.04	0.77
RECEPTACLE	Female	min.	38.76	24.54	33.20	7.77	12.17	27.25	10.46	0.51	6.05	0.89	2.92	2.46	9.0	-	3.63	1.07	0.89
		max.	39.52	24.79	33.45	8.03	12.93	27.76	10.97	1.02	6.30	1.52	3.20	2.62	11.0	-	-	1.14	0.95

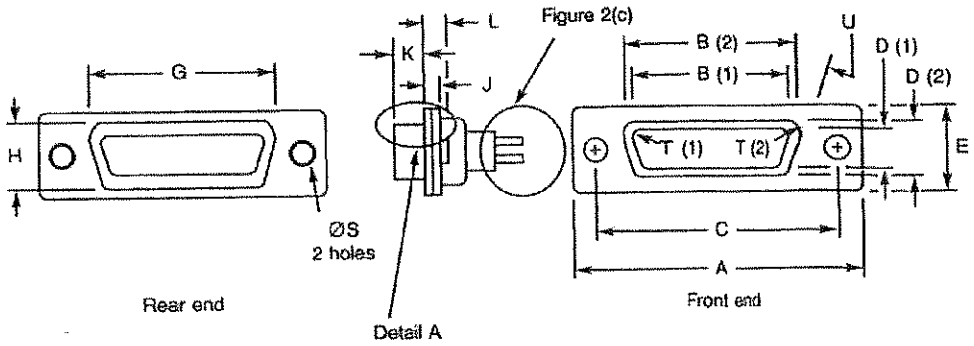
NOTES
1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

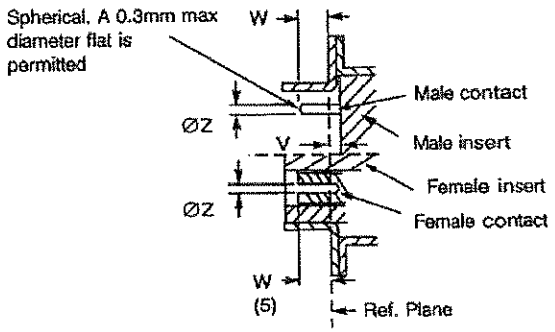
FIGURE 2(a) - RECEPTACLES AND PLUGS

SHELL SIZE B

Standard Mounting Holes



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	G	H	J	K	L	ØS	T	U °	V	W	ØZ V.01	ØZ V.02
PLUG	Male	min.	52.65	38.84	46.91	8.23	12.17	41.02	10.46	0.51	5.69	1.85	2.82	2.59	9.0	0	3.81	0.99	0.75
		max.	53.42	39.09	47.17	8.48	12.93	41.53	10.97	1.24	5.99	1.78	3.20	2.69	11.0	0.6	-	1.04	0.77
RECEPTACLE	Female	min.	52.65	38.25	46.91	7.77	12.17	41.02	10.46	0.51	6.05	0.89	2.92	2.46	9.0	-	3.63	1.07	0.89
		max.	53.42	38.51	47.17	8.03	12.93	41.53	10.97	1.02	6.30	1.52	3.20	2.62	11.0	-	-	1.14	0.95

NOTES

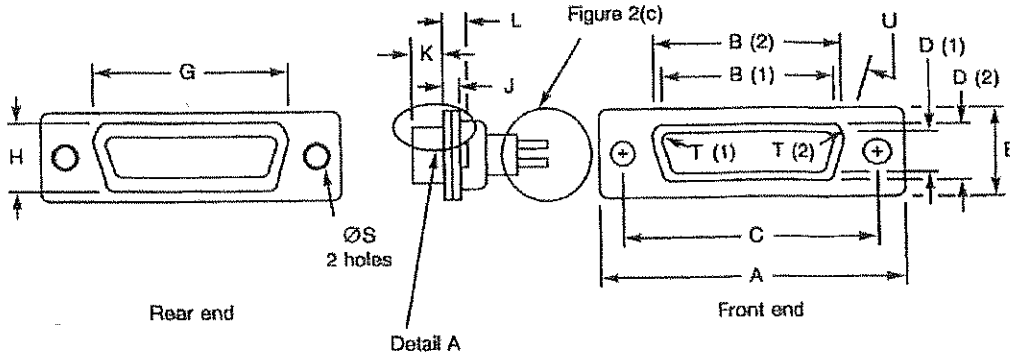
1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

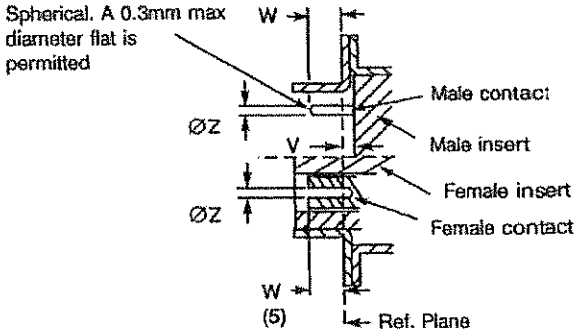
FIGURE 2(a) - RECEPTACLES AND PLUGS

SHELL SIZE C

Standard Mounting Holes



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	G	H	J	K	L	ØS	T	U °	V	W	ØZ V.01	ØZ V.02
PLUG	Male	min.	68.94	55.30	63.37	8.23	12.17	57.45	10.46	0.51	5.69	1.06	2.92	2.59	9.0	0	3.81	0.99	0.75
		max.	69.70	55.55	63.63	8.48	12.93	57.96	10.97	1.24	5.99	1.78	3.20	2.69	11.0	0.6	-	1.04	0.77
RECEPTACLE	Female	min.	68.94	54.71	63.37	7.77	12.17	57.45	10.46	0.51	6.05	0.89	2.92	2.46	9.0	-	3.63	1.07	0.89
		max.	69.70	54.97	63.63	8.03	12.93	57.96	10.97	1.02	6.30	1.52	3.20	2.62	11.0	-	-	1.14	0.95

NOTES

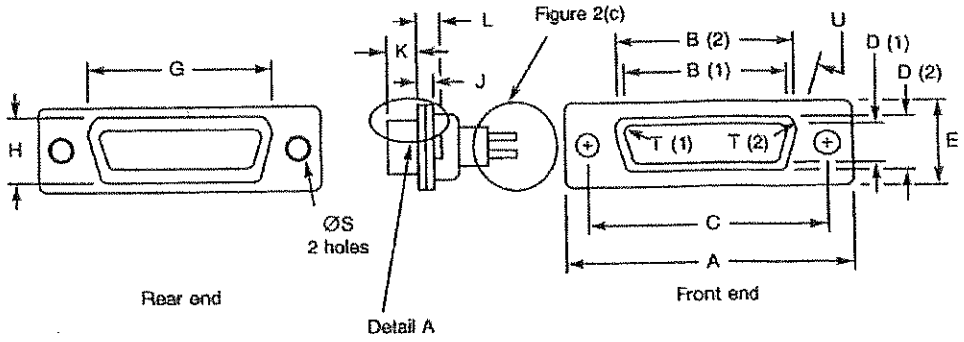
1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

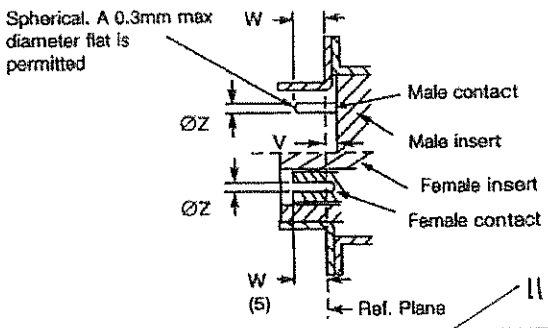
FIGURE 2(a) - RECEPTACLES AND PLUGS

SHELL SIZE D

Standard Mounting Holes



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	G	H	J	K	L	ØS	T	U °	V	W	ØZ V.01	ØZ V.02
PLUG	Male	min.	66.55	52.68	60.99	10.88	14.99	55.07	13.31	0.51	5.69	1.65	2.92	2.59	9.0	0	3.81	0.99	0.75
		max.	67.31	52.93	61.24	11.33	15.75	55.58	13.82	1.24	5.99	1.78	3.20	2.69	11.0	0.6	-	1.04	0.77
RECEPTACLE	Female	min.	66.55	52.30	60.99	10.62	14.99	55.07	13.31	0.51	6.05	0.89	2.92	2.46	9.0	-	3.63	1.07	0.89
		max.	67.31	52.55	61.24	10.87	15.75	55.58	13.82	1.02	6.30	1.52	3.20	2.62	11.0	-	-	1.14	0.95

NOTES

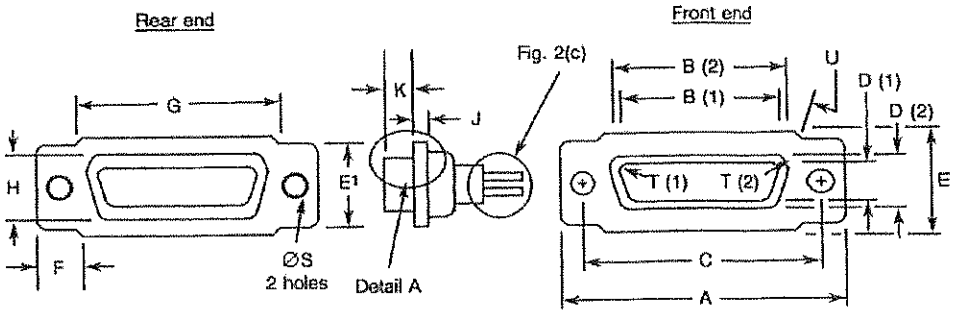
1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

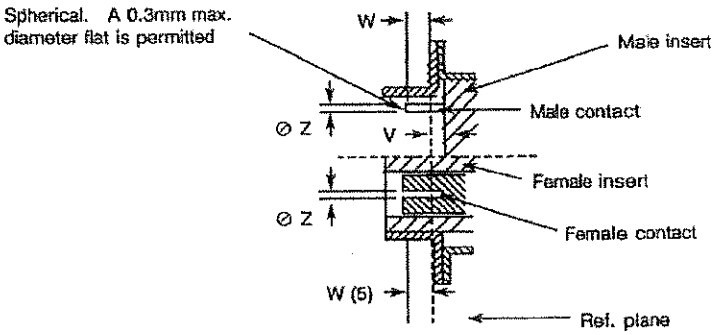
FIGURE 2(a) - RECEPTACLES AND PLUGS (CONTINUED)

SHELL SIZE F

Standard Mounting Holes



DETAIL A



Connector Type	Contact Type	Symbol/ Dim.	A	B	C	D	E	E¹	F	G	H	J	K	ØS	I	U °	V	W	ØZ
PLUG	Male	min.	68.94	56.06	63.37	12.65	16.92	14.99	5.17	57.25	15.45	0.74	5.69	2.92	2.59	9.0	0	3.81	0.75
		max.	69.70	56.31	63.63	12.90	17.68	15.75	5.43	57.75	15.95	1.24	5.99	3.20	2.69	11.0	0.6	-	0.77
RECEPTACLE	Female	min.	68.94	55.47	63.37	12.19	16.92	14.99	5.17	57.25	15.45	0.51	6.05	2.92	2.45	9.0	-	3.63	0.89
		max.	69.70	55.73	63.63	12.45	17.68	15.75	5.43	57.75	15.95	1.02	6.30	3.20	2.62	11.0	-	-	0.95

NOTES

1. Inside dimension for connectors with male contacts.
2. Outside dimension for connectors with female contacts.
3. All dimensions are in millimetres (angles in degrees).
4. Underlined dimensions, in table, are critical to ensure intermateability.
5. Electrical contact position in female contact.

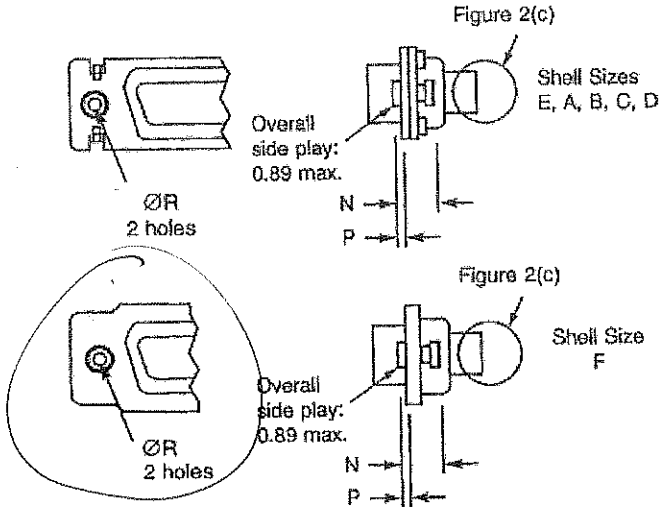
FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS

OTHER MOUNTING TYPES

FLOATING MOUNT - TYPE 'Y'

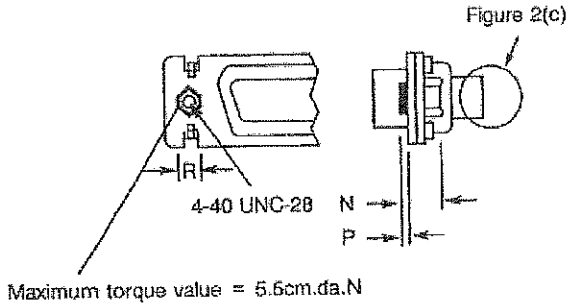
SHELL SIZES E, A, B, C, D AND F



Contact Type	Symbol/ Dim.	N	P	ØR
Male	Min.	2.4	0.76	2.2
	Max.	3.3	0.86	2.3
Female	Min.	2.4	0.76	2.2
	Max.	3.3	0.86	2.3

CAPTIVE NUT - TYPE 'E'

SHELL SIZES E, A, B, C AND D



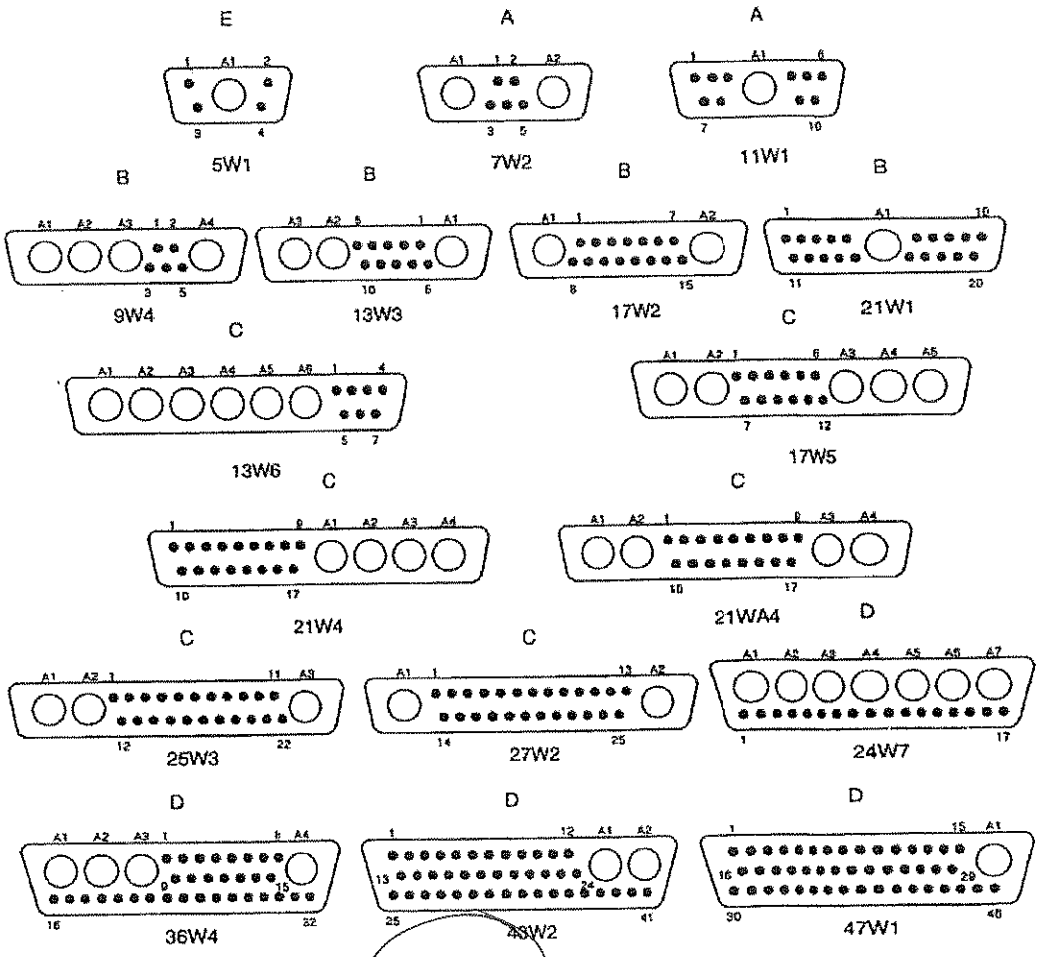
Contact Type	Symbol/ Dim.	N	P	R
Male	Min.	3.4	0	4.3
	Max.	4.2	0.4	4.7
Female	Min.	3.4	0	4.3
	Max.	4.2	0.4	4.7

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - CONTACT ARRANGEMENTS (CONTINUED

(FRONT VIEW MALE INSERT)

MIXED CONTACT ARRANGEMENTS FOR VARIANT 01 ONLY (CONTINUED)



NOTES

1. Contact locations are in conformity with MIL-~~C~~-24308 specification sheets and shall not be checked during procurement.
2. Both sides of the insert shall be marked with the minimum marking shown. Contact numbers are shown outside the inserts for readability.
3. See Para. 4.5 for definition of letters and numbers.
4. 3WK3 insulator with built-in keying (middle part recessed or protruding with respect to each side), to avoid mismounting (K = keyed).

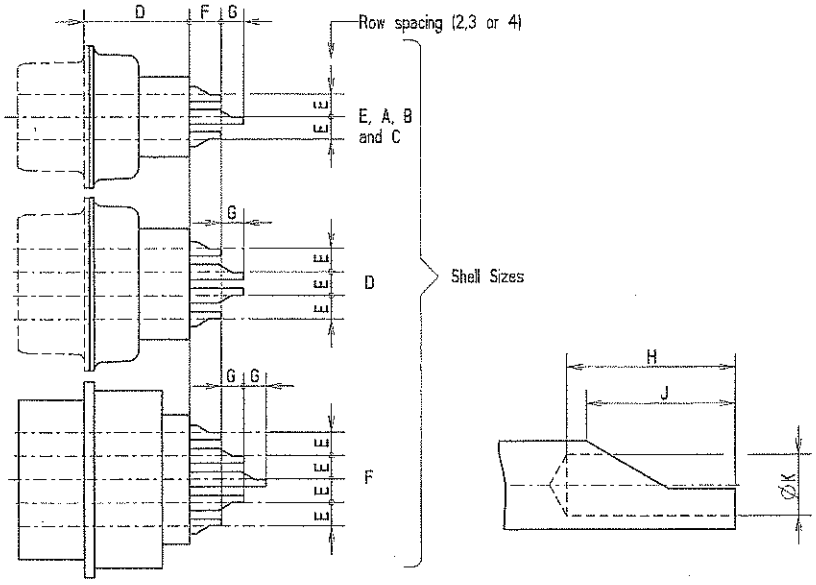
(original DCR 315)

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

NEW

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 Solder Bucket Contacts (CODE -)



Pitch between contacts
Connector shell sizes E, A and B: 2.29
Connector shell sizes C, D and F: 2.41

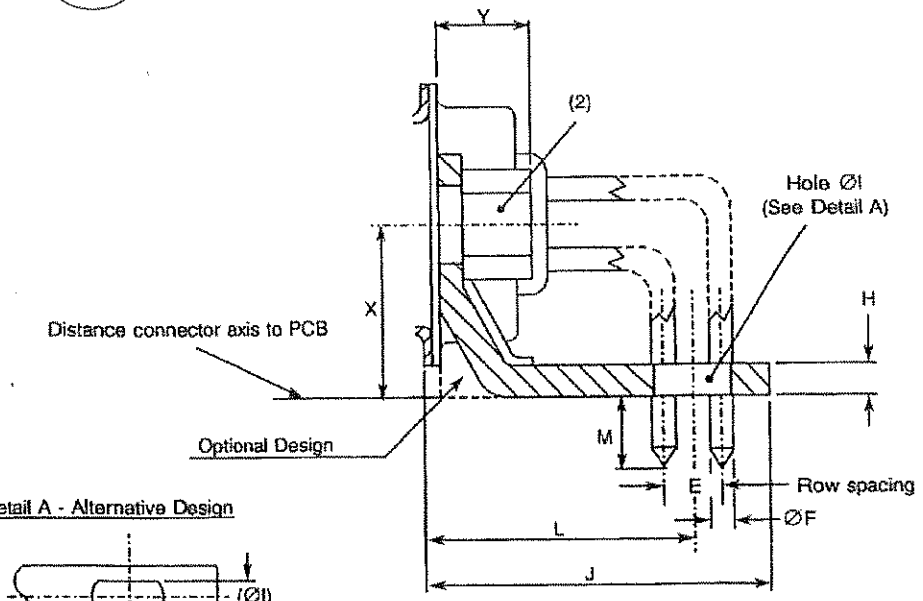
Symbol/ Dim.	D		E		F	G	H	J	ØK
	(2) (3)	(4)	Sizes E, A, B, C (5)	Sizes D, F (6)					
min.	-	-	1.91	2.01	2.5	1.9	2.4	1.4	0.87
max.	11.21	11.41	2.05	2.15	3.1	2.1	-	2.5	0.93

NOTES
1. All dimensions are in mm.
2. Connectors equipped with female contacts all sizes.
3. Connectors equipped with male contacts sizes E and A.
4. Connectors equipped with male contacts sizes B, C, D and F.
5. Typical = 1.98.
6. Typical = 2.08.

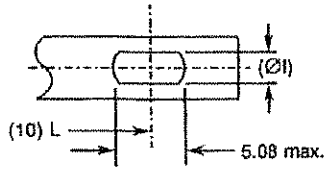
FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - REAR END (CONTINUED)

Gauge 20 PCB Solder Contacts with 90° Brackets and Screw Locks (Sizes E, A, B and C)
(Codes 1A7N, 1A9N, 1B7N,1B9N, 2A7N, 2A9N, 2B7N and 2B9N)



Detail A - Alternative Design



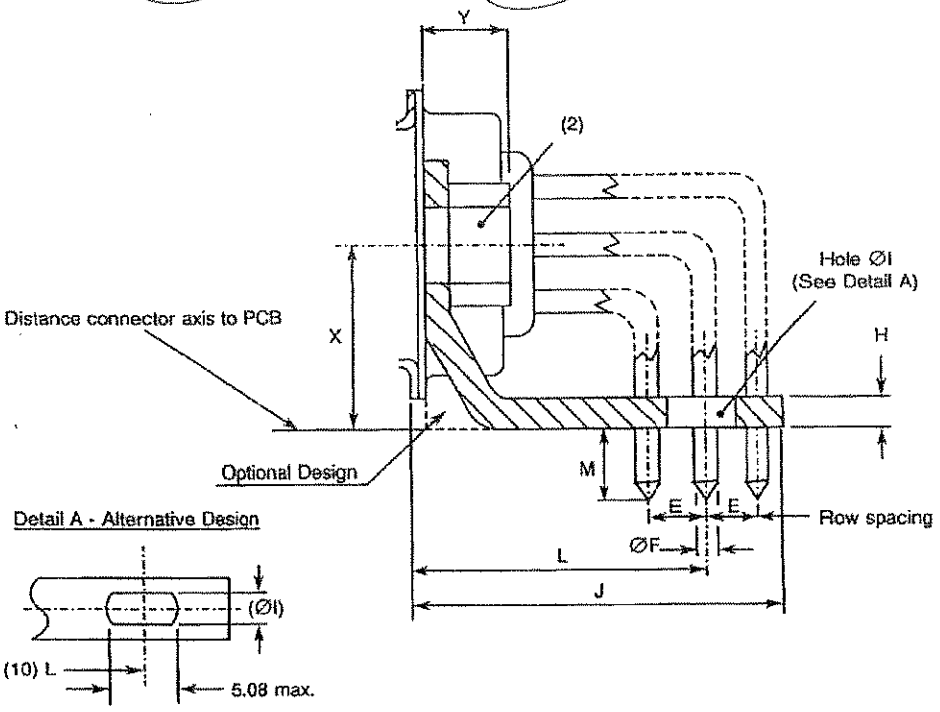
Symbol/ Dim.	E		ØF		H	ØI	J		L				M	X	Y
									(7)		(8)				
	(*)A7N (*)A9N (3)	(*)B7N (*)B9N (4)	1(*)7N 1(*)9N (5)	2(*)7N 2(*)9N (6)			(7)	(8)	(*)A7N (*)A9N	(*)B7N (*)B9N	(*)A7N (*)A9N	(*)B7N (*)B9N		(9)	
min.	2.49	2.79	0.50	0.69	1.0	3.12	-	-	11.37	11.52	11.57	11.72	3.6	7.2	-
max.	2.59	2.89	0.65	0.84	3.2	3.32	15.6	15.8	11.57	11.72	11.77	11.92	4.4	7.5	7.0

NOTES
1. All dimensions are in mm.
2. Codes (*)A7N and (*)B7N: Nut 4-40.
   Codes (*)A9N and (*)B9N: Nut M3.
3. Typical = 2.54.
4. Typical = 2.84.
5. Typical = 0.60.
6. Typical = 0.76.
7. Connectors equipped with female contacts all sizes and connectors equipped with male contacts sizes E and A.
8. Connectors equipped with male contacts sizes B and C.
9. Typical = 7.35.
10. This alternative design takes into account the different possible values of L.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - REAR END (CONTINUED)

Gauge 20 PCB Solder Contacts with 90° Bracket and Screw Locks (Size D)
(Codes 1A7N, 1A9N, 1B7N, 1B9N, 2A7N, 2A9N, 2B7N and 2B9N)



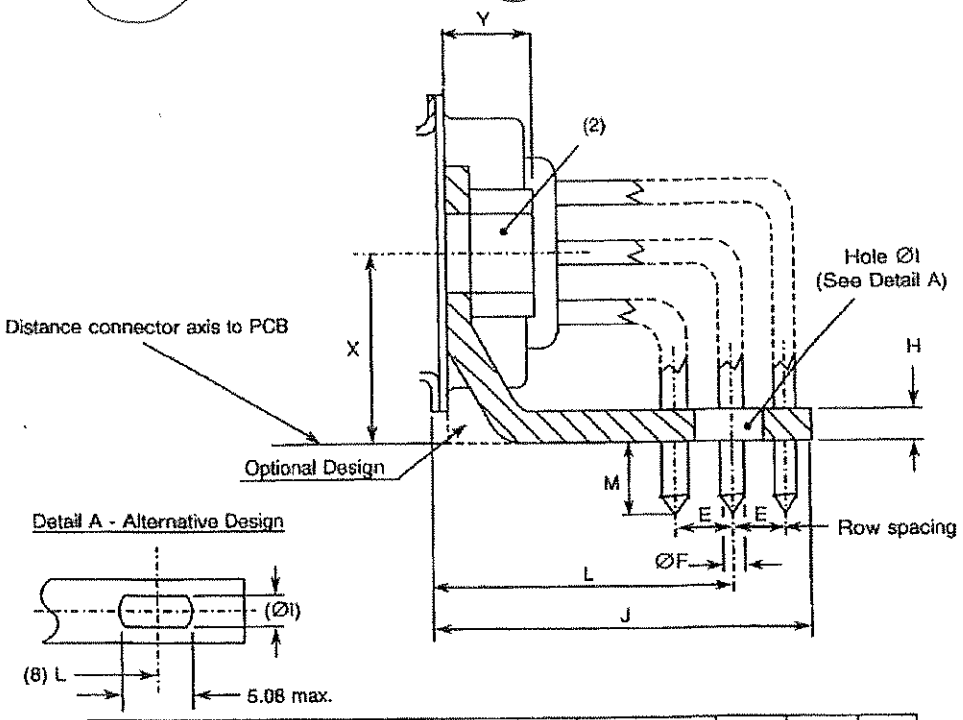
Symbol/ Dim.	E		ØF		H	ØI	J		L				M	X	Y
									(7)		(8)				
	(*)A7N (*)A9N (3)	(*)B7N (*)B9N (4)	1(*)7N 1(*)9N (5)	2(*)7N 2(*)9N (6)			(7)	(8)	(*)A7N (*)A9N	(*)B7N (*)B9N	(*)A7N (*)A9N	(*)B7N (*)B9N		(9)	
min.	2.49	2.79	0.50	0.69	1.0	3.12	-	-	12.64	12.94	12.84	13.14	3.6	8.6	-
max.	2.59	2.89	0.65	0.84	3.2	3.32	17.5	17.7	12.84	13.14	13.04	13.34	4.4	8.8	7.0

NOTES
1. All dimensions are in mm.
2. Codes (*)A7N and (*)B7N: Nut 4-40
   Codes (*)A9N and (*)B9N: Nut M3.
3. Typical = 2.54.
4. Typical = 2.84.
5. Typical = 0.60.
6. Typical = 0.76.
7. Connectors equipped with female contacts.
8. Connectors equipped with male contacts.
9. Typical = 8.70.
10. This alternative design takes into account the different possible values of L.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - REAR END (CONTINUED)

Gauge 22 PCB Solder Contacts with 90° Brackets and Screw Locks (Sizes E, A, B and C) (Codes 1C7N and 1C9N)



Symbol/ Dim.	E (3)	ØF	ØI	H	J (4) (6)	J (5) (6)	L 1C7N 1C9N (4)	L 1C7N 1C9N (5)	M	X (7)	Y
min.	1.93	0.50	3.12	1.0	-	-	14.11	14.31	3.6	7.2	-
max.	2.03	0.65	3.32	3.2	18.3	18.5	14.31	14.51	4.4	7.5	7.0

NOTES

1. All dimensions are in mm.
2. Code 1C7N: Nut 4-40.
   Code 1C9N: Nut M3.
3. Typical = 1.98.
4. Connectors equipped with female contacts all sizes and connectors equipped with male contacts sizes E and A.
5. Connectors equipped with male contacts sizes B and C.
6. Optional positioning bar for termination included.
7. Typical = 7.35.
8. This alternative design takes into account the different possible values of L.

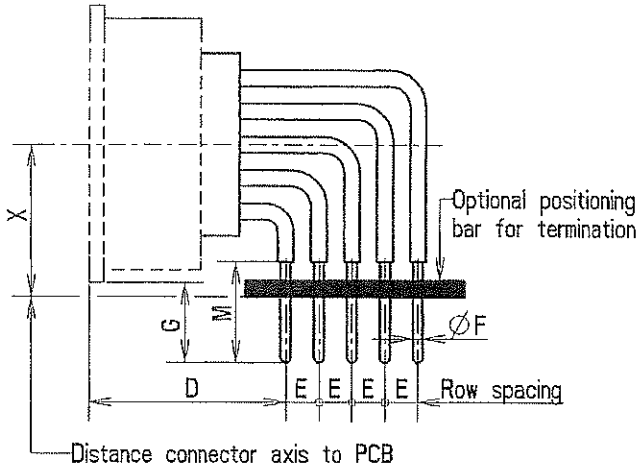
(Original DR315)

NEW

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 90° PCB Solder Contacts
(Size F code 1DON)



Pitch between contacts
Connector shell size F = 2.41

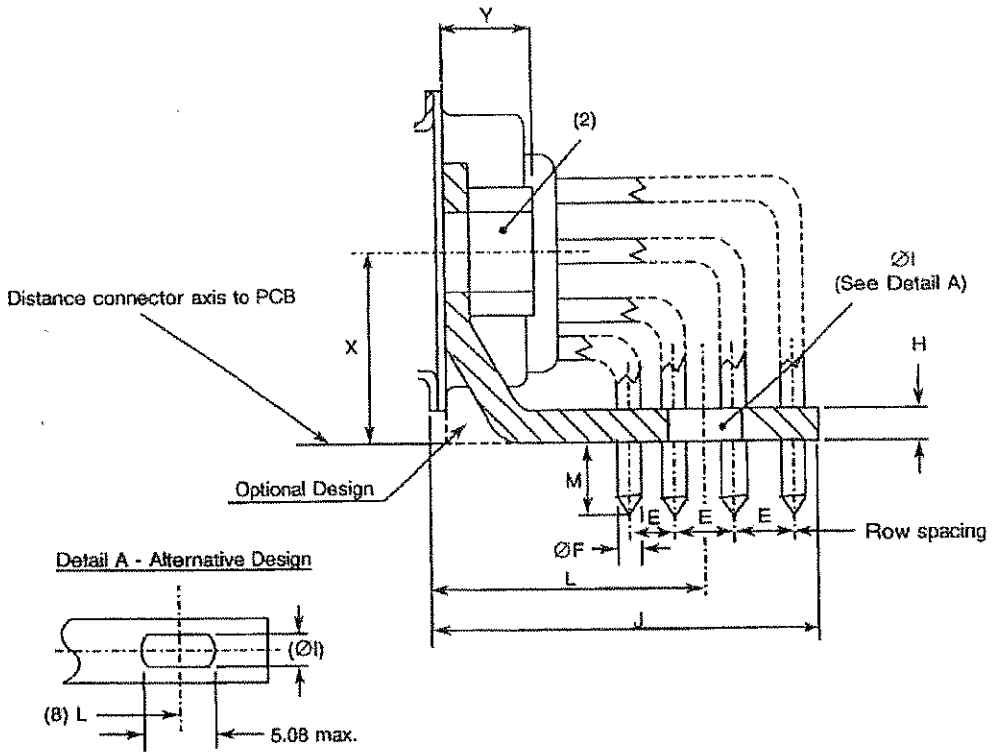
Symbol/ Dim.	D	E (2)	ØF	G	M	X (3)
min.	12.18	2.03	0.50	4.70	5.30	8.6
max.	12.68	2.13	0.65	5.30	5.40	8.8

NOTES
1. All dimensions are in mm.
2. Typical = 2.08
3. Typical = 8.70

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - REAR END (CONTINUED)

Gauge 22 PCB Solder Contacts with 90° Bracket and Screw Locks (Size D)
(Codes 1D7N and 1D9N)



Symbol/ Dim.	E (3)	ØF	ØI	H	J (4) (6)	J (5) (6)	L (4)	L (5)	M	X (7)	Y
min.	2.03	0.50	3.12	1.0	-	-	15.25	15.45	3.6	8.6	-
max.	2.13	0.65	3.32	3.2	20.5	20.7	15.45	15.65	4.4	8.8	7.0

NOTES

1. All dimensions are in mm.
2. Code 1D7N: Nut 4-40.
   Code 1D9N: Nut M3.
3. Typical = 2.08.
4. Connectors equipped with female contacts.
5. Connectors equipped with male contacts.
6. Optional positioning bar for termination included.
7. Typical = 8.70.
8. This alternative design takes into account the different possible values of L.

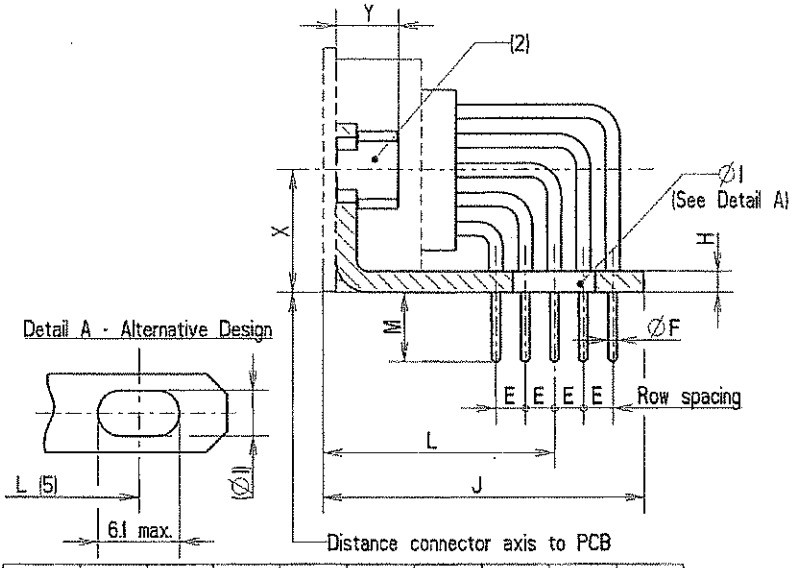
(Original DCR 315)

NEW

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 90° PCB Solder Contacts with 90° Bracket and Screw Locks (Size F)
(Code 1D7N and 1D9N)



Symbol/ Dim.	E (3)	ØF	ØI	H	J	L	M	X (4)	Y
min.	2.03	0.50	3.12	1	-	16.15	4.6	8.6	-
max.	2.13	0.65	3.32	3.2	23.5	16.85	5.4	8.8	7.0

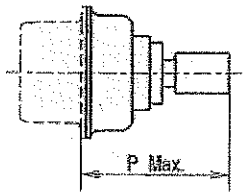
NOTES

1 ~~10~~. All dimensions are in mm.
2 ~~11~~. Code 1D7N : Nut 4-40
Code 1D9N : Nut M3
3 ~~12~~. Typical = 2.08
4 ~~13~~. Typical = 8.70
5 ~~14~~. This alternative design takes into account the different possible values of L

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

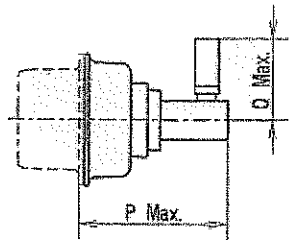
FIGURE 2(c) – REAR END (CONTINUED)
Power and Coaxial Contacts (Code -)

Straight Coaxial Contacts



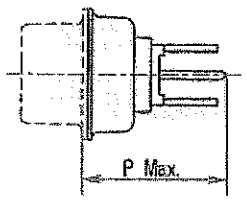
Symbol	Connectors equipped with Variant Number per 3401/004			
	3401/004 Variants 01-02-05-06-11-12-15-16		3401/004 Variants 09-10-19-20	
P	19.6 (2) (3)	19.8 (4)	22.3 (2) (3)	22.5 (4)

90° Coaxial Contacts



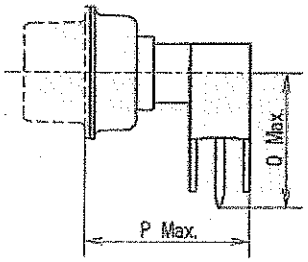
Symbol	Connectors equipped with ~~Variant Number per~~ 3401/004 03-04-07-08-13-14-17-18	
P	14.3 (2) (3)	14.5 (4)
Q	12.5	

Coaxial PCB
Straight ~~PC~~ Contacts



Symbol	Connectors equipped with ~~Variant Number per~~ 3401/004 Variants 21-22	
P	13.8 (2) (3)	14 (4)

Coaxial PCB
90° ~~PC~~ Contacts



Symbol	Connectors equipped with ~~Variant Number per~~ 3401/004 Variants 23-24	
P	15.8 (2) (3)	16 (4)
Q	13	

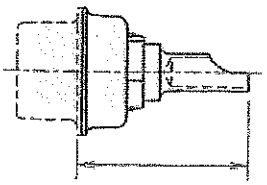
NOTES
1. All dimensions are in mm.
2. Connectors equipped with female contacts all sizes.
3. Connectors equipped with male contacts sizes E and A.
4. Connectors equipped with male contacts sizes B, C and D.

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Power and Coaxial Contacts (Code -)

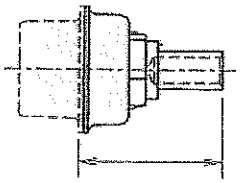
Power Solder Contact



3401/001 connectors equipped with contact Variants 01 through 06 of 3401/040

17.7 Max. (2) (3)
17.9 Max. (4)

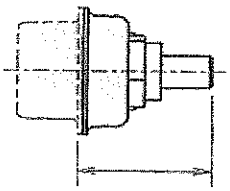
Power Crimp contact



3401/001 connectors equipped with contact Variants 07 through 12 of 3401/040

19.8 Max. (2) (3)
20 Max. (4)

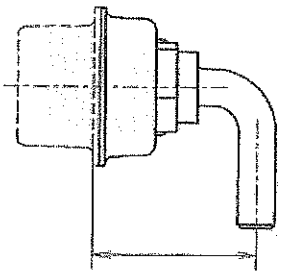
Power PCB
Straight PC Contact



3401/001 connectors equipped with contact Variants 13 and 14 of 3401/040

14.8 Max. (2) (3)
15 Max. (4)

Power PCB
90° PC Contact



3401/001 connectors equipped with contact Variants 15 and 16 of 3401/040

12.8 Max. (2) (3)
13 Max. (4)

NOTES

1. All dimensions are in mm.
2. Connectors equipped with female contacts all sizes.
3. Connectors equipped with male contacts sizes E and A.
4. Connectors equipped with male contacts sizes B, C and D.

4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the connectors specified herein are stated in this specification and ESCC 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 ESCC 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. 9.9, 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. 9.24, Jackscrew Retention: Not applicable.

(d) Para. 9.27, Maintenance Aging : Not applicable to gauge 20 and 22 contacts.

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.

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 ESCC Generic Specification 3401 and shall conform to those shown in Figure 2 of this specification. Only the underlined dimensions shall be checked during procurement.

4.3.2 Weight

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

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

No.	CHARACTERISTIC	SYMBOL	ESCC 3401 TEST METHOD	TEST CONDITION	LIMITS		UNIT
					MIN.	MAX.	
1	Insulation Resistance	Ri	Para. 9.1.1.1	Para. 9.1.1.1	5000	-	MΩ
2	Voltage Proof Leakage Current	I_L	Para. 9.1.1.2	(1)	-	2.0	mA
3	Mated Shell Conductivity (Voltage Drop) (2)	Vd	Para. 9.1.1.4	Para. 9.1.1.4	Not applicable		mV
4	Contact Resistance (Low Level Current) Gauge 20 Gauge 22 (PCB Contacts) Coaxial Power (3)	Rcl max.	Para. 9.1.1.3	Para. 9.1.1.3	- -	6.0 12	mΩ
5	Contact Resistance (Rated Current) (3)	Rcr max.	Para. 9.1.1.3	Gauge 20: 7.5A Gauge 22: 3.0A	-	5.0 10	mΩ

NOTES

1. - Gauge 20 contacts: 1250Vrms.
   - Gauge 22 contacts, power and straight coaxial contacts: 1000Vrms.
   - 90° Coaxial contacts: 800Vrms.
   - For mixed contact arrangements, the voltage applied between dissimilar contacts shall be the higher that would be applied between either of the contacts in question tested with an identical contact.
2. Applicable to mated connectors with grounding option.
3. See ESCC Detail Specifications 3401/004 and 3401/040 for coaxial and power contacts.

Nos.

TABLES 3, 4 AND 5

Not applicable

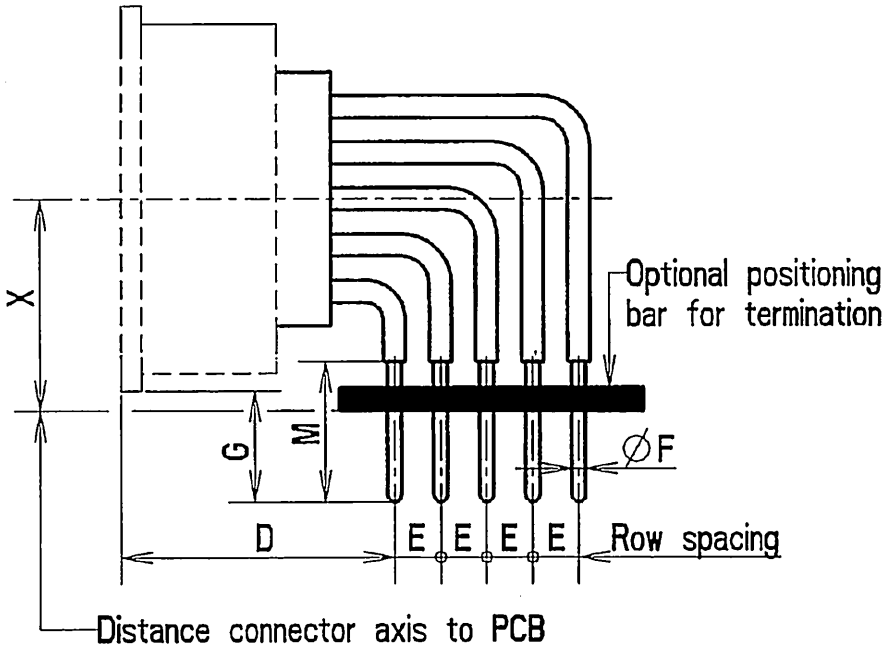
NO.	ESCC GENERIC NO. 3401		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN	MAX	
11	Permanence of Marking	Para. 9.19	-	-	-	-	-	
12	Mating/Unmating Forces	Para. 9.20	Force	-	F	Para. 4.3.5 of this spec		
13	High Temperature Storage	Para. 9.21	**Initial Measurements** Low Level Contact Resis. Mated Shell Conductivity **Final Measurements** Visual Examination Mating/Unmating Forces Low Level Contact Resistance Drift Rated Current Contact Resis. Mated Shell Conductivity Insulation Resistance Voltage Proof Leakage Curr. Contact Retention (in insert)	 Table 2 Item 4 Table 2 Item 3 - Table 2 Item 4 Table 2 Item 5 Table 2 Item 3 Table 2 Item 1 Table 2 Item 2 Para 4.3.4 of this spec.	 Rcl Vd - F ΔRcl Rcr Vd Ri I_L	 Record Values Not applicable - Para. 4.3.5 of this spec - Table 2 Item 5 Not applicable Table 2 Item 1 Table 2 Item 2 ESCC 3401 Para. 9.17	 - - 3.0 - - - -	 mΩ
14	Corrosion	Para. 9.22	Visual Examination	-	-	-	-	
15	Insert Retention (in shell)	Para. 9.23 & Para. 4.3.6 of this spec.	Visual Examination	-	-	Para. 4.3.6		
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 Rated Current Contact Resis. Mated Shell Conductivity Insulation Resistance Voltage Proof Leakage Curr.	 Table 2 Item 5 Table 2 Item 3 Table 2 Item 1 Table 2 Item 2	T Rcr Vd Ri I_L	- Table 2 Item 5 Not applicable Table 2 Item 1 Table 2 Item 2	+100	°C
19	Maintenance Aging	Para. 9.27 & Para. 4.2.4 of this spec.	Visual Examination Contact Retention (in insert) Contact Insertion & Withdrawal Forces	- Para 4.3.4 of this spec. Para. 4.3.8 of this spec.	-	- ESCC 3401 Para. 9.17 Para. 4.3.8	-	

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

FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 90° PCB Solder Contacts
(Size F code 1DON)



Pitch between contacts
Connector shell size F = 2.41

Symbol/ Dim.	D	E (2)	ØF	G	M	X (3)
min.	12.18	2.03	0.50	4.70	5.30	8.6
max.	12.68	2.13	0.65	5.30	5.40	8.8

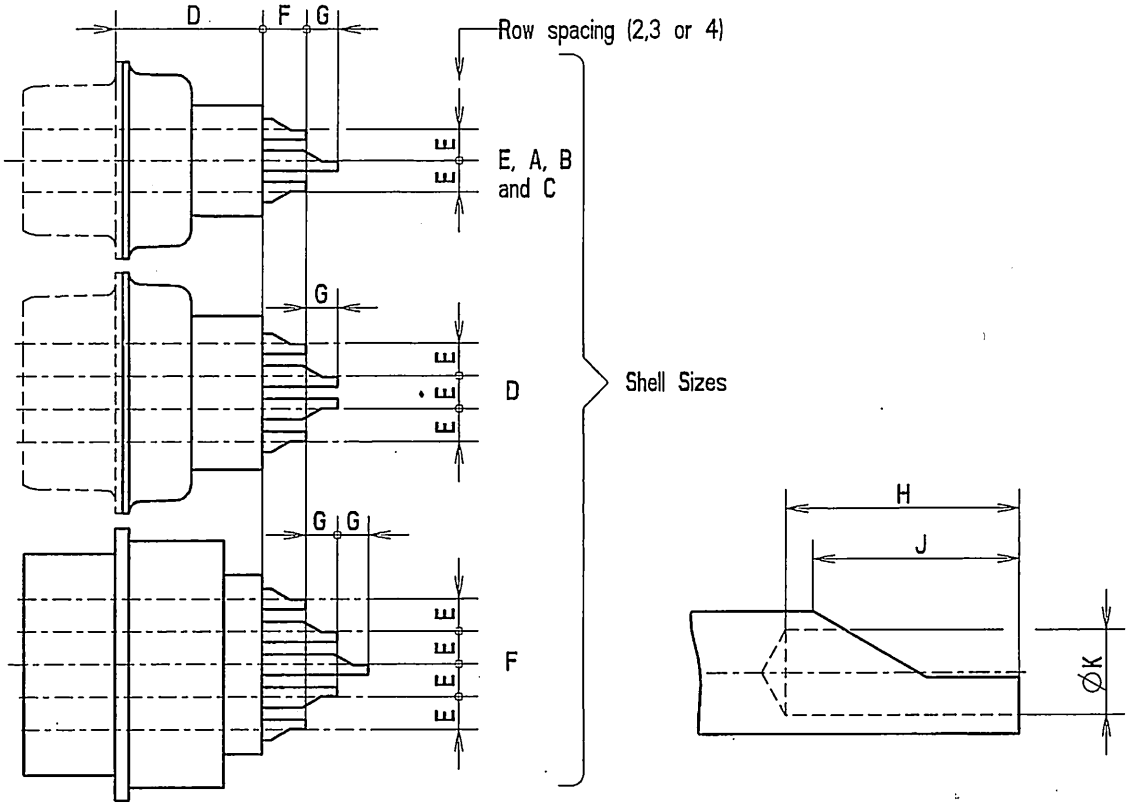
NOTES
1. All dimensions are in mm.
2. Typical = 2.08
3. Typical = 8.70

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FIGURE 2 – PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) – REAR END (CONTINUED)

Gauge 22 Solder Bucket Contacts (CODE -)



Pitch between contacts
Connector shell sizes E, A and B: 2.29
Connector shell sires C, D and F: 2.41

Symbol/ Dim.	D		E		F	G	H	J	ØK
	(2) (3)	(4)	Sizes E, A, B, C (5)	Sizes D, F (6)					
min.	-	-	1.91	2.01	2.5	1.9	2.4	1.4	0.87
max.	11.21	11.41	2.05	2.15	3.1	2.1	-	2.5	0.93

NOTES
1. All dimensions are in mm.
2. Connectors equipped with female contacts all sizes.
3. Connectors equipped with male contacts sizes E and A.
4. Connectors equipped with male contacts sizes B, C, D and F.
5. Typical = 1.98.
6. Typical = 2.08.

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