CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, NON-REMOVABLE CRIMP CONTACTS, 2-WAY AND 4-WAY FOR SENSORS

BASED ON TYPE SNAPLITE

ESCC Detail Specification No. 3401/100

Issue 1	November 2024

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

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DCR No.	CHANGE DESCRIPTION

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1 GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for Electrical, Rectangular, Microminiature 2-way and 4-way Sensor Connectors with Non-Removable Crimp-type Contacts and their associated insulated wires and uninsulated solid wires, based on type SnapLite.

It shall be read in conjunction with ESCC Generic Specification No. 3401 (Connectors, Electrical, Rectangular and Circular), the requirements of which are supplemented herein.

1.2 COMPONENT TYPE VARIANTS AND RANGE OF COMPONENTS

Variants of the basic type connectors specified herein and their different sizes, which are also covered by this specification, together with their mechanical characteristics, are scheduled in Table 1(a). The different sizes of associated insulated wires and uninsulated solid wires are given in Figures 2.7 and 2.6.

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 given in Table 1(b).

1.4 PARAMETER DERATING INFORMATION

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

1.5 PHYSICAL DIMENSIONS

The physical characteristics of the connectors, insulated wires and uninsulated solid wires specified herein are shown in Figure 2.

1.6 CONTACT ARRANGEMENTS

Contact arrangements are shown in Figure 3.

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, Connectors, Electrical, Circular and Rectangular.
(b) ESCC Detail Specification No. 3901/002, Polyimide Insulated Wires and Cables, Low Frequency, 600V, -100 to +200°C.
(c) ESCC Detail Specification No. 3901/012, Extruded, Cross-linked Fluoropolymer Insulated Wires and Cables on Silver-Plated Copper Conductor, Low Frequency, 600V, -100 to +200°C.
(d) ESCC Detail Specification No. 3901/013, PTFE Insulated Wires and Cables, 600V, -100 to +200°C.
(e) MIL-DTL-83513, Connectors Electrical, Rectangular, Microminiature, Polarised Shell, General Specification for.

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. In addition, the following terms are used:

- Jumper: Two connectors (two plugs, two receptacles or one plug and one receptacle) of the same number of ways (n), wired together with n wires (per one of three ESCC Detail Specifications, listed herein) of the same specified length.
- Potting: Epoxy compound used as an encapsulant.

TABLE 1(a) – COMPONENT TYPE VARIANTS AND RANGE OF COMPONENTS

Variant Number	Description	Contact Arrangement (Number of Contacts) (See Note 1)	Mating Force N Max	Unmating Force		Weight Max (g)
				N Max	N Min	
01	Pigtail	2	6	6	0.3	See Note 2
		4	12	12	0.6	
02	90° PCB Mounting	2	6	6	0.3	
		4	12	12	0.6	
03	Straight PCB Mounting	2	6	6	0.3	
		4	12	12	0.6	
04	Jumper, 2×Variant 01	2	6	6	0.3	See Note 3
		4	12	12	0.6	

NOTES:

1. Contact Arrangement is unique with respect to the connector interface and mating, see Figures 2.1, 2.2 and 2.3. Each Variant is available with 5 contact arrangement options (fully populated with 4 contacts, or a 2-contact arrangement), as shown in Figure 3.
2. The specified maximum weights of Variants 01 to 03, by contact type, are shown in the table below:

Variant Number	Contact Type	
	Male	Female
	Weight Max (g)	
01	0.6	0.9
02	0.8	1.1
03	0.7	1

The specified maximum weight only applies to the connector with contacts. It does not apply to cables. For Variant 01, see Figure 2.7 for the weight of cable (insulated wires). For Variants 02 and 03, see Figure 2.6 for the weight of cable (uninsulated solid wires for PCB).

3. The specified maximum weights of Variant 04, by jumper type, are shown in the table below:

Variant Number	Jumper Type		
	Male-Male	Female-Female	Male-Female
	Weight Max (g)		
04	1.2	1.8	1.5

The specified maximum weight only applies to the connector with contacts. It does not apply to cables. See Figure 2.7 for the weight of cable (insulated wires).

TABLE 1(b) - MAXIMUM RATINGS

No.	Characteristic	Symbol	Maximum Rating	Unit	Remarks
1	Working Voltage Sea Level	U_R	150	Vrms	Note 1
2	Rated Current: (AWG24)	I_R	3.5	A	-
3	Rated Current: (AWG26 and AWG25 uninsulated solid wire)	I_R	2.5	A	-
4	Rated Current: (AWG28)	I_R	1.5	A	-
5	Operating Temperature Range	T_{op}	-55 to +125	°C	-
6	Storage Temperature Range	T_{stg}	-55 to +125	°C	-

NOTES:
1. Between contacts.

FIGURE 1 - PARAMETER DERATING INFORMATION

FIGURE 1(a) - WORKING VOLTAGE VERSUS ALTITUDE

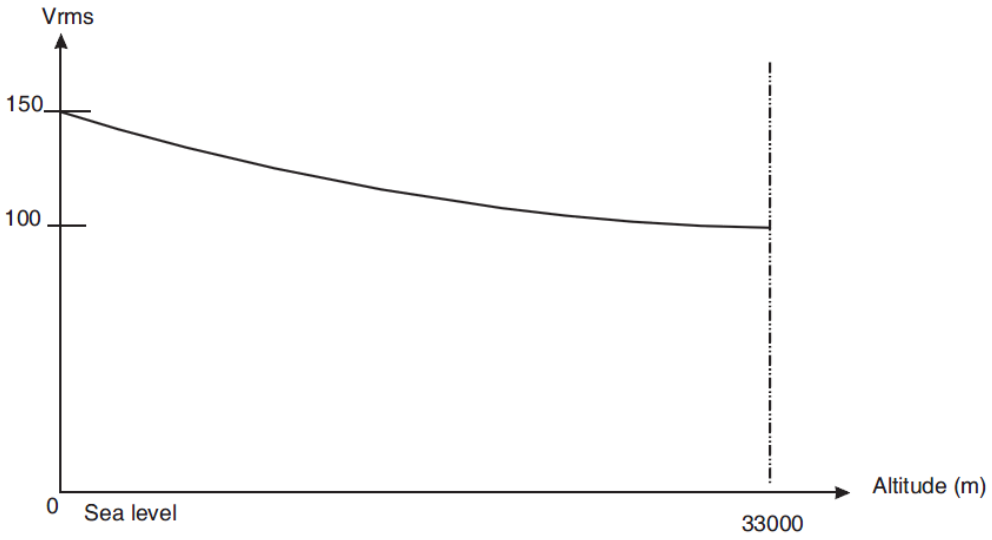
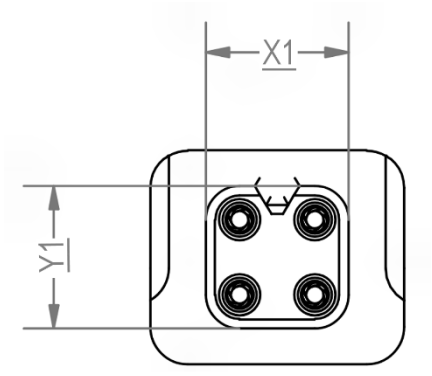


FIGURE 1(b) - MAXIMUM CURRENT PER CONTACT

MAXIMUM CURRENT PER CONTACT (A)		
WIRE SIZE		
AWG24	AWG26 AND AWG25 UNINSULATED SOLID WIRE	AWG 28
2.6	2	1.4

FIGURE 2 - PHYSICAL DIMENSIONS

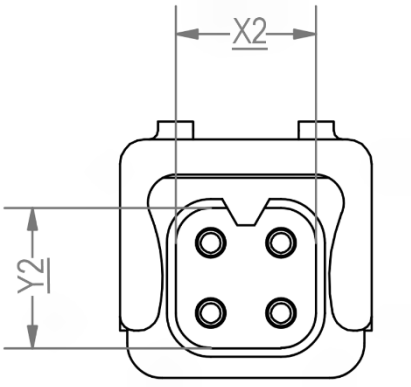
FIGURE 2.1A – INTERFACE DIMENSIONS – PLUG, MALE CONTACTS



Variants	X1 Max.	Y1 Max.
01 to 04	3.85	3.85

NOTES:
1. All dimensions are in mm.

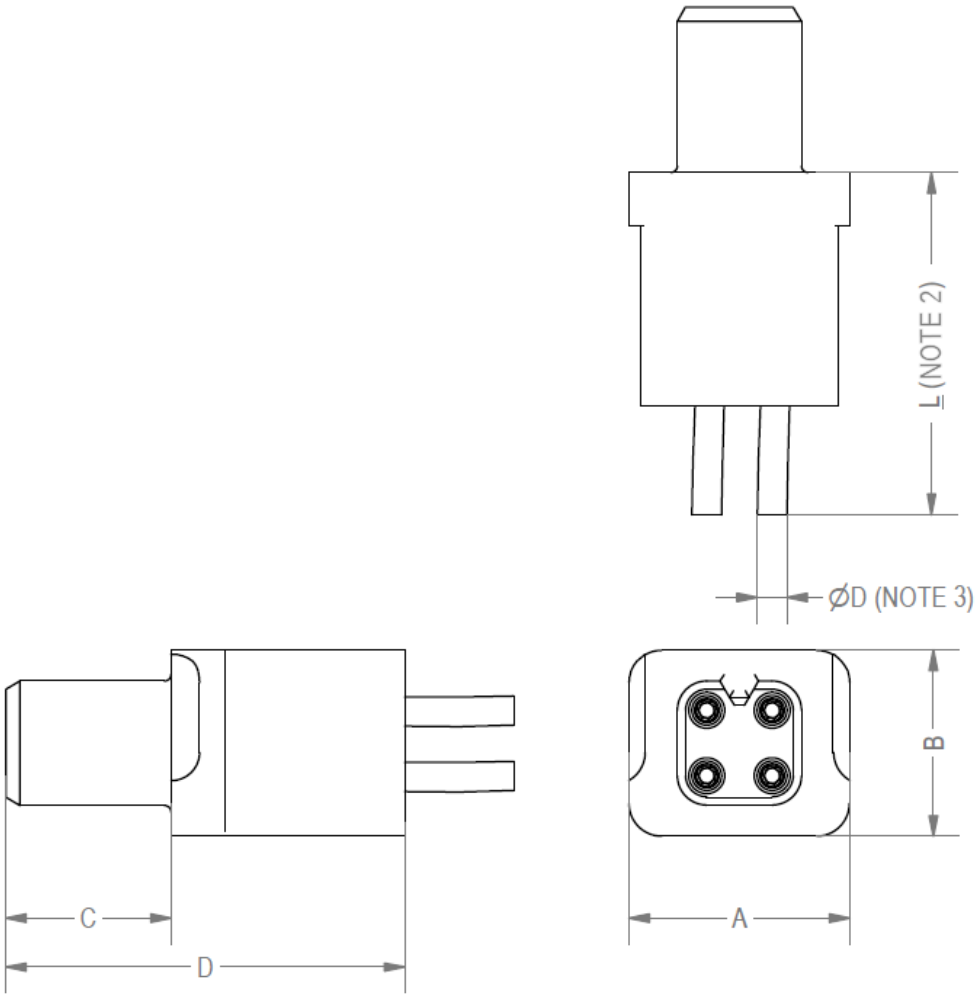
FIGURE 2.1B – INTERFACE DIMENSIONS – RECEPTACLE, FEMALE CONTACTS



Variants	X2 Min.	Y2 Min.
01 to 04	3.95	3.95

NOTES:
1. All dimensions are in mm.

FIGURE 2.2A – VARIANT 01 – PLUG, MALE CONTACTS, PIGTAIL

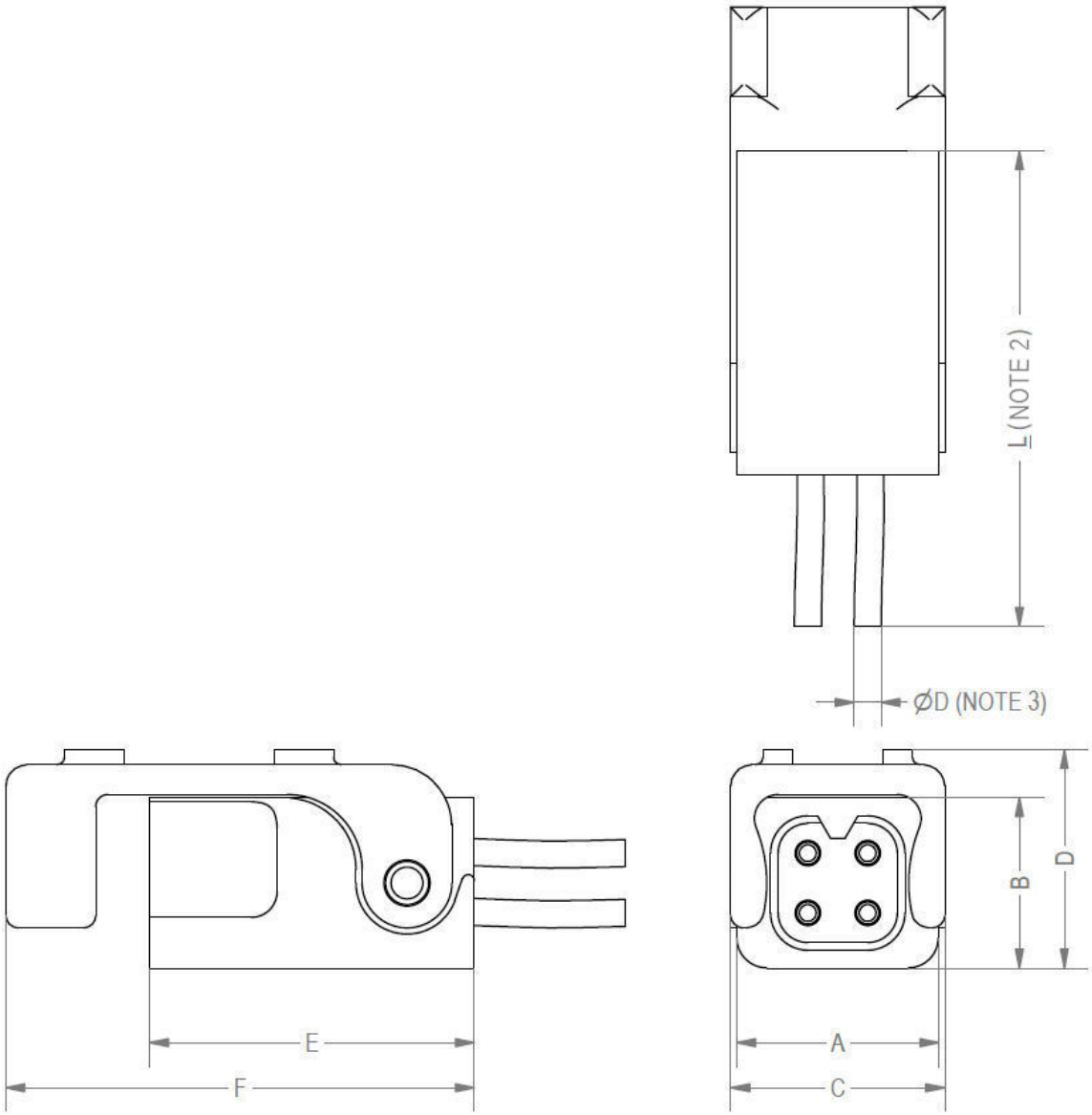


A Max.	B Max.	C Max.	D Max.
6.9	5.85	5.13	12.4

NOTES:

1. All dimensions are in mm.
2. The wire length, L, is specified in Figure 2.7 and Para. 4.5.2.1.3(a).
3. For ØD, refer to Figure 2.7 (Wire Characteristics, Maximum Diameter (mm)).

FIGURE 2.2B – VARIANT 01 – RECEPTACLE, FEMALE CONTACTS, PIGTAIL, CLASP

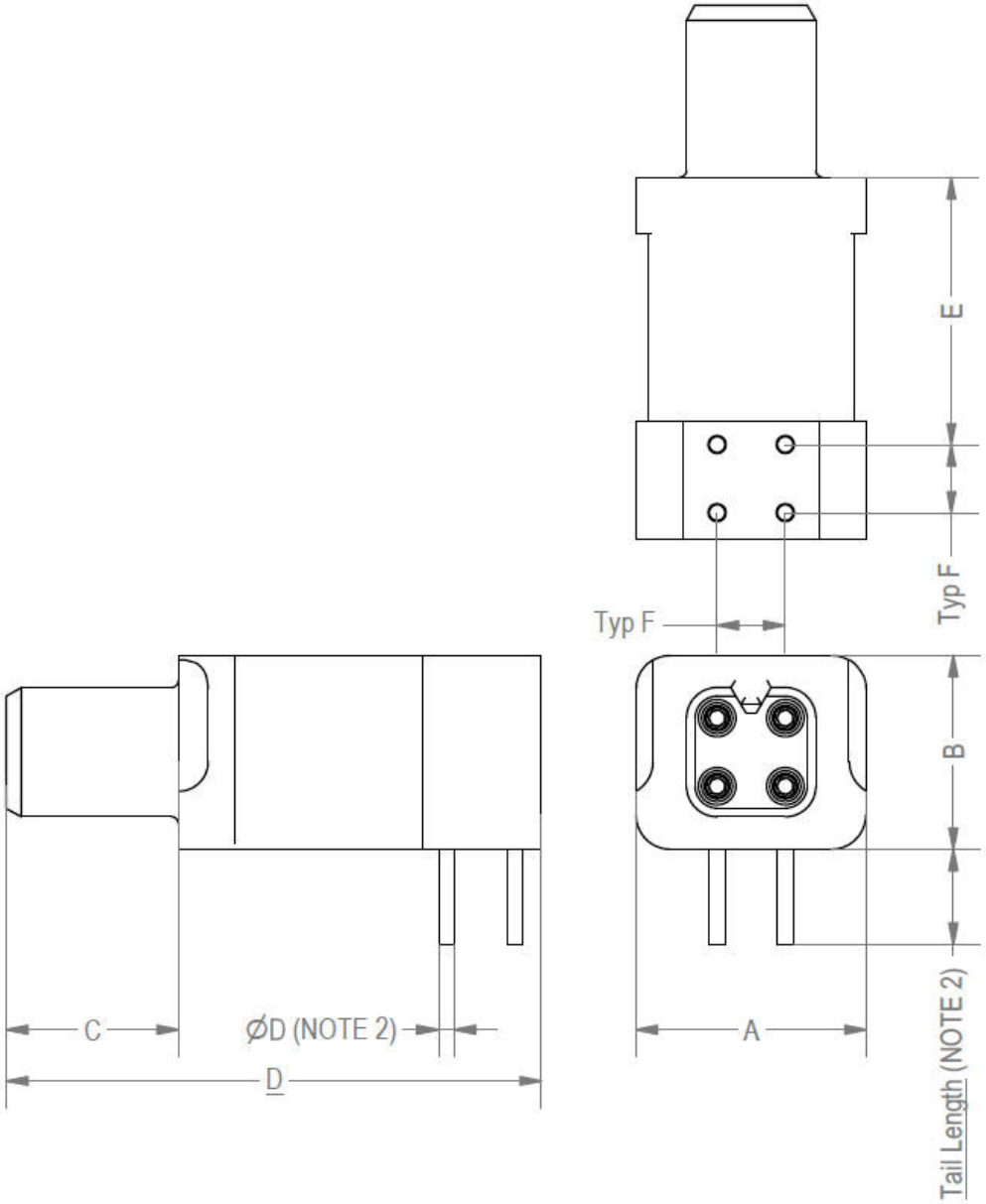


A Max.	B Max.	C Max.	D Max.	E Max.	F Max.
6.9	5.85	7.3	7.5	11.05	15.95

NOTES:

1. All dimensions are in mm.
2. The wire length, L, is specified in Figure 2.7 and Para. 4.5.2.1.3(a).
3. For ØD, refer to Figure 2.7 (Wire Characteristics, Maximum Diameter (mm)).

FIGURE 2.2C – VARIANT 02 – PLUG, MALE CONTACTS, 90° PCB MOUNTING

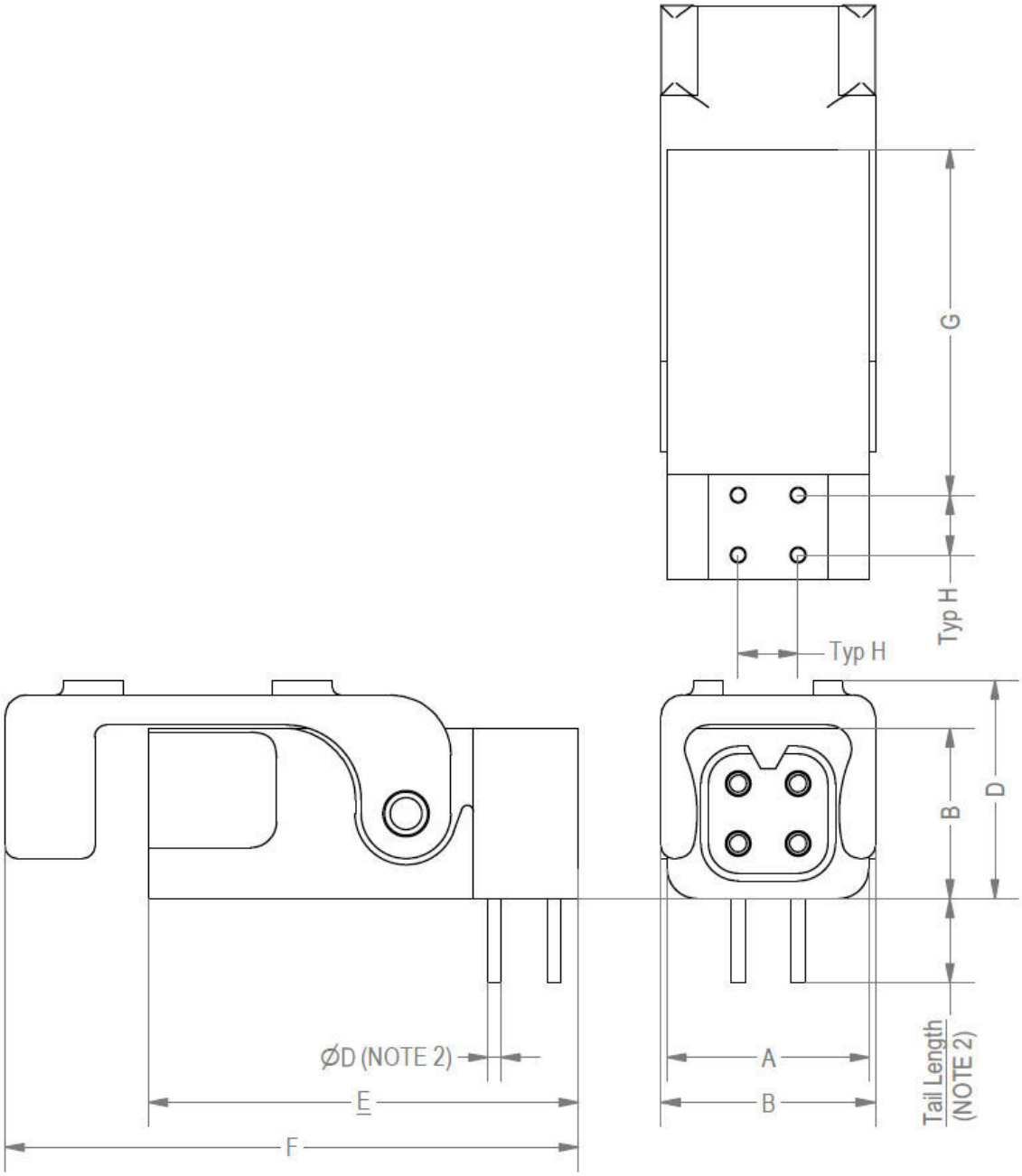


A Max.	B Max.	C Max.	D Max.	E		F Typ.
				Min.	Max.	
6.9	5.85	5.13	16	7.6	8.1	2

NOTES:

1. All dimensions are in mm.
2. The PCB tail dimensions are specified in Figure 2.6 and Para. 4.5.2.1.3(b).

FIGURE 2.2D – VARIANT 02 – RECEPTACLE, FEMALE CONTACTS, 90° PCB MOUNTING, CLASP

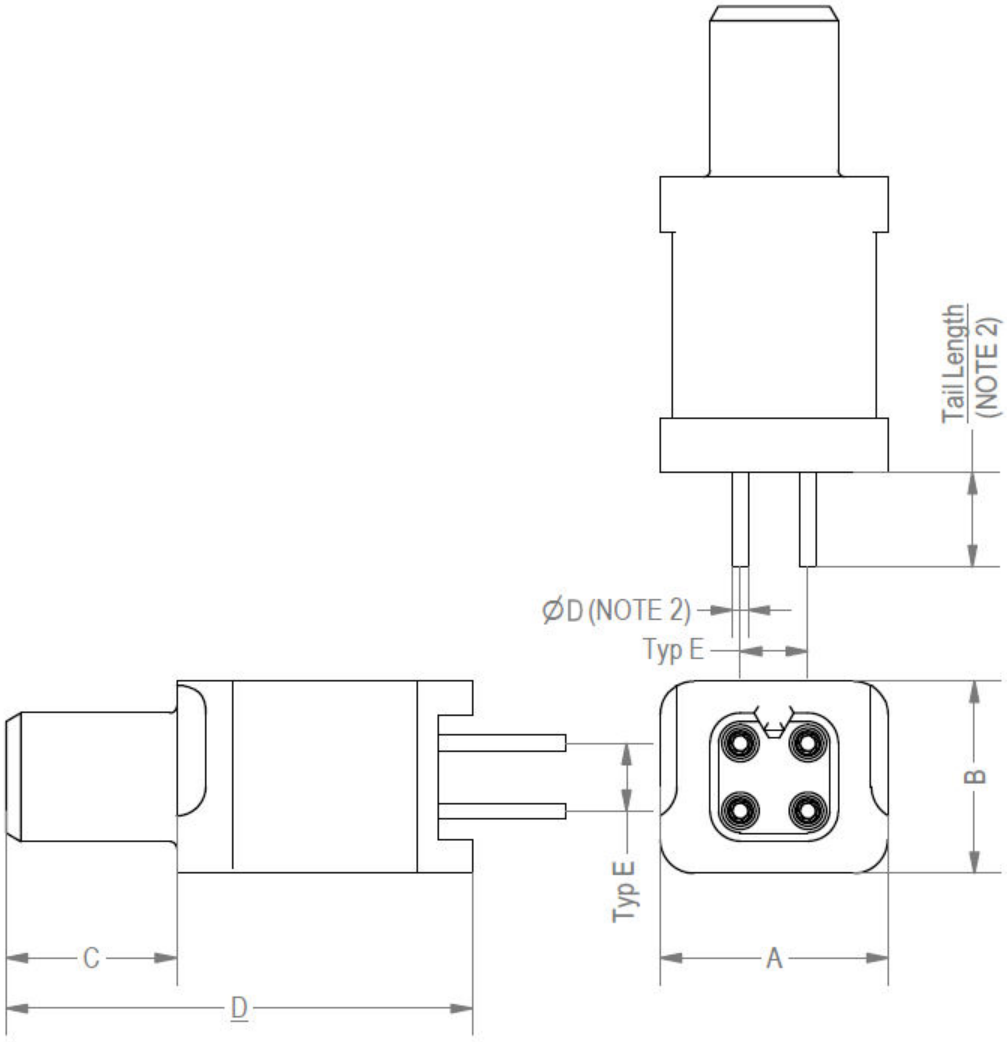


A Max.	B Max.	C Max.	D Max.	E Max.	F Max.	G		H Typ.
						Min.	Max.	
6.9	5.85	7.3	7.5	14.65	19.55	11.3	11.8	2

NOTES:

1. All dimensions are in mm.
2. The PCB tail dimensions are specified in Figure 2.6 and Para. 4.5.2.1.3(b).

FIGURE 2.2E – VARIANT 03 – PLUG, MALE CONTACTS, STRAIGHT PCB MOUNTING

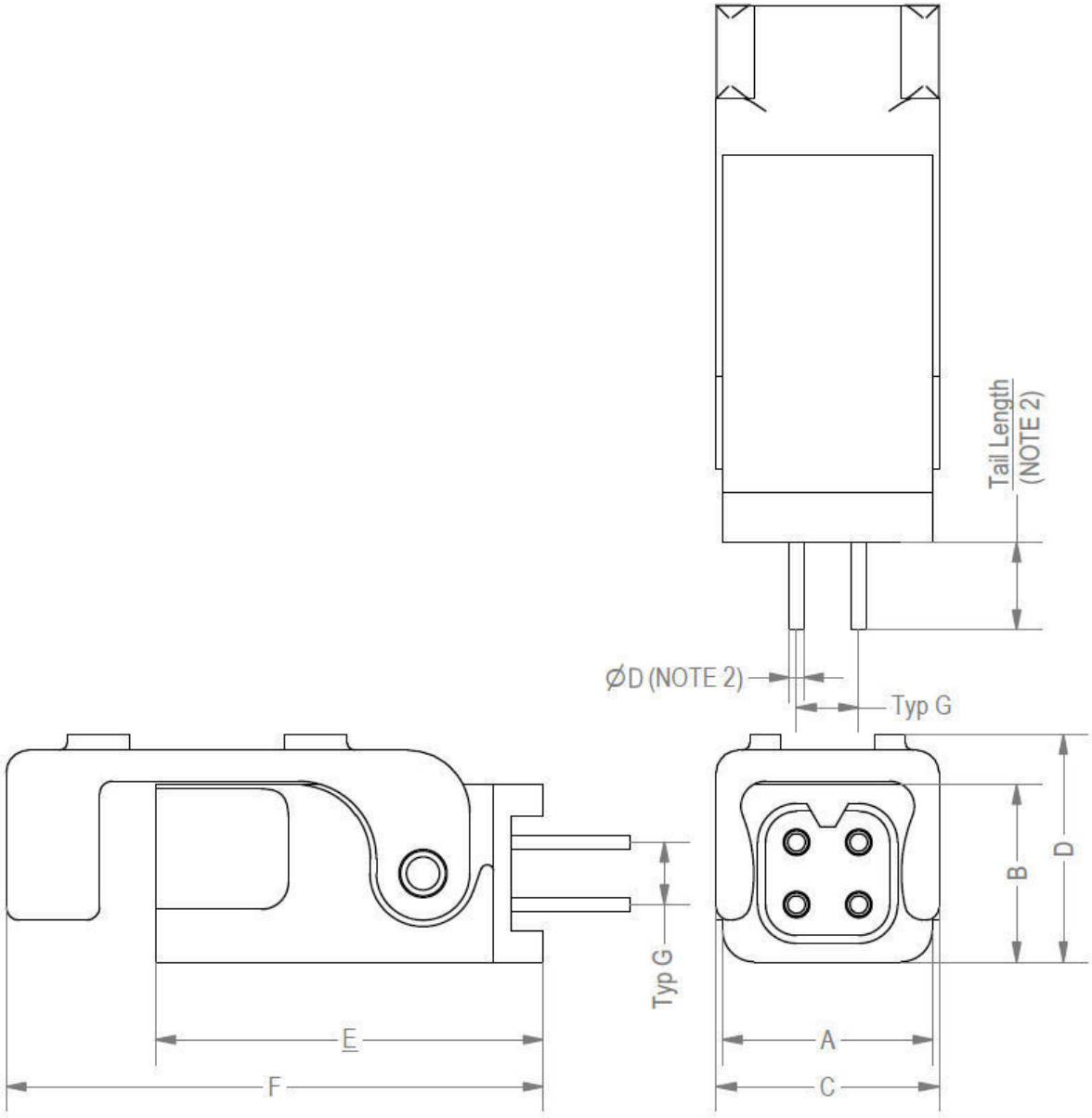


A Max.	B Max.	C Max.	D Max.	E Typ.
6.9	5.85	5.13	14	2

NOTES:

1. All dimensions are in mm.
2. The PCB tail dimensions are specified in Figure 2.6 and Para. 4.5.2.1.3(b).

FIGURE 2.2F – VARIANT 03 – RECEPTACLE, FEMALE CONTACTS, STRAIGHT PCB MOUNTING, CLASP

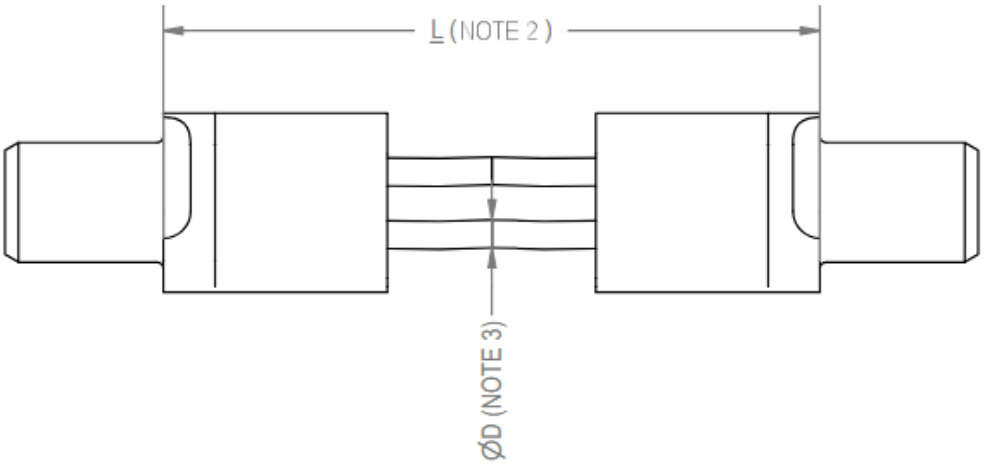


A Max.	B Max.	C Max.	D Max.	E Max.	F Max.	G Typ.
6.9	5.85	7.3	7.5	12.75	17.65	2

NOTES:

1. All dimensions are in mm.
2. The PCB tail dimensions are specified in Figure 2.6 and Para. 4.5.2.1.3(b).

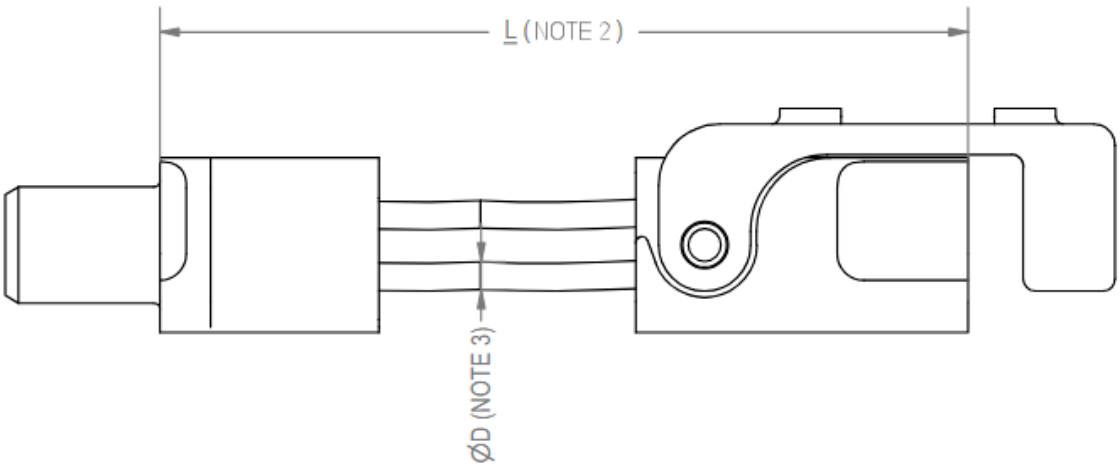
FIGURE 2.3A – VARIANT 04 – JUMPER (CONNECTOR VARIANTS 01 TO 01), PLUG, MALE CONTACTS TO PLUG, MALE CONTACTS (NOTE 1)



NOTES:

1. The contact arrangement, as specified in Figure 3, shall be the same on both sides of the jumper.
2. The wire length, L, is specified in Figure 2.7 and Para. 4.5.2.1.6.
3. For ØD, refer to Figure 2.7 (Wire Characteristics, Maximum Diameter (mm)).

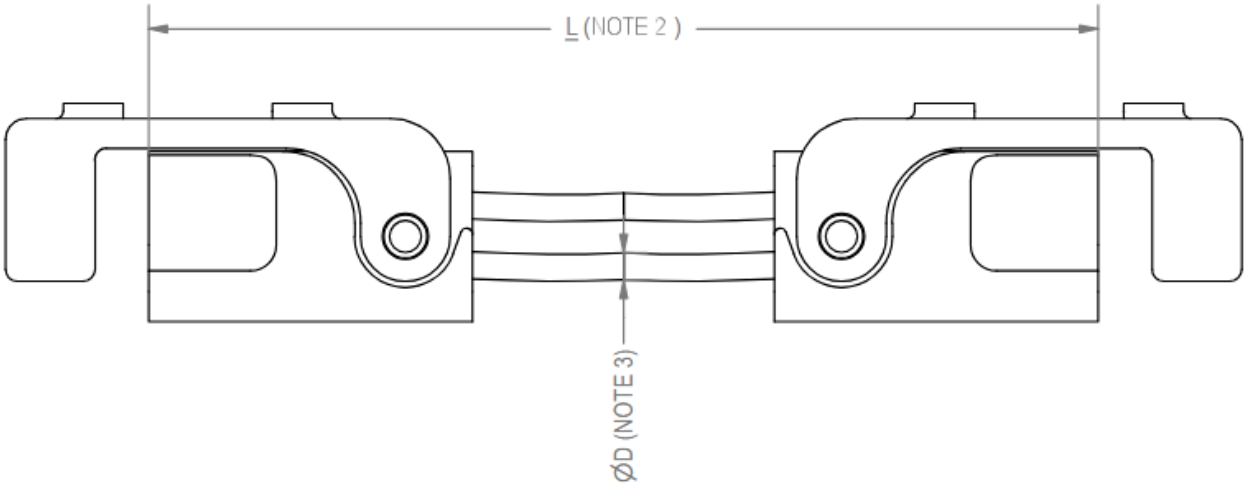
FIGURE 2.3B – VARIANT 04 – JUMPER (CONNECTOR VARIANTS 01 TO 01), PLUG, MALE CONTACTS TO RECEPTACLE, FEMALE CONTACTS, WITH CLASP (NOTE 1)



NOTES:

1. The contact arrangement, as specified in Figure 3, shall be the same on both sides of the jumper.
2. The wire length, L, is specified in Figure 2.7 and Para. 4.5.2.1.6.
3. For ØD, refer to Figure 2.7 (Wire Characteristics, Maximum Diameter (mm)).

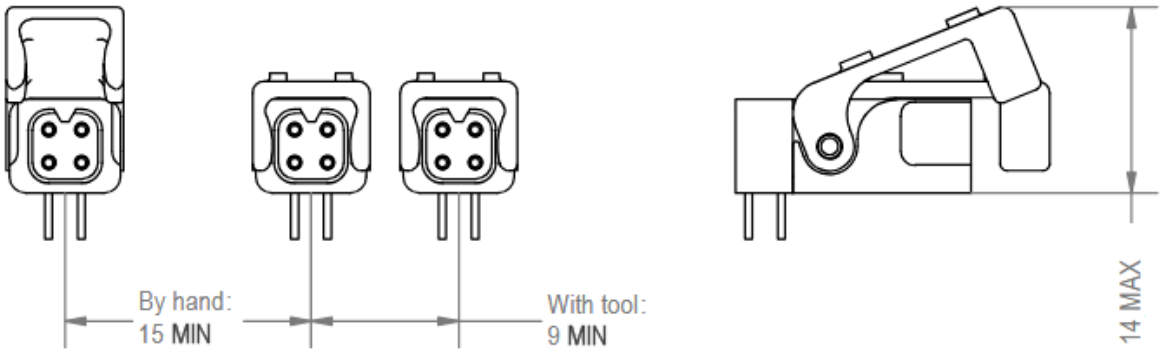
FIGURE 2.3C – VARIANT 04 – JUMPER (CONNECTOR VARIANTS 01 TO 01), RECEPTACLE, FEMALE CONTACTS, WITH CLASP TO RECEPTACLE, FEMALE CONTACTS, WITH CLASP (NOTE 1)



NOTES:

1. The contact arrangement, as specified in Figure 3, shall be the same on both sides of the jumper.
2. The wire length, L, is specified in Figure 2.7 and Para. 4.5.2.1.6.
3. For ØD, refer to Figure 2.7 (Wire Characteristics, Maximum Diameter (mm)).

FIGURE 2.4 – CONNECTOR SPACING AND CLASP OPENING FOOTPRINT



NOTES:

1. All dimensions are in mm.

FIGURE 2.5 - CONTACT POSITIONS

FIGURE 2.5.1 - MOUNTING CONDITION

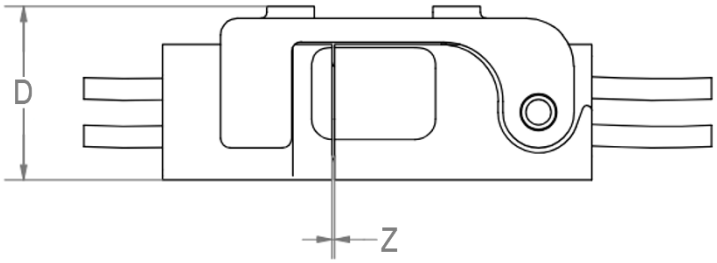


FIGURE 2.5.2 - PLUG MALE CONTACT

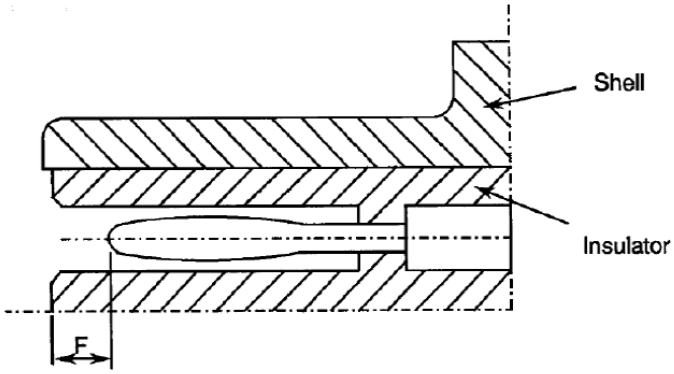
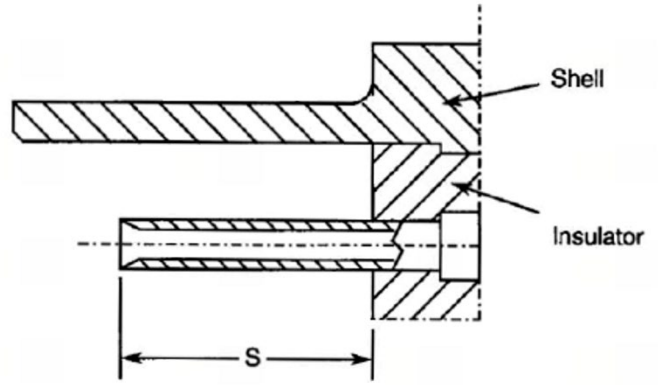


FIGURE 2.5.3 - RECEPTACLE FEMALE CONTACT

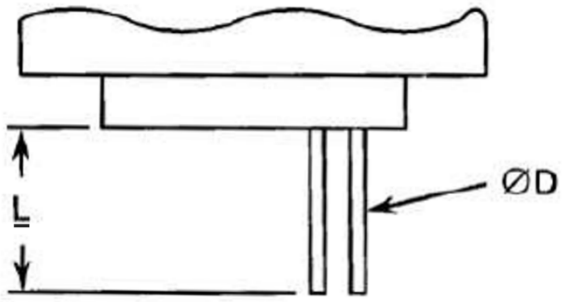


D Max.	F		S		Z Max.
	Min.	Max.	Min.	Max.	
7.5	0.13	0.91	2.96	3.43	0.5

NOTES:

1. All dimensions are in mm.

FIGURE 2.6 - UNINSULATED SOLID WIRES FOR PCB



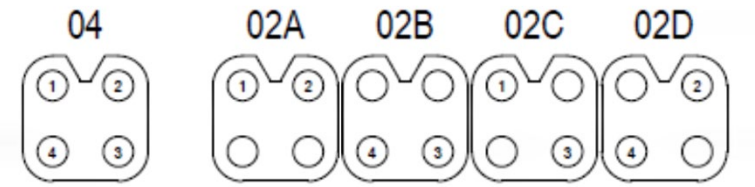
Wire Size (AWG)	25
Maximum Diameter ØD (mm)	0.51
Minimum Diameter ØD (mm)	0.4
Maximum Weight (g/m)	1.6
Minimum and Maximum PCB Tail Length L	See Para. 4.5.2.1.3(b)

FIGURE 2.7 - INSULATED WIRES

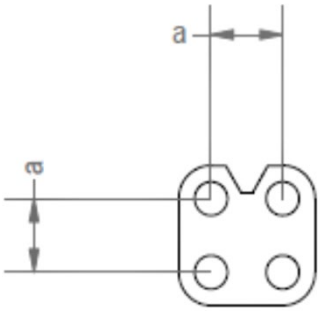
		Insulated Wire Detail Specifications and Variant Numbers								
		ESCC 3901/002			ESCC 3901/012			ESCC 3901/013		
		57	56	61	04	03	02	03	02	01
Wire Size (AWG)		24	26	28	24	26	28	24	26	28
Conductor Characteristics	Maximum Diameter (mm)	0.64	0.53	0.43	0.66	0.53	0.38	0.62	0.5	0.42
	Nominal Cross-section (mm^2)	0.21	0.15	0.1	0.25	0.15	0.08	0.22	0.14	0.089
Wire Characteristics	Maximum Diameter (mm)	0.88	0.78	0.68	0.99	0.86	0.7	1.04	0.89	0.82
	Maximum Weight (g/m)	2.64	1.93	1.23	2.97	2.11	1.35	3.34	2.3	1.8
	Minimum & Maximum Wire Length L (cm)	5 ≤ Wire Length ≤ 999 (See Paras. 4.5.2.1.3(a) and 4.5.2.1.6)								

FIGURE 3 - CONTACT ARRANGEMENTS

FRONT VIEW OF MALE INSERT - USE MIRROR VIEW FOR FEMALE INSERT



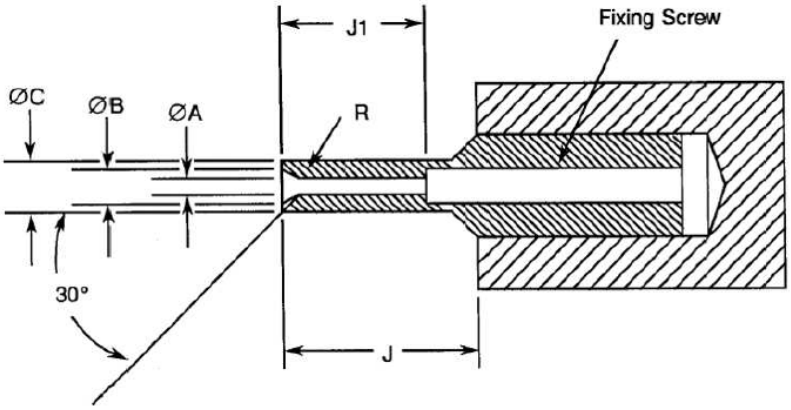
CONTACT CENTRES



NOTES:

1. a = Distance between contact centres: 2mm (typical).

FIGURE 4 - GAUGE FIXTURE



MINIMUM DIAMETER TEST SLEEVE

Weight (g) 170			Remarks
Symbol	Min.	Max.	
ØA	0.559	0.564	Note 2
ØB	0.749	0.775	-
ØC	0.813	0.825	-
J	4	-	-
J1	3.13	3.23	-
R	0.381	0.483	Note 3

MAXIMUM DIAMETER TEST SLEEVE

Weight (g) 14			Remarks
Symbol	Min.	Max.	
ØA	0.582	0.587	Note 2
ØB	0.749	0.775	-
ØC	0.813	0.825	-
J	4	-	-
J1	3.13	3.23	-
R	0.381	0.483	Note 3

NOTES:

1. All dimensions are in mm.
2. ØA and entry chamfer shall have a surface roughness of 3.2µm (roughness grade N8).
3. Radius R, must be tangent to entry chamfer and ØA.

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

Para. 9.15, Joint strength: the contacts shall be crimped to insulated stranded wire AWG24, AWG26 and AWG28, and to uninsulated solid wire AWG25. The value of failure shall be recorded together with the information as to whether the failure was 'pull-out', 'break in crimp' or 'break in wire'. The minimum tensile strength shall be as follows:

Wire	Male and Female Contacts		
	AWG24	AWG26 and AWG25 – Solid Uninsulated	AWG28
Tensile Strength (N)	38	22	13

4.2.2 Deviations from Final Production Tests (Chart II)

(a) Para. 9.4, Contact Capability: this test shall be performed on the male contacts. For details see Para. 4.3.3 of this specification.
(b) Para. 9.9, Seal Test: Not applicable.
(c) Para. 9.5, Magnetism Level: Not applicable.

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

None (Chart III is not applicable).

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.9, Seal Test: Not applicable.
(b) Para. 9.15, Joint Strength: Not applicable.
(c) Para. 9.17, Contact Retention (in insert): Not applicable with male contact.
(d) Para. 9.19, Permanence of Marking: Not applicable as the marking is engraved on the connectors.
(e) Para. 9.22, Corrosion: Not applicable.
(f) Para. 9.23, Insert Retention: Not applicable.
(g) Para. 9.24, Jackscrew Retention: Not applicable.
(h) Para. 9.27, Maintenance Aging: Shall not be performed as the contacts are non-removable.
(i) Para. 9.29, Oversize Pin Exclusion: Not applicable.
(j) Para. 9.30, Probe Damage: Not applicable.
(k) Para. 9.31, Solderability: Not applicable.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.9, Seal Test: Not applicable.
(b) Para. 9.15, Joint Strength: Not applicable.
(c) Para. 9.17, Contact Retention (in insert): Not applicable with male contact.
(d) Para. 9.19, Permanence of Marking: Not applicable as the marking is engraved on the connectors.
(e) Para. 9.22, Corrosion: Not applicable.
(f) Para. 9.27, Maintenance Aging: Shall not be performed as the contacts are non-removable.
(g) Para. 9.29, Oversize Pin Exclusion: Not applicable.
(h) 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 ESCC Generic Specification No. 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 shall be calculated on the basis of the values given 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:

Measurements	Pick-Up Weight	Drop Weight
Weight (g)	14	170
Inner Gauge Diameter (mm) (1)	0.582 - 0.587	0.559 - 0.564
Insertion Depth (mm)	1.5	1.5

NOTES:

1. See Figure 4 for ØA.

4.3.4 Contact Retention (in Insert)

Contact retention within the insert shall be 22.25N. There shall be no displacement of the contact. Not applicable to male contacts.

4.3.5 Mating and Unmating Forces

The forces applied for the mating and unmating of the connectors shall conform to the values specified in Table 1(a).

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 (Male Contacts)

The contact engagement and separation forces of the male contacts shall be tested to a depth of 1.5mm with the applicable test gauge fixtures specified in Figure 4, and shall not exceed the values of the table hereunder:

Measurements	Inner Diameter (mm)		Separation Force Min. (N)	Engagement Force Max. (N)
	Min.	Max.		
Minimum Diameter Test Sleeve	0.559	0.564	-	1.667
Maximum Diameter Test Sleeve	0.582	0.587	0.137	-

4.3.10 Oversize Pin Exclusion

Not applicable.

4.3.11 Probe Damage

Not applicable.

4.3.12 Solderability

Not applicable.

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 components specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

4.4.1 Shell

The shell shall be made of PEEK with 30% reinforced glass fibre.

4.4.2 Locking Clasp

The locking clasp shall be made of PEEK with 30% reinforced glass fibre.

4.4.3 Contacts

4.4.3.1 Female Contact

The contact body material and finish shall be either copper alloy with an underplate of 1µm minimum of copper, gold plated with 1.27µm minimum of gold, or Type N2 with underplating in accordance with Para 3.3 note 3(b) of ESCC Basic Specification No. 23500. Measurement of thickness shall be performed at a distance of 1.5mm from the engagement end.

4.4.3.2 Male Contact

The contact body and the bundle material and finish shall be either copper alloy with an underplate of 1µm minimum of copper, gold plated with 1.27µm minimum of gold, or Type M2 with underplating in accordance with Para 3.3 note 3(b) of ESCC Basic Specification No. 23500. Measurement of thickness shall be performed at a distance of 1.5mm from the engagement end.

4.4.4 Insulated Wire (for Pigtails and Jumpers)

Wire materials and finishes shall be in accordance with the requirements specified in ESCC Detail Specifications Nos. 3901/002, 3901/012 or 3901/013, as applicable.

4.4.5 Uninsulated Solid Wire (for Connectors with PCB Tails)

Uninsulated solid wire material and finish shall be either copper alloy, gold plated with 0.5µm minimum of gold, or Type A14 (except the thickness of the gold plating shall be 0.25µm minimum) in accordance with ESCC Basic Specification No. 23500.

4.5 MARKING

4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESCC Basic Specification No. 21700 and the following paragraphs.

Each component shall be marked in respect of:

(a) The ESCC qualified components symbol (for ESCC qualified components only).
(b) The ESCC Component Number.
(c) Traceability Information.

4.5.2 The ESCC Component Number

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

(a) For connector Variants 01 to 03:

Example: 340110001B04P01301L150

- Detail Specification Number: 3401100
- Type Variant (See Table 1(a)): 01 (as required)
- Testing Level: B
- Characteristic code: Contact Arrangement: 04 (as required)
- Characteristic code: Contact Type: P (as required)
- Characteristic code: Termination Type and Length: 01301L150 (as required)

(b) For jumper Variant 04:

Example: 340110004B04PSD01301L050

- Detail Specification Number: 3401100
- Type Variant (See Table 1(a)): 04
- Testing Level: B
- Characteristic code: Contact Arrangement: 04 (as required)
- Characteristic code: Contact Type: PS (as required)
- Characteristic code: Wiring Method: D
- Characteristic code: Wire Type and Length: 01301L050 (as required)

4.5.2.1 Characteristics Codes

Characteristics to be codified as part of the ESCC Component Number shall be as follows:

4.5.2.1.1 Contact Arrangement (Variants 01 to 04)

Contact arrangement (see Figure 3) shall be designated by the following codes:

04	02A	02B	02C	02D

4.5.2.1.2 Contact Type (Variants 01 to 03)
The contact type for the connector shall be indicated by the following code letters:

Code Letter	Contact Type
P	Male
S	Female

4.5.2.1.3 Termination Type and Length (Variants 01 to 03)
The termination type and length for the connector shall be indicated by the following codes:

(a) For Variant 01; Type: Pigtails (see Para. 4.4.4):

Code Number	Applicable Wire ESCC Detail Specification	Termination Wire Type (ESCC Component Number)
00257	ESCC 3901/002	390100257B
00256	ESCC 3901/002	390100256B
00261	ESCC 3901/002	390100261B
01204	ESCC 3901/012	390101204B
01203	ESCC 3901/012	390101203B
01202	ESCC 3901/012	390101202B
01303	ESCC 3901/013	390101303B
01302	ESCC 3901/013	390101302B
01301	ESCC 3901/013	390101301B

The wire length and tolerance shall be indicated by the following codes:

Code	Wire Length (cm)	Tolerance (cm)
L00X	5 ≤ Wire Length < 10	-0 / +0.5
L0XX	10 ≤ Wire Length < 100	-0 / +3
LXXX	100 ≤ Wire Length ≤ 999	-0 / +5

(b) For Variants 02 and 03; Type: PCB Tails (see Para. 4.4.5); the tail length shall be indicated by the following codes:

Code Letter	PCB Tail Length and Tolerance (mm)
A	2.8 ±0.38
B	3.8 ±0.38
C	4.8 ±0.38
D	6.35 ±0.38

4.5.2.1.4 Contact Type (Jumper Variant 04)

The contact type for jumpers shall be indicated by the following code letters:

Code Letter	Contact Type
PP	Male Contacts to Male Contacts
PS	Male Contacts to Female Contacts
SS	Female Contacts to Female Contacts

4.5.2.1.5 Wiring Method (Jumper Variant 04)

The wiring method for jumpers shall be indicated by the following code letter:

Code Letter	Wiring Method
D	Direct Wiring (Note 1)

NOTES:

1. Direct Wiring differs with regard to the jumper type as follows:
   - Jumper type Male-Female (PS): Straight, “flat”, wiring (no cross-overs).
   - Jumper types Male-Male (PP) and Female-Female (SS): The wiring has cross-overs.

4.5.2.1.6 Wire Type and Length (Jumper Variant 04)

The wire type and length for jumpers shall be indicated by the following code numbers (see Para. 4.4.4):

Code Number	Applicable Wire ESCC Detail Specification	Termination Wire Type (ESCC Component Number)
00257	ESCC 3901/002	390100257B
00256	ESCC 3901/002	390100256B
00261	ESCC 3901/002	390100261B
01204	ESCC 3901/012	390101204B
01203	ESCC 3901/012	390101203B
01202	ESCC 3901/012	390101202B
01303	ESCC 3901/013	390101303B
01302	ESCC 3901/013	390101302B
01301	ESCC 3901/013	390101301B

The wire length and tolerance for jumpers shall be indicated by the following codes:

Code	Wire Length (cm)	Tolerance (cm)
L00X	5 ≤ Wire Length < 10	-0 / +0.5
L0XX	10 ≤ Wire Length < 100	-0 / +3
LXXX	100 ≤ Wire Length ≤ 999	-0 / +5

4.5.3 Traceability Information
Traceability information shall be marked in accordance with the requirements of ESCC 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 ±3°C.

4.6.2 Electrical Measurements at High and Low Temperatures
Not applicable.

4.6.3 Circuits for Electrical Measurements
Not applicable.

4.7 BURN-IN AND ELECTRICAL MEASUREMENTS (TABLES 4 AND 5)
Not applicable.

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

No.	Characteristic	Symbol	ESCC 3401 Test Method	Test Condition	Limits		Unit
					Min	Max	
1	Insulation Resistance	R_i	Para. 9.1.1.1	Para. 9.1.1.1	5000	-	MΩ
2	Voltage Proof Leakage Current	I_L	Para. 9.1.1.2	600Vrms	-	2	mA
3	Contact Resistance (Low Level Current)	R_{cl} max.	Para. 9.1.1.3	Para. 9.1.1.3	-	6 (1)	mΩ
4	Contact Resistance (Rated Current)	R_{cr} max.	Para. 9.1.1.3	Table 1(b)	-	5 (1)	mΩ

NOTES:
1. For Variants 02 and 03, measurement of Contact Resistance shall include all parts of the contact including the body and the tail.

TABLES 3, 4 AND 5

Not applicable.

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESCC 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 shall be those specified in Table 6. Unless otherwise specified, these measurements shall be performed at T_{amb} = +22 ±3°C.

4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests
Not applicable.

4.8.3 Measurements and Inspections on Completion of Endurance Tests
The parameters to be measured and inspections to be performed on completion of endurance testing shall be those specified in Table 6. Unless otherwise specified, these measurements shall be performed at T_{amb} = +22 ±3°C.

4.8.4 Conditions for Operating Life Test (Part of Endurance Testing)
Not applicable.

4.8.5 Electrical Circuit for Operating Life Test
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 ESCC Generic Specification No. 3401. The temperature to be applied shall be the maximum storage temperature specified in Table 1(b) of this specification.

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

No.	ESCC Generic Spec. No. 3401		Measurements and Inspections		Symbol	Limits		Unit
	Environmental and Endurance Tests Note 1	Test Method and Conditions	Identification	Conditions		Min	Max	
01	Seal Test	Para. 9.9 & Paras. 4.2.4 & 4.2.5 of this spec.	Not applicable					
02	Wiring	Para. 9.10	Low Level Contact Resistance	Table 2 Item 3	R_{cl}	Table 2, Item 3		-
03	Vibration	Para. 9.11	Full Engagement Visual Examination	-	-	-		-
04	Shock or Bump	Para. 9.12	Full Engagement Visual Examination	-	-	-	-	-
05	Climatic Sequence	Para. 9.13	**Dry Heat** Insulation Resistance	At High Temperature Table 2, Item 1 (2)	R_i	10	-	MΩ
			Low Air Pressure Voltage Proof Leakage Current	Figure 1	I_L	ESCC 3401 Para. 9.13.5		mA
			Damp Heat Insulation Resistance	Immediately after test Table 2, Item 1	R_i	100	-	MΩ
			Final Measurements	After 1-24 hrs Recovery				
			External Visual Inspection	ESCC 3401 Para. 9.7	-	ESCC 3401 Para. 9.7		-
			Insulation Resistance Voltage Proof Leakage Current	Table 2, Item 1 Table 2, Item 2	R_i I_L	Table 2, Item 1 Table 2, Item 2		MΩ mA
06	Plating Thickness	Para. 9.14	Thickness	-	-	Para. 4.4.3 of this spec.		-
07	Joint Strength	Para. 9.15 & Paras. 4.2.4 & 4.2.5 of this spec.	Not applicable					
08	Rapid Change of Temperature	Para. 9.16	Visual Examination	-	-	-		-
			Insulation Resistance Voltage Proof Leakage Current	Table 2, Item 1 Table 2, Item 2	R_i I_L	Table 2, Item 1 Table 2, Item 2		MΩ mA
09	Contact Retention (in Insert)	Para. 9.17 & Para. 4.3.4 of this spec.	Contact Displacement	-	-	ESCC 3401 Para. 9.17		-

No.	ESCC Generic Spec. No. 3401		Measurements and Inspections		Symbol	Limits		Unit
	Environmental and Endurance Tests Note 1	Test Method and Conditions	Identification	Conditions		Min	Max	
10	Endurance	Para. 9.18	**Initial Measurements**					
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec.		N
			Low Level Contact Resistance	Table 2, Item 3	R_{cl}	Record Values		mΩ
					V_D	Not applicable		mV
			Final Measurements					
			Visual Examination	-	-	-	-	
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec		N
			Low Level Contact Resistance Drift	Table 2, Item 3	ΔR_{cl}	-	3	mΩ
			Rated Current Contact Resistance	Table 2, Item 4	R_{cr}	Table 2, Item 4		mΩ
			Insulation Resistance	Table 2 Item 1	R_i	Table 2, Item 1		MΩ
			Voltage Proof Leakage Current	Table 2 Item 2	I_L	Table 2, Item 2		mA
11	Permanence of Marking	Para. 9.19 & Paras. 4.2.4 & 4.2.5 of this spec.	Not applicable					
12	Mating/Unmating Forces	Para. 9.20	Force	-	F	Para. 4.3.5 of this spec		N
13	High Temperature Storage	Para. 9.21	**Initial Measurements**					
			Low Level Contact Resistance	Table 2, Item 3	R_{cl}	Record Values		mΩ
			Mated Shell Conductivity	Table 2, Item 3	V_D	Not applicable		mV
			Final Measurements					
			Visual Examination	-	-	-		
			Mating/Unmating Forces	-	F	Para. 4.3.5 of this spec		N
			Low Level Contact Resistance Drift	Table 2, Item 3	ΔR_{cl}	-	3	mΩ
			Rated Current Contact Resistance	Table 2, Item 4	R_{cr}	Table 2, Item 4		mΩ
			Insulation Resistance	Table 2 Item 1	R_i	Table 2, Item 1		MΩ
			Voltage Proof Leakage Current	Table 2 Item 2	I_L	Table 2, Item 2		mA
			Contact Retention (In insert)	Para. 4.3.4 of this spec.	-	ESCC 3401 Para. 9.17		-
14	Corrosion	Para. 9.22 & Paras. 4.2.4 & 4.2.5 of this spec.	Not applicable					

No.	ESCC Generic Spec. No. 3401		Measurements and Inspections		Symbol	Limits		Unit
	Environmental and Endurance Tests Note 1	Test Method and Conditions	Identification	Conditions		Min	Max	
15	Insert Retention (in Shell)	Para. 9.23 & Para. 4.3.6 of this spec.	Not applicable					
16	Jackscrew Retention	Para. 9.24 & Para. 4.3.7 of this spec.	Not applicable					
17	High Temperature Measurements	Para. 9.25	Insulation Resistance	Table 2 Item 1 (2)	R_i	10	-	MΩ
18	Overload Test	Para. 9.26	Internal Temperature	-	T	-	+100	°C
			Rated Current Contact Resistance	Table 2, Item 4	R_{cr}	Table 2, Item 4		mΩ
			Mated Shell Conductivity	Table 2 Item 3	V_D	Not applicable		mV
			Insulation Resistance	Table 2 Item 1	R_i	Table 2, Item 1		MΩ
			Voltage Proof Leakage Current	Table 2 Item 2	I_L	Table 2, Item 2		mA
19	Maintenance Aging	Para. 9.27 & Paras. 4.2.4 & 4.2.5 of this spec.	Not applicable					
20	Engage/Separation Forces	Para. 9.28 & Para. 4.3.9 of this spec.	Force	-	F	Para. 4.3.9 of this spec.		N
21	Oversize Pin Exclusion	Para. 9.29 & Para. 4.3.10 of this spec.	Not applicable					
22	Probe Damage	Para. 9.30 & Para. 4.3.11 of this spec.	Not applicable					
23	Solderability	Para. 9.31 & Para. 4.3.12 of this spec.	Not applicable					

NOTES:

1. The tests in this Table refer to either Chart IV or V and shall be used as applicable.
2. T_{amb} = +125°C.

APPENDIX 'A'

AGREED DEVIATIONS FOR AXON' CABLE (F)

Items Affected	Description of Deviations
Para. 4.3.1, Dimension Check	Although underlined, the dimensions given in Figures 2.1A and 2.1B shall only be checked during internal processing; they shall not be checked after connector manufacturing.