TABLE 1(a) - RANGE OF COMPONENTS

Variants		Shell Size	Weight Max g						Mating Force N Max	Unmating Force	
Shell Finish			FR112 to FR116 FR112A to FR115A FR123 FR123A and FR123B FR112B to FR115B (1)	FR136 (2)	FR136A (2)	FR139 (2)	GMR7580	GMR7590			
Nickel	Gold									N Max	N Min
01	02	9	2.2	7.4	7.4	4.6	3.6	3.5	20	20	1.3
01	02	15	3	7.8	N/A	5	4.3	4.3	33	33	2
01	02	21	3.8	8.5	N/A	5.4	5.1	5	47	47	2.9
01	02	25	4.3	10.2	N/A	6.5	5.4	5.6	55	55	3.5
01	02	31	5.1	12.2	N/A	7.7	6.2	6.5	69	69	4.3
01	02	37	5.9	14.4	N/A	9.2	7	7.3	82	82	5.1
01	02	51	7.2	16.5	N/A	10.5	8.1	9.2	113	113	7.1
01	02	69	N/A	N/A	N/A	N/A	14.2	17	153	153	9.6
01	02	100	N/A	N/A	N/A	N/A	20.9	25.5	222	222	13.9

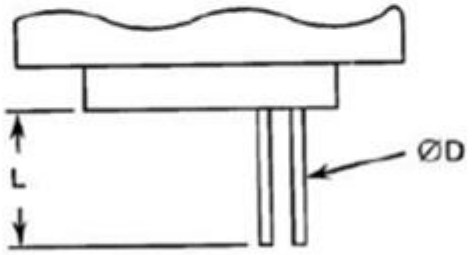
NOTES:
1. Connector contacts and rear potting, without cables, without floating eyelets and without captive nut. Add 0.4g for connectors with floating mounts and 1g for connectors with captive nuts. See Figures 2.4 and 2.5 for the weight of cable.
2. Connector with contacts and rear potting.

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: (AWG26 and uninsulated solid wire)	I_R	2.5	A	
3	Rated Current: (AWG28)	I_R	1.5	A	
4	Operating Temperature Range	T_{op}	-55 to +125	°C	
5	Storage Temperature Range	T_{stg}	-55 to +125	°C	

NOTES:
1. Between contacts, and contact and shell.

FIGURE 2.4 - UNINSULATED SOLID WIRES



Wire Size (AWG)	25
Max Diameter D (mm)	0.46
Min Diameter D (mm)	0.45
Min Gold Plating Thickness (µm)	0.5
Max Weight (g/m)	1.6
Min. Length L	See Para. 4.5.3.3

FIGURE 2.5 - INSULATED WIRES

		ESCC 3901/002		ESCC 3901/013		ESCC 3901/012	
		Wire Size (AWG)					
		26	28	26	28	26	28
Conductor Characteristics	Maximum Diameter (mm)	0.53	0.43	0.5	0.42	0.53	0.38
Wire Characteristics	Maximum Diameter (mm)	0.78	0.68	0.89	0.82	0.86	0.70

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. 3401/032, Accessories for Connectors, Microminiature, 3401/029, 3401/077 and Connector Savers 3401/041.
(c) ESCC Detail Specification No. 3401/087, Lightweight Accessories for Rectangular, Microminiature Connectors, 3401/029 and 3401/077.
(d) ESCC Detail Specification No. 3901/002, Polyimide Insulated Wires and Cables, Low Frequency, 600V, -100 to +200°C.
(e) ESCC Detail Specification No. 3901/012, Extruded Cross-linked Fluoropolymer Insulated Wires and Cables, Low Frequency, 600V, - 100 to +200 °C.
(f) ESCC Detail Specification No. 3901/013, PTFE Insulated Wires and Cables, 600V, -100 to +200°C.
(g) QQ-W-343, Wire, Electrical, Copper (Uninsulated).
(h) MIL-DTL-45204, Gold Plating, Electro-deposited.
(i) SAE-AMS 2418, Copper Plating.
(j) 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

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.

4.4 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 Shells

Shells shall be made of aluminium alloy. Variant 01 shall have a minimum plating thickness of 25.4µm of electroless nickel. The plating for Variant 02 shall be 0.7µm minimum of gold with 2.54µm minimum of electroless nickel underplating.

4.4.2 Inserts

Inserts shall be made of glass fibre-filled diallylphthalate resin or suitable thermoplastic material.

4.4.3 Contacts

4.4.3.1 Female Contacts

The contact body material and finish shall either be copper alloy with an underplate of 1µm minimum of copper to SAE-AMS 2418, gold plated with 1.27µm minimum of gold Type 2 Grade C of MIL-DTL-45204, 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 Contacts

The contact body and the bundle material and finish shall either be copper alloy with an underplate of 1µm minimum of copper to SAE-AMS 2418, gold plated with 1.27µm minimum of gold Type 2 Grade C of MIL-DTL-45204, 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 Interfacial Seals

Interfacial seals shall be made of silicon base rubber.

4.4.5 Insulated Wires

Wire materials and finishes shall be in accordance with the requirements specified in Para. 4.4 of ESCC Detail Specifications No. 3901/002, 3901/012 and 3901/013.

4.4.6 Uninsulated Solid Wire

Uninsulated solid wire material and finish shall either be copper alloy in accordance with Type S as specified in QQ-W-343, gold-plated in accordance with Class ØØ Grade C or D as specified in MIL-DTL-45204, or Type A14 (except the thickness of the gold-plating shall be 0.25µm minimum) in accordance with ESCC Basic Specification No. 23500.

4.4.7 Rear Potting

Rear potting shall be made of epoxy resin. For connectors Type FR136, Type FR136A and Type FR139, the rear container shall be made from glass-fibre filled diallylphthalate resin or suitable thermoplastic material.

4.5.3.3 Termination Type

Codes defining the termination type and details according to Figures 2.1, 2.2, 2.4 and 2.5 as follows:

Code	Type	Min. Length (mm)
FR112	AWG26 Wire 390101302B	508
FR112A	AWG26 Wire 390100256B	508
FR112B	AWG26 Wire 390101203B	508
FR113	AWG26 Wire 390101302B	914
FR113A	AWG26 Wire 390100256B	914
FR113B	AWG26 Wire 390101203B	914
FR123	AWG26 Wire 390101302B	4000
FR123A	AWG26 Wire 390100256B	4000
FR123B	AWG26 Wire 390101203B	4000
FR114	AWG28 Wire 390101301B	508
FR114A	AWG28 Wire 390100261B	508
FR114B	AWG28 Wire 390101202B	508
FR115	AWG28 Wire 390101301B	914
FR115A	AWG28 Wire 390100261B	914
FR115B	AWG28 Wire 390101202B	914
FR116	Uninsulated Wire	25.4
FR136 FR136A	90° Mounting on PCB, 2.54mm PCB termination pitch	-
FR139	Straight Mounting on PCB, 2.54mm PCB termination pitch	-
GMR7590	Uninsulated wire formed for 90° Mounting on PCB, 1.91 mm PCB termination pitch	-
GMR7580	Uninsulated wire formed for Straight Mounting on PCB, 1.91 mm PCB termination pitch	-

4.5.3.4 Mounting

The letter E indicates a captive nut.

The letter F shall indicate a floating mount.

If the shell has fixed mounting holes, these letters shall be omitted.

4.5.4 Traceability Information

Traceability information shall be marked in accordance with the requirements of ESCC Basic Specification No. 21700.