european space agency
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Pages 1 to 29

CONNECTORS, ELECTRICAL, RECTANGULAR

MULTIPLE INSERT TYPE, RACK AND PANEL,

REMOVABLE CRIMP CONTACTS,

BASED ON MIL-C-83527

ESA/SCC Detail Specification No. 3401/060

space components
coordination group

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 1	September 1994		
Revision 'A'	May 1995		

DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
'A'	May '95	P1.	Cover page	None
		P2.	DCN	None
		P27-29.	Table 6 : Editorial corrections	23725

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TABLES

FIGURES

APPENDICES (Applicable to specific Manufacturers only)
None.

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for Connectors, Electrical, Rectangular, Multiple Insert Type, Rack and Panel Removable Contacts, based on MIL-C-83527.

It shall be read in conjunction with:

- ESA/SCC Generic Specification No. 3401, Connectors, Electrical, Non-Filtered, Circular and Rectangular.
- ESA/SCC Detail Specification No. 3401/061, Contacts, Electrical, Crimp for 3401/060 Connectors.

the requirements of which are supplemented herein.

1.2 RANGE OF COMPONENTS

The different sizes of connectors 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) ESA/SCC Generic Specification No. 3401, Connectors, Electrical, Non-Filtered, Circular and Rectangular.

(b) ESA/SCC Detail Specification No. 3401/061, Contacts, Electrical, Crimp for 3401/060 Connectors.

(c) MIL-STD-1842, Insert Arrangements for MIL-C-83527 Rack to Panel Connectors.

TABLE 1(a) - RANGE OF COMPONENTS

SHELL SIZE (2)	SHELL STYLE	MAX. WEIGHT g (1)	MATING AND UNMATING FORCE		
			INITIAL		AFTER HIGH TEMPERATURE STORAGE
			N. min	N. max	N. max
2	Receptacle	250	-	-	-
3	Receptacle	450	-	-	-
4	Receptacle	650	-	-	-
2	Plug	220	-	500	800
3	Plug	400	-	1000	1300
4	Plug	550	-	1500	1800

NOTES

1. Without contacts. See ESA/SCC Detail Specification No. 3401/061 for contact weights.
2. See Figure 2.

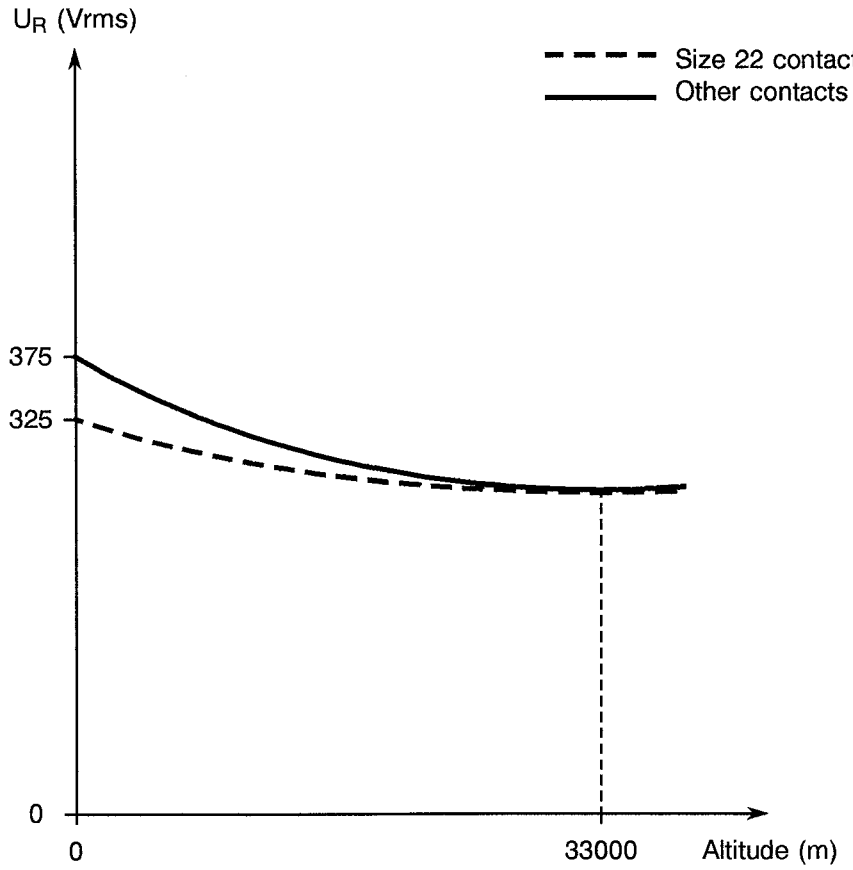
TABLE 1(b) - MAXIMUM RATINGS

No.	CHARACTERISTICS	SYMBOL	MAXIMUM RATING		UNIT
			MIN.	MAX.	
1	Working Voltage (Sea Level) - Size 22 - Other contacts	U_R	 - -	 325 375	 Vrms Vrms
2	Operating Temperature Range	T_{op}	−65	+200 (1)	°C
3	Storage Temperature Range	T_{stg}	−65	+200	°C

NOTES

1. When all contacts are at 100% of rated current in a connector, the current shall be derated from 100% at +125°C to 0 at +200°C (see ESA/SCC Detail Specification No. 3401/061 for rated contact current).

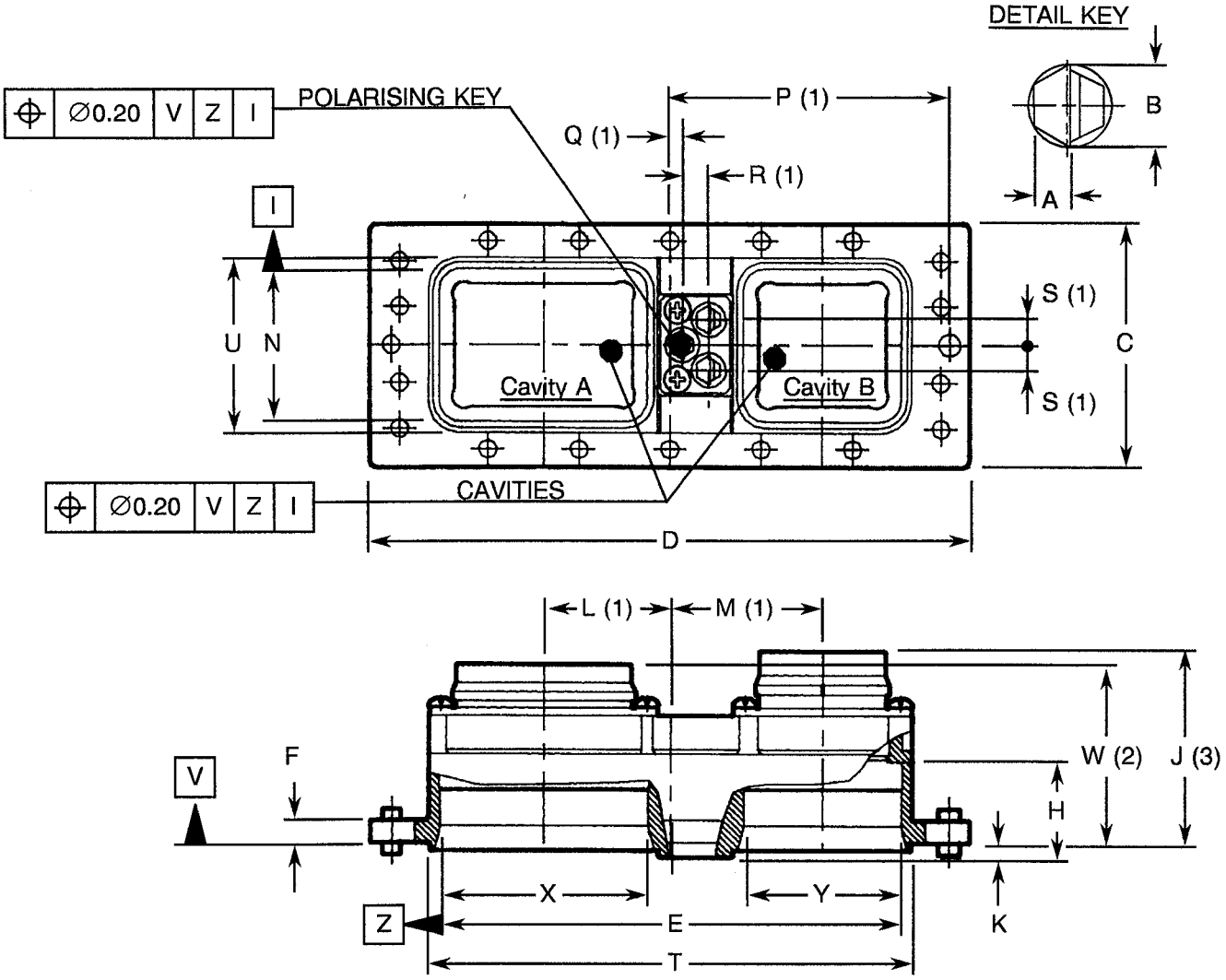
FIGURE 1 - PARAMETER DERATING INFORMATION



Working Voltage versus Altitude

FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - RECEPTACLES AND PLUGS
RECEPTACLE SIZE 2 - FRONT VIEW



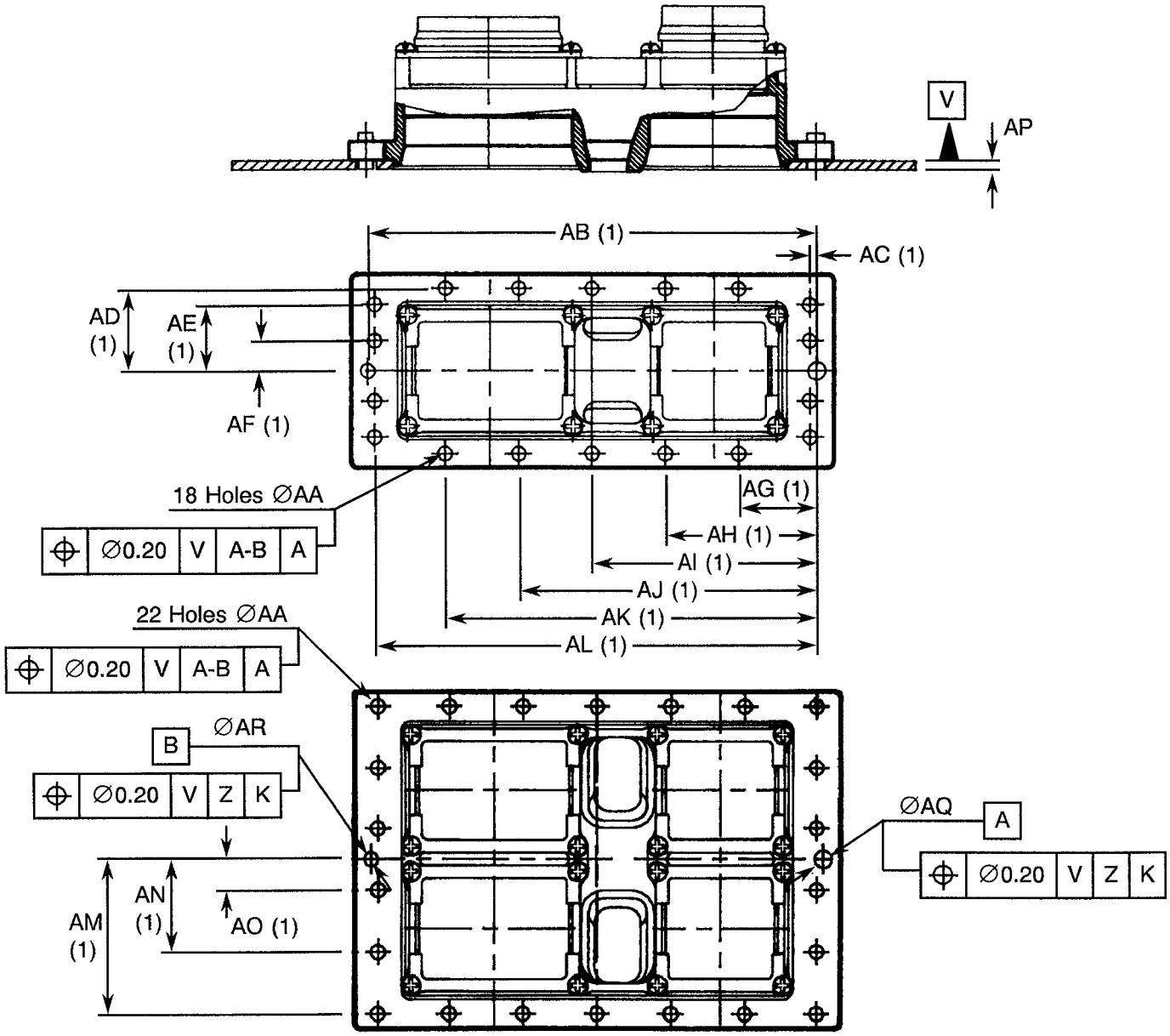
NOTES
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	H	J	K	L Ref.	M Ref.
Max.	3.12	6.32	53.09	131.32	100.86	5.08	20.75	46.48	3.43	27.69	33.27
Min.	2.60	5.75	52.58	130.81	100.71	4.57	20.55	-	2.92		

Symbol/ Dim.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	33.05	60.96	2.67	5.84	5.46	105.99	38.00	38.86	45.54	34.37
Min.	32.94					-	-	-	45.44	34.26

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
RECEPTACLE SIZES 2 AND 3 - REAR VIEW



NOTES

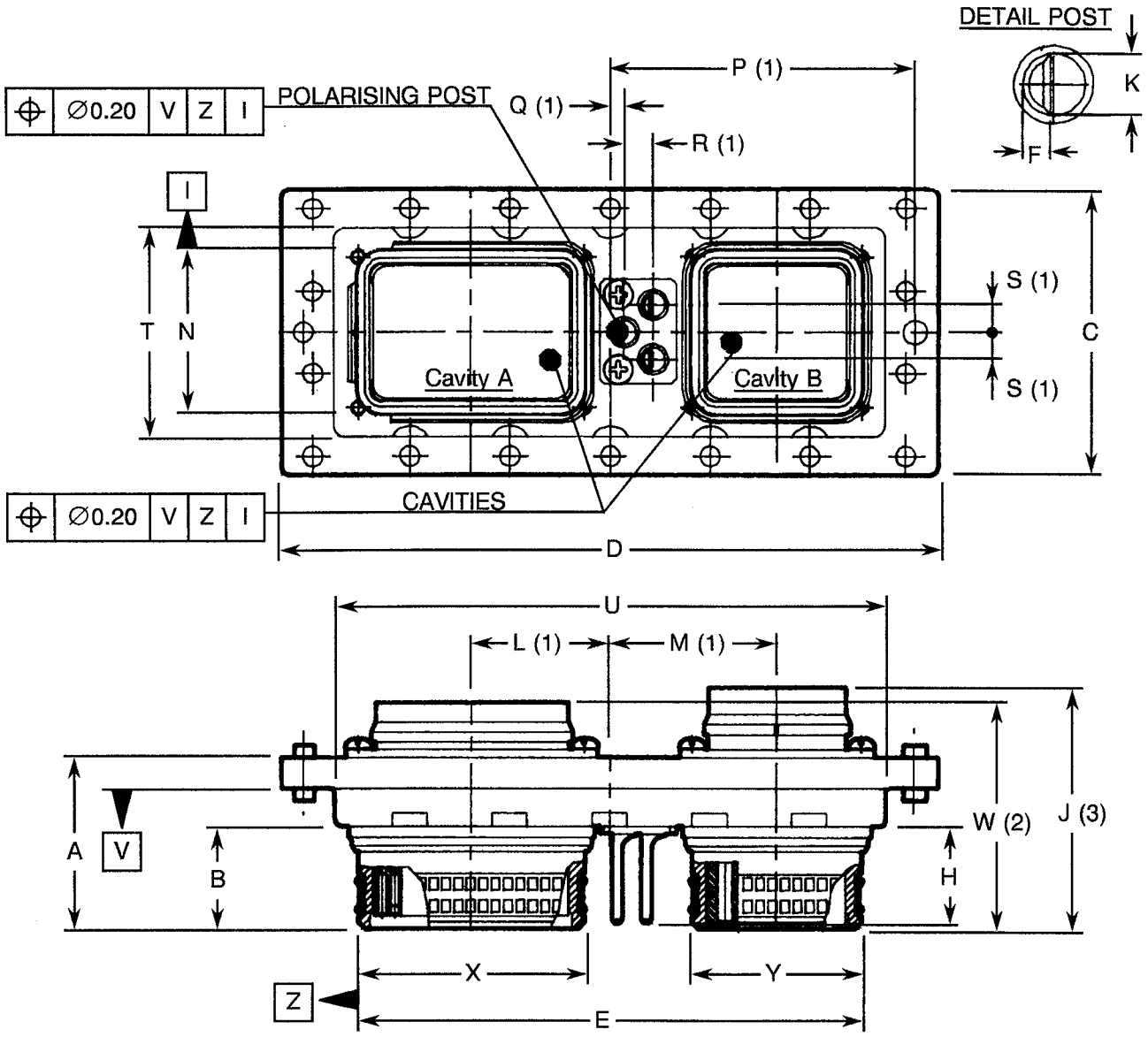
1. This dimension is for reference purpose only.

Symbol/ Dim.	ØAA	AB Ref.	AC Ref.	AD Ref.	AE Ref.	AF Ref.	AG Ref.	AH Ref.	AI Ref.	AJ Ref.	AK Ref.
Max.	3.96	121.92	1.83	22.53	18.11	8.26	21.08	41.02	60.96	80.90	100.84
Min.	3.71										

Symbol/ Dim.	AL Ref.	AM Ref.	AN Ref.	AO Ref.	AP	ØAQ	ØAR
Max.	120.09	41.28	24.76	8.26	2.50	4.78	3.99
Min.					-	4.67	3.88

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
PLUG SIZE 2 - FRONT VIEW



NOTES

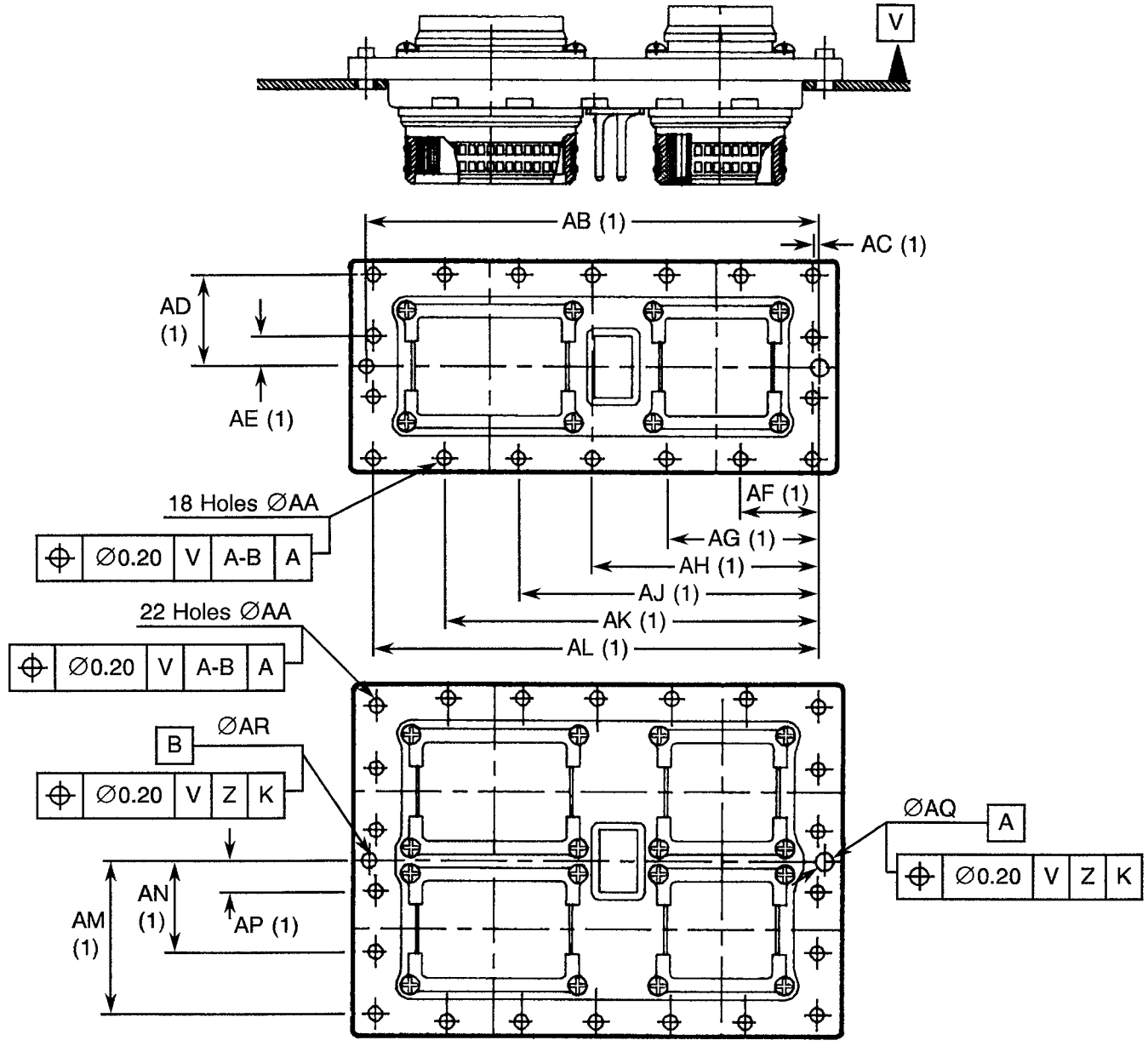
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	H	J	K	L Ref.	M Ref.
Max.	34.01	20.29	57.30	131.32	100.66	2.15	19.30	40.39	4.81	27.69	33.27
Min.	33.50	20.09	56.79	130.81	100.51	2.03	18.80	-	4.84		

Symbol/ Dim.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	32.79	60.96	2.67	5.84	5.46	42.14	110.13	35.50	45.24	34.06
Min.	32.69					41.86	109.80	-	45.14	33.96

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
PLUG SIZES 2 AND 3 - REAR VIEW



NOTES

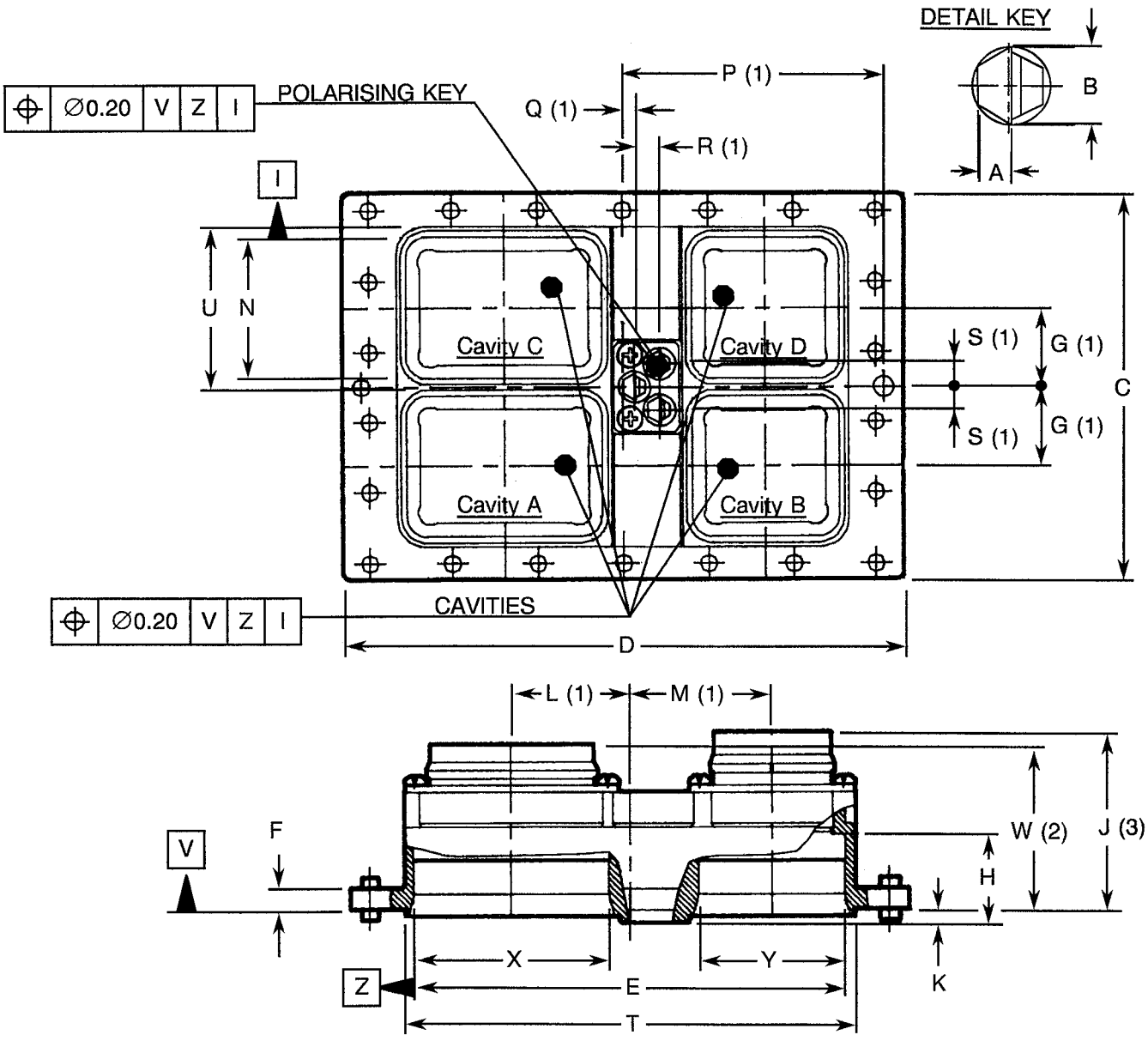
1. This dimension is for reference purpose only.

Symbol/ Dim.	ØAA	AB Ref.	AC Ref.	AD Ref.	AE Ref.	AF Ref.	AG Ref.	AH Ref.	AJ Ref.	AK Ref.	AL Ref.
Max.	3.96	121.92	1.83	24.76	8.26	21.08	41.02	60.96	80.90	100.84	120.09
Min.	3.71										

Symbol/ Dim.	AM Ref.	AN Ref.	AP Ref.	ØAQ	ØAR
Max.	41.28	24.76	8.26	4.78	3.99
Min.				4.67	3.88

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
RECEPTACLE SIZE 3 - FRONT VIEW



NOTES

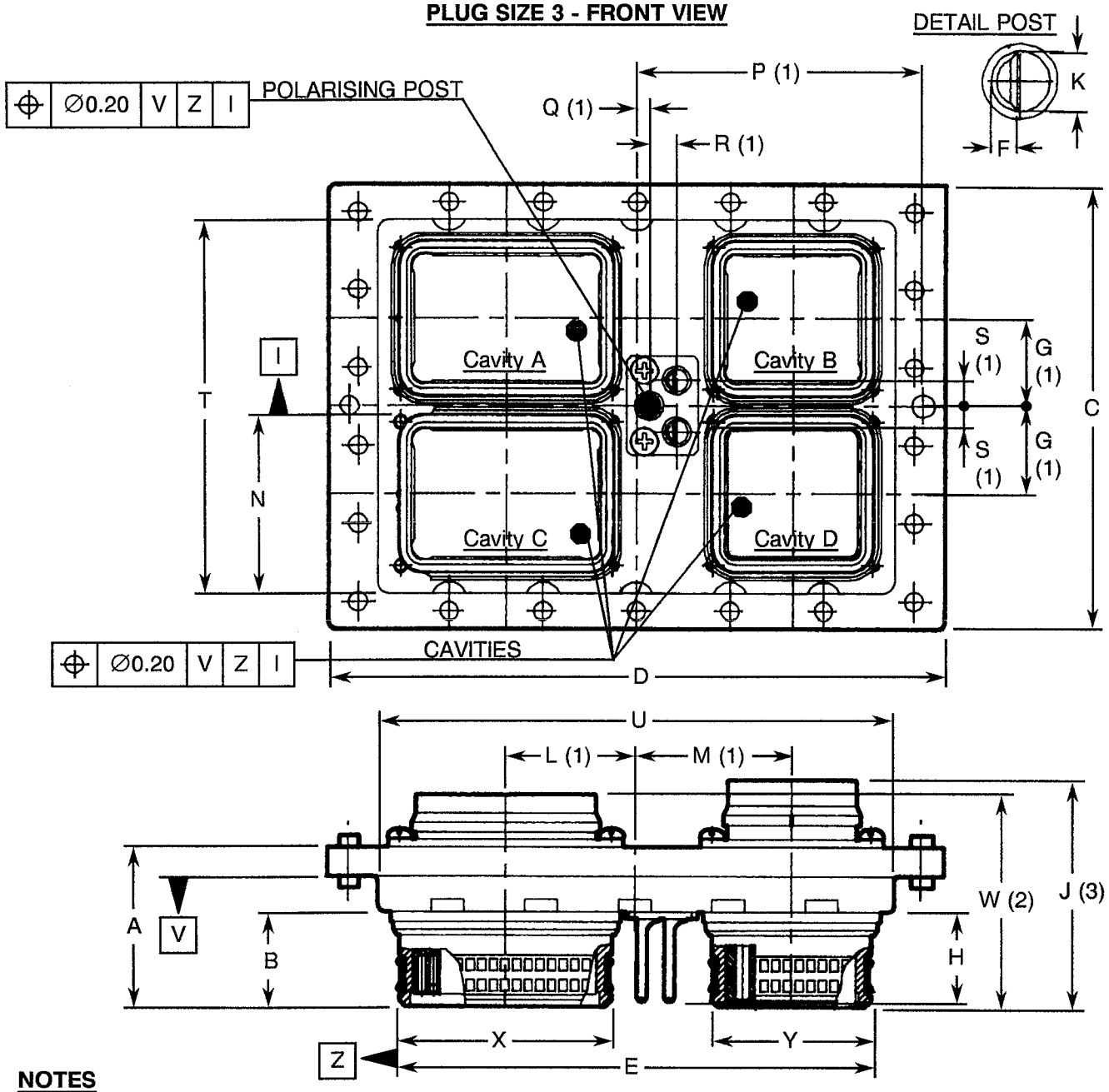
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	G Ref.	H	J	K	L Ref.
Max.	3.12	6.32	94.39	131.32	100.86	5.08	18.54	20.75	46.48	3.43	27.69
Min.	2.60	5.75	93.88	130.81	100.71	4.57		20.55	-	2.92	

Symbol/ Dim.	M Ref.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	33.27	33.05	60.96	2.67	5.84	5.46	105.99	38.00	38.86	45.54	34.37
Min.		32.94					-	-	-	45.44	34.26

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
PLUG SIZE 3 - FRONT VIEW



NOTES

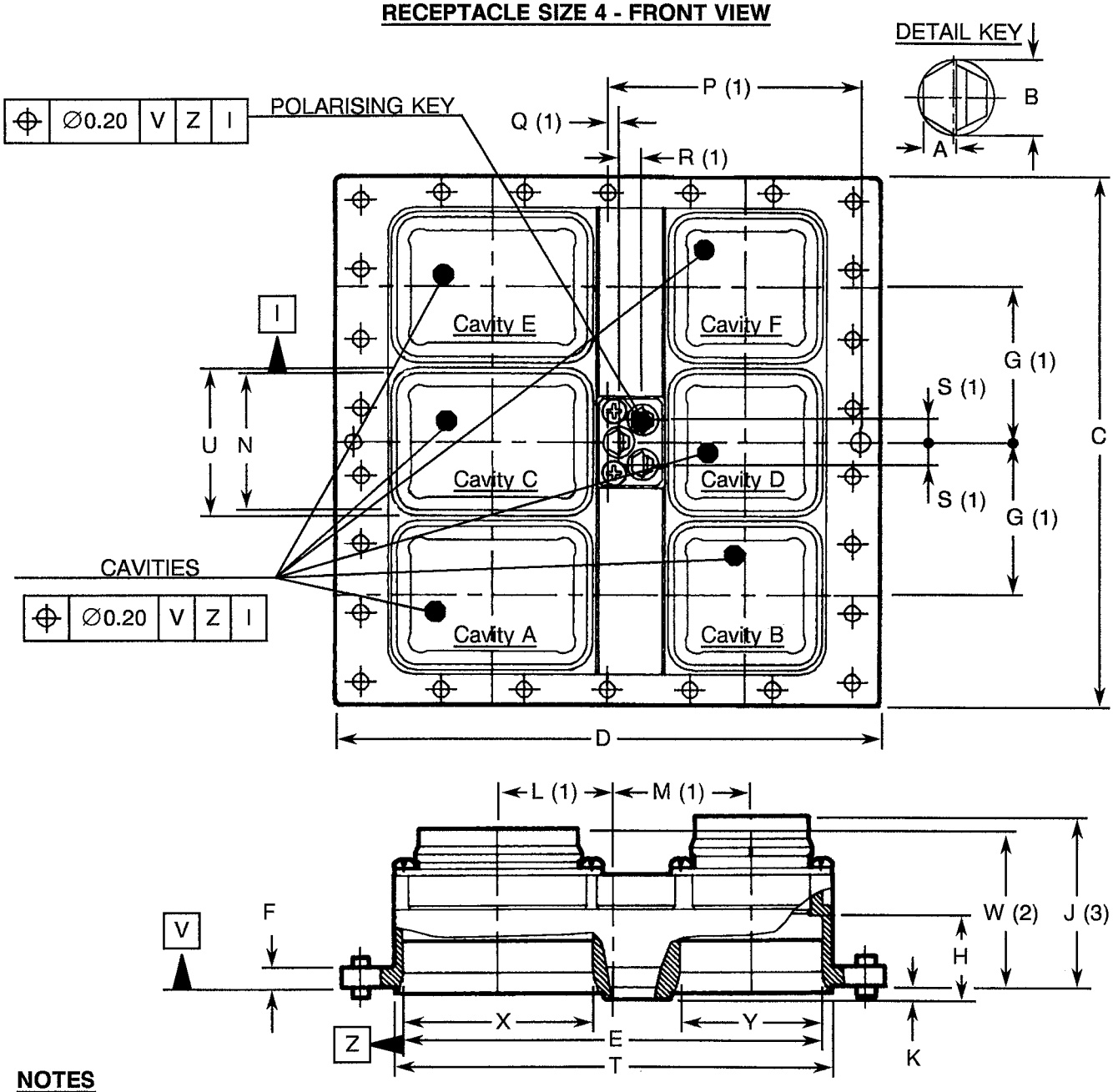
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	G Ref.	H	J	K	L Ref.
Max.	34.01	20.29	94.39	131.32	100.66	2.15	18.54	19.30	40.39	4.81	27.69
Min.	33.50	20.09	93.88	130.81	100.51	2.03		18.80	-	4.64	

Symbol/ Dim.	M Ref.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	33.27	32.79	60.96	2.67	5.84	5.46	79.22	110.13	35.50	45.24	34.06
Min.		32.69					78.97	109.88	-	45.14	33.96

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
RECEPTACLE SIZE 4 - FRONT VIEW



NOTES

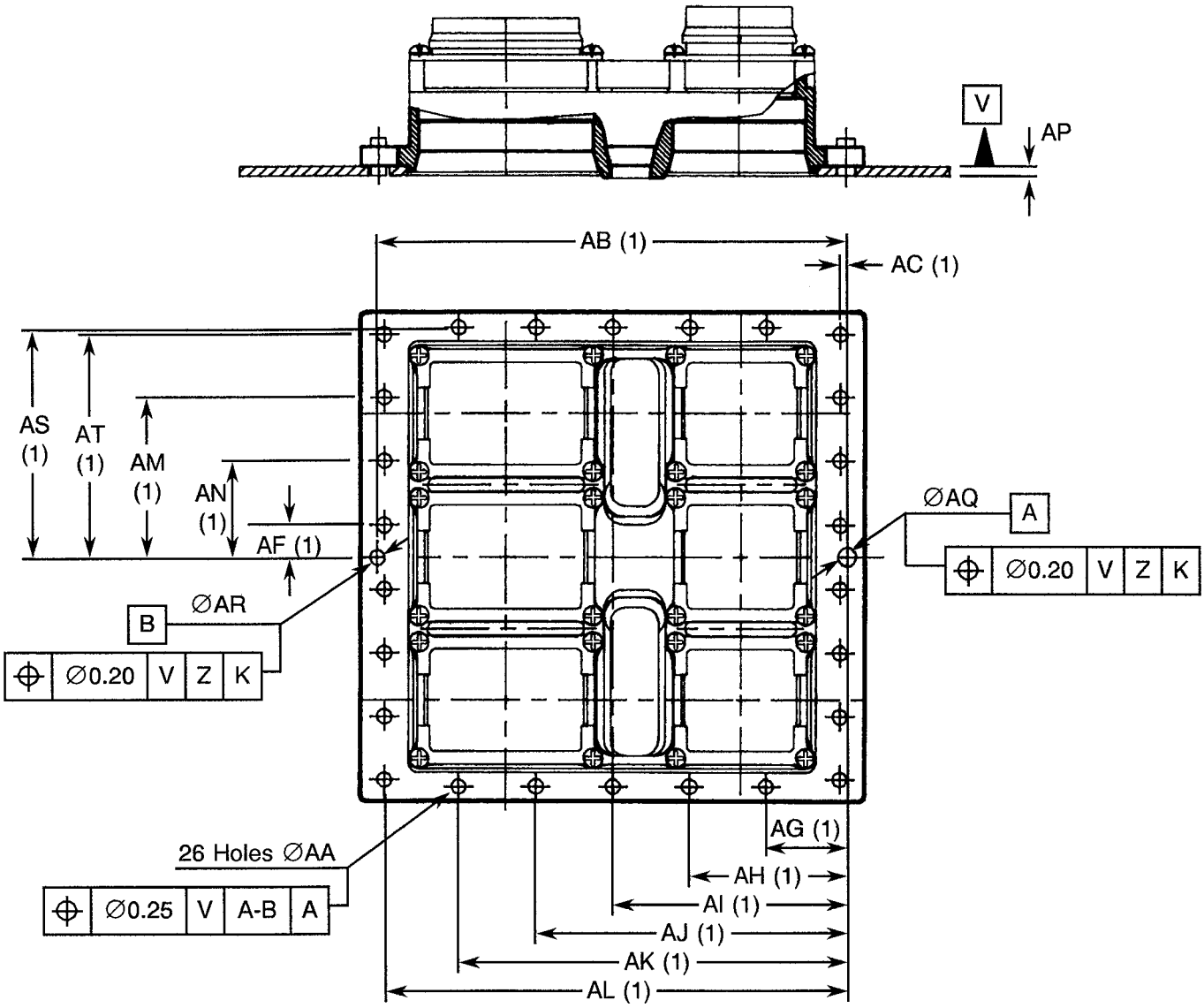
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	G Ref.	H	J	K	L Ref.
Max.	3.12	6.32	125.25	131.32	100.86	5.08	37.08	20.75	46.48	3.43	27.69
Min.	2.60	5.75	126.75	130.81	100.71	4.57		20.55	-	2.92	

Symbol/ Dim.	M Ref.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	33.27	33.05	60.96	2.67	5.84	5.46	105.99	38.00	38.86	45.54	34.37
Min.		32.94					-	-	-	45.44	34.26

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
RECEPTACLE SIZE 4 - REAR VIEW



NOTES

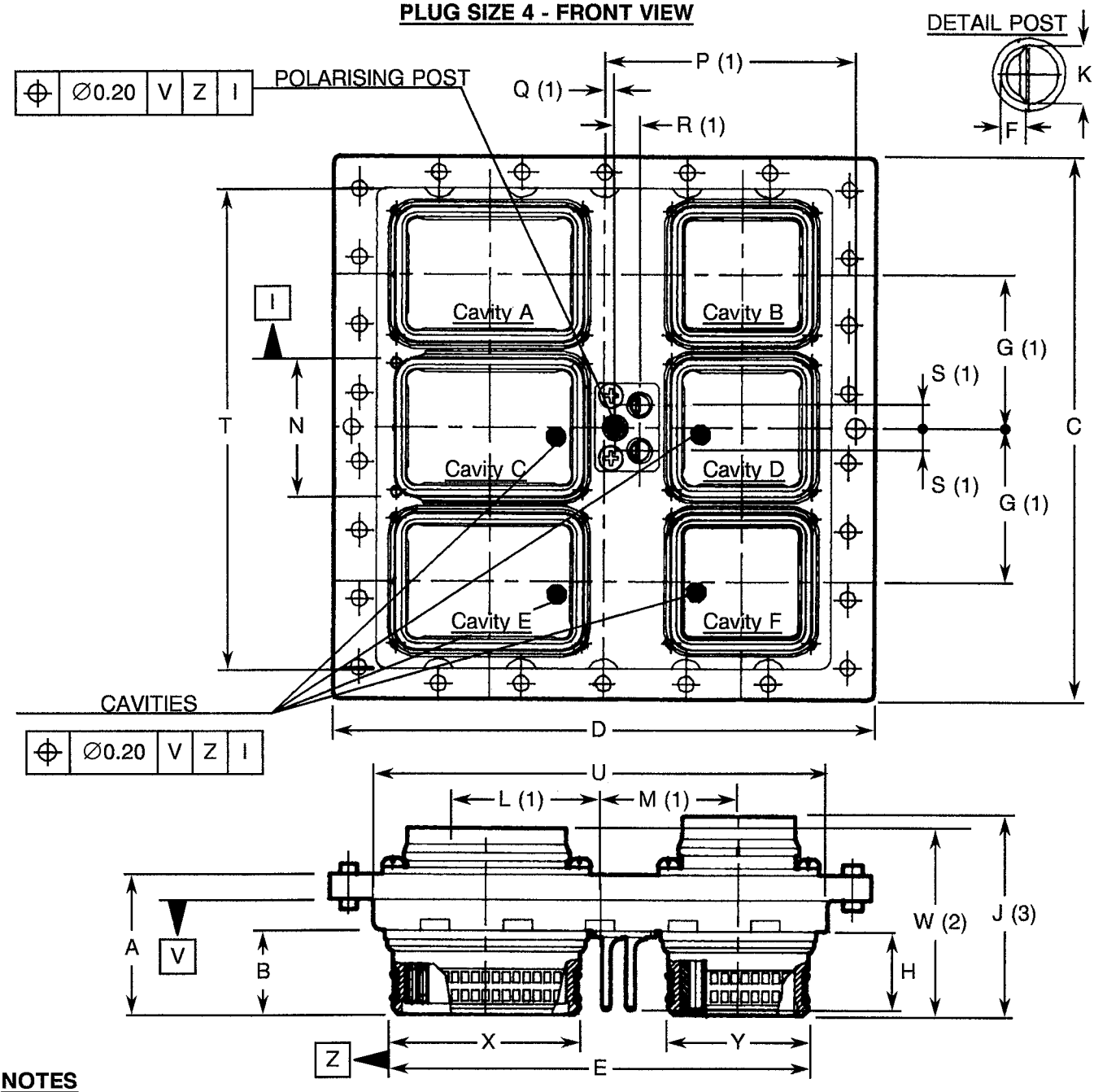
1. This dimension is for reference purpose only.

Symbol/ Dim.	ØAA	AB Ref.	AC Ref.	AF Ref.	AG Ref.	AH Ref.	AI Ref.	AJ Ref.	AK Ref.	AL Ref.	AM Ref.
Max.	3.96	121.92	1.83	8.26	21.08	41.02	60.96	80.90	100.84	120.09	41.28
Min.	3.71										

Symbol/ Dim.	AN Ref.	AP	ØAQ	ØAR	AS Ref.	AT Ref.
Max.	24.76	2.50	4.78	3.99	59.61	57.78
Min.		-	4.67	3.88		

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
PLUG SIZE 4 - FRONT VIEW



NOTES

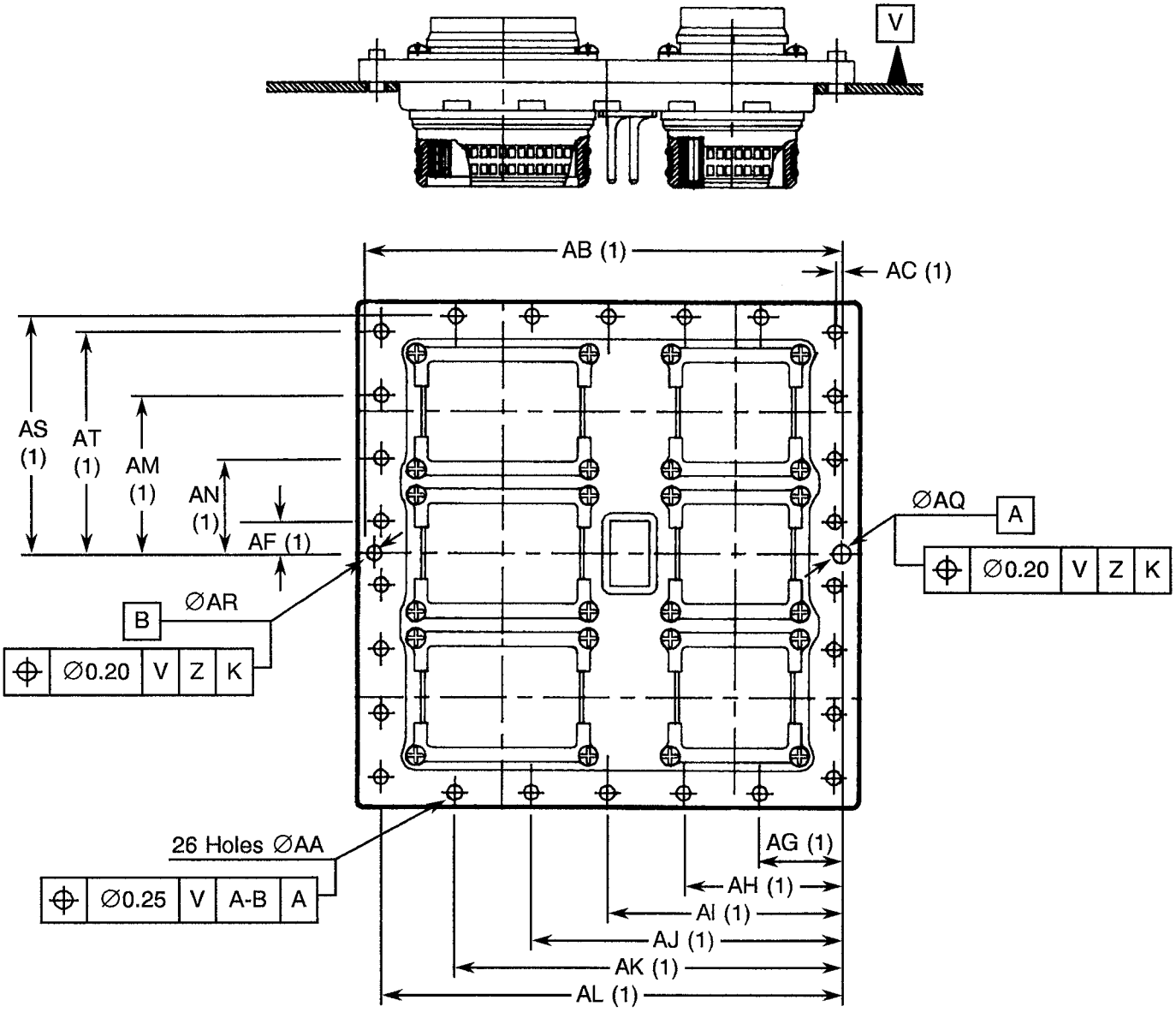
1. This dimension is for reference purpose only.
2. For arrangements I-150 and II-100 only.
3. For all other arrangements.

Symbol/ Dim.	A	B	C	D	E	F	G Ref.	H	J	K	L Ref.
Max.	34.01	20.29	94.39	131.32	100.86	2.15	37.08	19.30	40.39	4.81	27.69
Min.	33.50	20.09	93.88	130.81	100.51	2.03		18.80	-	4.64	

Symbol/ Dim.	M Ref.	N	P Ref.	Q Ref.	R Ref.	S Ref.	T	U	W	X	Y
Max.	33.27	32.79	60.96	2.67	5.84	5.46	116.31	110.13	35.50	45.24	34.06
Min.		32.69					116.05	109.88	-	45.14	33.96

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(a) - RECEPTACLES AND PLUGS
PLUG SIZE 4 - REAR VIEW



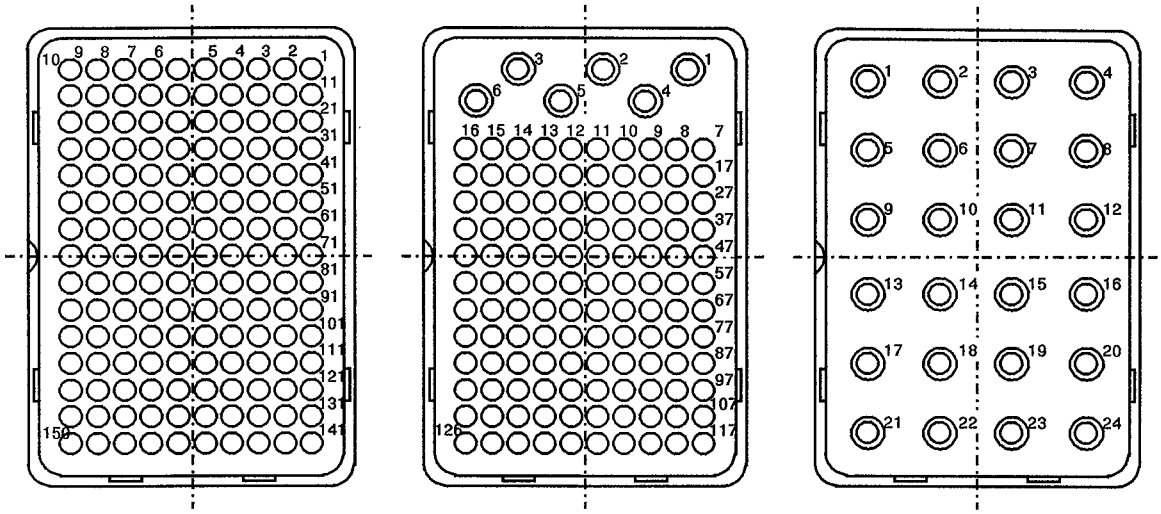
NOTES
1. This dimension is for reference purpose only.

Symbol/ Dim.	ØAA	AB Ref.	AC Ref.	AF Ref.	AG Ref.	AH Ref.	AI Ref.	AJ Ref.	AK Ref.	AL Ref.	AM Ref.
Max.	3.96	121.92	1.83	8.26	21.08	41.02	60.96	80.90	100.84	120.09	41.28
Min.	3.71										

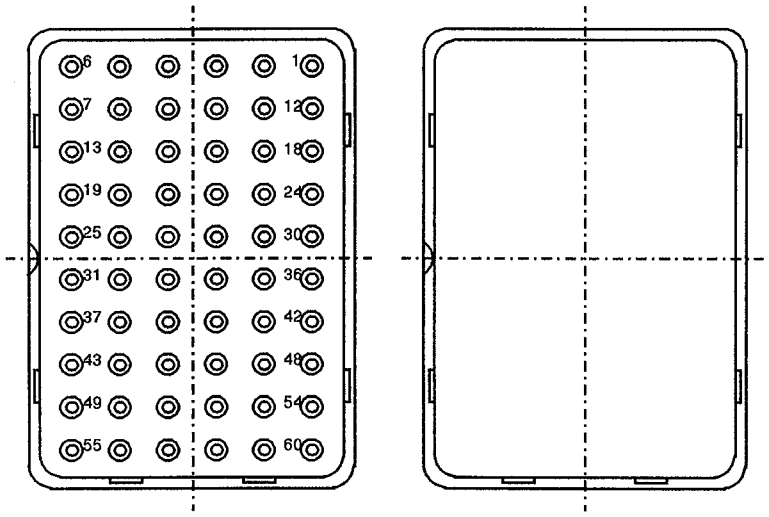
Symbol/ Dim.	AN Ref.	ØAQ	ØAR	AS Ref.	AT Ref.
Max.	24.76	4.78	3.99	61.85	57.78
Min.		4.67	3.88		

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - CONTACT ARRANGEMENTS
MALE INSULATOR - FRONT VIEW
CAVITIES: A, C, E



Arrangements:	1 - 150	1 - 126	1 - 24
Number of contacts:	150 Size 22	120 Size 22 6 Size 16	24 Size 12

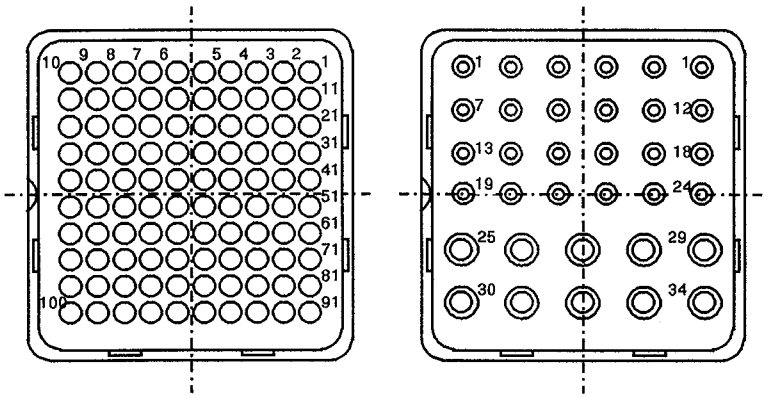


Arrangements:	1 - 60	1 - 0
Number of contacts:	60 Size 20	Without contacts

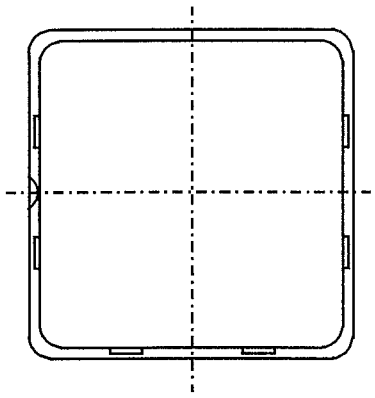
NOTES
1. Contact locations and identifications in conformity with MIL-STD-1842.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(b) - CONTACT ARRANGEMENTS
MALE INSULATOR - FRONT VIEW
CAVITIES: B, D, F



Arrangements:	2 - 100	2 - 34
Number of contacts:	100 Size 22	24 Size 20 10 Size 16

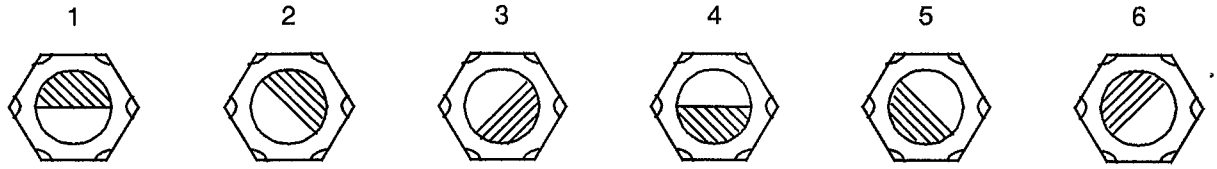


Arrangements:	2 - 0
Number of contacts:	Without contacts

NOTES
1. Contact locations and identifications in conformity with MIL-STD-1842.

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(c) - POLARISATION
POLARISATION POSITIONS



PLUG				RECEPTACLE				PLUG				RECEPTACLE			
POSITION	LEFT POST	CENTRE POST	RIGHT POST	POSITION	LEFT KEY	CENTRE KEY	RIGHT KEY	POSITION	LEFT POST	CENTRE POST	RIGHT POST	POSITION	LEFT KEY	CENTRE KEY	RIGHT KEY
00	-	-	-	00	-	-	-	50	2	2	5	50	6	3	3
01	1	1	1	01	4	4	4	51	3	2	5	51	6	3	2
02	2	1	1	02	4	4	3	52	4	2	5	52	6	3	1
03	3	1	1	03	4	4	2	53	5	2	5	53	6	3	6
04	4	1	1	04	4	4	1	54	6	2	5	54	6	3	5
05	5	1	1	05	4	4	6	55	1	2	4	55	1	3	4
06	6	1	1	06	4	4	5	56	2	2	4	56	1	3	3
07	1	1	6	07	5	4	4	57	3	2	4	57	1	3	2
08	2	1	6	08	5	4	3	58	4	2	4	58	1	3	1
09	3	1	6	09	5	4	2	59	5	2	4	59	1	3	6
10	4	1	6	10	5	4	1	60	6	2	4	60	1	3	5
11	5	1	6	11	5	4	6	61	1	2	3	61	2	3	4
12	6	1	6	12	5	4	5	62	2	2	3	62	2	3	3
13	1	1	5	13	6	4	4	63	3	2	3	63	2	3	2
14	2	1	5	14	6	4	3	64	4	2	3	64	2	3	1
15	3	1	5	15	6	4	2	65	5	2	3	65	2	3	6
16	4	1	5	16	6	4	1	66	6	2	3	66	2	3	5
17	5	1	5	17	6	4	6	67	1	2	2	67	3	3	4
18	6	1	5	18	6	4	5	68	2	2	2	68	3	3	3
19	1	1	4	19	1	4	4	69	3	2	2	69	3	3	2
20	2	1	4	20	1	4	3	70	4	2	2	70	3	3	1
21	3	1	4	21	1	4	2	71	5	2	2	71	3	3	6
22	4	1	4	22	1	4	1	72	6	2	2	72	3	3	5
23	5	1	4	23	1	4	6	73	1	3	1	73	4	2	4
24	6	1	4	24	1	4	5	74	2	3	1	74	4	2	3
25	1	1	3	25	2	4	4	75	3	3	1	75	4	2	2
26	2	1	3	26	2	4	3	76	4	3	1	76	4	2	1
27	3	1	3	27	2	4	2	77	5	3	1	77	4	2	6
28	4	1	3	28	2	4	1	78	6	3	1	78	4	2	5
29	5	1	3	29	2	4	6	79	1	3	6	79	5	2	4
30	6	1	3	30	2	4	5	80	2	3	6	80	5	2	3
31	1	1	2	31	3	4	4	81	3	3	6	81	5	2	2
32	2	1	2	32	3	4	3	82	4	3	6	82	5	2	1
33	3	1	2	33	3	4	2	83	5	3	6	83	5	2	6
34	4	1	2	34	3	4	1	84	6	3	6	84	5	2	5
35	5	1	2	35	3	4	6	85	1	3	5	85	6	2	4
36	6	1	2	36	3	4	5	86	2	3	5	86	6	2	3
37	1	2	1	37	4	3	4	87	3	3	5	87	6	2	2
38	2	2	1	38	4	3	3	88	4	3	5	88	6	2	1
39	3	2	1	39	4	3	2	89	5	3	5	89	6	2	6
40	4	2	1	40	4	3	1	90	6	3	5	90	6	2	5
41	5	2	1	41	4	3	6	91	1	3	4	91	1	2	4
42	6	2	1	42	4	3	5	92	2	3	4	92	1	2	3
43	1	2	6	43	5	3	4	93	3	3	4	93	1	2	2
44	2	2	6	44	5	3	3	94	4	3	4	94	1	2	1
45	3	2	6	45	5	3	2	95	5	3	4	95	1	2	6
46	4	2	6	46	5	3	1	96	6	3	4	96	1	2	5
47	5	2	6	47	5	3	6	97	1	3	3	97	2	2	4
48	6	2	6	48	5	3	5	98	2	3	3	98	2	2	3
49	1	2	5	49	6	3	4	99	3	3	3	99	2	2	2

FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

FIGURE 2(d) - INSERT COMBINATION CODE

SHELL SIZE 2

CODE	SHELL SIZE	INSERT CAVITIES	
		CONTACT ARRANGEMENT	
		A	B
201	2	1 - 150	2 - 34
203	2	1 - 126	2 - 100
216	2	1 - 150	2 - 100
231	2	1 - 24	2 - 0
232	2	1 - 24	2 - 34
237	2	1 - 24	2 - 100

SHELL SIZE 3

CODE	SHELL SIZE	INSERT CAVITIES			
		CONTACT ARRANGEMENT			
		A	B	C	D
006	3	1 - 60	2 - 100	1 - 60	2 - 100
007	3	1 - 150	2 - 100	1 - 150	2 - 100
008	3	1 - 60	2 - 34	1 - 60	2 - 34
226	3	1 - 150	2 - 34	1 - 150	2 - 34
233	3	1 - 150	2 - 34	1 - 150	2 - 34
239	3	1 - 24	2 - 34	1 - 24	2 - 34
243	3	1 - 60	2 - 34	1 - 24	2 - 34

SHELL SIZE 4

CODE	SHELL SIZE	INSERT CAVITIES					
		CONTACT ARRANGEMENT					
		A	B	C	D	E	F
220	4	1 - 150	2 - 100	1 - 150	2 - 100	1 - 150	2 - 100
241	4	1 - 24	2 - 34	1 - 24	2 - 34	1 - 24	2 - 34
244	4	1 - 60	2 - 34	1 - 60	2 - 34	1 - 24	2 - 34

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.

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. 9.5, Magnetism Level: 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. 9.12.1, Shock: 30g, 11 milliseconds, half sine wave.

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

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

The same deviations as listed in Para. 4.2.4 above are 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 3401 and shall conform to those shown in Figure 2 of this specification.

4.3.2 Weight

The maximum weight of the connectors specified herein, without contacts, shall be as specified in Table 1(a).

4.3.3 Contact Capability

As specified in ESA/SCC Detail Specification No. 3401/061.

4.3.4 Contact Retention (in Insert)

As specified in ESA/SCC Detail Specification No. 3401/061.

4.3.5 Mating and Unmating Forces

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

4.3.6 Insert Retention (in Shell)

Connector inserts shall withstand a force of 200N without being dislodged from the shell.

4.3.7 Jackscrew Retention

Not applicable.

4.3.8 Contact Insertion and Withdrawal Forces

As specified in ESA/SCC Detail Specification No. 3401/061.

4.3.9 Engagement and Separation Forces

As specified in ESA/SCC Detail Specification No. 3401/061.

4.3.10 Oversize Pin Exclusion

As specified in ESA/SCC Detail Specification No. 3401/061.

4.3.11 Probe Damage

As specified in ESA/SCC Detail Specification No. 3401/061.

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 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 Shell

The shell shall be made of aluminium alloy, bright electroless nickel plated.

4.4.2 Inserts

Bonded sandwich: Silicone/thermosetting or thermoplastic insert/silicone.

4.4.3 Contacts

As specified in ESA/SCC Detail Specification No. 3401/061.

4.4.4 Contact Retaining Clip

The retaining clip shall be made of beryllium copper.

4.4.5 Guiding and Locking Devices

The insert retention plate shall be made of blue anodized aluminium alloy. The screening ring shall be made of copper alloy with plating. The screws shall be made of passivated stainless steel.

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. Each component shall be marked in respect of:-

(a) Contact Identification.

(b) The SCC Component Number.

(c) Characteristics.

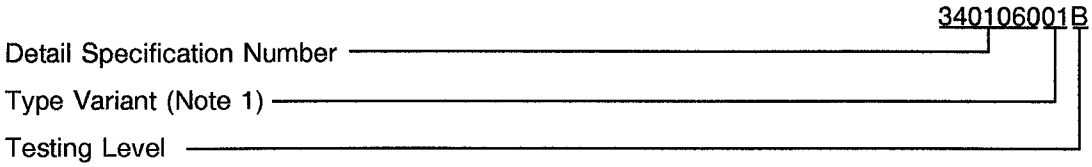
(d) Traceability Information.

4.5.2 Contact Identification

Contact identification shall be marked in accordance with Figure 2(b).

4.5.3 The SCC Component Number

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



NOTES

1. Marking of the type variant number is mandatory. No further reference to type variant is made in this specification.

4.5.4 Characteristics

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

(a) Shell type.

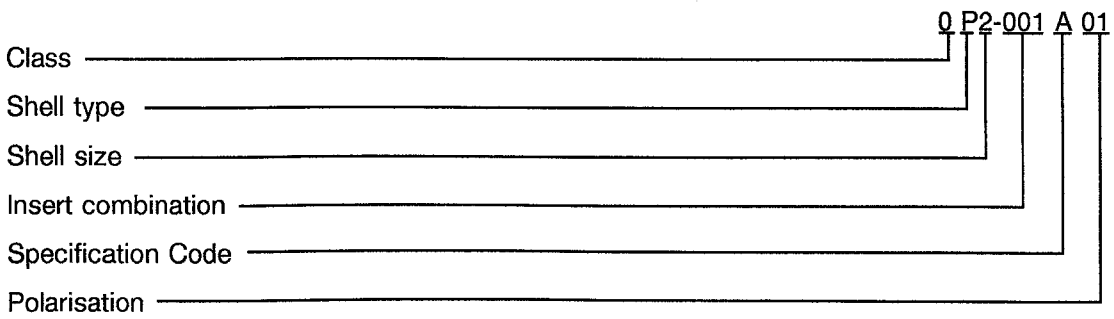
(b) Shell size.

(c) Insert combination.

(d) Specification Code.

(e) Polarisation.

The information shall be constituted and marked as follows:-



4.5.4.1 Class

0: Sealed.

4.5.4.2 Shell Type

P: Rack plug.
R: Equipment receptacle.

4.5.4.3 Shell Size

See Figure 2(a).

4.5.4.4 Insert Combination

See Figures 2(d) and 2(b).

4.5.4.5 Specification Code

A: Standard Connector.

4.5.4.6 Polarisation

See Figure 2(c).

4.5.5 Traceability Information

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

4.5.6 Marking of Small Components

Where it is considered that a component is too small to accommodate the marking as specified above, as much as space permits shall be marked. The order of precedence shall be as specified in Para. 4.5.1. The marking information in full shall accompany each component in its primary package.

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, these 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 Circuit for Electrical Measurements (Figure 4)

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	ESA/SCC No. 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 Contact size 22 Other contacts	I_L	Para. 9.1.1.2	 1300Vrms 1500Vrms	 - -	 1.0 1.0	mA
3	Mated Shell Conductivity (Voltage Drop)	Vd	Para. 9.1.1.4	Para. 9.1.1.4	-	2.5	mV

TABLES 3, 4 AND 5

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 shall be those specified 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 tests shall be those specified 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 Circuits for Operating Life Tests

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 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL AND ENDURANCE TESTS

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	Wiring	Para. 9.10	ESA/SCC 3401/061			-	-	
02	Vibration	Para. 9.11	**Initial**	-				
			Coupling Screw(s)					
			Unlocking Torque		-	Not applicable		
			Final					
			Full Engagement	-				
			Coupling Screw(s)					
			Unlocking Torque Drift	-	Δ	Not applicable		%
			Visual Examination	-	-	-	-	
03	Shock or Bump	Para. 9.12& Para. 4.2.4 of this spec	Full Engagement	-		-	-	
			Visual Examination	-		-	-	
04	Climatic Sequence	Para. 9.13	**Dry Heat**					
			Insulation Resistance	Table 2 Item 1	Ri	1 000	-	MΩ
			Low Air Pressure					
			Voltage Proof Leakage Curr.	250Vrms	I_L	Table 2 Item 2		
			Damp Heat	**Immediately after test**				
			Insulation Resistance	Table 2 Item 1	Ri	100	-	MΩ
				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		
05	Seal Test	Para. 9.9	ESA/SCC 3401 Para. 9.9			Not applicable		
06	Plating Thickness	Para. 9.14	Thickness			ESA/SCC 3401/061		
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	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**					
			Mating/Unmating Forces		F	Para. 4.3.5 of this spec.		
			Low Level Contact Resist	ESA/SCC 3401/061	Rcl	Record Values		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Table 2 Item 3		
			Final					
			Visual Examination	-	-	-	-	-
			Mating/Unmating Forces		F	Para. 4.3.5 of this spec.		
			Low Level Contact Resistance Drift	ESA/SCC 3401/061	ΔRcl	ESA/SCC 3401/061		
			Mated Shell Conductivity	Table 2 Item 3	Vd	Table 2 Item 3		
			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 TESTS

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** Low Level Contact Resis. Mated Shell Conductivity **Final** 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)	 ESA/SCC 3401/061 Table 2 Item 3 - ESA/SCC 3401/061 ESA/SCC 3401/061 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 Table 2 Item 3 - Para. 4.3.5 of this spec. ESA/SCC 3401/061 ESA/SCC 3401/061 Table 2 Item 3 Table 2 Item 1 Table 2 Item 2 ESA/SCC 3401 Para. 9.17	- 	
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

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 TESTS

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	
18	Overload Test	Para. 9.26	Internal Temperature Rated Current Contact Resis. Mated Shell Conductivity Insulation Resistance Voltage Proof Leakage Curr.	 ESA/SCC 3401/061 Table 2 Item 3 Table 2 Item 1 Table 2 Item 2	T Rcr Vd Ri I_L	- ESA/SCC 3401/061 Table 2 Item 3 Table 2 Item 1 Table 2 Item 2	+100	°C
19	Maintenance Aging	Para. 9.27	Visual Examination Contact Retention Contact Insertion & Withdrawal Forces	- Para. 4.3.4 of this spec Para. 4.3.8 of this spec	-	- ESA/SCC 3401 Para. 9.17 Para. 4.3.8	-	-
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		
22	Probe Damage	Para. 9.30 & Para. 4.3.11 of this spec.	Contact Separation Force	Para. 4.3.9 of this spec.		Para. 4.3.9		
23	Solderability	Para. 9.31 & Para. 4.3.12 of this spec.				Para. 4.3.12		

NOTES

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