



NSAI
Standards

Irish Standard
I.S. EN 3682-002:2013

Aerospace series - Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 Â°C continuous - Part 002: Specification of performance and contact arrangements

I.S. EN 3682-002:2013

Incorporating amendments/corrigenda/National Annexes issued since publication:

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English Version

Aerospace series - Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous - Part 002: Specification of performance and contact arrangements

Série aérospatiale - Connecteurs électriques rectangulaires rackables, fiches et embases, à inserts interchangeables, température d'utilisation 150 °C continu - Partie 002 : Spécification de performances et arrangements de contacts

Luft- und Raumfahrt - Elektrischer Rechtecksteckverbinder, freie und feste Bauform, auswechselbare Isolierkörper, Gestell-Einschubsteckverbinder, Betriebstemperatur 150 °C konstant - Teil 002: Leistungsdaten und Kontaktanordnungen

This European Standard was approved by CEN on 8 May 2013.

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Foreword

This document (EN 3682-002:2013) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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This document supersedes EN 3682-002:2006.

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Introduction

This family of connectors is derived from MIL-C-83527 with which it is intermateable.

1 Scope

This European Standard defines the common conditions for plug and receptacle, rack to panel with interchangeable insulators and continuous temperature rating 150 °C.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 3155-026, *Aerospace series — Electrical contacts used in elements of connection — Part 026: Contacts, electrical, male, type A, crimp, class R — Product standard*

EN 3155-027, *Aerospace series — Electrical contacts used in elements of connection — Part 027: Contacts, electrical, female, type A, crimp, class R — Product standard*

EN 3155-028, *Aerospace series — Electrical contacts used in elements of connection — Part 028: Contacts, electrical, coaxial, shielded, size 16, male, type D, crimp, class R — Product standard*

EN 3155-029, *Aerospace series — Electrical contacts used in elements of connection — Part 029: Contacts, electrical, coaxial, shielded, size 16, female, type D, crimp, class R — Product standard*

EN 3155-030, *Aerospace series — Electrical contacts used in elements of connection — Part 030: Contacts, electrical, coaxial, shielded, size 12, male, type D, crimp, class R — Product standard*

EN 3155-031, *Aerospace series — Electrical contacts used in elements of connection — Part 031: Contacts, electrical, coaxial, shielded, size 12, female, type D, crimp, class R — Product standard*

EN 3155-032, *Aerospace series — Electrical contacts used in elements of connection — Part 032: Contacts, electrical, coaxial, 50 ohms, size 5, male, type D, crimp, class R — Product standard*

EN 3155-033, *Aerospace series — Electrical contacts used in elements of connection — Part 033: Contacts, electrical, coaxial, 50 ohms, size 5, female, type D, crimp, class R — Product standard*

EN 3155-034, *Aerospace series — Electrical contacts used in elements of connection — Part 034: Contacts, electrical, triaxial, size 08, male, type D, crimp, class R — Product standard*

EN 3155-035, *Aerospace series — Electrical contacts used in elements of connection — Part 035: Contacts, electrical, triaxial, size 08, female, type D, crimp, class R — Product standard*

EN 3155-038, *Aerospace series — Electrical contacts used in elements of connection — Part 038: Contacts, electrical, coaxial, size 16, male 038, type D, solder, class R — Product standard*¹⁾

EN 3155-039, *Aerospace series — Electrical contacts used in elements of connection — Part 039: Contacts, electrical, coaxial, size 16, female, type D, solder, class R — Product standard*

EN 3155-040, *Aerospace series — Electrical contacts used in elements of connection — Part 040: Contacts, electrical, coaxial, size 12, male, type D, solder, class R — Product standard*

EN 3155-041, *Aerospace series — Electrical contacts used in elements of connection — Part 041: Contacts, electrical, coaxial, size 12, female, type D, solder, class R — Product standard*

EN 3155-042, *Aerospace series — Electrical contacts used in elements of connection — Part 042: Contacts, electrical, triaxial, size 08, male 042, type D, solder, class P — Product standard*

EN 3155-043, *Aerospace series — Electrical contacts used in elements of connection — Part 043: Contacts, electrical, triaxial, size 08, female 043, type D, solder, class P — Product standard*

EN 3155-063, *Aerospace series — Electrical contacts used in elements of connection — Part 063: Contacts, electrical, coaxial, 50 ohms, size 1, male, type D, solder, class R — Product standard*

EN 3155-064, *Aerospace series — Electrical contacts used in elements of connection — Part 064: Contacts, electrical, coaxial, 50 ohms, size 1, female, type D, solder, class R — Product standard*

EN 3155-072, *Aerospace series — Electrical contacts used in elements of connection — Part 072: Contacts, electrical, quadrax, size 08, male, type E, crimp, class R — Product standard*¹⁾

EN 3155-073, *Aerospace series — Electrical contacts used in elements of connection — Part 073: Contacts, electrical, quadrax, size 08, female, type E, crimp, class R — Product standard*¹⁾

EN 3197, *Aerospace series — Design and installation of aircraft electrical and optical interconnection systems*

EN 3682 (all parts), *Aerospace series — Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous — Part 001: Technical specification*

EN 4529-002, *Aerospace series — Elements of electrical and optical connection — Sealing plugs — Part 002: Index of product standards*

MIL-C-83527A, *Connectors, plug and receptacle, electrical, rectangular multiple insert type, rack to panel, environment resisting, 150 °C total continuous operating temperature*²⁾

TR 4679, *Aerospace series — Connector, optical rectangular, multicontacts, rack and panel, quadrax cavity, 2,5 diameter fixed ferrule, operating temperatures – 65 °C to 125 °C — Part 001: Technical specification*³⁾

1) In preparation at the date of publication of this standard.

2) Published by: DoD National (US) Mil. Department of Defense. <http://www.defenselink.mil/>

3) Published as ASD-STAN Technical Report at the date of publication of this standard. <http://www.asd-stan.org/>

3 Description of models

Electrical rectangular rack panel connectors, environmental resisting with 3 shell sizes 2, 3 and 4, crimp contact class R.

4 Terms and definitions

See EN 3682-001.

5 Operating conditions

5.1 Permissible cables

The performance of these connectors is achieved with the cables of the dimensions given in Table 1 and using the accessories and wiring tools specified.

Table 1

Size		Size of conductors Standard cables	Outer diameter of cables mm	
Contact	Barrel	AWG ^a	min.	max.
22	22	22 24 26	0,76	1,32
20	20	20 22 24	0,89	1,52
16	16	16 18 20	1,21	2,03
12	12	12 14	2,31	2,90
Cavity #8		–	3,69	6,86
Cavity #5		–	4,85	5,49
Cavity #1		–	10,62	10,97

^a AWG: Closest American Wire Gauge.

5.2 Operating characteristics

5.2.1 Electrical conditions

- Rated current: according to standards for contacts
- Insulation resistance at ambient temperature: 5 000 M Ω
- Withstand voltage at sea level:
 - 22 AWG contacts: 1 300 V r.m.s
 - thicker gauge contacts 1 500 V r.m.s
 - triaxial contacts 500 V r.m.s
 - coaxial contacts 500 V r.m.s
 - quadrax contacts 500 V r.m.s
- Withstand voltage at 33 000 m
 - connectors mated together 750 V r.m.s
 - connectors unmated 200 V r.m.s

5.2.2 Climatic conditions

- Operating temperatures:
 - minimum temperature: – 65 °C
 - maximum temperature: 150 °C
- Corrosion resistance and fluid resistance: see EN 3682-001.

5.2.3 Mechanical conditions

Mechanical endurance: 500 mating and unmating operations.

6 Product standards

See Table 2.

Table 2

Component	EN 3682-
Inserts	003
Receptacle size 2	004
Plug size 2	005
Receptacle size 3	006
Plug size 3	007
Receptacle size 4	008
Plug size 4	009

7 Polarization

Figures 1 and 2 and Tables 3 and 4 show the various positions of the coding keys, which provide 99 standard different locating codes.

The shaded area indicates the male key and the lighted area corresponds to the female key. Keys are viewed from the front of the connector, and the top of the connector is facing upwards.

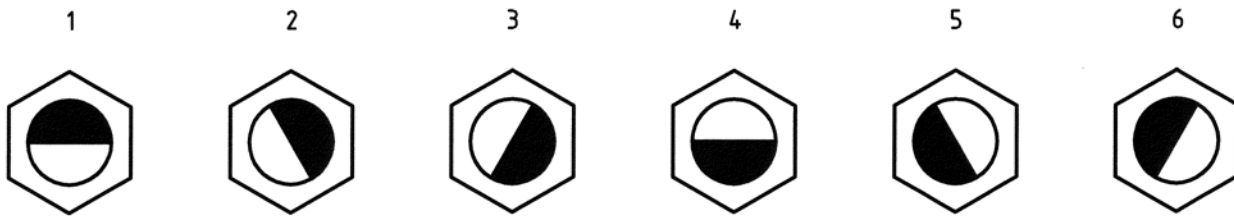


Figure 1

Table 3

Position	left	centre	right	Position	left	centre	right	Position	left	centre	right	Position	left	centre	right
00	Keys not assembled			25	1	1	3	50	2	2	5	75	3	3	1
01	1	1	1	26	2	1	3	51	3	2	5	76	4	3	1
02	2	1	1	27	3	1	3	52	4	2	5	77	5	3	1
03	3	1	1	28	4	1	3	53	5	2	5	78	6	3	1
04	4	1	1	29	5	1	3	54	6	2	5	79	1	3	6
05	5	1	1	30	6	1	3	55	1	2	4	80	2	3	6
06	6	1	1	31	1	1	2	56	2	2	4	81	3	3	6
07	1	1	6	32	2	1	2	57	3	2	4	82	4	3	6
08	2	1	6	33	3	1	2	58	4	2	4	83	5	3	6
09	3	1	6	34	4	1	2	59	5	2	4	84	6	3	6
10	4	1	6	35	5	1	2	60	6	2	4	85	1	3	5
11	5	1	6	36	6	1	2	61	1	2	3	86	2	3	5
12	6	1	6	37	1	1	1	62	2	2	3	87	3	3	5
13	1	1	5	38	2	2	1	63	3	2	3	88	4	3	5
14	2	1	5	39	3	2	1	64	4	2	3	89	5	3	5
15	3	1	5	40	4	2	1	65	5	2	3	90	6	3	5
16	4	1	5	41	5	2	1	66	6	2	3	91	1	3	4
17	5	1	5	42	6	2	1	67	1	2	2	92	2	3	4
18	6	1	5	43	1	2	6	68	2	2	2	93	3	3	4
19	1	1	4	44	2	2	6	69	3	2	2	94	4	3	4
20	2	1	4	45	3	2	6	70	4	2	2	95	5	3	4
21	3	1	4	46	4	2	6	71	5	2	2	96	6	3	4
22	4	1	4	47	5	2	6	72	6	2	2	97	1	3	3
23	5	1	4	48	6	2	6	73	1	3	1	98	2	3	3
24	6	1	4	49	1	2	5	74	2	3	1	99	3	3	3

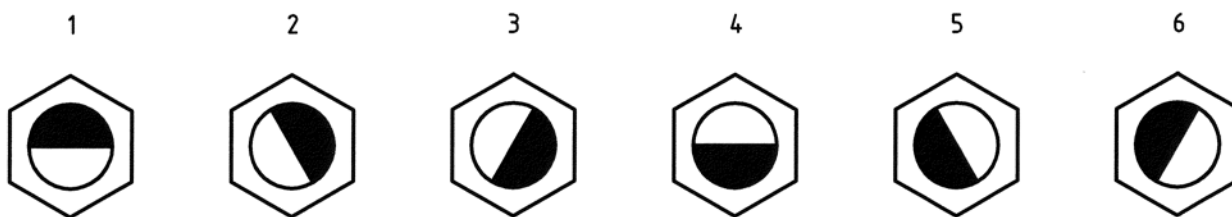


Figure 2

Table 4

Position	left	centre	right	Position	left	centre	right	Position	left	centre	right	Position	Left	centre	right
00	Keys not assembled			25	2	4	4	50	6	3	3	75	4	2	2
01	4	4	4	26	2	4	3	51	6	3	2	76	4	2	1
02	4	4	3	27	2	4	2	52	6	3	1	77	4	2	6
03	4	4	2	28	2	4	1	53	6	3	6	78	4	2	5
04	4	4	1	29	2	4	6	54	6	3	5	79	5	2	4
05	4	4	6	30	2	4	5	55	1	3	4	80	5	2	3
06	4	4	5	31	3	4	4	56	1	3	3	81	5	2	2
07	5	4	4	32	3	4	3	57	1	3	2	82	5	2	1
08	5	4	3	33	3	4	2	58	1	3	1	83	5	2	6
09	5	4	2	34	3	4	1	59	1	3	6	84	5	2	5
10	5	4	1	35	3	4	6	60	1	3	5	85	6	2	4
11	5	4	6	36	3	4	5	61	2	3	4	86	6	2	3
12	5	4	5	37	4	3	4	62	2	3	3	87	6	2	2
13	6	4	4	38	4	3	3	63	2	3	2	88	6	2	1
14	6	4	3	39	4	3	2	64	2	3	1	89	6	2	6
15	6	4	2	40	4	3	1	65	2	3	6	90	6	2	5
16	6	4	1	41	4	3	6	66	2	3	5	91	1	2	4
17	6	4	6	42	4	3	5	67	3	3	4	92	1	2	3
18	6	4	5	43	5	3	4	68	3	3	3	93	1	2	2
19	1	4	4	44	5	3	3	69	3	3	2	94	1	2	1
20	1	4	3	45	5	3	2	70	3	3	1	95	1	2	6
21	1	4	2	46	5	3	1	71	3	3	6	96	1	2	5
22	1	4	1	47	5	3	6	72	3	3	5	97	2	2	4
23	1	4	6	48	5	3	5	73	4	2	4	98	2	2	3
24	1	4	5	49	6	3	4	74	4	2	3	99	2	2	2

8 Contact arrangements and insert combinations

8.1 Contact arrangements

See Table 5 and Figures 3 to 27.

Table 5 (1 of 2)

Insulator type ^a	Contacts arrangement	Number of contacts	Contact size
1	150	150	22
	47T2	47	20
		2	8 triaxial
	24	24	12
	60	60	20
	70C12	70	22
		12	12
	35	35	16
	126	120	22
		6	16
	C12T6	12	12 coaxial
		6	8 triaxial
	70C1	70	22
		1	1 coaxial
	Q11	11	8 quadrax or triaxial
118Q2	118	22	
	2	8 quadrax or triaxial	
68Q4	62	22	
	6	16	
	4	8 quadrax or triaxial	
0	0	–	
2	100	100	22
	11C2	4	20
		3	16
		4	12
		2	5 coaxial
	20T4	20	20
		4	8 triaxial
	34	24	20
		10	16
	25	25	16
	6T4	6	12
4		8 triaxial	
T6	6	8 triaxial	

Table 5 (2 of 2)

Insulator type ^a	Contacts arrangement	Number of contacts	Contact size
2	11T2	4	20
		3	16
		4	12
		2	8 triaxial
	62T2	60	22
		2	16
		2	8 triaxial
	Q6	6	8 quadrax or triaxial
	11Q2	4	20
		3	16
		4	12
	20Q4	2	8 quadrax or triaxial
		20	20
		4	8 quadrax or triaxial
	62Q2	60	22
		2	16
		2	8 quadrax or triaxial
	68Q2	68	22
		2	8 quadrax or triaxial
	0	0	–
^a Insulator 1: cavities A, C, E. Insulator 2: cavities B, D, F.			

1-150
150 contacts size 22

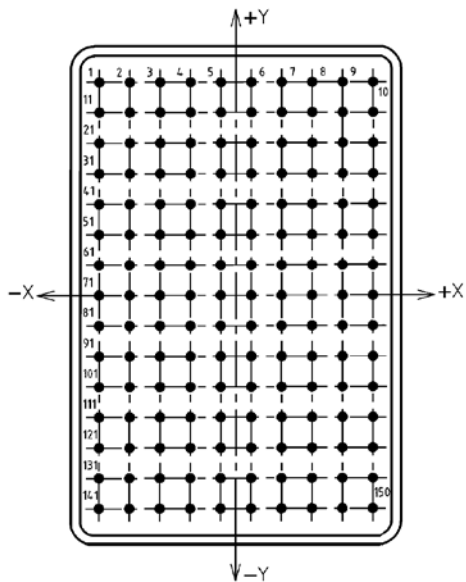


Figure 3

1-47T2
47 contacts size 20
2 contacts size 8 (triaxial)

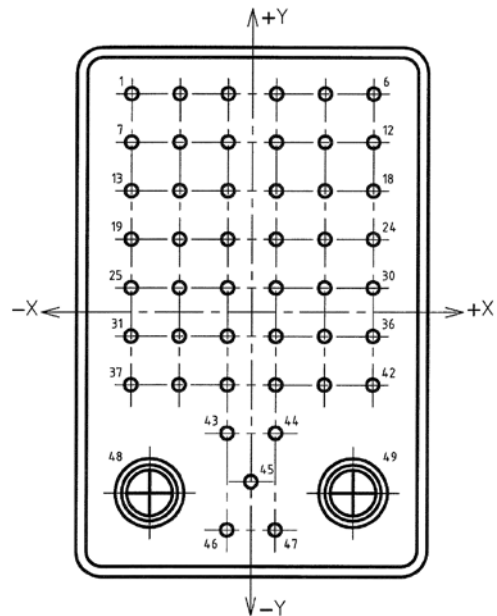


Figure 4

1-24
24 contacts size 12

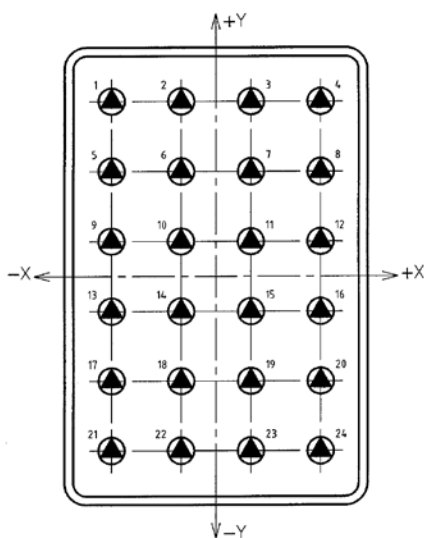


Figure 5

1-60
60 contacts size 20

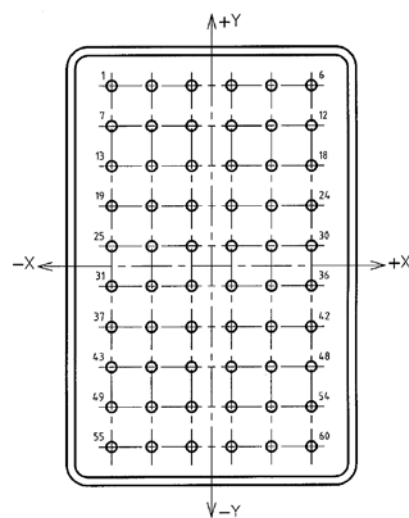


Figure 6

1-70C12
70 contacts size 22
12 contacts size 12

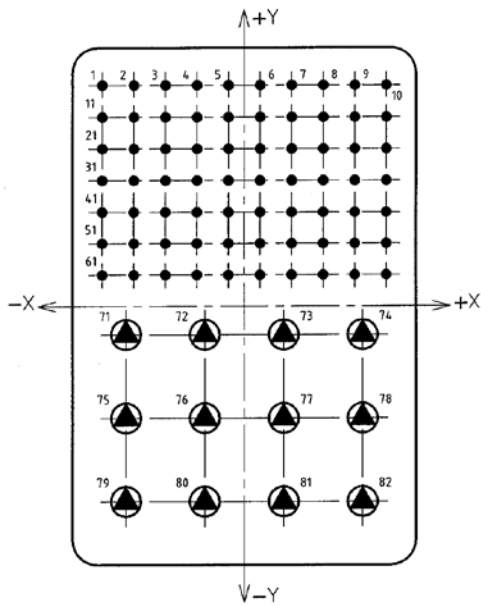


Figure 7

1-35
35 contacts size 16

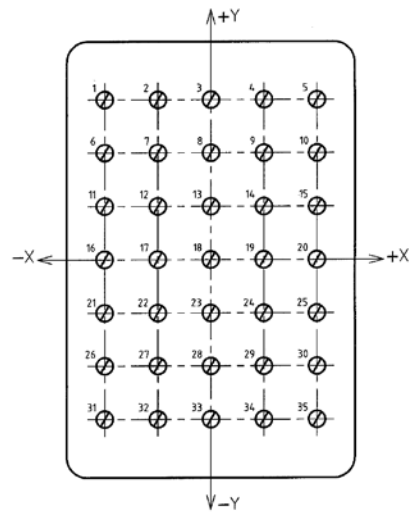


Figure 8

1-126
120 contacts size 22
6 contacts size 16

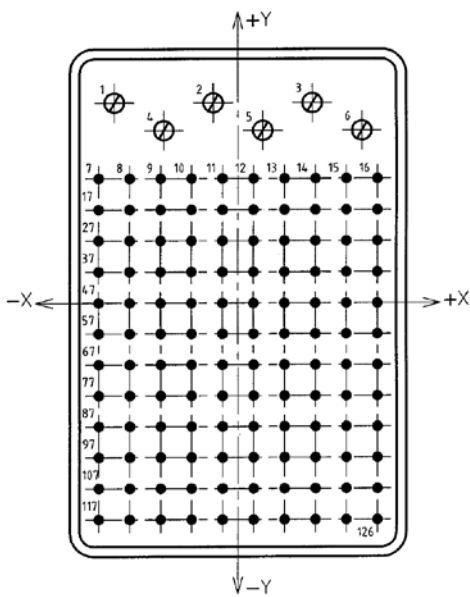


Figure 9

1-C12T6
12 contacts size 12 (coaxial)
6 contacts size 8 (triaxial)

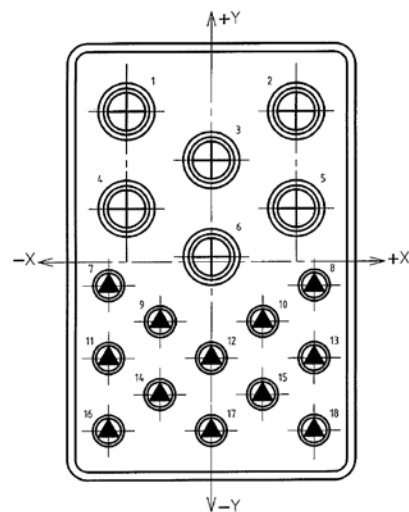


Figure 10

1-70C1

70 contacts size 22
1 contact size 1 (coaxial)

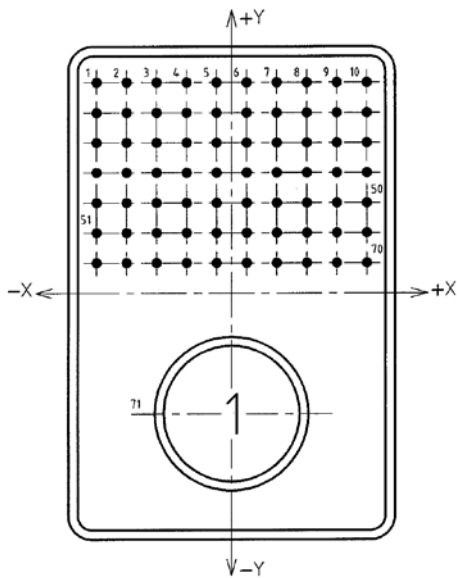


Figure 11

1-Q11

11 contacts size 8 quadrax or triaxial

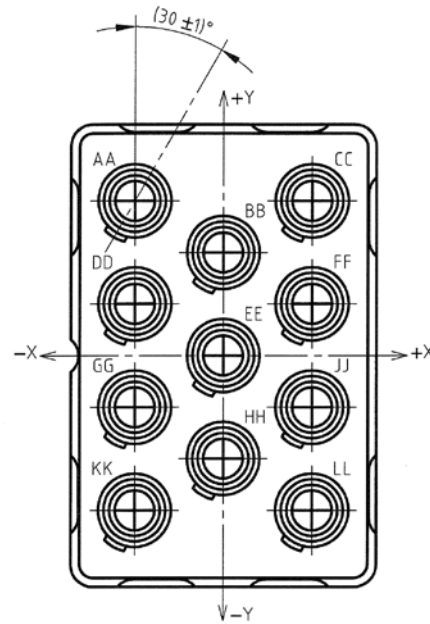


Figure 12

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