INTERNATIONAL STANDARD

ISO 8668-3

First edition
1994-12-01

Aircraft — Terminal junction systems —

Part 3:
Detail specification for type 1 system

Aéronefs — Systèmes de raccordement à modules amovibles —
Partie 3: Spécification détaillée pour le système du type 1

Reference number
ISO 8668-3:1994(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8668-3 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 1, *Aerospace electrical requirements*.

ISO 8668 consists of the following parts, under the general title *Aircraft — Terminal junction systems*:

— *Part 1: Characteristics*

— *Part 2: Tests*

— *Part 3: Detail specification for type 1 system*

— *Part 4: Detail specification for type 2 system*

— *Part 5: Detail specification for type 3 system*

— *Part 6: Detail specification for type 4 system*

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Aircraft — Terminal junction systems —

Part 3:
Detail specification for type 1 system

1 Scope

1.1 This part of ISO 8668 specifies the particular characteristics of a terminal junction system (TJS), designated as type 1 and intended for use at temperatures between – 55 °C and + 155 °C.

1.2 The junction systems covered by this part of ISO 8668 comprise:

a) feedback modules in four sizes;
b) feedthrough modules in four sizes;
c) frames adapted to these modules: standard frame P1, perforated frame P2 or frame P3 for feedback modules; solid frame P4 for feedthrough modules;
d) module clamps and inserts;
e) removable identification tags;
f) removable male crimp contacts of sizes 22, 20, 16 and 12;
g) sealing plugs.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8668. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8668 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8668-1:1986, *Aircraft — Terminal junction systems — Part 1: Characteristics.*

ISO 8668-2:1986, *Aircraft — Terminal junction systems — Part 2: Tests.*

MIL-I-81969:1982, *Connector and electrical contact — General specification for installing and removal tools.*

3 Definitions

For the purposes of this part of ISO 8668, the definitions given in ISO 8668-1 apply. See also IEC 50(581):1978, *International Electrotechnical Vocabulary — Chapter 581: Electromechanical components for electronic equipment.*

4 Designation

4.1 Modules

The modules shall be designated as follows:

a) reference to this part of ISO 8668;
b) separated by a space, a figure indicating the type of module:
   1 = feedback module,
   2 = feedthrough module;
c) a letter indicating the size of module: A, B, C or D (see figures 1 and 2);
d) three figures indicating the interconnection diagram (see 5.2);
e) a letter defining resistance to fluids (see table 1).

Table 1 — Code for resistance to fluids

Fluids	Code
Synthetic oil for turbine aero engines Mineral oil for turbine aero engines Kerosene for turbine aero engines	A

EXAMPLE

The designation of a size A feedback module with 21 contacts of size 22, arranged according to interconnection diagram 101 and resistant to fluids defined by code A is as follows:

Feedback module ISO 8668-3 1 A 101 A

4.2 Frames

The frames shall be designated as follows:

a) reference to this part of ISO 8668;
b) separated by a space, a figure indicating the type of module for which the frame is designated:
   1 = feedback modules,
   2 = feedthrough modules;
c) a letter indicating the type of frame:
   P1 = standard solid frame for feedback modules;
   P2 = perforated frame for feedback modules;
   P3 = reinforced frame for feedback modules;
   P4 = full frame for feedthrough modules.
d) three-figure code indicating the length of the frame, in millimetres;
e) separated by a hyphen, a figure indicating the nature of the protection of the frame (see table 2).

Table 2 — Coding of the protection of frames

Protection	Code
White cadmium plating	1
Colourless anodic oxidation	2
Black anodic oxidation	3
Yellow anodic oxidation	4
Stainless steel	5

EXAMPLE

The designation of a perforated frame for 100 mm long feedback modules, protected by black anodic oxidation, is as follows:

Perforated frame ISO 8668-3 1 P2 100 - 3

4.3 Module clamps and inserts

Module clamps and inserts shall be designated as follows:

a) reference to this part of ISO 8668;
b) separated by a space, two letters and one figure indicating the type of module clamp or insert:
SR1 and SR2 for feedback modules;
ST1 and ST2 for feedthrough modules.

EXAMPLE

The designation of a module clamp for a feedback module is as follows:

Module clamp ISO 8668-3 SR1

4.4 Contacts

The contacts shall be designated as follows:

a) reference to this part of ISO 8668;
b) separated by a space, the two-figure code: 22, 20, 16 or 12 indicating the size of contact.

EXAMPLE

The designation of a contact of size 22 is as follows:

Contact ISO 8668-3 22

4.5 Sealing plugs

Sealing plugs shall be designated as follows:

a) reference to this part of ISO 8668;
b) separated by a space, a two-figure code: 01, 02, 03 or 04 (see table 9).

EXAMPLE

The designation of a sealing plug for size 22 contact cavities is as follows:

Sealing plug ISO 8668-3 01

5 Characteristics

5.1 Dimensional characteristics

The dimensions are given in millimetres. In the figures and in certain tables, values in inches are given in parentheses. Drawings are shown in the first angle.

5.1.1 Feedback modules (code 1)

See figure 1 and table 3.

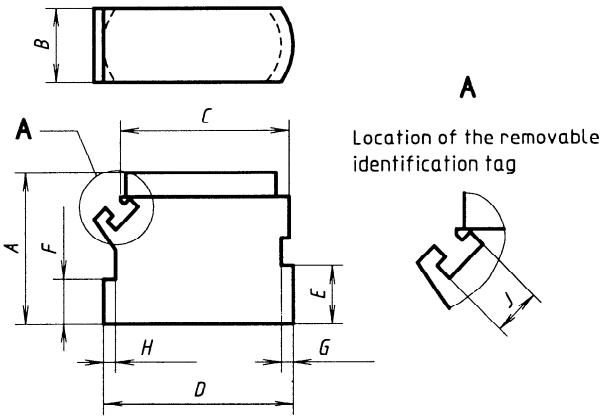


Figure 1 — Feedback module

Table 3 — Feedback modules

Dimensions in millimetres									
Size of module	*A* max.	*B* ± 0,1	*C* $^{0}_{-0,3}$	*D* $^{+0,1}_{-0,2}$	*E* $^{0}_{-0,2}$	*F* $^{0}_{-0,2}$	*G*	*H*	*J* $^{+0,2}_{0}$
A	21,6	10	21,8	24,8	8	6	1,5	1,5	3
B	20	10	21,8	24,8	8	6	1,5	1,5	3
C	25	12	23	24,8	8	6	1,5	1,5	3
D	25	15	24	24,8	8	6	1,5	1,5	3
Dimensions in inches									
Size of module	*A* max.	*B* ± 0,004	*C* $^{0}_{-0,011}$	*D* $^{+0,004}_{-0,008}$	*E* $^{0}_{-0,008}$	*F* $^{0}_{-0,008}$	*G*	*H*	*J* $^{+0,008}_{0}$
A	0,85	0,393	0,858	0,976	0,314	0,236	0,059	0,059	0,118
B	0,787	0,393	0,858	0,976	0,314	0,236	0,059	0,059	0,118
C	0,984	0,472	0,905	0,976	0,314	0,236	0,059	0,059	0,118
D	0,984	0,59	0,944	0,976	0,314	0,236	0,059	0,059	0,118

5.1.2 Feedthrough modules (code 2)

See figure 2 and table 4.

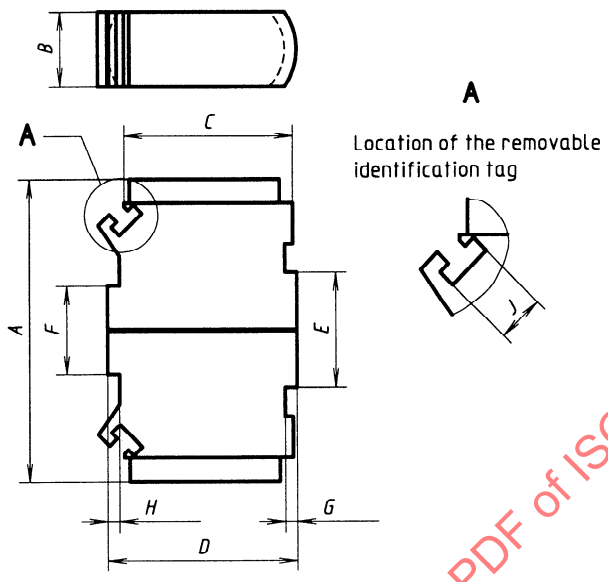


Figure 2 — Feedthrough module

Table 4 — Feedthrough modules

Dimensions in millimetres

Size of module	*A* max.	*B* ± 0,1	*C* 0 −0,3	*D* +0,1 −0,2	*E* 0 −0,2	*F* 0 −0,2	*G*	*H*	*J* +0,2 0
A	43,5	10	21,8	24,8	16,5	12,5	1,5	1,5	3
B	40	10	21,8	24,8	16,5	12,5	1,5	1,5	3
C	50	12	23	24,8	16,5	12,5	1,5	1,5	3
D	50	15	24	24,8	16,5	12,5	1,5	1,5	3

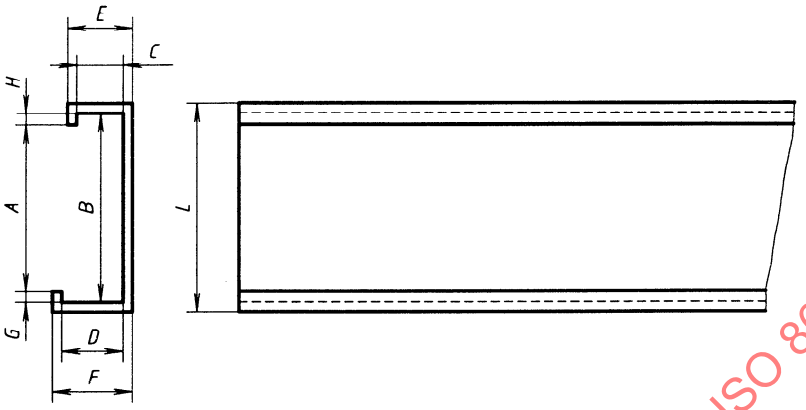
Dimensions in inches

Size of module	*A* max.	*B* ± 0,004	*C* 0 −0,011	*D* +0,004 −0,008	*E* 0 −0,008	*F* 0 −0,008	*G*	*H*	*J* +0,008 0
A	1,712	0,393	0,858	0,976	0,649	0,492	0,059	0,059	0,118
B	1,574	0,393	0,858	0,976	0,649	0,492	0,059	0,059	0,118
C	1,968	0,472	0,905	0,976	0,649	0,492	0,059	0,059	0,118
D	1,968	0,59	0,944	0,976	0,649	0,492	0,059	0,059	0,118

5.1.3 Frames

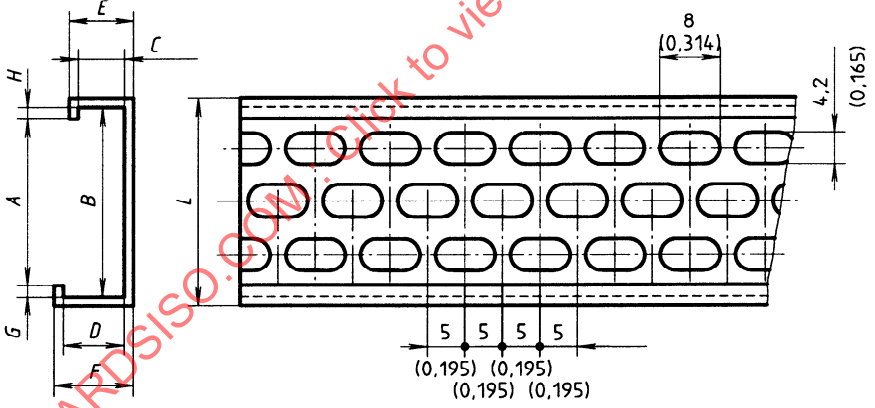
See figures 3 to 5 and tables 5 and 6 for dimensions of frames for feedback modules.

See figure 6 and table 7 for dimensions of frames for feedthrough modules.



NOTE — Dimensions are given in table 5.

Figure 3 — Frame for feedback module: Standard frame P1



NOTE — Dimensions are given in table 5.

Figure 4 — Frame for feedback module: Perforated frame P2

Table 5 — Frames for feedback modules (types P1 and P2)

Dimensions in millimetres								
A +0,3 −0,1	*B* +0,5 −0,05	*C* +0,3 0	*D* +0,3 0	*E*	*F*	*G*	*H*	*L*
22	25	6,05	8,05	8,6	10,6	1,5	1,5	27,5
Dimensions in inches								
A +0,011 −0,004	*B* +0,019 −0,002	*C* +0,011 0	*D* +0,011 0	*E*	*F*	*G*	*H*	*L*
0,866	0,984	0,238	0,317	0,338	0,417	0,059	0,059	1,082

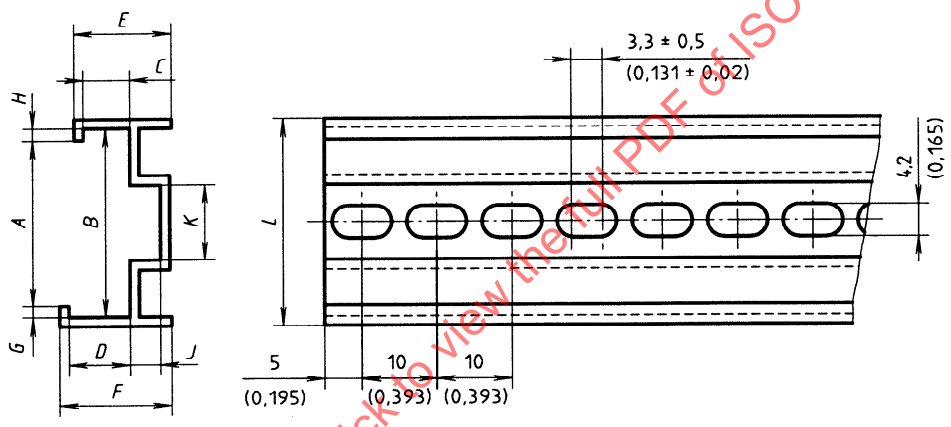


Figure 5 — Frame for feedback module: Reinforced frame P3

Table 6 — Frames for feedback modules (type P3)

Dimensions in millimetres										
A +0,3 −0,1	*B* +0,5 −0,05	*C* +0,3 0	*D* +0,3 0	*E*	*F*	*G*	*H*	*J* +0,5 0	*K* +0,5 0	*L*
22	25	6,05	8,05	13	15	1,5	1,5	4	10	27,5
Dimensions in inches										
A +0,011 −0,004	*B* +0,019 −0,002	*C* +0,011 0	*D* +0,011 0	*E*	*F*	*G*	*H*	*J* +0,019 0	*K* +0,019 0	*L*
0,866	0,984	0,238	0,317	0,511	0,59	0,059	0,059	0,157	0,393	1,082

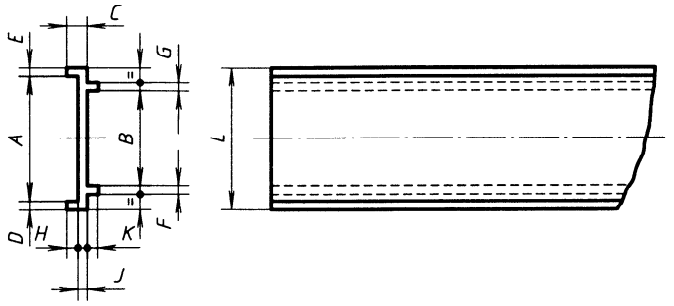


Figure 6 — Frame for feedthrough module: P4

Table 7 — Frames for feedthrough modules (type P4)

Dimensions in millimetres

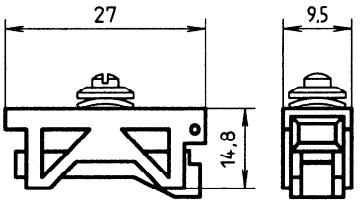
A $^{+0,3}_{0}$	B $^{+0,3}_{0}$	C	D $^{+0,2}_{0}$	E $^{+0,2}_{0}$	F $^{+0,2}_{0}$	G $^{+0,2}_{0}$	H $^{+0,2}_{0}$	J $^{+0,2}_{0}$	K $^{+0,2}_{0}$	L
16,5	12,5	4,3	1,2	1,2	1,2	1,2	1,5	1,3	1,5	18,9

Dimensions in inches

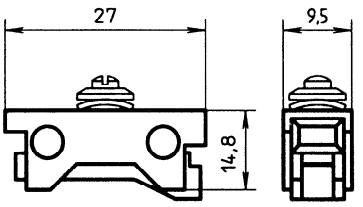
A $^{+0,011}_{0}$	B $^{+0,011}_{0}$	C	D $^{+0,008}_{0}$	E $^{+0,008}_{0}$	F $^{+0,008}_{0}$	G $^{+0,008}_{0}$	H $^{+0,008}_{0}$	J $^{+0,008}_{0}$	K $^{+0,008}_{0}$	L
0,649	0,492	0,169	0,047	0,047	0,047	0,047	0,059	0,051	0,059	0,744

5.1.4 Module clamps and insert

See figures 7 and 8 for the dimensions of module clamps and inserts.

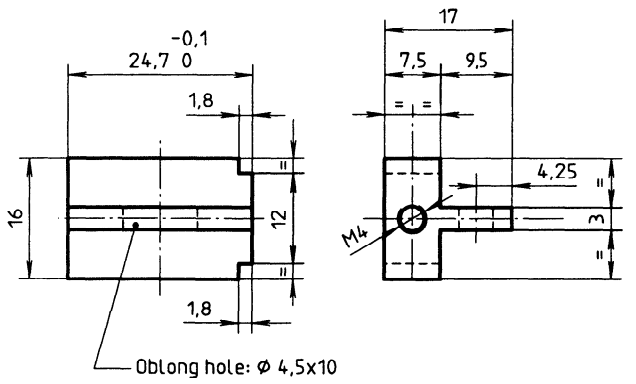


a) Module clamp, type SR1

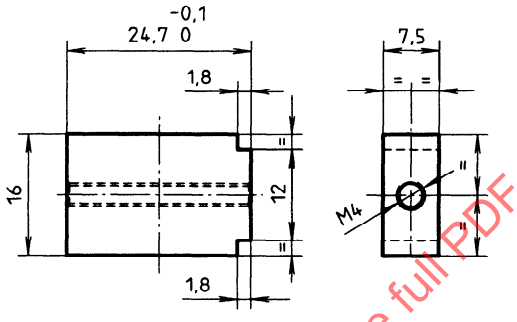


b) Module clamp, type SR2

Figure 7 — Module clamps for feedback modules (code 1)



a) Module clamp, type ST1



b) Inserts, type ST2

Figure 8 — Module clamps and inserts for feedthrough modules (code 2)

5.1.5 Removable identification tags

Removable identification tags shall be 5 mm × 2,8 mm × 0,5 mm. They shall have a white background and all numbers shall be printed in red.

5.1.6 Contacts

See figures 9 to 12 and table 8.

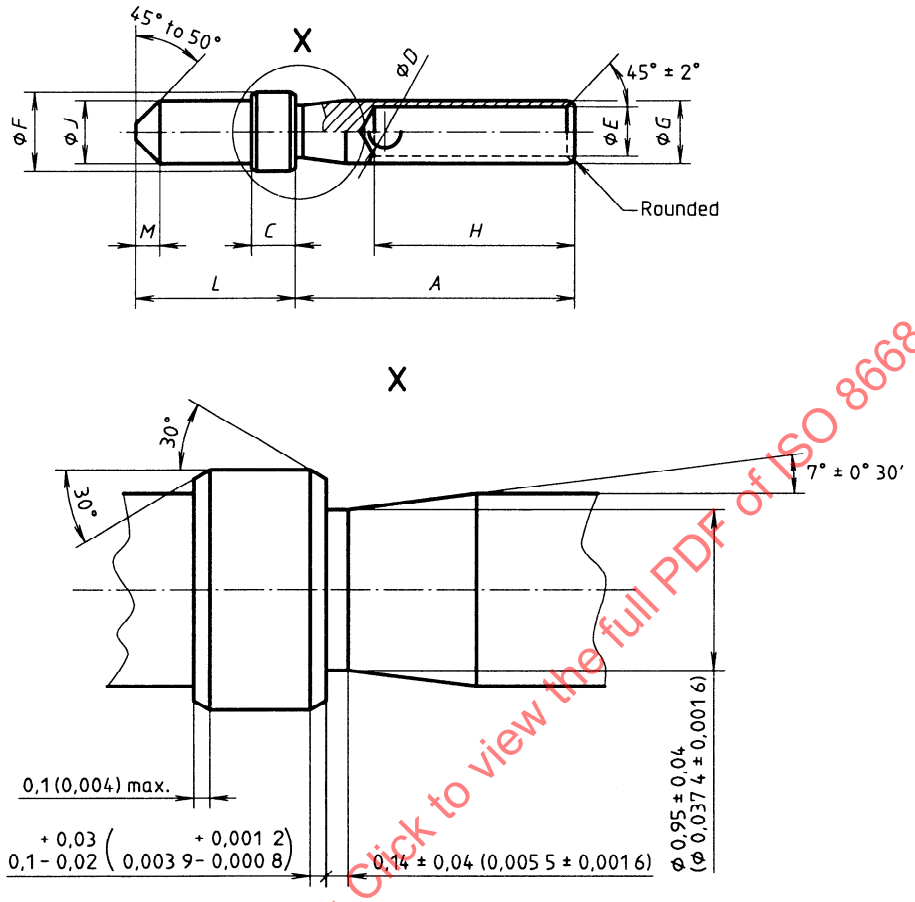
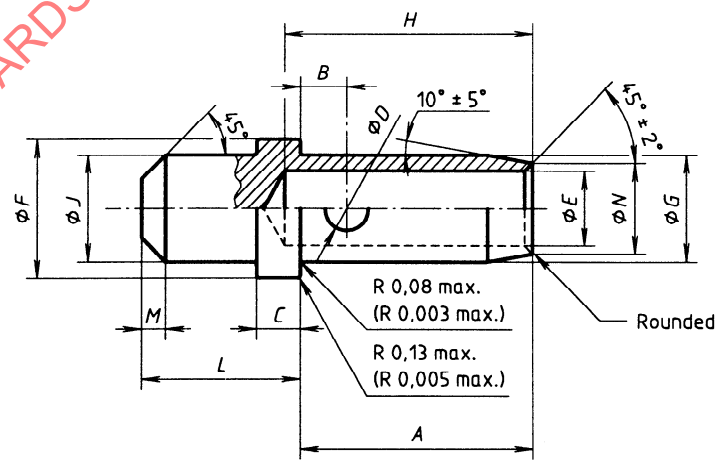


Figure 9 — Contact, size 22



NOTE — With the exception of the details shown in figures 11 and 12, figure 10 is also applicable to size 16 and 12 contacts.

Figure 10 — Contact, size 20

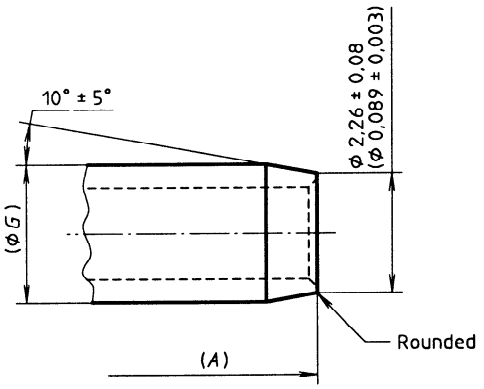


Figure 11 — Detail of the crimping shank of the size 16 contact

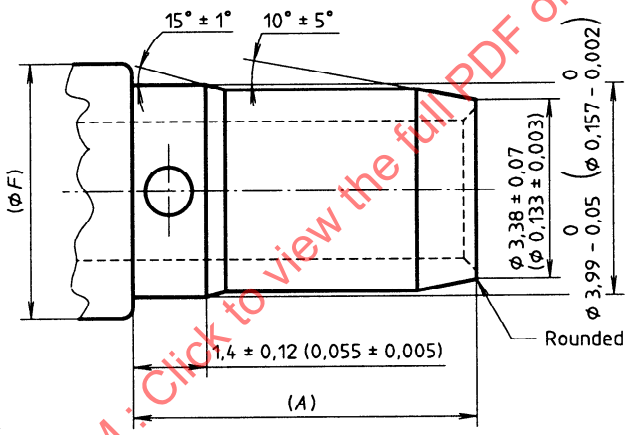


Figure 12 — Detail of the crimping shank of the size 12 contact

Table 8 — Contacts

Dimensions in millimetres

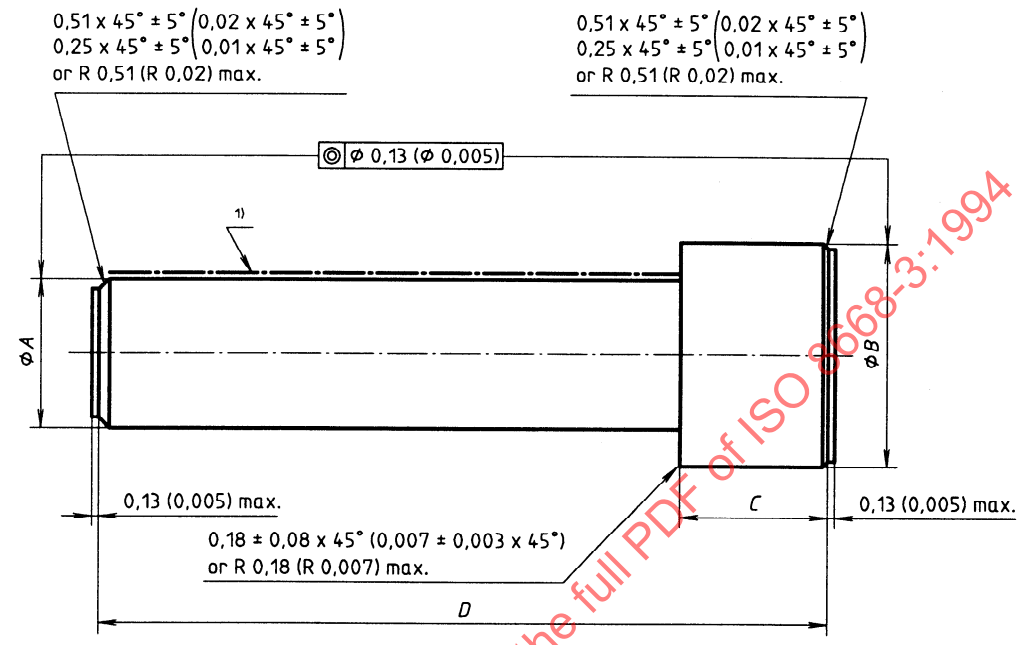
Size of contact	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*L*	*M*	*N*
22	5,30 5,18	1,70 1,65	0,83 0,73	0,63 0,37	0,94 0,87	1,50 1,45	1,19 1,14	3,81 3,71	1,17 1,12	3,03 2,79	0,45 0,35	—
20	4,34 4,06	0,88 0,64	0,83 0,73	0,82 0,66	1,35 1,30	2,62 2,54	1,98 1,93	4,7 4,0	1,98 1,93	3,03 2,79	0,45 0,35	1,67 1,57
16	6,53 6,25	0,88 0,64	1,22 1,12	1,07 0,91	1,73 1,68	3,38 3,30	2,62 2,57	7,2 6,4	2,62 2,57	3,42 3,18	0,45 0,35	2,06 1,91
12	6,53 6,25	0,88 0,64	1,22 1,12	1,07 0,91	2,59 2,49	4,83 4,75	3,84 3,76	7,2 6,4	3,84 3,76	4,39 4,15	0,56 0,46	3,1 3,0

Dimensions in inches

Size of contact	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*L*	*M*	*N*
22	0,209 0,204	0,067 0,065	0,033 0,029	0,025 0,015	0,037 0,034	0,059 0,057	0,047 0,045	0,150 0,146	0,046 0,044	0,119 0,110	0,018 0,014	—
20	0,171 0,160	0,035 0,025	0,033 0,029	0,032 0,026	0,053 0,051	0,103 0,100	0,078 0,076	0,185 0,157	0,078 0,076	0,119 0,110	0,018 0,014	0,066 0,062
16	0,257 0,246	0,035 0,025	0,048 0,044	0,042 0,036	0,068 0,066	0,133 0,130	0,103 0,101	0,283 0,252	0,103 0,101	0,135 0,125	0,018 0,014	0,081 0,075
12	0,257 0,246	0,035 0,025	0,048 0,044	0,042 0,036	0,102 0,098	0,190 0,187	0,151 0,148	0,283 0,252	0,151 0,148	0,173 0,163	0,022 0,018	0,122 0,118

5.1.7 Sealing plugs

Dimensions of sealing plugs are given in figure 13 and table 9. Figure 14 shows the assembly diagram for a sealing plug.

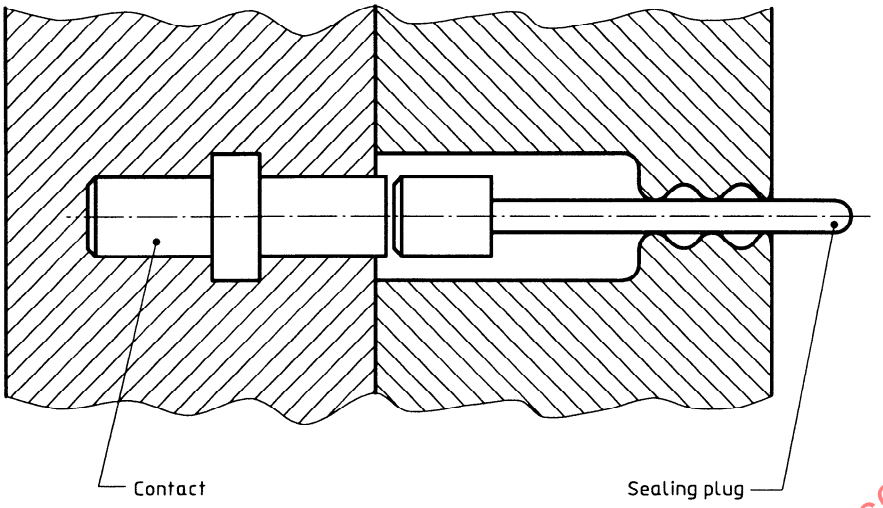


1) No indentations.

Figure 13 — Sealing plug

Table 9 — Sealing plugs

Sealing plug code	Size of contact	A		B		Colour	C		D
		min.	max.	min.	max.		min.	max.	min.
01	22	0,74 (0,029)	1,12 (0,044)	1,55 (0,061)	1,98 (0,078)	Green or yellow	2,79 (0,110)	3,18 (0,125)	13,82 (0,544)
02	20	1,14 (0,045)	1,65 (0,065)	2,16 (0,085)	2,54 (0,100)	Red			
03	16	1,85 (0,073)	2,36 (0,093)	3,25 (0,128)	3,50 (0,138)	Blue			
04	12	2,82 (0,111)	3,33 (0,131)	4,22 (0,166)	4,47 (0,176)	Yellow			



NOTE — If a sealing plug is to be fitted, it is necessary to first fit a contact.

Figure 14 — Assembly diagram

5.2 Interconnection diagrams

The lines defining the diagrams shall be marked on the contact access face. The colour of these lines shall contrast with that of the contact access face.

See figures 15 to 19 and tables 10 to 13.

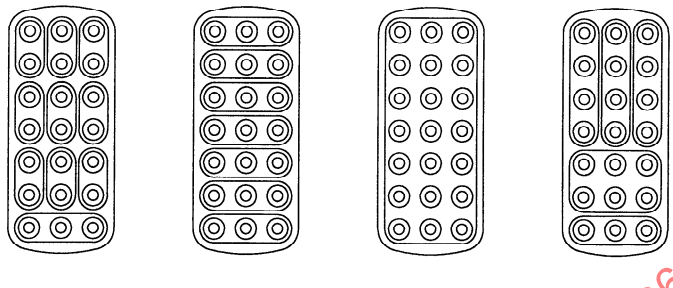


Figure 15 — Size A modules

Table 10 — Size A modules

Arrangement	Feedback module		Feedthrough module	
	Number of contacts	Definition of diagrams	Number of contacts	Definition of diagrams
101	21 of size 22	One group of 3 contacts Nine groups of 2 contacts	—	—
102	21 of size 22	Seven groups of 3 contacts	—	—
103	21 of size 22	One group of 21 contacts	—	—
104	21 of size 22	Three groups of 4 contacts One group of 6 contacts One group of 3 contacts	—	—

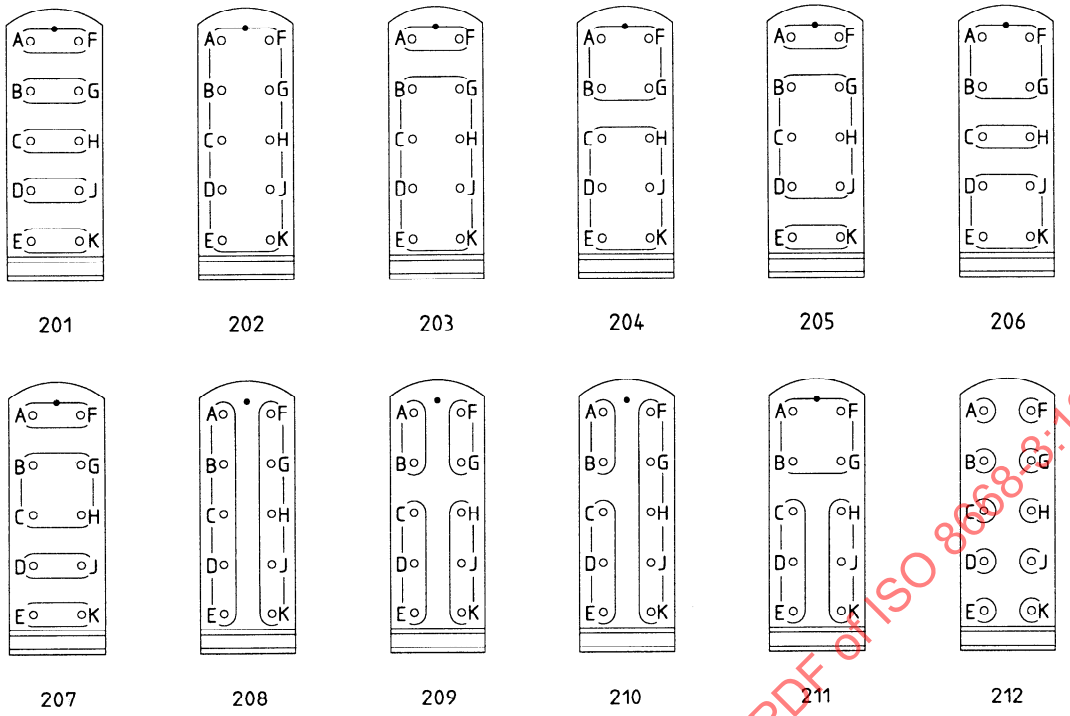


Figure 16 — Size B modules

Table 11 — Size B modules

Arrangement	Feedback module		Feedthrough module	
	Number of contacts	Definition of diagrams	Number of contacts	Definition of diagrams
201	10 of size 20	Five groups of 2 contacts	20 of size 20	Five groups of 4 contacts
202	10 of size 20	One group of 10 contacts	20 of size 20	One group of 20 contacts
203	10 of size 20	Two groups { 1 of 2 contacts; 1 of 8 contacts	—	—
204	10 of size 20	Two groups { 1 of 4 contacts; 1 of 6 contacts	—	—
205	10 of size 20	Three groups { 2 of 2 contacts; 1 of 6 contacts	—	—
206	10 of size 20	Three groups { 2 of 4 contacts; 1 of 2 contacts	—	—
207	10 of size 20	Four groups { 3 of 2 contacts; 1 of 4 contacts	—	—
208	10 of size 20	Two groups of 5 contacts	20 of size 20	Two groups of 10 contacts
209	10 of size 20	Four groups { 2 of 2 contacts; 2 of 3 contacts	—	—
210	10 of size 20	Three groups { 1 of 5 contacts; 1 of 2 contacts; 1 of 3 contacts	—	—
211	10 of size 20	Three groups { 1 of 4 contacts; 2 of 3 contacts	—	—
212	—	—	20 of size 20	Ten groups of 2 contacts

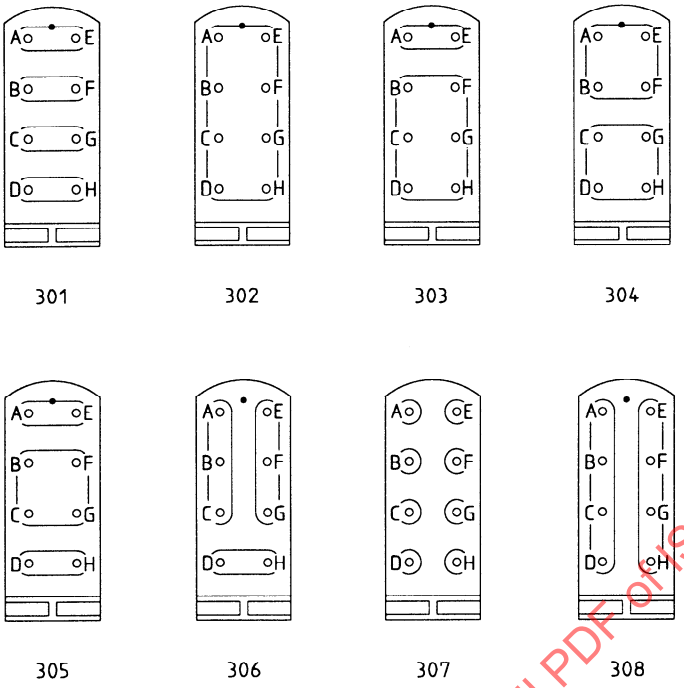
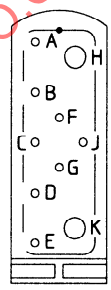


Figure 17 — Size C modules

Table 12 — Size C modules

Arrangement	Feedback module		Feedthrough module	
	Number of contacts	Definition of diagrams	Number of contacts	Definition of diagrams
301	8 of size 16	Four groups of 2 contacts	16 of size 16	Four groups of 4 contacts
302	8 of size 16	One group of 8 contacts	16 of size 16	One group of 16 contacts
303	8 of size 16	Two groups { 1 of 2 contacts; 1 of 6 contacts	—	—
304	8 of size 16	Two groups of 4 contacts	—	—
305	8 of size 16	Three groups { 2 of 2 contacts; 1 of 4 contacts	—	—
306	8 of size 16	Three groups { 2 of 3 contacts; 1 of 2 contacts	—	—
307	8 of size 16	Eight contacts	16 of size 16	Eight groups of 2 contacts
308	8 of size 16	Two groups of 4 contacts	16 of size 16	Two groups of 8 contacts

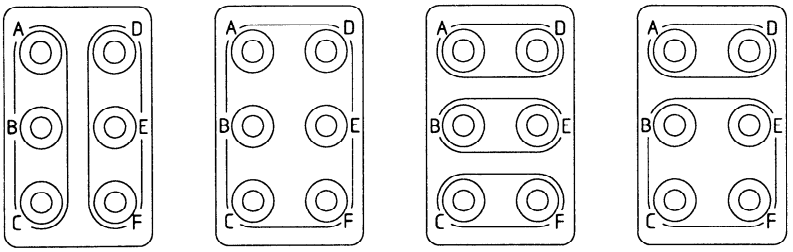


501

Feedback module (code 1)
Diagram No. 501
Number of contacts: 8 of type 20
2 of type 12

Definition of the design: one group of 10 contacts

Figure 18 — Hybrid interconnection diagram for size C modules



401 402 403 404

Figure 19 — Size D modules

Table 13 — Size D modules

Diagram No.	Feedback module		Feedthrough module	
	Number of contacts	Definition of diagrams	Number of contacts	Definition of diagrams
401	6 of size 12	Two groups of 3 contacts	—	—
402	6 of size 12	One group of 6 contacts	—	—
403	6 of size 12	Three groups of 2 contacts	—	—
404	6 of size 12	Two groups { 1 of 4 contacts; 1 of 2 contacts	—	—