PHILIPS

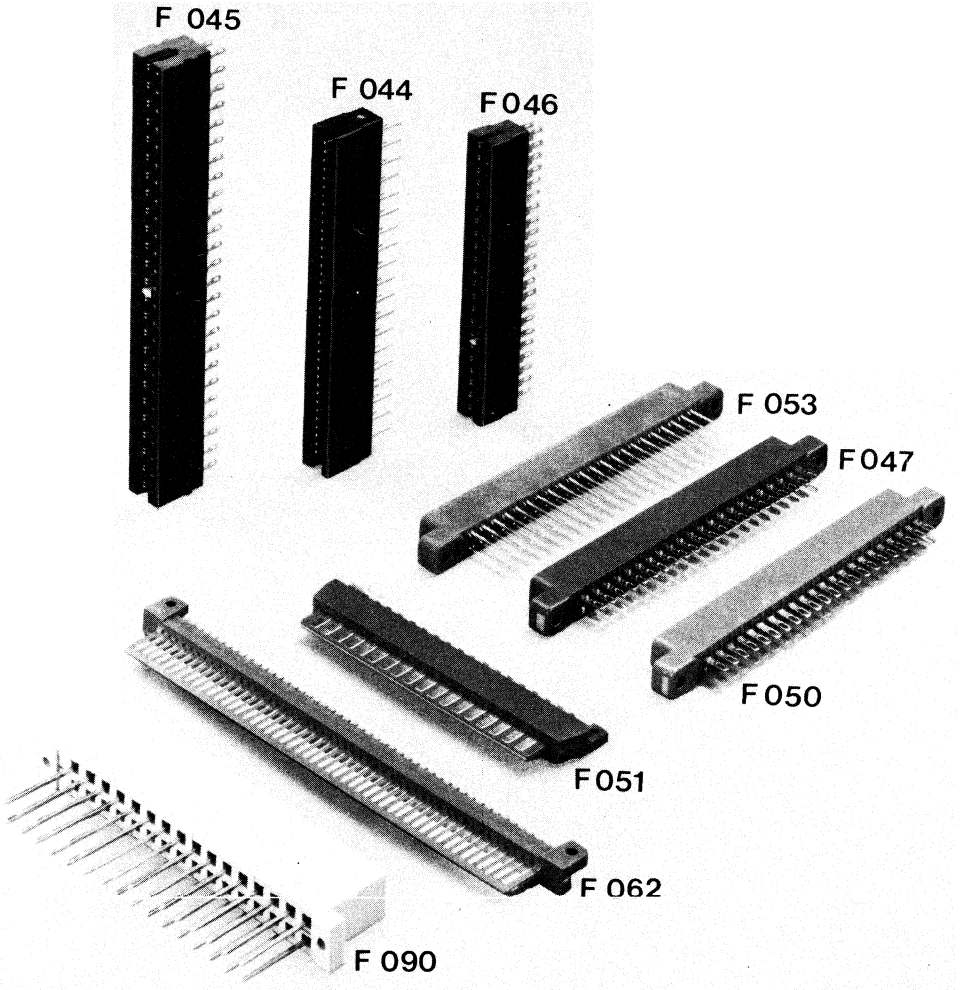
Data handbook

Electronic components and materials

Components and materials

Part 10 November 1975

Connectors


F 045
F 044
F046
F 053
F047
F 050
F051
F 062
F 090

COMPONENTS AND MATERIALS

Part 10 **November 1975**

Connectors

DATA HANDBOOK SYSTEM

Our Data Handbook System is a comprehensive source of information on electronic components, subassemblies and materials; it is made up of three series of handbooks each comprising several parts.

ELECTRON TUBES	**BLUE**
SEMICONDUCTORS AND INTEGRATED CIRCUITS	**RED**
COMPONENTS AND MATERIALS	**GREEN**

The several parts contain all pertinent data available at the time of publication, and each is revised and reissued periodically.

Where ratings or specifications differ from those published in the preceding edition they are pointed out by arrows. Where application information is given it is advisory and does not form part of the product specification.

If you need confirmation that the published data about any of our products are the latest available, please contact our representative. He is at your service and will be glad to answer your inquiries.

December 1972

ELECTRON TUBES (BLUE SERIES)

This series consists of the following parts, issued on the dates indicated.

Part 1a Transmitting tubes for communications and Tubes for r.f. heating Types PB2/500 ÷ TBW15/125 — **April 1973**

Part 1b Transmitting tubes for communication
Tubes for r.f. heating
Amplifier circuit assemblies — **August 1974**

Part 2 Microwave products — **October 1974**

Communication magnetrons
Magnetrons for microwave heating
Klystrons
Travelling-wave tubes
Diodes
Triodes
T-R Switches
Microwave Semiconductor devices
Isolators Circulators

Part 3 Special Quality tubes;
Miscellaneous devices — **January 1975**

Part 4 Receiving tubes — **March 1975**

Part 5a Cathode-ray tubes — **April 1975**

Part 5b Camera tubes; Image intensifier tubes — **May 1975**

Part 6 Products for nuclear technology
Photodiodes — **July 1975**

Neutron tubes
Channel electron multipliers
Geiger-Mueller tubes
N.B. Photomultiplier tubes and Photo diodes will be issued in Part 9

Part 7 Gas-filled tubes — **August 1975**

Voltage stabilizing and reference tube
Counter, selector, and indicator tubes
Trigger tubes
Switching diodes
Thyratrons
Ignitrons
Industrial rectifying tubes
High-voltage rectifying tubes

Part 8 TV Picture tubes — **October 1975**

SEMICONDUCTORS AND INTEGRATED CIRCUITS (RED SERIES)

This series consists of the following parts, issued on the dates indicated.

Part 1a **Rectifier diodes and thyristors** — **June 1974**

Rectifier diodes
Voltage regulator diodes (> 1,5 W)
Transient suppressor diodes
Thyristors, diacs, triacs
Rectifier stacks

Part 1b **Diodes** — **October 1975**

Small signal germanium diodes
Small signal silicon diodes
Special diodes
Voltage regulator diodes (< 1,5 W)
Voltage reference diodes
Tuner diodes

Part 2 **Low frequency transistors** — **July 1974**

Part 3 **High frequency and switching transistors** — **October 1974**

Part 4a **Special semiconductors** — **November 1974**

Transmitting transistors
Microwave devices
Field-effect transistors
Dual transistors
Microminiature devices for thick- and thin-film circuits

Part 4b **Devices for opto-electronics** — **December 1974**

Photosensitive diodes and transistors
Light emitting diodes
Photocouplers
Infra-red sensitive devices
Photoconductive devices

Part 5 **Linear integrated circuits** — **March 1975**

Part 6 **Digital integrated circuits** — **April 1974**

DTL (FC family)
CML (GX family)
MOS (FD family)
MOS (FE family)

COMPONENTS AND MATERIALS (GREEN SERIES)

These series consists of the following parts, issued on the dates indicated.

Part 1 Functional units, Input/output devices, Peripheral devices — **November 1975**

- High noise immunity logic FZ/30-Series
- Circuit blocks 40-Series and CSA70
- Counter modules 50-Series
- Norbits 60-Series, 61-Series
- Circuit blocks 90-Series
- Input/output devices
- Hybrid integrated circuits
- Peripheral devices

Part 2a Resistors — **September 1974**

- Fixed resistors
- Variable resistors
- Voltage dependent resistors (VDR)
- Light dependent resistors (LDR)
- Negative temperature coefficient thermistors (NTC)
- Positive temperature coefficient thermistors (PTC)
- Test switches

Part 2b Capacitors — **November 1974**

- Electrolytic and solid capacitors
- Paper capacitors and film capacitors
- Ceramic capacitors
- Variable capacitors

Part 3 Radio, Audio, Television — **February 1975**

- FM tuners
- Loudspeakers
- Television tuners, aerial input assemblies
- Components for black and white television
- Components for colour television

Part 4a Soft ferrites — **April 1975**

- Ferrites for radio, audio and television
- Beads and chokes
- Ferroxcube potcores and square cores
- Ferroxcube transformer cores

Part 4b Piezoelectric ceramics, Permanent magnet materials — **May 1975**

Part 5 Ferrite core memory products — **July 1975**

- Ferroxcube memory cores
- Matrix planes and stacks
- Core memory systems

Part 6 Electric motors and accessories — **September 1975**

- Small synchronous motors
- Stepper motors
- Miniature direct current motors

Part 7 Circuit blocks — **September 1971**

- Circuit blocks 100 kHz-Series
- Circuit blocks 1-Series
- Circuit blocks 10-Series
- Circuit blocks for ferrite core memory drive

Part 8 Variable mains transformers — **July 1975**

Part 10 Connectors — **November 1975**

Survey

SURVEY

pitch	type number	status	current at 70 °C (typ.)	mechanical endurance	terminations
Printed-wiring connectors (female)					
2,54 mm (0,1 in)	F044	D	3,5 A	≥ 300 insertions	solder tags pins for dip soldering
	F090	Dev.	1 A	≥ 400 insertions	pins for dip soldering pins for mini wire wrap
	F261 *)				
	F262 *)				
3,81 mm (0,15 in)	F046	D	4 A	≥ 300 insertions	solder tags
3,96 mm (0,156 in)	F047	D	5 A	≥ 250 insertions	solder tags
	F050	D	5 A	≥ 100 insertions	solder tags
	F053	D	4,5 A	≥ 250 insertions	pins for dip soldering pins for wire wrap
	F264 *)				
5,08 mm (0,2 in)	F045	D	4,5 A	≥ 300 insertions	solder tags
	F090	Dev.	4 A	≥ 400 insertions	pins for dip soldering pins for wire wrap
Two-part printed-wiring connectors					
2,54 mm (0,1 in)	F054	M	3 A	≥ 300 insertions	solder tags pins for dip soldering pins for mini wire wrap
	F068-I	D	1 A	≥ 400 insertions	solder tags pins for dip soldering pins for mini wire wrap
	F081	Dev.	1 A	≥ 500 insertions	solder pins solder tags pins for wire wrap
3,81 mm (0,15 in)	F080	Dev.	1 A	≥ 500 insertions	solder pins pins for wire wrap
5,08 mm (0,2 in)	F068-I	D	1 A	≥ 400 insertions	solder tags pins for dip soldering pins for mini wire wrap
	F068-II	D	4 A	≥ 400 insertions	pins for dip soldering pins for wire wrap

*) Development sample data sheets will be issued shortly.

pitch	type number	status	current at 70 °C (typ.)	mechanical endurance	terminations
Printed-wiring interconnectors (male)					
2,54 mm (0,1 in)	F062	Dev.	3 A	≥ 500 insertions [1] ≥ 100 insertions [2]	solder tags
3,96 mm (0,156 in)	F051	D	5 A	≥ 300 insertions	solder tags
Two-part jumper connector					
2,54 mm (0,1 in)	F088	D	2,5 A	≥ 150 insertions	pins for dip soldering
Modular connector system					
2,54 mm (0,1 in)	F095	D	2 A	≥ 300 insertions	pins for dip soldering pins for mini wire wrap
Subminiature rack and panel connectors					
	F161	D	5 A	≥ 500 insertions	crimp snap-in contacts solder pots
	F161	Dev.	5 A	≥ 500 insertions	pins for dip soldering pins for mini wire wrap

STATUS GUIDE

D = design type: recommended for equipment design and available in quantities.

M = maintenance type: limited production; no longer recommended for new equipment design, but available for maintenance of existing equipment.

Dev. = development type: data are given for information purposes only and are derived from development samples made available for evaluation. This does not necessarily imply that the device will go into production.

Note - In the data sheets on connectors F044, F045, F046 and F095, preferred numbers of contact positions are marked with an asterisk; these can be supplied more quickly and at a lower price.

[1]) Conforming to UTE 93-423, model HE901.

[2]) Conforming to UTE 93-423, model HE902.

Connectors

2,54 mm (0,1 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	2,54 mm (0,1 in)
Number of connections	4 to 39
Board thickness	1,42 to 1,78 mm
Terminations	solder tags or pins for dip soldering
Category (IEC 68)	25/085/21

DESCRIPTION

The connectors have a body of black tropic-proof thermosetting phenolic resin.
The contact springs are of phosphor bronze wire. The opposite contacts are bridged to provide a four-fold contact. The contact surfaces are gold plate on nickel plate.
In view of the use of mounting accessories the connectors are supplied without contacts at both end contact positions (Fig. 1c).

TECHNICAL DATA

Dimensions (mm)

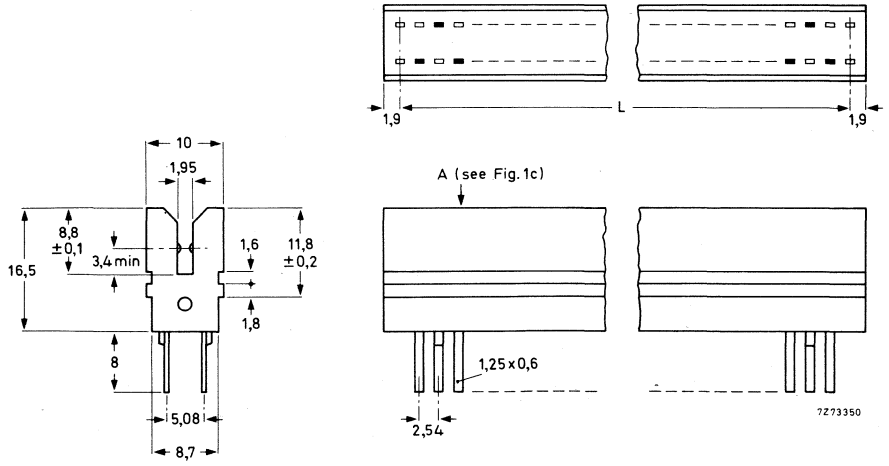


Fig. 1a. Connector with pins for dip soldering.
See Table 1 for dimension L.

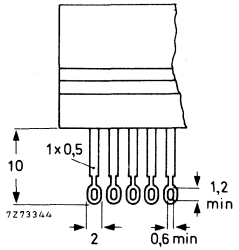


Fig. 1b. Connector with solder tags.

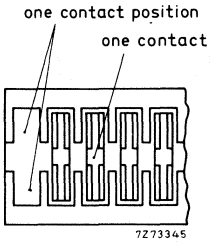


Fig. 1c. Diagrammatic part view in the direction of arrow A (see Fig. 1a).

For piercing diagrams, see Figs. 5 and 6.

Table 1 - The numbers in the first column marked with an asterisk are preferred ones, see "General".

number of contact positions	L [1]	approx. weight (g)	
		versions with pins for dip soldering	versions with solder tags
06	12,70	8,2	5
07	15,24	9,4	5,5
08	17,78	10,6	6
09	20,32	11,8	6,5
10 *)	22,86	13,0	7
11	25,40	14,2	8
12 *)	27,94	15,4	8,5
13	30,48	16,6	9,5
14 *)	33,02	17,8	10
15	35,56	19,0	10,5
16	38,10 ±0,2	20,2	11
17	40,64	21,4	12
18	43,18	22,6	13
19 *)	45,72	23,8	14
20	48,26	25,0	15
21	50,80	26,2	15,5
22	53,34	27,4	16
23	55,88	28,6	17
24 *)	58,42	29,8	17,5
25	60,96	31,0	18

[1] L_{nom} = (n-1) 2,54 mm; n = number of contact positions.

Table 1 (continued) - The numbers in the first column marked with an asterisk are preferred ones, see "General".

number of contact positions	L [1]	approx. weight (g)	
		versions with pins for dip soldering	versions with solder tags
26 *)	63,50	32,2	19
27	66,04	33,4	19,5
28 *)	68,58	34,6	20
29	71,12	35,8	20,5
30	73,66	37,0	21
31	76,20	38,2	22
32	78,74	39,4	22,5
33	81,28 ±0,2	40,6	23
34 *)	83,82	41,8	23,5
35	86,36	43,0	24
36	88,90	44,2	24,5
37	91,44	45,4	25
38	93,98	46,6	25,5
39 *)	96,52	47,8	26

Contact pitch	2,54 mm (0,1 in)
Number of connections	4 to 39
Board thickness	1,42 to 1,78 mm
Polarization	by means of a polarizing key (Fig. 7)
Mechanical endurance	≥ 300 insertions
Ambient temperature range	−25 to +85 °C
Connector body, material	tropic-proof phenolic resin
Contact springs	
material	phosphor bronze
finish of contact surfaces	min. 0,8 μm gold plate on min. 2 μm nickel plate
contact force for 1,6 mm board	
initially	≥ 1 N
after mechanical endurance	≥ 1 N
type of terminations	solder tag or pin for dip soldering
finish of terminations	tinned
Current at T_{amb} = 70 °C	typical 3,5 A
at T_{amb} = 85 °C	typical 3 A
Creepage distance between two adjacent contacts	≥ 1,3 mm

[1]) L_{nom} = (n-1) 2,54 mm; n = number of contact positions.

Maximum r.m.s. voltage	dependent on the safety regulations for the associated equipment [1]
Test voltage for 1 min	
between adjacent contacts	700 V, 50 Hz
between a contact and a metal mounting plate	700 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 10 mΩ
after damp heat test (IEC 68, test Ca)	< 12 mΩ
Insulation resistance	
initially	> 10^4 MΩ
after damp heat test (IEC 68, test Ca)	> 10^2 MΩ
Capacitance between adjacent contacts	< 2 pF

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 ... 4..18

021 pins for dip soldering
023 solder tags

number of contact positions, see Table 1

For ordering purposes please quote the catalogue number.

[1]) In accordance with IEC 130-1, the maximum permissible voltage is 100 V (r.m.s. value).

MOUNTING

Mounting accessories

The following mounting accessories are available:

- metal bracket for rail or panel mounting, catalogue number 4332 026 00750, Fig. 2a;
- metal bracket for panel mounting, catalogue number 4332 026 00760, Fig. 3a;
- metal bracket for panel mounting of connectors in series, catalogue number 4332 026 00730, Fig. 4a, and metal bracket, catalogue number 4332 026 00720, Fig. 4b.

Note - The mounting accessories can only be used with connectors without contacts at both ends.

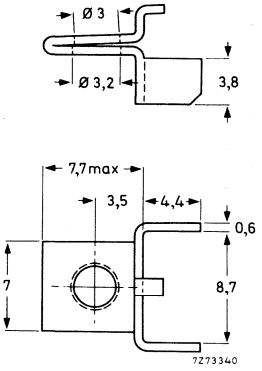


Fig. 2a. Metal mounting bracket 4332 026 00750.

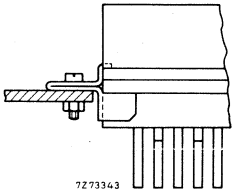


Fig. 2b. Part view, showing mounting bracket is position.

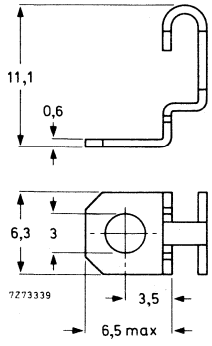


Fig. 3a. Metal mounting bracket 4332 026 00760.

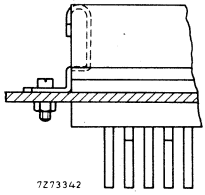


Fig. 3b. Part view, showing mounting bracket in position.

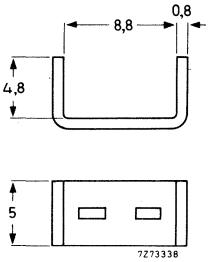
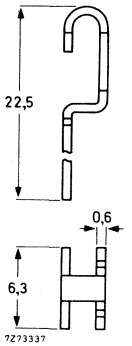


Fig. 4a. Metal mounting bracket 4332 026 00730.

Fig. 4b. Metal mounting bracket 4332 026 00720.



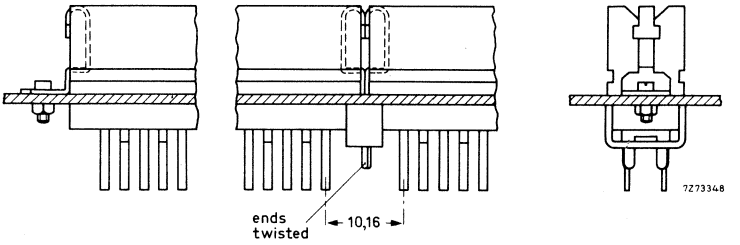


Fig. 4c. Part view, showing mounting brackets in position.

Piercing diagrams

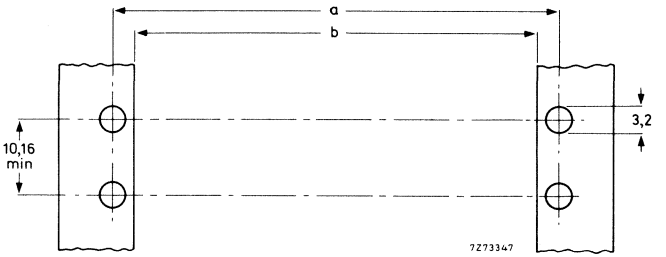


Fig. 5. Rail mounting; see Table 2 for dimensions a and b.

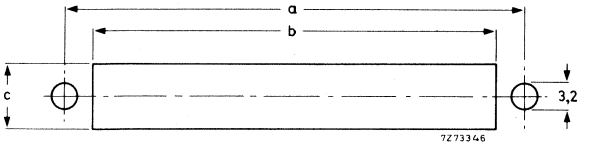


Fig. 6. Panel mounting; see Table 2 for dimensions a and b.
c = 10,5 ± 0,15 mm, when bracket 4332 026 00750 is used;
= 9 ± 0,15 mm, when bracket 4332 026 00760 is used.

Table 2

number of contact positions	dimensions (mm)		
	a (L_{nom} + 10,8)	for mounting with 4332 026 00750 b (L_{max} + 5,6)	for mounting with 4332 026 00760 b (L_{max} + 4,2)
06	23,50	18,50	17,10
07	26,04	21,04	19,64
08	28,58	23,58	22,18
09	31,12	26,12	24,72
10	33,66	28,66	27,26
11	36,20	31,20	29,80
12	38,74	33,74	32,34
13	41,28	36,28	34,88
14	43,82	38,82	37,42
15	46,36	41,36	39,96
16	48,90	43,90	42,50
17	51,44	46,44	45,04
18	53,98	48,98	47,58
19	56,52	51,52	50,12
20	59,06	54,06	52,66
21	61,60	56,60	55,20
22	64,14	59,14	57,74
23	66,68 ± 0,1	61,68 ± 0,1	60,28 ± 0,1
24	69,22	64,22	62,82
25	71,76	66,76	65,36
26	74,30	69,30	67,90
27	76,84	71,84	70,44
28	79,38	74,38	72,98
29	81,92	76,92	75,52
30	84,46	79,46	78,06
31	87,00	82,00	80,60
32	89,54	84,54	83,14
33	92,08	87,08	85,68
34	94,62	89,62	88,22
35	97,16	92,16	90,76
36	99,70	94,70	93,30
37	102,24	97,24	95,84
38	104,78	99,78	98,38
39	107,32	102,32	100,92

POLARIZATION

A metal key (Fig. 7) fitted over a contact spring ensures that a printed-wiring board is correctly polarized in its connector. A slot must be made in the printed-wiring board to receive the key (Fig. 8).
The same key is also recommended for positioning of the board when using connectors mounted with brackets 4332 026 00750 for example.

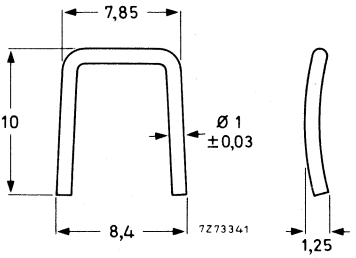
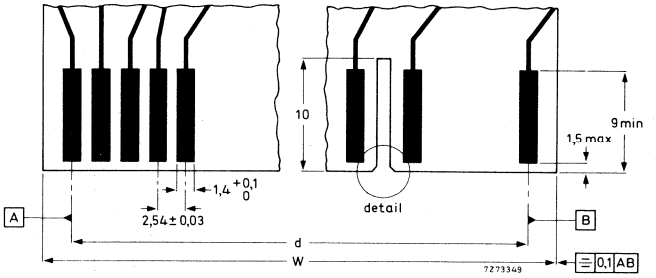


Fig. 7. Polarizing key, catalogue number 4332 026 00770.

PRINTED-WIRING BOARD REQUIREMENTS



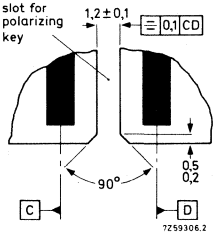


Fig. 8. For the dimensions d and W, see Table 3.

PACKAGING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

Table 3

number of contact positions	dimensions (mm)	
	d(L_{nom} − 5, 08)	W(L_{min} − 0, 4)
06	7, 62	12, 10
07	10, 16	14, 64
08	12, 70	17, 13
09	15, 24	19, 72
10	17, 78	22, 26
11	20, 32	24, 80
12	22, 86	27, 34
13	25, 40	29, 88
14	27, 94	32, 42
15	30, 48	34, 96
16	33, 02	37, 50
17	35, 56	40, 04
18	38, 10	42, 58
19	40, 64	45, 12
20	43, 18	47, 66
21	45, 72	50, 20
22	48, 26	52, 74
23	50, 80 ± 0, 1	55, 28 + 0, 2
24	53, 34	57, 82
25	55, 88	60, 36
26	58, 42	62, 90
27	60, 96	65, 44
28	63, 50	67, 98
29	66, 04	70, 52
30	68, 58	73, 06
31	71, 12	75, 60
32	73, 66	78, 14
33	76, 20	80, 68
34	78, 74	83, 22
35	81, 28	85, 76
36	83, 82	88, 30
37	86, 36	90, 84
38	88, 90	93, 38
39	91, 44	95, 92

5,08 mm (0,2 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	5,08 mm (0,2 in)
Number of connections	
single row	1 to 54
double row	2 to 108
Board thickness	1,42 to 1,78 mm
Terminations	solder tags
Category (IEC 68)	25/085/21

DESCRIPTION

The connectors have a moulded body of black, tropic-proof thermosetting phenolic resin. The contact springs are of phosphor bronze; they are bifurcated to provide a double contact and are easily removable.
The contact surfaces are gold plate on nickel plate.

TECHNICAL DATA

Dimensions (mm)

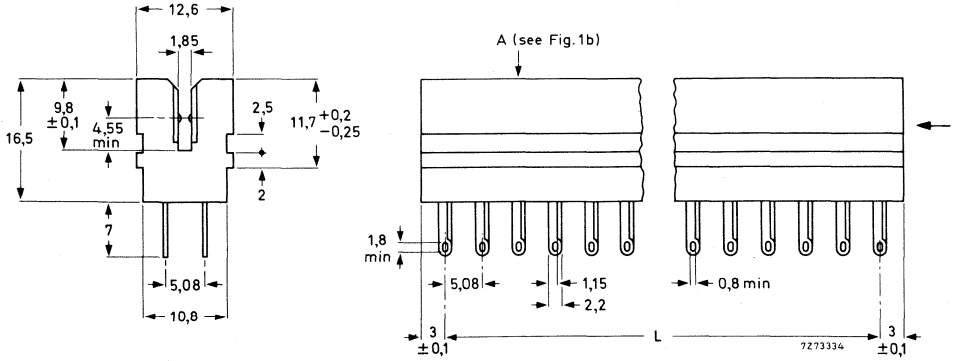


Fig. 1a. See Table 1 for dimension L.

For piercing diagrams see Figs. 6 and 7.

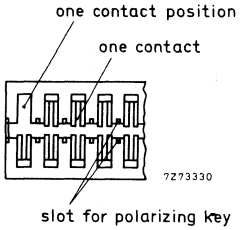


Fig. 1b. Diagrammatic part view in the direction of arrow A (see Fig. 1a)

Table 1 - The numbers in the first column marked with an asterisk are preferred ones, see "General".

number of contact positions, single row	L [1] (mm)		approx. weight [2] (g)	number of contact positions, single row	L [1] (mm)		approx. weight [2] (g)
03	10,16		4,6	29	142,24		35,8
04	15,24		5,8	30 *)	147,32		37,0
05	20,32		7,0	31	152,40		38,2
06	25,40	±0,20	8,2	32	157,48	±0,40	39,4
07	30,48		9,4	33	162,56		40,6
08	35,56		10,6	34	167,64		41,8
09	40,64		11,8	35 *)	172,72		43,0
10 *)	45,72		13,0	36	177,80		44,2
11	50,80		14,2	37	182,88		45,4
12	55,88		15,4	38	187,96		46,6
13	60,96		16,6	39	193,04		47,8
14	66,04		17,8	40 *)	198,12		49,0
15 *)	71,12		19,0	41	203,20		50,2
16	76,20		20,2	42	208,28		51,4
17	81,28	±0,30	21,4	43	213,36		52,6
18	86,36		22,6	44	218,44		53,8
19 *)	91,44		23,8	45	223,52	±0,50	55,0
20 *)	96,52		25,0	46	228,60		56,2
21	101,60		26,2	47	233,68		57,4
22	106,68		27,4	48	238,76		58,6
23	111,76		28,6	49	243,84		59,8
24	116,84		29,8	50	248,92		61,0
25 *)	121,92		31,0	51	254,00		62,2
26	127,00	±0,40	32,2	52	259,08		63,4
27	132,08		33,4	53	264,16		64,6
28	137,16		34,6	54 *)	269,24		65,8

1) L_{nom} = (n-1) 5,08 mm; n = number of connections, single row.

2) For double row connectors.

Contact pitch	5,08 mm (0,2 in)
Number of connections, single row	1 to 54
double row	2 to 108
Board thickness	1,42 to 1,78 mm ←
Polarization	by means of a polarizing key (Fig. 8)
Mechanical endurance	≥300 insertions
Ambient temperature range	− 25 to +85 °C
Connector body, material	tropic-proof phenolic resin
Contact springs	
material	phosphor bronze
shape	bifurcated
finish of contact surfaces	min. 0,75 µm gold plate on ← min.5 µm nickel plate
contact force for 1,6 mm board	
initially	≥1 N
after mechanical endurance	≥0,8 N
type of terminations	solder tag ←
finish of terminations	gold flash
Current at T_{amb} = 70 °C	typical 4,5 A ←
at T_{amb} = 85 °C	typical 4 A ←
Clearance between two opposite contacts	≥0,5 mm
Creepage distance between two adjacent or opposite contacts	≥2,6 mm
Maximum r.m.s. voltage	dependent on the safety regulations ← for the associated equipment [1])
Test voltage for 1 min	
between contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance)	
at 10 mA, ≤ 20 mVp, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 12 mΩ
after mechanical endurance	< 12 mΩ
after damp heat test (IEC 68, test Ca)	< 14 mΩ
Insulation resistance	
initially	> 10^4 MΩ
after damp heat test (IEC 68, test Ca)	> 10^2 MΩ
Capacitance between adjacent contacts	< 1 pF
between opposite contacts	< 1 pF

1) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 020 5....

number of contact positions, single row (see Table 1)

- 02 single row
- 12 double row
- 04 single row, minus one contact at either end
- 14 double row, minus two contacts at either end

For ordering purposes please quote the catalogue number.

MOUNTING

Mounting accessories

The following types of mounting accessories are available:

- thermoplastic bracket for rail or panel mounting (catalogue number 4332 026 11110), Fig. 2a;
- metal bracket for rail or panel mounting (catalogue number 4332 026 04760), Fig. 3a;
- metal bracket for panel mounting (catalogue number 4332 026 04750), Fig. 4a;
- metal bracket for panel mounting (catalogue number 4332 026 04630) in combination with end piece (catalogue number 4332 026 04770), Fig. 5.

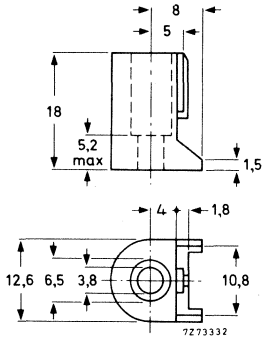


Fig. 2a. Thermoplastic mounting bracket 4332 026 11110.

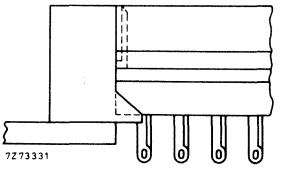
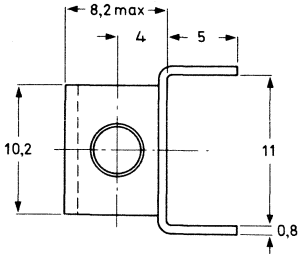


Fig. 2b. Part view, showing mounting bracket in position.



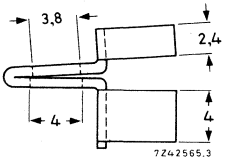


Fig. 3a. Metal mounting bracket 4332 026 04760.

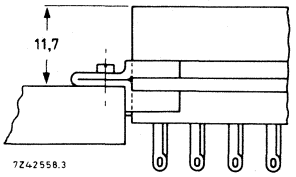


Fig. 3b. Part view, showing mounting bracket in position.

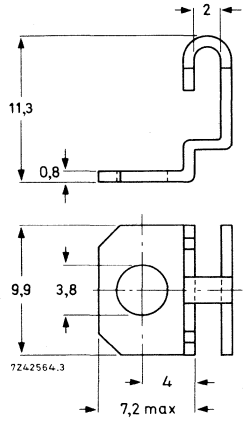


Fig. 4a. Metal mounting bracket 4332 026 04750 [1].

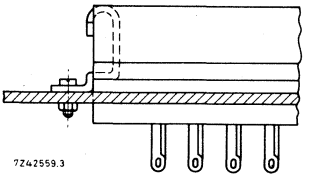


Fig. 4b. Part view, showing mounting bracket in position.

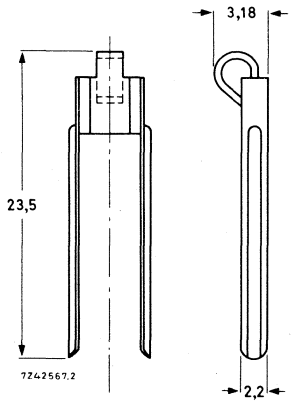


Fig. 5b. End piece 4332 026 04770 [1].

Fig. 5a. Metal mounting bracket 4332 026 04630 [1].

[1] For use with connectors of which the contact positions at either end are not provided.

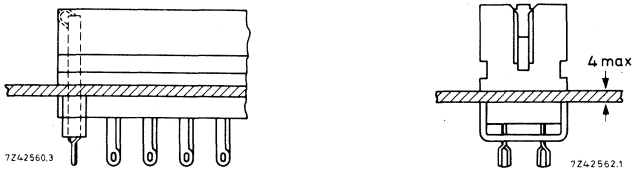


Fig. 5c. Part views, showing mounting bracket and end piece in position.

Piercing diagrams

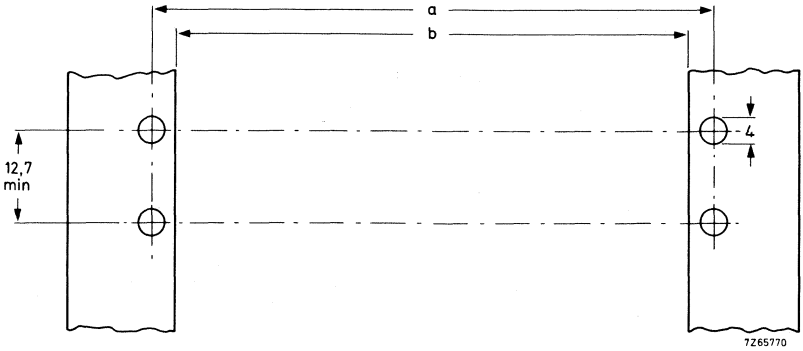


Fig. 6. Rail mounting; see Table 3, for dimensions a and b.

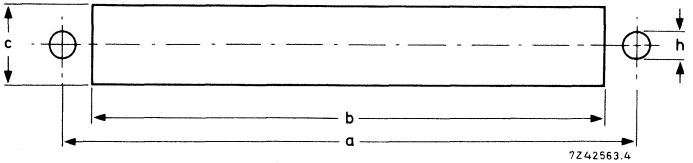


Fig. 7. Panel mounting; see Table 3, for dimensions a and b.

Table 2

mounting accessory	see Fig.	c (mm)	h (mm)
4332 026 11110	2	$11^{+0,2}_{-0}$	4
4332 026 04760	3	$12,8^{+0,2}_{-0}$	4
4332 026 04750	4	$11^{+0,2}_{-0}$	4
4332 026 04630 4332 026 04770	5	$11^{+0,2}_{-0}$	not required

POLARIZATION AND POSITIONING

A thermoplastic key (Fig. 8) inserted in a slot between any two adjacent contacts (see Fig. 1b) ensures that a printed-wiring board is correctly polarized in its connector. This method involves no loss of contacts. A slot must be made in the printed-wiring board to receive the key (Fig. 9).

The same key is also recommended for positioning of the board when using connectors with more than 35 contact positions, single row.
In this case the slot in the printed-wiring board should be near the centre.

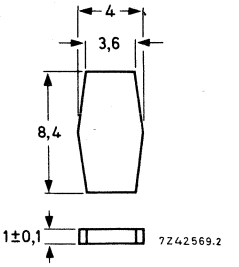


Fig. 8. Polarizing key, 4332 026 04740.

PRINTED-WIRING BOARD RECOMMENDATIONS

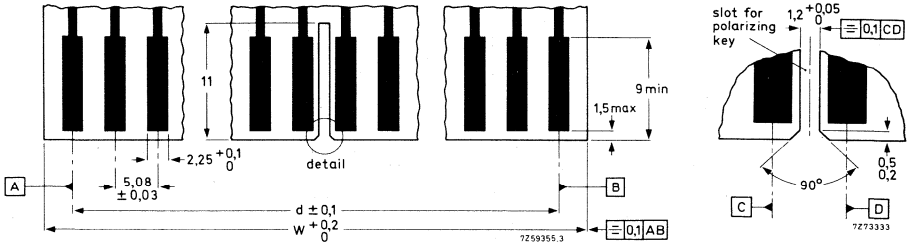


Fig. 9. See Table 3, for dimensions d and W.

PACKAGING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

Table 3

number of contact positions, single row	dimensions (mm)					
	a (L_{nom} + 14)		for mounting with bracket 4332 026 04760 b (L_{max} + 7,8)		for mounting with other parts b (L_{max} + 6,2)	
03	24,16		18,16		16,56	
04	29,24		23,24		21,64	
05	34,32		28,32		26,72	
06	39,40		33,40		31,80	
07	44,48		38,48		36,88	
08	49,56		43,56		41,96	
09	54,64		48,64		47,04	
10	59,72		53,72		52,12	
11	64,80		58,90		57,30	
12	69,88		63,98		62,38	
13	74,96		69,06		67,46	
14	80,04		74,14		72,54	
15	85,12		79,22		77,62	
16	90,20		84,30		82,70	
17	95,28		89,38		87,78	
18	100,36		94,46		92,86	
19	105,44		99,54		97,94	
20	110,52		104,62		103,02	
21	115,60		109,70		108,10	
22	120,68		114,78		113,18	
23	125,76		119,86		118,26	
24	130,84		125,04		123,44	
25	135,92		130,12		128,52	
26	141,00		135,20		133,60	
27	146,08		140,28		138,68	
28	151,16	± 0,2	145,36	± 0,1	143,76	± 0,1
29	156,24		150,44		148,84	
30	161,32		155,52		153,92	
31	166,40		160,60		159,00	
32	171,48		165,68		164,08	
33	176,56		170,76		169,16	
34	181,64		175,84		174,24	
35	186,72		180,92		179,32	
36	191,80		186,10		184,50	
37	196,88		191,18		189,58	
38	201,96		196,26		194,66	
39	207,04		201,34		199,74	
40	212,12		206,42		204,82	
41	217,20		211,50		209,90	
42	222,28		216,58		214,98	
43	227,36		221,66		220,06	
44	232,44		226,74		225,14	
45	237,52		231,82		230,22	
46	242,60		236,90		235,30	
47	247,68		241,98		240,38	
48	252,76		247,06		245,46	
49	257,84		252,14		250,54	
50	262,92		257,22		255,62	
51	268,00		262,30		260,70	
52	273,08		267,38		265,78	
53	278,16		272,46		270,86	
54	283,24		277,54		275,94	

dimensions (mm)

for mounting with bracket 4332 026 04760		for mounting with bracket 4332 026 11110		for mounting with bracket 4332 026 04750		for mounting with bracket 4332 026 04630 and end piece 4332 026 04770	
$d(L_{nom})$	$W(L_{min}+5,5)$	$d(L_{nom})$	$W(L_{min}+1,9)$	$d(L_{nom}-10,16)$	$W(L_{min}-0,1)$	$d(L_{nom}-10,16)$	$W(L_{min}-0,15)$
10,16	15,46	10,16	11,86	–	9,86	–	9,81
15,24	20,54	15,24	16,94	5,08	14,94	5,08	14,89
20,32	25,62	20,32	22,02	10,16	20,02	10,16	19,97
25,40	30,70	25,40	27,10	15,24	25,10	15,24	25,05
30,48	35,78	30,48	32,18	20,32	30,18	20,32	30,13
35,56	40,86	35,56	37,26	25,40	35,26	25,40	35,21
40,64	45,94	40,64	42,34	30,48	40,34	30,48	40,29
45,72	51,02	45,72	47,42	35,56	45,42	35,56	45,37
50,80	56,00	50,80	52,40	40,64	50,40	40,64	50,35
55,88	61,08	55,88	57,48	45,72	55,48	45,72	55,43
60,96	66,16	60,96	62,56	50,80	60,56	50,80	60,51
66,04	71,24	66,04	67,64	55,88	65,64	55,88	65,59
71,12	76,32	71,12	72,72	60,96	70,72	60,96	70,67
76,20	81,40	76,20	77,80	66,04	75,80	66,04	75,75
81,28	86,48	81,28	82,88	71,12	80,88	71,12	80,83
86,36	91,56	86,36	87,96	76,20	85,96	76,20	85,91
91,44	96,64	91,44	93,04	81,28	91,04	81,28	90,99
96,52	101,72	96,52	98,12	86,36	96,12	86,36	96,07
101,60	106,80	101,60	103,20	91,44	101,20	91,44	101,15
106,68	111,88	106,68	108,28	96,52	106,28	96,52	106,23
111,76	116,96	111,76	113,36	101,60	111,36	101,60	111,31
116,84	121,94	116,84	118,34	106,68	116,34	106,68	116,29
121,92	127,02	121,92	123,42	111,76	121,42	111,76	121,37
127,00	132,10	127,00	128,50	116,84	126,50	116,84	126,45
132,08	137,18	132,08	133,58	121,92	131,58	121,92	131,53
137,16	142,26	137,16	138,66	127,00	136,66	127,00	136,61
142,24	147,34	142,24	143,74	132,08	141,74	132,08	141,69
147,32	152,42	147,32	148,82	137,16	146,82	137,16	146,77
152,40	157,50	152,40	153,90	142,24	151,90	142,24	151,85
157,48	162,58	157,48	158,98	147,32	156,98	147,32	156,93
162,56	167,66	162,56	164,06	152,40	162,06	152,40	162,01
167,64	172,74	167,64	169,14	157,48	167,14	157,48	167,09
172,72	177,82	172,72	174,22	162,56	172,22	162,56	172,17
177,80	182,80	177,80	179,20	167,64	177,20	167,64	177,15
182,88	187,88	182,88	184,28	172,72	182,28	172,72	182,23
187,96	192,96	187,96	189,36	177,80	187,36	177,80	187,31
193,04	198,04	193,04	194,44	182,88	192,44	182,88	192,39
198,12	203,12	198,12	199,52	187,96	197,52	187,96	197,47
203,20	208,20	203,20	204,60	193,04	202,60	193,04	202,55
208,28	213,28	208,28	209,68	198,12	207,68	198,12	207,63
213,36	218,36	213,36	214,76	203,20	212,76	203,20	212,71
218,44	223,44	218,44	219,84	208,28	217,84	208,28	217,79
223,52	228,52	223,52	224,92	213,36	222,92	213,36	222,87
228,60	233,60	228,60	230,00	218,44	228,00	218,44	227,95
233,68	238,68	233,68	235,08	223,52	233,08	223,52	233,03
238,76	243,76	238,76	240,16	228,60	238,16	228,60	238,11
243,84	248,84	243,84	245,24	233,68	243,24	233,68	243,19
248,92	253,92	248,92	250,32	238,76	248,32	238,76	248,27
254,00	259,00	254,00	255,40	243,84	253,40	243,84	253,35
259,08	264,08	259,08	260,48	248,92	258,48	248,92	258,43
264,16	269,16	264,16	265,56	254,00	263,56	254,00	263,51
269,24	274,24	269,24	270,64	259,08	268,64	259,08	268,59

3,81 mm (0,15 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3, 81 mm (0, 15 in)
Number of connections	
single row	4 to 45
double row	8 to 90
Board thickness	1, 42 to 1, 78 mm
Terminations	solder tags
Category (IEC 68)	25/085/21

DESCRIPTION

The connectors have a moulded body of black, tropic-proof thermosetting phenolic resin. The contact springs are of phosphor bronze; they are bifurcated to provide a double contact and are easily removable.
The contact surfaces are gold plate on nickel plate.

TECHNICAL DATA

Dimensions (mm)

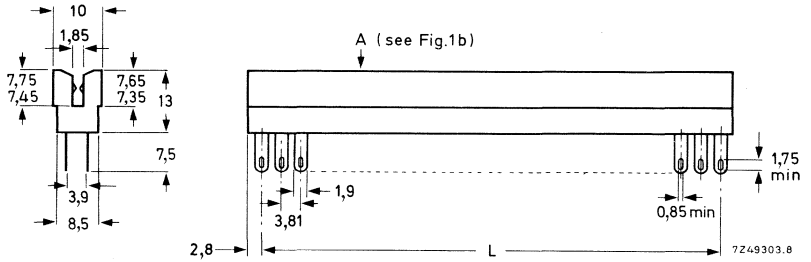


Fig. 1. See Table 1 for dimension L.

For piercing diagrams see Figs. 4 and 5.

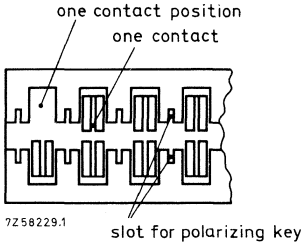


Fig. 1b. Diagrammatic part view in the direction of arrow A (see Fig. 1a).

Table 1 - The numbers in the first column marked with an asterisk are preferred ones, see "General".

number of contact positions, single row	L [1] (mm)		approx. weight [2] (g)	number of contact positions, single row	L [1] (mm)		approx. weight [2] (g)
06	19,05	±0,15	4,5	26	95,25	±0,20	16
07	22,86		5	27	99,06		16,5
08 *)	26,67		6	28	102,87		17
09	30,48		6,5	29	106,68		18
10	34,29		7	30	110,49		18,5
11	38,10	±0,20	8	31	114,30		19
12 *)	41,91		8,5	32	118,11		19,5
13 *)	45,72		9	33	121,92		20
14	49,53		10	34	125,73		20,5
15	53,34		10,5	35 *)	129,54		21
16 *)	57,15		11	36	133,35	±0,30	21,5
17	60,96		11,5	37	137,16		22
18	64,77		12	38	140,97		22,5
19	68,58		12,5	39	144,78		23
20	72,39		13	40	148,59		23,5
21	76,20		13,5	41	152,40		24
22	80,01		14	42	156,21		25
23	83,82		14,5	43	160,02		26
24	87,63		15	44	163,83		27
25 *)	91,44		15,5	45 *)	167,64		28

[1] L_{nom} = (n-1) 3,81 mm; n = number of connections, single row.

[2] For double row connectors.

Contact pitch	3, 81 mm (0, 15 in)
Number of connections, single row	4 to 45
double row	8 to 90
Board thickness	1, 42 to 1, 78 mm
Polarization	by means of a polarizing key (Fig. 6)
Mechanical endurance	≥ 300 insertions
Ambient temperature range	−25 to + 85 °C
Connector body, material	tropic-proof phenolic resin
Contact springs	
material	phosphor bronze
shape	bifurcated
finish of contact surfaces	min. 0, 8 µm gold plate on ← min. 5 µm nickel plate
contact force for 1, 6 mm board	
initially	≥ 1 N
after mechanical endurance	≥ 0, 8 N
type of terminations	solder tag ←
finish of terminations	gold flash
Current at T_{amb} = 70 °C	typical 4 A ←
at T_{amb} = 85 °C	typical 3 A ←
Clearance between two opposite contacts	≥ 0, 4 mm
Creepage distance between two adjacent or opposite contacts	≥ 1, 8 mm
Maximum r.m.s. voltage	dependent on the safety regulations for the associated equipment [1] ←
Test voltage for 1 min	
between contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 10 mΩ
after mechanical endurance	< 10 mΩ
after damp heat test (IEC 68, test Ca)	< 12 mΩ
Insulation resistance	
initially	> 10^4 MΩ
after damp heat test (IEC 68, test Ca)	> 10^2 MΩ
Capacitance between adjacent contacts	< 2 pF
between opposite contacts	< 2 pF

[1]) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 036 6....

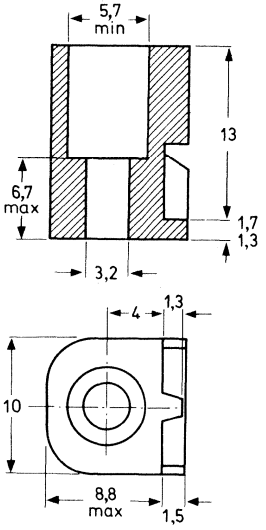
number of contact positions, single row (see Table 1)

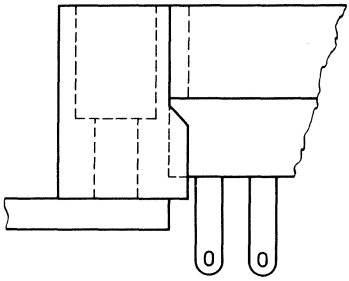
02 single row
12 double row
04 single row, minus one contact at either end
14 double row, minus two contacts at either end

MOUNTING

Mounting accessories

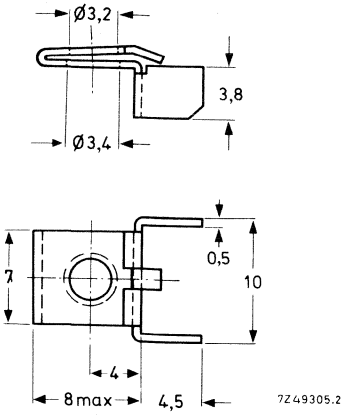
Two types of mounting brackets are available:
- thermoplastic brackets, catalogue number 4332 026 06560 (Fig. 2) and
- metal brackets, catalogue number 4332 026 06540 (Fig. 3).

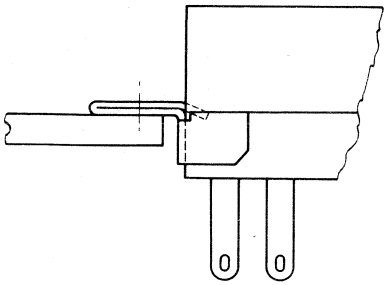




Part view, showing mounting bracket in position.

Fig. 2. Thermoplastic mounting bracket 4332 026 06560.





Part view, showing mounting bracket in position.

Fig. 3. Cadmium plated steel mounting bracket 4332 026 06540.

Piercing dragrams

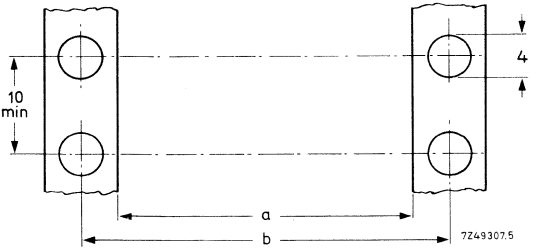


Fig. 4. Rail mounting; see Table 2 for dimensions a and b.

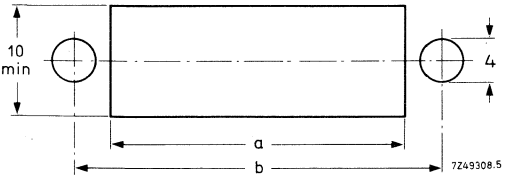


Fig. 5. Panel mounting; see Table 2 for dimensions a and b.

The brackets are fastened with 3 mm (M3) screws and washers.

Table 2

number of contact positions, single row	dimensions (mm) a (L_{max} + 7)		dimensions (mm) b (L_{nom}+13,40)		number of contact positions, single row	dimensions (mm) a (L_{max} + 7)		dimensions (mm) b (L_{nom} + 13,40)	
06	26,20		32,45		26	102,45		108,65	
07	30,01		36,26		27	106,26		112,46	
08	33,82		40,07		28	110,07		116,27	
09	37,63		43,88		29	113,88		120,08	
10	41,44		47,69		30	117,69		123,89	
11	45,30		51,50		31	121,50		127,70	
12	49,11		55,31		32	125,31		131,51	
13	52,92		59,12		33	129,12		135,32	
14	56,73		62,93		34	132,93		139,13	
15	60,54	±0,15	66,74	±0,2	35	136,74	±0,15	142,94	±0,2
16	64,35		70,55		36	140,65		146,75	
17	68,16		74,36		37	144,46		150,56	
18	71,97		78,17		38	148,27		154,37	
19	75,78		81,98		39	152,08		158,18	
20	79,59		85,79		40	155,89		161,99	
21	83,40		89,60		41	159,70		165,80	
22	87,21		93,41		42	163,51		169,61	
23	91,02		97,22		43	167,32		173,42	
24	94,83		101,03		44	171,13		177,23	
25	98,64		104,84		45	174,94		181,04	

POLARIZATION AND POSITIONING

A thermoplastic key (Fig. 6) inserted in a slot between any two adjacent contacts (see Fig. 1b) ensures that a printed-wiring board is correctly polarized in its connector. This method involves no loss of contacts. A slot must be made in the printed-wiring board to receive the key (Fig. 7).

The same key is also recommended for positioning to avoid misalignment arising from (a) cumulative tolerances in the case of long connectors (with more than 35 contacts, single row) and (b) open-end mounting.
For case (a) the slot in the printed-wiring board should be near the centre.
Positioning is not required if a connector with no more than 35 contacts (single row) is used together with thermoplastic brackets.

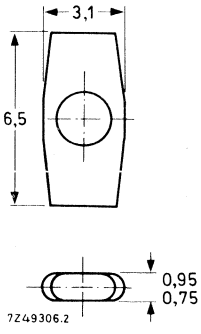
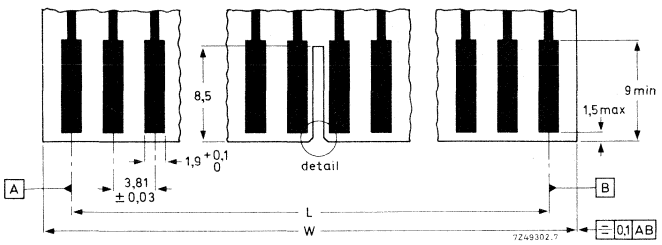


Fig. 6. Polarizing key, 4332 026 06550

PRINTED-WIRING BOARD RECOMMENDATIONS



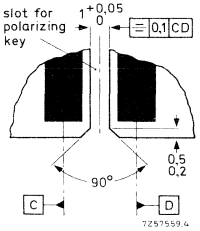


Fig. 7. See Table 3 for dimensions L and W.

Table 3

number of contact positions, single row	dimensions (mm)		number of contact positions, single row	dimensions (mm)	
	L	W (L_{nom} + 2,6)		L	W (L_{nom} + 2,6)
06	19,05	21,65	26	95,25	97,85
07	22,86	25,46	27	99,06	101,66
08	26,67	29,27	28	102,87	105,47
09	30,48	33,08	29	106,68	109,28
10	34,29	36,89	30	110,49	113,09
11	38,10	40,70	31	114,30	116,90
12	41,91	44,51	32	118,11	120,71
13	45,72	48,32	33	121,92	124,52
14	49,53	52,13	34	125,73	128,33
15	53,34	55,94	35	129,54	132,14
	±0,1	+0,2		±0,1	+0,2
16	57,15	59,75	36	133,35	135,95
17	60,96	63,56	37	137,16	139,76
18	64,77	67,37	38	140,97	143,57
19	68,58	71,18	39	144,78	147,38
20	72,39	74,99	40	148,59	151,19
21	76,20	78,80	41	152,40	155,00
22	80,01	82,61	42	156,21	158,81
23	83,82	86,42	43	160,02	162,62
24	87,63	90,23	44	163,83	166,43
25	91,44	94,04	45	167,64	170,24

PACKAGING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

3,96 mm (0,156 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3,96 mm (0,156 in)
Number of connections	
single row	6, 10, 15, 18 and 22
double row	12, 20, 30, 36 and 44
Board thickness	1,42 to 1,78 mm
Terminations	solder tags
Basic specification	MIL-STD-C-21097-1

DESCRIPTION

The connectors have a moulded body of a blue tropic-proof glass-fibre-filled diallyl-phthalate resin.
The contact springs are of phosphor bronze, they are bifurcated to provide a double contact and are easily removable.
The contact surfaces are gold plate on nickel plate.

TECHNICAL DATA

Dimensions (mm)

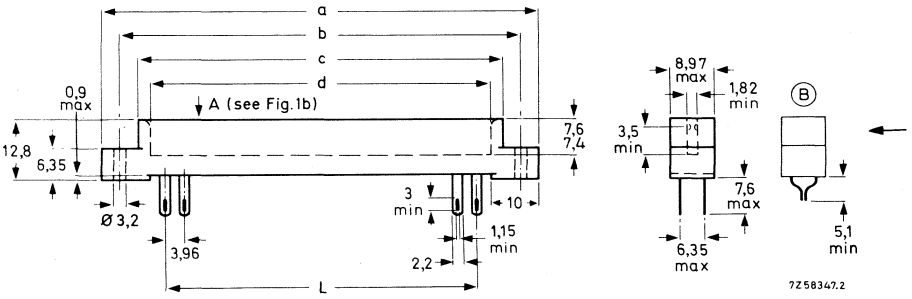


Fig. 1a. Double-row connector with insert (B) for type with bridged opposite terminations. See Table 1 for dimensions a, b, c, d and L.

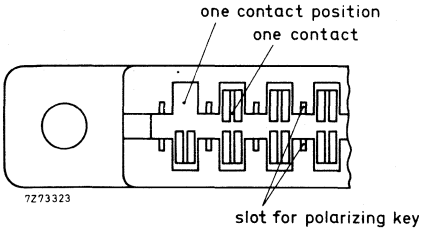


Fig. 1b. Diagrammatic part view in the direction of arrow A (see Fig. 1a).

Table 1

number of connections single row	number of connections double row	dimensions (mm) L [1]	a_{max}	b	c_{max}	d	approx. weight [2] (g)
6	12	19,80	47,34	38,91	32,56	27,94±0,15	6,8
10	20	35,64	63,19	54,76	48,43	43,79±0,15	10
15	30	55,44	83,00	74,62	68,27	63,60±0,15	14
18	36	67,32	94,89	86,51	80,18	75,49±0,15	16,4
22	44	83,16	110,74	102,41	96,06	91,34±0,20	19,6
		+0,2 −0,1		±0,2			

Contact pitch	3,96 mm (0,156 in)
Number of connections	
single row	6, 10, 15, 18 and 22
double row	12, 20, 30, 36 and 44
Board thickness	1,42 to 1,78 mm
Polarization	by means of a polarizing key (Fig. 2)
Insertion force [3]	
12 contacts	≤ 27 N
20 contacts	≤ 45 N
30 contacts	≤ 60 N
36 contacts	≤ 70 N
44 contacts	≤ 80 N
Withdrawal force per contact [3]	> 0,2 N
Mechanical endurance	≥ 250 insertions
Ambient temperature range	−65 to +125 °C
Connector body, material	glass-fibre-filled diallylphthalate
Contact springs	
material	phosphor bronze
shape	bifurcated
→ finish of contact surfaces	min. 1,3 μm gold plate on min. 5 μm nickel plate on min. 3 μm copper plate
contact force for 1,6 mm board	
initially	≥ 1,0 N
after mechanical endurance	≥ 0,8 N
type of terminations	solder tag with eyelet
finish of terminations	gold flash on nickel plate
→ Current at T_{amb} = 70 °C	typical 5 A
T_{amb} = 85 °C	typical 5 A
T_{amb} = 125 °C	typical 3,5 A

1) $L_{nom} = (n-1)$ 3,96 mm; n = number of connections, single row.
2) For double row connectors.
3) Measured with mechanical gauge according to MIL-STD-C-21097-1.

Clearance between two opposite contacts	≥ 0,4 mm
Creepage distance between two adjacent or opposite contacts	≥ 1,9 mm
Max. r.m.s. voltage	dependent on the safety regulations for the associated equipment [1] ←
Test voltage for 1 min (MIL-STD-202, method 301)	
between adjacent contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 7 mΩ
after mechanical endurance	< 7 mΩ
after damp heat test (IEC 68, test Ca)	< 7 mΩ
Insulation resistance	
initially	> 10^5 MΩ
after damp heat test (IEC 68, test Ca)	> 10^3 MΩ
Capacitance between adjacent contacts	< 2 pF
between opposite contacts	< 2 pF

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER ←

2422 037 7....

number of contacts, single row (06, 10, 15, 18 or 22)

02 single row

12 double row

16 double row bridged

For ordering purposes please quote the catalogue number.

MOUNTING

The connectors can be mounted by means of two M3 screws, or two screws according to MIL-STD-C-21097-1, with nuts and washers to match. ←

1) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

POLARIZATION

A thermoplastic key (Fig. 2), inserted in a slot between any two adjacent contacts (see Fig. 1 b) ensures that a printed-wiring board is correctly polarized in its connector.
This method involves no loss of contacts. A slot must be made in the printed-wiring board to receive the key (Fig. 3).

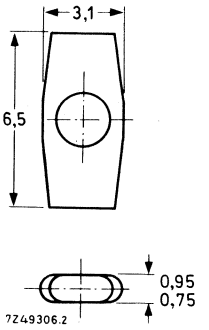


Fig. 2. Polarizing key, catalogue number 4332 026 06550.

PRINTED-WIRING BOARD RECOMMENDATIONS

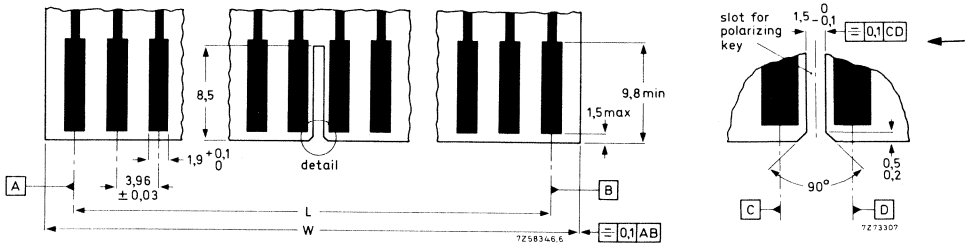


Fig. 3. See Table 2 for dimensions L and W.

Table 2

number of connections, single row	L (mm)		W (mm)	
6	19, 80	±0, 1	27, 78	−0, 2
10	35, 64		43, 63	
15	55, 44		63, 44	
18	67, 32		75, 33	
22	83, 16		91, 13	

MARKING

Connector

The individual positions are marked with figures and letters according to MIL-STD-C-21097-1.
The connector body is marked with the catalogue number.

Packaging

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

3,96 mm (0,156 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3,96 mm (0,156 in)
Number of connections	
single row	6, 10, 15, 18 and 22
double row	12, 20, 30, 36 and 44
Board thickness	1,42 to 1,78 mm
Terminations	solder tags
Category (IEC 68)	65/125/21

DESCRIPTION

The connectors have a moulded body of a green tropic-proof glass-fibre-filled polyester resin.
The contact springs are of phosphor bronze, they are bifurcated to provide a double contact and are easily removable.
The contact surfaces are gold plate on nickel plate.

TECHNICAL DATA

Dimensions (mm)

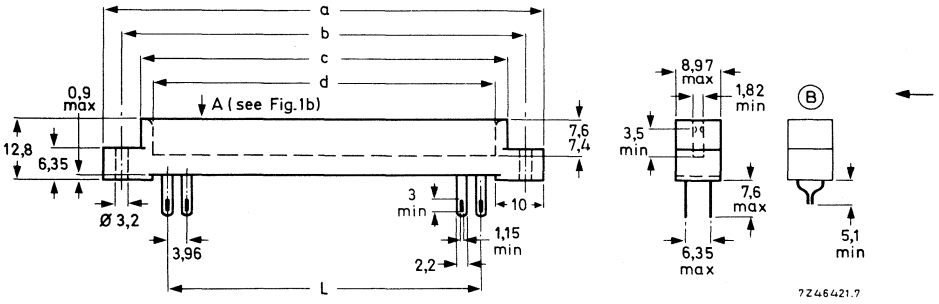


Fig. 1a. Double-row connector with insert (B) for type with bridged opposite terminations. See Table 1 for dimensions a, b, c, d and L.

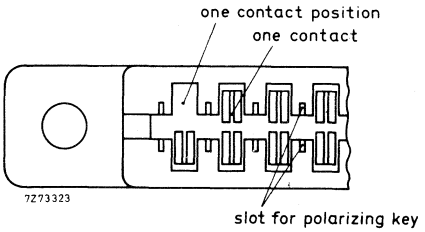


Fig. 1b. Diagrammatic part view in the direction of arrow A (see Fig. 1a).

Table 1

number of connections single row	number of connections double row	dimensions (mm) L [1]		a_{max}	b		c_{max}	d	approx. weight [2] (g)
6	12	19,80	+0,2 −0,1	47,34	38,91	±0,2	32,56	27,94±0,15	6,8
10	20	35,64		63,19	54,76		48,43	43,79±0,15	10
15	30	55,44		83,00	74,62		68,27	63,60±0,15	14
18	36	67,32		94,89	86,51		80,18	75,49±0,15	16,4
22	44	83,16		110,74	102,41		96,06	91,34±0,20	19,6

Contact pitch	3,96 mm (0,156 in)
Number of connections, single row	6, 10, 15, 18 and 22
double row	12, 20, 30, 36 and 44
Board thickness	1,42 to 1,78 mm
Polarization	by means of a polarizing key (Fig. 2)
Insertion force [3]	
12 contacts	≤ 27 N
20 contacts	≤ 45 N
30 contacts	≤ 60 N
36 contacts	≤ 70 N
44 contacts	≤ 80 N
Withdrawal force [3]	> 0,2 N
→ Mechanical endurance	≥ 100 insertions
Ambient temperature range	−65 to +125 °C
Connector body, material	glass-fibre-filled polyester
Contact springs	
material	phosphor bronze
shape	bifurcated
→ finish of contact surfaces	min. 0,2 μm gold plate on min. 3 μm nickel plate
contact force for 1,6 mm board	
initially	≥ 1,0 N
after mechanical endurance	≥ 0,8 N
type of terminations	solder tag with eyelet
finish of terminations	gold flash on nickel plate
→ Current at T_{amb} = 70 °C	typical 5 A
T_{amb} = 85 °C	typical 5 A
T_{amb} = 125 °C	typical 3,5 A

1) L_{nom} = (n-1) 3,96 mm; n = number of connections, single row.
2) For double-row connectors.
3) Measured with mechanical gauge according to MIL-STD-C-21097-1.

Clearance between two opposite contacts	≥ 0, 4 mm
Creepage distance between two adjacent or opposite contacts	≥ 1, 9 mm
Max. r.m.s. voltage	dependent on the safety regulations for the associated equipment [1])
Test voltage for 1 min	
between adjacent contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 10 mΩ
after mechanical endurance	< 10 mΩ
after damp heat test (IEC 68, test Ca)	< 12 mΩ
Insulation resistance	
initially	> 10^5 MΩ
after damp heat test (IEC 68, test Ca)	> 10^3 MΩ
Capacitance between adjacent contacts	< 2 pF
between opposite contacts	< 2 pF

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 037 0....

number of contacts single row (06, 10, 15, 18 or 22)

02 single row
12 double row
16 double row bridged

For ordering purposes please quote the catalogue number.

MOUNTING

The connectors can be mounted by means of two M3 screws, nuts and washers.

[1]) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

POLARIZATION

A thermoplastic key (Fig. 2) inserted in a slot between any two adjacent contacts (see Fig. 1b) ensures that a printed-wiring board is correctly polarized in its connector. This method involves no loss of contacts. A slot must be made in the printed-wiring board to receive the key (Fig. 3).

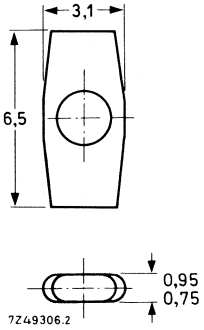


Fig. 2. Polarizing key
catalogue number 4332 026 06550.

PRINTED-WIRING BOARD RECOMMENDATIONS

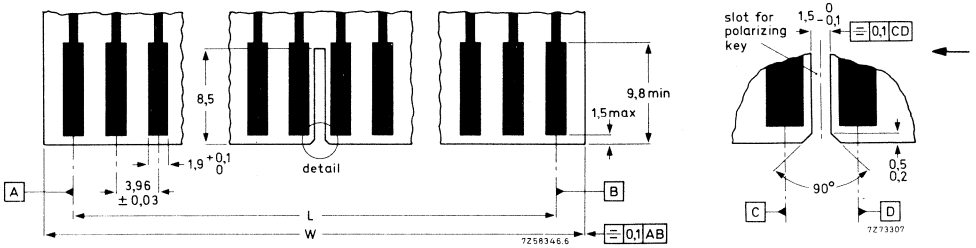


Fig. 3. See Table 2 for dimensions L and W.

Table 2

number of connections, single row	L (mm)		W (mm)	
6	19, 80	±0, 1	27, 78	−0, 2
10	35, 64		43, 63	
15	55, 44		63, 44	
18	67, 32		75, 33	
22	83, 16		91, 13	

MARKING

Connector

The individual positions are marked with figures and letters according to MIL-STD-C-21097-1.
The connector body is marked with the catalogue number.

Packaging

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

3,96 mm (0,156 in) PITCH PRINTED-WIRING INTERCONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3,96 mm (0,156 in)
Numbers of connections	
single row	6, 10, 15, 18, 22
double row	12, 20, 30, 36, 44
Board thickness	1,42 to 1,78 mm
Terminations	solder tags with open eyelet
Category (IEC 68)	65/125/21

DESCRIPTION

These interconnectors have a body of green glass-fibre-filled thermosetting material.
The contact springs are of phosphor bronze; they are easily removable.
The finish of the contact surfaces is rolled gold; the contact tags are gold flashed.
The interconnectors mate with the printed-wiring connectors F050 and F053.

TECHNICAL DATA

Dimensions (mm)

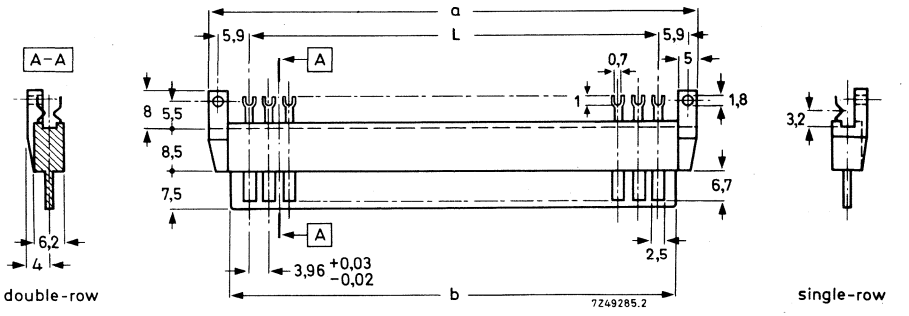


Fig. 1. See Table 1 for dimensions a, b, and L.

Table 1

number of connections, single row	dimensions (mm)			approx. weight (g)	
	L [1]	a_{max}	b	single row	double row
6	19, 80 $^{+0,15}_{-0,1}$	37, 45	27, 74 $\pm 0,3$	5, 0	6, 0
10	35, 64 $^{+0,2}_{-0,1}$	53, 34	43, 58 $\pm 0,3$	7, 5	8, 0
15	55, 44 $^{+0,2}_{-0,1}$	73, 14	63, 40 $\pm 0,3$	9, 0	10, 5
18	67, 32 $^{+0,2}_{-0,1}$	85, 02	75, 30 $\pm 0,3$	10, 0	12, 0
22	83, 16 $^{+0,2}_{-0,1}$	100, 86	91, 10 $\pm 0,3$	12, 5	15, 0

Contact pitch	3, 96 mm (0, 156 in)
Number of connections	
single row	6, 10, 15, 18, 22
double row	12, 20, 30, 36, 44
Board thickness	1, 42 to 1, 78 mm
Mechanical endurance	≥ 300 insertions
Ambient temperature range	−65 to + 125 °C
Connector body, material	glass-fibre-filled thermosetting material
Contact springs, material	phosphor bronze
→ finish of contact surfaces	min. 3 µm rolled gold
type of terminations	solder tag with open eyelet
finish of terminations	gold flash
→ Current at T_{amb} = 70 °C	typical 5 A
at T_{amb} = 85 °C	typical 4, 5 A
at T_{amb} = 125 °C	typical 3 A
Creepage distance between two adjacent or opposite contacts	≥ 1, 25 mm
→ Max. r.m.s. voltage	dependent on the safety regulations for the associated equipment [2]
Test voltage for 1 min between adjacent contacts	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 8 mΩ
after mechanical endurance	< 8 mΩ
after damp heat test (IEC 68, test Ca)	< 10 mΩ

1) L_{nom} = (n-1) 3, 96 mm; n = number of connections, single row.
2) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

Insulation resistance	
initially	$> 10^5$ MΩ
after damp heat test (IEC 68, test Ca)	$> 10^3$ MΩ
Capacitance between adjacent contacts	< 1, 5 pF
between opposite contacts	< 2, 0 pF

VERSIONS

Table 2

version	number of connections	catalogue number
single row	6	2422 025 89071
	10	89072
	15	89073
	18	89074
	22	89075
double row	12	2422 025 89076
	20	89077
	30	89078
	36	89079
	44	89081

For ordering purposes please quote the catalogue number.

MOUNTING

The interconnector should be fixed to the printed-wiring board by means of screws or tubular rivets (max. ϕ 1, 7 mm), after positioning the board in such a way that the solder tags are opposite the corresponding contact pads of the board. To improve the rigidity of the fixing a washer with a diameter of 4, 5 mm and a hole of 1, 8 ± 0, 1 mm should be placed under the screw or rivet and soldered to the copper isle of the mounting hole. See also Fig. 2. The solder tags should then be soldered to the contact pads.

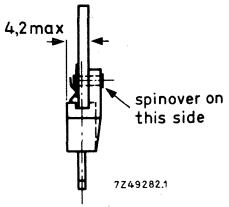


Fig. 2.

PRINTED-WIRING BOARD RECOMMENDATIONS

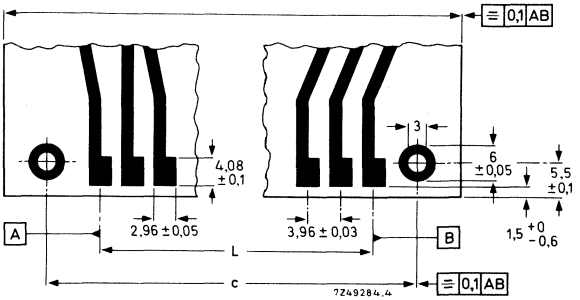


Fig. 3. See Table 3 for dimensions c and L.

Table 3

number of connections, single row	dimensions (mm)	
	L	c
6	19, 80 ±0, 1	31, 68 +0, 2
10	35, 64	47, 52
15	55, 44	67, 32
18	67, 32	79, 20
22	83, 16	95, 04

MARKING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

3,96 mm (0,156 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3,96 mm (0,156 in)
Number of connections	
single row	6, 10, 15, 18, 22, 28, 36 and 43
double row	12, 20, 30, 36, 44, 56, 72 and 86
Board thickness	1,42 to 1,78 mm
Terminations	pins for dip soldering or mini wire wrap
Category (IEC 68)	40/125/21

DESCRIPTION

The connectors have a moulded body of a red tropic-proof glass-fibre-filled polycarbonate resin.
The contact springs are of phosphor bronze, they are bifurcated to provide a double contact and are easily removable.
The contact surfaces are gold plate on nickel plate.

TECHNICAL DATA

Dimensions (mm)

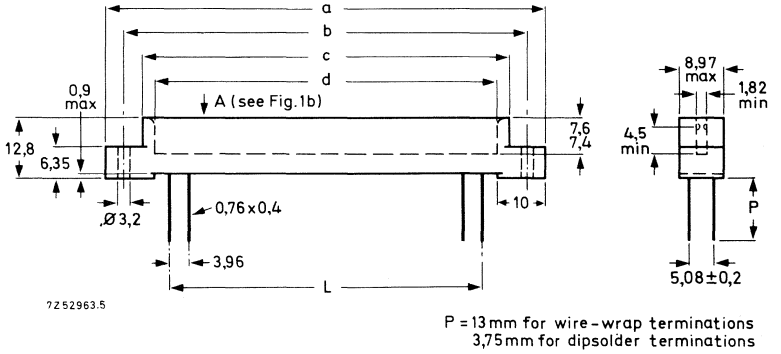


Fig. 1a. Double-row connector.
See Table 1 for dimensions a, b, c, d and L.

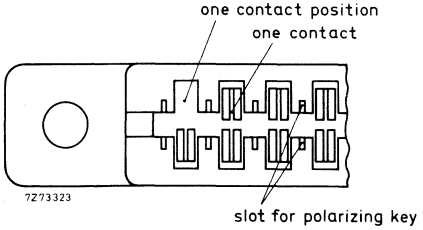


Fig. 1b. Diagrammatic part view in the direction of arrow A (see Fig. 1a).

A piercing diagram for dip solder version is given in Fig. 2 under "Mounting".

Table 1

number of connections		dimensions (mm)						approx. weight 2)
single row	double row	L 1)		a_{max}	b	c_{max}	d	(g)
6	12	19,80	+0,2 −0,1	47,34	38,91 ± 0,2	32,56	27,94 ± 0,15	6,8
10	20	35,64		63,19	54,76 ± 0,2	48,43	43,79 ± 0,15	10
15	30	55,44		83,00	74,62 ± 0,2	68,27	63,60 ± 0,15	14
18	36	67,32		94,89	86,51 ± 0,2	80,18	75,49 ± 0,15	16,4
22	44	83,16		110,74	102,41 ± 0,2	96,06	91,34 ± 0,20	19,6
28	56	106,92		134,21	126,09 ± 0,4	118,97	115,11 ± 0,25	24,4
36	72	138,60		166,19	157,99 ± 0,4	150,67	146,76 ± 0,25	30,8
43	86	166,32		193,82	185,47 ± 0,4	178,61	174,55 ± 0,25	36,4

Contact pitch	3,96 mm (0,156 in)
Number of connections	
single row	6, 10, 15, 18, 22, 28, 36 and 43
double row	12, 20, 30, 36, 44, 56, 72 and 86
Board thickness	1,42 to 1,78 mm
Polarization	by means of a polarizing key (Fig. 3)
Insertion force 3)	
12 contacts	≤ 27 N
20 contacts	≤ 45 N
30 contacts	≤ 60 N
36 contacts	≤ 70 N
44 contacts	≤ 80 N
56 contacts	≤ 100 N
72 contacts	≤ 120 N
86 contacts	≤ 140 N
Withdrawal force per contact 3)	> 0,2 N
Mechanical endurance	≥ 250 insertions
Ambient temperature range	−40 to +125 °C
Connector body, material	glass-fibre-filled polycarbonate
Contact springs,	
material	phosphor bronze
→ shape	bifurcated
finish of contact surfaces	min. 1,3 μm gold plate on min. 5 μm nickel plate
contact force for 1,6 mm board	
initially	≥ 1,0 N
after mechanical endurance	≥ 0,8 N
type of terminations	pin for dip soldering or mini wire wrap
finish of terminations	gold flash on nickel plate

1) L_{nom} = (n-1) 3,96 mm; n = number of connections, single row.
2) For double-row connectors.
3) Measured with mechanical gauge according to MIL-STD-C-21097-1.

Current at T_{amb} = 70 °C	typical 4,5 A
at T_{amb} = 85 °C	typical 4 A
at T_{amb} = 125 °C	typical 0,5 A
Clearance between two opposite contacts	≥ 0,4 mm
Creepage distance between two adjacent or opposite contacts	≥ 2,1 mm
Max. r.m.s. voltage	dependent on the safety regulations for the associated equipment [1]
Test voltage for 1 min	
- between adjacent contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 18 mΩ
after mechanical endurance	< 18 mΩ
after damp heat test (IEC 68, test Ca)	< 20 mΩ
Insulation resistance	
initially	> 10^5 MΩ
after damp heat test (IEC 68, test Ca)	> 10^3 MΩ
Capacitance between adjacent contacts	< 2 pF
between opposite contacts	< 2 pF

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 ... 0....

039 pins for mini wire wrap (length 13 mm)
044 pins for dip soldering (length 3,75 mm)

02 single row
12 double row

number of connections, single row (06, 10, 15, 18, 22, 28, 36 or 43)

For ordering purposes please quote the catalogue number.

[1]) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

MOUNTING

The connectors with pins for mini wire wrap must be fixed with two M3 screws. If required the same screws can be used to secure the connectors with pins for dip soldering. The relevant piercing diagram is shown in Fig. 2.

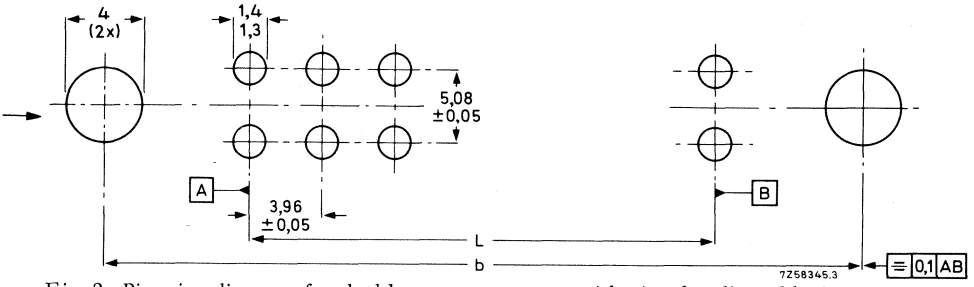


Fig. 2. Piercing diagram for double row connectors with pins for dip soldering. See Table 2 for dimensions b and L.

Table 2

number of connections, single row	L (mm)		b (mm)	
6	19,80	±0,05	38,91	±0,2
10	35,64		54,76	
15	55,44		74,62	
18	67,32		86,51	
22	83,16		102,41	
28	106,92		126,09	
36	138,60		157,99	
43	166,32		185,47	

POLARIZATION

A thermoplastic key (Fig. 3), inserted in a slot between any two adjacent contacts (see Fig. 1b) ensures that a printed-wiring board is correctly polarized in its connector. This method involves no loss of contacts. A slot must be made in the printed-wiring board to receive the key (Fig. 4).

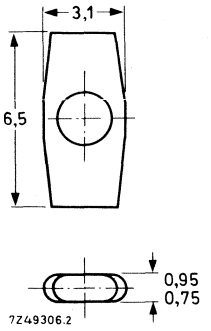


Fig. 3. Polarizing key catalogue number 4332 026 06550.

PRINTED-WIRING BOARD RECOMMENDATIONS

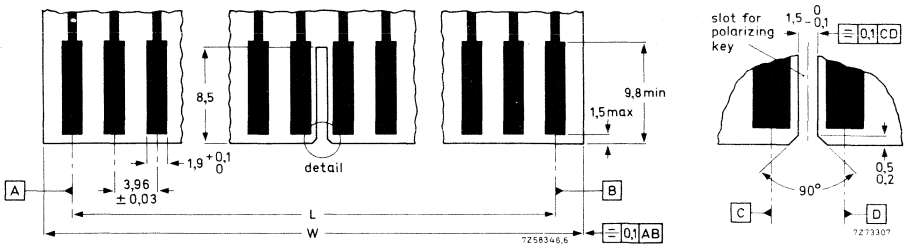


Fig. 4. See Table 3 for dimensions L and W.

Table 3

number of connections, single row	L (mm)		W (mm)	
6	19,80	±0,1	27,78	-0,2
10	35,64		43,63	
15	55,44		63,44	
18	67,32		75,33	
22	83,16		91,13	
28	106,92		114,85	
36	138,60		146,50	
43	166,32		174,29	

MARKING

Connector

The individual positions are marked with figures and letters according to MIL-STD-C-21097-1.

Packaging

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

CONNECTORS WITH GLASS-FIBRE-FILLED POLYESTER BODY ARE NO LONGER AVAILABLE.

2,54 mm (0,1 in) PITCH TWO-PART PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	2, 54 mm (0, 1 in)
Number of connections	32, 48, 64, 96
Terminations, board part panel part	pins for dip soldering solder tags, pins for dip soldering (straight or hooked), pins for mini wire-wrap
Category (IEC 68)	65/125/21

DESCRIPTION

These connectors consist of a part to be fitted to a printed-wiring board (board part) and another part to be mounted on a chassis or a back panel (panel part).
Both parts are moulded in blue glass-fibre-filled diallylphthalate resin. Connectors moulded in glass-fibre-filled polyster resin are no longer available. ←
The contact springs are of phosphor bronze. The contact surfaces are rolled gold on nickel plating. No special provisions are required for positioning.

TECHNICAL DATA

Dimensions (mm)

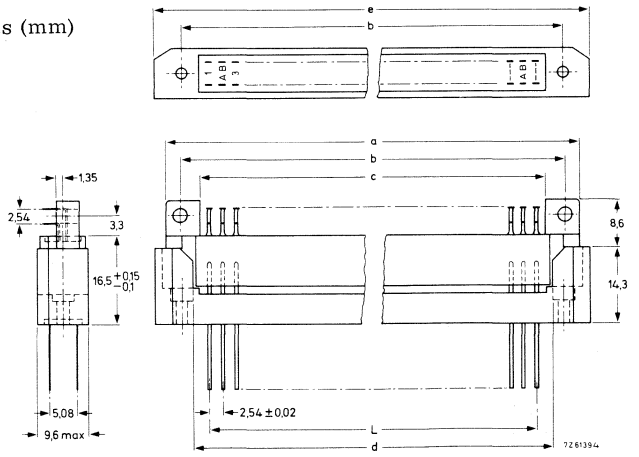


Fig. 1. Connector showing board part with pins for dip soldering and panel part with pins for mini wire-wrap. See Figs. 3 to 7 for other types of panel part terminations. See Table 1 for dimensions a, b, c, d, e, and L.

Table 1

number of connections (double sided)	dimensions (mm)						approx. weight (g)	
	L*)	a_{max}	b	c_{min}	d	e_{max}	board part	panel part
32	38.10 ±0.05	54.5	48.3 ±0.1	41.4	44.0	58.3	6.0	9.5
48	58.42 ±0.05	74.8	68.6 ±0.1	61.7	64.3	78.6	9.0	11.5
64	78.74 ±0.05	95.0	88.9 ±0.1	82.0	84.6	98.9	12.0	14.5
96	119.38 ±0.05	135.7	129.5 ±0.1	122.64	125.2	139.5	17.5	19.0

Contact pitch	2.54 mm (0.1 in)
Number of connections, double sided	32, 48, 64 and 96
Positioning	the panel part has been provided with guiding strips to prevent incorrect insertion
Polarization	by means of a polarizing key (see Fig. 14)
Insertion force	
32 connections	≤ 45 N (4.5 kg)
48 connections	≤ 65 N (6.5 kg)
64 connections	≤ 85 N (8.5 kg)
96 connections	≤ 130 N (13 kg)
Withdrawal force	
32 connections	≥ 5 N (0.5 kg)
48 connections	≥ 7.5 N (0.75 kg)
64 connections	≥ 10 N (1.0 kg)
96 connections	≥ 15 N (1.5 kg)
Mechanical endurance	≥ 300 insertions
Ambient temperature range	−65 to +125 °C
Connector body, material	glass fibre filled diallylphthalate
Contact springs, material	phosphor bronze
shape	single face
finish of faces	5 µm (min. 4 µm) rolled gold on 1 µm nickel plate
contact force	
initially	0.8 N (0.08 kg)
after mechanical endurance	0.6 N (0.06 kg)

*) $L_{nom} = (n-1)\ 2.54$ mm; n = number of connections, single sided.

type of terminations	
board part	dipsolder pins
panel part	solder tags, dipsolder pins (straight or hooked), pins for mini wire wrap (see Figs. 3 to 7)
finish of terminations	gold flash
Maximum current at $T_{amb} \leq 85\ ^{o}C$	3 A
at $T_{amb} > 85\ ^{o}C$	see Fig. 2
Creepage distance between two adjacent or opposite contacts	≥ 0.8 mm
Maximum r.m.s. voltage (I.E.C. publ. 130.1)	250 V
Test voltage for 1 min	
between adjacent contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	2000 V, 50 Hz
Contact resistance (inclusive material resistance) at 10 mA, $< 20\ mV_p$ (open circuit voltage), 1 kHz	
initially	$< 17\ m\Omega$
after mechanical endurance	$< 20\ m\Omega$
after damp heat test (I.E.C. 68, test Ca)	$< 20\ m\Omega$
Insulation resistance	
initially	$> 10^5\ M\Omega$
after damp heat test (I.E.C. 68, test Ca)	$> 10^3\ M\Omega$
Capacitance between adjacent contacts	< 2 pF
between opposite contacts	< 2 pF

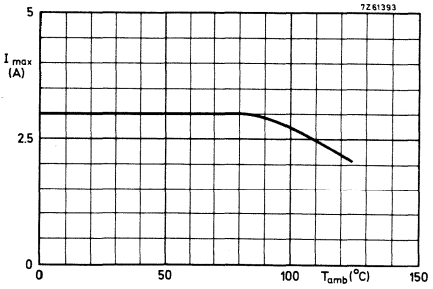


Fig. 2.
Maximum current as a function of ambient temperature.
The curve has been determined with maximum current through all contacts for 100 hours.

The following tests are carried out by frequent inspections:

vibration	I.E.C. 68 test Fc (10-2000 Hz, 0,75 mm/10 g, 6 hours in 3 directions)
shock	test Ea (50 g, 11 ms, 3 x in 6 directions)
damp heat	test Ca (40 °C, 90-95% R.H., 21 days)
rapid change of temperature	test Na (−65 °C/+125 °C, 5 cycles)
soldering	test T

AVAILABLE VERSIONS

number of connections	body mat.	catalogue number 2422 025 89...					
		panel part according to					board part
		Fig. 3	Fig. 4	Fig. 5	Fig. 6	Fig. 7	
32	diallyl-phthalate	117	118	119	122	121	114
48		123	124	125	127	126	115
64		128	129	131	133	132	116
96		211	212	213	215	214	209

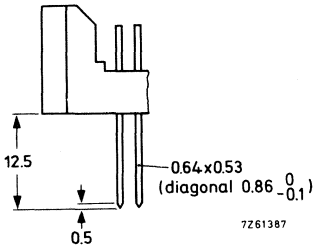


Fig. 3. Panel part with pins for mini wire wrap.

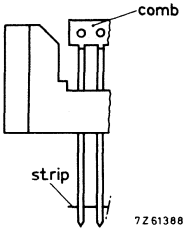


Fig. 4. Panel part with pins for mini wire wrap (back panel version).

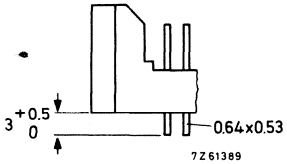


Fig. 5. Panel part with straight dipsolder pins.

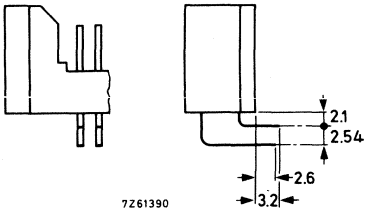


Fig. 6. Panel part with hooked dipsolder pins.

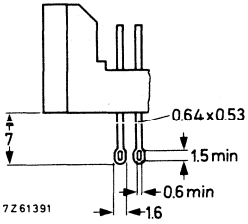


Fig. 7. Panel part with solder tags.

MOUNTING

Board part

1. Use the piercing diagram shown in Fig. 8.
2. Secure with M2x8 screws and nuts.
   (catalogue number of screw: 2522 001 08046
   catalogue number of nut: 2522 401 05005)

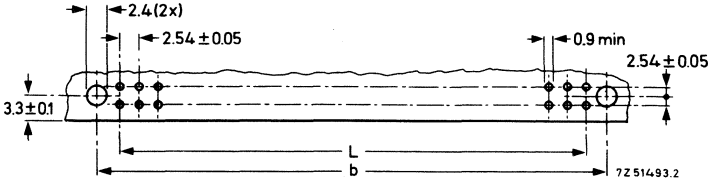


Fig. 8. For dimensions b and L, see Table 2.

Panel part

Types with pins for mini wire wrap or with dipsolder pins (see Figs. 3, 5 and 6)

1. Use the piercing diagram shown in Fig. 9.
2. Secure with M2x6 screws and nuts.
   (catalogue number of screw: 2522 001 08045
   catalogue number of nut: 4332 026 12961)

Note - For type with hooked dipsolder pins (see Fig. 6) use suitable mounting brackets.

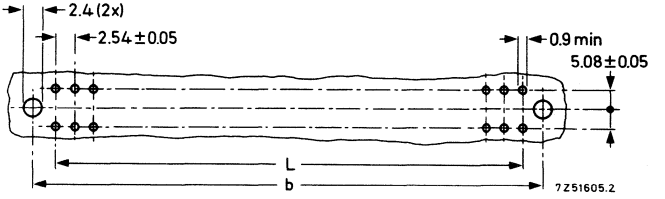


Fig. 9. For dimensions b and L, see Table 2.

Table 2

number of connections	dimensions (mm)			
	L	b	d	g
32	38.10	48.3	44.0	43.2
48	58.42	68.6	64.3	63.5
64	78.74	88.9	84.6	83.8
96	119.38	129.5	125.2	124.5
	±0.05	±0.1	−1	±0.1

Type with pins for mini wire wrap, back panel version (see Fig. 4)

1. Use the piercing diagram shown in Fig. 9.
2. Both rows of pins are on one side terminated by a comb; the wire wrap pins are aligned by means of a polyester strip which must remain in position during insertion of the pins.
   Insert the pins row by row into the holes at a slight angle (Fig. 10). The terminations should be pushed right in until the polyester strip touches the panel.
3. Remove the polyester strip by turning it into a vertical position by means of a pair of tweezers.
4. Push in both combs until the shoulder of the pins touches the panel using tool shown in Fig. 11.
5. Push the body of the panel part right onto the panel.
6. Secure with M2x6 screws and nuts.
   (catalogue number of screw: 2522 001 08045
   catalogue number of nut: 4332 026 12961)
7. Solder the connections. During dipsoldering, apply pressure on both combs to prevent movement.
8. Insert tool (Fig. 11) on the combs and twist to remove.

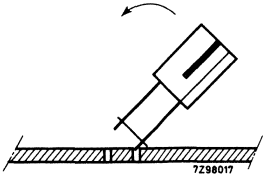


Fig. 10

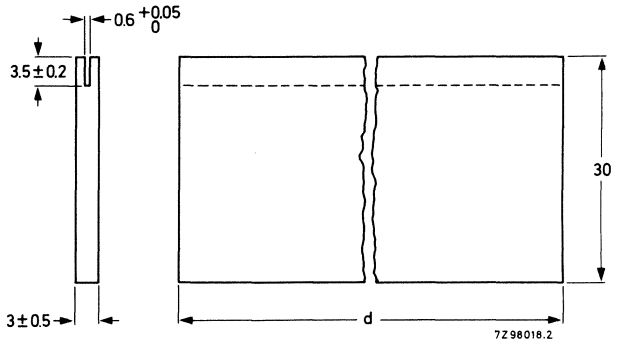


Fig. 11. For dimension d, see Table 2.

Type with solder tags for rail or panel mounting (see Fig. 7)

1. Use the hole configurations shown in Figs. 12 and 13 respectively.
2. Secure with M2x6 screws and nuts.
   (catalogue number of screw: 2522 001 08045
   catalogue number of nut: 4332 026 12961)

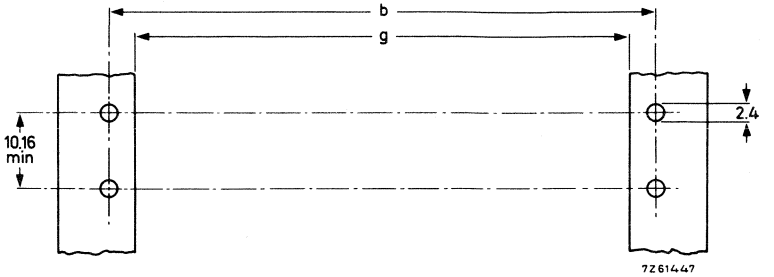


Fig. 12. Rail mounting; for dimensions b and g, see Table 2.

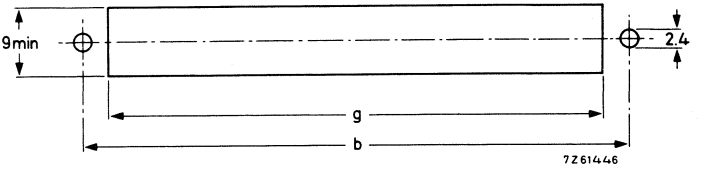


Fig. 13. Panel mounting; for dimensions b and g, see Table 2.

POLARIZATION

To ensure that the board part is inserted into the correct panel part, it is recommended to use polarizing key, catalogue number 4332 026 10840. This key is inserted into a contact position of the board part. The corresponding contact pin of the panel part must be broken off.

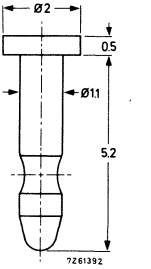


Fig. 14. Polarizing key catalogue number 4332 026 10840

MARKING

The terminations of the panel part are marked as follows:

number of connections	marking of the panel part
32	1A to 16A and 1B to 16B
48	1A to 24A and 1B to 24B
64	1A to 32A and 1B to 32B
96	1A to 48A and 1B to 48B

The outer pack is marked as follows: name of component
catalogue number
number of pieces
reference number of manufacture

2,54 mm (0,1 in) PITCH PRINTED-WIRING INTERCONNECTORS conforming to UTE 93 - 423

QUICK REFERENCE DATA	
Contact pitch	2, 54 mm (0, 1 in)
Number of connections	
single row	19, 25, 31, 37, 43, 49
double row	38, 50, 62, 74, 86, 98
Board thickness	1, 42 to 1, 78 mm
Terminations	solder tags
Category, HE 901	55/125/56
HE 902	25/085/21

DESCRIPTION

These interconnectors are designed to meet the requirements of UTE 93-423, models HE 901 and HE 902. The interconnectors have a moulded body of green tropic-proof glass-fibre-filled polyester resin.
The contact springs are of phosphor bronze; they are easily removable. The contact surfaces are of gold galvanized on nickel plate.

TECHNICAL DATA

Dimensions (mm)

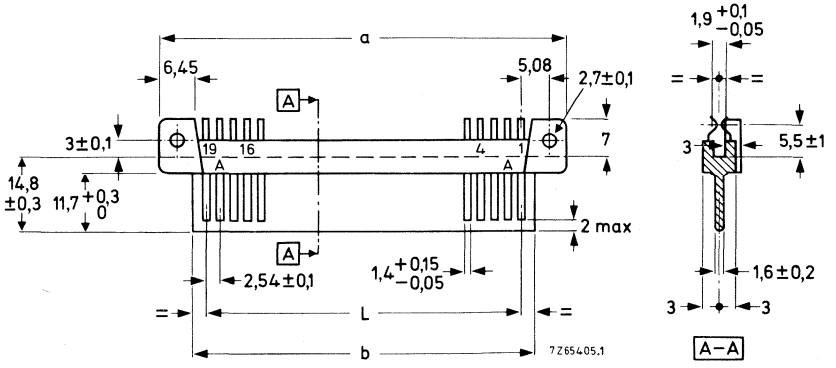


Fig. 1. See Table 1 for dimensions a, b and L.

Table 1

number of connections single row	number of connections double row	dimensions (mm) L [1]		amax	b		approx. weight
19	38	45, 72	±0, 1	62, 6	50, 5	−0,2	to be established
25	50	60, 96		77, 8	65, 8		
31	62	76, 20		93, 0	81, 0		
37	74	91, 44		108, 3	96, 3		
43	86	106, 68		123, 5	111, 5		
49	98	121, 92		138, 8	126, 7		

Contact pitch	2, 54 mm (0, 1 in)
Number of connections	
single row	19, 25, 31, 37, 43, 49
double row	38, 50, 62, 74, 86, 98
Board thickness	1, 42 to 1, 78 mm
Insertion force [2]	≤ 2 N
Withdrawal force [2]	≥ 0, 25 N
Mechanical endurance	
model HE 901	≥ 500 insertions
model HE 902	≥ 100 insertions
Ambient temperature range	
model HE 901	−55 to +125 °C
model HE 902	−25 to +85 °C
Connector body, material	glass-fibre-filled polyester resin
Contact springs, material	phosphor bronze
finish of contact surfaces	
model HE901	min. 3 µm gold plate on min. 1 µm nickel plate
model HE902	min. 0, 2 µm gold plate on min. 1 µm nickel plate
type of terminations	solder tag
finish of terminations	gold flash
Current at T_{amb} = 70 °C	typical 3 A
at other temperatures	to be established

[1]) L_{nom} = (n − 1) 2, 54 mm; n = number of connections, single row.
[2]) Measured on two opposite contacts.

Clearance between two adjacent or opposite contacts	≥ 0,4 mm
Creepage distance between two adjacent or opposite contacts	≥ 0,5 mm
Maximum r.m.s. voltage	dependent on the safety regulations for the associated equipment [1])
Test voltage for 1 min between adjacent or opposite contacts	1000 V, 50 Hz
Contact resistance (including material resistance) at ≤ 100 mA, ≤ 20 mV_p, 1,5 kHz	
initially	< 12 mΩ
after mechanical endurance	< 12 mΩ
Insulation resistance	> 10^5 MΩ
Capacitance	
between adjacent contacts	to be established
between opposite contacts	to be established

VERSIONS AND COMPOSITION OF THE CATALOGUE NUMBER

2422 060 1....

- number of connections, single row (19, 25, 31, 37, 43 or 49)
- 0 = single row; 1 = double row
- finish of contact surfaces: 1 = min. 0,2 μm gold plate (HE902); 4 = min. 3 μm gold plate (HE901)

For ordering purposes please quote the catalogue number.

MOUNTING

The interconnector should be fixed to the printed-wiring board by means of two screws and nuts M2,5 after positioning the board in such a way that the solder tags are opposite the corresponding contact pads of the board.
Take care that the edge of the board is resting on the bottom of the interconnector slot. Subsequently the solder tags should be soldered to the contact pads.

[1]) In accordance with IEC 130-1, the maximum permissible voltage is 250 V (r.m.s. value).

PRINTED-WIRING BOARD RECOMMENDATIONS

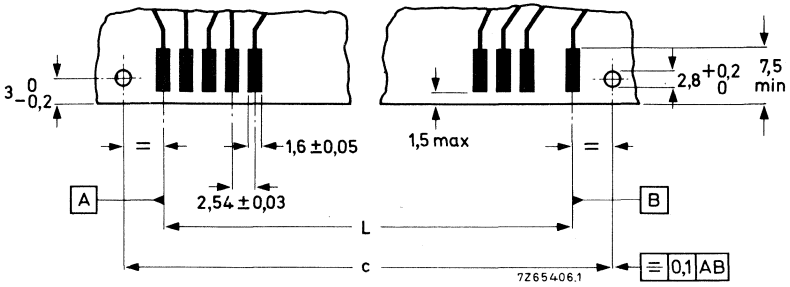


Fig. 2. See Table 2 for dimensions c and L.

Table 2

number of connections, single row	dimensions (mm)	
	L	c
19	45,72	55,88
25	60,96	71,12
31	76,20	86,36
37	91,44	101,60
43	106,68	116,84
49	121,92	132,08
	±0,1	±0,2

MARKING

Interconnector

The interconnectors are marked with : name of manufacturer
catalogue number
type number
code of manufacture.

The terminations of the interconnectors are marked as follows :

single row versions : B1 to B19 (B25, B31, B37, B43, B49);

double row versions: A1 to A19 (A25, A31, A37, A43, A49) and
B1 to B19 (B25, B31, B37, B43, B49).

Packaging

The package is marked with : name of component
catalogue number
number of pieces
reference number of manufacturer.

2,54 mm (0,1 in) AND 5,08 mm (0,2 in) PITCH TWO-PART PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA		
Contact pitch	2,54 mm (0,1 in)	5,08 mm (0,2 in)
Number of connections	64, 96	32
Board thickness	1,42 to 1,78 mm	
Terminations, board part panel part	pins for dip soldering pins for dip soldering, pins for mini wire wrap or solder tags	
Category (IEC 68)	55/125/56	
Basic specifications	IEC 130-14 and DIN 41612	

DESCRIPTION

These connectors consist of a part to be fitted to a printed-wiring board (board part) and another part to be mounted on a chassis or back panel (panel part).
Both parts have a grey glass-fibre-filled polycarbonate body. The insert of the panel part is of glass-fibre-filled diallylphthalate.
The contact springs are of phosphor bronze. The contact surfaces are gold on nickel-plating. No special provisions are required for positioning.

TECHNICAL DATA

Dimensions (mm)

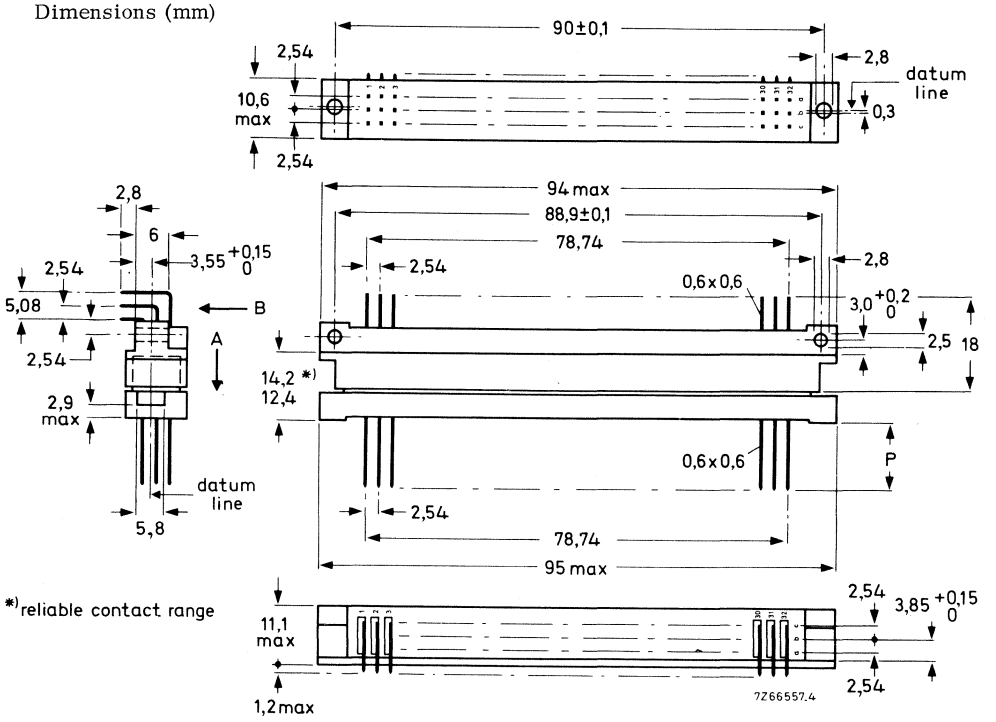


Fig. 1a Connector with 3 x 32 contacts, showing board part with pins for dip soldering and panel part with pins for mini wire wrap.
Dimension P is 4 mm for pins for dip soldering or 13 mm for pins for mini wire wrap.
Arrows A and B have been drawn for the sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

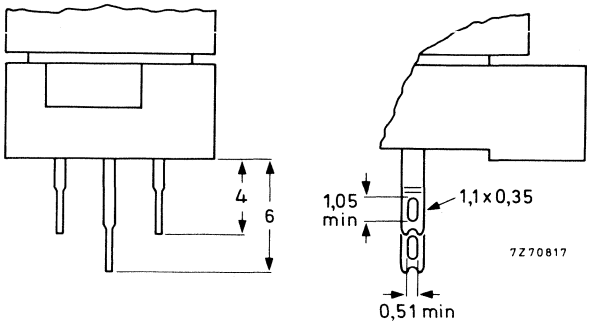


Fig. 1b Detail of panel part with solder tags.

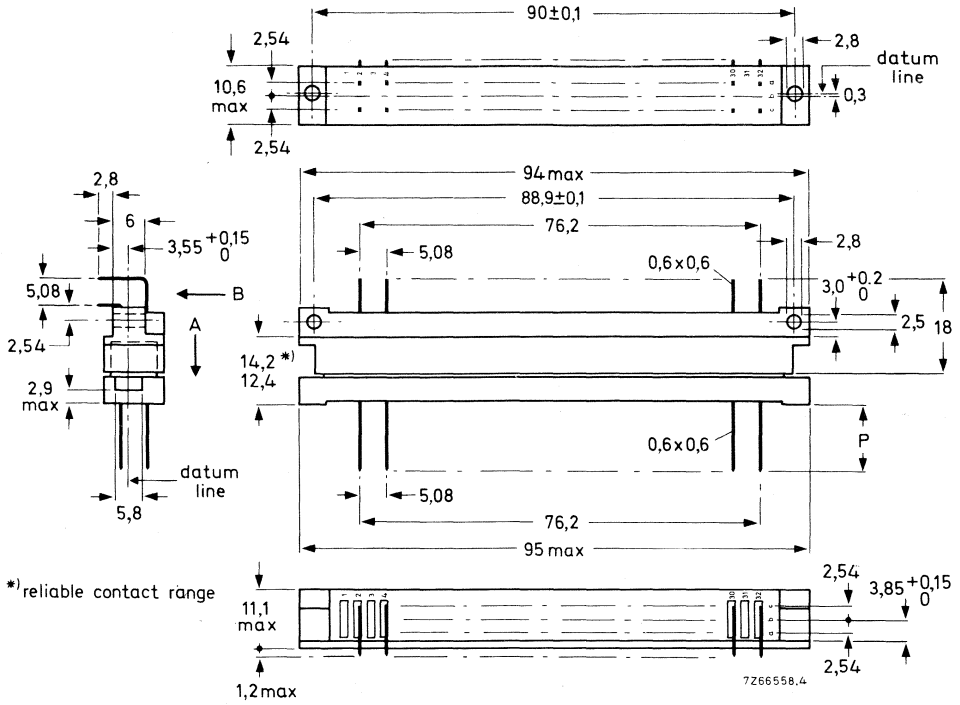


Fig. 2a Connector with 2 x 16 contacts, showing board part with pins for dip soldering and panel part with pins for mini wire wrap.
Dimension P is 4 mm for pins for dip soldering or 13 mm for pins for mini wire wrap.
Arrows A and B have been drawn for sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

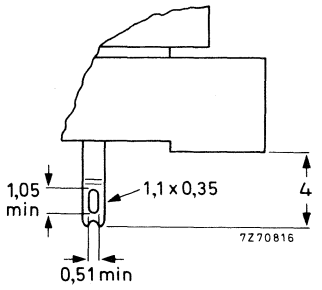


Fig. 2b Detail of panel part with solder tags.

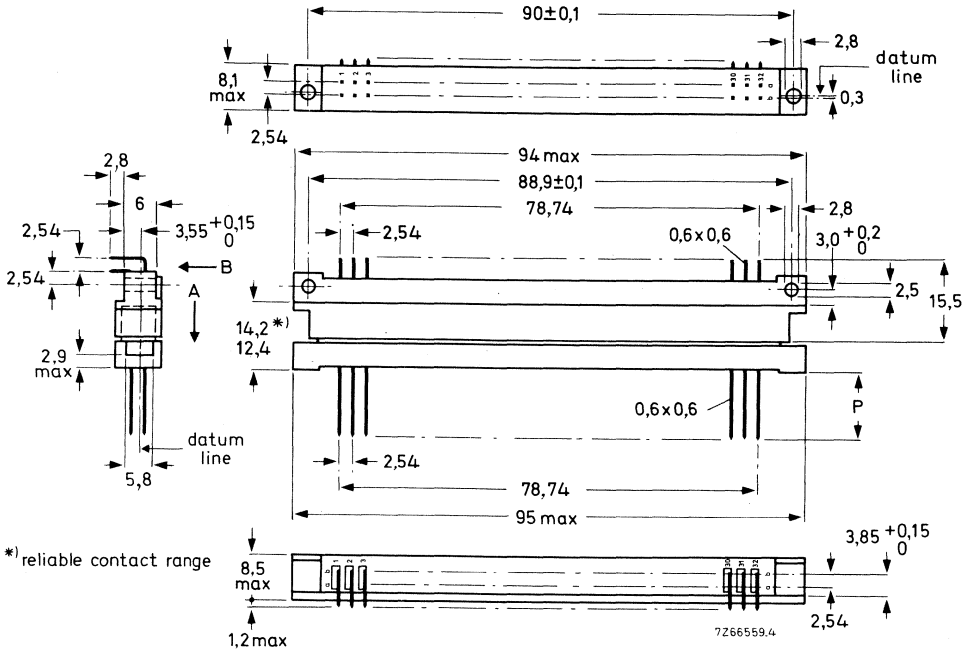


Fig. 3a Connector with 2 x 32 contacts, showing board part with pins for dip soldering and panel part with pins for mini wire wrap.
Dimension P is 4 mm for pins for dip soldering or 13 mm for pins for mini wire wrap.
Arrows A and B have been drawn for sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

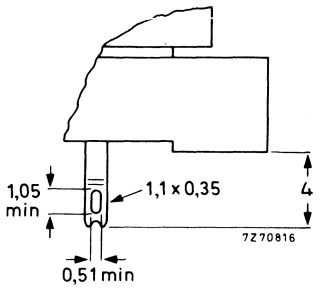


Fig. 3b Detail of panel part with solder tags.

Weight, board part, 64 connections	approx. 9 g	←
96 connections	approx. 12,5 g	
panel part, 64 connections	approx. 12,5 g	
96 connections	approx. 17,5 g	
Contact pitch	2,54 mm (0, 1 in)	5,08 mm (0,2 in)
Number of connections	64, 96	32
Board thickness	1,42 to 1,78 mm	
Positioning	panel parts and board parts have been provided with interlocking key-ways to prevent incorrect insertion	
Insertion force		←
32 connections	≤ 30 N	
64 connections	≤ 60 N	
96 connections	≤ 90 N	
Withdrawal force		←
32 connections	≥ 7 N	
64 connections	≥ 12 N	
96 connections	≥ 19 N	
Mechanical endurance	≥ 400 insertions	
Ambient temperature range	−55 to +125 °C	
Connector body, material	glass-fibre-filled polycarbonate; glass-fibre-filled diallylphthalate insert of panel part	
Contact springs		
material	phosphor bronze	
shape	solid cantilever	
finish of contact surfaces		
board part	min. 1 μm gold plate on min. 3 μm nickel plate	
panel part	min. 0,8 μm hard gold on min. 4 μm nickel plate	
contact force		
initially	≥ 0,5 N	
after mechanical endurance	≥ 0,5 N	
type of terminations		
board part	pins for dip soldering	
panel part	pins for dip soldering, pins for mini wire wrap or solder tags	
finish of terminations	gold flash	
Current at T_{amb} = 70 °C	typical 1 A	←
Maximum current at different temperatures	see Fig. 4	

Clearance between two opposite contacts	≥ 1,2 mm [1]
Creepage distance between two adjacent or opposite contacts	≥ 1,2 mm [1]
Maximum r.m.s. voltage	dependent on the safety regulations for the associated equipment [2]
Test voltage for 1 min	
between adjacent contacts	1000 V, 50 Hz
between a contact and a metal mounting plate	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 20 mΩ
after mechanical endurance	< 20 mΩ
after damp heat test (IEC 68, test Ca)	< 20 mΩ
Insulation resistance	
initially	> 10^6 MΩ
after damp heat test (IEC 68, test Ca)	> 10^4 MΩ
Capacitance between adjacent contacts	≤ 1,5 pF
between opposite contacts	≤ 1,5 pF

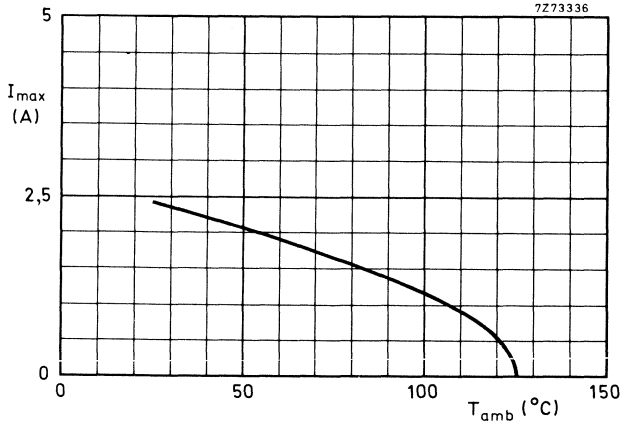


Fig. 4 Maximum current as a function of ambient temperature. The curve has been determined with maximum current through all contacts.

1) May be reduced by the wiring and/or the printed-wiring boards.
2) In accordance with IEC 130-1, the max. permissible voltage is 330 V (r.m.s. value).

VERSIONS

		catalogue number 2422 025 89...			
		panel part with			board part
		pins for dip soldering	pins for wire wrap	solder tags	
Connector with 3 x 32 contact positions (Fig. 1a)	3 x 32 contact pins; 2,54 mm pitch	296	284	325	283
	2 x 32 contact pins (row b is empty); 2,54 mm pitch	298	288	326	287
	2 x 16 contact pins (row b is empty); 5,08 mm pitch (Fig. 2a)	299	291	327	289
Connector with 2 x 32 contact positions (Fig. 3a)	2 x 32 contact pins; 2,54 mm pitch	297	286	329	285
	1 x 32 contact pins (row b is empty); 2,54 mm pitch	302	293	331	292

For ordering purposes please quote the catalogue number.

MOUNTING

Piercing diagrams for the panel part

The figures below give a view on the panels or chassis in the direction of arrow A (Figs. 1a, 2a and 3a).

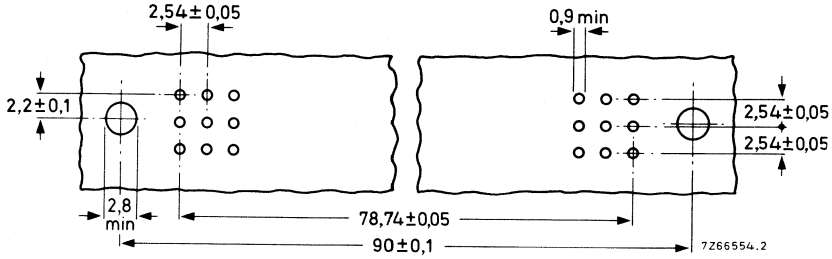


Fig. 5a For 3 x 32 connections.

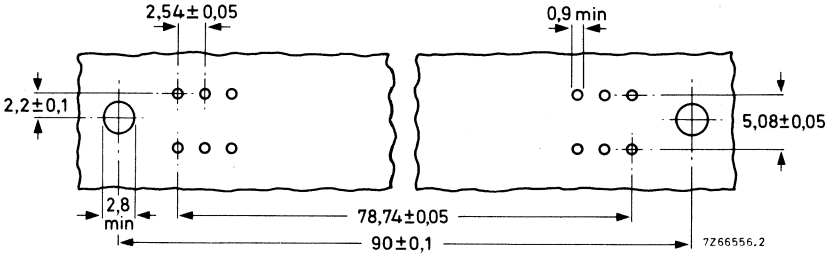


Fig. 5b For 2 x 32 connections (one row of contacts is empty).

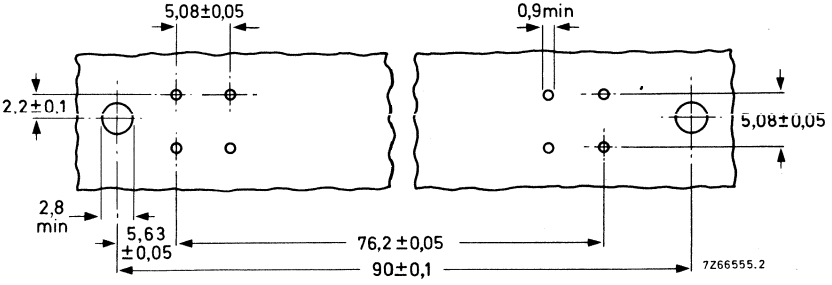


Fig. 5c For 2 x 16 connections (one row of contacts is empty).

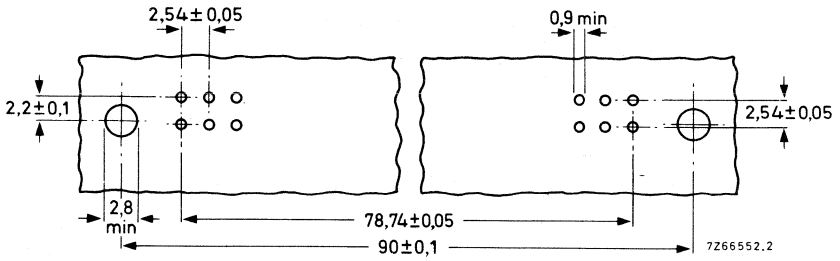


Fig. 5d For 2 x 32 connections

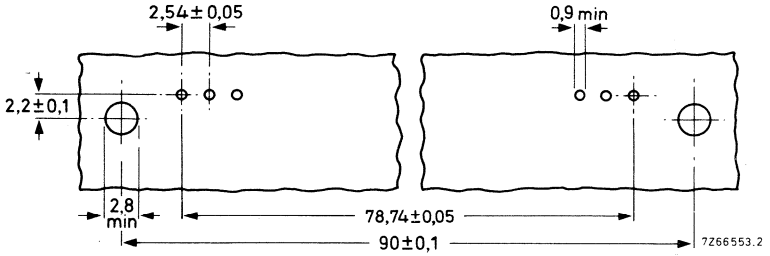


Fig. 5e For 1 x 32 connections (one row of contacts is empty).

Piercing diagrams for the board part

The figures below give a view on the printed-wiring boards in the direction of arrow B (Figs. 1a, 1b and 1c).

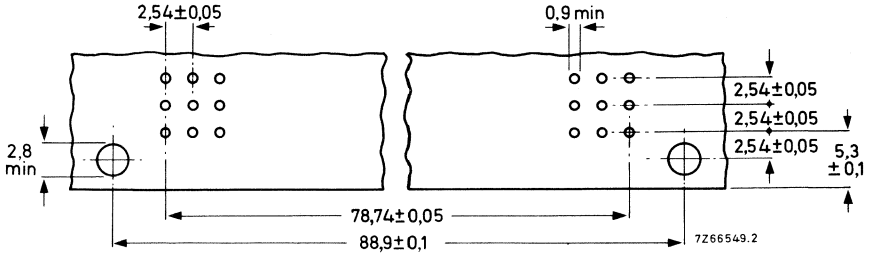


Fig. 6a For 3 x 32 connections.

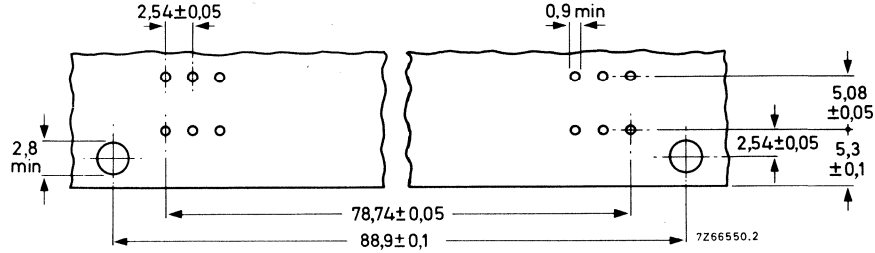


Fig. 6b For 2 x 32 connections (one row of contacts is empty).

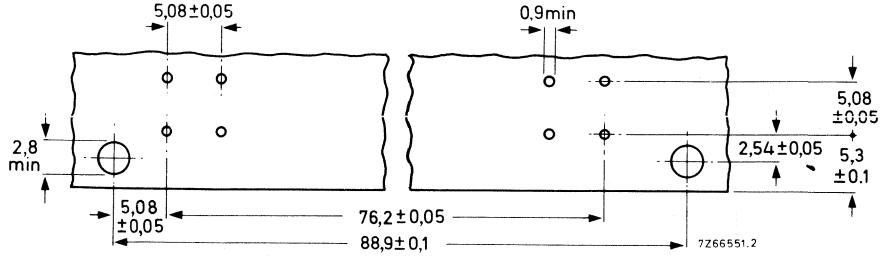


Fig. 6c For 2 x 16 connections (one row of contacts is empty).

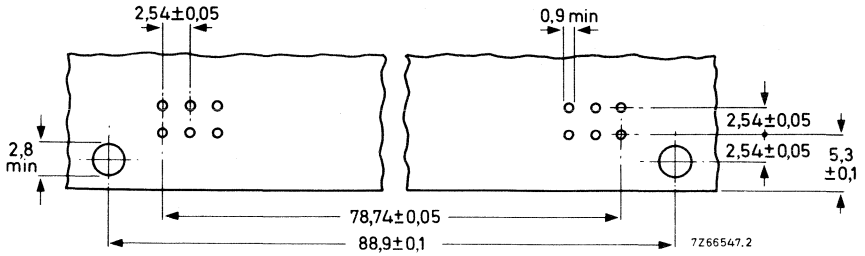


Fig. 6d For 2 x 32 connections.

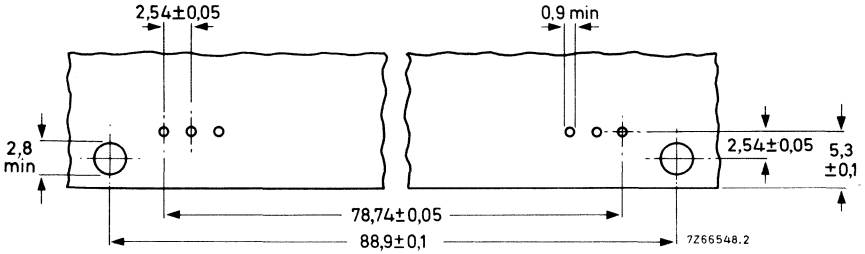


Fig. 6e For 1 x 32 connections (one row of contacts is empty).

MARKING

Connector

The board part and the panel part are marked with: name of manufacturer
catalogue number
type number
code of manufacture.

The terminations of both parts are marked as follows,
for 2 x 32 contact positions: 1a to 32a and 1b to 32b;
for 3 x 32 contact positions: 1a to 32a, 1b to 32b and 1c to 32c.

Packaging

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

CABLE HOOD

A two-part cable hood is supplied for use with DIN 41612 connector types B, C and D. The hood consists of two identical parts; it is suitable for use with both board and panel parts. It is provided with three cable inlets.
The component parts of the hood are supplied unassembled in a plastic bag.

Notes – Use of the cable hood with a DIN 41612 connector type B requires the use of the packing piece (catalogue number 4332 026 26070).
– The hood cannot be applied to the board part with right-angled pins of connector F068-I.

TECHNICAL DATA

Dimensions (mm)

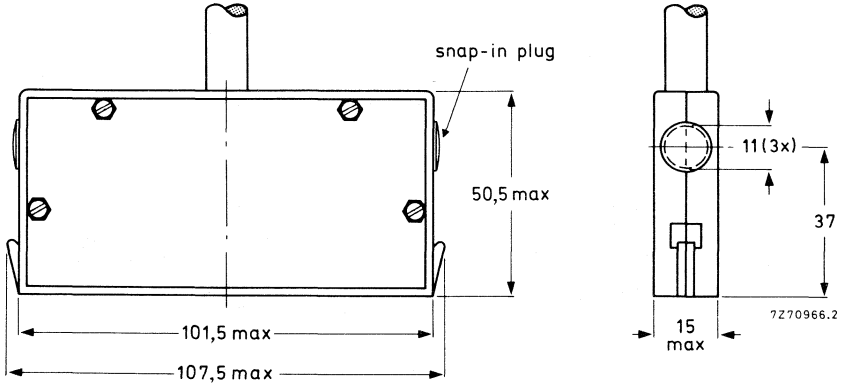


Fig. 1

Weight	
cable hood (assembled, without connector and cable)	41,5 g
locking clip	0,8 g
bracket (Fig. 5)	0,2 g
bracket (Fig. 6)	1,0 g
Material	glass-fibre-filled polycarbonate
Colour	dark grey
Maximum permissible cable diameter	11 mm (e.g. 96 wires, insulated AWG30 of 0,91 mm dia.)

MOUNTING

Fixing of the cable to the hood, and mounting of the hood on the board part and panel part are shown in Figs. 2 and 3 respectively.

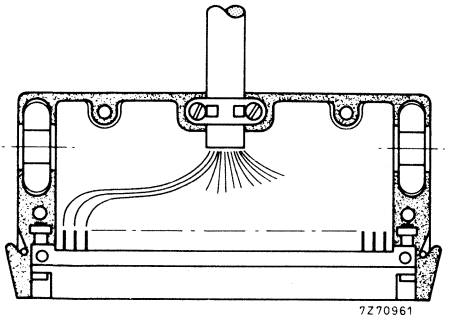


Fig. 2

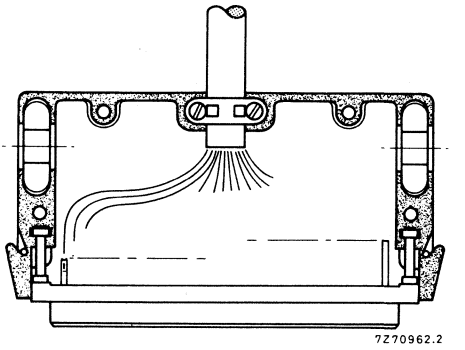


Fig. 3

APPLICATION POSSIBILITIES

Cable to cable

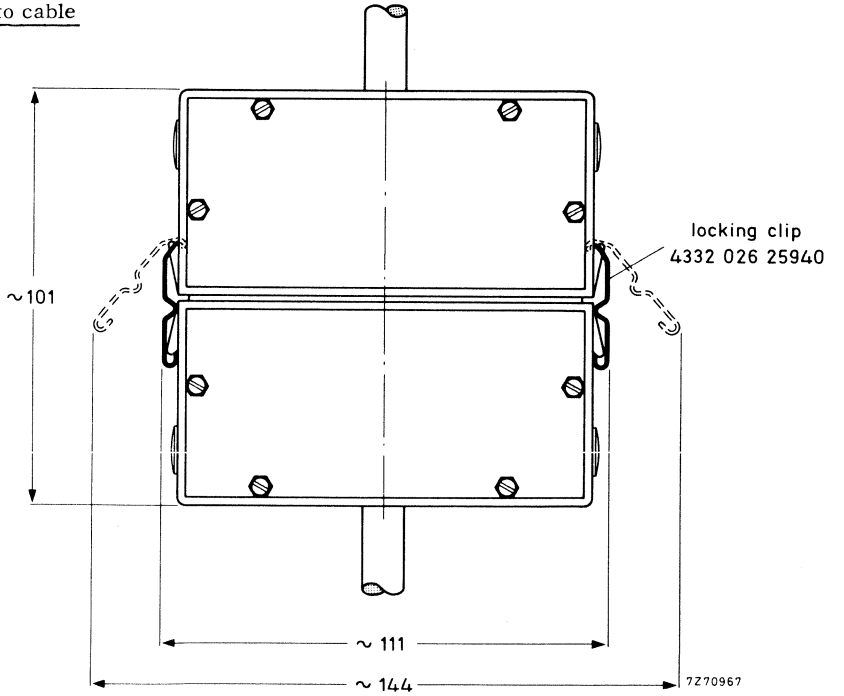


Fig. 4

Cable to printed-wiring board

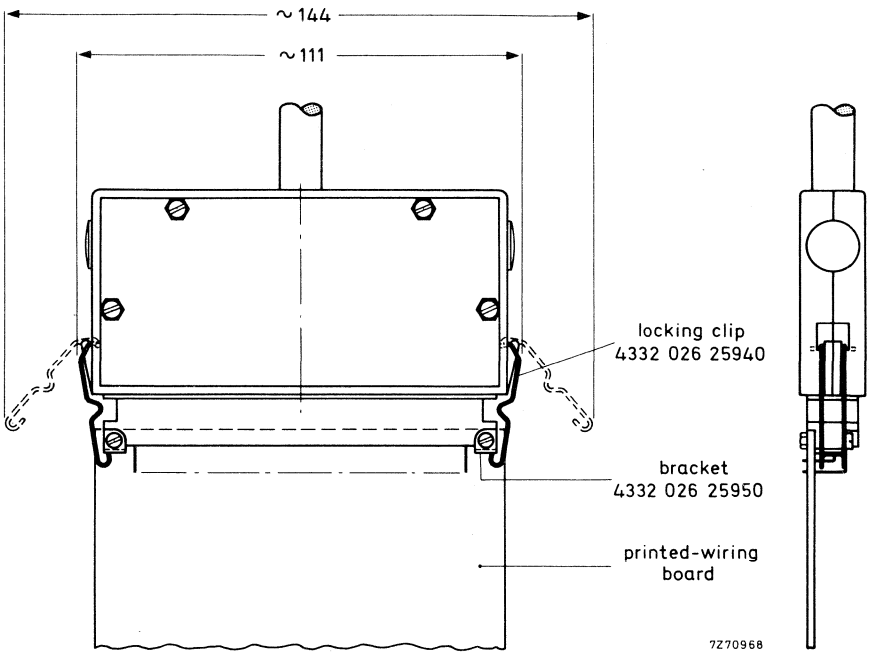


Fig. 5

Cable to panel

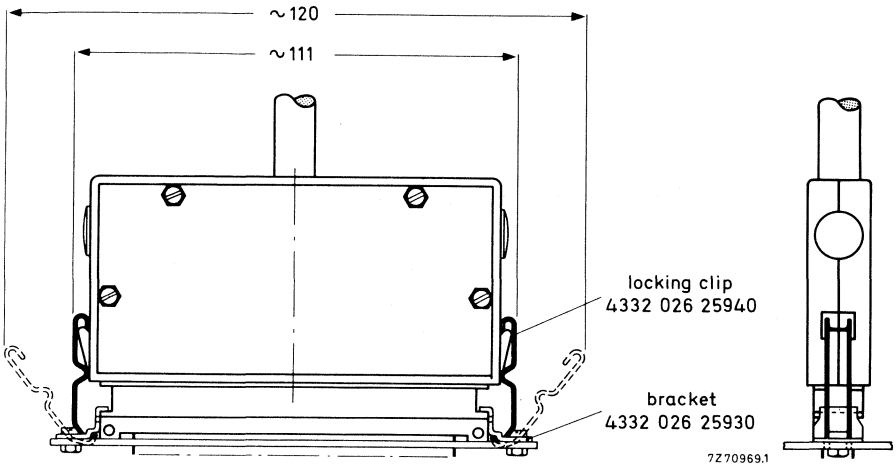


Fig. 6

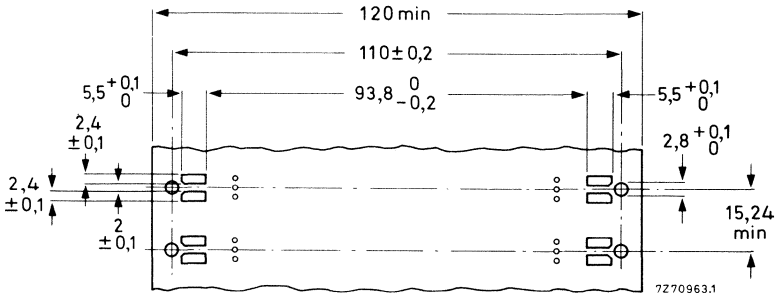


Fig. 7. Piercing diagram

ORDERING

For ordering purposes please quote the 12-digit catalogue number.

Catalogue number of the cable hood		: 4332 026 25920
	the locking clip [1]	: 4332 026 25940
	the bracket (Fig. 6) [1]	: 4332 026 25930
	the bracket (Fig. 5) [1]	: 4332 026 25950
	the packing piece [1][2]	: 4332 026 26070

[1] Packaged in bags of 10, therefore please order in multiples of 10.
[2] For use with DIN 41612 connector type B.

KEYING PARTS

A set of three keying parts is supplied for use with DIN 41612 connector types B, C and D. The parts prevent insertion of the board part into the wrong panel part.

The set consists of: - aluminium strip for the board part
- aluminium comb for the panel part
- polycarbonate key.

Strip and comb are fixed to their relevant connector part by means of the connector mounting screws.

The key is pushed over the selected position of the strip and the corresponding comb tooth broken off (Fig. 1).
Strip and comb are marked 1 to 16 inclusive, to facilitate location of the key.

Maximum number of key locations with one key : 16
with two keys : 120

Minimum centre-to-centre distance between two adjacent connectors:
types C and D (DIN 41612) : 15,24 mm
type B (DIN 41612) : 12,7 mm

Weight of the strip: 2,0 g
comb: 2,8 g
key : 0,06 g

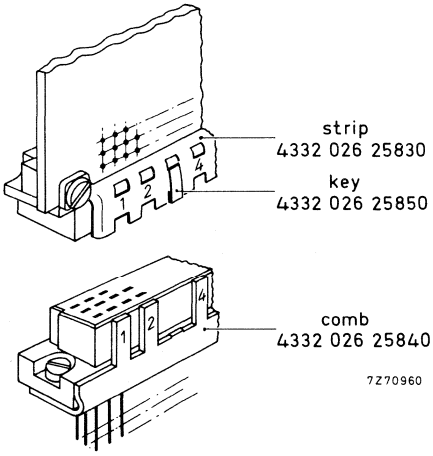


Fig. 1

Notes - The panel part is raised 1 mm above the panel (thickness of the comb).
- This keying system cannot be applied to connector F068-I with cable hood.

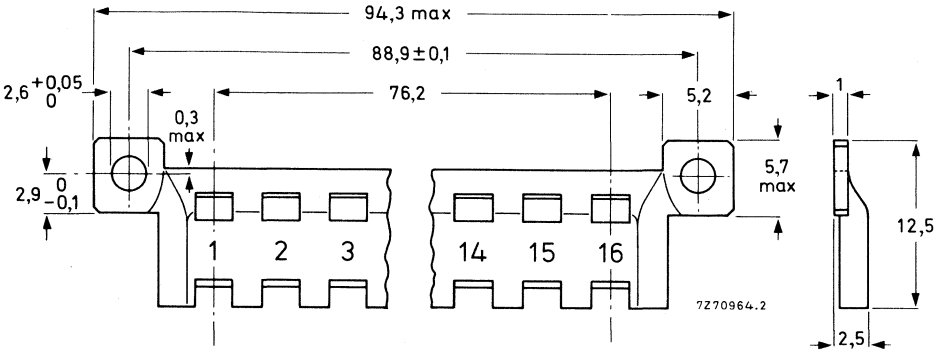


Fig. 2 Strip

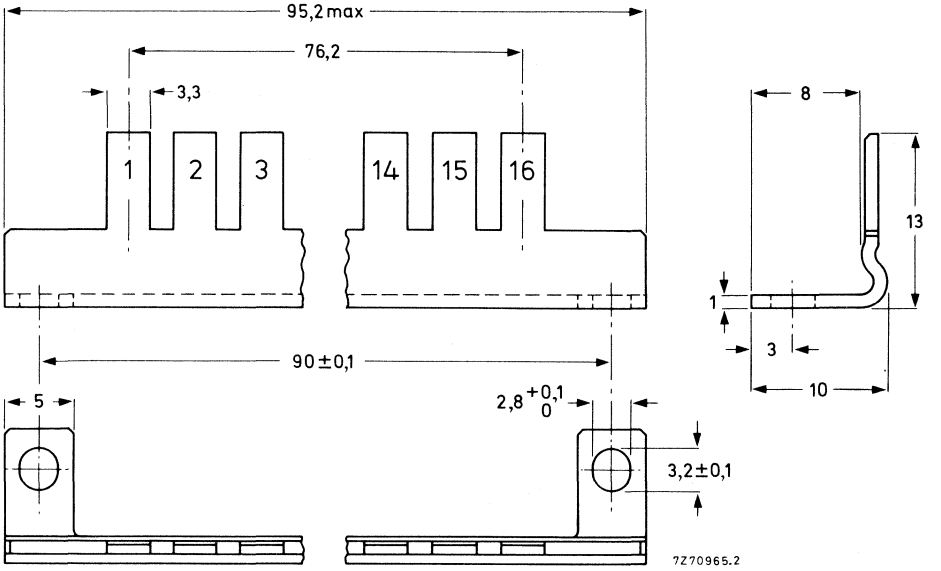


Fig. 3 Comb

ORDERING

For ordering purposes please quote the 12-digit catalogue number.

Catalogue number of the strip [1] : 4332 026 25830
the comb [1] : 4332 026 25840
the key [2] : 4332 026 25850

[1]) Packaged in bags of 25; please order in multiples of 25.
[2]) Packaged in bags of 50; please order in multiples of 50.

5,08 mm (0,2 in) PITCH TWO-PART PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	5,08 mm (0,2 in)
Number of connections	32, 48, 64
Board thickness	1,42 to 1,78 mm
Terminations, board part panel part	pins for dip soldering pins for wire wrap
Category (IEC 68)	55/125/56
Basic specification	IEC 130-1 and DIN 41612

DESCRIPTION

These connectors consist of a part to be fitted to a printed-wiring board (board part) and another part to be mounted on a chassis or back panel (panel part).
Both parts have a grey glass-fibre-filled polycarbonate body.
The contact springs are of phosphor bronze. The contact surfaces are gold on nickel-plating.
No special provisions are required for positioning.

TECHNICAL DATA

Dimensions (mm)

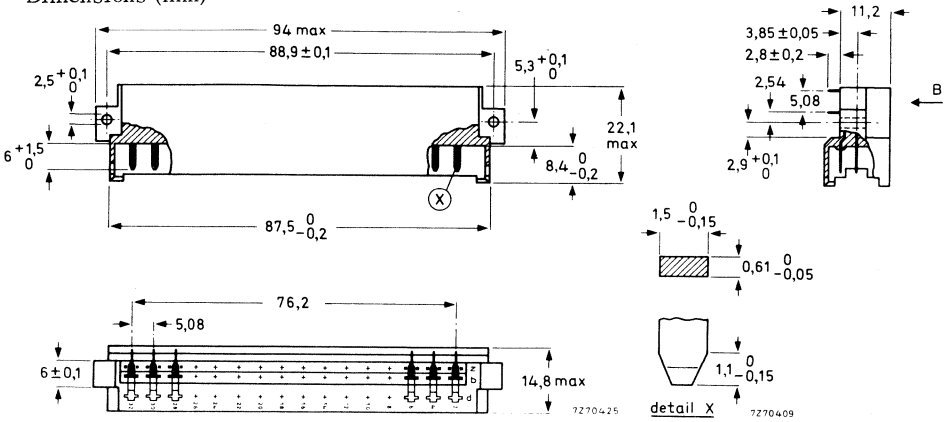


Fig. 1a. Board part with 2 x 16 contacts

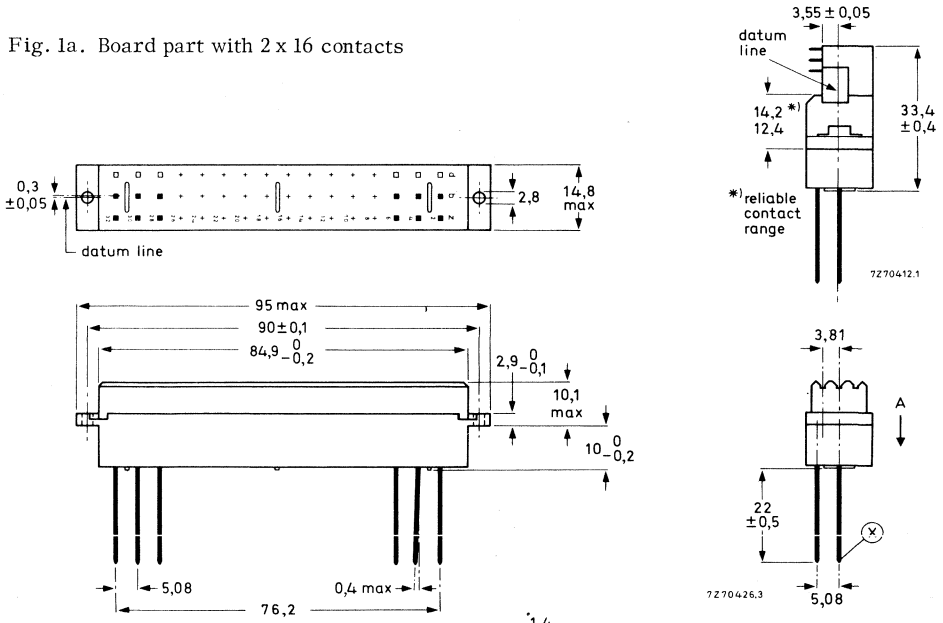


Fig. 1b. Panel part with 2 x 16 contacts

Note - Arrows A and B have been drawn for the sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

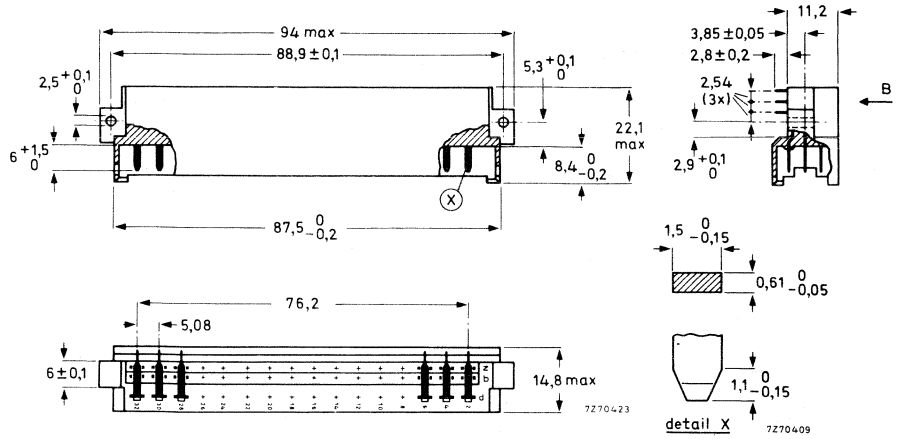


Fig. 2a. Board part with 3 x 16 contacts

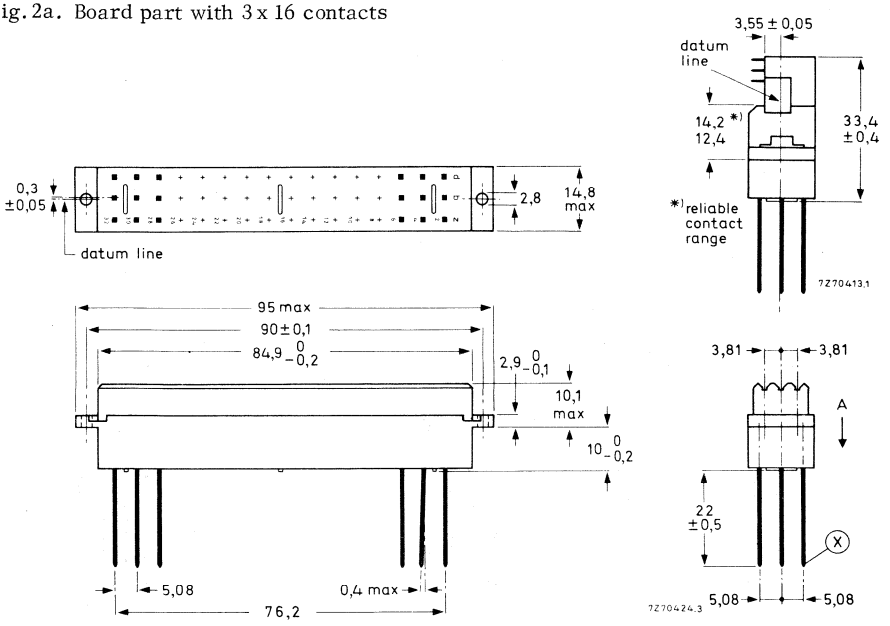
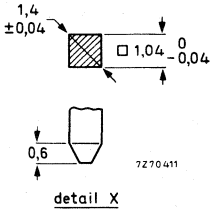


Fig. 2b. Panel part with 3 x 16 contacts



Note - Arrows A and B have been drawn for the sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

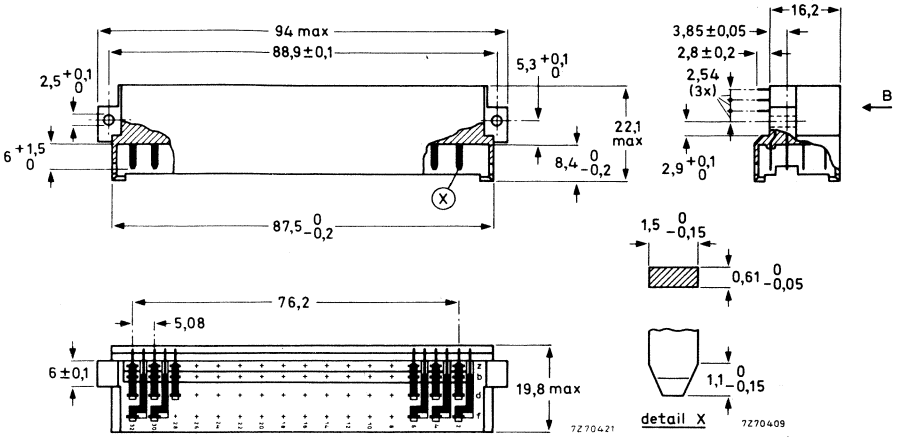


Fig. 3a. Board part with 4 x 16 contacts

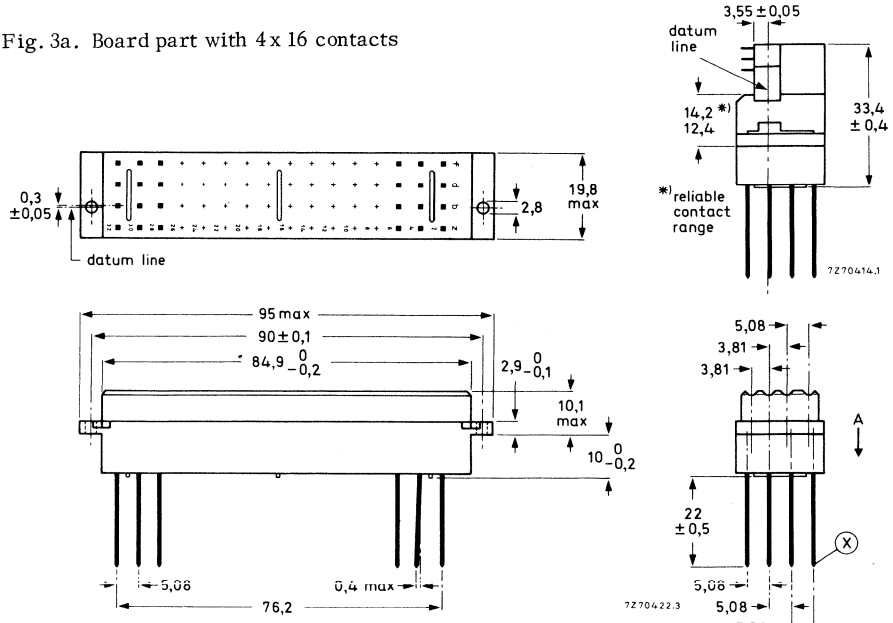
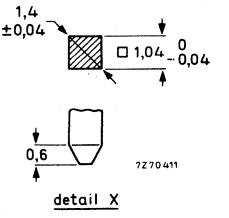


Fig. 3b. Panel part with 4 x 16 contacts



Note - Arrows A and B have been drawn for the sake of clarity; they indicate the direction of viewing when making the piercing diagrams (Figs. 5 and 6).

Weight, board part, 32 connections	approx. 22 g
48 connections	approx. 25 g
64 connections	approx. 33 g
panel part, 32 connections	approx. 38 g
48 connections	approx. 44 g
64 connections	approx. 60 g
Contact pitch	5,08 mm (0,2 in)
Number of connections	32, 48, 64
Board thickness	1,42 to 1,78 mm
Positioning	panel and board parts have been provided with interlocking key-ways to prevent incorrect insertion
Insertion force	
32 connections	≤ 50 N
48 connections	≤ 75 N
64 connections	≤ 100 N
Withdrawal force per contact [1]	0,2 N
Mechanical endurance	≥ 400 insertions
Ambient temperature range	−55 to + 125 °C
Connector body, material	glass-fibre-filled polycarbonate
Contact springs, material	phosphor bronze
shape	solid cantilever
finish of contact surfaces	min. 1 µm gold plate on min. 0,5 µm nickel plate
type of terminations	
board part	pins for dip soldering
panel part	pins for wire wrap
finish of terminations	gold flash
Current at T_{amb} = 70 °C	typical 4 A
Maximum current at different temperatures	see Fig. 4
Clearance between two opposite contacts	≥ 1,6 mm [2]
Creepage distance between two adjacent or opposite contacts	≥ 3 mm [2] [3]
Maximum r.m.s. voltage	Dependent on the safety regulations for the associated equipment [4]

[1]) Measured with mechanical gauge according to DIN41612.

[2]) This value may be reduced by the wiring and/or the printed-wiring boards.

[3]) Between rows Z and f of the board part: ≥ 1,9 mm.

[4]) In accordance with IEC 130-1, the max. permissible voltage is 330 V (r.m.s. value).

Test voltage for 1 min	
between adjacent contacts	1550 V, 50 Hz
between a contact and a metal mounting plate	2500 V, 50 Hz
Contact resistance (including material resistance) at 1 A, ≤ 20 mV_p, 1 kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 15 mΩ
after mechanical endurance	< 15 mΩ
after damp heat test (IEC 68, test Ca)	< 15 mΩ
Insulation resistance	
initially	> 10^5 MΩ
after damp heat test (IEC 68, test Ca)	> 10^4 MΩ
Capacitance between adjacent contacts	≤ 2 pF
between opposite contacts	≤ 2 pF

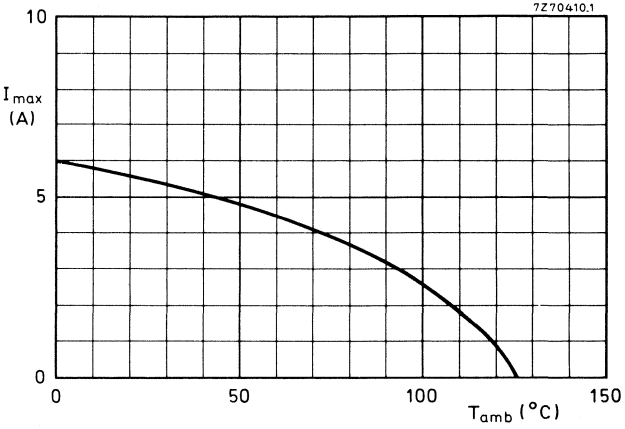


Fig. 4
Maximum current as a function of ambient temperature. The curve has been determined with maximum current through all contacts.

VERSIONS

number of connections	catalogue number	
	board part	panel part
2 x 16	2422 025 88014	2422 025 88004
3 x 16	88007	88006
4 x 16	88009	88008

For ordering purposes please quote the catalogue number.

MOUNTING

Piercing diagrams for the panel part

The figures below give a view on the panels in the direction of arrow A (Figs. 1b, 2b and 3b).

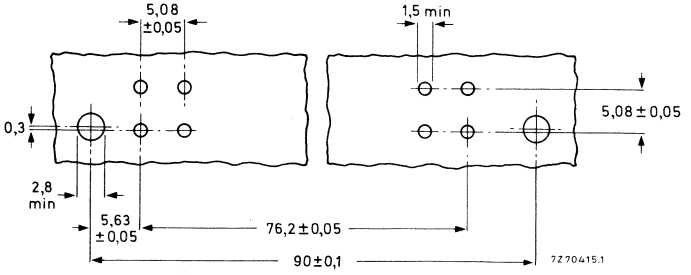


Fig. 5a. For 2 x 16 connections.

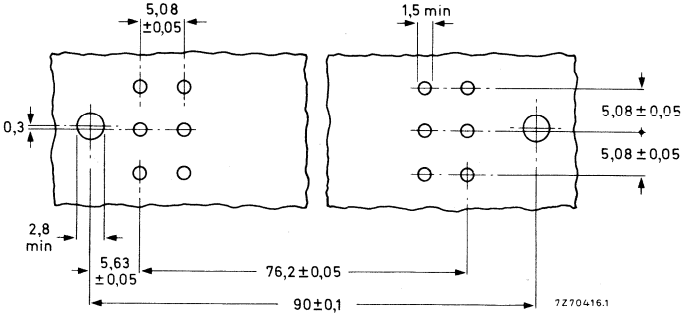


Fig. 5b. For 3 x 16 connections.

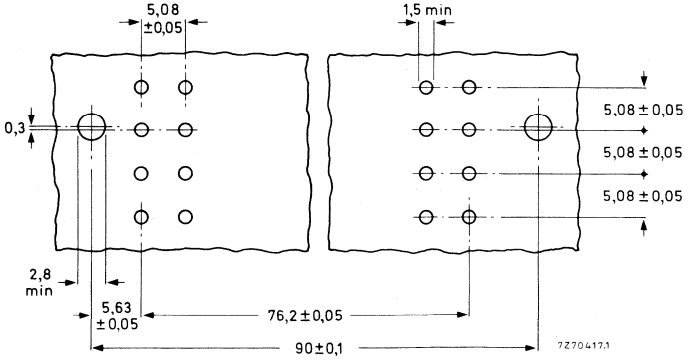


Fig. 5c. For 4 x 16 connections.

Piercing diagrams for the board part

The figures below give a view on the printed-wiring boards in the direction of arrow B (see Figs. 1a, 2a and 3a).

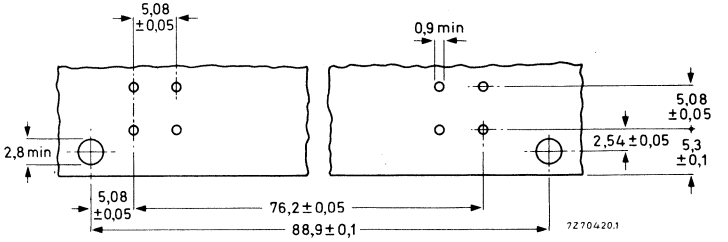


Fig. 6a. For 2 x 16 connections.

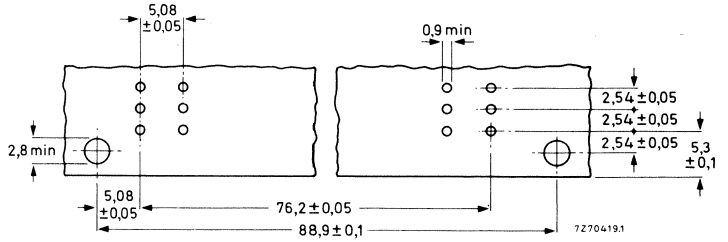


Fig. 6b. For 3 x 16 connections.

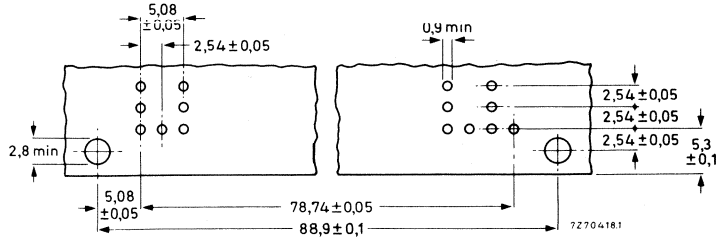


Fig. 6c. For 4 x 16 connections.

MARKING

Connector

The board part and the panel part are marked with: name of manufacturer
type number

The terminations of both parts are marked as follows,
for 32 connections: 2Z, 4Z to 32Z and 2b, 4b to 32 b;
for 48 connections: 2Z, 4Z to 32Z; 2b, 4b to 32b and 2d, 4d to 32d;
for 64 connections: 2Z, 4Z to 32Z; 2b, 4b to 32b; 2d, 4d to 32d and 2f, 4f to 32f.

Packaging

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

3,81 mm (0,15 in) PITCH TWO-PART PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	3,81 mm (0,15 in)
Number of connections (double row)	8, 32, 42
Board thickness	1,42 to 1,78 mm
Terminations, board part	solder pins
panel part	pins for wire wrap
Ambient temperature range	−10 to +70 °C
Current at T_{amb} = 70 °C	typical 1 A
Mechanical endurance	≥500 insertions
Finish of contact surfaces	min. 0,5 µm gold flash on min. 3 µm rolled-on gold on min. 2 µm nickel plate
Contact mating length	min. 3,5 mm

DESCRIPTION

These connectors consist of a part to be fitted to a printed-wiring board (board part) and another part to be mounted on a chassis or back panel (panel part).
Both parts have a dark green glass-fibre-filled phenolphormaldehyde body. The contact springs are of phosphor bronze. The contact surfaces are rolled-on gold on nickel plating and are gold-flashed.

DIMENSIONS (mm)

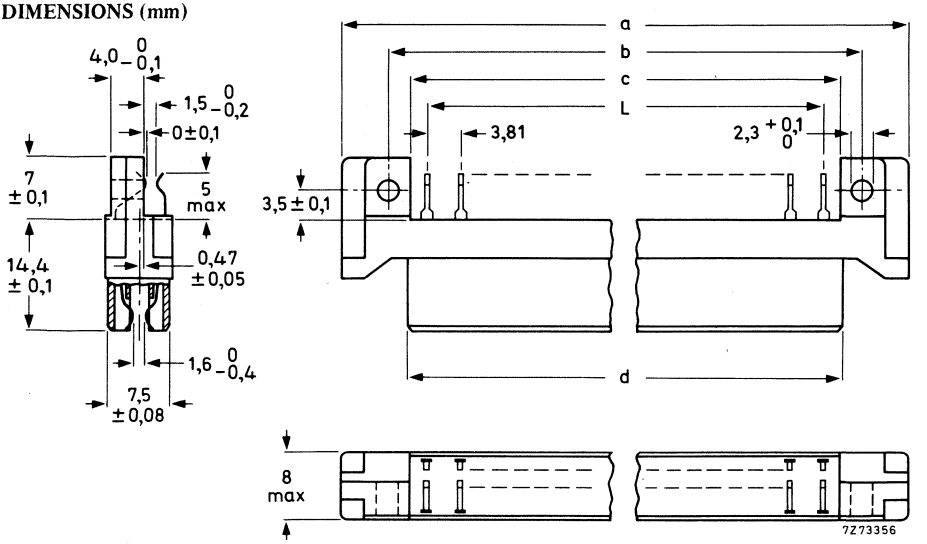


Fig. 1 Board part. See Table 1 for dimensions a, b, c, d and L.

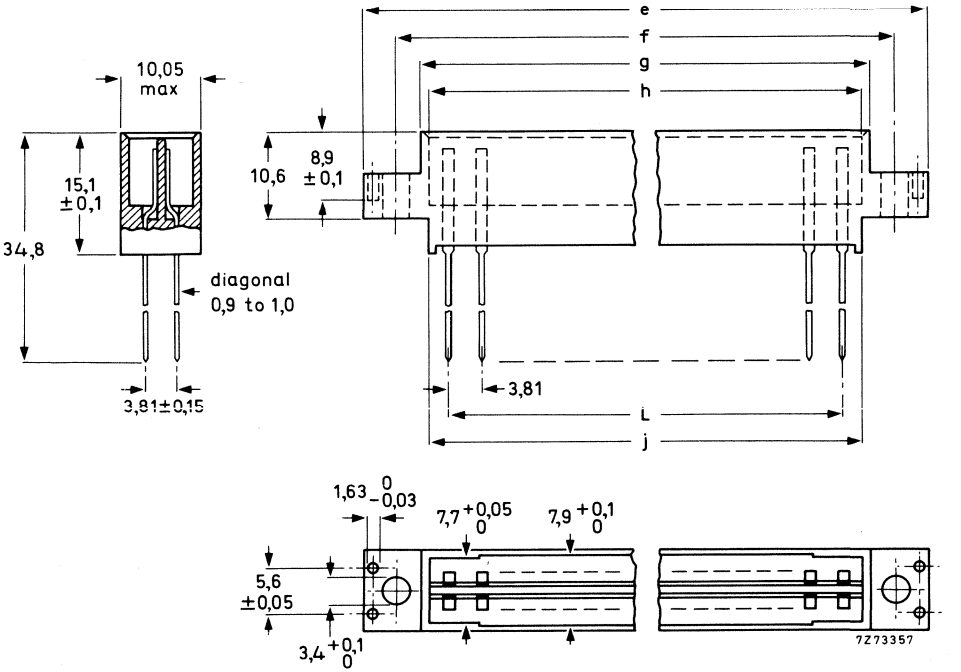


Fig. 2 Panel part. See Table 2 for dimensions e, f, g, h, j and L.

Table 1 (See Fig.1).

number of connections	dimensions (mm)				
	L	a_{max}	b	c	d
32	57, 15 ± 0, 06	79, 83	68, 58 ± 0, 1	63, 08 ± 0, 2	63, 98 ± 0, 07
42	76, 20 ± 0, 06	100, 15	88, 90 ± 0, 1	83, 40 ± 0, 2	84, 30 ± 0, 07

Table 2 (See Fig. 2).

number of connections	dimensions (mm)					
	L	e_{max}	f	gmax	h	j
32	57, 15 ± 0, 06	80, 38	72, 18 ± 0, 1	66, 43	64, 38 ± 0, 07	63, 68 – 0, 5
42	76, 20 ± 0, 06	100, 70	92, 50 ± 0, 1	86, 75	84, 70 ± 0, 07	84, 00 – 0, 5

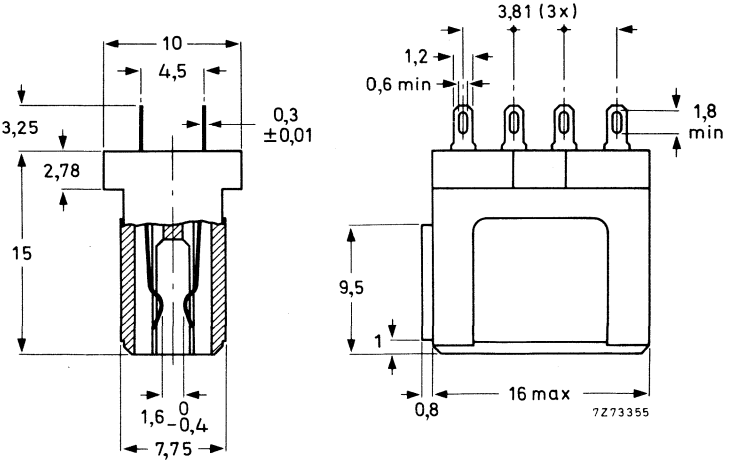


Fig. 3 Connector with eight connections. This connector is used as a cable connector in combination with the auxiliary parts shown in Fig. 4. Four cable connectors mate with the panel part with 42 connections.

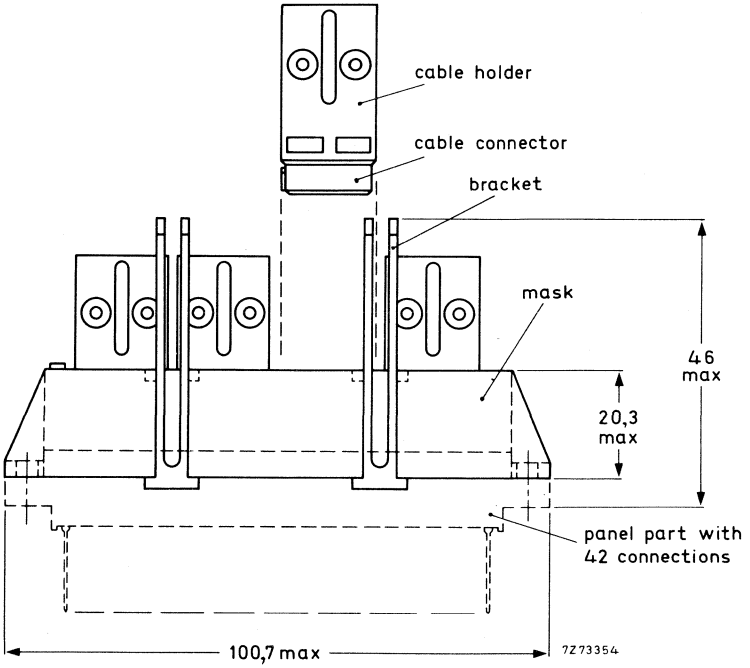


Fig. 4 Four cable connectors with auxiliary parts.

CATALOGUE NUMBERS FOR ORDERING

description	catalogue number
board part, 32 connections	2422 050 16008
42 connections	2422 050 21008
panel part, 32 connections	2422 050 16007
42 connections	2422 050 21007
cable connector, 8 connections	2422 050 90004
cable holder	3522 202 08960
mask	3522 202 08970
bracket	3522 202 08940

For ordering purposes please quote the catalogue number.

2,54 mm (0,1 in) PITCH TWO-PART PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA	
Contact pitch	2,54 mm (0,1 in)
Number of connections (double row)	8, 48, 64
Board thickness	1,42 to 1,78 mm
Terminations, board part	solder pins or solder tags
panel part	pins for wire wrap
Ambient temperature range	−10 to 70 °C
Current at T_{amb} = 70 °C	typical 1 A
Mechanical endurance	≥ 500 insertions
Finish of contact surfaces	min. 0,5 µm gold flash on min. 3 µm rolled-on gold on min. 2 µm nickel plate
Contact mating length	min. 3,5 mm

DESCRIPTION

These connectors consist of a part to be fitted to a printed-wiring board (board part) and another part to be mounted on a chassis or back panel (panel part).
Both parts have a dark green glass-fibre-filled phenolphormaldehyde body. The contact springs are of phosphor bronze. The contact surfaces are rolled-on gold on nickel plating and are gold-flashed.

DIMENSIONS (mm)

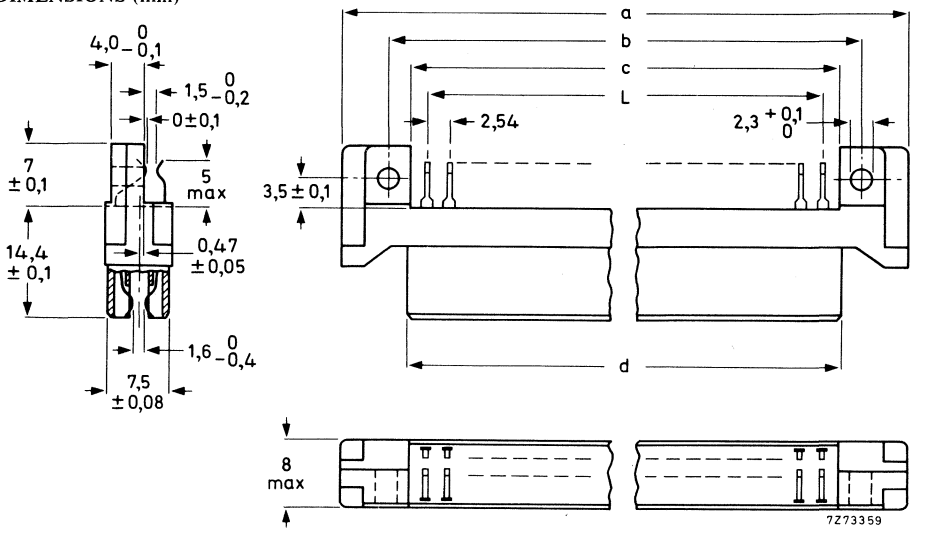


Fig. 1 Board part with solder pins. See Table 1 for dimensions a, b, c, d

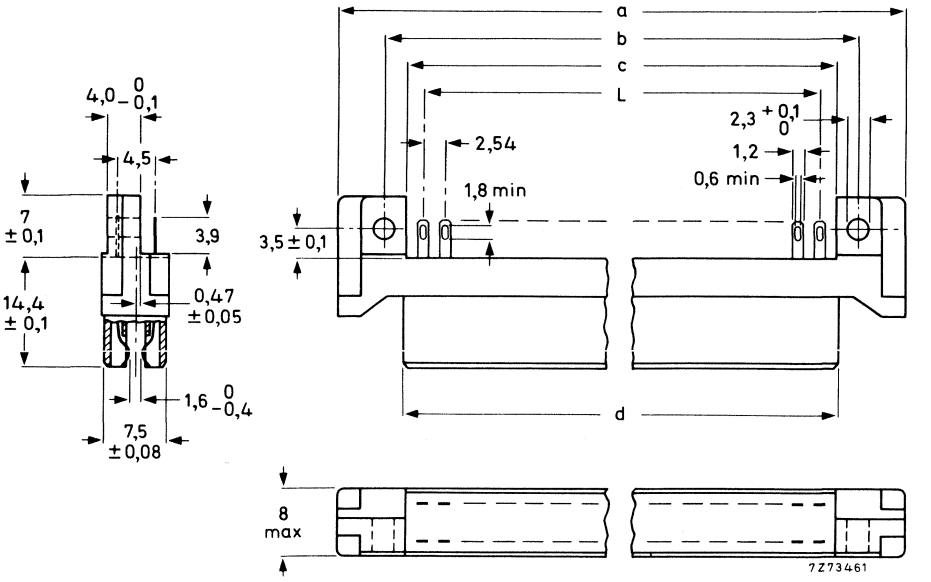


Fig. 2 Board part with solder tags. See Table 1 for dimensions a, b, c, d and L. Only available with 48 connections.

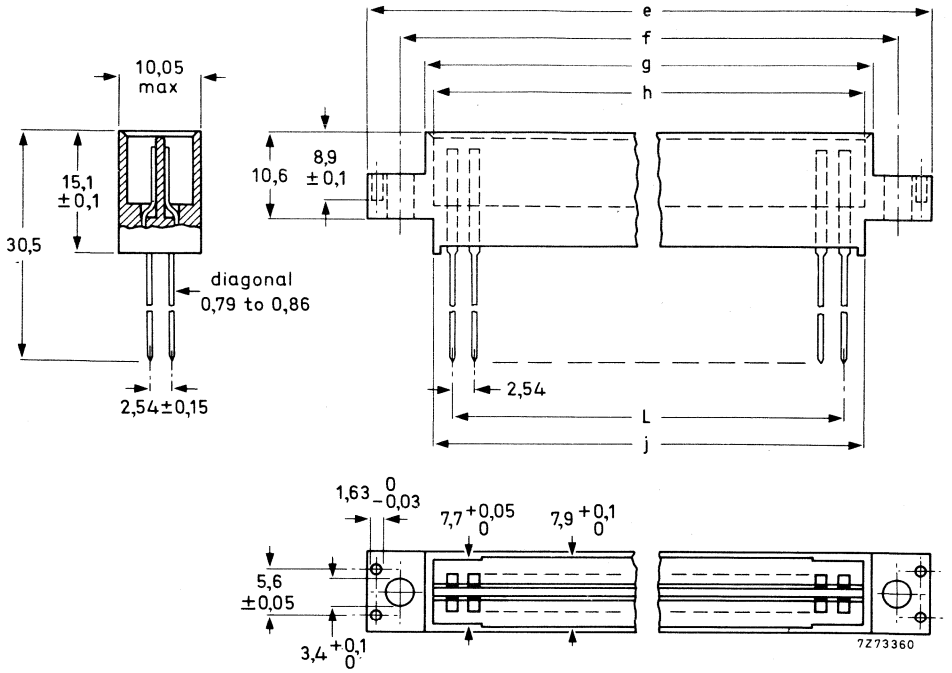


Fig. 3 Panel part. See Table 2 for dimensions e, f, g, h, j, and L.

Table 1 (See Figs. 1 and 2)

number of connections	dimensions (mm)				
	L	a_{max}	b	c	d
48	58, 42±0, 06	79, 83	68, 58±0, 1	63, 08±0, 2	63, 98±0, 07
64	78, 74±0, 06	100, 15	88, 90±0, 1	83, 40±0, 2	84, 30±0, 07

Table 2 (See Fig. 3)

number of connections	dimensions (mm)					
	L	e_{max}	f	g_{max}	h	j
48	58, 42±0, 06	80, 38	72, 18±0, 1	66, 43	64, 38±0, 07	63, 68−0, 5
64	78, 74±0, 06	100, 70	92, 50±0, 1	86, 75	84, 70±0, 07	84, 00−0, 5

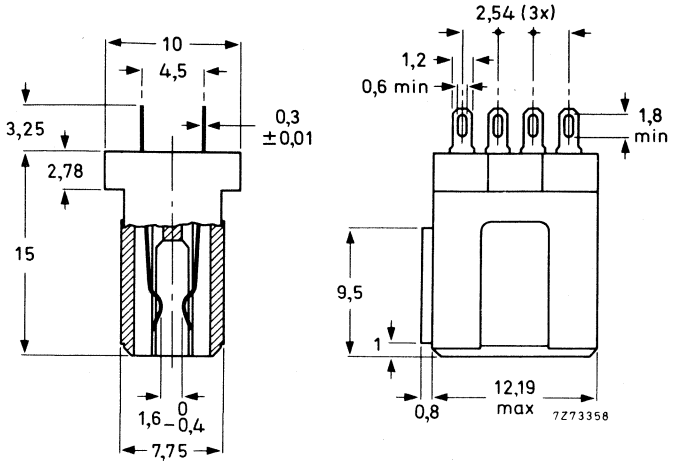


Fig. 4 Connector with eight connections. This connector is used as a cable connector in combination with the auxiliary parts shown in Fig. 5. Four cable connectors mate with the panel part with 64 connections.

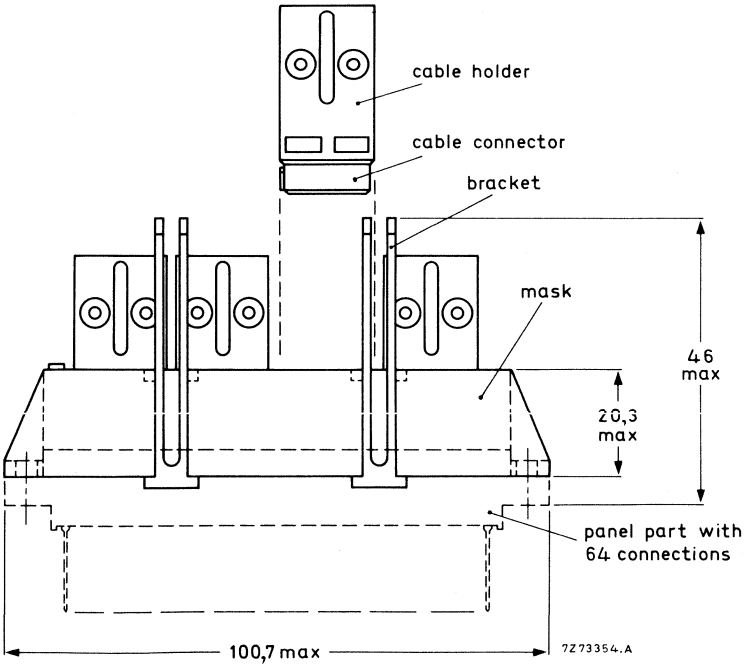


Fig. 5 Four cable connectors with auxiliary parts.

CATALOGUE NUMBERS FOR ORDERING

description	catalogue number
board part with solder pins, 48 connections	2422 049 24008
64 connections	2422 049 32008
board part with solder tags, 48 connections	2422 049 24018
panel part, 48 connections	2422 049 24007
64 connections	2422 049 32007
cable connector, 8 connections	2422 049 90004
cable holder	3522 202 15240
mask	3522 202 15230
bracket	3522 202 08940

For ordering purposes please quote the catalogue number.

2,54 mm (0,1 in) PITCH TWO-PART JUMPER CONNECTOR

QUICK REFERENCE DATA	
Contact pitch	2,54 mm (0,1 in)
Number of connections	2
Pin terminations	suitable for dip soldering
Category (IEC 68)	55/125/21

APPLICATION

This connector is intended for use as a link between two adjacent points on a printed-wiring board with a grid of 2,54 mm (0,1 in) thus enabling various circuit configurations to be built up or parts of the circuit to be shorted out.

DESCRIPTION

The connector consists of two contact pins for dip-solder mounting and a female plug. The plug is moulded in grey glass-fibre-filled thermoplastic. The contact springs in the plug and the pins are of phosphor bronze; the springs are shaped to provide two contact surfaces.
The contact faces are hard gold plated. The pins can be supplied either loose or as an assembly of 2 x 16 pins on a red glass-fibre-filled thermoplastic strip, which can be removed after dip soldering.

Note: If the contact pins are to be permanently interconnected, a modified wire wrap can be used instead of the female plug.

TECHNICAL DATA

Dimensions (mm)

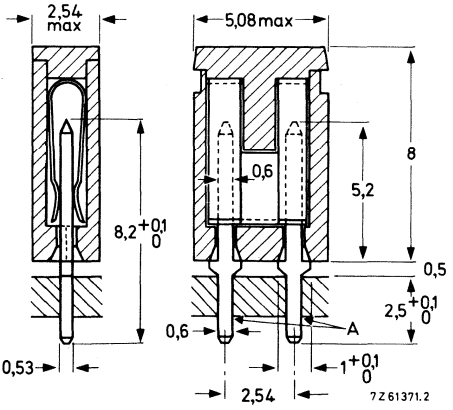


Fig. 1a Two-part jumper connector.

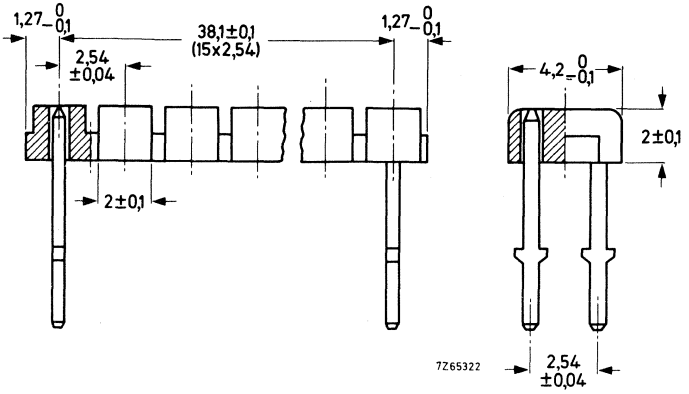


Fig. 1b Assembly of 2 x 16 pins on a strip.

Weight	
female plug	0, 16 g
pin	0, 021 g
strip with 2 x 16 pins	1, 06 g
Contact pitch	2, 54 mm (0, 1 in)
Number of connections	2
Insertion force	≤ 2 N
Withdrawal force	≥ 0, 2 N
Mechanical endurance	≥ 150 insertions
Ambient temperature range	−55 to +125 °C
Connector body, material	glass-fibre-filled thermoplastic
Contact springs and pins, material	phosphor bronze
shape of springs	see Fig. 1a
→ overall finish	min. 1 μm hard gold
type of pin termination	suitable for dip soldering
→ Current at T_{amb} = 70 °C	typical 2, 5 A
Maximum current at different temperatures	see Fig. 2
→ Maximum r. m. s. voltage	dependent on the safety regulations for the associated equipment [1]
Test voltage for 1 min between a contact and a metal mounting plate	1000 V, 50 Hz

1) In accordance with IEC 130-1, the maximum permissible voltage is 125 V (r. m. s. value).

Contact resistance between pins,
measured at A (see Fig. 1a)
at 10 mA, ≤ 20 mVp, 1 kHz

initially	< 25 mΩ
after mechanical endurance	< 25 mΩ
after damp heat test (IEC 68, test Ca)	< 35 mΩ

Insulation resistance

initially	$> 5.10^3$ MΩ
after damp heat test (IEC 68, test Ca)	$> 10^3$ MΩ

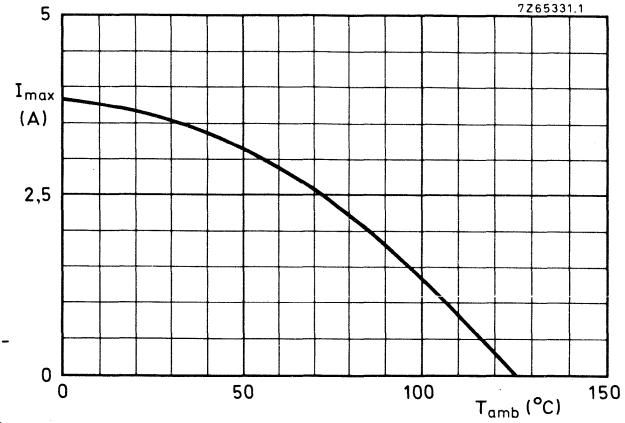


Fig. 2 Maximum current as a function of ambient temperature. The curve has been determined with maximum current through the contacts.

MOUNTING

The piercing diagram for mounting of the pins in a printed-wiring board is shown in Fig. 3.

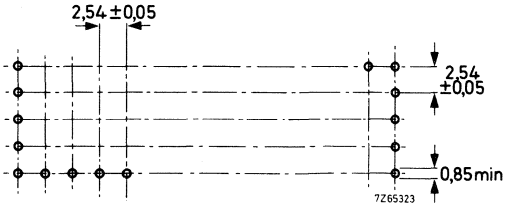


Fig. 3

The best result of pin positioning is achieved by using pins supplied on a thermoplastic strip. After dip or wave soldering of the pins, the strip can be removed by hand or a pair of tweezers.

CATALOGUE NUMBERS FOR ORDERING

For ordering purposes please quote the catalogue number.

Catalogue number of the female plug [1] : 2422 024 88003
the loose pin [2] : 4332 026 16770
the strip with 2 x 16 pins [3] : 2422 025 89303

MARKING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer.

[1] Packaged in bags of 500 ; please order in multiples of 500.

[2] Packaged in bags of 1000; please order in multiples of 1000.

[3] Packaged in boxes of 30 ; please order in multiples of 30.

2,54 mm (0,1 in) AND 5,08 mm (0,2 in) PITCH PRINTED-WIRING CONNECTORS

QUICK REFERENCE DATA		
	types B and F (DIN 41613)	types C and G (DIN 41613)
Contact pitch	2, 54 mm (0, 1 in) or 5, 08 mm (0, 2 in)	5, 08 mm (0, 2 in)
Number of connections	16, 32 or 64	16 or 32
Board thickness	1, 42 to 1, 78 mm	1, 42 to 1, 78 mm
Terminations	pins for dip soldering or pins for mini wire wrap	pins for dip soldering or pins for wire wrap
Current at $T_{amb} = 70\,^{o}C$	typical 1A	typical 4A
Mechanical endurance	≥400 insertions	≥400 insertions
Category (IEC 68)	55/125/56	55/125/56
Basic specification	IEC 130-1 and DIN 41613	IEC 130-1 and DIN 41613

DIMENSIONS (mm)

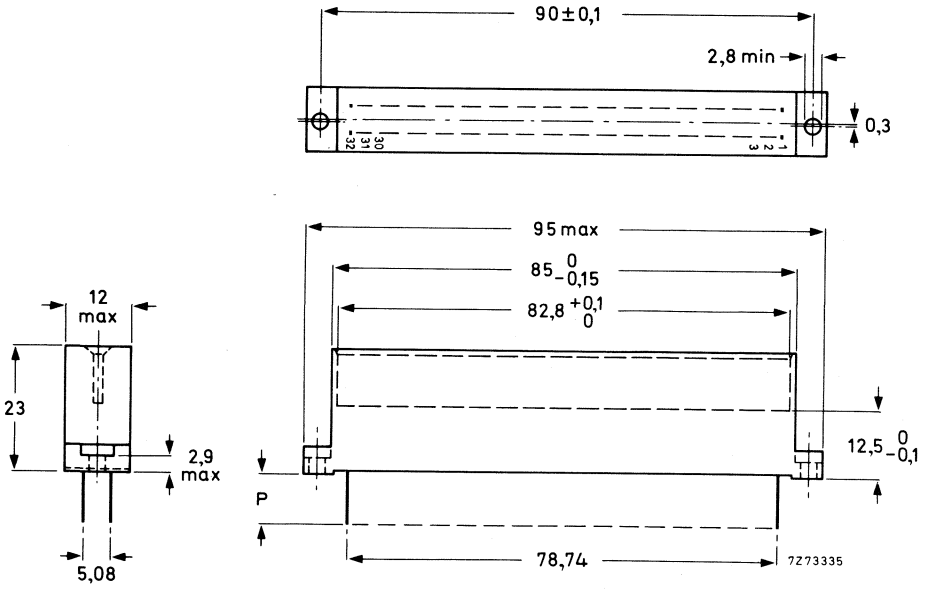


Fig. 1 Dimensions of connector types B and C (DIN 41613)
Dimension P is 2, 5 mm for pins for dip soldering or 22 mm for pins for mini wire wrap (0, 6 mm x 0, 6 mm) as well as for pins for wire wrap (1 mm x 1mm).
The contact pitch is 2, 54 mm (0, 1 in) or 5, 08 mm (0, 2 in) for type B, and 5, 08 mm (0, 2 in) for type C.

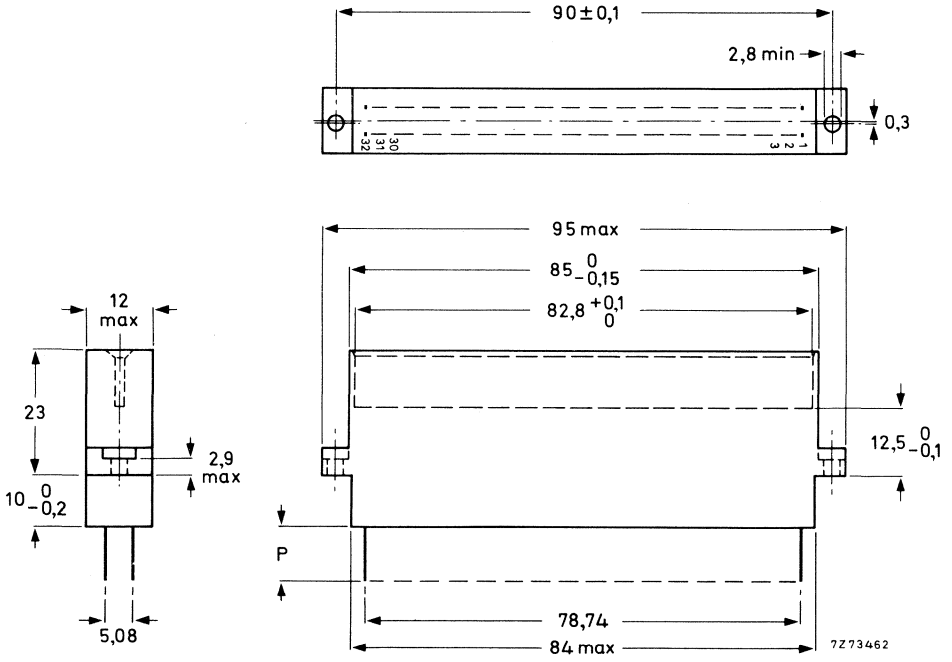


Fig. 2 Dimensions of connector types F and G (DIN 41613).
Dimension P is 2, 5 mm for pins for dip soldering or 22 mm for pins for mini wire wrap (0, 6 mm x 0, 6 mm) as well as for pins for wire wrap (1 mm x 1 mm).
The contact pitch is 2, 54 mm (0, 1 in) or 5, 08 mm (0, 2 in) for type F, and 5, 08 mm (0, 2 in) for type G.

2,54 mm (0,1 in) PITCH MODULAR CONNECTOR SYSTEM

QUICK REFERENCE DATA	
Contact pitch	2,54 mm (0,1 in)
Number of connections	
board edge socket, single row	2 to 32
double row	6 to 130
panel socket, single row	2 to 32
double row	4 to 100
male header, straight pins, single row	2 to 30 [1]
double row	4 to 60 [2]
male header, right-angled pins, single row	15
double row	30
Terminations	contact pins for dip or wave soldering or mini wire-wrap
Total length of contact pins (□0,6 mm) of male header with straight pins supplied in a removable mounting block	11,6 and 22 mm
of 2 x 10 pins	9, 11,6 and 22 mm
Category (IEC 68)	20/125/21

APPLICATION

This modular connector system has been developed to provide a simple, flexible yet reliable means of interconnecting eletronic circuit boards and modules in applications where maximum packing density is of major importance.

DESCRIPTION

The system consists of the following parts:
- board edge sockets (Fig. 1) for connecting daughter boards at right-angles to mother boards in vertically stacked card systems;
- panel sockets (Fig. 2) for horizontally stacking printed-wiring boards;
- male headers with straight (Fig. 4) or right-angled pins (Fig. 3) for accommodating mini wire-wrap or soldered joints or mating panel sockets and board edge sockets.

The male headers with straight pins have a body of glass-fibre-filled thermoplastic polyester, the bodies of the other parts are of glass-fibre-filled diallylphthalate.
All parts have been provided with contact pins for dip or wave soldering.

1) In future 2 to 32.
2) In future 2 to 64.

The contact springs and pins are of phosphor bronze; the electrical contact surfaces are gold-on-nickel plating. The contact surfaces of the springs ensure low resistance with two of the flat surfaces of mating contact pins by means of two sprung blades.

Contact pins with different lengths are supplied in a removable glass-fibre-filled thermoplastic polyester mounting block with 2 x 10 pins.

TECHNICAL DATA

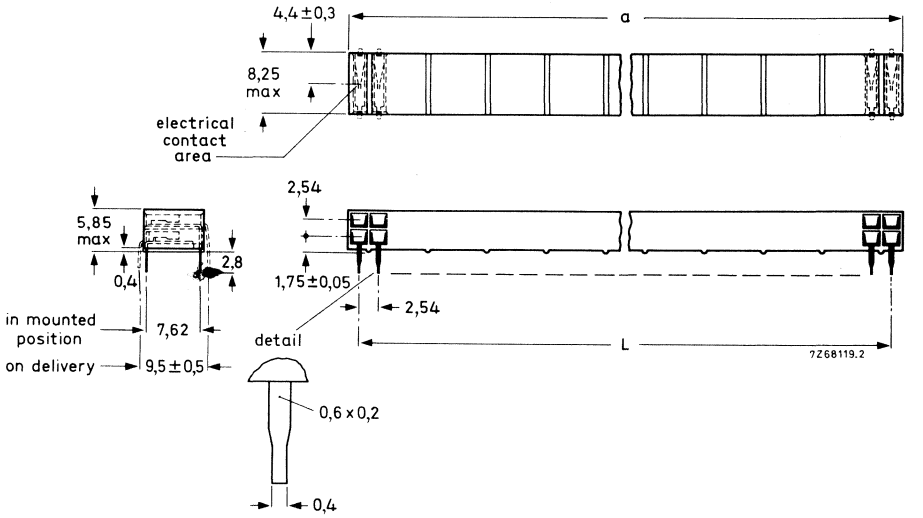


Fig. 1a. Board edge socket, double row. See table for dimensions a and L.

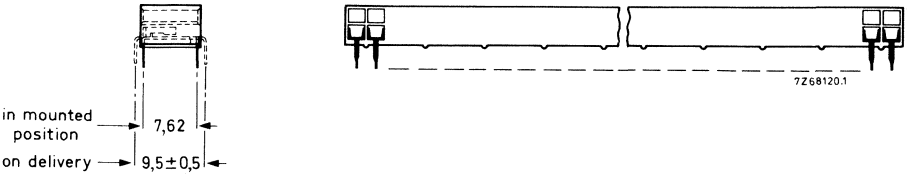


Fig. 1b. Board edge socket, single row. Dimensions are identical with those in Fig. 1a except as shown.

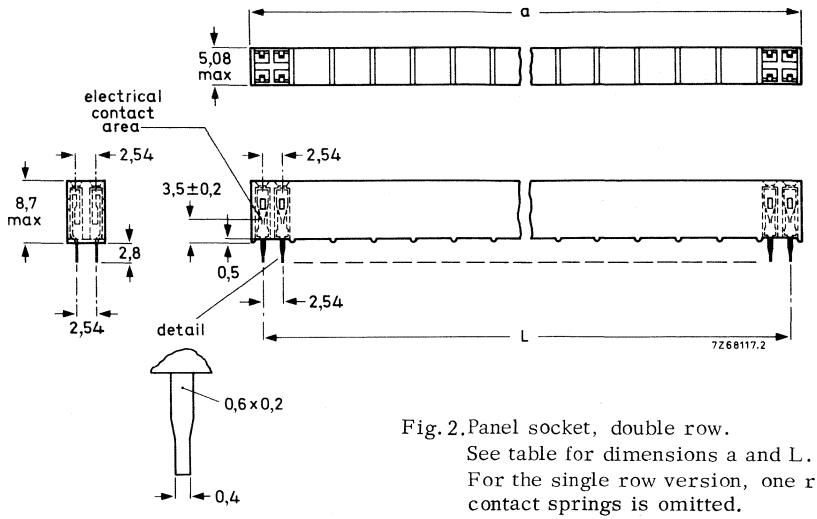


Fig. 2. Panel socket, double row.
See table for dimensions a and L.
For the single row version, one row of contact springs is omitted.

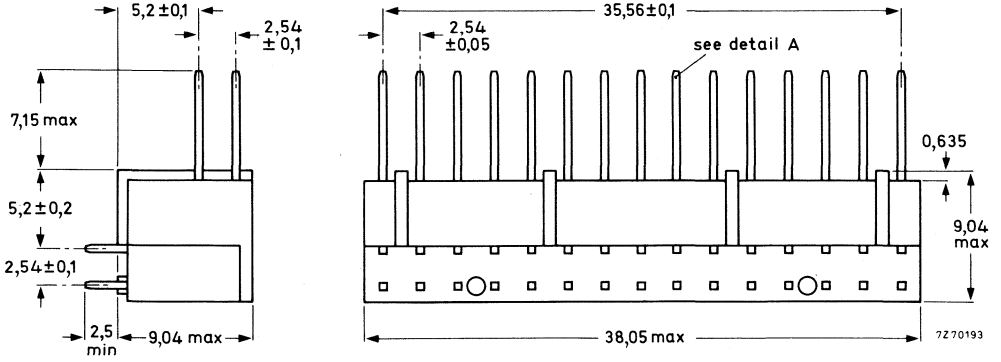
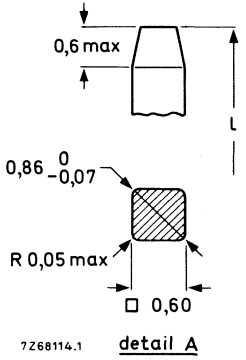


Fig. 3. Male header with right-angled pins, double row (30 contact pins).

For the single row version, the outer row of pins is omitted.



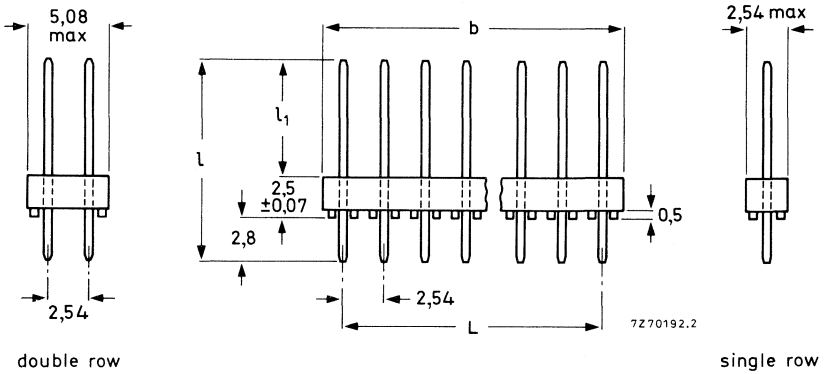


Fig. 4. Male header with straight pins. See table for dimensions b and L.
Dimensions of the pins are identical with those in Fig. 5, except as shown.
1 = 11, 6 mm (l_1 = 6, 5 mm) for pins for dip soldering.
1 = 22 mm (l_1 = 17 mm) for pins for mini wire-wrap.

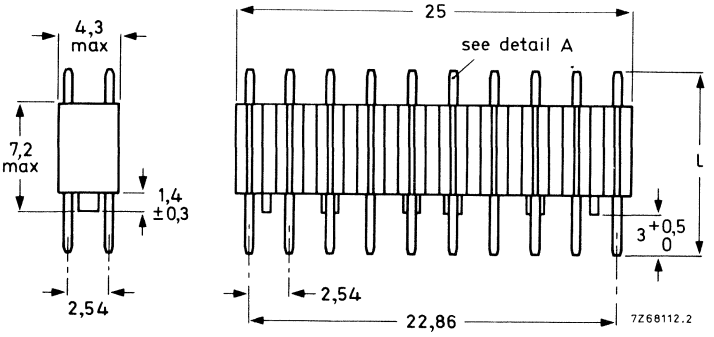


Fig. 5. Assembly of 2 x 10 contact pins in a removable mounting block.
Pin lengths (l) are: 9 mm, 11, 6 mm, or 22 mm.

The 22 mm pins are suitable for mini wire-wrap.

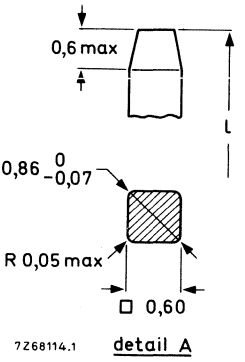


Table – The numbers in the first column marked with an asterisk are preferred ones, see "General".

number of contact positions, single row	dimensions (mm)			approx. weight (g), double row
	L [1]	a_{max} [2]	b_{max} [3]	
02 not for double row board edge sockets	2, 54	5, 83	5, 28	0, 3
03	5, 08	8, 37	7, 82	0, 5
04	7, 62	10, 91	10, 36	0, 7
05	10, 16	13, 45	12, 90	0, 9
06	12, 70	15, 99	15, 44	1, 1
07 *	15, 24	18, 53	17, 98	1, 3
08	17, 78	21, 07	20, 52	1, 5
09	20, 32	23, 61	23, 06	1, 7
10 *	22, 86	26, 15	25, 60	1, 9
11	25, 40	28, 69	28, 14	2, 1
12	27, 94	31, 23	30, 68	2, 3
13	30, 48	33, 77	33, 22	2, 4
14	33, 02	36, 31	35, 76	2, 6
15 *	35, 56	38, 85	38, 30	2, 8
16	38, 10 ±0, 1	41, 39	40, 84	3, 0
17	40, 64	43, 93	43, 38	3, 2
18	43, 18	46, 47	45, 92	3, 4
19	45, 72	49, 01	48, 46	3, 6
20 *	48, 26	51, 55	51, 00	3, 8
21	50, 80	54, 09	53, 54	4, 0
22	53, 34	56, 63	56, 08	4, 2
23	55, 88	59, 17	58, 62	4, 4
24 *	58, 42	61, 71	61, 16	4, 5
25	60, 96	64, 25	63, 70	4, 7
26	63, 50	66, 79	66, 24	4, 9
27	66, 04	69, 33	68, 78	5, 1
28	68, 58	71, 87	71, 32	5, 3
29	71, 12	74, 41	73, 86	5, 5
30 *	73, 66	76, 95	76, 40	5, 7
31 not for	76, 20	79, 49		5, 9
32 male headers	78, 74	82, 03		6, 1

1) $L_{nom} = (n-1)\ 2,54$ mm; n = number of contact positions, single row.
2) $a = (L_{nom} + 3,04) \pm 0,25$ mm for 2 to 34 contact positions, single row;
$a = (L_{nom} + 3,04) \pm 0,30$ mm for 34 to 65 contact positions, single row.
3) $b = (L_{nom} + 2,54) \pm 0,2$ mm.

Table (continued)

number of contact positions, single row		dimensions (mm)			approx. weight (g), double row
		L [1]	a_{max} [2]	b_{max}	
33	not for male headers, single row board edge sockets and single row panel sockets.	81, 28 ± 0, 1	84, 57		6, 3
34		83, 82	87, 16		6, 4
35		86, 36	89, 70		6, 6
36		88, 90	92, 24		6, 8
37		91, 44	94, 78		7, 0
38		93, 98	97, 32		7, 2
39		96, 52	99, 86		7, 4
40		99, 06	102, 40		7, 6
41		101, 60	104, 94		7, 8
42		104, 14	107, 48		8, 0
43		106, 68	110, 02		8, 2
44		109, 22	112, 56		8, 4
45		111, 76	115, 10		8, 5
46		114, 30	117, 64		8, 7
47		116, 84	120, 18		8, 9
48		119, 38	122, 72		9, 1
49		121, 92	125, 26		9, 3
50		124, 46 ± 0, 15	127, 80		9, 5
51	only for double row board edge sockets	127, 00	130, 34		9, 7
52		129, 54	132, 88		9, 9
53		132, 08	135, 42		10, 1
54		134, 62	137, 96		10, 3
55		137, 16	140, 50		10, 5
56		139, 70	143, 04		10, 7
57		142, 24	145, 58		10, 8
58		144, 78	148, 12		11, 0
59		147, 32	150, 66		11, 2
60		149, 86	153, 20		11, 4
61		152, 40	155, 74		11, 6
62		154, 94	158, 28		11, 8
63		157, 48	160, 82		12, 0
64		160, 02	163, 36		12, 2
65		162, 56	165, 90		12, 4

1) L_{nom} = (n-1) 2, 54 mm; n = number of contact positions, single row.
2) a_{nom} = (L_{nom} + 3, 04) ± 0, 25 mm for 2 to 34 contact positions, single row;
a_{nom} = (L_{nom} + 3, 04) ± 0, 30 mm for 34 to 65 contact positions, single row.

Contact pitch	2,54 mm (0,1 in)
Number of connections	
board edge socket, single row	2 to 32
double row	6 to 130
panel socket, single row	2 to 32
double row	4 to 100
male header, straight pins, single row	2 to 30 [1]
double row	4 to 60 [2]
male header, right-angled pins, single row	15
double row	30
Board thickness (for dip-solder application)	1,42 to 1,78 mm
Insertion force [3]	≤ 1,5 N
Withdrawal force [3]	≥ 0,2 N
Mechanical endurance	≥ 300 insertions
Ambient temperature range, operating	−20 to + 125 °C
storage	−65 to + 125 °C
Body material, male header with straight pins and removable mounting block	glass-fibre-filled thermoplastic polyester
other parts	glass-fibre-filled diallylphthalate
Contact springs	
material	phosphor bronze
shape	See Fig. 6.
finish of contact surfaces	min. 0,75 µm gold plate on min. 1 µm nickel plate
type of terminations	pin for dip soldering
finish of terminations	gold flash
Contact pins and pins of male headers	
material	phosphor bronze
shape	square wire, chamfered at both ends
finish of contact surfaces	min. 0,75 µm gold plate on min. 1 µm nickel plate
type of terminations	pin for dip soldering or mini wire-wrap

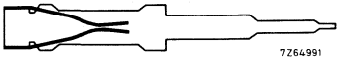


Fig. 6a. Upper contact spring for board edge sockets.

Fig. 6b. Lower contact spring for board edge sockets.

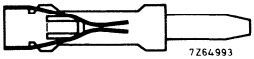


Fig. 6c. Contact spring for panel sockets.

1) In future 2 to 32.
2) In future 2 to 64.
3) Measured for each contact position with metal gauge.

Current at T_{amb} = 70 °C	typical 2 A through all contacts
Maximum current at different temperatures	see Fig. 7
Clearance between two adjacent or opposite contacts	≥0,4 mm
Creepage distance between two adjacent or opposite contacts	≥0,5 mm
Maximum r.m.s. voltage	dependent on the safety regulations for the associated equipment [1])
Test voltage for 1 min	
between adjacent or opposite contacts	750 V, 50 Hz
between a contact and a metal mounting plate	750 V, 50 Hz
Contact resistance (including material resistance) at ≤ 100 mA, ≤ 20 mVp, 1kHz or ≤ 20 mV d.c. (open-circuit voltage)	
initially	< 12 mΩ } measured on contact
after mechanical endurance	< 12 mΩ } pin at 2 mm from
after damp heat test (IEC 68, test Ca)	< 12 mΩ } connector body
Insulation resistance	
initially	> 10^5 MΩ
after damp heat test (IEC 68, test Ca)	> 10^3 MΩ
Capacitance between adjacent or opposite contacts at 1 MHz	< 1,5 pF

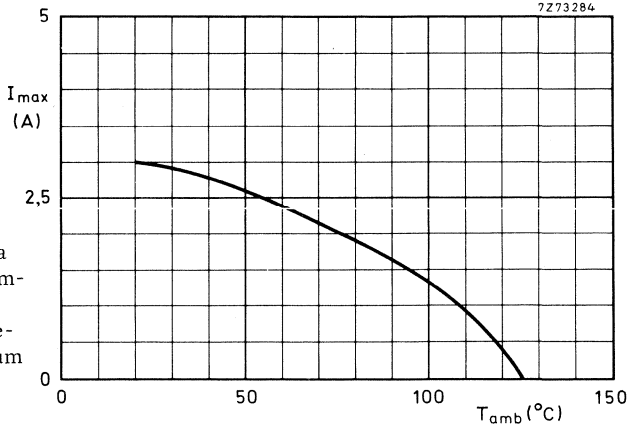


Fig. 7. Maximum current as a function of ambient temperature.
The curve has been determined with maximum current through all contacts.

1) In accordance with IEC 130-1, the maximum permissible voltage is 100 V (r.m.s. value).

COMPOSITION OF THE CATALOGUE NUMBER

IMPORTANT- For available versions see "Technical data-Number of connections".

- For ordering purposes please quote the catalogue number.

Board edge socket

2422 062 1...1

number of contact positions, single row (02, 03, etc.)

6 = single row (Fig. 1b)
1 = double row (Fig. 1a)

Panel socket (Fig. 2)

Single row panel socket: 4322 028 03..1

number of contact positions, single row (02, 03, etc.)

Double row panel socket: 2422 062 0..11

number of contact positions, single row (02, 03, etc.)

Male headers

Male header with straight pins (Fig. 4): 2422 062 1

4 = pins for dip soldering (11,6 mm)
5 = pins for mini wire-wrap (22 mm)

4 = single row
5 = double row

number of contact positions, single row (02, 03, etc.)

Male header with right-angled pins (Fig. 3), single row (1 x 15 pins): 2422 025 88023
double row (2 x 15 pins): 2422 025 88012

Contact pins

Assembly of 2 x 10 pins in a removable mounting block (Fig. 5):
4322 027 737..

10 = 9 mm
30 = 11,6 mm
50 = 22 mm
} total pin length

MOUNTING

Piercing diagrams

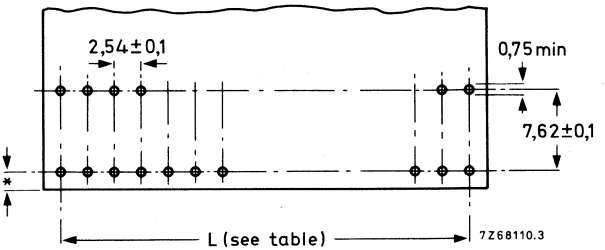


Fig. 8. Piercing diagram for a double row board edge socket.
The dimension marked * is determined by customer application (min. 2 mm).
The hole diameter applies to plated-through holes.

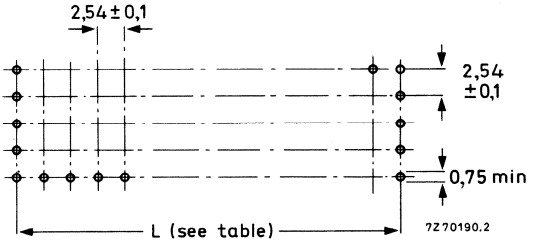


Fig. 9. Piercing diagram for panel sockets.
The hole diameter applies to plated-through holes.

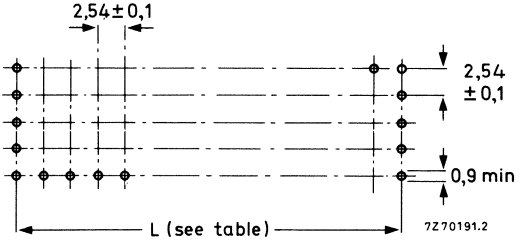


Fig. 10. Piercing diagram for male headers and contact pins in an assembly of 2 x 10 pins. The hole diameter applies to plated-through holes.

Note- After soldering an assembly of 2 x 10 pins, the mounting block can easily be removed.

SUBMINIATURE RACK AND PANEL CONNECTORS

QUICK REFERENCE DATA	
Number of connections	9, 15, 25, 37 and 50
Terminations	crimp snap-in, or solder pots
Climatic category (IEC 68)	55/125/21

APPLICATION

Intended for rack and panel connection or cable plugs and sockets.

DESCRIPTION

Connectors with crimp snap-in contacts

These consist of a red glass-fibre-filled polycarbonate insulating block, mounted in a passivated, cadmium-plated steel shell.
The insulating block contains a number of holes allowing crimpable contact pins or sockets to be loaded into the connector.
The contact pins and sockets are made of a copper alloy and are gold plated on a nickel layer; they are supplied as loose parts.
The connectors meet the requirements of MIL-STD-C-24308, except for the body material and gold plating of contacts. The contacts can be crimped with the aid of tools according to MIL-STD, see "CONTACT CRIMPING TOOLS".
If a connector is to be used as a cable plug or socket, it can be fitted with a cable hood and locking device.

Connectors with solder pots

Except for the contacts, these connectors are identical as the connectors with crimp snap-in contacts. The insulating block contains a number of contact pins or sockets with solder pot terminations.

TECHNICAL DATA

Dimensions (mm)

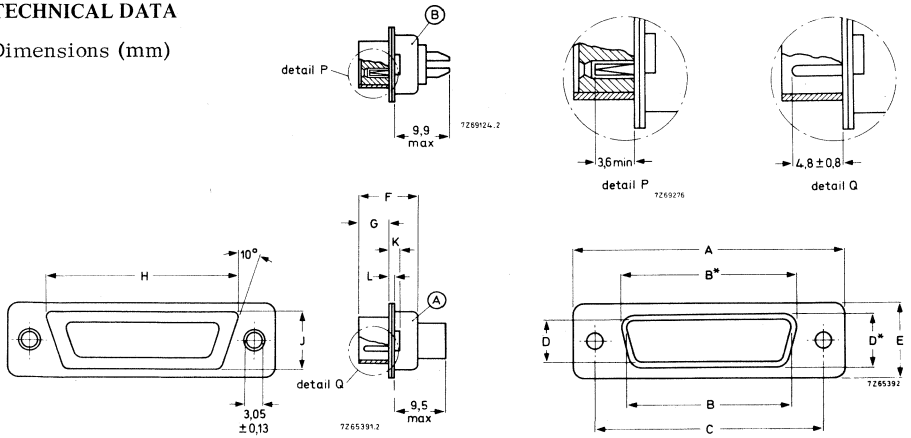


Fig. 1 Outline dimensions of a pin connector (A) (crimp snap-in version) and a socket connector (B) (solder pot version).

Table 1

number of connections	dimensions (mm)												
	A ±0,35	B ±0,15	B* ±0,15	C ±0,12	D ±0,12	D* ±0,12	E ±0,35	F ±0,25	G ±0,15	H ±0,25	J ±0,25	K ±0,3	L ±0,2
9(P)	30,8	16,93		25,0	8,35		12,55	10,7	5,9	19,3	10,7	1,2	0,8
9(S)	30,8		16,3	25,0		7,9	12,55	10,9	6,15	19,3	10,7	1,2	0,8
15(P)	39,15	25,25		33,3	8,35		12,55	10,7	5,9	27,5	10,7	1,2	0,8
19(S)	39,15		24,65	33,3		7,9	12,55	10,9	6,15	27,5	10,7	1,2	0,8
25(P)	53,0	39,0		47,05	8,35		12,55	10,7	5,9	41,3	10,7	1,2	0,8
25(S)	53,0		38,35	47,05		7,9	12,55	10,9	6,15	41,3	10,7	1,2	0,8
37(P)	69,3	55,45		63,5	8,35		12,55	10,7	5,9	57,7	10,7	1,2	0,8
37(S)	69,3		54,8	63,5		7,9	12,55	10,9	6,15	57,7	10,7	1,2	0,8
50(P)	66,9	52,83		61,1	11,07		15,35	10,7	5,9	55,3	13,5	1,2	0,8
50(S)	66,9		52,4	61,1		10,75	15,35	10,9	6,15	55,3	13,5	1,2	0,8

Note: (P) = pin connector; (S) = socket connector.

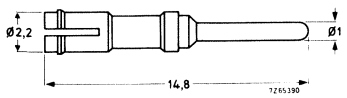


Fig. 2 Crimp snap-in contact pin.

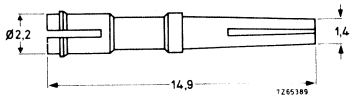


Fig. 3 Crimp snap-in contact socket.

Weight

crimp snap-in contact pin	0,15 g
crimp snap-in contact socket	0,18 g

Table 2

number of connections	max. insertion force (N)	max. withdrawal force (N)	approx. weight (g) of complete pin connector	socket connector
9	46	27	6	7
15	78	46	8	9
25	129	78	12	14
37	180	111	16	20
50	226	138	20	25

Wire cross section *)	AWG20 to AWG24 (0,6 to 0,23 mm^2)
Positioning	the shell is trapezium shaped, preventing incorrect insertion
Mechanical endurance	min. 500 insertions
Number of insertions of contacts into insulating block *)	min. 10
Ambient temperature range	−55 to +125 °C
Insulating block, material	glass-fibre-filled polycarbonate
Contacts, material	copper alloy
shape	round pins and cylindrical sockets with a two-fold spring facility
finish	min. 0,5 µm hard gold on min. 2 µm nickel plating
contact force	min. 0,4 N
Contact holding force (from rear) *)	min. 40 N
Current at T_{amb} = 70 °C	typical 5 A
Maximum current at different temperatures	see Fig. 4
Creepage distance between contacts	min. 1 mm
Test voltage for 1 min	
between contacts	1000 V, 50 Hz
between contacts and metal shell	1000 V, 50 Hz
Contact resistance (including material resistance) at 10 mA, < 20 mV_p (open-circuit voltage), 1 kHz	
initially	max. 2 mΩ
after mechanical endurance	max. 3 mΩ
after damp heat test (MIL-STD-202)	max. 3 mΩ
Insulation resistance	
initially	min. 10^5 MΩ
after damp heat test (MIL-STD-202)	min. 5.10^3 MΩ

*) Only for crimp snap-in contacts.

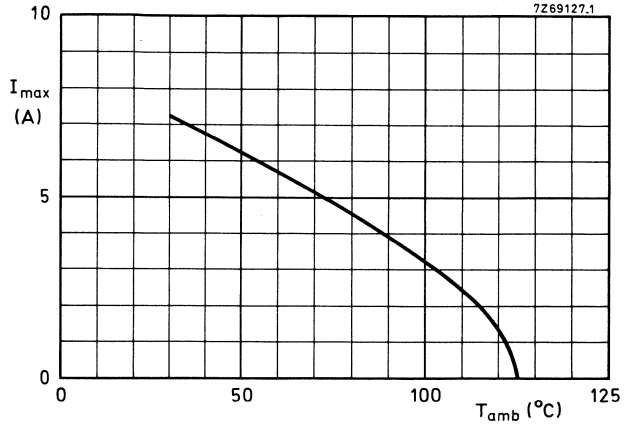


Fig. 4 Maximum current as a function of ambient temperature. The curve has been determined with maximum current through all contacts.

AVAILABLE VERSIONS

Table 3

	number of connections	catalogue number	
		connector body for crimp snap-in contacts *)	connector with solder pots
pin connector	9	4332 026 22400	2422 606 20901
	15	22420	21501
	25	22440	22501
	37	22460	23701
	50	22480	25001
socket connector	9	4332 026 22410	2422 606 30901
	15	22430	31501
	25	22450	32501
	37	22470	33701
	50	22490	35001

*) This version is supplied without contacts. The catalogue numbers for loose contacts are: crimp snap-in contact pin 4332 026 19690
crimp snap-in contact socket 4332 026 19700.

MOUNTING

Panel cut-outs

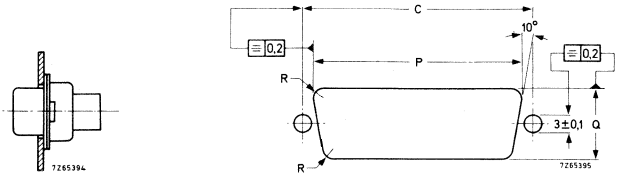


Fig. 5. Rear flange mounting.

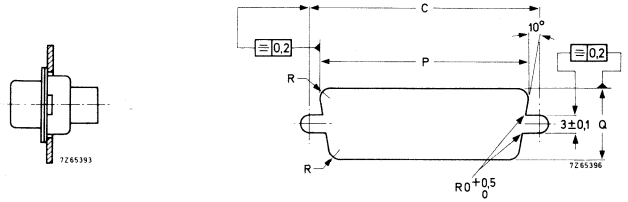


Fig. 6. Front flange mounting.

Table 4

mounting method	number of connections	C ±0,2	P ±0,2	Q ±0,2	R ±0,2
rear flange mounting	9	25,0	20,5	11,4	3,4
	15	33,3	28,8	11,4	3,4
	25	47,0	42,5	11,4	3,4
	37	63,5	59,1	11,4	3,4
	50	61,1	56,3	14,1	3,4
front flange mounting	9	25,0	22,2	12,3	2,1
	15	33,3	30,5	12,3	2,1
	25	47,0	44,3	12,3	2,1
	37	63,5	60,7	12,3	2,1
	50	61,1	58,3	15,3	2,1

Crimping and mounting of the contacts

Crimping tools

See "CONTACT CRIMPING TOOLS" at the end of this data sheet.

Mounting tools

Contact insertion tool (white), see Fig. 7; catalogue number 4332 026 22500
Contact extraction tool (red), see Fig. 8; catalogue number 4332 026 22510

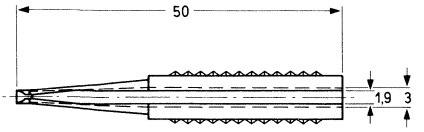


Fig. 7 Insertion tool (white)

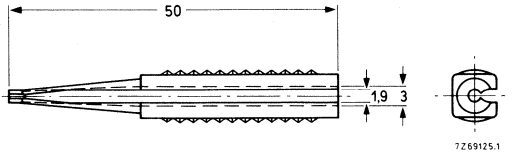


Fig. 8 Extraction tool (red)

Wire stripping

Cut the wires to the required length and strip a part of the insulation from the end to be crimped, as shown in Figs. 9a and 9b, depending on the diameter of the wire.

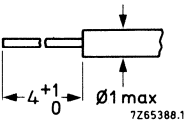


Fig. 9a. Wire diameter max. 1 mm

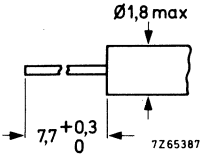


Fig. 9b. Wire diameter greater than 1 mm (max. 1, 8 mm)

Contact crimping

Fit the positioner into the crimping tool and insert the contact pin or the contact socket. Push the stripped end of the wire as far as possible into the back of the pin or socket and crimp the contact to the wire. (For cables with a diameter greater than 1 mm, the insulation remains outside the contact end.)

Contact insertion

Push the pin or socket by hand from the rear into the requisite hole in the insulating block until it fits. For wires with AWG24 (0, 23 mm^2) use the white insertion tool shown in Fig. 7: place the pin or socket in the groove of the tool and insert the pin or socket into the hole of the insulating block until it fits.

Contact extraction (rear release system)

Place the wire into the groove of the red extraction tool (Fig. 8). Push the tool from the rear into the hole of the insulating block until it touches the ledge (contact is unlocked). Release the tool and pull on the wire (contact is free).

Soldering

For connecting the wires to the solder pot terminations the following conditions must be maintained:
- maximum solder temperature: 235 °C
- maximum solder time: 5 s
- minimum distance between body and solder point: 2 mm.

Mounting accessories

Cable hoods

Hoods of thermoplastic material for cable mounting can be supplied in two versions: straight and 90° hooked. A cable clamp and two screws are supplied with each hood. Also supplied are two screws to secure the hood to the connector.
The hoods are packed in plastic bags, containing 5 hoods and associated parts; please order in multiples of this quantity.

Table 5

version	number of connections	dimensions (mm)					catalogue number
		l	w	d	p	q	
straight (Fig. 10)	9	28	31	12,7	7,5	8	4332 026 23690
	15	29	39,2	12,7	8,6	9	23740
	25	34	53	12,7	14	9	23790
	37	40	69,5	12,7	20	9	23840
	50	40	67	15,5	20	12	23890
90° hooked (Fig. 11)	9	28	39	12,7	7,5	8	4332 026 23710
	15	29	47,2	12,7	8,6	9	23760
	25	34	61	12,7	14	9	23810
	37	40	77,5	12,7	20	9	23860
	50	40	75	15,5	20	12	23910

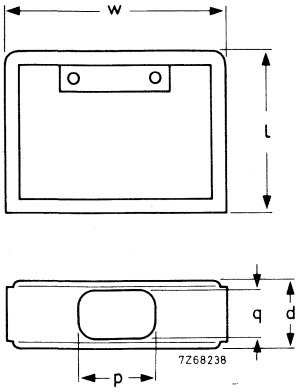


Fig. 10 Straight cable hood.

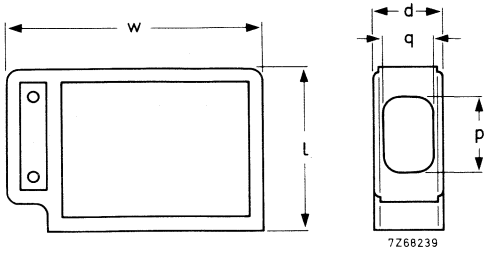


Fig. 11 90° hooked cable hood.

Locking devices

Locking clips and handles of thermoplastic material are available for locking pin connectors to socket connectors.

Use must be made of (see Fig. 12): 2 x handle 4332 026 24350 [1]) and
2 x clip 4332 026 24070 [2])

For locking a 90° hooked cable hood use must be made of:
1 x handle 4332 026 24350 [1])
1 x handle (90° hooked) 4332 026 24360 [1]) and
2 x clip 4332 026 24070 [2])

The locking devices are secured with the fixing screws of the hoods.

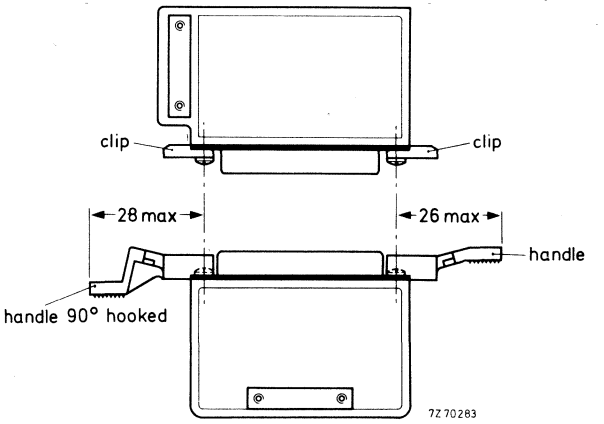


Fig. 12

MARKING

The package is marked with: name of component
catalogue number
number of pieces
reference number of manufacturer

The connector body and the cable hood are marked with manufacturer's name.

1) Packed in plastic bags, containing 50 handles. Please order in multiples of this quantity.
2) Packed in plastic bags, containing 100 clips. Please order in multiples of this quantity.

CONTACT CRIMPING TOOLS

Crimping of contacts can be effected with the following tools:

	Buchanan *) catalogue number
a) Hand crimping tool, MS 3198-1	612596
Positioner to hand crimping tool, MS 3198-5P	613533

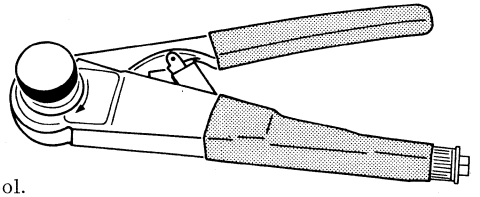


Fig. 13 Hand crimping tool.

	catalogue number	Buchanan *) catalogue number
b) Manual feed pneumatic crimping tool		612768
Bench mount assembly		11380
Positioner for pin and socket contact with ejector		616265
Positioner for pin contact	4332 026 26970	
Positioner for socket contact	4332 026 26980	
Contact feeder	4332 026 26960	
Gauge pin for AWG20(0,6 mm^2)	4332 026 26930	
Gauge pin for AWG22(0,36 mm^2)	4332 026 26940	
Gauge pin for AWG24(0,23 mm^2)	4332 026 26950	

Notes - The use of the contact feeder facilitates the contact positioning.
The feeder can be fitted by means of the four screws of the crimping tool.

- The gauge pins for adjustment and control of crimp depth are also suitable for check with hand tool.

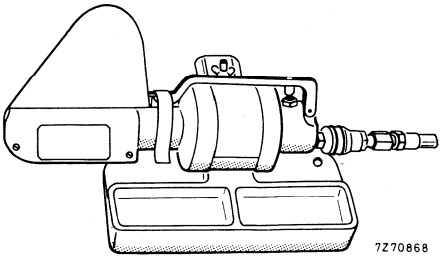


Fig. 14 Pneumatic crimping tool.

*) Registered trade name of Buchanan Electrical Products Corporation.

SUBMINIATURE RACK AND PANEL CONNECTORS

QUICK REFERENCE DATA	
Number of connections	9, 15, 25, 37 and 50
Terminations	pins for dip soldering (straight or right-angled) and mini wire wrap
Climatic category (IEC 68)	55/125/21

APPLICATION

Intended for rack and panel connection or connection to printed-wiring boards.

DIMENSIONS (mm)

The dimensions of the connectors given below are identical with those in Fig. 1 of the data sheet on F161, except as shown.

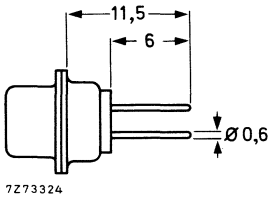


Fig. 1 Connector with straight pins for dip soldering.

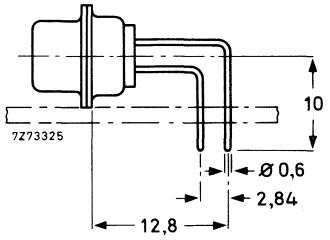


Fig. 2 Connector with right-angled pins for dip soldering.

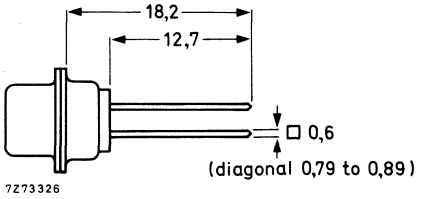
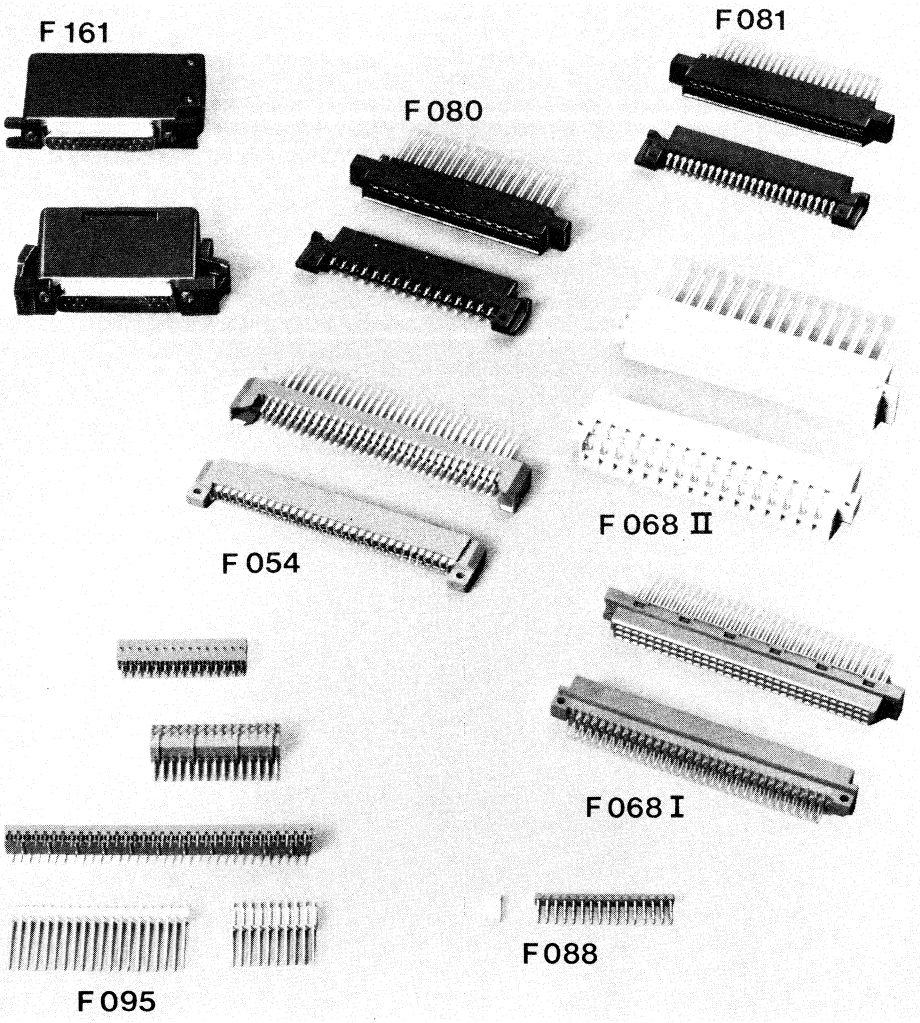


Fig. 3 Connector with pins for mini wire wrap


F 161
F 080
F 081
F 054
F 068 II
F 068 I
F 088
F 095

Argentina: FAPESA I.y.C., Av. Crovara 2550, Tablada, Prov. de BUENOS AIRES, Tel. 652-7438/7478.
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Austria: ÖSTERREICHISCHE PHILIPS BAUELEMENTE Industrie G.m.b.H., Triester Str. 64, A-1101 WIEN, Tel. 62 91 11.
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