



CHB
CHC



PCB Connectors

smiths

Smiths Interconnect

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HYPERTAC CONTACT

wire sleeve before
insertion of pin



pin partially
inserted into sleeve



pin completely
inserted into sleeve



HYPERTAC SOCKET CONTACT BRIEFLY

HYPERTAC (= HYPERboloid conTAct) is a socket contact designed and manufactured in such a manner that, implementing advanced micromechanics technology, satisfies performance requirements previously considered impossible.

The shape of the sleeve is formed by a springy wires special arrangement. When pin is inserted into this sleeve every wire stretches to accomodate it, so that wires wrap themselves around pin providing lines of current paths.

HYPERTAC SOCKET CONTACT, ADVANTAGES

1. ENVIRONMENTAL ADVANTAGES:

- no local hot spot (uniform current densities);
- self-cleaning pin insertion.

2. MECHANICAL ADVANTAGES:

- exceptional electrical continuity under vibration and shock (very low mass of springy wires, 360° current paths around pin and redundant current paths);
- low contact engagement and separation forces;
- long contact life (stable time/life contact resistance).

3. ELECTRICAL ADVANTAGES:

- lower contact resistance (redundant current paths);
- higher current rating (lower contact resistance);
- uniform current densities (lower current gradients).

4. USER'S ADVANTAGES:

- HYPERTAC socket contact mates every conventional cylindrical pin contact.

CONTENTS

Series CHB/CHC	2
Requirements	2
How to order.....	3
Connector dimensions	4
Contact terminal styles	6
Hardware	
Codify	10
For test connector	11
Floating	12
With key	13
Screw locking	14
Compatibility between fixings	16
Mountin pattern and panel cut-out	17
Tool and Replacement contacts	25
 Special qualifications	
CHB connector qualified to MIL-DTL-55302	26
CHC connector qualified to TEL-80-5935	27



CHB and CHC are PCB connectors conforming to BS9525, NF C 93-424 and ESA SCC 3401. Contact arrangement is offset-grid pattern, two or three contact rows within dielectric connector body, with 2.54 mm center-to-center contact spacing in each row and 2.54 mm row-to-row spacing. Contact size is 0.6 mm nominal pin DIA. Configurations are from 17 to 144 contact positions. CHB and CHC connectors are also available with special qualification (see pages 26 and 27)

REQUIREMENTS		APPLIED DOCUMENTS
MATERIAL		
Body Contacts Hardware	DAP 5553 Brass CuBe Phosphor-Bronze Stainless steel CuBe	MIL-M-24519 ASTM B16 ASTM B197 ASTM B139 ASTM A582 ASTM B196
FINISHES		
Contacts Hardware	Gold Passivation Nichel plated	ASTM B488 ASTM A967 QQ-N-290
MECHANICAL		
Mating/Unmating force Contact life	56g max 100000 insertion	- -
ELECTRICAL		
Current rating ⁽¹⁾ Contact resistance Dielectric withstanding voltage Insulation resistance	5.0 A ≤ 10.0 mΩ 1400 VRMS, 60 Hz a.s.l. ≥ 5000 MΩ at 500 VDC	- - - -
PHYSICAL AND ENVIROMENTAL		
Shock Vibration Operating range CVCМ TML	- - -65°C +125°C <0.1% <1.0%	In accordance with MIL-STD-1344 In accordance with MIL-STD-1344 - - -

⁽¹⁾ Consult factory for details

How to order

Ref. order

CH

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*

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* * *

* *

CONNECTOR FAMILY

Contact arrangement

Two rows
Three rows

B
C

Connector size

Two rows: 017-029-033-041-053-065-072-084-096-120
Three rows: 026-044-062-080-098-108-126-144
Without contact: 000

Connector style

Plug
Receptacle

P
E

Contact style

Male
Female
Without contact

M
F
O

Contact terminal style

Right angle L=4.50 mm
Right angle standard L=3.00 mm
Straight L= 4.50 mm
Straight L= 5.80 mm
Crimp (wire AWG 22, 24, 26)
Double crimp (wire AWG 22, 24, 26)
Solder cup (wire AWG 22 max)
Solder cup counter part (wire AWG 22 max)
Wire wrap
Without contact

B
C
D
L
R
H
S
Z
Y
O

Hardware polarization ⁽¹⁾

Guide pin: A10-A11-A13-A14-A16-A17-V01-V03-V07-V13-V22-V24-V25
Guide socket: A21-A23-A24-A26-A27-A28-V02-V04-V06-V08-V15-V21-V23
Without guide: 000

Contact finishing

Plating standard ⁽²⁾
Plating conforming to MIL-DTL-55302 ⁽²⁾
Plating standard + tin dipping ⁽³⁾
Plating conforming to MIL-DTL-55302 + tin dipping ⁽³⁾
Without contact

T
H
TS
HS
O

⁽¹⁾ Standard coding: pos. C3

⁽²⁾ T Reference:

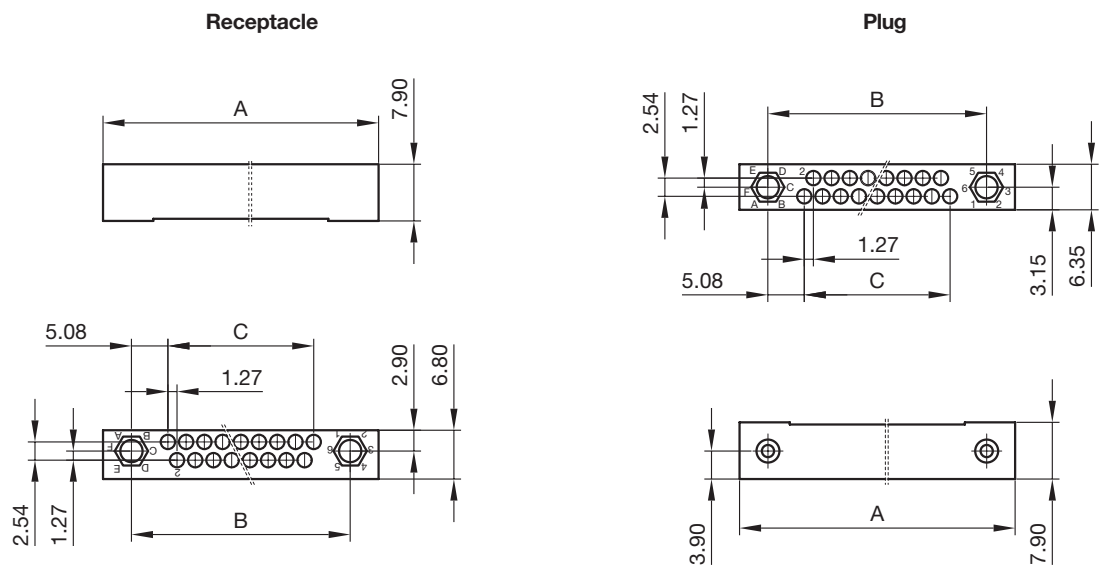
Functional part (Mating area): 0.25 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290
Termination area: 0.15 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290

H Reference:

Functional part (Mating area): 1.27 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290
Termination area: 0.508 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290

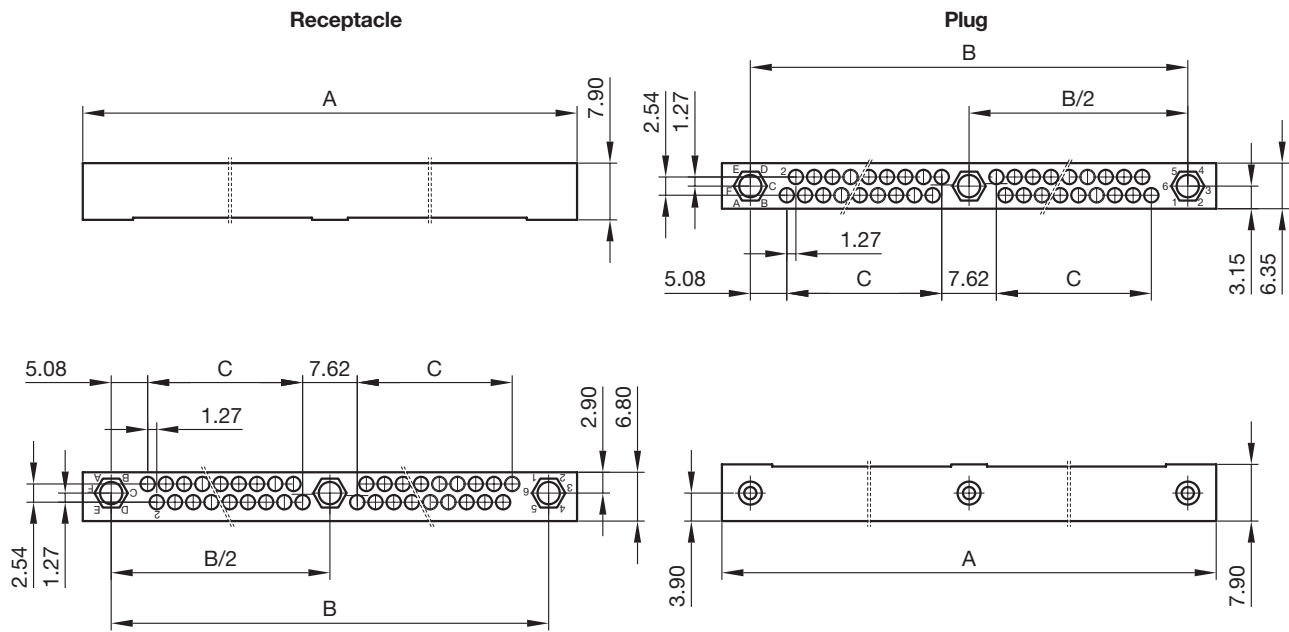
⁽³⁾ This finishing is only for dip solder contacts.

Connector dimensions CHB017 to CHB065



No of contacts	17	29	33	41	53	65
A	38.40	53.60	58.70	68.90	84.10	99.40
B	30.48	45.72	50.80	60.96	76.20	91.44
C	20.32	35.56	40.64	50.80	66.04	81.28

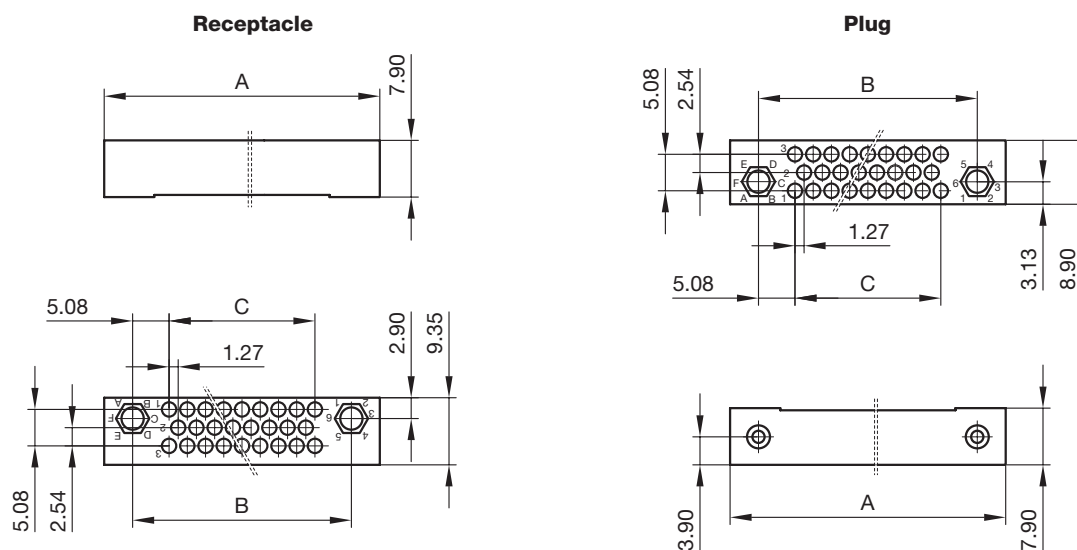
Connector dimensions CHB072 to CHB120



No of contacts	72	84	96	120
A	114.60	129.80	145.10	175.50
B	106.68	121.92	137.16	167.64
C	44.45	52.07	59.69	74.93

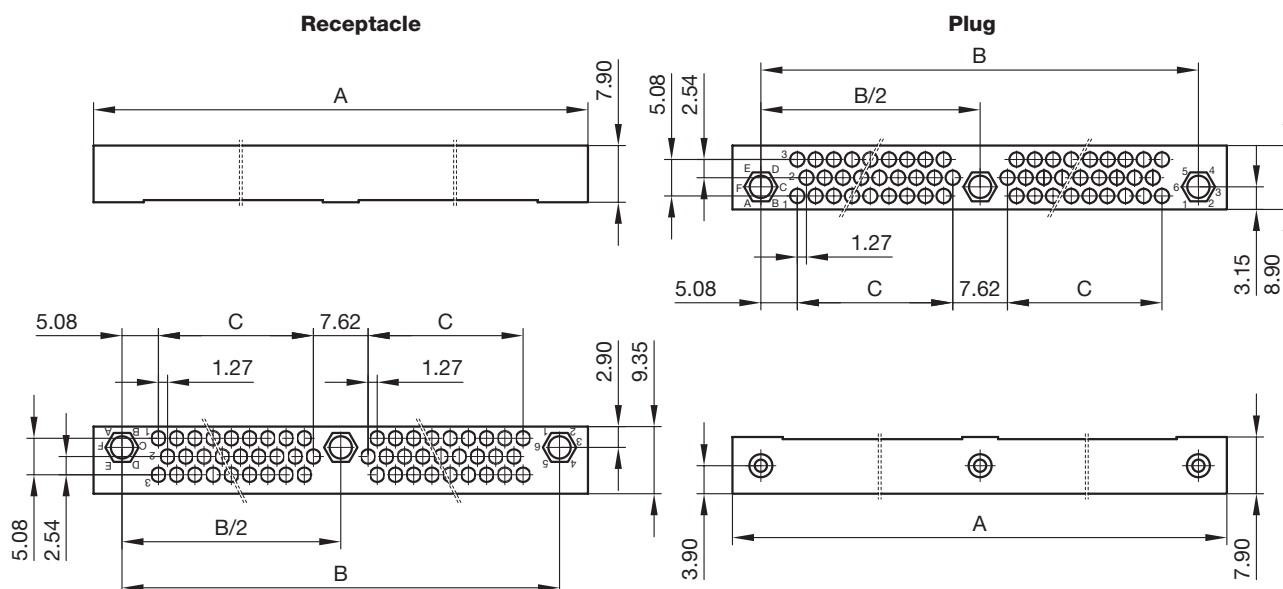
Dimensions are in millimeters

Connector dimensions CHC026 to CHC098



No of contacts	26	44	62	80	98
A	38.40	53.60	68.90	84.10	99.40
B	30.48	45.72	60.96	76.20	91.44
C	20.32	35.56	50.80	66.04	81.28

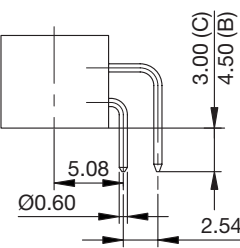
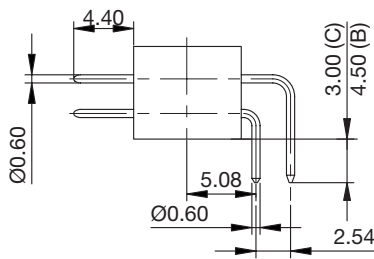
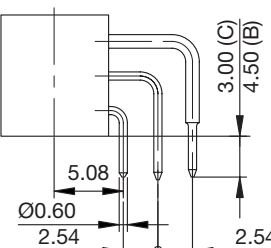
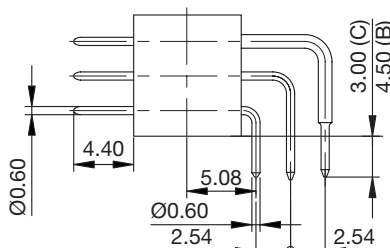
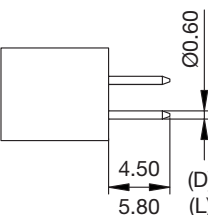
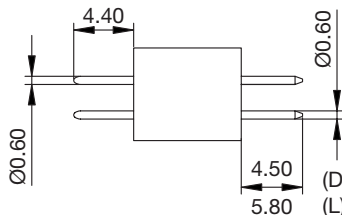
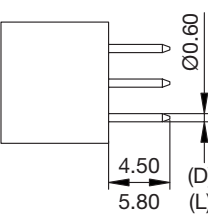
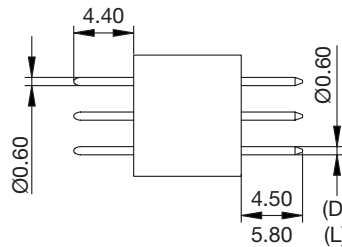
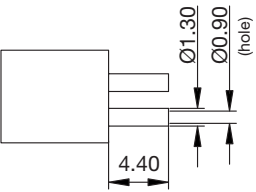
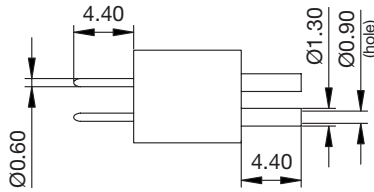
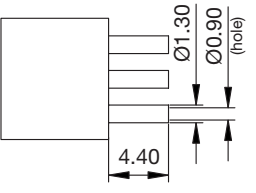
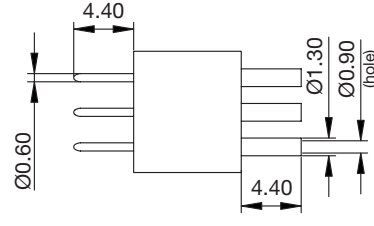
Connector dimensions CHC108 to CHC144



No of contacts	108	126	144
A	114.60	129.80	145.10
B	106.68	121.92	137.16
C	44.45	52.07	59.69

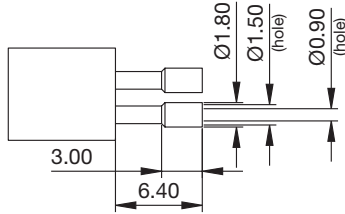
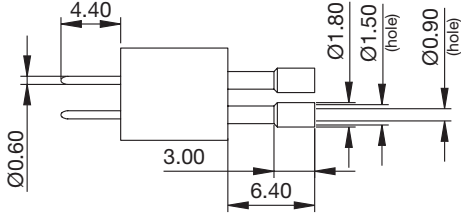
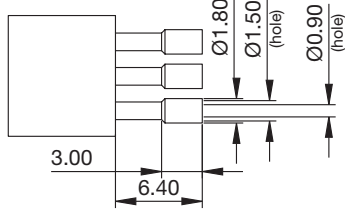
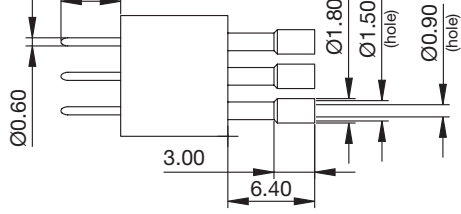
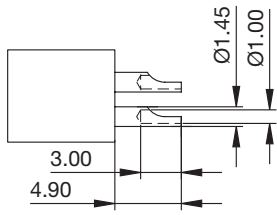
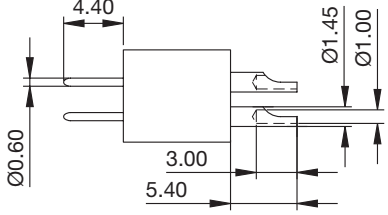
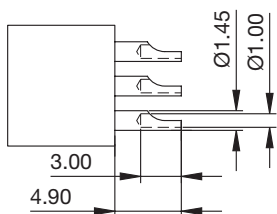
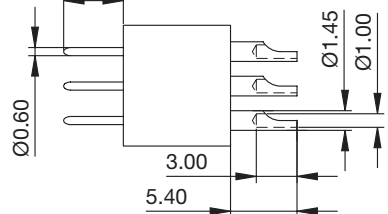
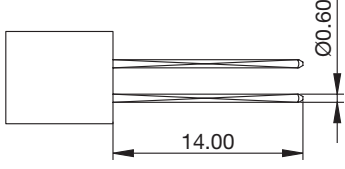
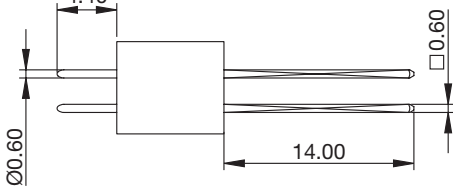
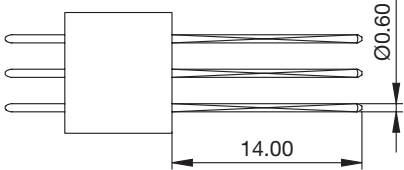
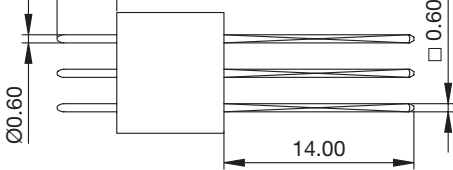
Dimensions are in millimeters

Contact terminal style for plug connector

Terminal style	Serie	Female	Male
B/C see note 1)	CHB		
	CHC		
D/L	CHB		
	CHC		
R Accept AWG 22, 24, 26	CHB	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
	CHC	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED

Notes:
 1) The connector is supplied with positioner to assist the contacts insertion in the PCB
 2) Dimensions are in millimeters

Contact terminal style for plug connector

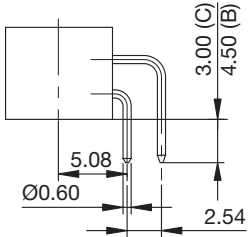
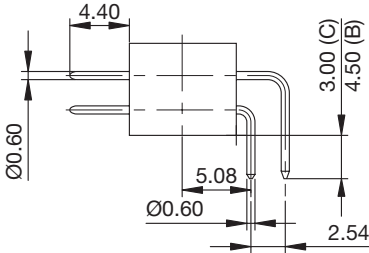
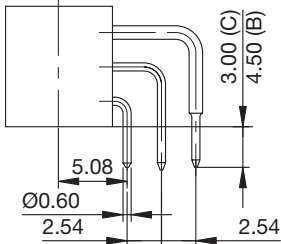
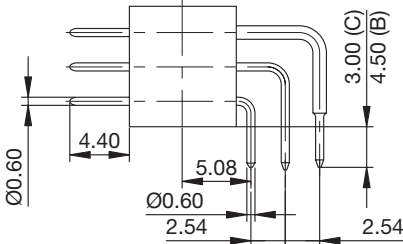
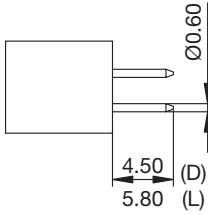
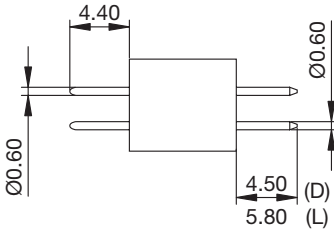
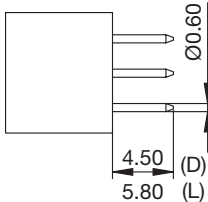
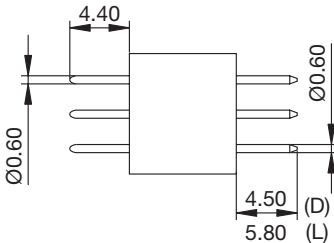
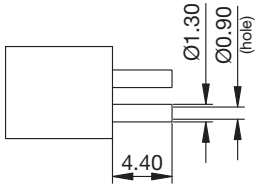
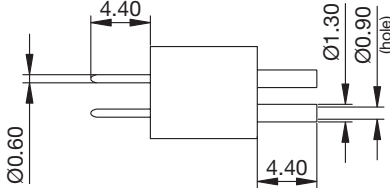
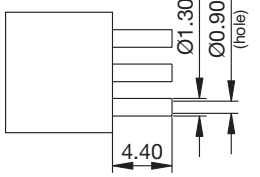
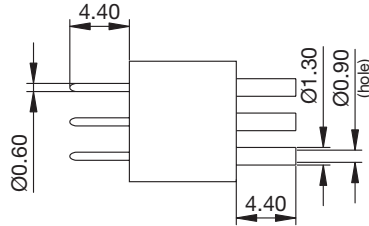
Terminal style	Serie	Female	Male
H ¹⁾ Accept AWG 22, 24, 26	CHB	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
	CHC	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
S/Z Accept up to AWG 22	CHB	 Ref. Z: solder cup staggered orientation	 Ref. Z: solder cup staggered orientation
	CHC		
Y	CHB		
	CHC		

Notes:

1) The connector is supplied with an insulation diaphragm to eliminate the possibility of electric discharge wiring side

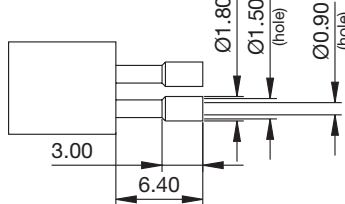
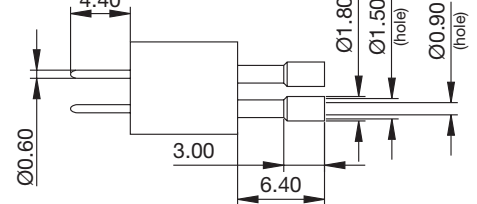
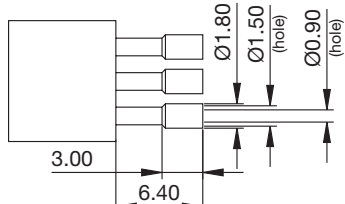
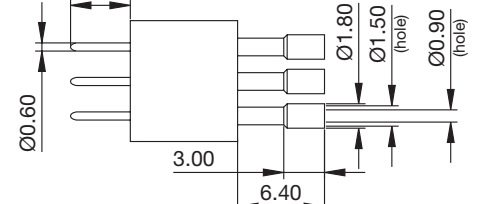
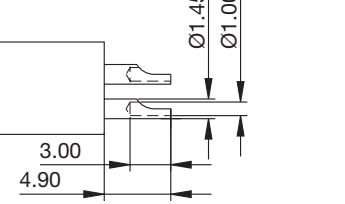
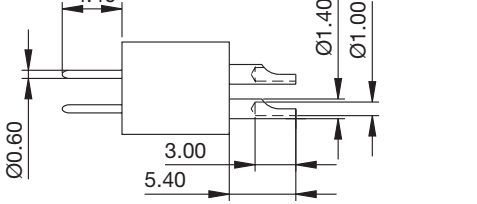
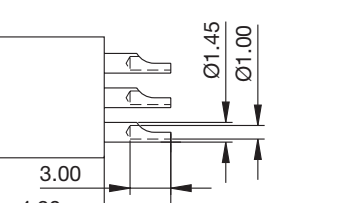
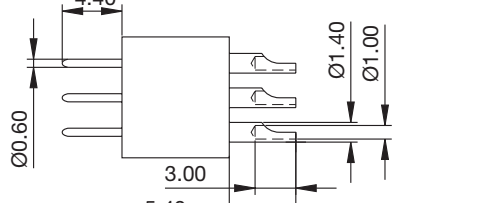
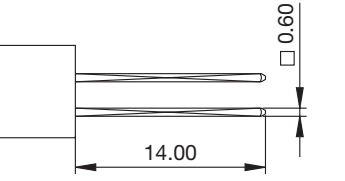
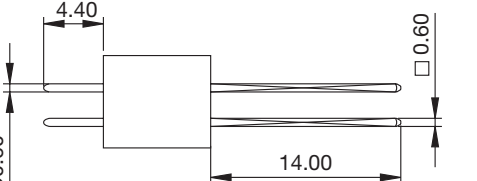
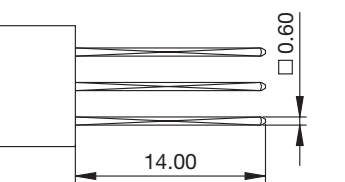
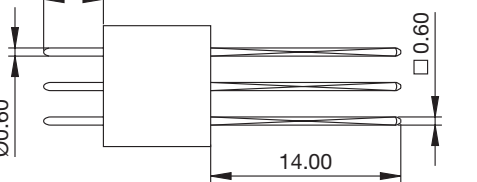
2) Dimensions are in millimeters

Contact terminal style for receptacle connector

Terminal style	Serie	Female	Male
B/C ¹⁾	CHB		
	CHC		
D/L	CHB		
	CHC		
R Accept AWG 22, 24, 26	CHB	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
	CHC	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED

Notes:
1) The connector is supplied with positioner to assist the contacts insertion in the PCB
2) Dimensions are in millimeters

Contact terminal style for receptacle connector

Terminal style	Serie	Female	Male
H ¹⁾ Accept AWG 22, 24, 26	CHB	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
	CHC	 Contacts supplied NOT ASSEMBLED	 Contacts supplied NOT ASSEMBLED
S/Z Accept up to AWG 22	CHB	 Ref. Z: solder cup staggered orientation	 Ref. Z: solder cup staggered orientation
	CHC		
Y	CHB		
	CHC		

Notes:

- 1) The connector is supplied with an insulation diaphragm to eliminate the possibility of electric discharge wiring side
- 2) Dimensions are in millimeters

Codify hardware

Ref.	For connector	Lateral fixing	Central fixing
A10	PLUG		
A11	PLUG RECEPTACLE		
A14	RECEPTACLE		
A21	PLUG RECEPTACLE		
A24	PLUG RECEPTACLE		
A27	RECEPTACLE		

Notes

- 1) 0.10 N*m (1.1 Kg*cm) torque
- 2) 0.24 N*m (2.5 Kg*cm) torque
- 3) Dimensions are in millimeters

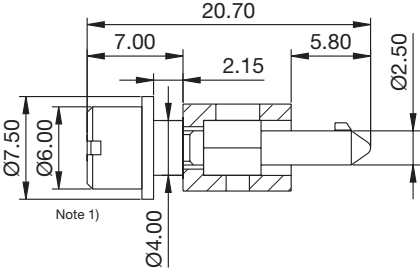
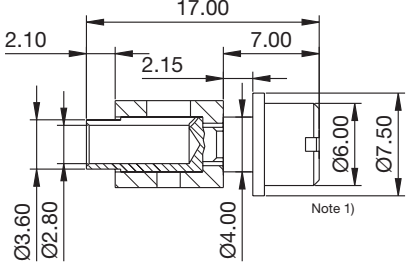
Hardware for test connector

Ref.	For connector	Lateral fixing	Central fixing
A16	PLUG		
A17	PLUG RECEPTACLE		
A26	PLUG RECEPTACLE		
A28	PLUG RECEPTACLE		

Notes

- 1) 0.10 N*m (1.1 Kg*cm) torque
- 2) 0.24 N*m (2.5 Kg*cm) torque
- 3) Dimensions are in millimeters

Floating hardware

Ref.	For connector	Lateral fixing	Central fixing
A13	PLUG RECEPTACLE only CHB 017+065 CHC 026+098		
A23	PLUG RECEPTACLE only CHB 017+065 CHC 026+098		

Notes
1) 0.24 N*m (2.5 Kg*cm) torque
2) Dimensions are in millimeters

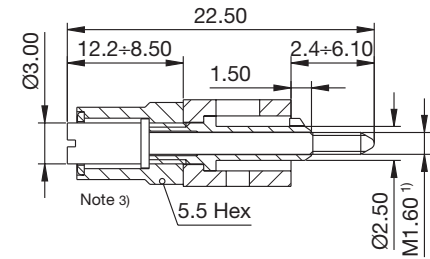
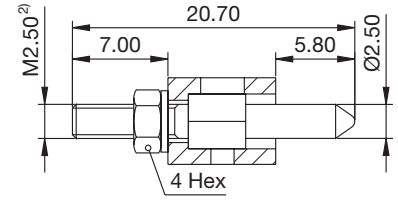
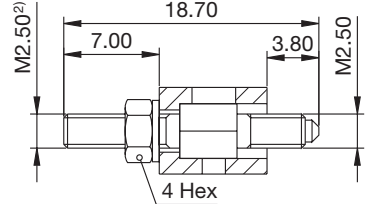
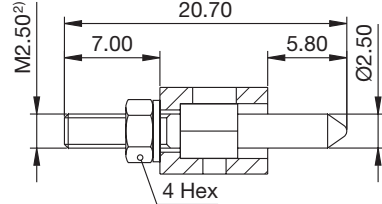
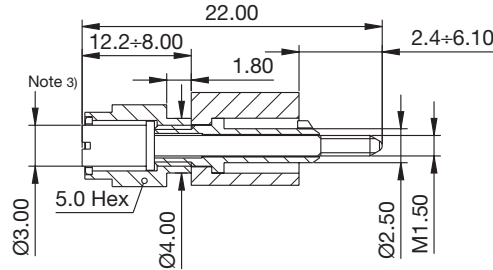
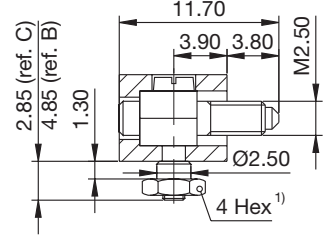
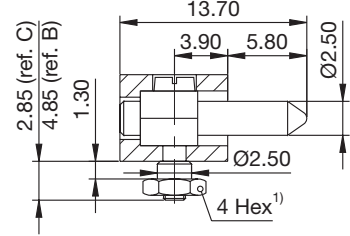
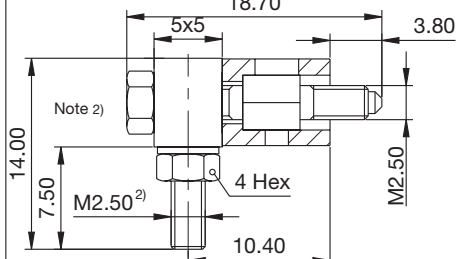
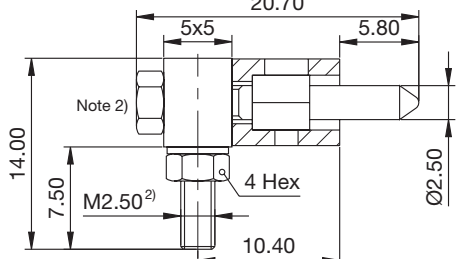
Hardware with key

Ref.	For connector	Lateral fixing	Central fixing
V01	PLUG RECEPTACLE		
V03	PLUG		
V02	PLUG RECEPTACLE		
V04	PLUG RECEPTACLE		
V06	PLUG only CHB 017+065 CHC 026+098		

Notes

- 1) 0.10 N*m (1.1 Kg*cm) torque
- 2) 0.24 N*m (2.5 Kg*cm) torque
- 3) Dimensions are in millimeters

Screw locking hardware

Ref.	For connector	Lateral fixing	Central fixing
V07	PLUG RECEPTACLE		
V13	PLUG RECEPTACLE		
V22	RECEPTACLE CHB 017+065 CHC 026+098		
V24	PLUG		
V25	PLUG RECEPTACLE		

Notes

- 1) 0.10 N*m (1.1 Kg*cm) torque
- 2) 0.24 N*m (2.5 Kg*cm) torque
- 3) 0.35 N*m (3.8 Kg*cm) torque
- 4) Dimensions are in millimeters

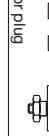
Screw locking hardware

Ref.	For connector	Lateral fixing	Central fixing
V08	PLUG		
V15	PLUG RECEPTACLE		
V21	PLUG only CHB 017+065 CHC 026+098		
V23	PLUG RECEPTACLE		

Notes

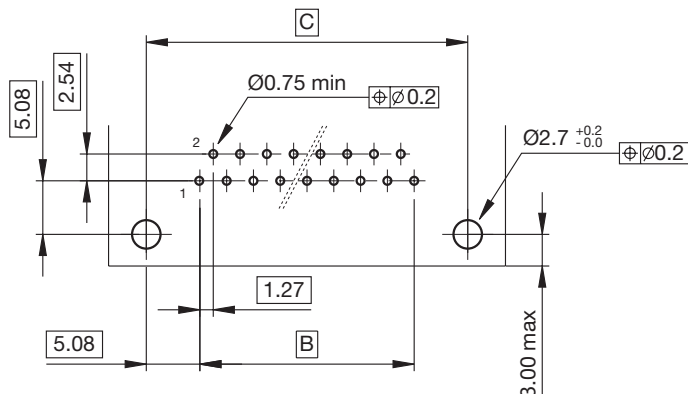
- 1) 0.10 N*m (1.1 Kg*cm) torque
- 2) 0.24 N*m (2.5 Kg*cm) torque
- 3) 0.35 N*m (3.8 Kg*cm) torque
- 4) Dimensions are in millimeters

Compatibility between fixings

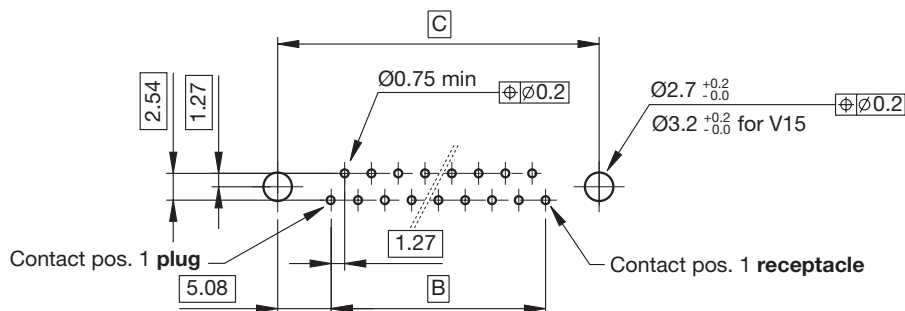
		 for plug	 for plug/receptacle	 for receptacle	 for plug	 for plug/receptacle	 for plug/receptacle	 for plug/receptacle	 for plug	 for plug/receptacle	 for plug/receptacle	 for receptacle	 for plug	 for plug/receptacle
 for plug/receptacle	A21	*	*	*	*	*	*							
 for plug/receptacle	A24	*	*	*	*	*	*							
 for receptacle	A27	*	*	*	*	*	*							
 for plug/receptacle	A26	*	*	*	*	*	*							
 for plug/receptacle	A28	*	*	*	*	*	*							
 for plug/receptacle	A23	*	*	*	*	*	*							
 for plug/receptacle	V02							*	*					
 for plug/receptacle	V04							*	*					
 for plug	V06							*	*					
 for plug	V08									*				
 for plug/receptacle	V15									*				
 for plug	V21											*		
 for plug/receptacle	V23										*		*	*

Mounting pattern for two rows connectors with two fixings

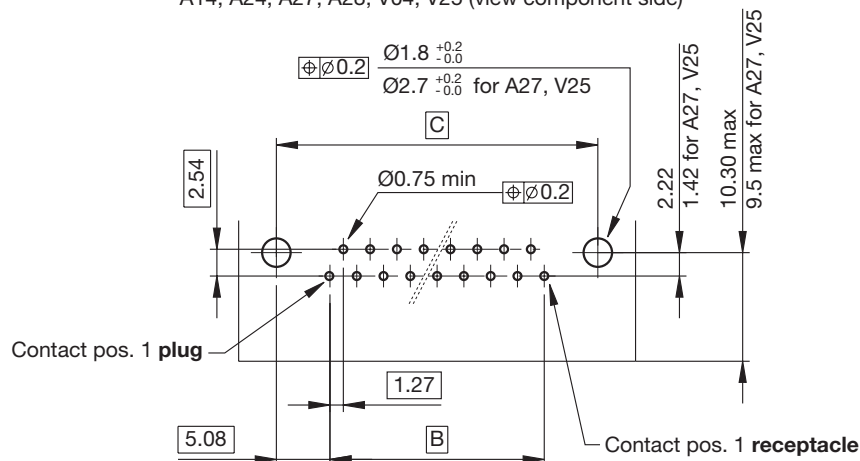
Mounting pattern for plug connector with fixing type:
A10, A16, V03, V06, V08, V21, V24 (view component side)



Mounting pattern for plug and receptacle connector with fixing type:
A11, A17, A21, A26, V02, V13, V15 (view component side)



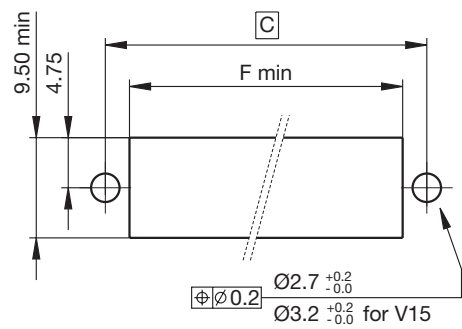
Mounting pattern for plug and receptacle connector with fixing type:
A14, A24, A27, A28, V04, V25 (view component side)



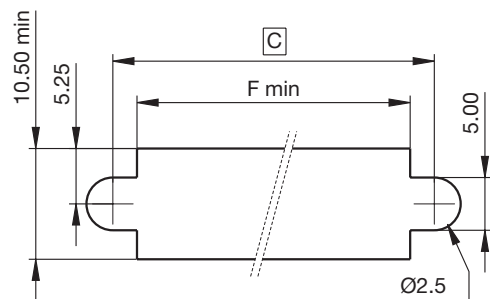
Contact No	17	29	33	41	53	65
B	20.32	35.56	40.64	50.80	66.04	81.28
C	30.48	45.72	50.80	60.96	76.2	91.44

Panel cut-out for two rows connectors with two fixings

Panel cut-out for fixing hardware



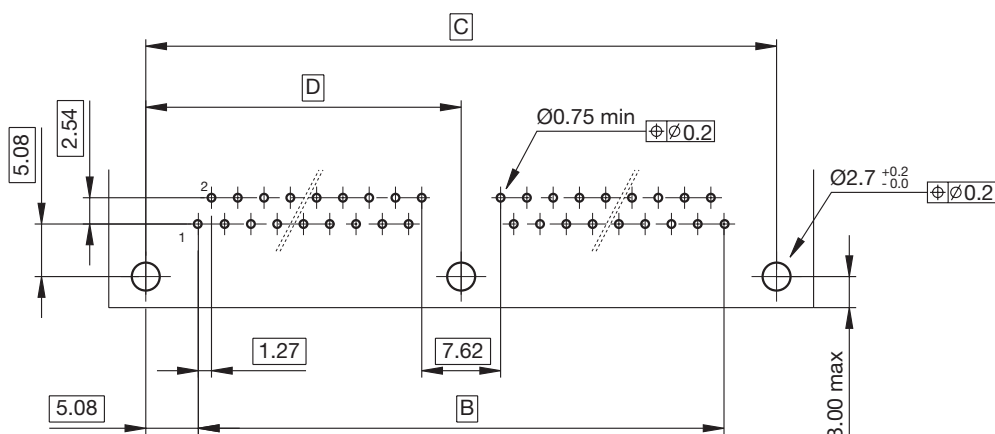
Panel cut-out for floating hardware



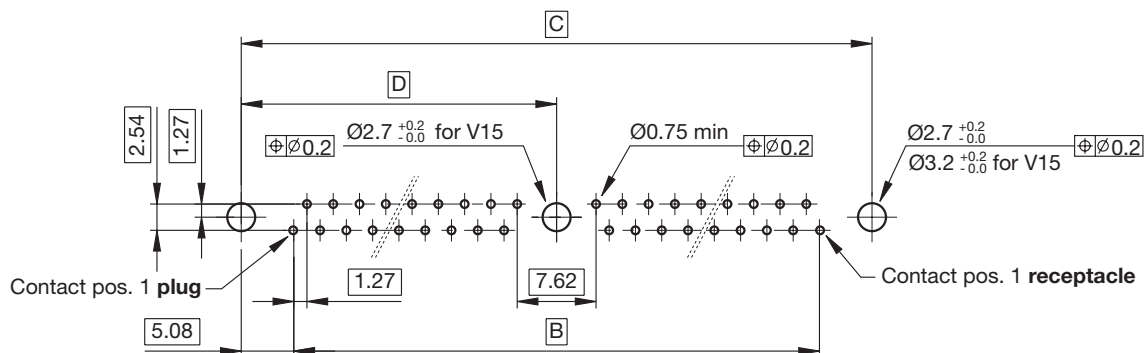
Contact No	17	29	33	41	53	65
C	30.48	45.72	50.8	60.96	76.2	91.44
F	25.9	41.1	46.2	56.4	71.6	86.9

Mounting pattern for two rows connectors with three fixings

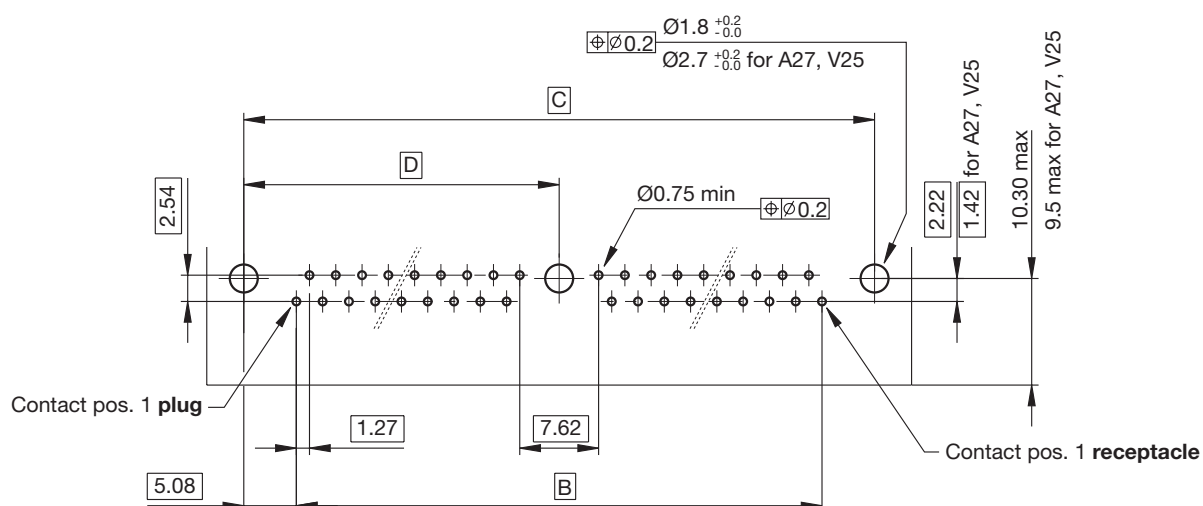
Mounting pattern for plug connector with fixing type:
A10, A16, V03, V24, V08 (view component side)



Mounting pattern for plug and receptacle connector with fixing type:
A11, A17, A21, A26, V02, V13, V15 (view component side)



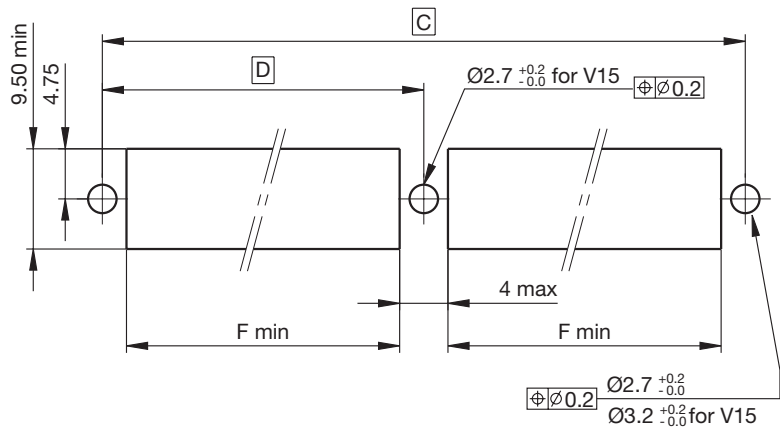
Mounting pattern for plug and receptacle connector with fixing type:
A14, A24, A27, A28, V04, V25 (view component side)



Contact No	72	84	96	120
B	96.52	111.76	127	157.48
C	106.68	121.92	137.16	167.64
D	53.34	60.96	68.58	83.82

Panel cut-out for two rows connectors with three fixings

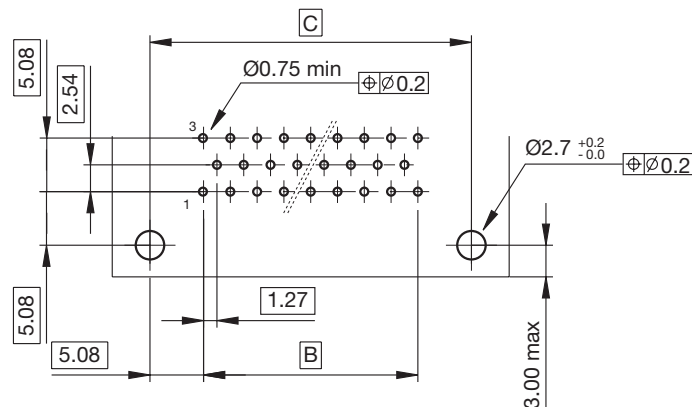
Panel cut-out for fixing hardware



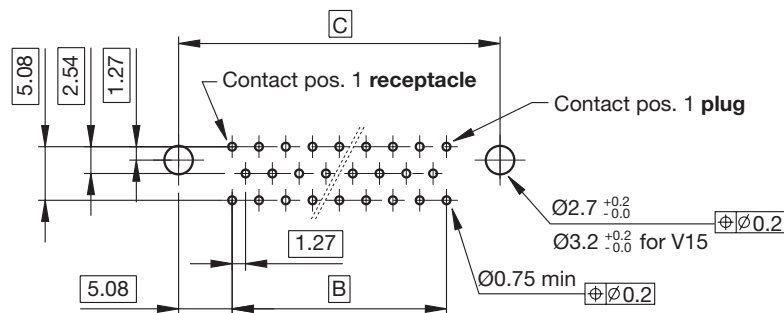
Contact No	72	84	96	120
C	106.68	121.92	137.16	167.64
D	53.34	60.96	68.58	83.82
F	48.5	56	63.6	78.8

Mounting pattern for three rows connectors with two fixings

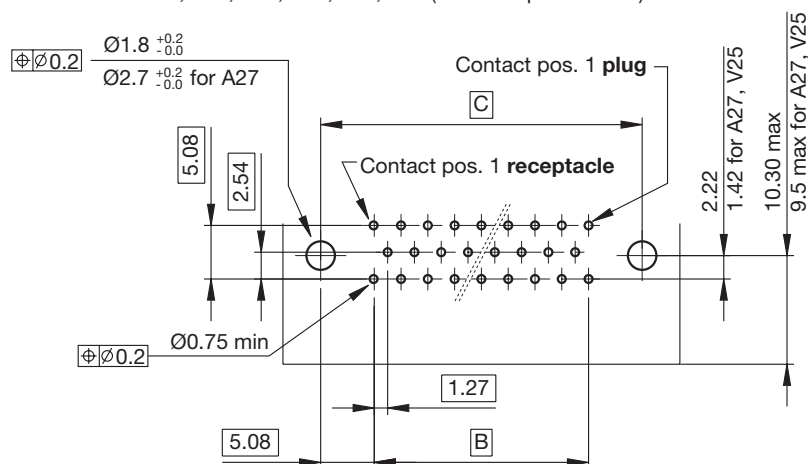
Mounting pattern for plug connector with fixing type:
A10, A16, V03, V06, V08, V21, V24 (view component side)



Mounting pattern for plug and receptacle connector with fixing type:
A11, A17, A21, A26, V02, V13, V15 (view component side)



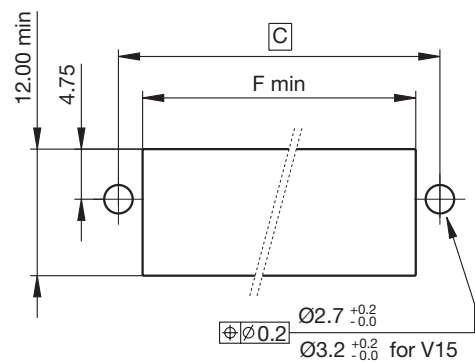
Mounting pattern for plug and receptacle connector with fixing type:
A14, A24, A27, A28, V04, V25 (view component side)



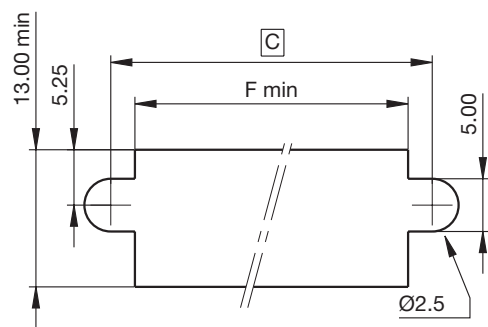
Contact No	26	44	62	80	98
B	20.32	35.56	50.8	66.04	81.28
C	30.48	45.72	60.96	76.2	91.44

Panel cut-out for three rows connectors with two fixings

Panel cut-out for fixing hardware



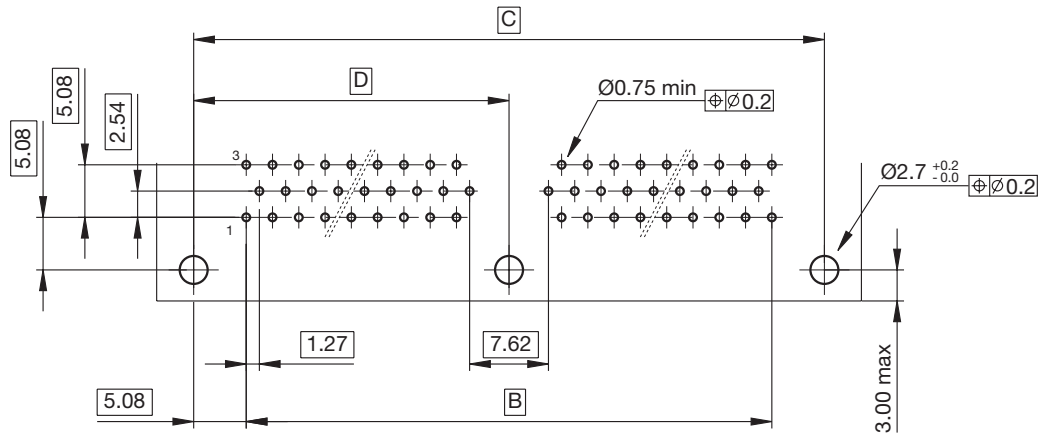
Panel cut-out for floating hardware



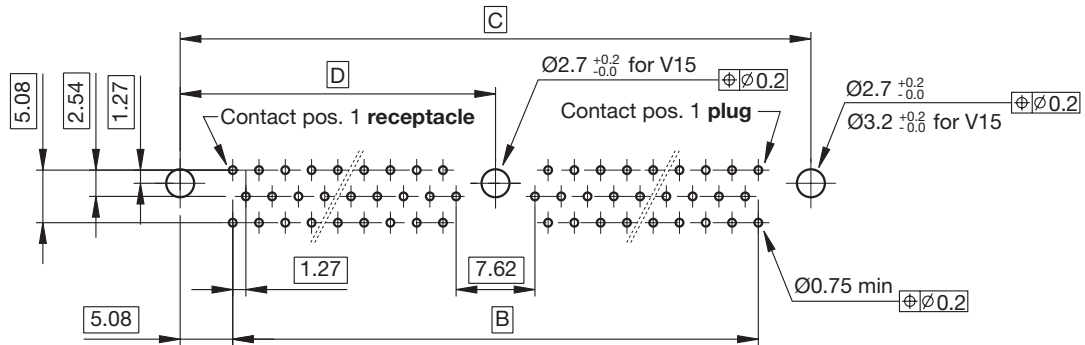
Contact No	26	44	62	80	98
C	30.48	45.72	60.96	76.2	91.44
F	25.9	41.1	56.4	71.6	86.9

Mounting pattern for three rows connectors with three fixings

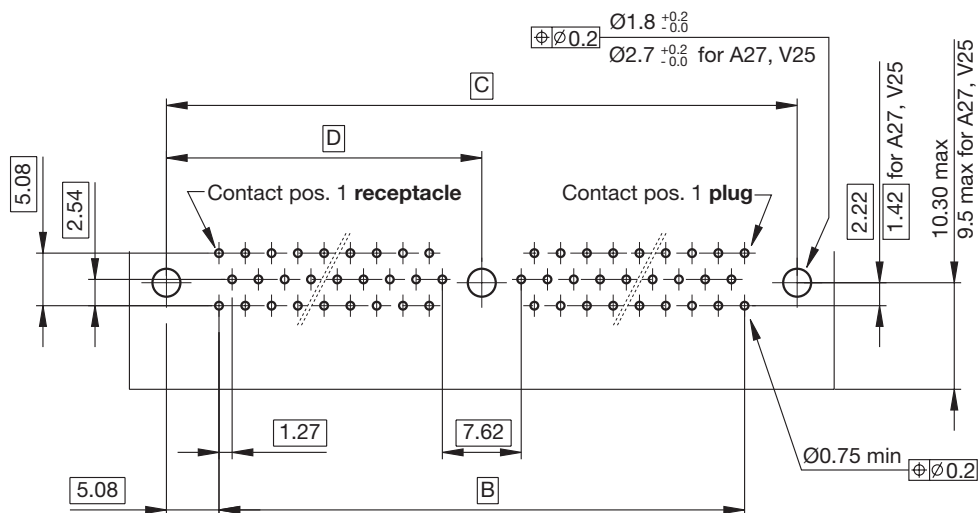
Mounting pattern for plug connector with fixing type:
A10, A16 V03, V08, V24 (view component side)



Mounting pattern for plug and receptacle connector with fixing type:
A11, A17, A21, A26, V02, V13, V15 (view component side)



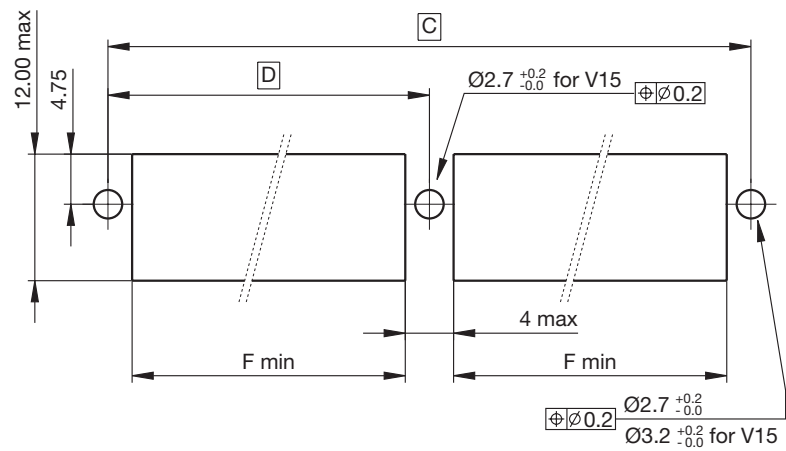
Mounting pattern for plug and receptacle connector with fixing type:
A14, A24, A27, A28, V04, V25 (view component side)



Contact No	108	126	144
B	96.52	111.76	127
C	106.68	121.92	137.16
D	53.34	60.96	68.58

Panel cut-out for three rows connectors with three fixings

Panel cut-out for fixing hardware



Contact No	108	126	144
C	106.68	121.92	137.16
D	53.34	60.96	68.58
F	48.5	56	63.6

Tools

Extraction tool S/DEM/6/0060

Insertion tool S/MONT/1/0060

Tool for wire-wrap connection Consult factory

Notes for wire-wrap connection

AWG	Ø cable (mm)	No coil	L* (mm)
30	0.25	8	25
28	0.32	7	23
26	0.4	6	23

(*) stripping lenght

Crimp tool

Contact type	Crimp tool	Crimp positioner	Crimp setup				L* (mm)
"R"	Ref. Daniels: AFM8 Ref. Military: M22520/2-01	Ref. order: S/S/1/0060 Ref. Daniels: K547	AWG	26	24	22	4.8÷5.2
			selector No	4	5	3	
"H"	Ref. Daniels: AFM8 Ref. Military: M22520/2-01	Double crimp Core - Ref. Daniels: K547 Jacket - Ref. Daniels: K640					3.9÷4.3

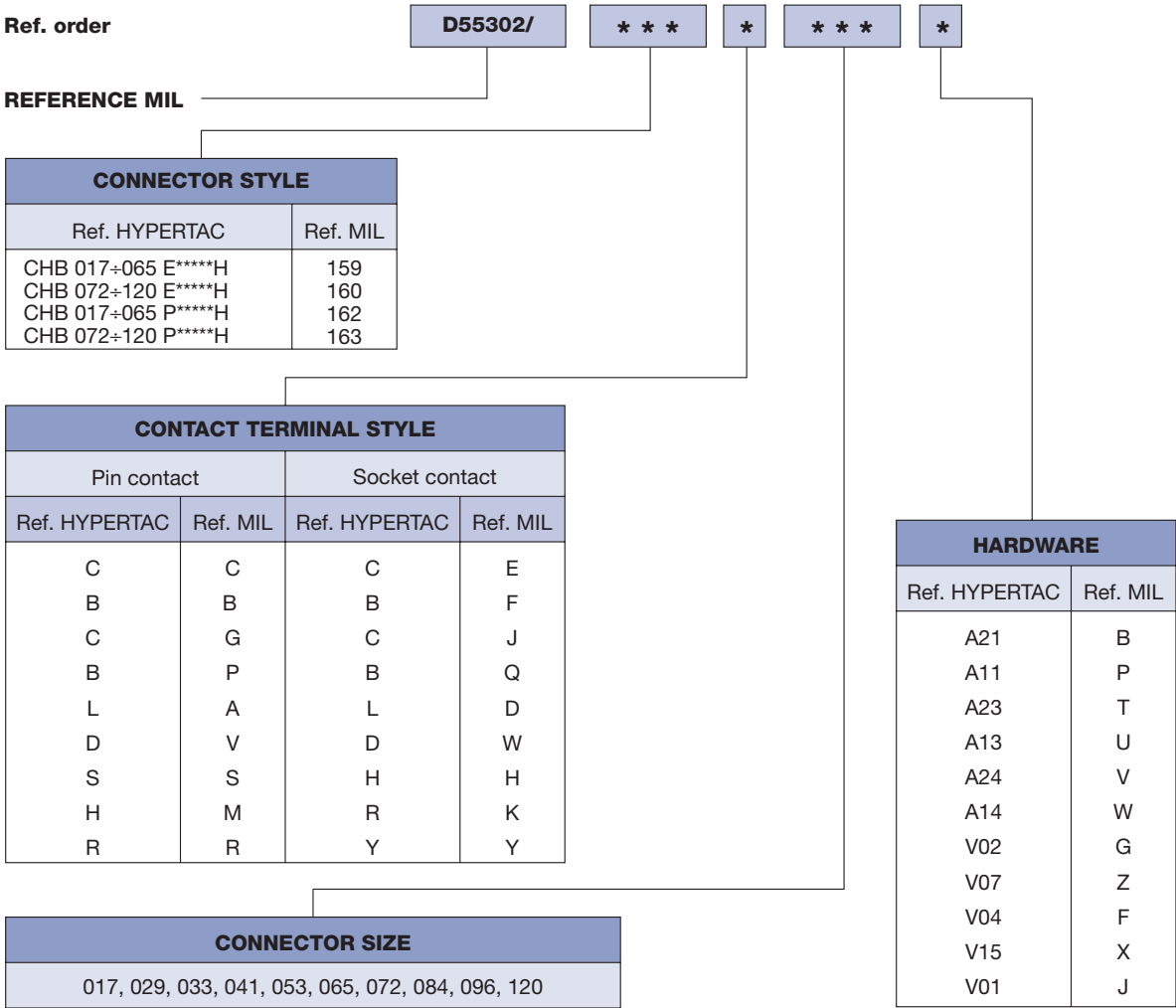
(*) stripping lenght

CH SERIES REPLACEMENT CONTACTS

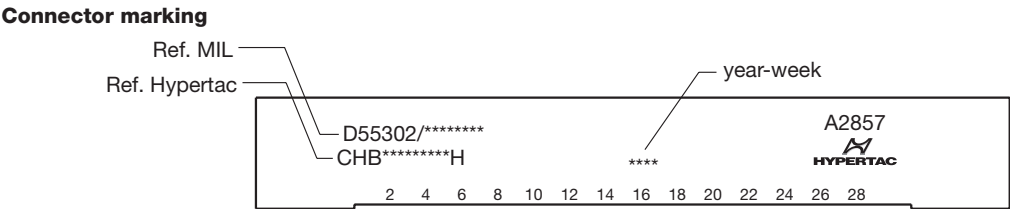
Ref.	Standard socket	Standard pin
B row 1 CHB B row 1 CHC	15632 15632	15352 15352
B row 2 CHB B row 2 CHC	15634 15634	15354 15354
B row 3 CHB B row 3 CHC	- 15636	- 15496
C row 1 CHB C row 1 CHC	12507 12507	12543 12543
C row 2 CHB C row 2 CHC	12509 12509	12545 12545
C row 3 CHB C row 3 CHC	- 14072	- 14074
D	13276	13280
L	12511	12547
R	12512	12548
H	14033	14035
S	12514	12550
Y	12516	12552

CHB connector qualified to MIL-DTL-55302F

CHB connector is also available with qualification MIL-DTL-55302F sheets 159, 160, 162, 163
The reference order for this connector is shown below



Example
D55302/159D041B: receptacle connector, 41 ways, contact terminal style dip solder straight, hardware type A21



Special qualification

CHC connector qualified to TEL-80-5935-000*-00-00C000 (see QPL MIL-C-55302 Part II)

CHC connector is also available with qualification TEL-80-5935-001, -002, -003, -004
The reference order for this connector is shown below

Ref. order	ST1042	CHC	***	*	*	*	***	*
HYPERTAC SPECIFICATION								
CONNECTOR FAMILY								
Connector size	026-044-062-080-098-108-126-144							
Connector style	Plug P Receptacle E							
Contact style	Male M Female F							
Contact terminal style	Right angle L=4.50 mm B Right angle standard L=3.00 mm C Straight L= 4.50 mm D Straight L= 5.80 mm L Crimp R Double crimp H Solder cup (wire size AWG22 max) S Wire wrapp Y							
Hardware polarization ⁽¹⁾	Guide pin: A10-A11-A13-A14-V01-V03-V07 Guide socket: A21-A23-A24-V02-V04-V08-V15							
Contact finishing	Plating conforming to MIL-DTL-55302 ⁽²⁾ H							
Connector marking	Ref. TEL Ref. Hypertac year-week TEL-80-5935-000*-00-00C000 ⁽³⁾ CHC*****H *** A2857 HYPERTAC 3 6 9 12 15 18 21 24 27 30 33 36 39 42 44							

⁽¹⁾ Standard coding: pos. C3

⁽²⁾ **H** Reference:

Functional part (Mating area): 1.27 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290

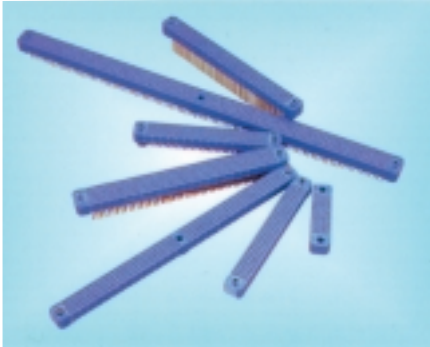
Termination area: 0.508 µm Gold per ASTM B-488 type II Grade C on 2 µm Ni per QQ N-290

⁽³⁾ 001: CHC026E÷CHC098E; 002: CHC108E÷CHC144E; 003: CHC026P÷CHC098P; 004: CHC108E÷CHC144E

OTHER PRODUCTS FROM HYPERTAC INTERCONNECT

2 TO 5 ROWS PCB CONNECTORS

- . According to MIL-DTL-55302
- . 100 000 reliable mating and unmating cycles
- . Reduces need for board stiffeners and auxiliary actuators
- . Virtual immunity to shock and vibration
- . Under 5 mΩ contact resistance



SIGNAL/POWER & COAXIAL CONTACTS

- Signal & power contacts
- . Over 100 000 mating and unmating cycles
- . Models for dry circuit to 500 Amps
- . Ideal for test, burn-in and high power use
- Coaxial contacts
- . Suits DIN 41612 cavity
- . Over 25 000 mating cycles
- . Low insertion force (140 grams average)



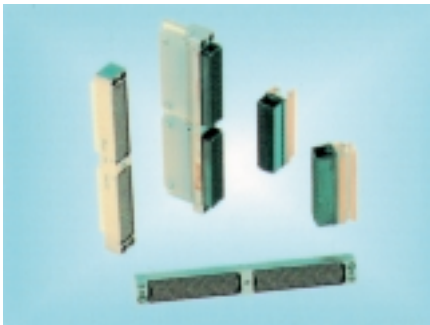
VERY HIGH DENSITY PCB CONNECTOR

- . According to MIL-DTL-55302
- . 8 row offset grid (2,54 mm contacts, 1,27 mm rows)
- . 372 contacts
- . Lightweight with high structural strength
- . Low insertion force



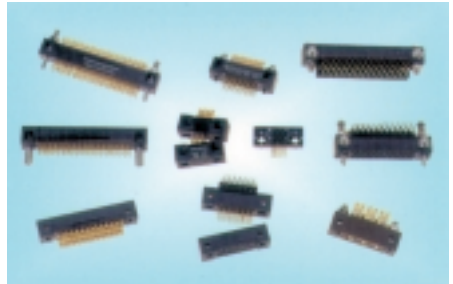
METAL SHELLLED PCB CONNECTORS

- . According to MIL-DTL-55302
- . ESD insulation, EMI & RFI protection
- . Easily tailored to customer specific requirements
- . Suitable for LRM applications
- . Available as test connector, card extender and cable assembly



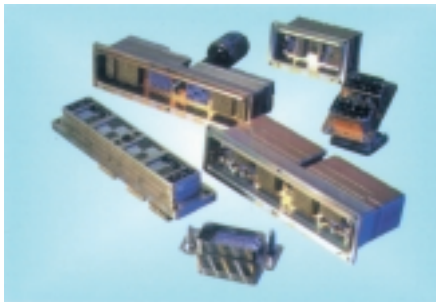
MIL-DTL-55302 PCB CONNECTORS

- . 2 contact rows within dielectric connector
- . Contact size of 0.76 mm nominal pin diameter
- . Number of contacts: 10-14-20-24-26-30-36-44-50-54-59-176
- . Alignment and keying provided by the end guide



AIRFRAME H71 SERIES

- . Meets performance requirements of BAe spec JN1123
- . Outstanding performance under extreme vibration conditions
- . Jackscrew mating device ensures correct mating
- . EMI & RFI protection
- . Integral environmental seal
- . Pin & socket bodies in accordance with MIL-C-39029



CIRCULAR SIGNAL CONNECTORS

- . Contact arrangement: 6 to 21 poles
- . IP67 protection (mated)
- . Nominal current: 3 to 20 A
- . Temperature range -20° to 125°C
- . Tested based on VDE 0627/09.91
- . Variable shielding connection based on standard EMC DIN EN 50082



QUICK DISCONNECT CONNECTOR

- . Plastic shelled
- . Quick disconnect enable easier mating and unmating cycles
- . 3 to 25 contacts
- . Crimp, solder terminations





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