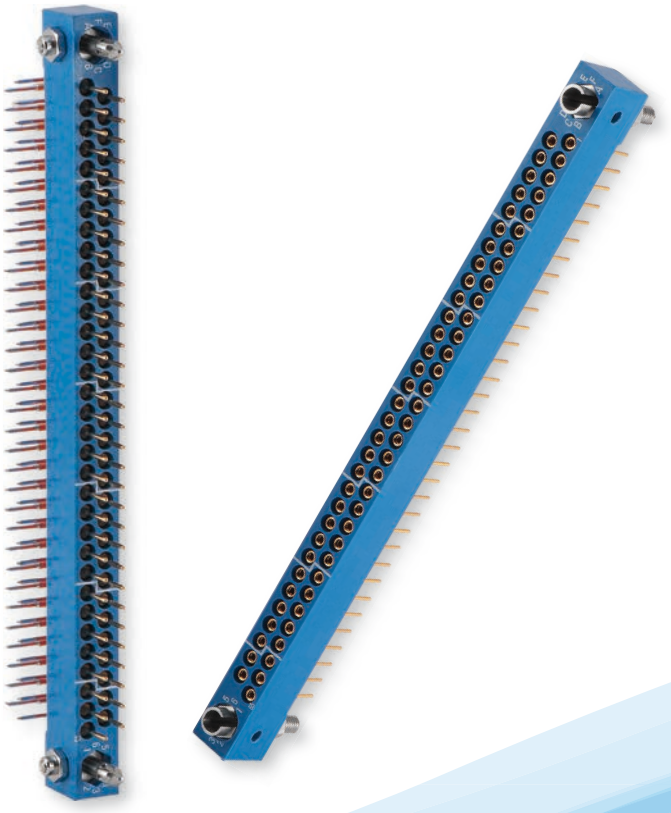
smiths connectors

HPD & HPF
CONNECTOR SERIES

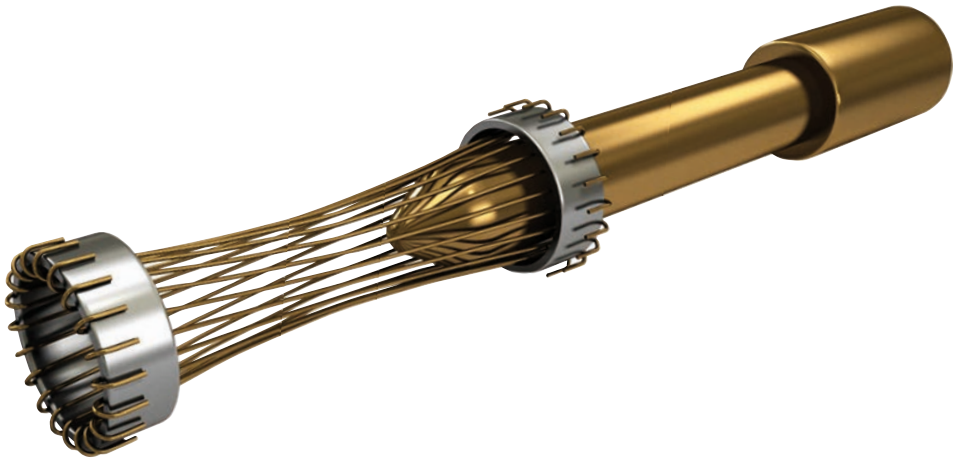
High Reliability Signal Connectors



HYPERTAC IDI INTERCONNECT DEVICES SABRITEC

HYPERBOLOID TECHNOLOGY

Smiths Connectors offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



FEATURE	BENEFIT
LOW INSERTION/EXTRACTION FORCES The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.	**HIGH DENSITY INTERCONNECT SYSTEMS** Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.
LONG CONTACT LIFE The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/ extraction cycles with little degradation in performance.	**LOW COST OF OWNERSHIP** The Hypertac contact technology technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.
LOWER CONTACT RESISTANCE The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has half the resistance of conventional contact designs.	**LOW POWER CONSUMPTION** The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.
HIGHER CURRENT RATINGS The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.	**MAXIMUM CONTACT PERFORMANCE** The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.
IMMUNITY TO SHOCK & VIBRATION The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360 degrees around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.	**RELIABILITY UNDER HARSH ENVIRONMENTS** Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.

TECHNICAL CHARACTERISTICS

Contact number	17, 29, 33, 41, 48, 53, 62, 65, 72, 80, 84, 96, 98, 119, 120, 149 & 160
Contact diameter	0.60 mm
Current rating	4 A
Contact resistance	7 mΩ (max)
Contact mating force	0.28 N (average)
Contact life cycle	> 2,000
Breakdown voltage between contacts	1,920 VAC (min) *[sea level]*
Dielectric withstanding voltage	1,400 VAC (min) *[sea level]*
Temperature rating	-55° to +125 degree C
Insulation resistance	5 GΩ @ 500 VDC (min)
Insulator material	DAP
Contact - Material - Plating (mating surfaces)	 Copper alloy 1.27 micro-metres gold plate (min)
Guide hardware - Material - Plating	 Stainless steel BS 303 Passivated

The following unshrouded sizes are in compliance to:	
MIL-C-55302/159 and 162	17, 29, 41, 53 and 65 position
MIL-C-55302/160 and 163	72, 84, 96 and 120 position
MIL-C-55302/161 and 164	160 position
BS 9525 N0001/1982	17, 29, 33, 41, 53, 65, 72, 84, 96 and 120 position
BS 9525 F0041/1989	17, 29, 33, 41, 53, 65, 72, 84, and 96 position Incorporates BS 9525 N0001 testing but includes Gunfire vibration test.
BS 9525 F0053/1995	Additional specification to BS 9525 N0001 with extra terminations.
BS 9525-F-0016/1995	48, 62, 80, 98, 119, 149 and 160 (Solid insulator) position

The following shrouded sizes are qualified to:	
BS 9525-F-0016/1995	48, 98, 119 and 160 position

Space qualification:
ESA/SCC 3401/016/017

Dimension are in mm

HPD/HPF CONNECTORS SUMMARY

Number of positions	Overall length mm	Contact rating at s.t.p. Amps	Number of contact rows	Contact pitch mm	Contact pin diameter mm	Connector prefix	Shrouded/ Unshrouded
17	38.50	4.0	2	2.54	0.6	HPD	Unshrouded
29	53.70	4.0	2	2.54	0.6	HPD	Unshrouded
33	58.80	4.0	2	2.54	0.6	HPD	Unshrouded
33	62.70	4.0	2	2.54	0.6	HPP	Shrouded
41	69.00	4.0	2	2.54	0.6	HPD	Unshrouded
41	72.90	4.0	2	2.54	0.6	HPP	Shrouded
48	58.30	4.0	3	2.54	0.6	HPF	Unshrouded
48	61.00	4.0	3	2.54	0.6	HPM	Shrouded
53	84.20	4.0	2	2.54	0.6	HPD	Unshrouded
53	88.10	4.0	2	2.54	0.6	HPP	Shrouded
62	69.00	4.0	3	2.54	0.6	HPF	Unshrouded
65	99.50	4.0	3	2.54	0.6	HPD	Unshrouded
65	103.12	4.0	2	2.54	0.6	HPP	Shrouded
72	114.70	4.0	2	2.54	0.6	HPD	Unshrouded
80	84.20	4.0	3	2.54	0.6	HPF	Unshrouded
84	129.60	4.0	2	2.54	0.6	HPD	Unshrouded
96	145.20	4.0	2	2.54	0.6	HPD	Unshrouded
96	148.82	4.0	2	2.54	0.6	HPP	Shrouded
98	99.50	4.0	3	2.54	0.6	HPF	Unshrouded
119	117.26	4.0	3	2.54	0.6	HPF	Unshrouded
120	175.50	4.0	2	2.54	0.6	HPD	Unshrouded
120	161.40	4.0	2	2.54	0.6	HPP	Shrouded
149	142.55	4.0	3	2.54	0.6	HPF	Unshrouded
160	158.00	4.0	3	2.54	0.6	HPF	Unshrouded
160	161.30	4.0	3	2.54	0.6	HPM	Shrouded

HPD CONNECTORS SUMMARY

HPD/HPF Connectors Series offer a wide range of termination and guide styles. A 'Preferred Options' list, as illustrated below, has been prepared. These offers utilise the more common piece parts and selections have been made from across the range. To benefit from standard price/lead time reductions a connector must be assembled from parts within the Preferred Listings.

TERMINATION STYLES - PREFERRED OPTIONS

A wide range of Termination Styles is available, please see page 4 and 19.
Please enquire with our Sales Office for additional details on Termination Styles

Term type	Part no.	Description
B	HPD-488-7 male 1st row	Through board solder-90 degree
B	HPD-489-7 male 2nd row	Through board solder-90 degree
B	HPD-462-7 male 3rd row	Through board solder-90 degree
B	HPD-596-9 female 1st row	Through board solder-90 degree
B	HPD-598-9 female 2nd row	Through board solder-90 degree
B	HPD-599-9 female 3rd row	Through board solder-90 degree
C	HPD-486-7 male	Crimp
C	HPD-526-9 female	Crimp
L	HPD-685-7 male 1st row	Through board solder-90 degree
L	HPD-688-7 male 2nd row	Through board solder-90 degree
L	HPD-691-7 male 3rd row	Through board solder-90 degree
L	HPD-708-9 female 1st row	Through board solder-90 degree
L	HPD-712-9 female 2nd row	Through board solder-90 degree
L	HPD-716-9 female 3rd row	Through board solder-90 degree
P	HPD-487-7 male	Through board solder-straight
P	HPD-522-9 female	Through board solder-straight

GUIDE STYLES - PREFERRED OPTIONS

A wide range of Guide Styles is available. Please enquire with our Sales Office for additional details

Style	Style	Style	Style	Style	Style
AO *(see page 27)*	HO *(see page 27)*	LB*	NC *(see page 24)*	RA *(see page 25)*	VL*
BO *(see page 28)*	JO *(see page 27)*	LO*	NO *(see page 24)*	RO *(see page 25)*	ZO*
EO*	KB *(see page 26)*	LV*	PO *(see page 25)*	UO *(see page 26)*	
GO*	KO *(see page 26)*		QO *(see page 27)*	VO *(see page 27)*	

* Please enquire with our Sale Offices for further details on the above Guide Styles

PLATING FINISH

U-Gold Plate (ASTM-B-488)

HOW TO ORDER

SOLID INSULATOR

HPD						
1	2	3	4	5	6	7 A B C

1 CONNECTOR FAMILY

2 NO. OF CAVITIES

D	017*	029*	033*	041*	053*	065*	072**	084*	096*	120**
P	033*	041*	053*	065*	096*	120**				
F	048*	062*	080*	098*	119*	149*	160*	320**		
M	048*	098**	119**	160*						

3 CONTACT PLATING

U GOLD PLATE *(ASTM-B-488)*

S GOLD PLATE / SPACE QUALIFIED PRODUCT *(ASTM-B-488)*

4 CONTACT GENDER

M MALE

F FEMALE

O CONTACTS NOT SUPPLIED

C* PIN CARRIER - HPD & HPF ONLY

5 CONTACT TERMINATION

A B* C* D F L* M P* Q R S T W

X* 1 2 3 4 5 9 *(See 'HPD contact termination and codes' for details)*

0 CONTACTS NOT SUPPLIED

6 GUIDE STYLE

(See 'HPD guide style index' and 'HPD guide styles' for details) or 00 GUIDES NOT SUPPLIED

7 VARIATION CODES

A

0 NO VARIATIONS

3 CENTRE GUIDE POLARISED

D OUTER 2 OF 3 ROWS LOADED

Q CENTRE ROW OF 3 ROWS LOADED

B PRINTING

0 REVERSE *(BS spec standard)*

2 STANDARD *(BS spec standard)*

5 REVERSE *(MIL spec standard)*

7 STANDARD *(MIL spec standard)*

8 REVERSE *(80 position cut from 160 position)*

9 STANDARD *(80 position cut from 160 position)*

(See 'HPD insulators' for details)

C

0 NO VARIATIONS

B 90° TERMINATION TINNED AND POTTED

C 90° TERMINATION POTTED

X TERMINATION TINNED

2 STRENGTHENED INSULATOR 84 AND 96 POSITION VERTICAL MOUNTING ONLY

** off the shelf* *** made to order*

HOW TO ORDER

TWO PART INSULATOR

1 CONNECTOR FAMILY

2 NO. OF CAVITIES

0 9 8 1 6 0

3 CONTACT PLATING

A GOLD PLATE U GOLD PLATE *(ASTM-B-488)*

4 CONTACT GENDER

F FEMALE

5 CONTACT TERMINATION

6 7 8 *(See 'HPD contact termination and codes' for details)*

6 GUIDE STYLE

L 1 L 2 L 5 5 G 5 L 5 M 5 N *(See 'HPD guide style index' and 'HPD guide styles' for details)*

7 VARIATION CODES

A

0 NO VARIATIONS 3 CENTRE GUIDE POLARISED D OUTER 2 OF 3 ROWS LOADED Q CENTRE ROW OF 3 ROWS LOADED

B PRINTING

0 REVERSE *(BS spec standard)* 2 STANDARD *(BS spec standard)*

5 REVERSE *(MIL spec standard)* 7 STANDARD *(MIL spec standard)*

(See 'HPD insulators' for details)

C

2 TWO PART INSULATOR

HOW TO ORDER

IF ADDITIONAL GUIDES ARE REQUIRED

H P		0 0 0		0 0 H
1	2		3	

1 CONNECTOR FAMILY

D HPD STYLE F HPF STYLE

2 GUIDES

065 SET OF TWO HPD GUIDES
072 SET OF THREE HPD GUIDES
149 SET OF TWO HPF GUIDES
160 SET OF THREE HPF GUIDES

3 GUIDE STYLES

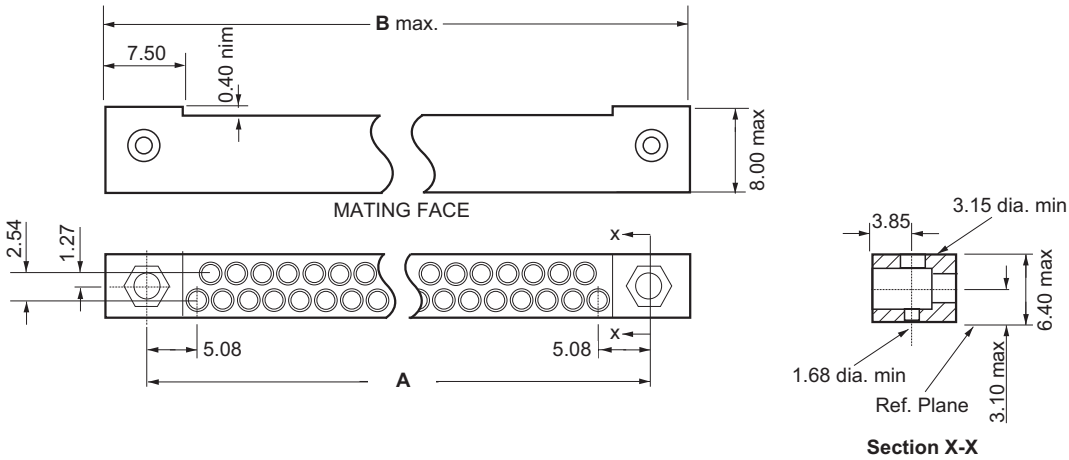
(See 'HPD guide style index' and 'HPD guide styles' for details)

EXAMPLE GUIDE STYLES KS (MALE POLARISED) IS REQUIRED	
HPD06500KS00H	Two (HPD KS) guides
HPD072000KS00H	Two (HPD KS) guides + one (HPD AS) unpolarised guide
HPF149000KS00H	Two (HPF KS) guides
HPF160000KS00H	Two (HPF KS) guides + one (HPF AS) unpolarised guide

INSULATORS

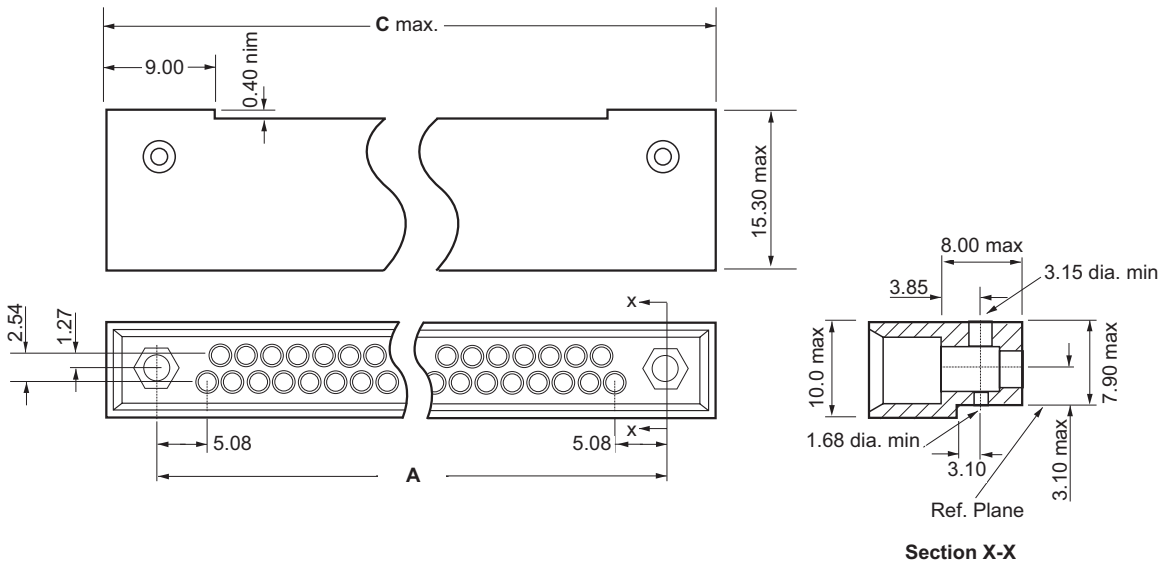
TWO ROW - STYLE HPD

17 to 65 position unshrouded



TWO ROW - STYLE HPP

33 to 65 position shrouded *(fitted with male contacts only)*



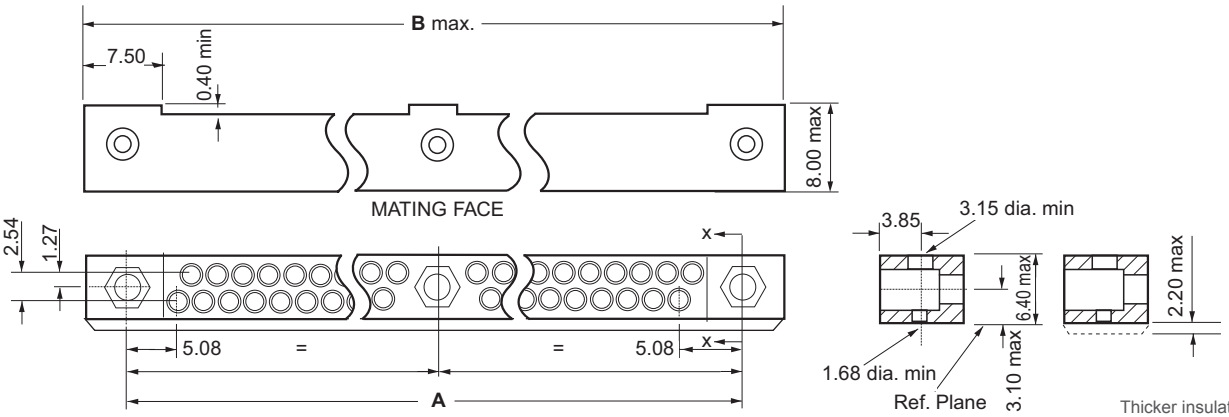
No. of positions	17	29	33	41	53	65
Dimension A	30.48	45.72	50.80	60.96	76.20	91.44
Dimension B	38.50	53.70	58.80	69.00	84.20	99.50
Dimension C	N/A	N/A	62.70	72.90	88.10	103.42

All diagrams are shown in 3rd angle projection with dimensions in millimetres

INSULATORS

TWO ROW - STYLE HPD

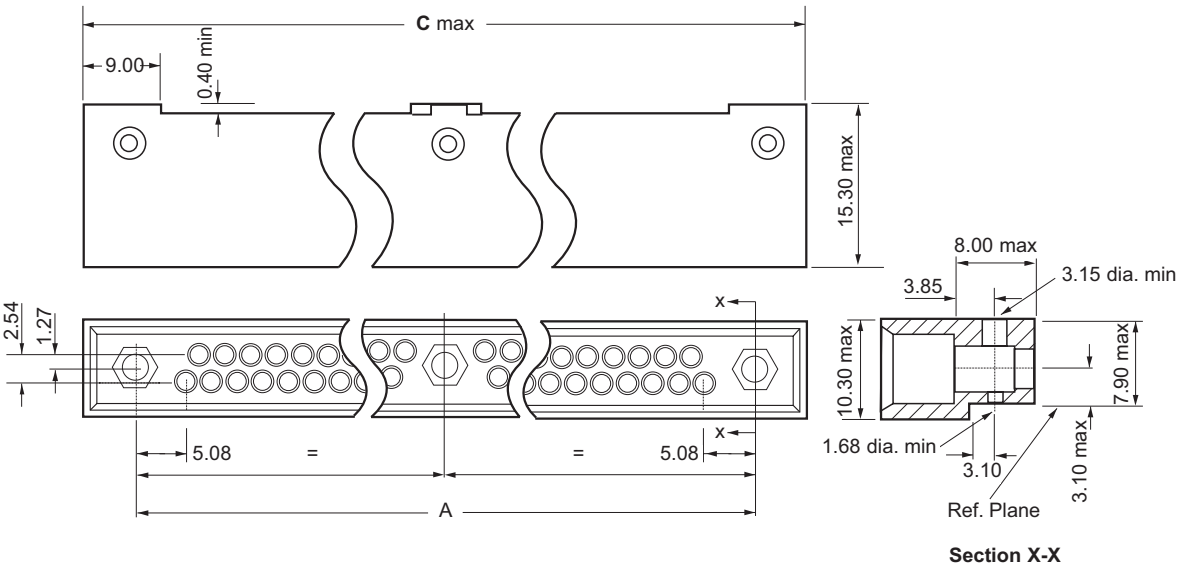
72 to 120 position unshrouded



Thicker insulators are available for 84 and 96 positions for vertical applications only. They cannot be used in conjunction with shrouded insulators.

TWO ROW - STYLE HPP

96 to 120 position shrouded *(fitted with male contacts only)*



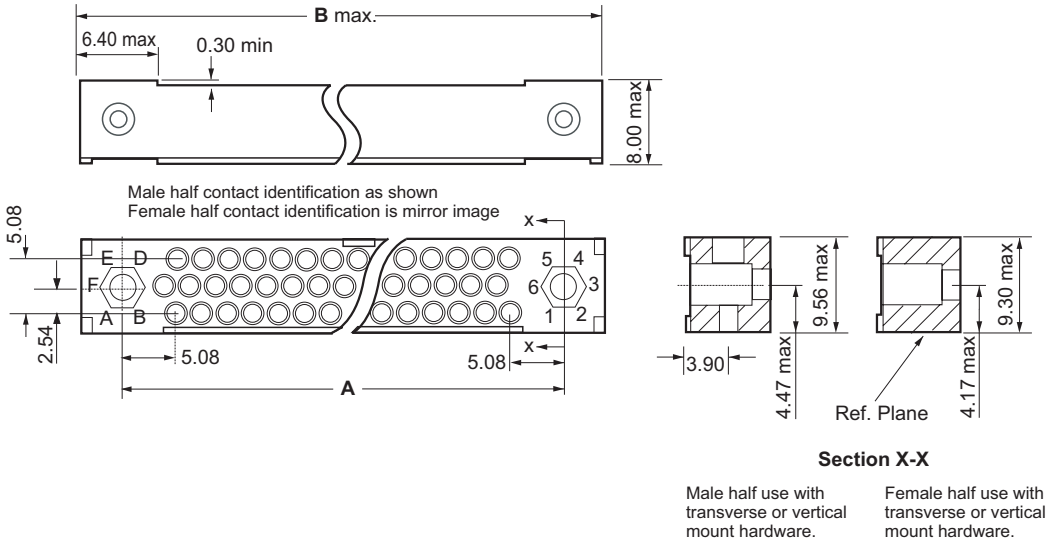
No. of positions	72	84	96	120
Dimension A	106.68	121.92	137.16	167.64
Dimension B	114.70	129.90	145.20	175.60
Dimension C	N/A	N/A	149.12	179.50

All diagrams are shown in 3rd angle projection with dimensions in millimetres

INSULATORS

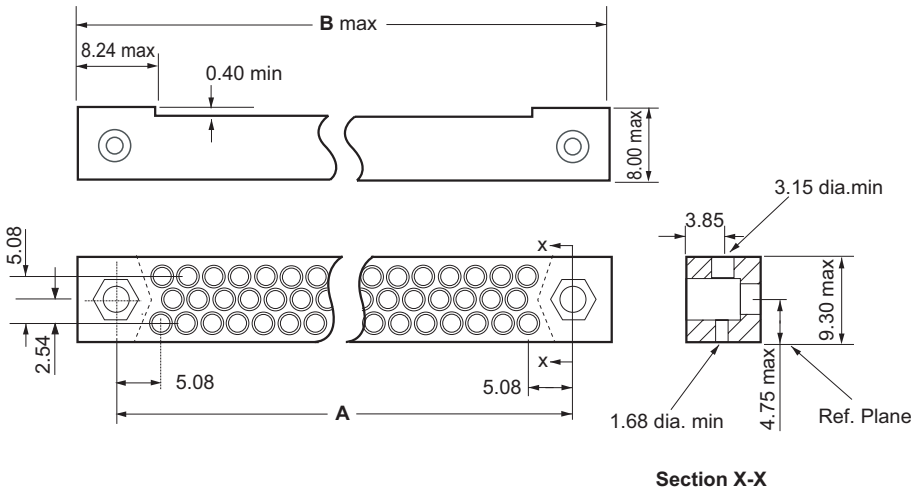
THREE ROW - STYLE HPF

62 to 80 position unshrouded



THREE ROW - STYLE HPF

98 to 149 position unshrouded



No. of positions	62	80	98	119	149
Dimension A	60.96	76.20	91.44	109.22	134.62
Dimension B	68.90	84.10	99.50	117.26	142.66

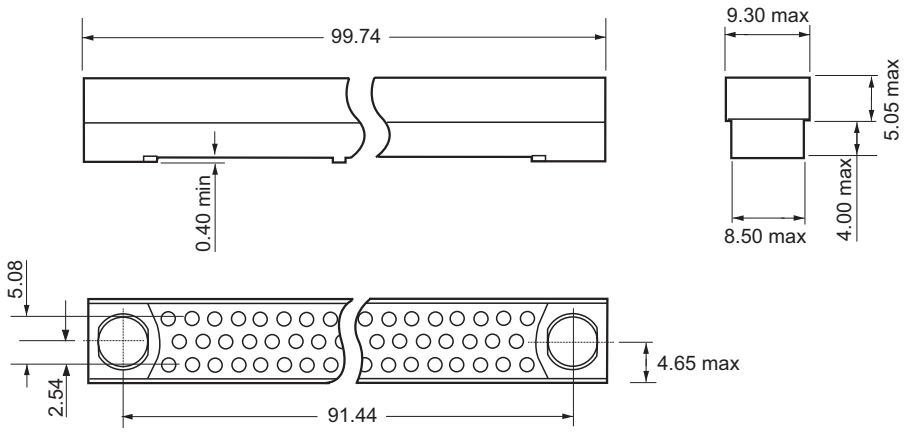
All diagrams are shown in 3rd angle projection with dimensions in millimetres

INSULATORS

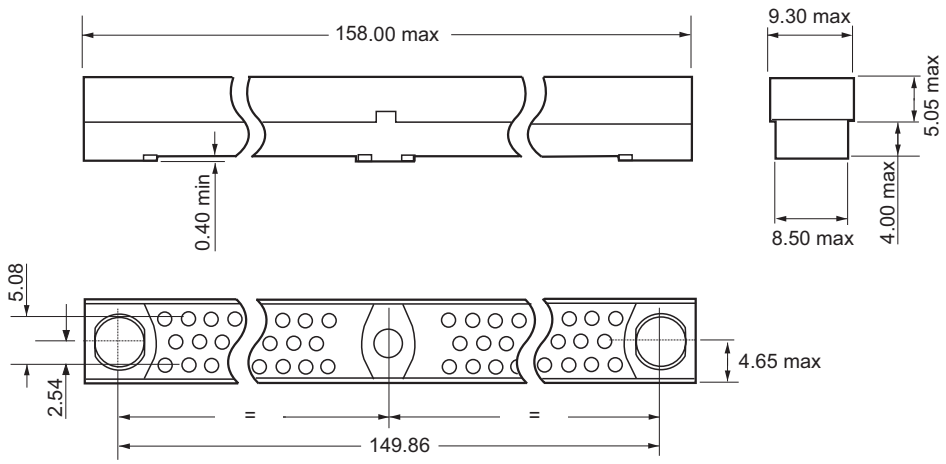
TWO PART INSULATORS

98 position unshrouded - HPF

(with front removable socket contacts for vertical mounting applications only)



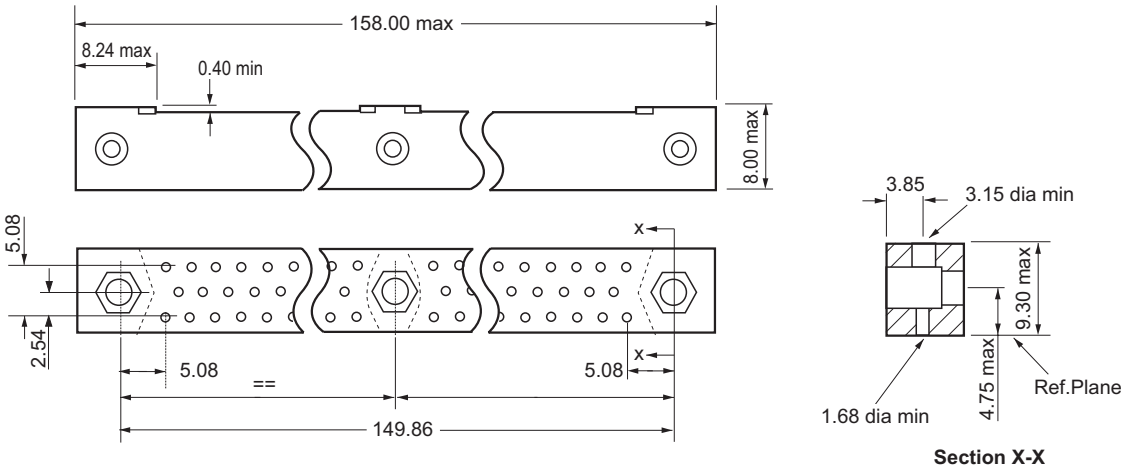
160 position unshrouded - HPF



INSULATORS

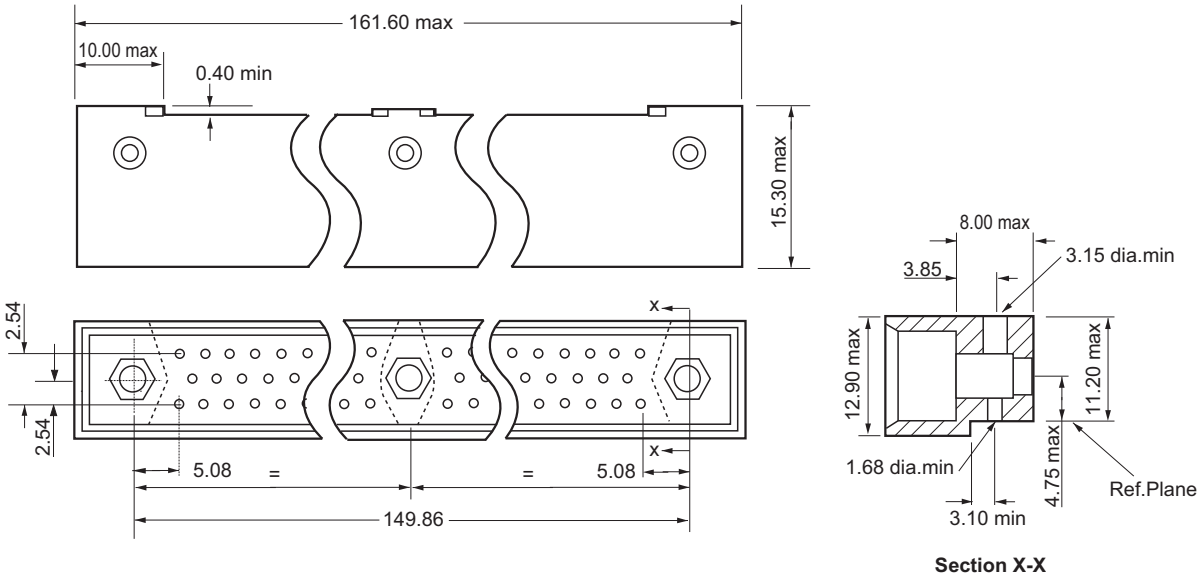
THREE ROW - STYLE HPF

160 position unshrouded



THREE ROW - STYLE HPM

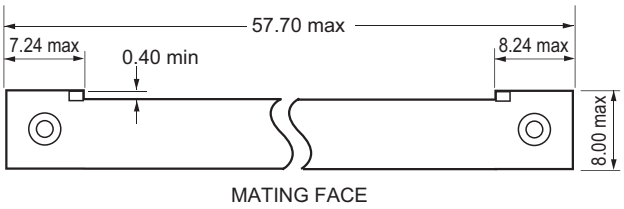
160 position shrouded *(fitted with male contacts only)*



INSULATORS

THREE ROW - STYLE HPF

48 position unshrouded

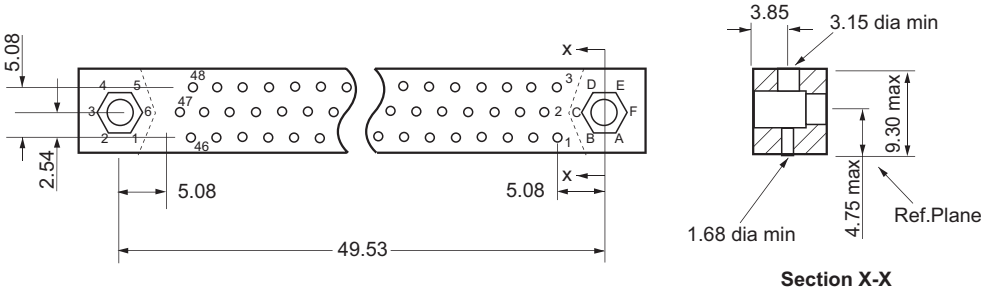


Please note the 048 way is the only non-symetrical connector in this range.
Therefore care should be taken to ensure correct identification code.

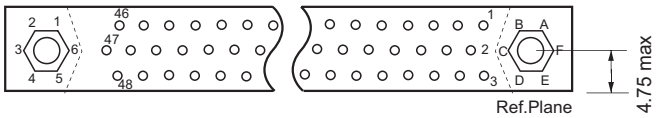
CONTACT IDENTIFICATION

(13th Digit in Ordering Code) views on Mating face

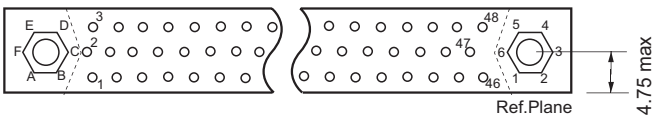
Female Contact: BS Spec. *2*; MILSpec. *7* *(not MIL spec. qualified)*



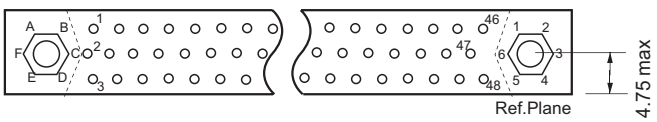
Male Contact: BS Spec. *2*; MILSpec. *7* (not MILSpec. qualified)



Female Contact: BS Spec. *0*; MILSpec. *5* (not MILSpec. qualified)



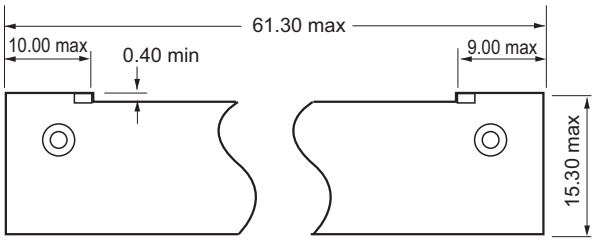
Male Contact: BS Spec. *0*; MILSpec. *5* (not MILSpec. qualified)



INSULATORS

THREE ROW - STYLE HPM

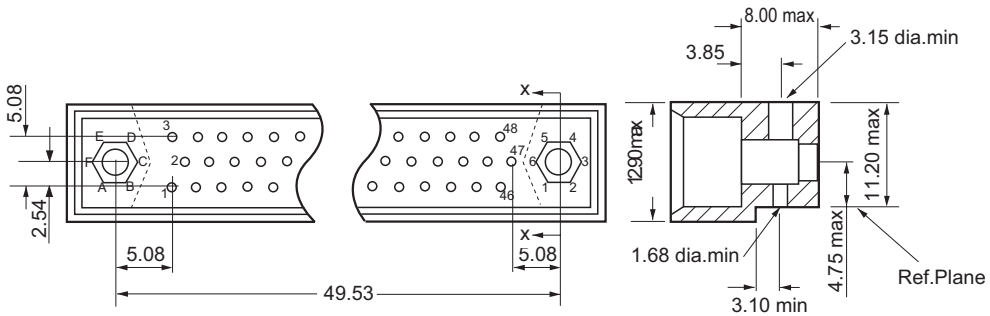
48 position shrouded *(fitted with male contacts only)*



CONTACT IDENTIFICATION

(13th Digit in Ordering Code) views on Mating face

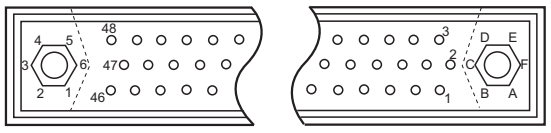
Male Contact: BS Spec. *2*; MILSpec. *7* *(not MIL spec. qualified)*



Section X-X

Male Contact: BS Spec. *0*; MILSpec. *5*

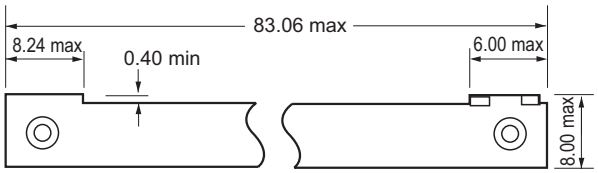
(not MIL spec. qualified)



INSULATORS

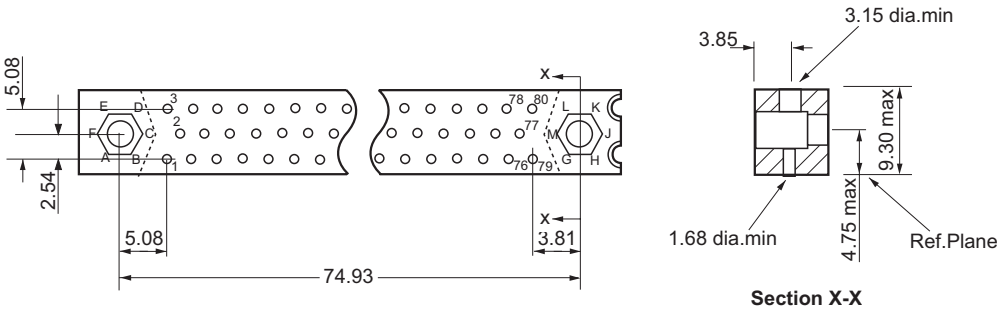
THREE ROW - STYLE HPF

80 position unshrouded *(cut from 160 position)*

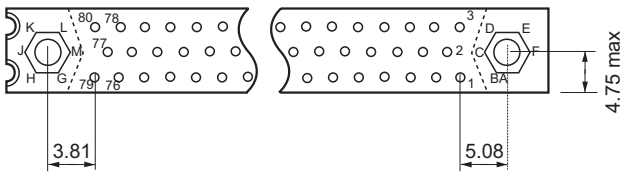


CONTACT IDENTIFICATION

(13th Digit in Ordering Code) views on Mating face
Use with Transverse Mounting Hardware Only
Male contact *9*; Female contact *8*



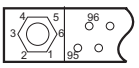
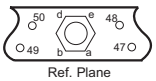
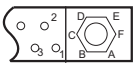
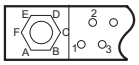
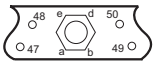
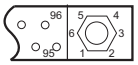
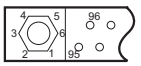
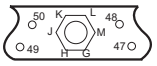
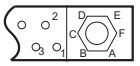
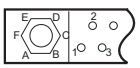
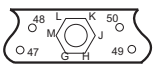
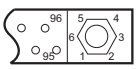
Use with Vertical Mounting Hardware Only
Male Contact *9*; Female Contact *8*



INSULATORS POLARISING DATA

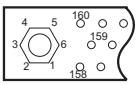
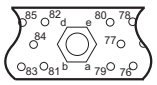
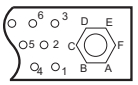
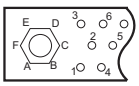
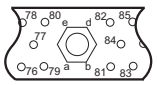
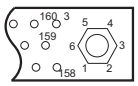
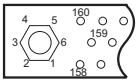
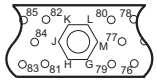
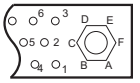
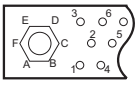
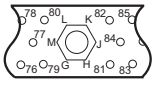
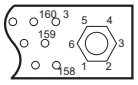
TWO ROW CONTACTS

96 position illustrated

			Views on mating face		
	Code (13th digit)	**Contact gender**	**Left hand guide/ polarising positions**	**Centre guide/ polarising positions**	**Right hand guide/ polarising positions**
BS spec. standard	*2*	Female		 Ref. Plane	
	0	Male			
	2	Male		 Ref. Plane	
	0	Female			
MIL spec. standard	*7*	Female		 Ref. Plane	
	5	Male			
	7	Male		 Ref. Plane	
	5	Female			

THREE ROW CONTACTS

160 position illustrated

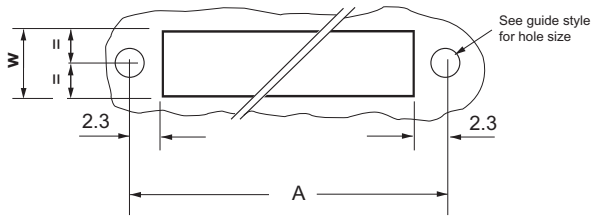
			Views on mating face		
	Code (13th digit)	**Contact gender**	**Left hand guide/ polarising positions**	**Centre guide/ polarising positions**	**Right hand guide/ polarising positions**
BS spec. standard	*2*	Female		 Ref. Plane	
	0	Male			
	2	Male		 Ref. Plane	
	0	Female			
MIL spec. standard	*7*	Female		 Ref. Plane	
	5	Male			
	7	Male		 Ref. Plane	
	5	Female			

INSULATORS

PANEL PREPARATION DETAILS

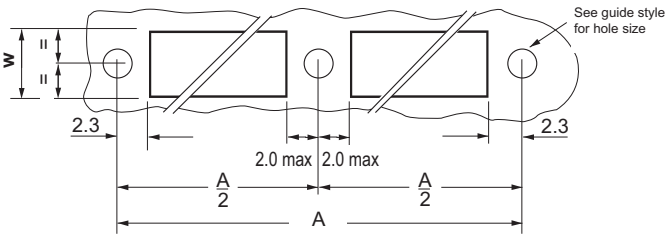
TWO FIXING POSITIONS

17, 29, 33, 41, 48, 53, 62, 65, 80, 98, 119 and 149 positions

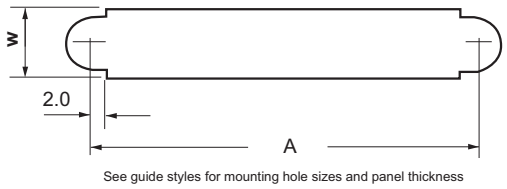


THREE FIXING POSITIONS

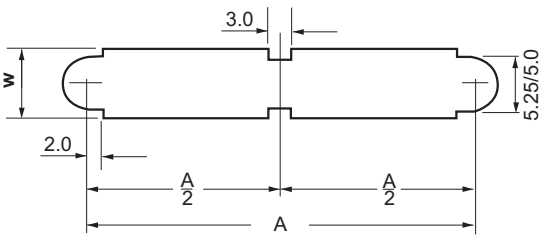
72, 84, 96, 120 and 160 positions



FLOATING MOUNT STYLE



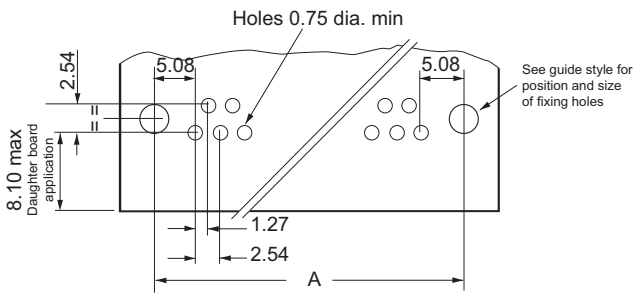
FLOATING MOUNT STYLE



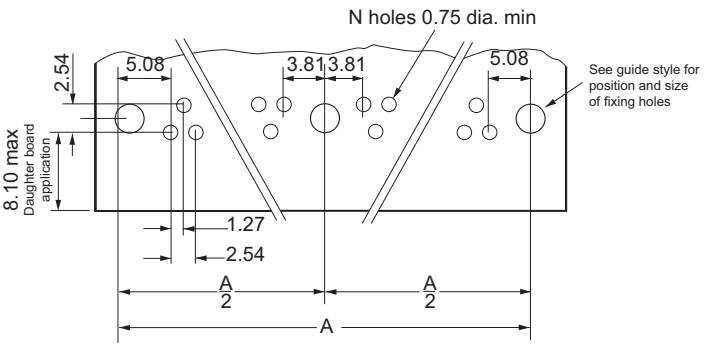
Fixed mount style				
	HPD/P	HPF/M	HPD/P	HPF/M
Dimension W	9.50	12.00	9.00	12.00

BOARD PREPARATION DETAILS

17, 29, 33, 41, 48, 53, and 65 positions



72, 84, 96 and 120 positions

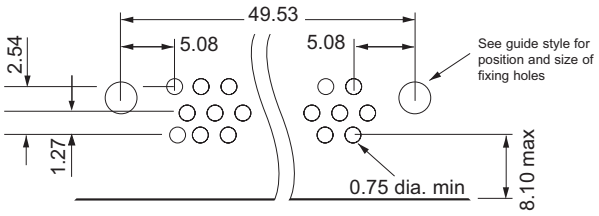


INSULATORS BOARD PREPARATION DETAILS

48 POSITIONS (views on component side of board)

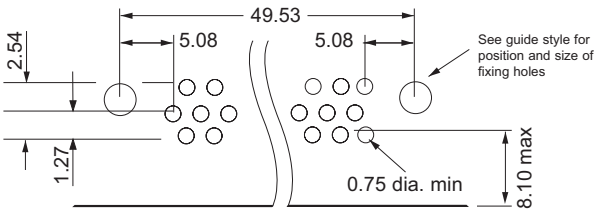
HPM/HPF COMBINATION

Daughter board - HPM shrouded moulding

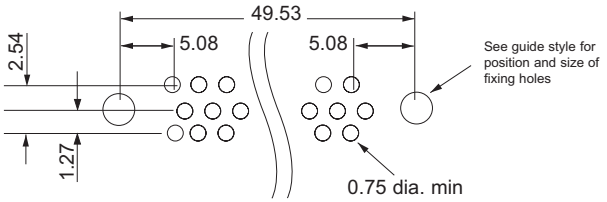


HPM/HPF COMBINATION

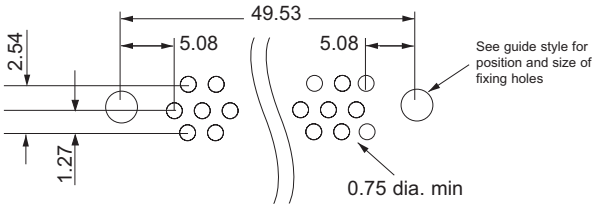
Daughter board - HPF unshrouded moulding



Mother Board - HPF unshrouded moulding

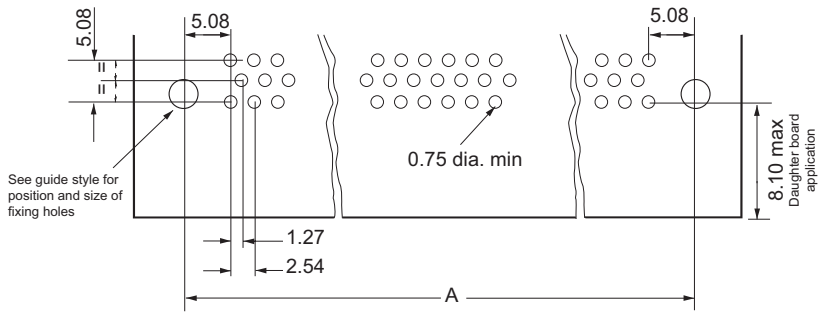


Mother Board - HPF unshrouded moulding

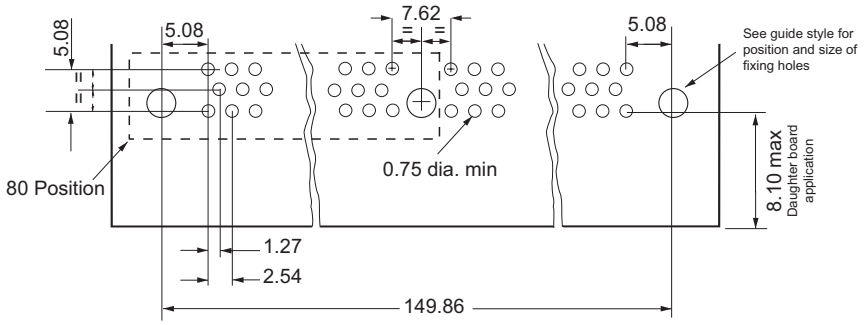


INSULATORS BOARD PREPARATION DETAILS

62, 80, 98, 119 AND 149 POSITIONS (except 80 position cut from 160 position)



160 POSITIONS AND 80 POSITION (cut from 160 Position)

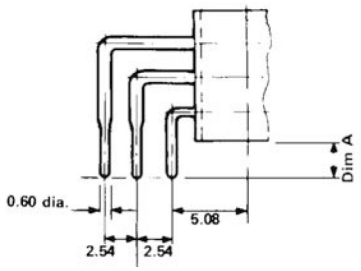


No. of positions	17	29	33	41	53	62	65
Dimension A nom.	30.48	45.72	50.80	60.96	76.20	60.96	91.44

No. of positions	72	80	84	96	98	119	120	149
Dimension A nom.	106.68	76.20	121.92	137.16	91.44	109.22	167.64	134.62

CONTACT TERMINATION AND CODES

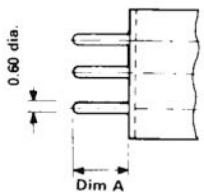
This section includes details of the standard contact terminations used in most applications. Details of other available contact terminations can be obtained from the sales office of Smiths Connectors.



STYLE B/L

Through board solder - 90°

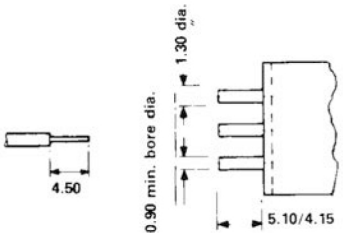
Term. style	Dimension A				Part no.					
	2 Row		3 Row		Male			Female		
	Max	Min	Max	Min	1st Row	2nd Row	3rd Row	1st Row	2nd Row	3rd Row
B	3.50	2.50	3.10	2.10	HPD 488/*	HPD 489/*	HPD 462/*	HPD 596/*	HPD 598/*	HPD 599/*
L	4.85	3.85	4.45	3.45	HPD 685/*	HPD 688/*	HPD 691/*	HPD 708/*	HPD 712/*	HPD 716/*



STYLE X/P

Through board solder - Straight

Term. style	Dimension A		Part no.	
	Max	Min	Male	Female
X	5.10	4.15	HPD 720/*	HPD 548/*
P	6.20	5.30	HPD 487/*	HPD 522/*



STYLE C SUPPLIED UNASSEMBLED

Crimp barrel showing cable preparation

Term. style	Part no.	
	Male	Female
C	HPD 486/*	HPD 526/*
For 22, 24, 26 aw wire		

GUIDE TORQUE INFORMATION (HPD/HPF)

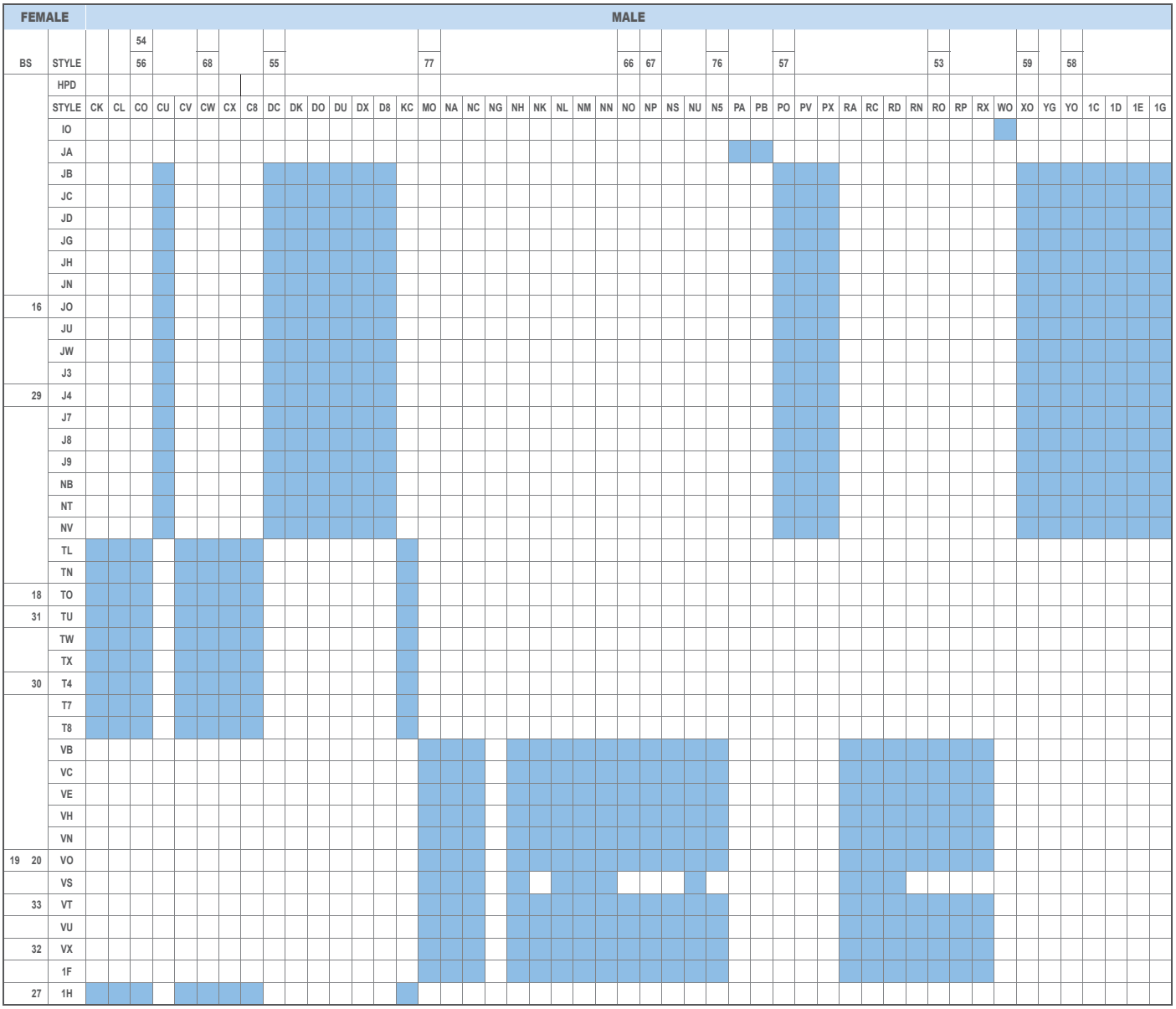
HPD/HPF TORQUE VALUES

Stainless steel guide

Range	Description	Torque
HPD/HPF	M2.5 mm vertical fixing *(Styles EO,LO,and similar)*	3 lb f*in max
HPD/HPF	M1.6 mm transverse fixing non-counter sink *(Styles KO,AO,and similar)*	1 lb f*in max
HPD/HPF	Jackscrew with cross pin fitted *(Styles PO and similar)*	1 lb f*in max

INTERMATEABILITY CHARTS

JACK GUIDE - POLARISED AND UNPOLARISED



HOW TO USE THE INTERMATEABILITY CHARTS

Examples:

Male guide “CU” has been selected and a mating female guide is required
1) locate “CU” male guide on the above chart;
2) follow the “CU” column down to a shaded area and read across to the left hand side of the chart to find the mating female guide.

From the above intermatability chart female guides JB, JC, JD, JG JH, JN, JO, JU, JW, J3, J4, J7, J8, J9, NB, NT, and NV all with “CU” male guide.

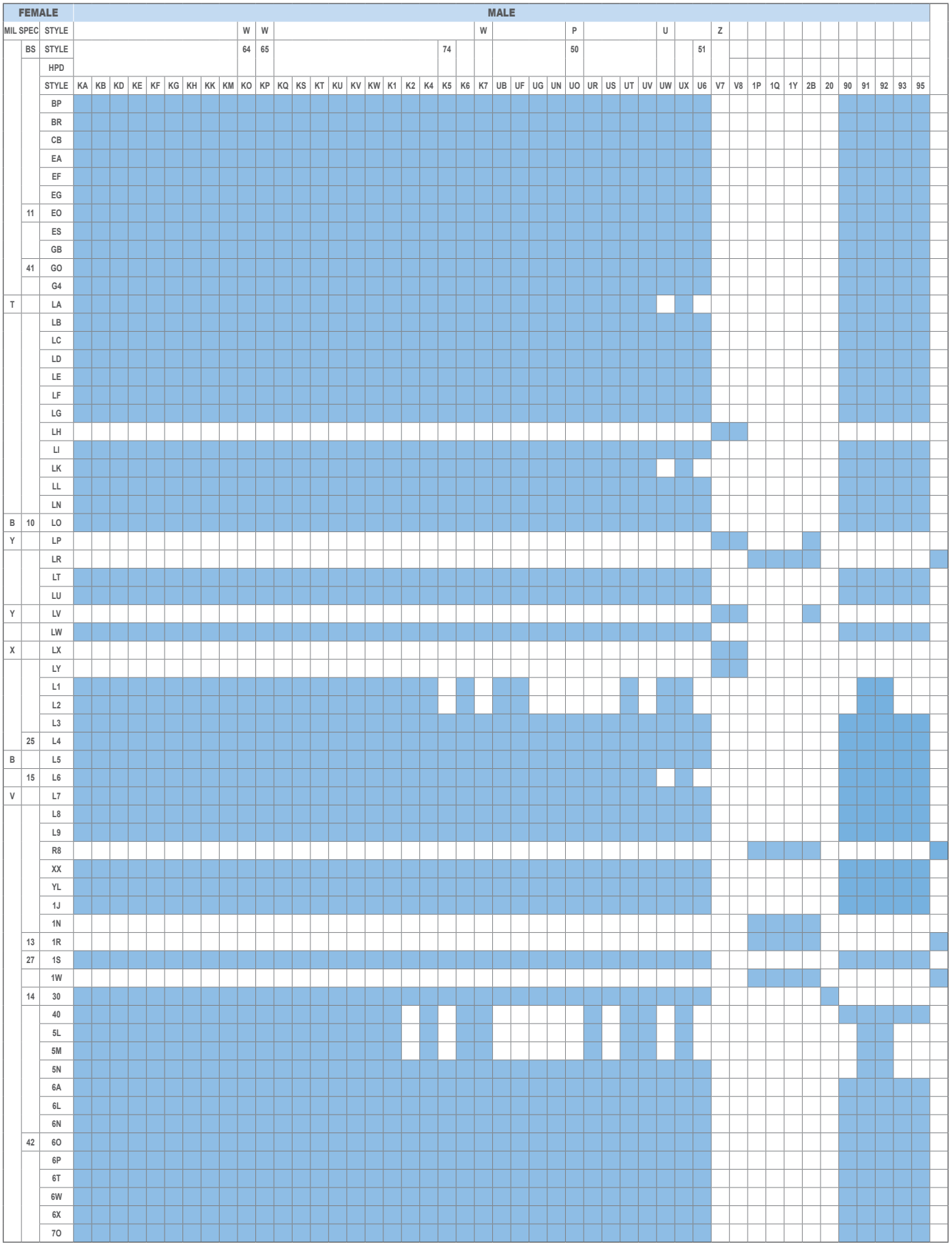
IF BS STYLE GUIDES ARE REQUIRED

Select a guide with a BS style number. *(Male guide “MO” has been selected BS No. 77)*:
1) locate “MO” male guide on above chart;
2) follow “MO” column down to a shaded area and read across to the left hand side of the chart to find mating female guide (only selecting guides with BS style numbers).

From the above intermatability chart female guides VO, VT and VX are all BS style guides.

INTERMATEABILITY CHARTS

POLARISED GUIDES INTERMATEABILITY CHART



INTERMATABILITY CHARTS

UNPOLARISED GUIDES INTERMATABILITY CHART

FEMALE			MALE																											
MIL SPEC		STYLE																												
	BS	STYLE									71	72							79								62		63		
		HPD																												
		STYLE	AB	AC	AD	AE	AG	AH	AK	AL	AO	AP	AQ	AS	AV	AW	AZ	A4	A5	A6	A8	HO	QG	QH	QN	QO	QT	Q6	9K	
		BB	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BD	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BE																												
		BF	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BN	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
	23	BO	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BU	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BW	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		BX	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		B3	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
	38	B4	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
	24	B6	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■		■	
		B7	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
	39	B8	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		B9	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		MC																												
		MT																												
		M4																												
		M5																												
		M7																												
		M8																												
		0D																												
		5A	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		5B	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		5D	■	■	■		■	■	■	■	■	■	■	■		■		■	■	■	■		■	■	■	■	■	■	■	
		5G			■		■	■	■		■	■	■	■		■		■			■						■			

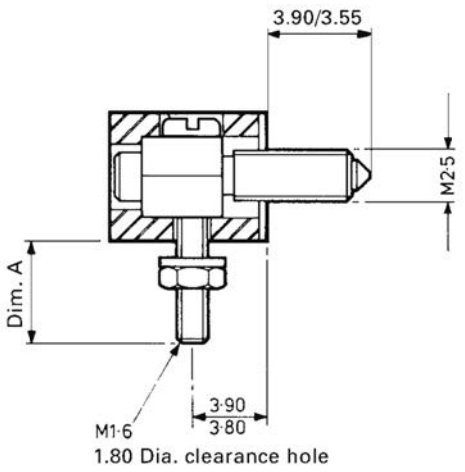
QUARTER TURN LOCK POLARISED GUIDES INTERMATABILITY CHART

FEMALE			MALE																
MIL SPEC		STYLE																	
	BS	STYLE																	
		HPD																	
		STYLE	CH	CS	CT	SJ	SK	SL	SN	SO	ST	SX	S2	S3	S5	S6	S9	8K	8O
		ZG	■	■	■	■	■	■					■			■			
		ZK							■	■	■	■		■	■		■		
G		ZL	■	■	■	■	■	■					■						
		ZM	■	■	■	■	■	■					■						
		ZN							■	■	■	■		■	■		■		
	22	ZO							■	■	■	■		■	■		■		
	37	ZT							■	■	■	■		■	■		■		
	34	ZW							■	■	■	■		■	■		■		
		ZX							■	■	■	■		■	■		■		
		ZZ	■	■	■	■	■	■					■			■			
		Z4	■	■	■	■	■	■					■			■			
F		Z5	■	■	■	■	■	■					■			■			
		Z6	■	■	■	■	■	■					■			■			
	36	Z8							■	■	■	■		■	■		■		
	35	1A							■	■	■	■		■	■		■		
	31	1B							■	■	■	■		■	■		■		
		1M							■	■	■	■		■	■		■		
		1T							■	■	■	■		■	■		■		

GUIDE STYLE

This Section includes details of the standard guide styles used in most applications. Details of other available guide styles can be obtained from Smiths Connectors sales offices.

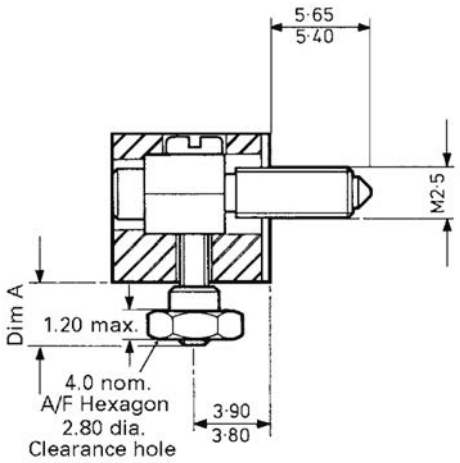
NON ROTATING TRANSVERSE GUIDES (MALE) - UNPOLARISED



STYLE NC/NH

Style	Dimension A			
	2 Row		3 Row	
	Max	Min	Max	Min
NC	6.36	5.53	6.60	6.09
NH	5.30	4.59	5.71	4.88

When used in 62 & 80 position insulators add 0.28 mm to dimension A (3 Row)



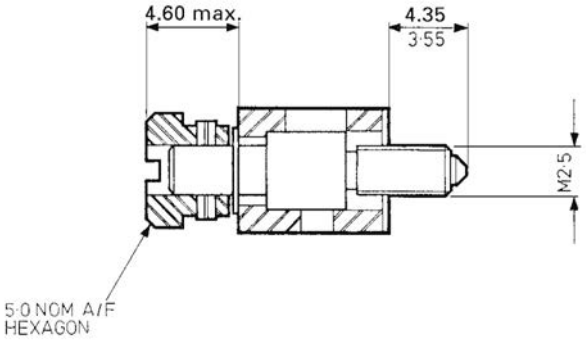
STYLE NO

Style	Dimension A			
	2 Row		3 Row	
	Max	Min	Max	Min
NO	3.30	2.59	3.65	2.94

When used in 62 & 80 position insulators add 0.28 mm to Dimension A (3 Row)

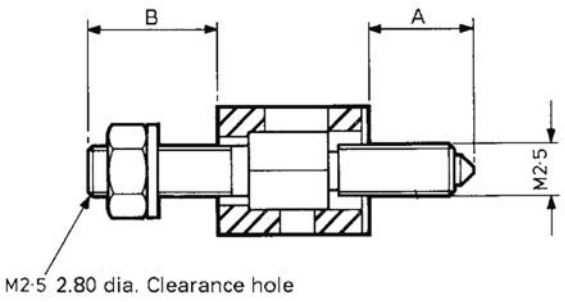
GUIDE STYLE

JACK GUIDES (MALE) - UNPOLARISED



STYLE P0

Rotating free connector



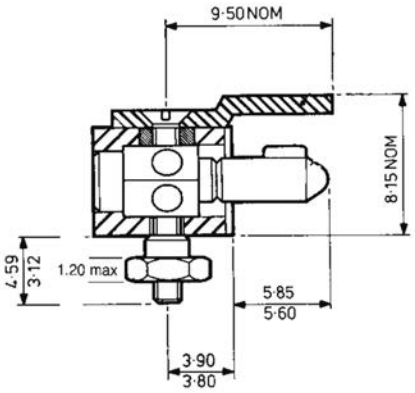
STYLE RA/RO

Non rotating transverse mounting

Style	Dimension A		Dimension B	
	Max	Min	Max	Min
RA	3.80	3.55	7.15	6.75
RO	5.65	5.40	7.15	6.75

GUIDE STYLE

GUIDES (MALE) - POLARISED

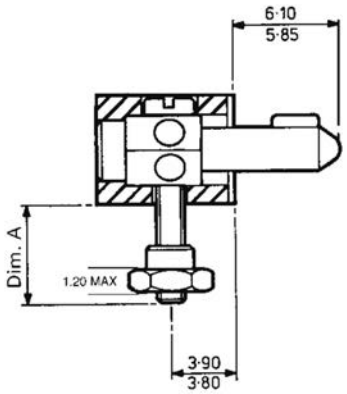


STYLE KB

Transverse mounting with pin protector
for use with HPD/HPF only

Style	Dimension A			
	2 Row		3 Row	
	Max	Min	Max	Min
KB	5.30	4.59	5.71	4.88

When used in 62 & 80 position insulators deduct 0.25 mm to Dimension A (3 Row)

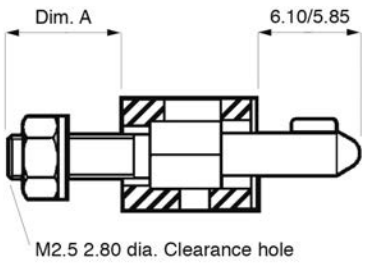


STYLE KO

Transverse mounting

Style	Dimension A			
	2 Row		3 Row	
	Max	Min	Max	Min
KO	3.30	2.59	3.65	2.94

When used in 62 & 80 position insulators add 0.28 mm to Dimension A (3 Row)



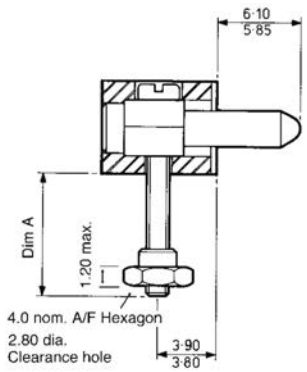
STYLE UO

Vertical mounting

Style	Dimension A	
	Max	Min
UO	7.15	6.75

GUIDE STYLE

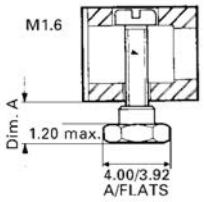
GUIDES (MALE) - UNPOLARISED



STYLE AO

Transverse mounting

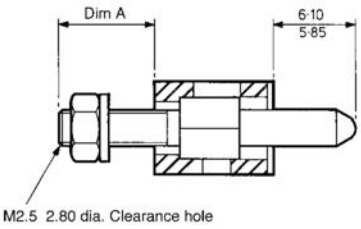
Style	Dimension A			
	Max	Min	Max	Min
AO	3.30	2.59	3.65	2.94



STYLE HO

Transverse mounting

Style	Dimension A			
	Max	Min	Max	Min
HO	3.30	2.59	3.65	2.94

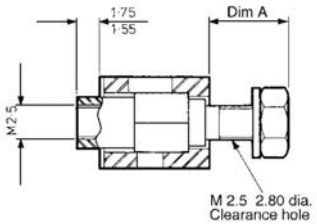


STYLE QO

Vertical mounting

Style	Dimension A	
	Max	Min
QO	7.15	6.75

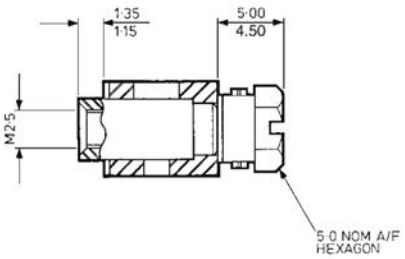
JACK GUIDES (FEMALE) - UNPOLARISED



STYLE JO

Non rotating vertical mounting

Style	Dimension A	
	Max	Min
JO	6.85	6.25



STYLE VO/VU

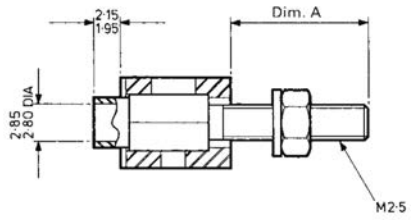
Rotating free connector

VO assembled

VU unassembled

GUIDE STYLE

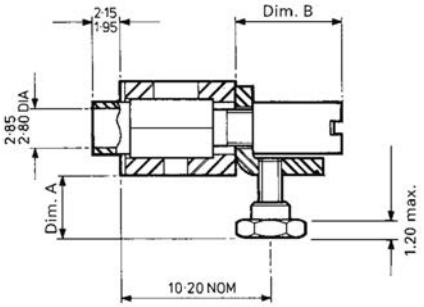
GUIDES (FEMALE) - UNPOLARISED



STYLE BO

Vertical mounting

Style	Dimension A	
	Max	Min
BO	7.15	6.75

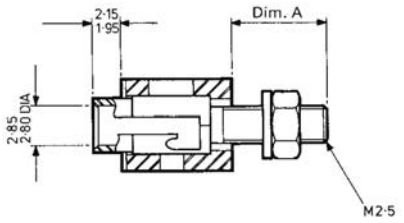


STYLE BU

Transverse mounting

Style	Dimension A		Dimension B			
			2 Row		3 Row	
	Max	Min	Max	Min	Max	Min
BU	5.60	5.20	7.30	6.90	7.50	7.10

GUIDES (FEMALE) QUARTER TURN LOCK-POLARISED



STYLE ZO

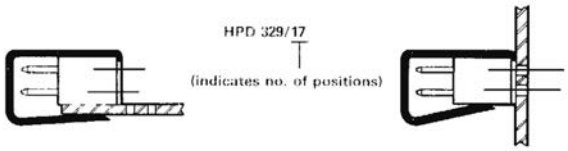
Vertical mounting

Style	Dimension A	
	Max	Min
ZO	7.15	6.75

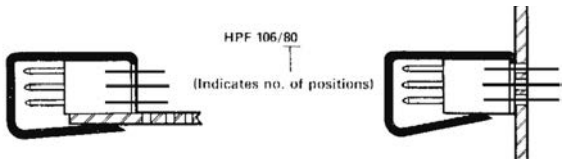
ACCESSORIES

PIN PROTECTOR (extruded polypropylene)

For plug assemblies HPD style insulator. Available to fit all sizes.



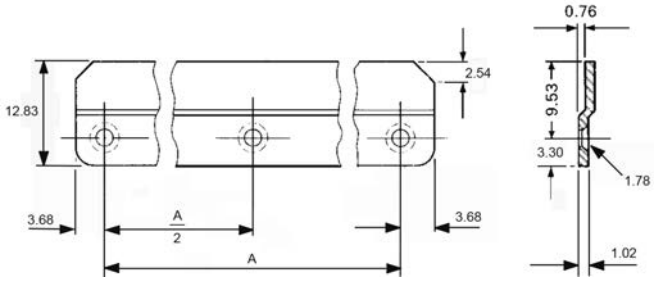
For plug assemblies HPD style insulator. Available to fit all sizes.



ACCESSORIES

PIN PROTECTOR METAL PLATE (blue anodised aluminium alloy)

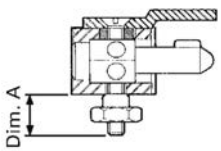
Use with HPD and HPF connectors only



No. of positions	17	29	33	41	48	53	62	65	80	98	119	149
Dimension A	30.48	45.72	50.80	60.96	49.53	76.20	60.96	91.44	76.20	91.44	109.22	134.62
Protector part no.	HPD 630	HPD 631	HPD 632	HPD 633	HPD 1059	HPD 634	HPD 1030	HPD 635	HPD 634	HPD 640	HPD 947	HPD 1178
Spacer part no. qty. 2 per	HPD 654	HPD 654	HPD 654	HPD 654	HPD 655	HPD 654	HPD 655	HPD 654	HPD 655	HPD 655	HPD 655	HPD 655

No. of positions	72	84	96	120	160
Dimension A	106.68	121.92	137.16	167.64	149.86
Dimension A/2	53.34	60.96	68.86	83.82	74.93
Protector part no.	HPD 636	HPD 637	HPD 638	HPD 639	HPD 641
Spacer part no. qty. 3 per	HPD 654	HPD 654	HPD 654	HPD 654	HPD 655

Order countersunk head screws from following table, same quantity as spacers.



Style	Dimension A			
	2 Row		3 Row	
	Max	Min	Max	Min
20-234-2047-01	3.53	2.18		
20-234-2048-01	4.59	3.12		
20-234-2049-01	5.59	4.12		
HPD 1131	6.59	5.12	3.69	2.22
20-234-2050-01	7.59	6.12	4.69	3.22
HPD 1132	3.59	7.12	5.69	4.22
20-234-2051-01	9.59	8.12	6.69	5.22

When using in 62 & 80 position insulators deduct 0.25 mm to Dimension A (3 Row)

ACCESSORIES

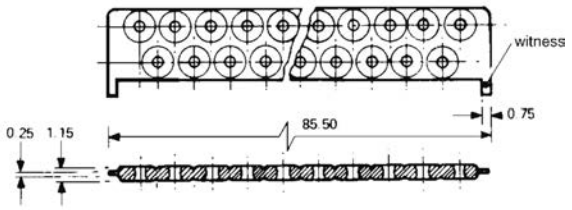
SEALING GASKETS

CODE NO. HPD 751 (fluorosilicone) 2 ROW GASKET

May be cut to suit all sizes by the user, above 65 positions two gaskets are required per connector.

CODE NO. HPF 197 (silicone) 3 ROW GASKET

May be cut to suit all sizes by the user, above 98 positions two gaskets are required per connector.
Similar to that illustrated but with three row configuration.



ALIGNMENT COMB

FOR EUROPEAN MARKET

Connector halves having 90° through board terminations are supplied fitted with an alignment comb to facilitate mounting to the board or panel.

Code HPD 354/No. of positions
Code HPF 107/No. of positions
Code HPM 111/No. of positions

CRIMP INFORMATION

AWG	Number and nominal diameter of wires	Crimp tool selector position
22	19 / 0.15 mm	5
24	7 / 0.20 mm	5
24	19 / 0.118 mm	4
26	7 / 0.15 mm	4

TOOLS

Contact extraction tool:	HPD 286
Spare tips for above:	HPD 280
Contact insertion tool:	use non ferrous long pointed tweezers
Crimp tool positioner:	HPD 309
Crimp tool:	MIL-C-22520/2.01

Disclaimer 2014

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.
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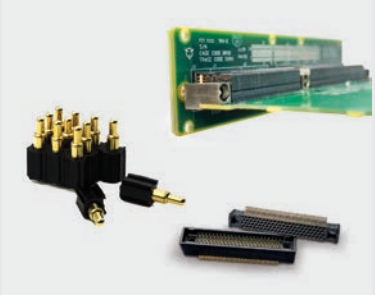
SMITHS CONNECTORS
PRODUCT LINES

PCB

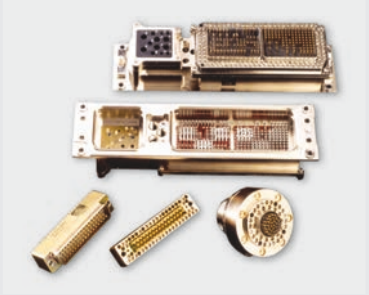


- Low, medium and high density board-to-board, cable to board and stacking
- Rugged standard
- Low profile
- Signal, power, coaxial & high speed configurations
- Self configurable board-to-board
- Spring probe connectors
- Mixed signal, power and coaxial contact connectors
- Different termination styles: solder cup, crimp, SMT and SMT flex, press fit, solder dip.

POWER

- Circular
- Configurable rectangular
- Ruggedized
- Single and Multi-Way Connectors
- Power contact up to 1,200 Amps
- Excellent performance in harsh environment conditions
- Cable assembling

EMI/EMP FILTER



- EMI/RFI filtering and transient protection
- RoHS compliant solderless filter connectors available
- Circular, ARINC, D-Subminiature Micro-D
- Filtered adapters for “bolt on” EMI /EMP solutions
- Filter hybrid capability

MODULAR/RECTANGULAR

- Configurable with modules for signal, power, coax, fiber optics and/or pneumatics
- Easy configuration in a single frame
- For rack & panel, and cable applications
- Guided hardware for blind
- D-sub connectors
- Micro-D style
- Signal connectors for hand held and docking stations

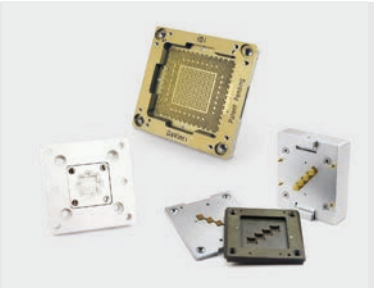
CIRCULAR

- Metal and Plastic
- Industrial M12, M23, M40, M58
- Crimp and solder terminations
- Various types of cable clamps
- Push Pull/ latch mechanism
- Color coding

HEAVY DUTY

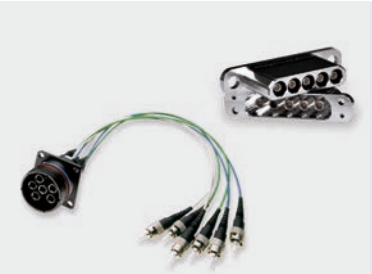
- Ultra reliable hyperboloid contact
- Modular solution: signal, power, data contacts, and fiber optics
- High resistance in harsh environment
- EMC shielding
- Easy cable mounting
- High pressure up to 35K PSI, 250° C
- High temperature up to 440°C

SPRING PROBES



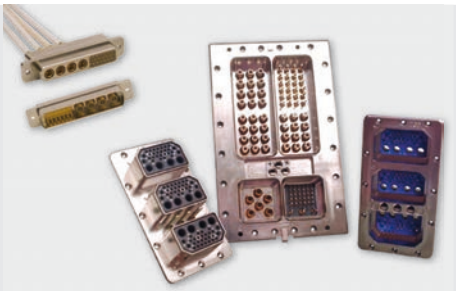
- Z-axis compliant
- Blind mate engagement
- Long cycle life
- High density
- Extreme miniaturization
- Printed circuit board test
- Bare board test
- Coaxial contacts

MIL/AERO STANDARD



- Standard military interface
- ARINC interface
- ARINC 801
- Custom inserts

HIGH SPEED COPPER/FIBER



- Quadrax and Twinax Connectors
- Rugged D-Sub Connectors
- ARINC and MIL-STD Contacts
- Micro Twinax/Quadrax
- Butt-Joint and Expanded Beam Contacts
- ARINC 801 Termini
- Floating Fiber Termini

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