

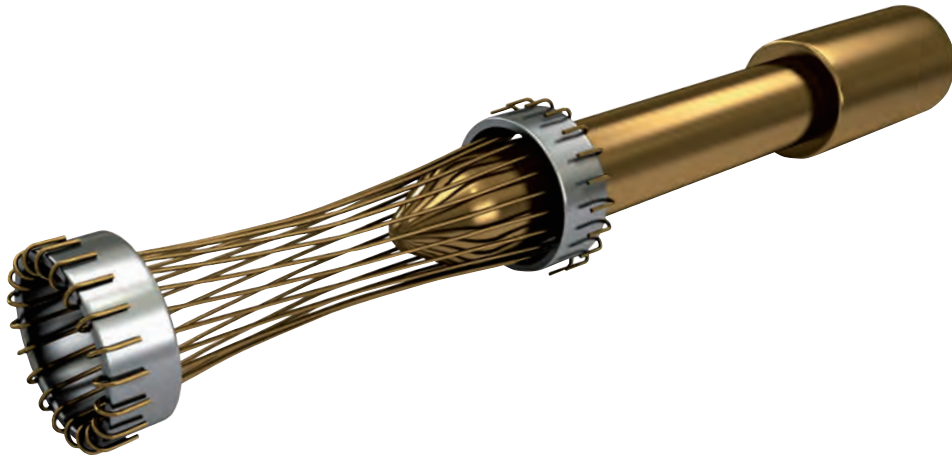
HPW CONNECTOR SERIES

Mixed Signal & Power Connectors



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

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.

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.

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.

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.

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.

BENEFIT

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.

LOW COST OF OWNERSHIP

The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

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.

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.

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.

PRODUCT DESCRIPTION

Mixed power & signal PCB connector, qualified at system level for civil and military programmes.

HPW connectors offer:

- Signal and power contacts
- High reliability contacts

for the Military, Aero Space, Marine, Rail and Industrial market.

TECHNICAL CHARACTERISTICS

Contact number	63, 92, 100 & 107 ways
Contact Diameter	size 22 0,75 mm nominal & size 16 1,58 mm nominal
Current Rating	size 22 5 A & size 16 15 A
Contact Resistance	size 22 7 mΩ (max) & size 16 3 mΩ (max)
Contact mating force	size 22 0,28 N (average) & size 16 0,56 N (average)
Contact Life Cycle	> 2,000
Breakdown Voltage Between Contacts	1,920 V AC (min) <i>[sea level]</i>
Dielectric Withstanding Voltage	1,400 V AC (min) <i>[sea level]</i>
Temperature Rating	-55 to +125 Degree C
Insulation Resistance	5 GΩ @ 500 V DC (min)
Insulator Material	PPS
Contact - Material - Plating (Mating surfaces)	Copper alloy MIL-G-45204 gold plated
Guide Hardware - Material - Plating	Stainless steel Passivated

HOW TO ORDER



1 ▶ CONNECTOR FAMILY

2 ▶ NO. OF CAVITIES

063 **092** **100** **107**

3 ▶ CONTACT PLATING

U SEE BELOW **S** U PLATING WITH TIN DIPPED TERMINATION

4 ▶ CONTACT GENDER

M MALE **F** FEMALE

5 ▶ CONTACT TERMINATION

0 NO CONTACTS **C** CRIMP BUCKET **X** THROUGH BOARD SOLDER - 180°
B THROUGH BOARD SOLDER - 90° **M** MIXED

Note: not all combinations are available

6 ▶ POLARISING/GUIDES

CA MALE JACKING, POLARISED, FREE ROTATING **TA** FEMALE JACKING, POLARISED, VERTICAL MOUNT
NB MALE POLARISED, VERTICAL MOUNT **FE** FEMALE POLARISED, VERTICAL MOUNT
FB FEMALE POLARISED, FLOAT MOUNT **NC** MALE POLARISED, TRANSVERSE MOUNT
FF FEMALE POLARISED, TRANSVERSE MOUNT

7 ▶ STANDARD VARIATIONS

000 STANDARD **0P0** BACK POTTING NON READABLE CODE = CONTACT MIX CONFIGURATION ETC.

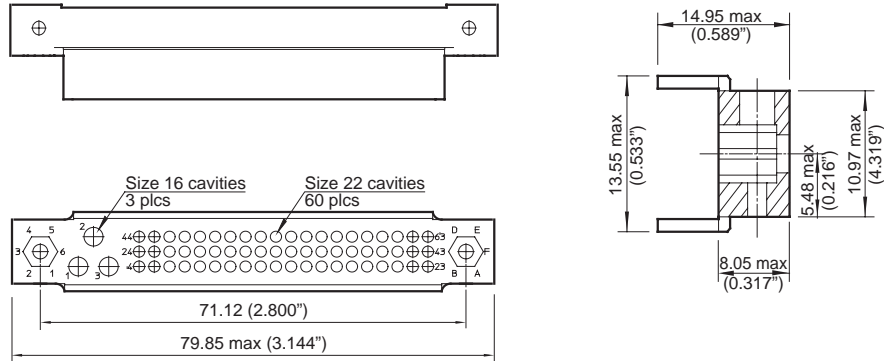
CONTACT PLATING FINISHES

Connector finish ordering code	Description	Component	Component finish ordering code	Conforms to	Plating Thickness*
U	Gold Plate	Socket	-/9	MIL-G45204 (Type II, Grade C, Class 1)	1.27 µm gold plate 50 µin gold plate <i>minimum</i>
		Pin	-/7	MIL-G45204 (Type II, Grade C, Class 1)	1.27 µm gold plate 50 µin gold plate <i>minimum</i>

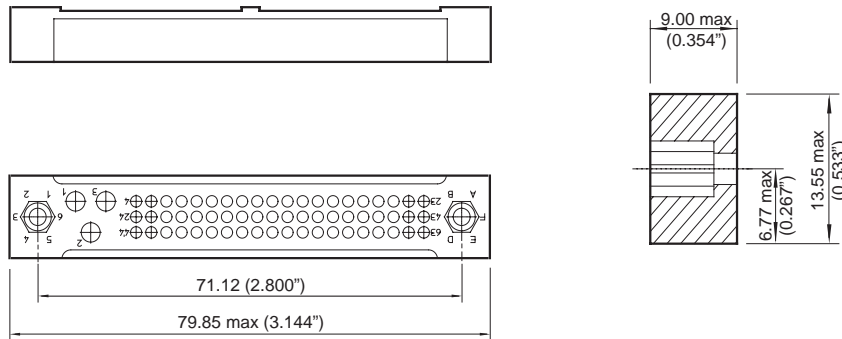
* These values apply to mating surfaces

STANDARD INSULATORS

63 WAY MALE HALF



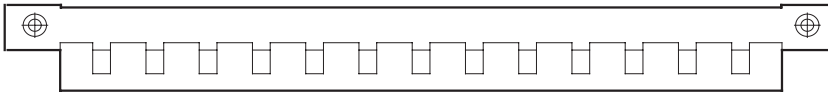
63 WAY FEMALE HALF



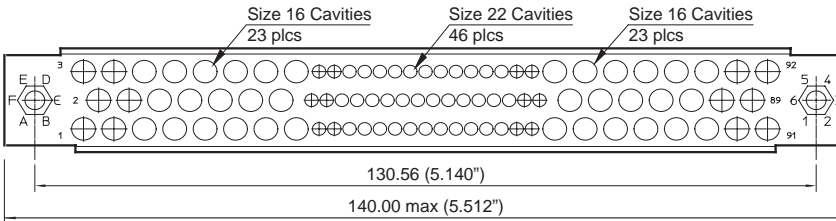
Dimension are in mm and inches

STANDARD INSULATORS

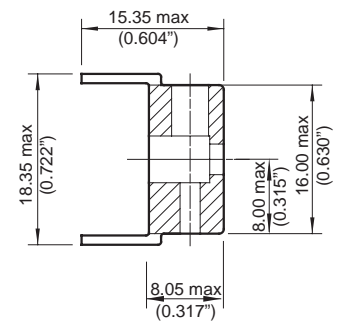
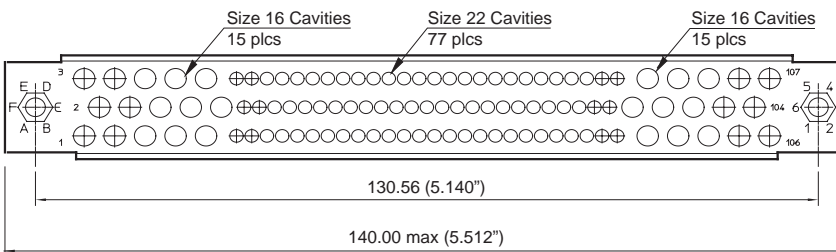
92 & 107 WAY MALE HALVES



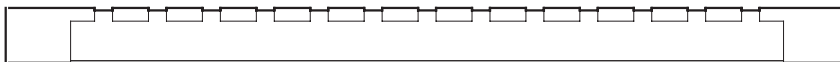
92 WAY HALF



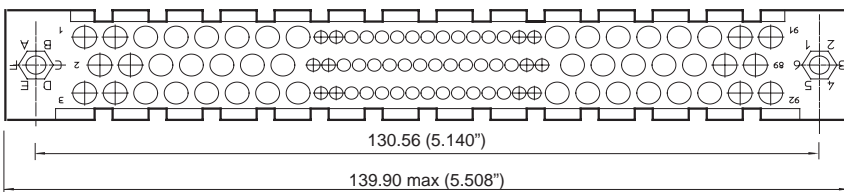
107 WAY HALF



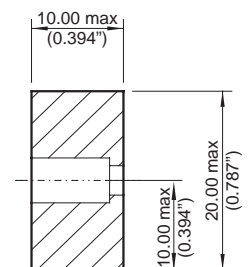
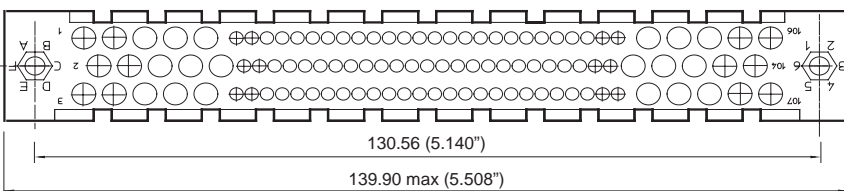
92 & 107 WAY FEMALE HALVES



92 WAY HALF

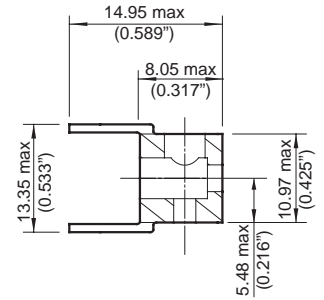
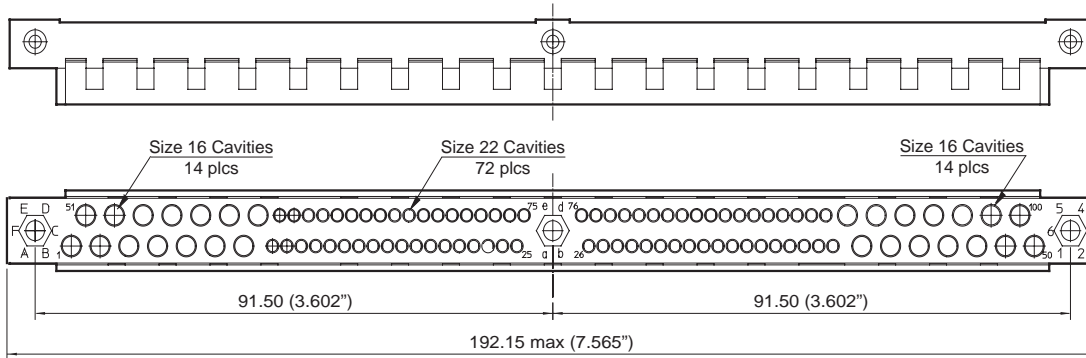


107 WAY HALF

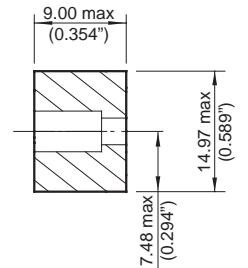
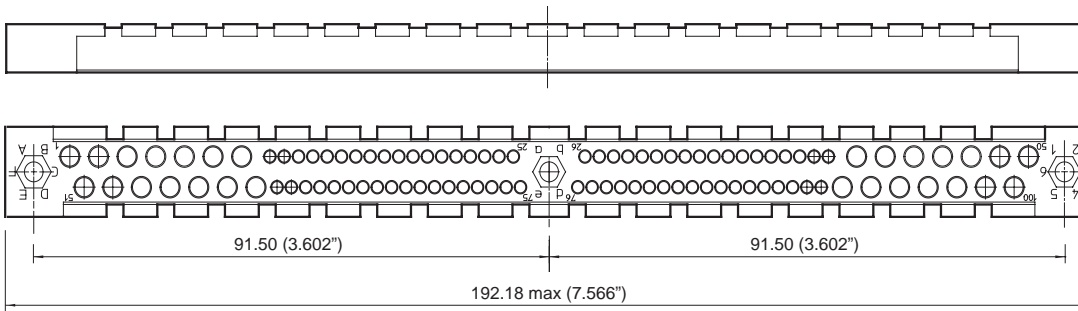


STANDARD INSULATORS

100 WAY MALE HALF



100 WAY FEMALE HALF



TOOLING

	Crimp tool (MIL specification)	Positioner	Extraction tool	Insertion tool
Size 22 contacts	M22520/2-01	HPW-501	HPW-521	Pair of Non-ferrous tweezers
Size 16 contacts	M22520/1-01	HPW-502	HPW-512	Pair of Non-ferrous tweezers

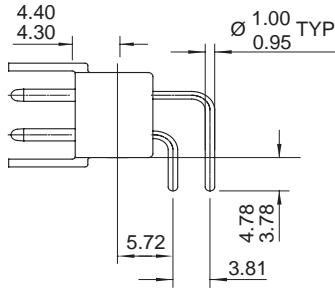
STANDARD PCB TERMINATIONS

MALE HALF

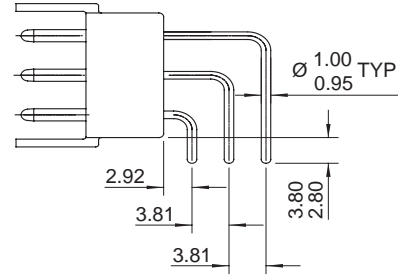
TERMINATION B: THROUGH BOARD SOLDER 90°

SIZE 16

63 way & 100 way

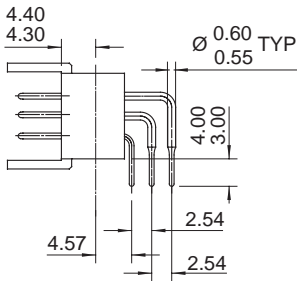


92 way & 107 way

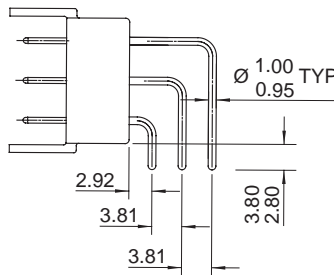


SIZE 22

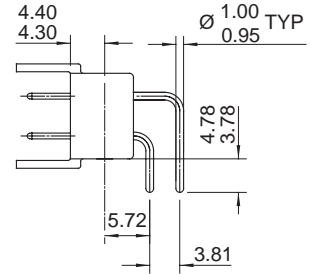
63 way



92 way & 107 way



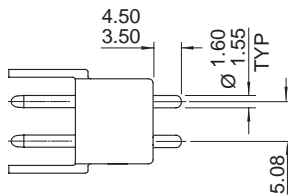
100 way



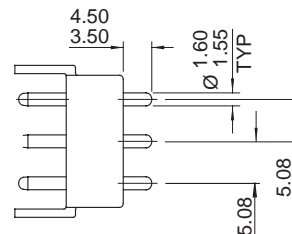
TERMINATION X: THROUGH BOARD SOLDER 180°

SIZE 16

63 way & 100 way

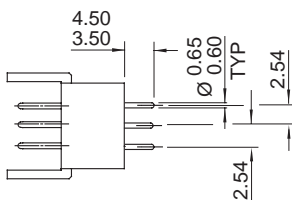


92 way & 107 way

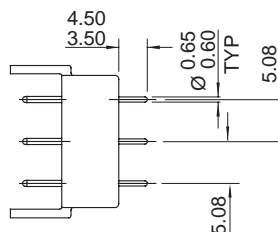


SIZE 22

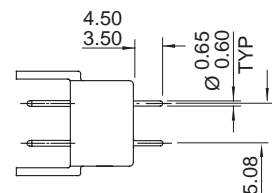
63 way



92 way & 107 way



100 way



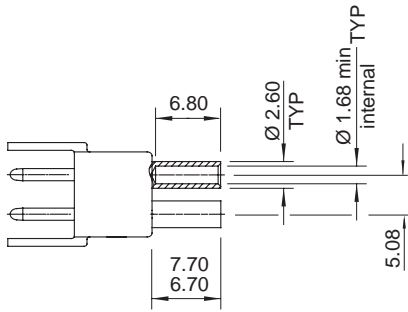
STANDARD PCB TERMINATIONS

MALE HALF

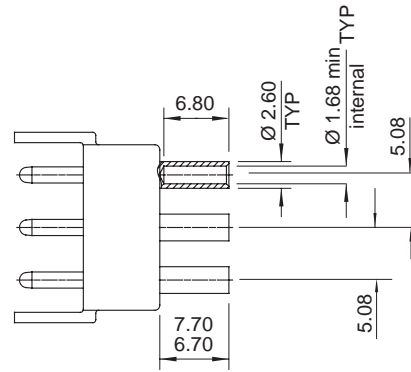
TERMINATION C: CRIMP BUCKET

SIZE 16

63 way & 100 way

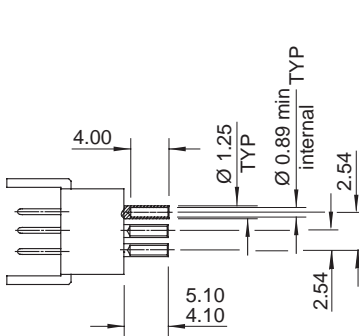


92 way & 107 way

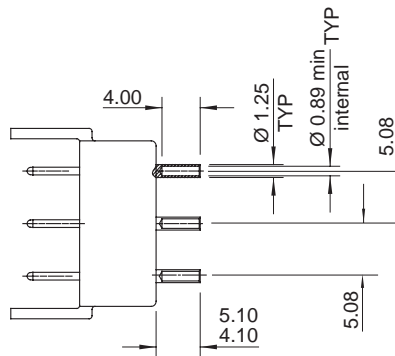


SIZE 22

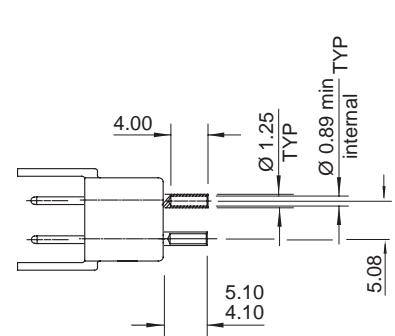
63 way



92 way & 107 way



100 way



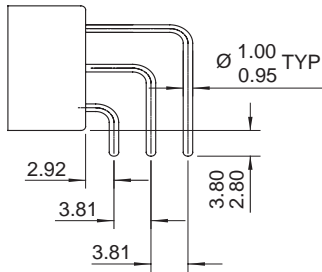
STANDARD PCB TERMINATIONS

FEMALE HALF

TERMINATION B: THROUGH BOARD SOLDER 90°

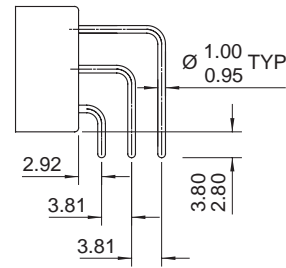
SIZE 16

92 way & 107 way



SIZE 22

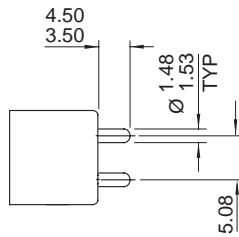
92 way & 107 way



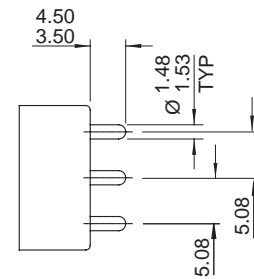
TERMINATION X: THROUGH BOARD SOLDER 180°

SIZE 16

63 way & 100 way

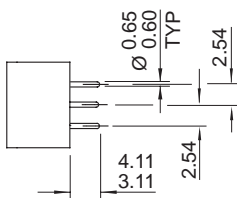


92 way & 107 way

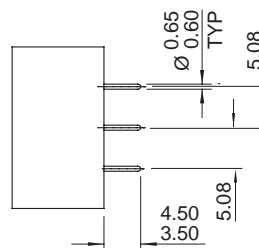


SIZE 22

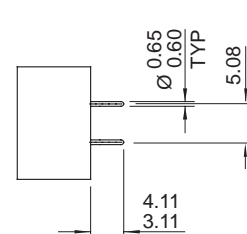
63 way



92 way & 107 way



100 way



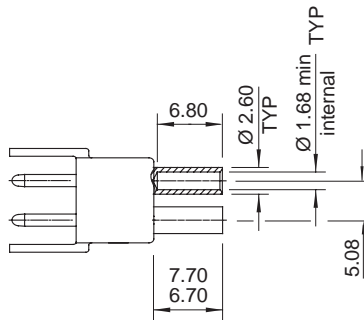
STANDARD PCB TERMINATIONS

FEMALE HALF

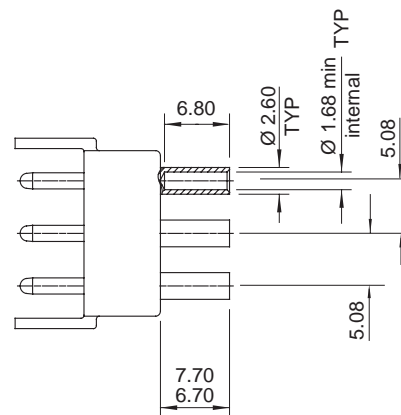
TERMINATION C: CRIMP BUCKET

SIZE 16

63 way & 100 way

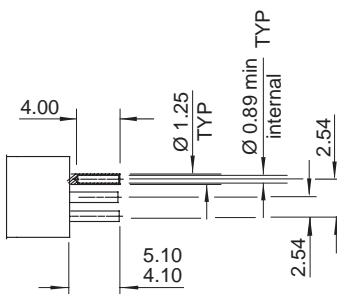


92 way & 107 way

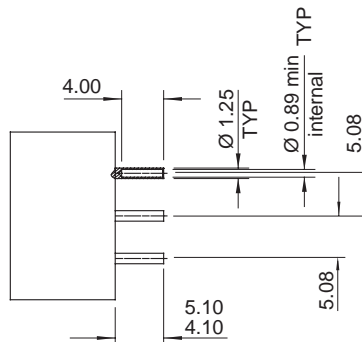


SIZE 22

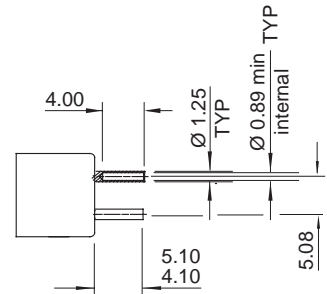
63 way



92 way & 107 way



100 way



▶ STANDARD GUIDES MALE/FEMALE

MALE GUIDE INDEX

Style CA	Jacking, free rotating	Polarised	Vertical mounting
Style NB		Polarised	Vertical mounting
Style NC	Bracket (92; 107 way only)	Polarised	Transverse mounting

FEMALE GUIDE INDEX

Style FB	Float	Polarised	Vertical mounting
Style FE		Polarised	Vertical mounting
Style FF	Bracket	Polarised	Transverse mounting
Style TA	Jack socket	Polarised	Vertical mounting

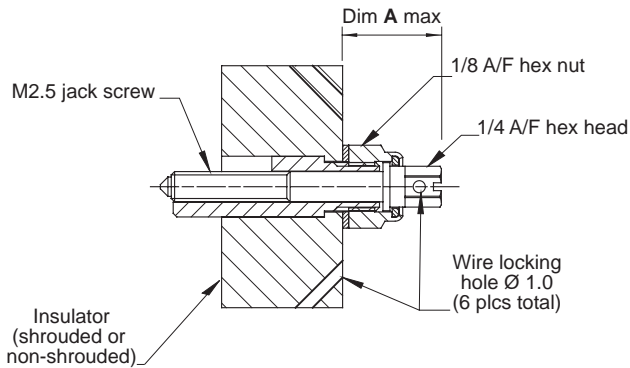
Male guides

		CA	NB	NC
Female guides	FB			
	FE			
	FF			
	TA			

STANDARD GUIDES MALE

STYLE CA

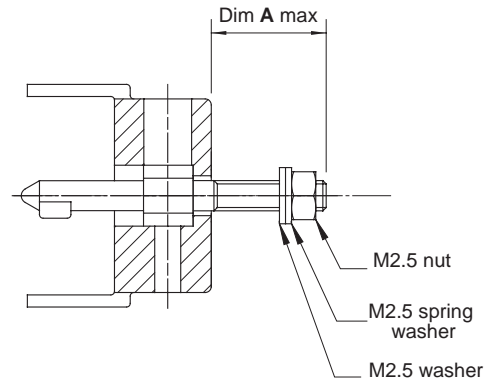
Jacking Polarised, Free Rotating (92; 107 way)



Style	Dim A max (mated)	Dim A max (free)
CA	8.60 0.339"	8.25 0.325"

STYLE NB

Polarised, Vertical Mount (63; 92; 100; 107 way)

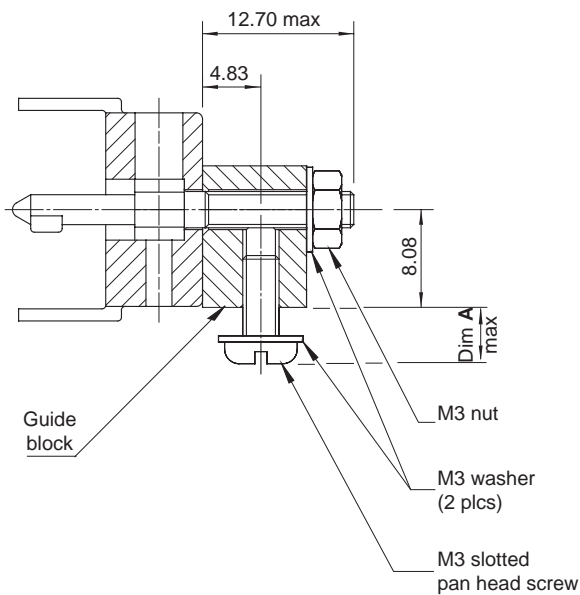


Style	Board thickness max	Dim A max
NB	5.60 0.220"	9.75 0.384"

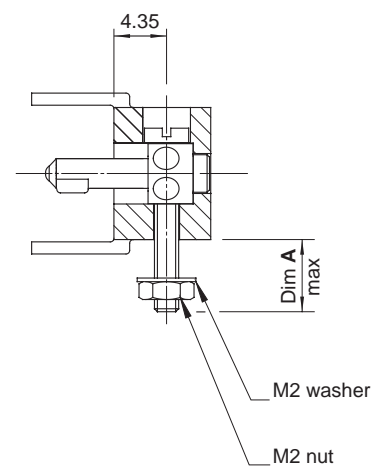
STYLE NC

Polarised, Transverse Mount

(92; 107 way)



(63; 100 way)

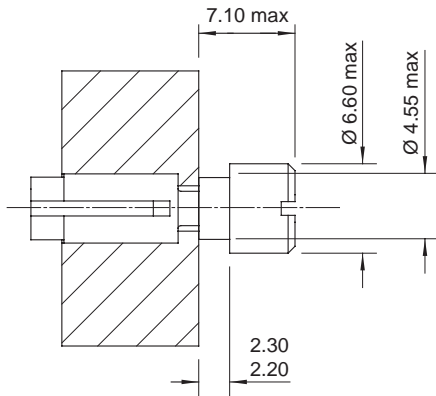


Ways (Style NC)	Board thickness max	Dim A max
63 way	2.00 0.079"	5.40 0.213"
100 way	5.00 0.197"	8.40 0.331"
92; 107 way	3.10 0.122"	5.50 0.217"

STANDARD GUIDES FEMALE

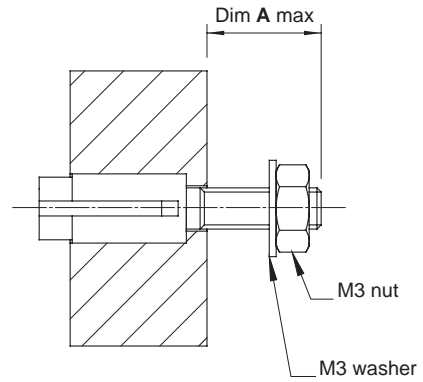
STYLE FB

Polarised Float Mount Socket, Vertical (92; 107 way)



STYLE FE

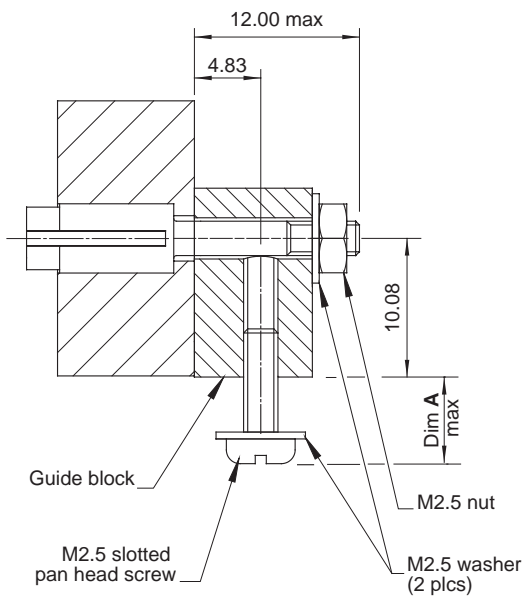
Polarised Socket, Vertical Mount (63; 92; 100; 107 way)



Ways (Style NC)	Board thickness max	Dim A max
63; 100 way	4.50 0.177"	8.30 0.327"
92; 107 way	4.70 0.185"	8.50 0.335"

STYLE FF

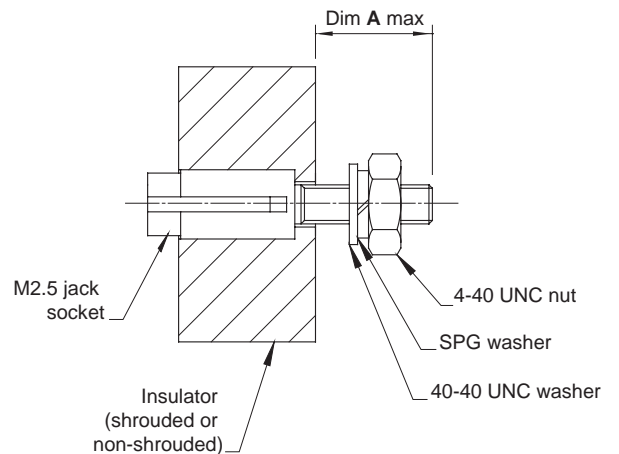
Polarised Socket, Transverse Mount (92; 107 way)



Style	Board thickness max	Dim A max
FF	4.00 0.157"	6.50 0.256"

STYLE TA

Polarised Jack Socket, Vertical Mount (92; 107 way)

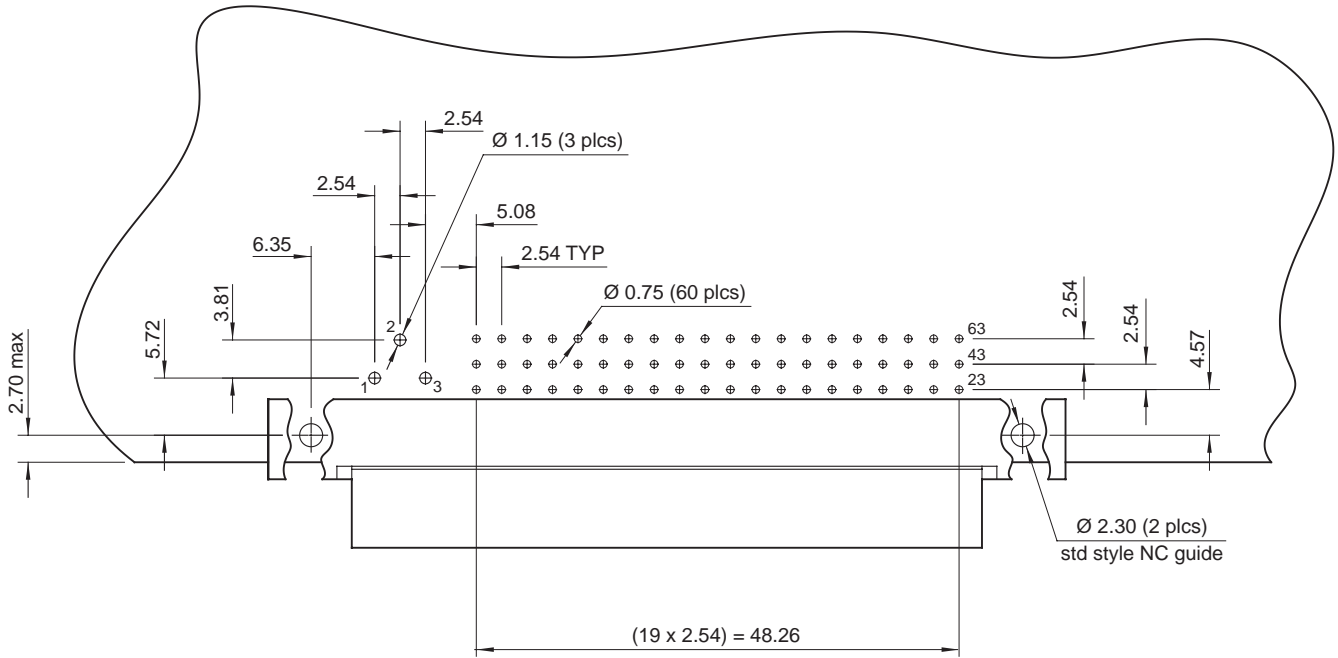


Style	Panel thickness max	Dim A max
TA	2.70 0.106"	8.50 0.335"

► PCB STANDARD 90° PREPARATIONS DETAILS

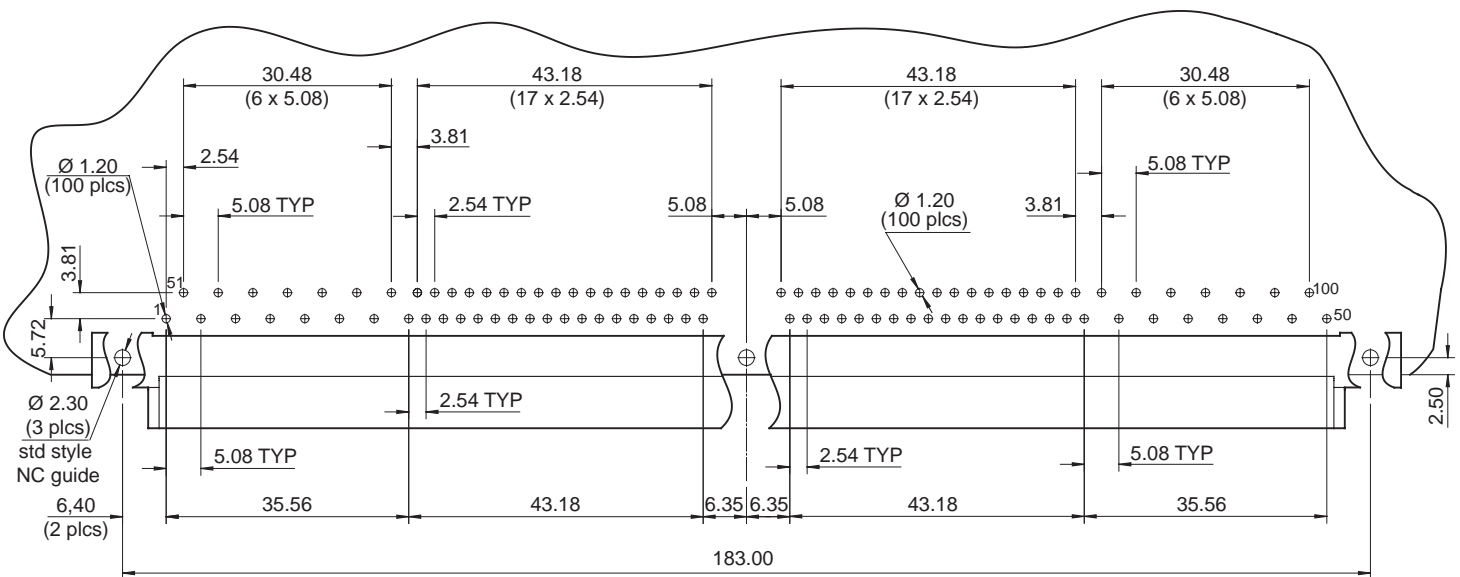
63 WAY 90° PCB LAYOUT

MALE



100 WAY 90° PCB LAYOUT

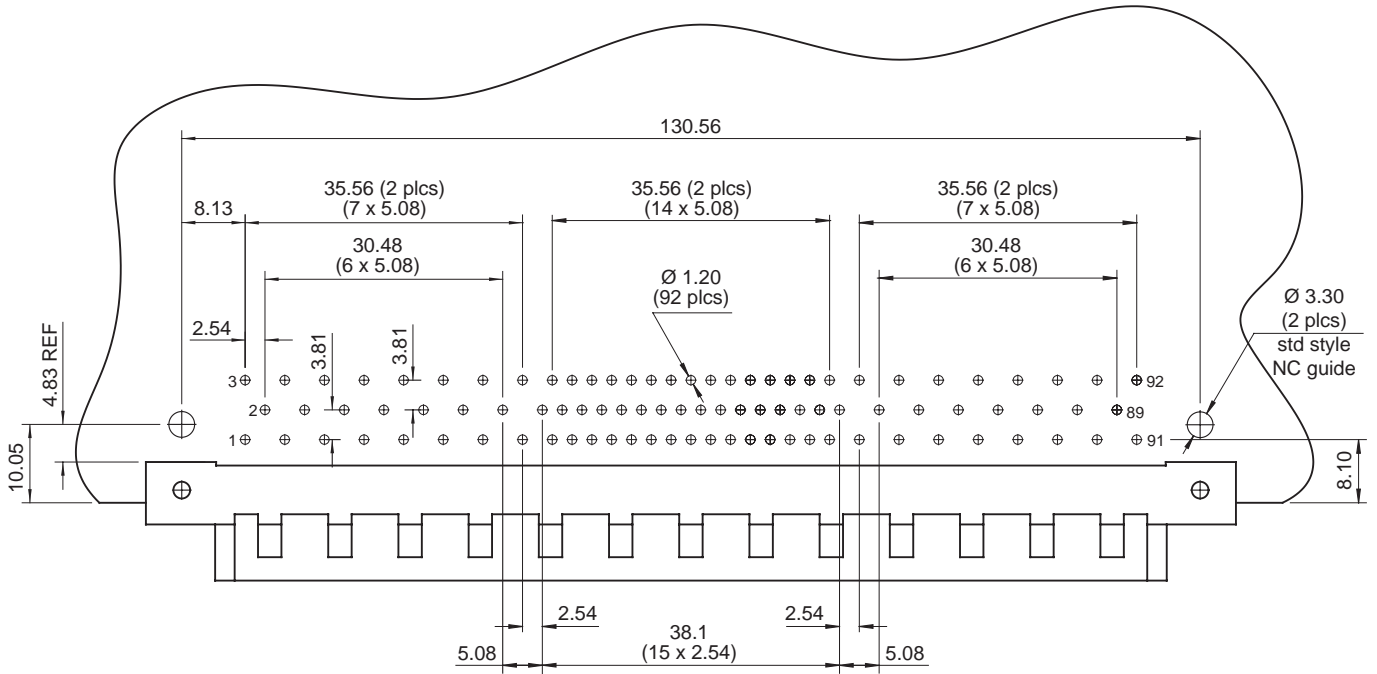
MALE



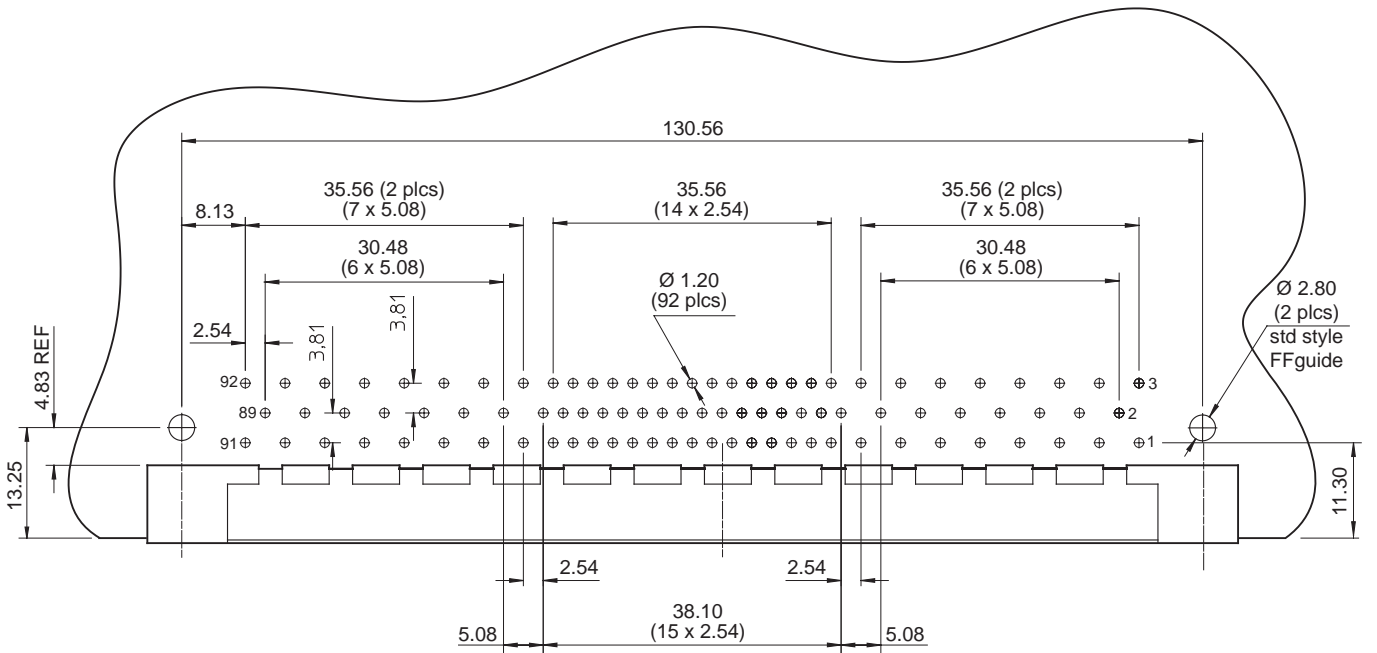
► PCB STANDARD 90° PREPARATIONS DETAILS

92 WAY 90° PCB LAYOUT

MALE



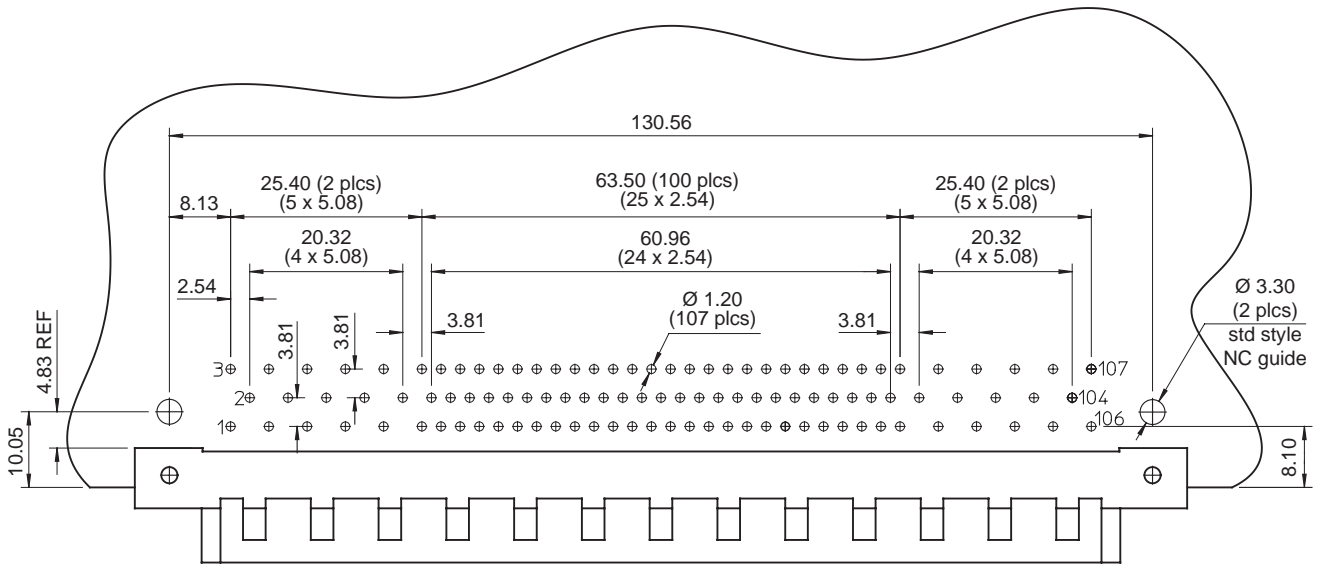
FEMALE



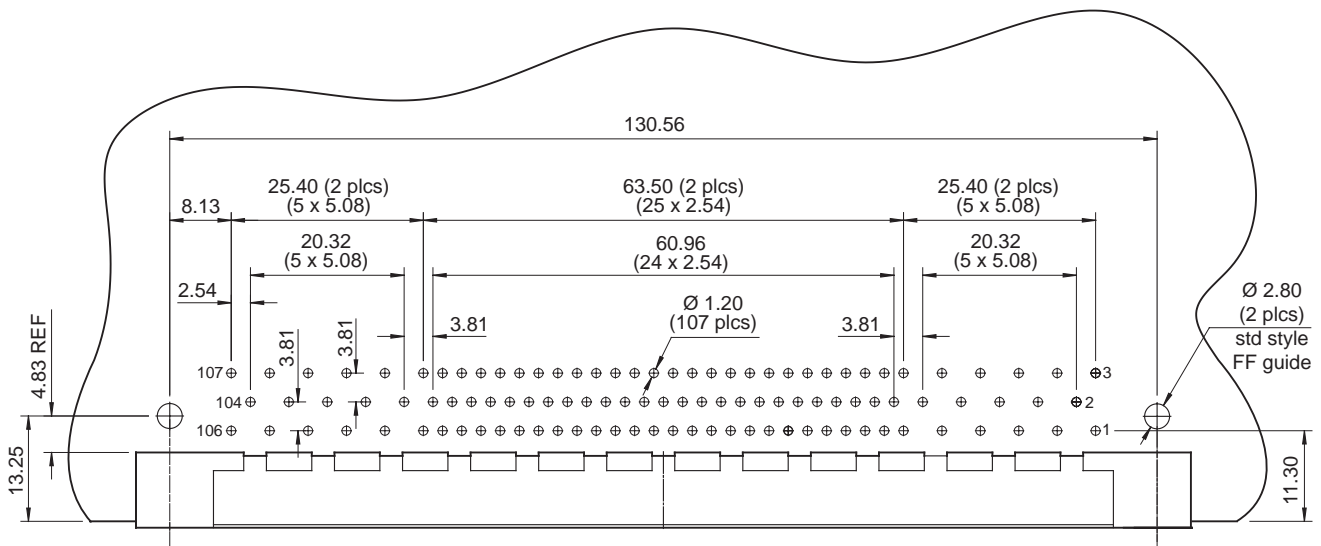
► PCB STANDARD 90° PREPARATIONS DETAILS

107 WAY 90° PCB LAYOUT

MALE



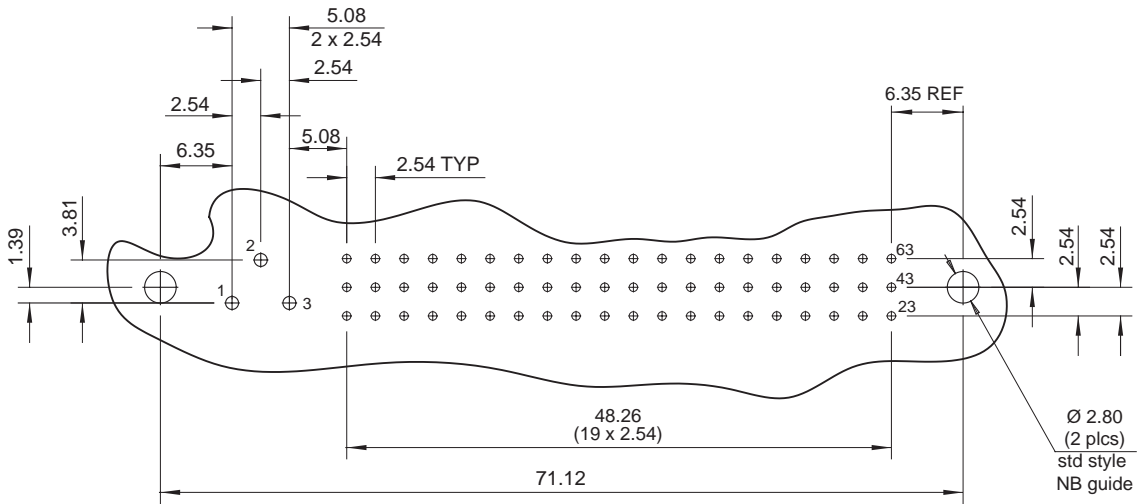
FEMALE



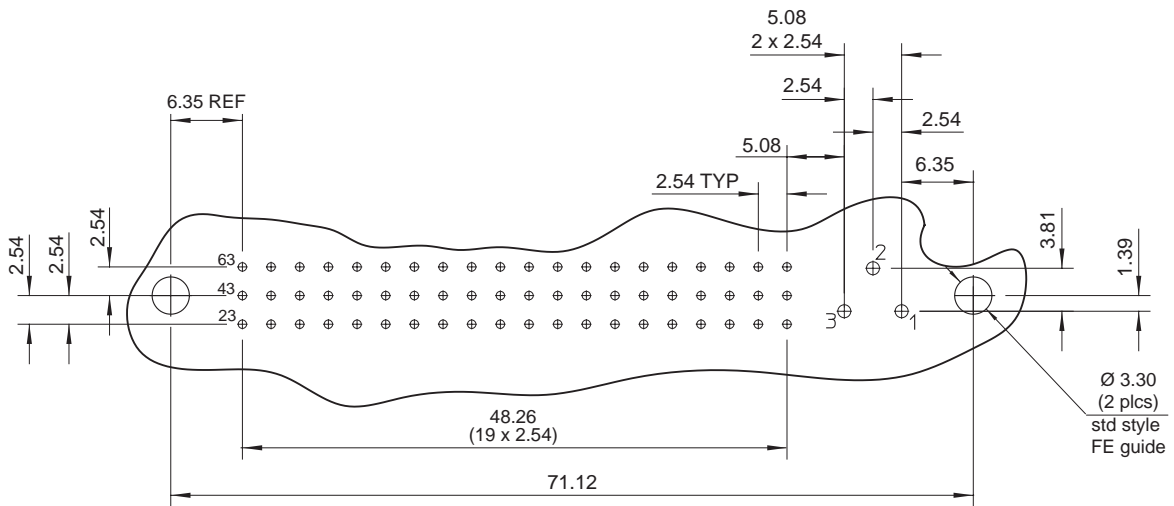
► PCB STANDARD 180° PREPARATIONS DETAILS

63 WAY 180° PCB LAYOUT

MALE



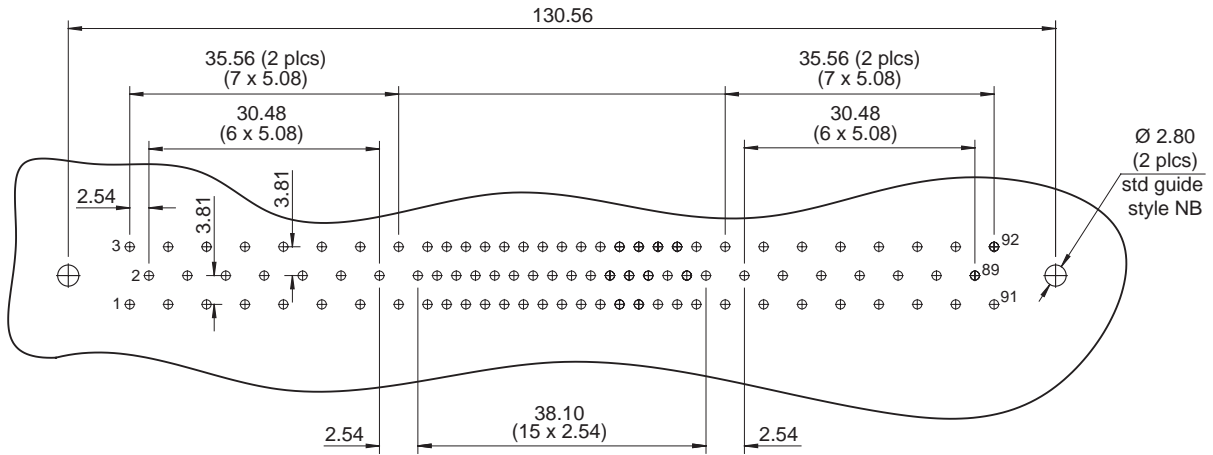
FEMALE



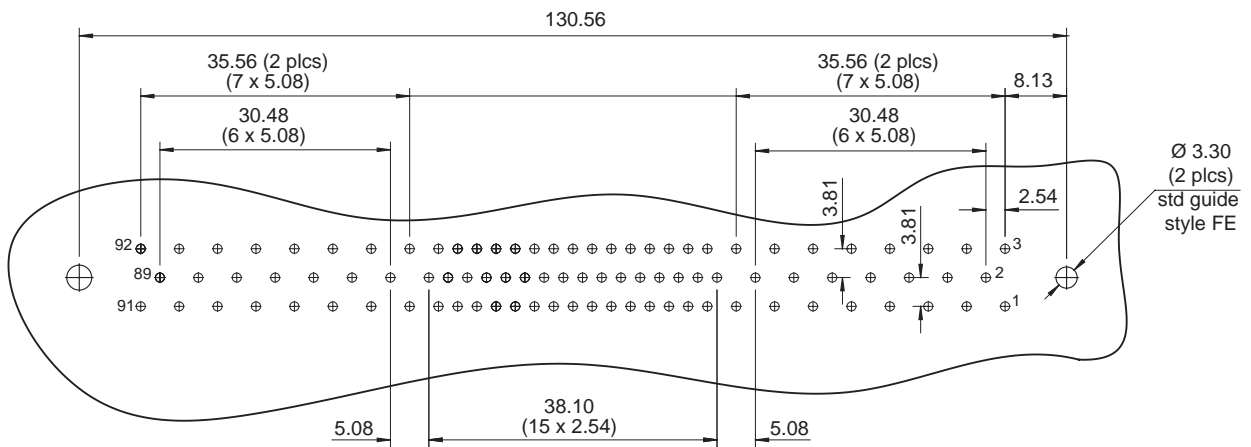
► PCB STANDARD 180° PREPARATIONS DETAILS

92 WAY 180° PCB LAYOUT

MALE



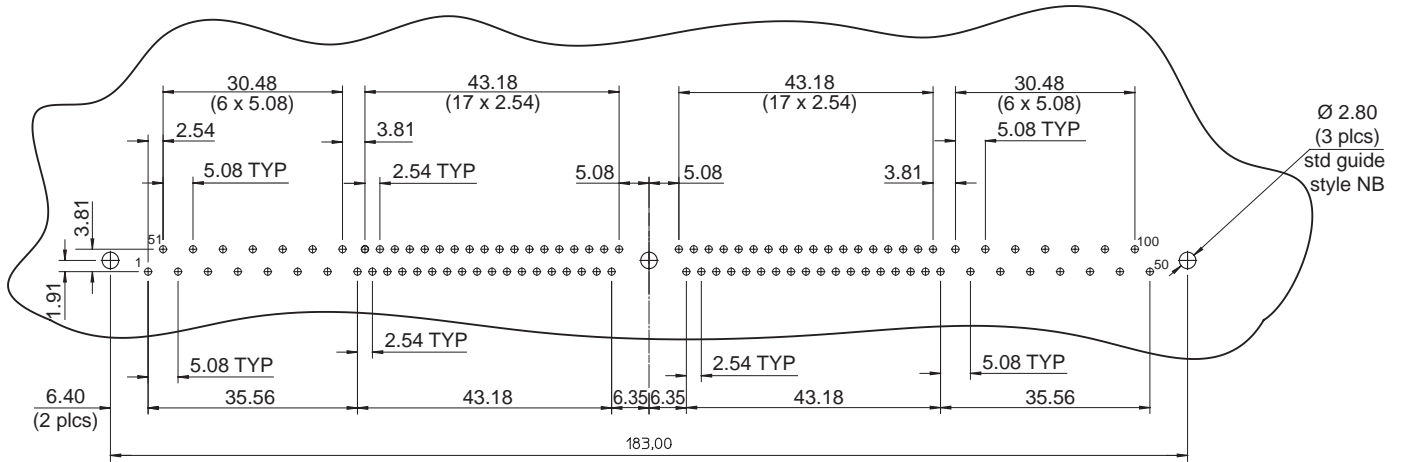
FEMALE



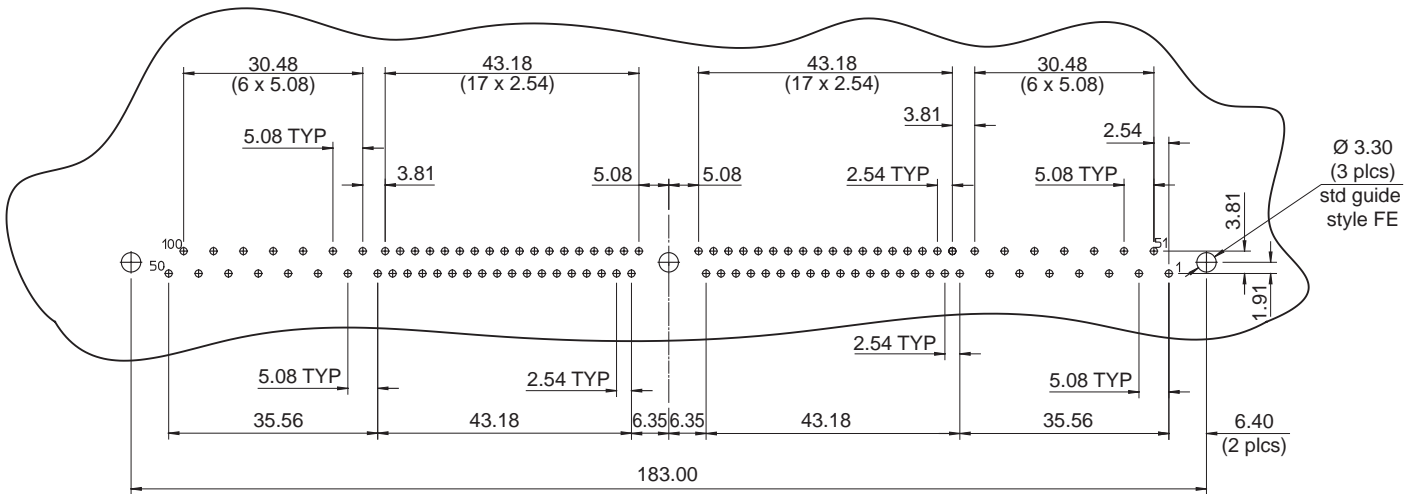
► PCB STANDARD 180° PREPARATIONS DETAILS

100 WAY 180° PCB LAYOUT

MALE



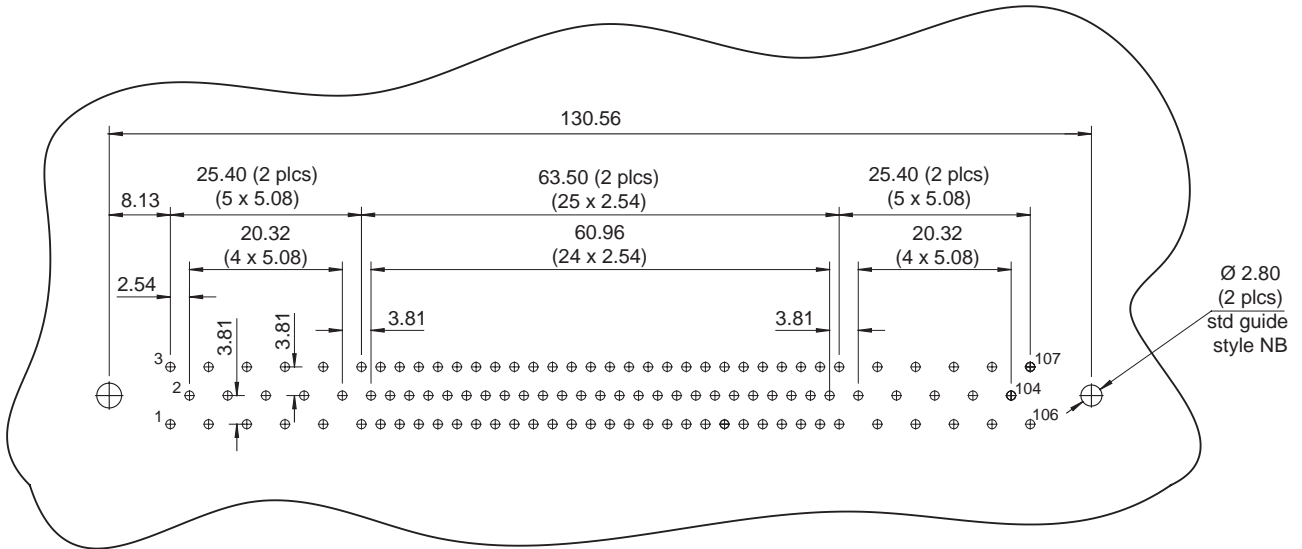
FEMALE



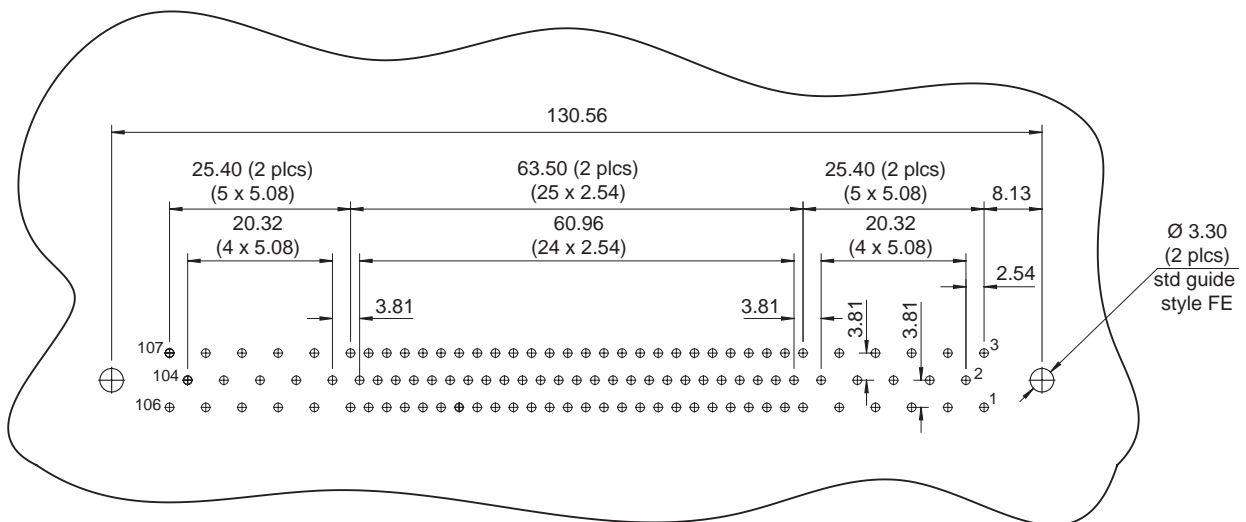
► PCB STANDARD 180° PREPARATIONS DETAILS

107 WAY 180° PCB LAYOUT

MALE



FEMALE



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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



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



SMITHS CONNECTORS

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