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## 1.0 OBJECTIVE

This specification provides information and requirements regarding customer application of Metral™ B series vertical solder to board receptacles. This specification is intended to provide general guidance for process development. It is recognized that no single process will work under all customer applications and that customers will develop their processes to meet their needs. However, FCI cannot guarantee results if these processes vary from the recommendations.

## 2.0 SCOPE

This specification provides information and requirements regarding customer application of Metral™ B series vertical solder to board receptacles.

## 3.0 REFERENCE DOCUMENTS

Any applicable product drawing  
GS-12-002, Metral™ Connector System

## 4.0 GENERAL

This document is meant to be an application guide. If information varies from that in the product drawings and specifications, the drawings and specifications take precedence.

This document contains the following sections:


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### 4.1 Banned/Restricted Substances

All product where the part number ends in 'LF' meet the European Union directives and other country regulations as described in GS-22-008. The part numbers that do not end in 'LF' meet all regulations except for Pb in SnPb plating.

### 4.2 Manufacturing Processability

All products covered by this specification will withstand exposure to 260°C for 60 seconds in a convection, infra-red or vapor phase reflow oven.

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## 5.0 APPLICATION INFORMATION

### 5.1 General Product Information

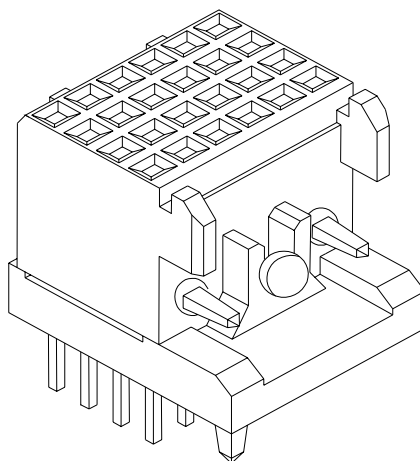


Figure 1: 4 row vertical solder to board signal receptacle.

#### 5.1.1 Location peg information

There are two location pegs on the bottom side of the connector. These pegs perform two functions:

- 1) They properly locate the connector onto the PCB
- 2) They serve as a retention feature during the subsequent soldering process


#### 5.1.2 Component masses:

Table 1: Approximate mass of components (in grams)

4 row	1 mod	2 mod	4 mod	8 mod
Housing (plastic)	1.18	2.36	4.72	9.44
Wafer (plastic)	0.51	1.02	2.04	4.08
Total assembly	2.95	5.9	11.8	23.6
5 row	1 mod	2 mod	4 mod	8 mod
Housing (plastic)	1.37	2.74	5.48	10.96
Wafer (plastic)	0.57	1.14	2.28	4.56
Total assembly	3.51	7.02	14.04	28.08

#### 5.1.3 Application forces:

For a vertical receptacle assembly the number location pegs will determine the force required to properly apply the assembly to the board before soldering. The recommended insertion force for each location peg is 53 N (12 lbf).

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## 5.2 Available Product Features

The features of vertical solder to board B-style Metral™ receptacle connectors include:

- Standard module size is 12 mm.
- 4 row and 5 row configurations are available.
- Each 4 row 12mm module contains 24 signal terminals or 8 power terminals.
- Each 5 row 12mm module contains 30 signal terminals or 10 power terminals.
- Signal terminals are located on a 2 mm x 2 mm grid for high signal density.
- 1, 2, 4, and 8 module connectors are standard. Other sizes are available.
- Standard tail lengths include 2.65mm (for use with a 1.6mm nominal thickness PCB), 3.45mm (for use with a 2.4mm nominal thickness PCB), and 4.25mm (for use with a 3.2mm nominal thickness PCB)
- Terminals may be selectively loaded.
- Available accessories which are end-to-end stackable include guide, keying, DIN power, and Din coax.

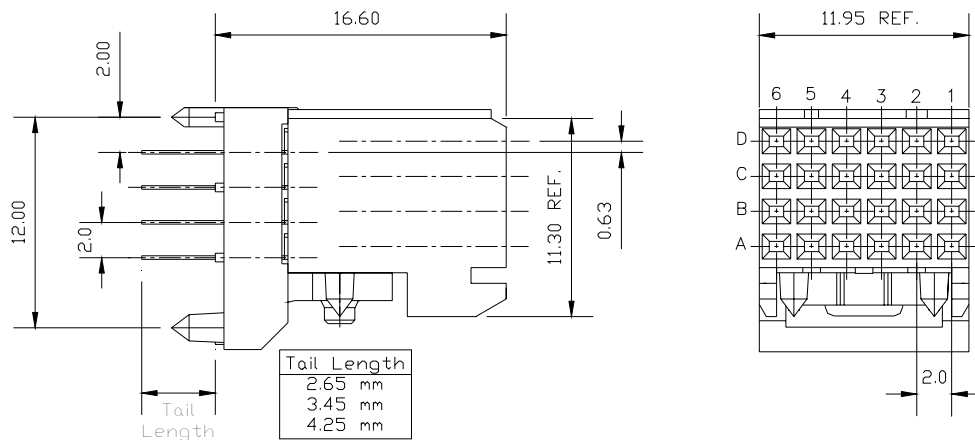



Figure 2: Vertical solder to board 4 row signal receptacle (all dimensions in mm)

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### 5.3 PCB Requirements

The features that are important to define on the printed circuit board when using press fit technology are:

- Drilled hole diameter
- Plated hole diameter
- Plating type in thru hole
- Printed circuit board thickness
- Land/pad size

The recommended values are shown on customer drawing 58531, and a sketch showing these features is shown in Figure 3.

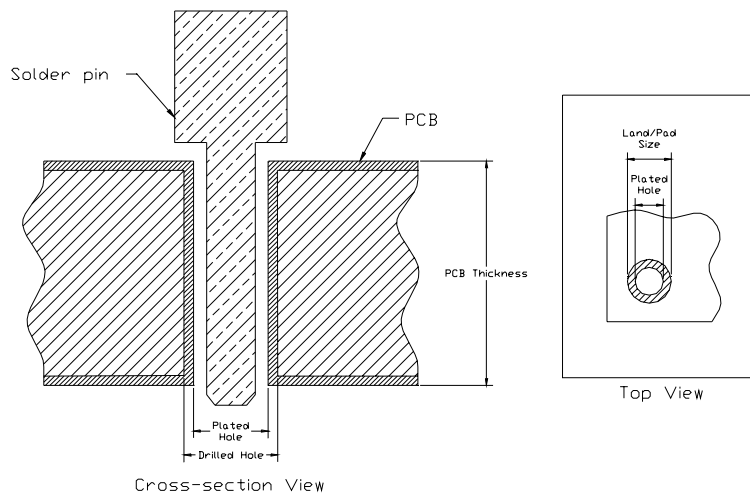



Figure 3: Critical features of PCB design for Metral™ Connectors.

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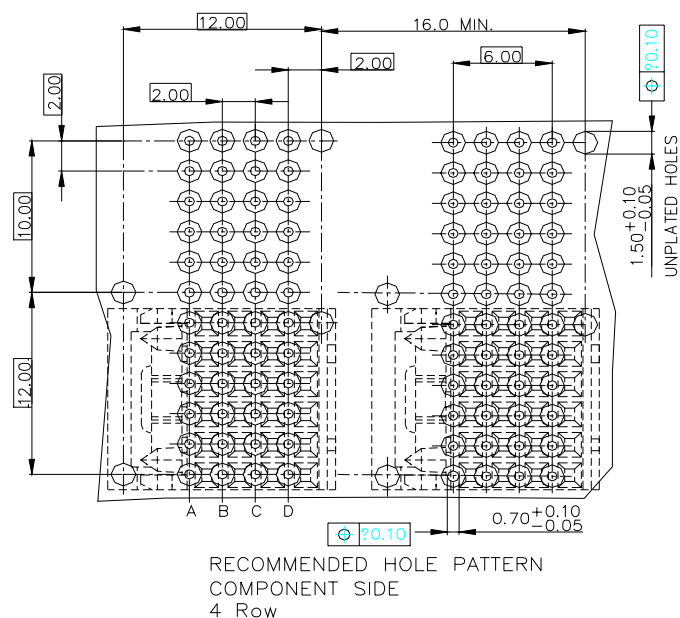
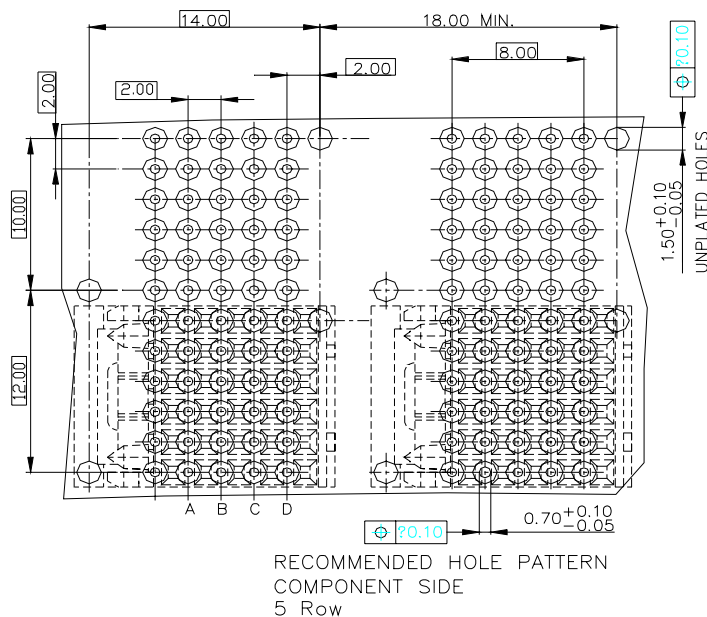



Figure 4: Board layout for right vertical solder to board receptacles (all dimensions in mm)

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#### 5.4 Customer Design Considerations

- Receptacles should be placed on 12 mm increments within a slot to be consistent with the preferred module placement). If 12 mm increments are not possible, receptacles should be placed on multiples of 2 mm within a slot.
- Keep receptacles a minimum of 4 mm from any edge of the backpanel to avoid handling and shipping damage.
- In applications that require additional components to be mounted from the non-component side, a minimum slot spacing of 22 mm is preferred to accommodate fixturing.
- The solder tail on the vertical solder to board receptacle is offset relative to the mating contact window. This offset distance, 0.63 mm, is shown in Fig. 5.
- Refer to Fig. 6 for nominal board-to-board offsets for fully mated vertical receptacles.

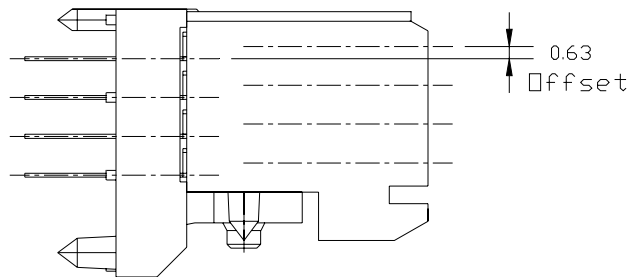


Figure 5: Vertical solder to board receptacle offset

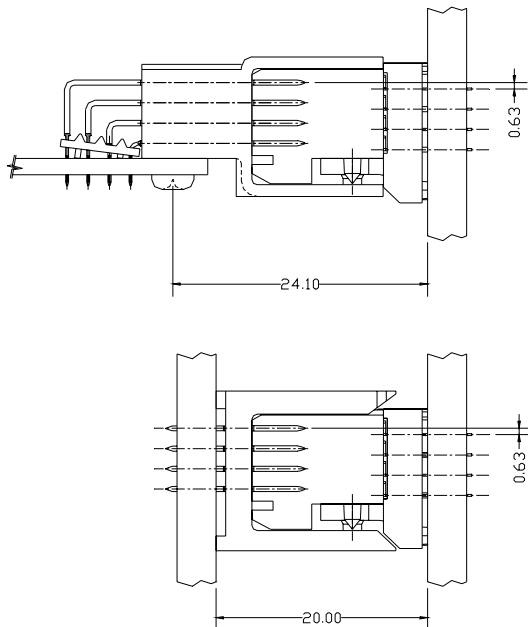



Figure 6: Nominal board-to-board offsets for vertical receptacles mated to r/a and vertical headers

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### 5.5 Customer Application Machines (CAMS)

There are no special CAM's for this product. The required top press tool is simply a "flat rock" tool. Be sure there is a bottom fixture that allows the tails to protrude through the board while applying the connectors.

### 5.6 Post-Installation Inspection Criteria

#### **Gap between bottom surface of receptacle housing and top surface of PCB**

In order to decrease the risk of interference between mating connector parts during insertion of the circuit board into the shelf system, it is desirable to not have a gap larger than 0.2mm (.008in) between the bottom surface of the connector receptacle housing and the top surface of the PCB.

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### REVISION RECORD

REV	PAGE	DESCRIPTION	EC#	DATE
A	All	New Release	V90298	03/19/99
B	All	Revised format to be consistent with GS-01-001, and change BERG, Dupont, etc. references to FCI.	V01922	08/07/00
C	All	Extensive revisions including removal of performance specifications, part number tables, and order forms; added location peg force requirement of 12 lb; added post-installation inspection criteria	V11863	12/28/01
D	All	Add lead free information	V05-0936	10/31/05





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