

3.40MM SENTRALITY PIN AND SOCKET HIGH CURRENT CONNECTOR SYSTEM APPLICATION TOOLS AND SPECIFICATION



[SENTRALITY PIN AND SOCKET
INTERCONNECTS](#)

[TABLE OF CONTENTS](#)



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				1 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

Contents

1.0	SCOPE	3
2.0	PRODUCT DESCRIPTION	3
2.1	DESCRIPTION, SERIES NUMBER, AND LINKS	3
2.2	DIMENSIONS, MATERIALS, PLATINGS.....	3
3.0	APPLICABLE DOCUMENTS AND SPECIFICATION	4
4.0	MALE PIN GENERAL REQUIREMENTS	4
4.1	FOR SURFACE – MOUNT (PCB REQUIREMENTS).....	4
4.2	FOR PRESS-FIT (BUSBAR REQUIREMENTS).....	4
4.3	FOR SCREW – MOUNT (PCB OR BUSBAR REQUIREMENTS)	5
5.0	INSTALLATION OF SENTRALITY PRODUCTS	5
5.1	PRESS-FIT MALE PIN PRESS IN STEPS	5
5.2	PRESS-FIT SOCKET WITH FLOAT PRESS IN STEPS.....	9
5.3	STANDARD PRESS FIT SOCKET PRESS IN STEPS.....	13
5.4	SMT SOCKET WITH FLOAT SOLDER STEPS.....	17
5.5	STANDARD SMT SOCKET SOLDER STEPS	22
5.6	SMT MALE PIN SOLDER STEPS.....	26
5.7	SCREW MOUNT MALE PIN MOUNTING STEPS.....	30
6.0	SOLDER INFORMATION	31
6.1	SOLDER PROCESS TEMPERATURES*	31
6.2	SOLDERING PROFILE	31
7.0	SENTRALITY MATING REQUIREMENTS AND RECOMMENDATIONS.....	32
7.1	ANGLE OF MATE.....	32
7.2	FLOATING CONNECTORS	33
7.3	MULTIPLE INDEPENDENT BUSBAR MATING	34
7.4	PIN LENGTH GUIDE	34

CENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				2 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REV.A						

molex APPLICATION SPECIFICATION

1.0 SCOPE

This specification applies to the 3.40mm Sentrality Pin and Socket High Current Interconnect System for function, assembly, and use of this product.

2.0 PRODUCT DESCRIPTION

The Sentrality Pin and Socket High Power Interconnect System Connector is a single circuit connector system with available 1.00mm of actual float for high power applications connecting Busbars and PCBs. The system has Au plated socket contacts mating to Ag plated male pins.

2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

Sockets	
Series	Description
204313	Press-Fit Floater Sentrality Socket
204316	Press-Fit Standard Sentrality Socket
204318	Surface Mount Standard Sentrality Socket
204365	Surface Mount Floater Sentrality Socket
212194	Surface Mount Standard Sentrality Socket In T&R Packing
212195	Surface Mount Floater Sentrality Socket In T&R Packing
Male Pins	
203263	Male Pins with Press-Fit, SMT and Screw Mount Termination
214336	3.40mm Interposer and Power Tap pins

2.2 DIMENSIONS, MATERIALS, PLATINGS

- Dimensions: Refer to sales drawing.
- Material: RoHS compliant materials:
 - Male Pins: Copper Alloy.
 - Female Sockets:
 - Terminal Contacts: Copper Alloy.
 - Components: Copper Alloy and Stainless Steel.
- Plating:
 - Male Pins: Silver Plating with a Tarnish Inhibitor.
 - Female Sockets: Gold Plating for Terminal Contact (Mating Interference), Remaining Components are Silver Plated with Tarnish Inhibitor.
- Refer to [2043131234-TS](#) for effects of tarnish on connector.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	3 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

APPLICATION SPECIFICATION

3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

SENTRALITY High Power interconnect System - Recommended Application Tool			
Size	Type	Application Tooling	Product Specification
3.40mm (Pin and Socket)	Press-Fit Floater Sentrality Socket	2192590113	2043130018-PS
	Press-Fit Standard Sentrality Socket	2192590103	
	Press-Fit Sentrality Pin	2192590003	

Other General Molex Documents

Molex Solderability Specification SMES-152

Molex Heat Resistance Specification AS-40000-5013

Molex Moisture Technical Advisory AS-45499-001

Molex Package Handling Specification 454990100-PK

4.0 MALE PIN GENERAL REQUIREMENTS

The Sentrality Pin requires mounting to a PCB or Busbar via Surface-Mount, Screw-Mount or Press-Fit termination. Below section provides general requirements for each termination style.

MOUNTING REQUIREMENTS:

- Mounting to PCB: Use SMT or Screw Mount Pins Only
- Mounting to Busbar: Use Press Fit or Screw Mount Pins only

4.1 FOR SURFACE – MOUNT (PCB REQUIREMENTS)

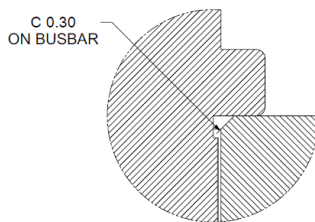
1. Minimum PCB Thickness: Refer to P/N Sales Drawing.
2. Board layers shall be as such to handle needed current.
3. Copper OSP plating is recommended, other plating types acceptable.
4. Allow for proper fixturing under board to allow part to protrude during reflow.
5. Soldering fixture that encapsulates pin is recommended to maintain terminal straightness and true position throughout soldering process.

4.2 FOR PRESS-FIT (BUSBAR REQUIREMENTS)

1. Minimum Busbar Thickness: Refer to P/N Sales Drawing
2. Ream all the holes.
3. Verify hole sizes prior to installation.
4. Allow for proper fixturing under press in holes to avoid hole deformation especially in thin busbars.
5. Laser drilled holes in busbars may exhibit draft and should be tested for proper size and retention for proper use.
6. 0.30mm Chamfer Recommended on top of hole where possible for aid in assembly.

<u>SENTRALITY PIN AND SOCKET INTERCONNECTS</u>				<u>TABLE OF CONTENTS</u>			
<u>REVISION:</u> C1	<u>ECM INFORMATION:</u> <u>EC No:</u> 784031 <u>DATE:</u> 2024/05/22	<u>TITLE:</u> APPLICATION SPECIFICATION 3.40MM SENTRALITY					<u>SHEET No.</u> 4 of 34
<u>DOCUMENT NUMBER:</u> 2043130018-AS		<u>DOC TYPE:</u> PS	<u>DOC PART:</u> 000	<u>CREATED / REVISED BY:</u> SOURAJ	<u>CHECKED BY:</u> SCS02	<u>APPROVED BY:</u> HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003 REV A							

molex APPLICATION SPECIFICATION



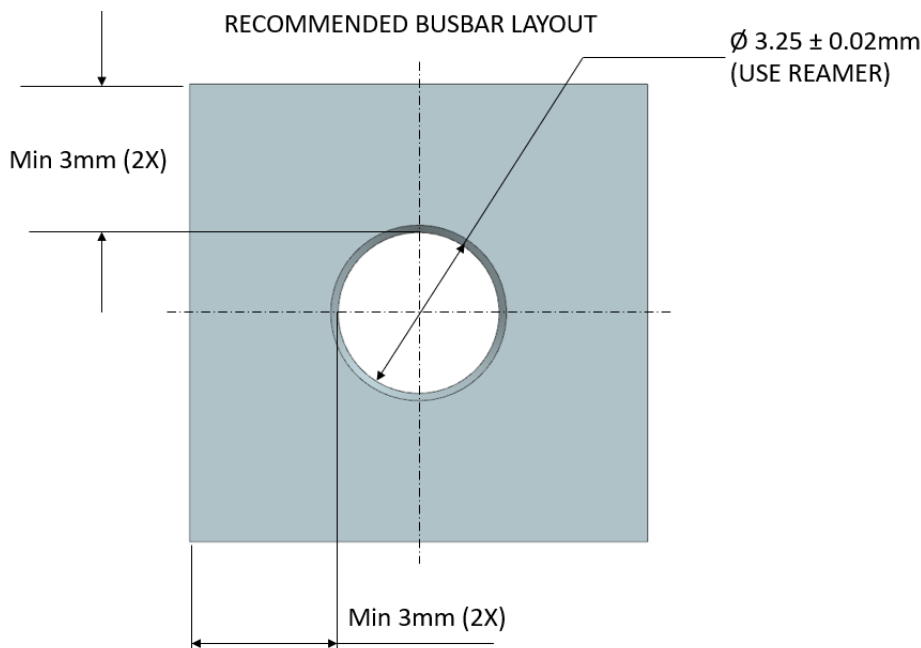
4.3 FOR SCREW – MOUNT (PCB OR BUSBAR REQUIREMENTS)

1. Minimum PCB/Busbar Thickness: Refer to P/N Sales Drawing.
2. Recommended lock or Belleville washer.
3. Screw torque down to 1.12N-m (10 lbf-in). Refer [Section 5.7](#) for details.
4. For Screw size, refer to P/N Sales Drawing.

5.0 INSTALLATION OF SENTRALITY PRODUCTS

5.1 PRESS-FIT MALE PIN PRESS IN STEPS

1. Follow recommended hole size and drill hole in busbar per sales drawing ([2032630034-SD](#)), maintaining a minimum space of 3mm* from any edge of board.



*Note: If the male pin is to be installed after the installation of other components on the busbar, then provide additional space to accommodate the press-fit tool.

2. Verify hole with gage pin to ensure the hole size meets the requirement per sales drawing.

[SENTRALITY PIN AND SOCKET INTERCONNECTS](#)

[TABLE OF CONTENTS](#)



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	5 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

3. Create fixture to allow for Centrality features and other components, if any, protruding through bottom of busbar. Below is the recommendation for male pin.
 - a. Fixture should have a hole clearance of 0.50mm with respect to Busbar hole dimension for free flow of pin during press. Refer to below figure 5.1.1.
 - b. Maximum misalignment of Busbar Hole and Fixture Hole should be no more than 0.25mm to avoid any stubbing during press. Refer to below figure 5.1.2.

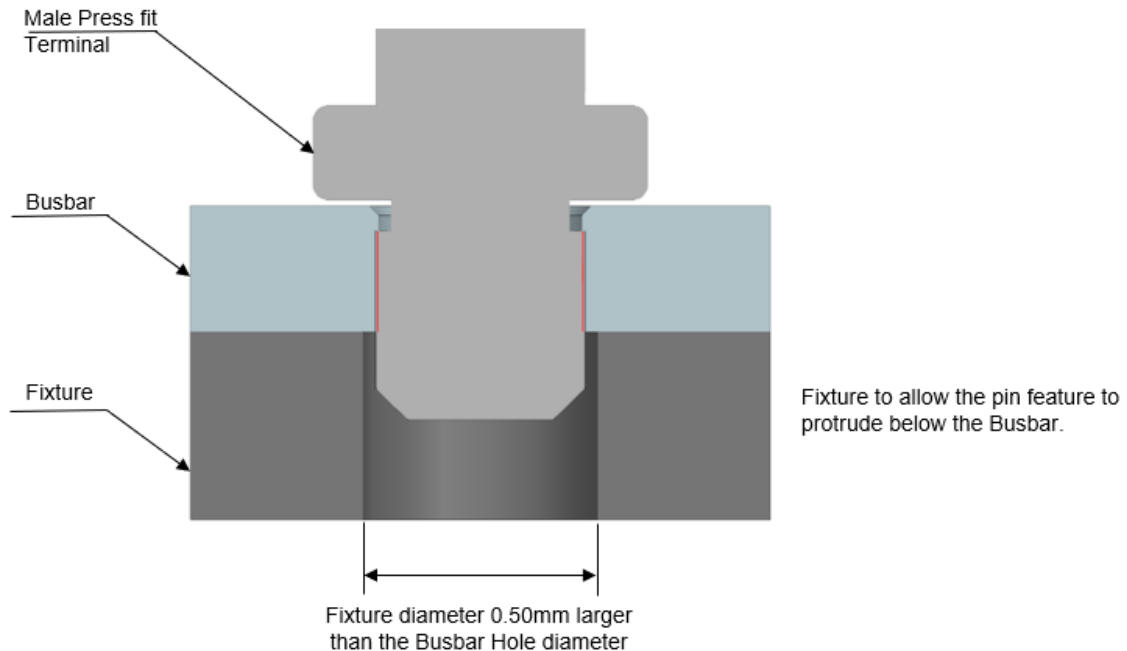


Figure 5.1.1

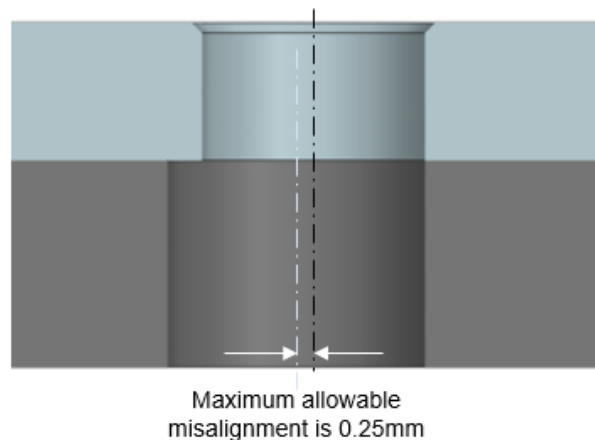


Figure 5.1.2

CENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				6 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REV.A						

molex APPLICATION SPECIFICATION

- Hand place male pin into the tool ([Refer Section 3.0](#) / Contact MOLEX for custom tooling information)



- Place tool with male pin into center of above verified hole.



- Press head can be used to hold tool and male pin in place until press is completed.



SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					7 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003 REV A							

- a. Molex recommended standard press-fit tool ([Refer Section 3.0](#)).

- i. Do not under press male pin.

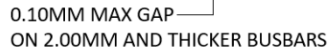


Figure 5.1.3

- ii. Do not over press male pin.

1. Max insertion force 5000N
2. Min insertion force 3000N
3. Min retention force 1000N

- b. Custom tool

- i. The press-fit of components to be done via manual lever press or Pneumatic press. The dimension of press-fit to be calculated according to max. press-fit forces.
- ii. Press-fit around fifty set of samples and monitor the maximum press-fit force required to press the samples. Then setup the equipment for this force and perform the press-fit operation to avoid over press or under press.

8. Inspect pressed in part, looking for damage and straightness.

CENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS

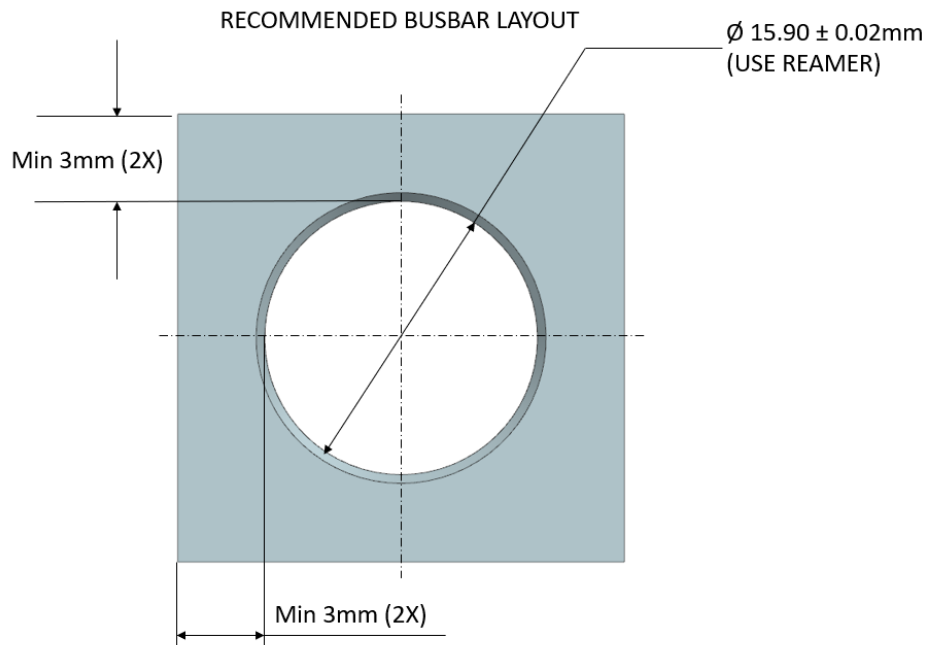


REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					8 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REV.A							

molex APPLICATION SPECIFICATION

5.2 PRESS-FIT SOCKET WITH FLOAT PRESS IN STEPS

1. Follow recommended hole size and drill hole in busbar per sales drawing ([2043130018-SD](#)), maintaining a minimum space of 3mm* from any edge of board.



*Note: If the socket is to be installed after the installation of other components on the busbar, then provide additional space to accommodate the press-fit tool.

2. Verify hole with gage pin to ensure the hole size meets the requirement per sales drawing.
3. Create fixture to allow for Centrality features and other components protruding through bottom of busbar. Below is the recommendation for socket with float.
 - a. Fixture should have a hole clearance of 0.50mm with respect to Busbar hole dimension for free flow of socket during press. Refer to below figure 5.2.1.
 - b. Maximum misalignment of Busbar Hole and Fixture Hole should be no more than 0.25mm to avoid any stubbing during press. Refer to below figure 5.2.2.

**SENTRALITY PIN AND SOCKET
INTERCONNECTS**

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				9 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

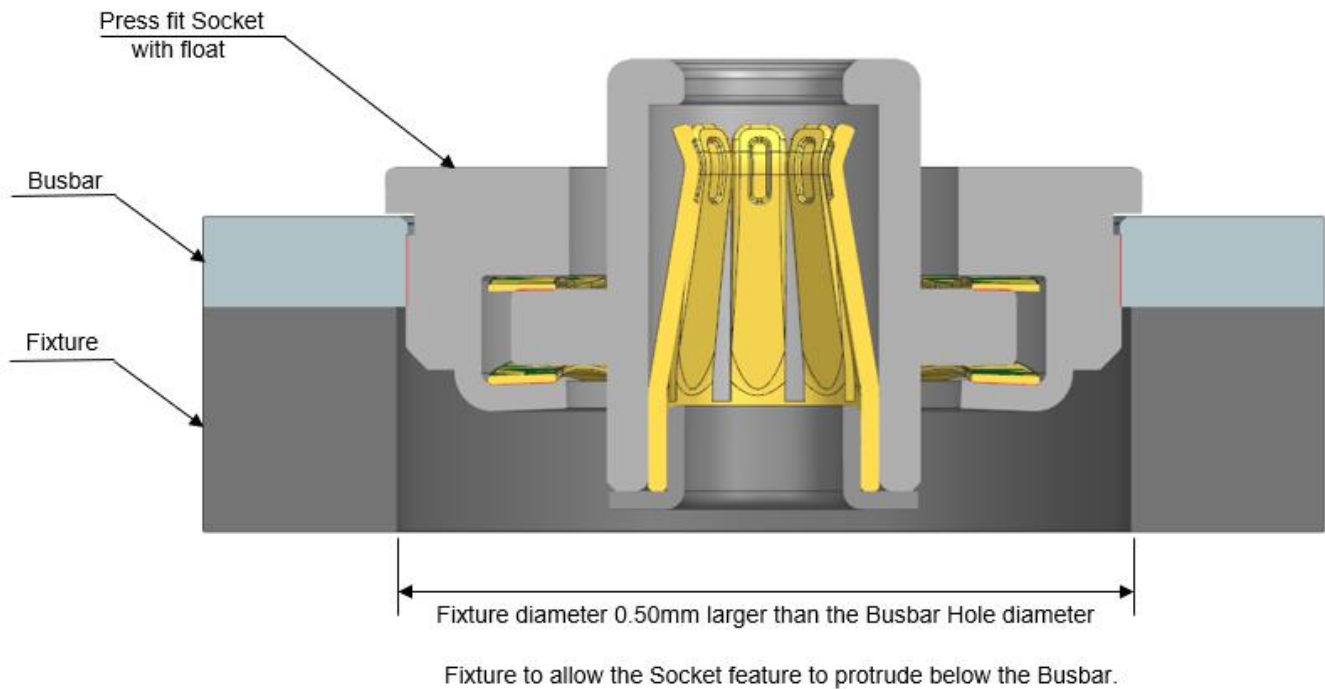


Figure 5.2.1

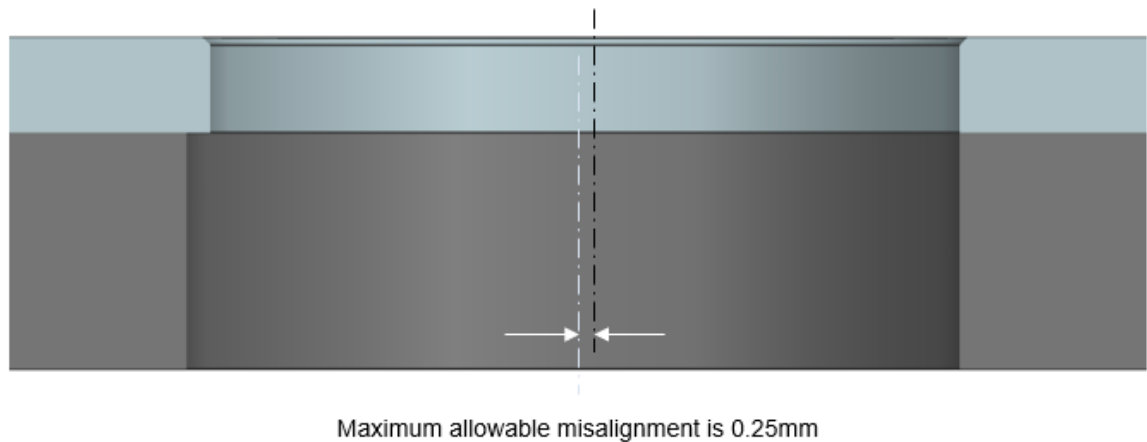


Figure 5.2.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



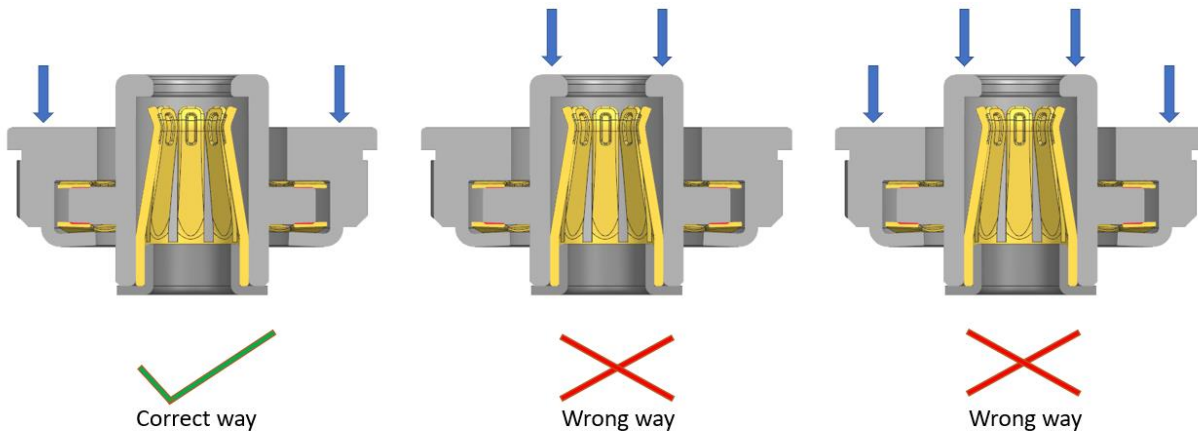
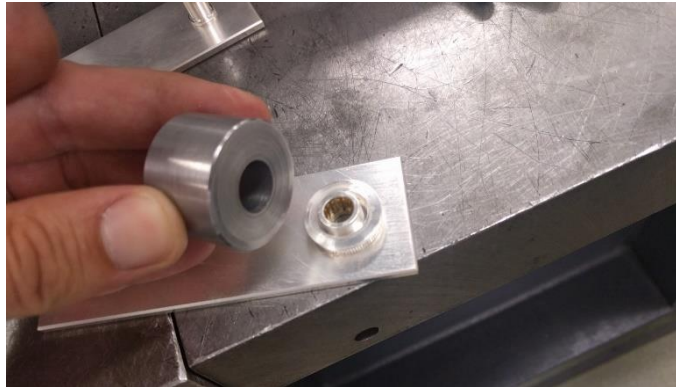
REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					10 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003 REV A							

molex APPLICATION SPECIFICATION

4. Hand place Sentrality socket into center of above verified hole.



5. Place tool onto top of placed socket, aligning hole over the protruding socket. DO NOT PRESS ON TOP OF SOCKET. Refer below for force application area. ([Refer Section 3.0](#) / Contact MOLEX for custom tooling information).



SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



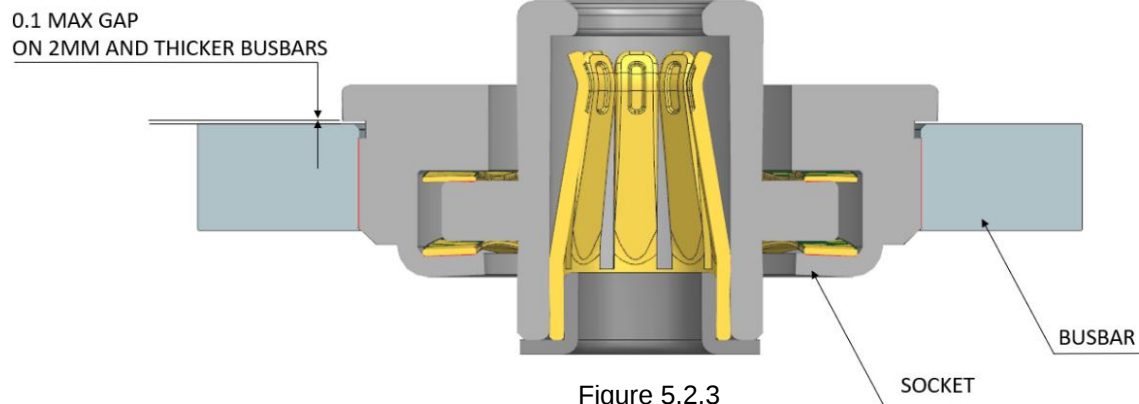
REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	11 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

molex APPLICATION SPECIFICATION

6. Press head can be used to hold tool and socket in place until press.



7. Press on top of tool until bottom of positive stop on the part is flush with the top of busbar.
- Molex recommended standard press-fit tool ([Refer Section 3.0](#)).
 - Do not under press socket.



- Do not over press socket.
 - Max insertion force 10000N
 - Min insertion force 3000N
 - Min retention force 1000N
 - Custom tool
 - The press-fit of components to be done via manual lever press or Pneumatic press. The dimension of press-fit to be calculated according to max. press-fit forces.
 - Press-fit around fifty set of samples and monitor the maximum press-fit force required to press the samples. Then setup the equipment for this force and perform the press-fit operation to avoid over press or under press.
8. Inspect pressed in part, looking for damage, straightness, and if socket still floats.
9. Refer the mating profile in the Sales Drawing for maintaining the minimum mating height to avoid over compression during mating and use.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS

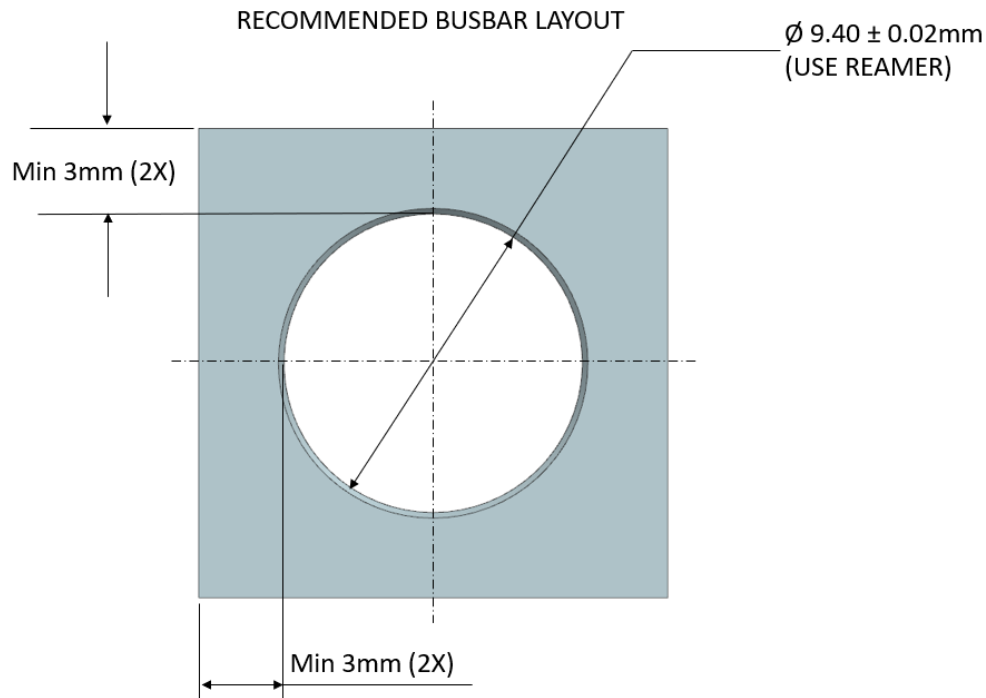


REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	12 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

molex APPLICATION SPECIFICATION

5.3 STANDARD PRESS FIT SOCKET PRESS IN STEPS

1. Follow recommended hole size and drill hole in busbar per sales drawing ([2043160018-SD](#)), maintaining a minimum space of 3mm* from any edge of board.



*Note: If the socket is to be installed after the installation of other components on the busbar, then provide additional space to accommodate the press-fit tool.

2. Verify hole with gage pin to ensure the hole size meets the requirement per sales drawing.
3. Create fixture to allow for Centrality features and other components protruding through bottom of busbar. Below is the recommendation for standard socket.
 - a. Fixture should have a hole clearance of 0.50mm with respect to Busbar hole dimension for free flow of socket during press. Refer to below figure 5.3.1.
 - b. Maximum misalignment of Busbar Hole and Fixture Hole should be no more than 0.25mm to avoid any stubbing during press. Refer to below figure 5.3.2.

**SENTRALITY PIN AND SOCKET
INTERCONNECTS**

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				13 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REV A						

molex APPLICATION SPECIFICATION

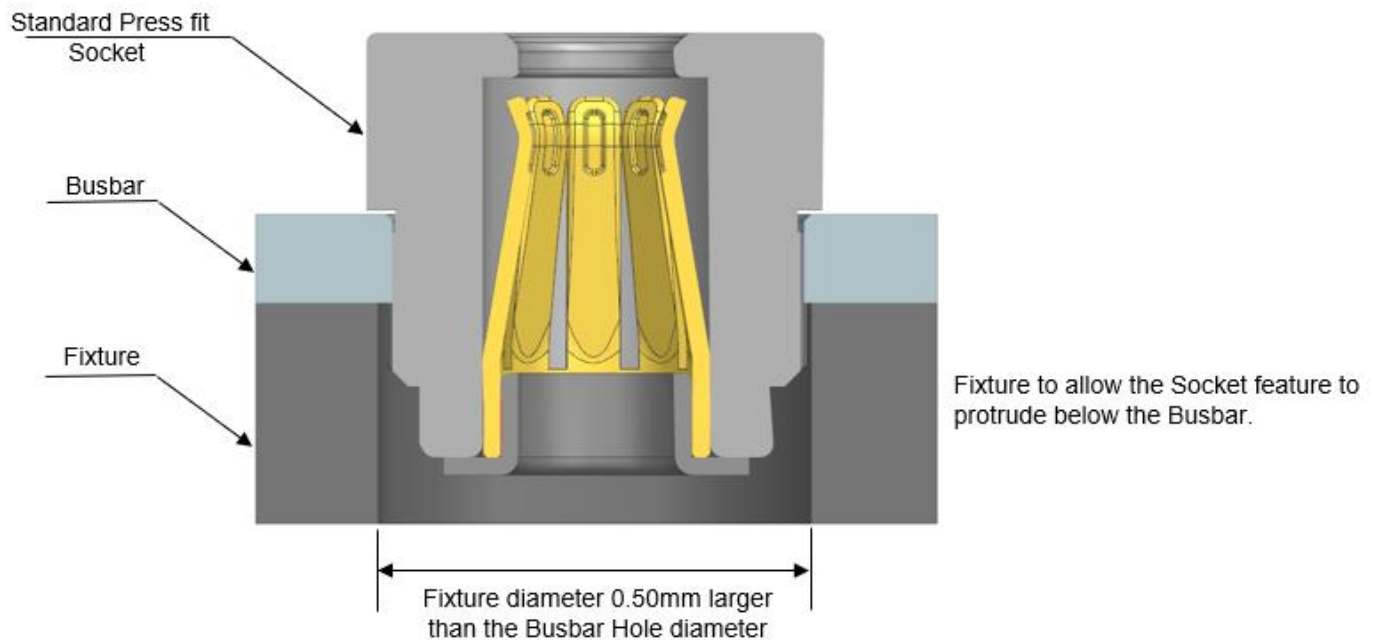


Figure 5.3.1

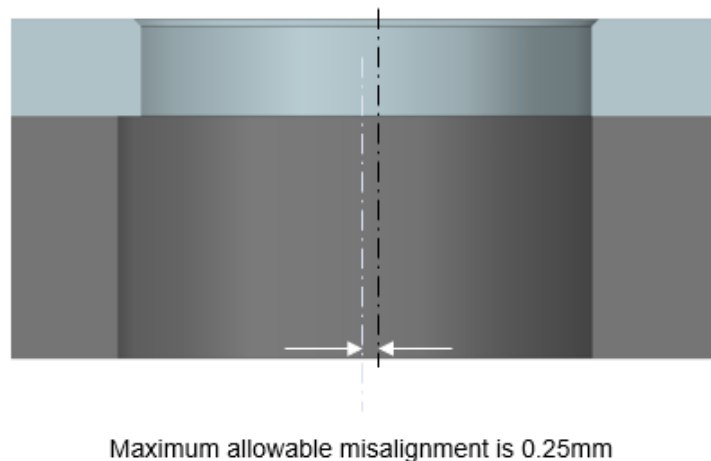


Figure 5.3.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



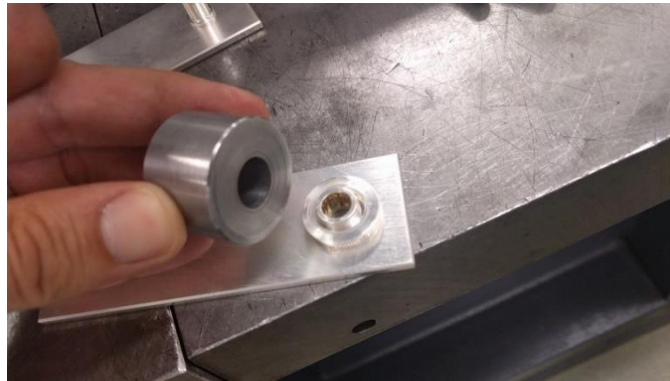
REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	14 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

molex APPLICATION SPECIFICATION

4. Hand place Sentrality socket into center of above verified hole.



5. Place tool on top of the socket, this Sentrality version can be pressed directly on the top of the part. ([Refer Section 3.0](#) / Contact MOLEX for Flat Rock application/custom tooling information)



6. Press head can be used to hold tool and socket in place until press.



SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					15 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REV A							

molex APPLICATION SPECIFICATION

7. Press on top of tool until bottom of positive stop on the part is flush with the top of busbar.
 - a. Molex recommended standard press-fit tool ([Refer Section 3.0](#)).
 - i. Do not under press socket.

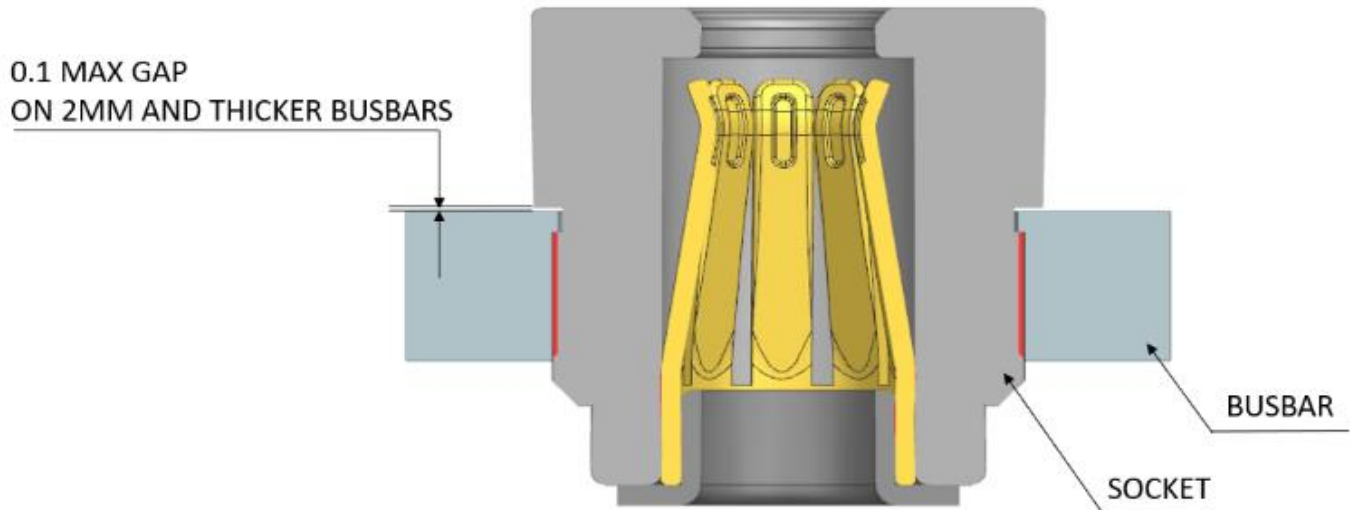


Figure 5.3.3

- ii. Do not over press socket.
 1. Max insertion force 7500N
 2. Min insertion force 1500N
 3. Min retention force 1000N
 - b. Custom tool
 - i. The press-fit of components to be done via manual lever press or Pneumatic press. The dimension of press-fit to be calculated according to max. press-fit forces.
 - ii. Press-fit around fifty set of samples and monitor the maximum press-fit force required to press the samples. Then setup the equipment for this force and perform the press-fit operation to avoid over press or under press.
8. Inspect pressed in part, looking for damage, straightness.
 9. Refer the mating profile in the Sales Drawing for maintaining the minimum mating height to avoid over compression during mating and use.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



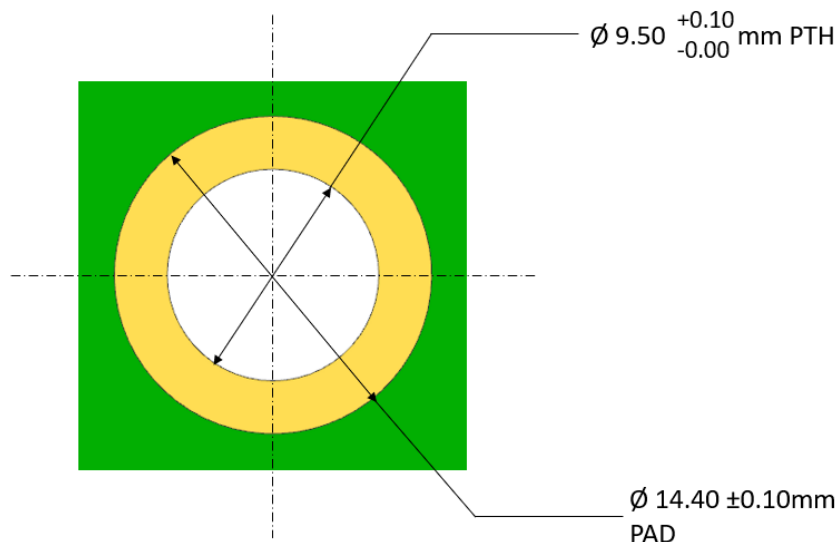
REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					16 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003 REV A							

molex APPLICATION SPECIFICATION

5.4 SMT SOCKET WITH FLOAT SOLDER STEPS

1. Follow the recommended hole size and PCB thickness as per sales drawing ([2043650018-SD](#) / [2121950018-SD](#))

RECOMMENDED PCB LAYOUT



2. Verify hole with gage pin, as shown above in male pin steps.
3. Apply solder paste for above [hole pattern](#) using a 6-mil stencil thickness. Standard SAC 305 lead free paste has been used in testing.
4. Solder wicking can affect the integrity of the solder joint to the Pad. It can also affect the integrity of the float displacement action of the connector. The following actions are recommended to avoid the solder wicking issue:
 - a. It is recommended to use solder mask to cover the plated through hole and thermal vias to prevent the flow of the solder paste in the plated through hole and thermal vias region. Reference is show in the figure 5.4.1
 - b. If in case, covering the plated through hole is not possible, then it is recommended to use non plated through hole (NPTH). However, all the copper layers should be connected via thermal vias. Reference is shown in figure 5.4.2

[CENTRALITY PIN AND SOCKET INTERCONNECTS](#)

[TABLE OF CONTENTS](#)



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				17 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

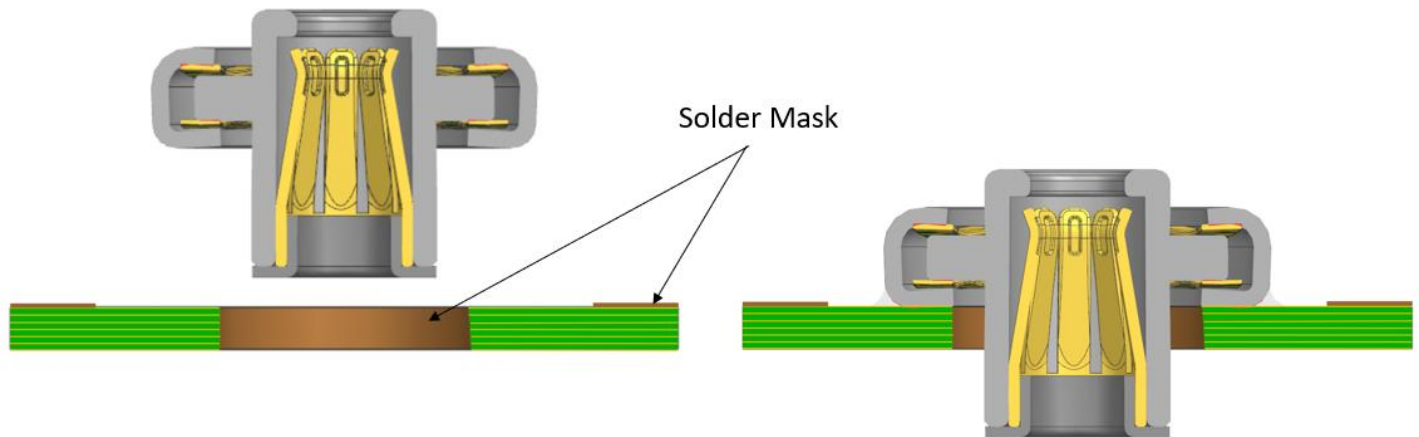


Figure 5.4.1

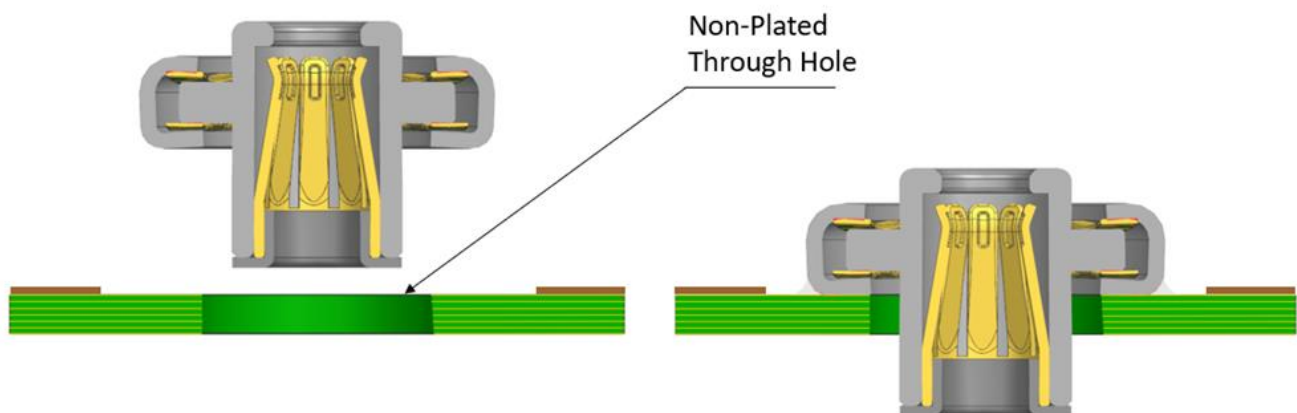


Figure 5.4.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



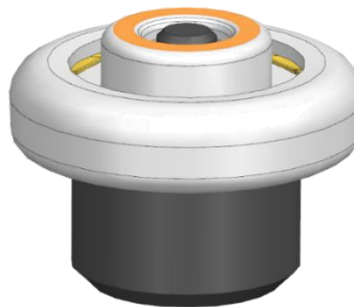
REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				18 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REVA						

molex APPLICATION SPECIFICATION

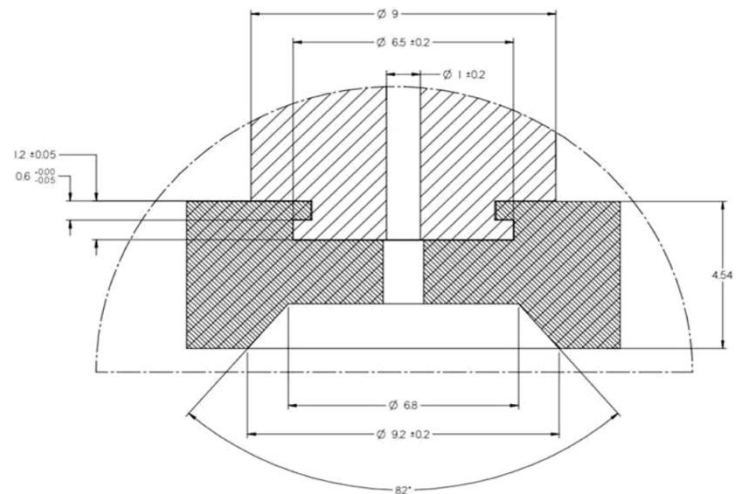
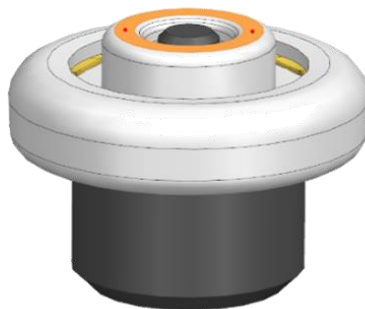
5. Lightly hand or pick and place the Centrality socket into center of above verified hole making sure to not press the solder out of the way.



- a. Use the orange highlighted surface as the sealing surface with a center suction. The PNP cap will help keep escaping air to a minimum. Surface area is located between a 2.2mm and 3mm zone from center as highlighted below.



- b. A custom nozzle could also be developed that would have suction points at red marked locations as shown below. Suction points are at 2.6mm from center. Recommended custom nozzle profile is shown below.



SENTRALITY PIN AND SOCKET INTERCONNECTS

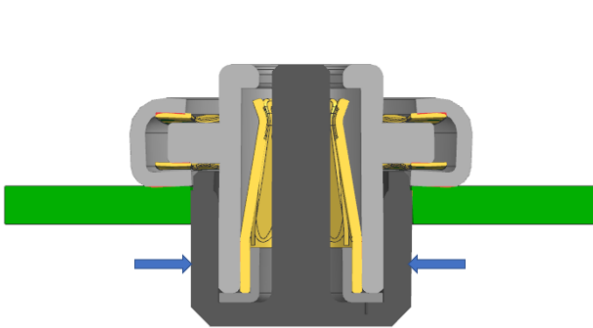
TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	19 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

APPLICATION SPECIFICATION

- c. During pick and place operation, while placing the component, do not apply force on top of the component, as the cap may fall off from the component.
- d. After reflow, for the removal of the pick and place cap, apply the force on the sides of the cap as show in the figure 5.4.3, so that the terminals are not damaged during the removal of the cap.
- e. If the force is being applied from the top as shown in the figure 5.4.4, make sure that the terminals and the floating region is not damaged during the application of force.



Recommended Pressure application

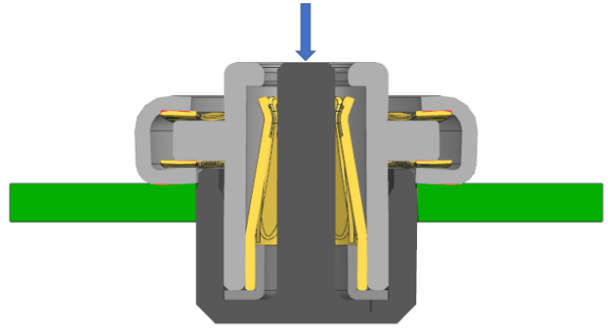


Figure 5.4.4

6. Verify part is centered properly on hole pattern.
7. * Solder part(s) using a recommended standard convection oven reflow technique.
 - a. Parts tested with zone temperatures below and a conveyor speed of 12 in/min.
 - b. Refer [Section 6.2](#) for the solder profile details.

Zone Heater Temperatures					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Top	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Bottom	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Zone Airflow					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Top	50L/min	30L/min	30L/min	70L/min	20L/min
Bottom	50L/min	30L/min	30L/min	70L/min	20L/min

*- This section is for reference only and it varies based on customer application.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					20 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REVA							

molex APPLICATION SPECIFICATION

8. Solder paste should not fill any thermal vias.
9. Inspect soldered part, looking for a good solder joint, damage, and straightness.
 - a. Solder process is highly dependent on customer application and set up. Processing should be adjusted appropriately for each application.
10. Solder must have 360° coverage with a filler profile as shown below.

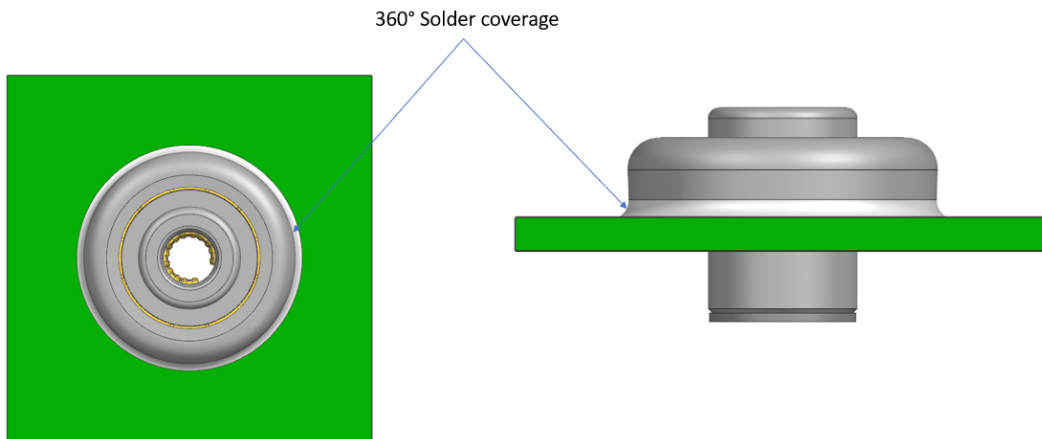


Figure 5.4.4

11. Recommended Solder Stencil profile is shown below:

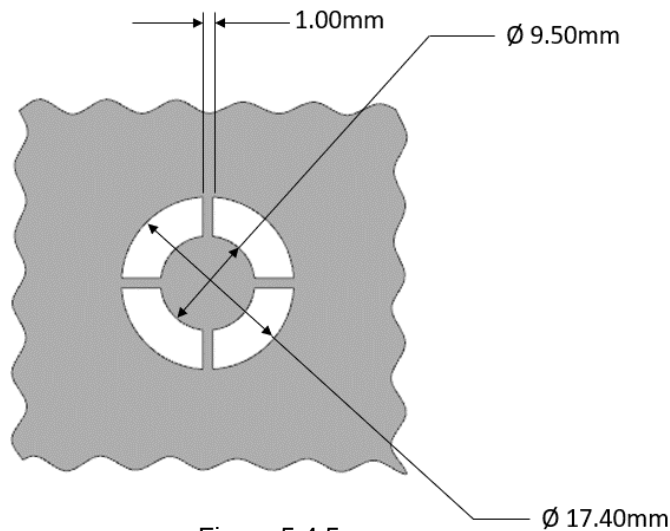


Figure 5.4.5

12. Refer the mating profile in the Sales Drawing for maintaining the minimum mating height to avoid over compression during mating and use.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS

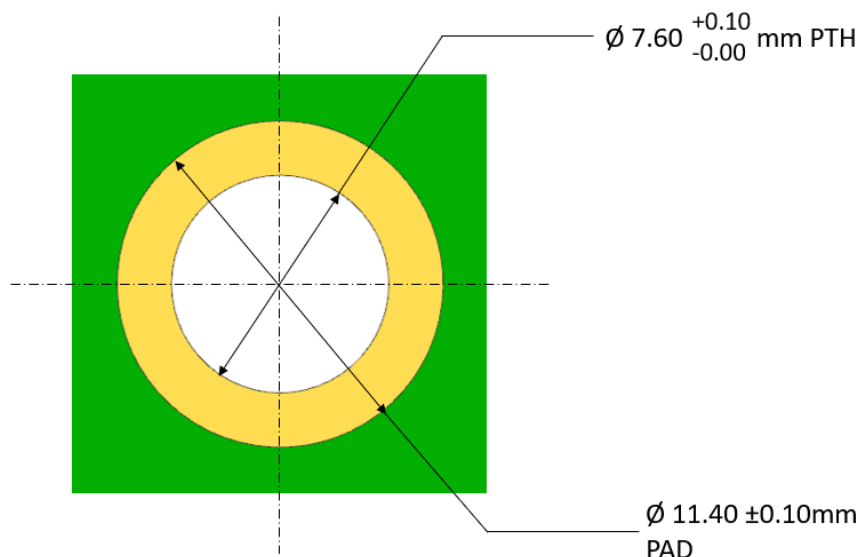


REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	21 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

5.5 STANDARD SMT SOCKET SOLDER STEPS

1. Follow the recommended hole size and PCB thickness as per sales drawing ([2043180018-SD](#) / [2121940018-SD](#))
2. Verify hole with gage pin, as shown above in male pin steps.

RECOMMENDED PCB LAYOUT



3. Apply solder paste for above [hole pattern](#) using a 6-mil stencil thickness. Standard SAC 305 lead free paste has been used in testing.
4. Solder wicking can affect the integrity of the solder joint to the Pad. It can also affect the integrity of the float displacement action of the connector. The following actions are recommended to avoid the solder wicking issue:
 - a. It is recommended to use solder mask to cover the plated through hole and thermal vias to prevent the flow of the solder paste in the plated through hole and thermal vias region. Reference is show in the figure 5.5.1
 - b. If in case, covering the plated through hole is not possible, then it is recommended to use non plated through hole (NPTH). However, all the copper layers should be connected via thermal vias. Reference is shown in figure 5.5.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				22 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

molex APPLICATION SPECIFICATION

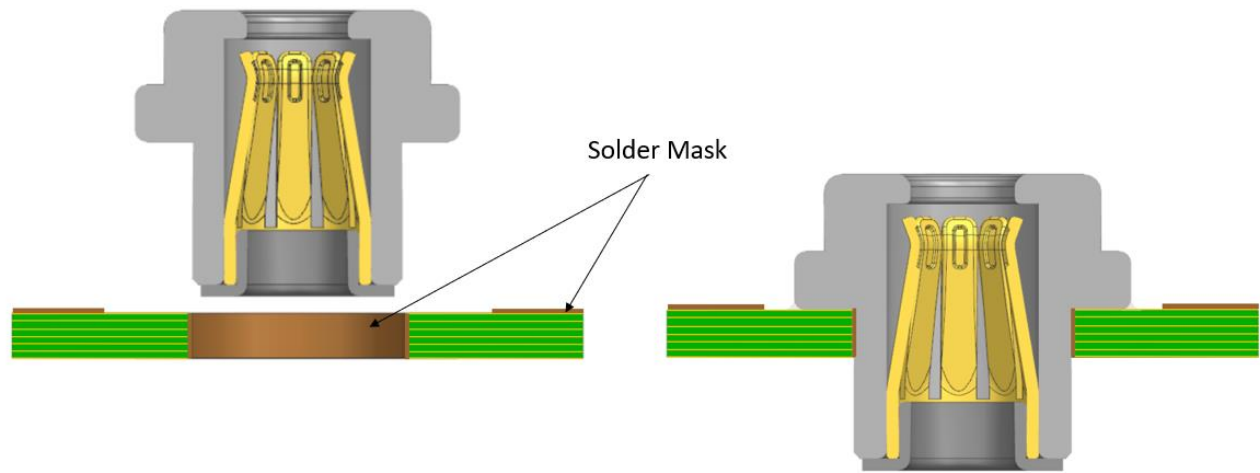


Figure 5.5.1

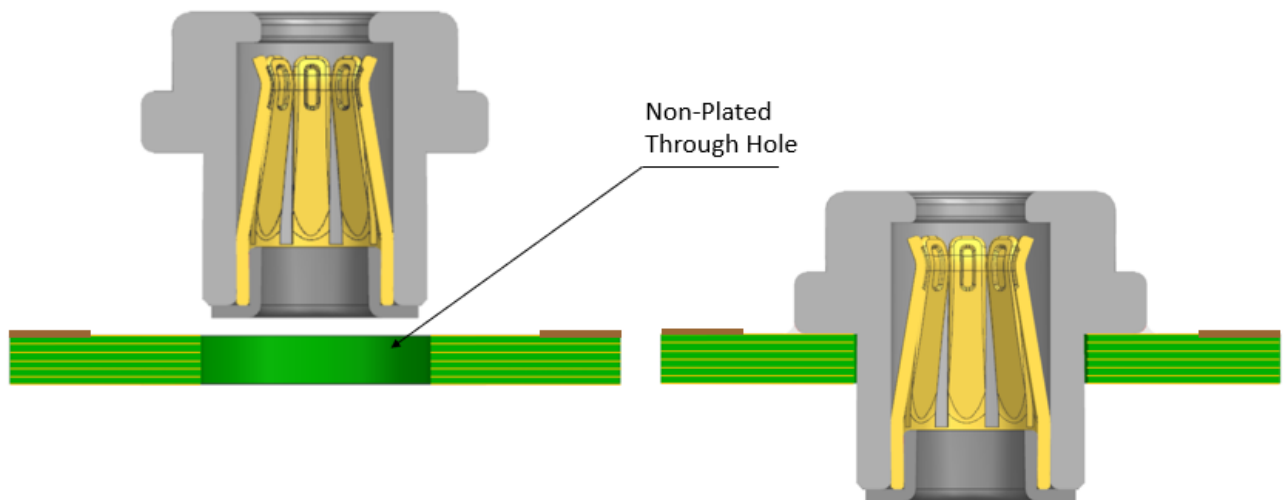


Figure 5.5.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	23 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

5. Lightly hand or pick and place the Sentrality socket into center of above verified hole making sure to not press the solder out of the way (See Figure from [Section 5.4.5](#) for reference).
6. Verify part is centered properly on hole pattern.
7. * Solder part(s) using a recommended standard convection oven reflow technique.
 - a. Parts tested with zone temperatures below and a conveyor speed of 12 in/min.
 - b. Refer [Section 6.2](#) for the solder profile details.

Zone Heater Temperatures					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Top	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Bottom	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Zone Airflow					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Top	50L/min	30L/min	30L/min	70L/min	20L/min
Bottom	50L/min	30L/min	30L/min	70L/min	20L/min

*- This section is for reference only and it varies based on customer application.

8. Solder paste should not fill any thermal vias.
9. Inspect soldered part, looking for a good solder joint, damage, and straightness.
 - a. Solder process is highly dependent on customer application and set up. Processing should be adjusted appropriately for each application.
10. Pick and place cap can be removed by gripping from the bottom if board permits. Else cap must be pushed through top to exit the rear of connector without damaging the terminals. This can be achieved by using a tool mimicking the male terminal.

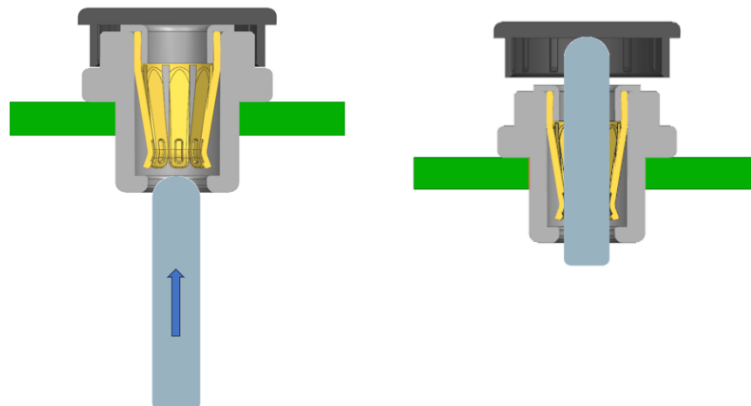


Figure 5.5.3

CENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					24 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REV.A							

11. Solder must have 360° coverage with a filler profile as shown below.

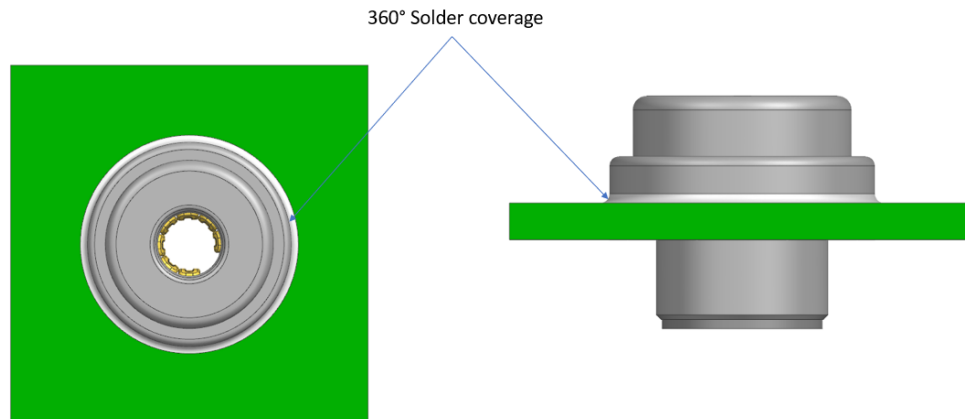


Figure 5.5.4

12. Recommended Solder Stencil profile is shown below:

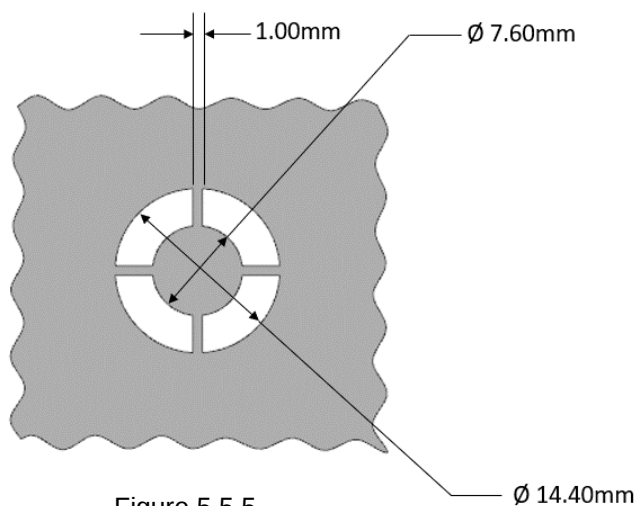


Figure 5.5.5

13. Refer the mating profile in the Sales Drawing for maintaining the minimum mating height to avoid over compression during mating and use.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS

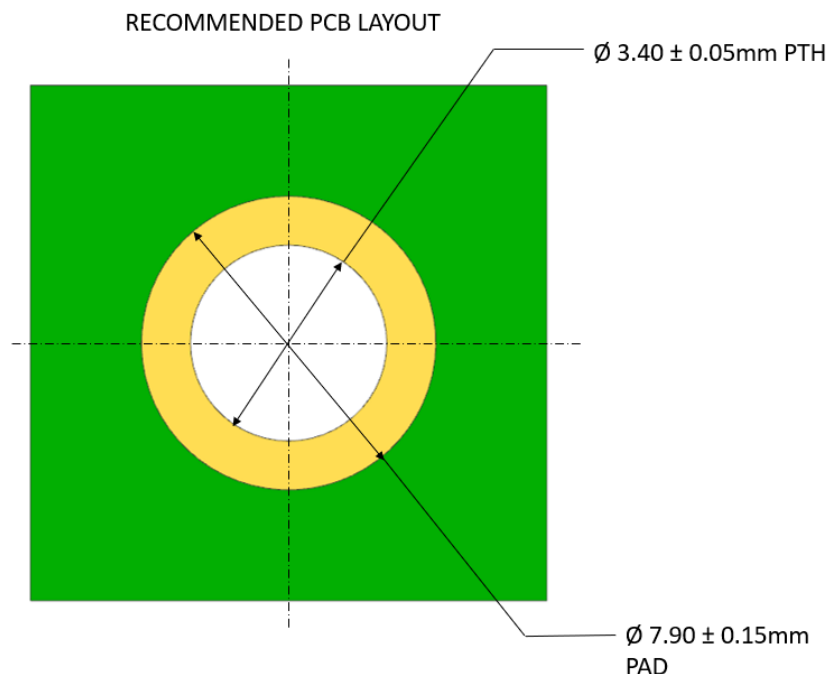


REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					25 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REV.A							

molex APPLICATION SPECIFICATION

5.6 SMT MALE PIN SOLDER STEPS

1. Follow the recommended hole size and PCB thickness as per sales drawing([2032631134-SD](#)).



2. Verify hole with gage pin, as shown above in male pin press in steps.
3. Apply solder paste for above [hole pattern](#) using a 6-mil stencil thickness. Standard SAC 305 lead free paste has been used in testing.
4. Solder wicking can affect the integrity of the solder joint to the Pad. It can also affect the integrity of the float displacement action of the connector. The following actions are recommended to avoid the solder wicking issue:
 - a. It is recommended to use solder mask to cover the plated through hole and thermal vias to prevent the flow of the solder paste in the plated through hole and thermal vias region. Reference is show in the figure 5.6.1
 - b. If in case, covering the plated through hole is not possible, then it is recommended to use non plated through hole (NPTH). However, all the copper layers should be connected via thermal vias. Reference is shown in figure 5.6.2

**SENTRALITY PIN AND SOCKET
INTERCONNECTS**

[TABLE OF CONTENTS](#)



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				26 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

molex APPLICATION SPECIFICATION

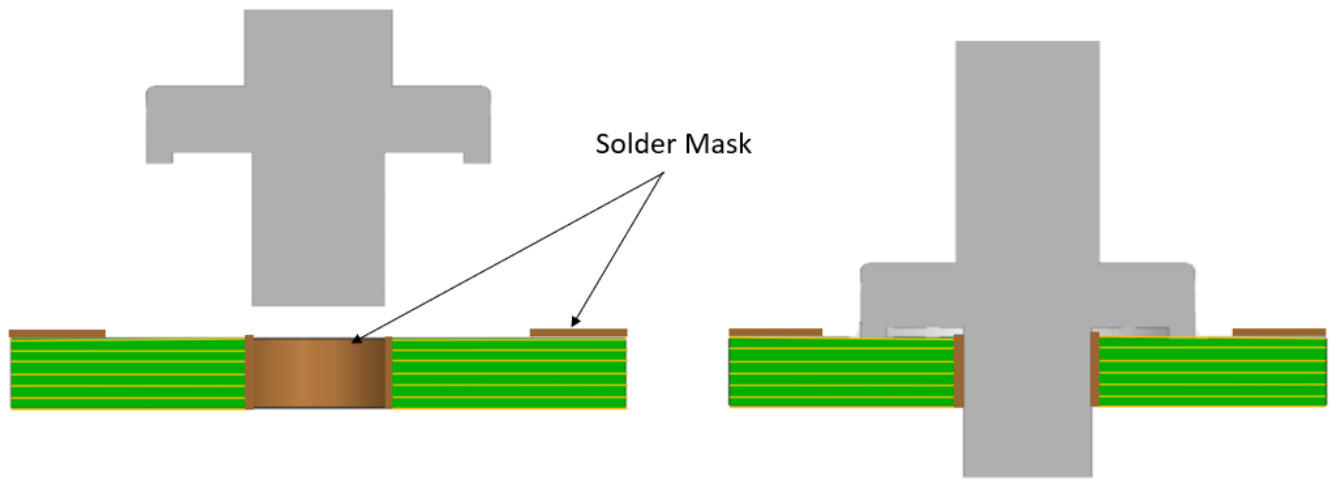


Figure 5.6.1

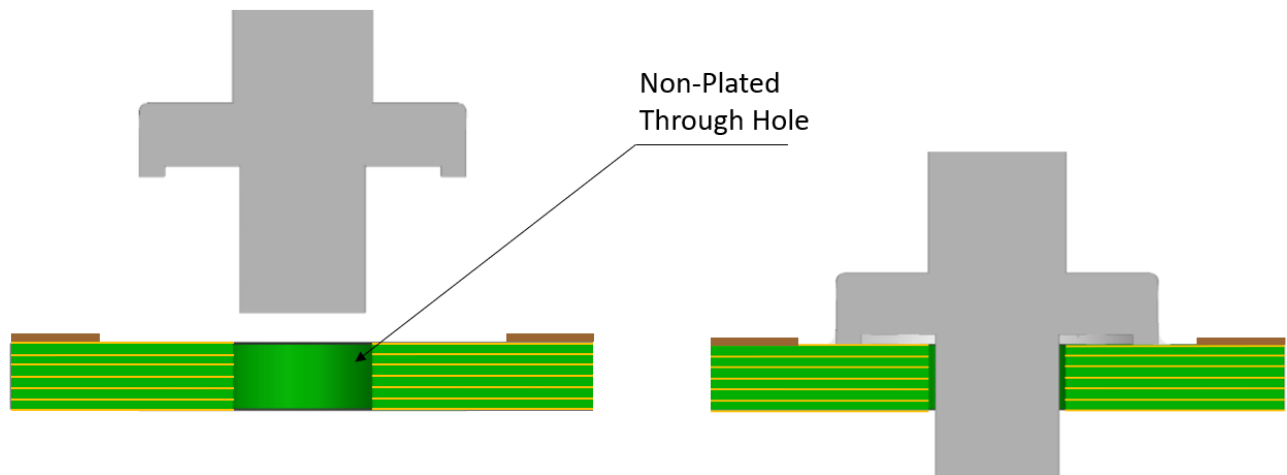


Figure 5.6.2

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	27 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

APPLICATION SPECIFICATION

5. Lightly hand or pick and place the Sentrality pin into center of above verified hole making sure to not press the solder out of the way a. A SOLDER FIXTURE MAY BE NEEDED FOR STRAIGHTNESS OF LONGER SOLDERED PINS.



6. Verify part is straight and centered properly on hole pattern.
7. * Solder part(s) using a recommended standard convection oven reflow technique.
 - a. Parts tested with zone temperatures below and a conveyor speed of 12 in/min.
 - b. Refer [Section 6.2](#) for the solder profile details.

Zone Heater Temperatures					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Top	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Bottom	160 deg. C	168 deg. C	200 deg. C	230 deg. C	270 deg. C
Zone Airflow					
	Zone1	Zone 2	Zone 3	Zone 4	Zone 5
Top	50L/min	30L/min	30L/min	70L/min	20L/min
Bottom	50L/min	30L/min	30L/min	70L/min	20L/min

‘*’- This section is for reference only and it varies based on customer application.

8. Solder paste should not fill any thermal vias.
9. Inspect soldered part, looking for a good solder joint, damage, and straightness.
 - a. Solder process is highly dependent on customer application and set up. Processing should be adjusted appropriately for each application.

CENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				28 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REV.A						

10. Solder must have 360° coverage with a filler profile as shown below.

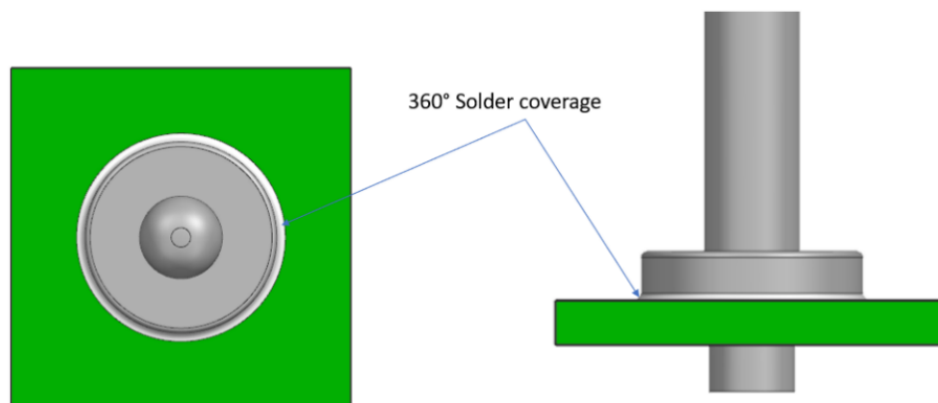


Figure 5.6.3

11. Recommended Solder Stencil profile is shown below:

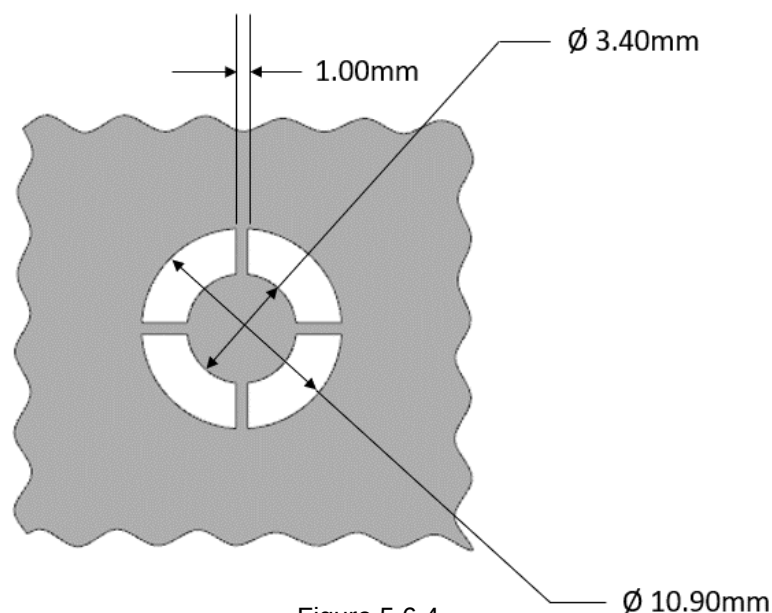


Figure 5.6.4

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS

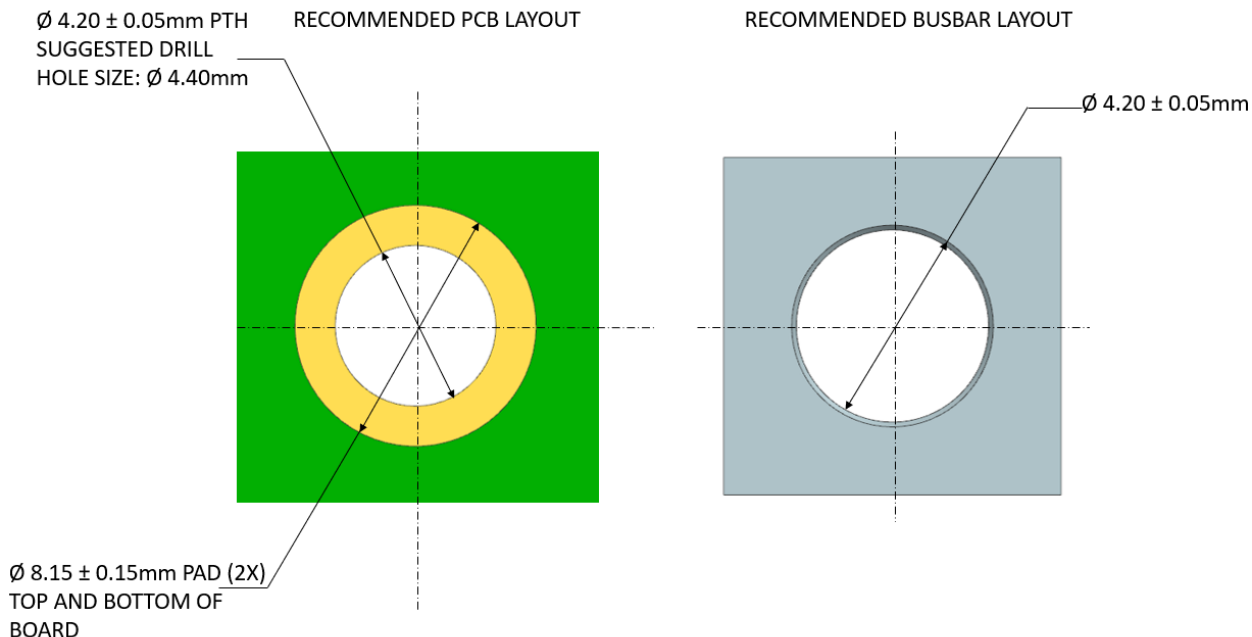


REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				29 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

molex APPLICATION SPECIFICATION

5.7 SCREW MOUNT MALE PIN MOUNTING STEPS

1. Follow the recommended hole size and PCB/busbar thickness as per sales drawing ([2032638034-SD](#))



2. Verify hole with gage pin, as shown above in male pin press in steps.
3. Hand place Sentrality male pin into center of above verified hole.



4. Screw in the screw as specified by the P/N Sales Drawing, with washer into threaded portion of male pin.
 - a. A Bellville washer is recommended to maintain constant contact force.
 - b. It is recommended to use a locking washer in high temp and vibrating systems.
 - c. Conductive screw and washer can be used if needed.
 - d. Flats on male pin base are to be used to assist in torquing down screw.

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				30 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A						

molex APPLICATION SPECIFICATION

- Torque down the screw and washer to 1.12N-m (10 lbf-in).
- Verify part is straight and centered properly on hole pattern.
- For tight tolerance non floating applications, a fixture is recommended to center screw mount pins in hole during assembly.

6.0 SOLDER INFORMATION

Per SMES-152 and AS-40000-5013

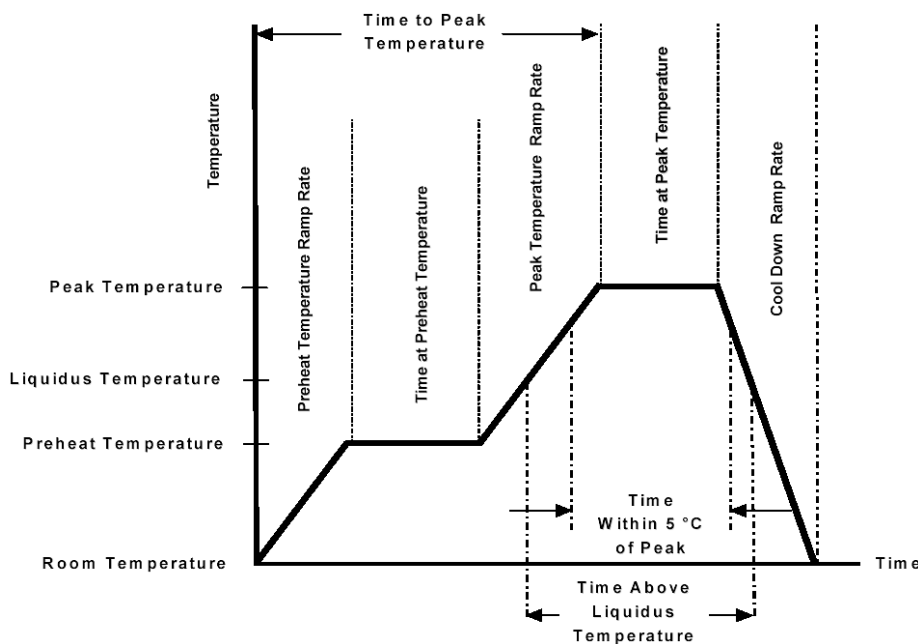
*These specifications establish standard solderability test methods used to evaluate a products ability to accept molten solder. Solder Process Temperatures and Reflow Solder Profiles will vary based on application, equipment, solder paste, PCB thickness, etc.

6.1 SOLDER PROCESS TEMPERATURES*

Reflow Solder Temperature: 260°C Maximum

6.2 SOLDERING PROFILE

(This profile is per JEDEC J-STD-020D.1 and it is for guideline only; please see notes for additional information)



[Molex Connector Heat Resistance Specification AS-40000-5013 \(Click Here\)](#)

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:	SHEET No.		
C1	EC No: 784031 DATE: 2024/05/22	APPLICATION SPECIFICATION 3.40MM SENTRALITY	31 of 34		
DOCUMENT NUMBER:	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS	PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A					

molex APPLICATION SPECIFICATION

Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 200°C Max
Preheat Time	60 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquids (217°C)	60 to 150 sec
Peak Temperature	260 +0/-5°C
Time within 5°C of Peak	20 to 40 sec
Ramp - Cool Down	6°C/sec Max
Time 25°C to Peak	8 min Max

Notes:

1. Temperature indicated refers to the PCB surface temperature at soldering region.
2. Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste & reflow equipment manufacturer for their recommendations to adopt a suitable process.

7.0 SENTRALITY MATING REQUIREMENTS AND RECOMMENDATIONS

7.1 ANGLE OF MATE

- 7.1.1 Rigid and non-rigid systems must be able to maintain a maximum 1.5 degrees mating angle. Rigid systems degree of mate may be less due to pin length. Figure 7.1.1 shows longer pins with the same angle misalignment creating larger True Position offsets at the tip.

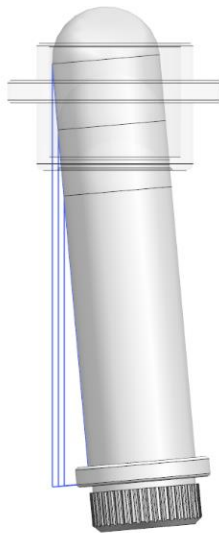


Figure 7.1.1

SENTRALITY PIN AND SOCKET INTERCONNECTS

TABLE OF CONTENTS



REVISION:	ECM INFORMATION:	TITLE:				SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY				32 of 34
	DATE: 2024/05/22					
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003.REV.A						

- 7.1.2 Sentrality floating connectors do not compensate for excessive mating angle.
- 7.1.3 Systems using multiple Sentrality must maintain a mating angle of 1.5 degrees throughout the entire mate and must be mated simultaneously to prohibit rocking or zippering during mating. This rocking or zippering with large busbars creates a moment that exerts high stress on the connector. Proper alignment and training will alleviate any mating concerns.

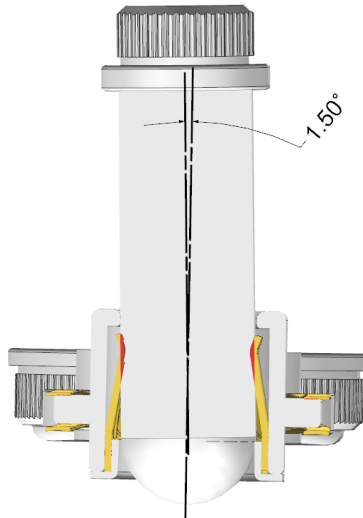


Figure 7.1.2

7.2 FLOATING CONNECTORS

- 7.2.1 Molex recommends floating connectors for applications using multiple sockets. If multiple non floating sockets are to be used, applications tolerance should be reviewed against allowable misalignment. Allowing one side of the mating interface to float amongst themselves will help with potential tolerance issues. Fixturing during assembly of both mating halves will assist in any stack up of tolerances in the system.
- 7.2.2 Factors effecting misalignment.
1. Rigid mating, whether one side, or both
 2. Hole TP of multiple circuits
 3. Distance between any two holes in multiple circuit applications increases the tolerances of the system
 4. Hole “slop” of SMT and screw mounted components
 5. Length of the male terminal must also be considered for misaligned or out of spec forms on busbars. The longer a terminal gets the tighter the form tolerance will need to be controlled to assure proper mating.

If not all, most of these misalignment concerns can be alleviated using the floating option of the Centrality connector system and or allowing float within the PCB or busbar application.

<u>SENTRALITY PIN AND SOCKET INTERCONNECTS</u>				<u>TABLE OF CONTENTS</u>			
REVISION:	ECM INFORMATION:		TITLE:				SHEET No.
C1	EC No: 784031 DATE: 2024/05/22		APPLICATION SPECIFICATION 3.40MM SENTRALITY				33 of 34
DOCUMENT NUMBER:			DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
2043130018-AS			PS	000	SOURAJ	SCS02	HTHYAGARAJ
TEMPLATE FILENAME: 1703070003 REV A							

molex APPLICATION SPECIFICATION

7.3 MULTIPLE INDEPENDENT BUSBAR MATING

7.3.1 When mating multiple busbars in a given system, the busbars should float independently from each other to allow for tolerance stack up. Shoulder bolts or rivets are recommended to hold busbar location within the required float range.

7.4 PIN LENGTH GUIDE

7.4.1 Contact Molex for proper pin length and stack height.

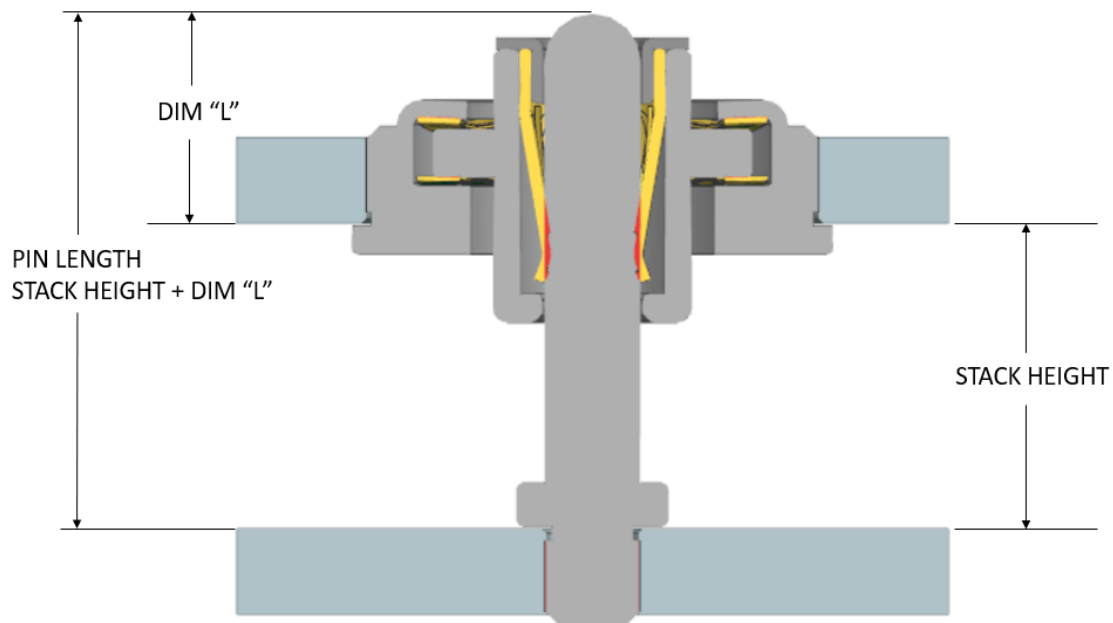


Figure 7.4.1
Press fit floater shown in view

[SENTRALITY PIN AND SOCKET
INTERCONNECTS](#)

[TABLE OF CONTENTS](#)



REVISION:	ECM INFORMATION:	TITLE:					SHEET No.
C1	EC No: 784031	APPLICATION SPECIFICATION 3.40MM SENTRALITY					34 of 34
	DATE: 2024/05/22						
DOCUMENT NUMBER:		DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:	
2043130018-AS		PS	000	SOURAJ	SCS02	HTHYAGARAJ	
TEMPLATE FILENAME: 1703070003.REV.A							