

Press-fit zone



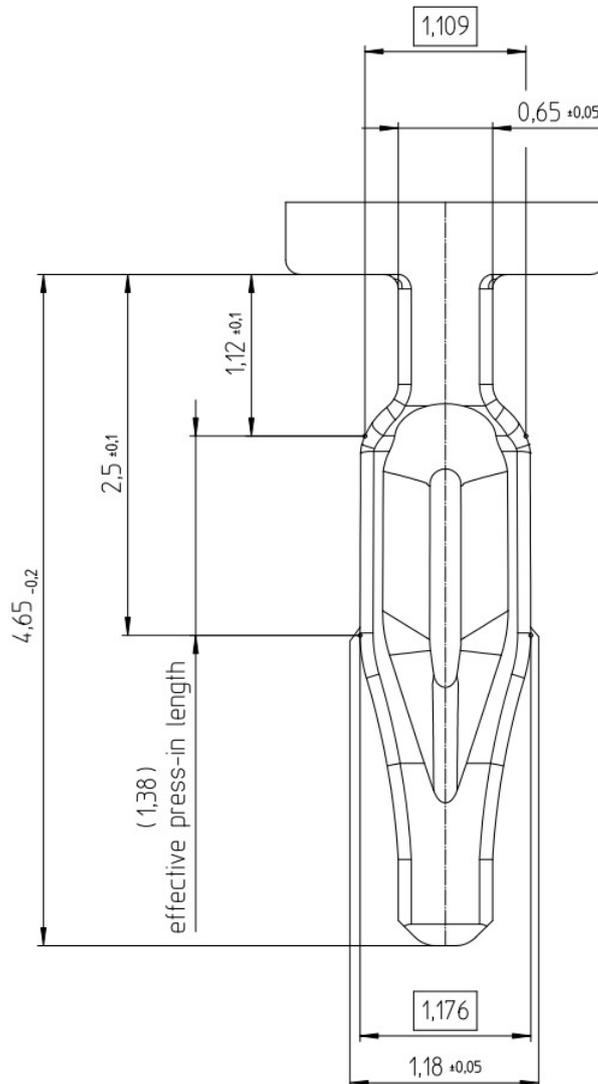
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1. Product description

The press-fit zone is implemented as a solder-free electrical connection.



Material: CuSn6 (Rm 560 N/mm²)

Material: K88TR08 (Wieland)

Material thickness: 0,6 mm ±0,02

Surface: Nickel layer and matt tin plated

Press-in force into PCB: 75 N ±20

Press-in force into PCB: tbd.

Press-out force from PCB: > 50 N

Press-out force from PCB: tbd.

Table 1

1.1. Applicable documentation

- Brose standard BN590929-102
- Product drawing
- Press-in speed according to the standard or product drawings
- Higher speeds must first be approved by the EPZ manufacturer.
- The product drawings specify the maximum press-in speed

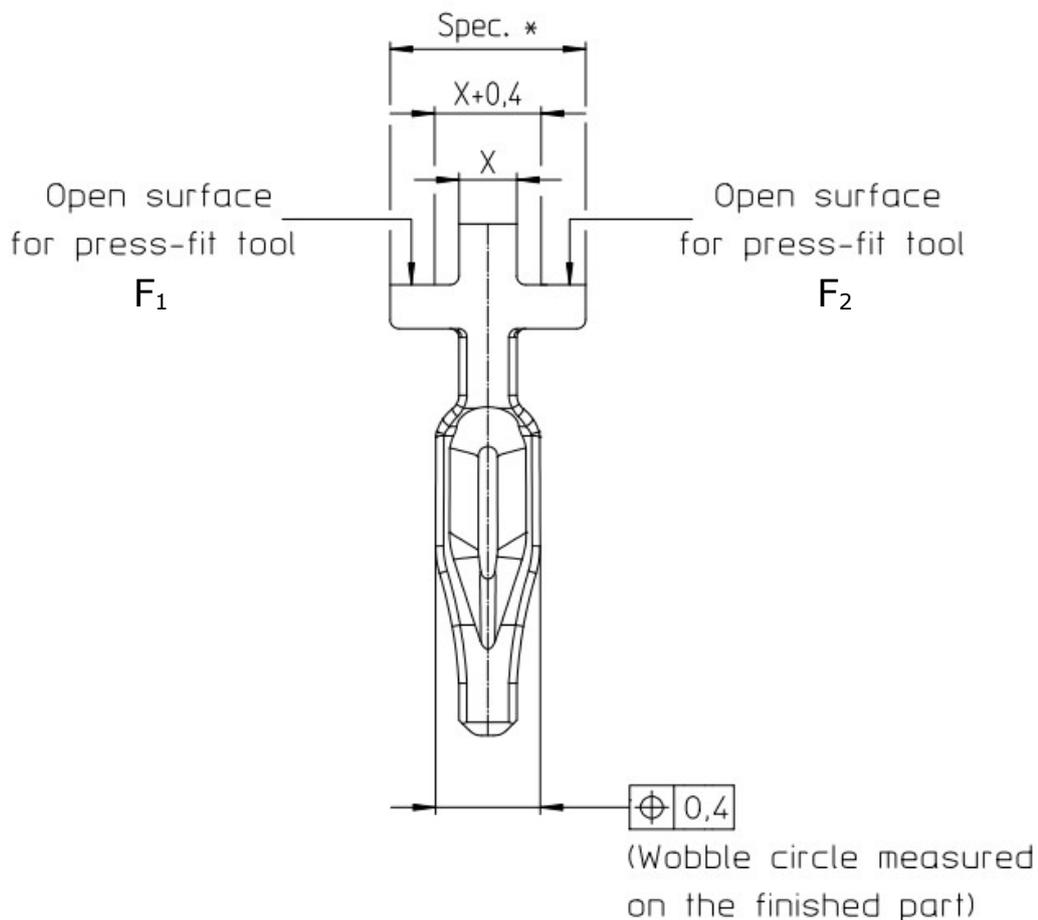
2. Processing instructions

2.1. Press-fit insertion tool

The press-fit insertion tool used depends on the installation situation of the final product. The end user is exclusively responsible for its design (*).

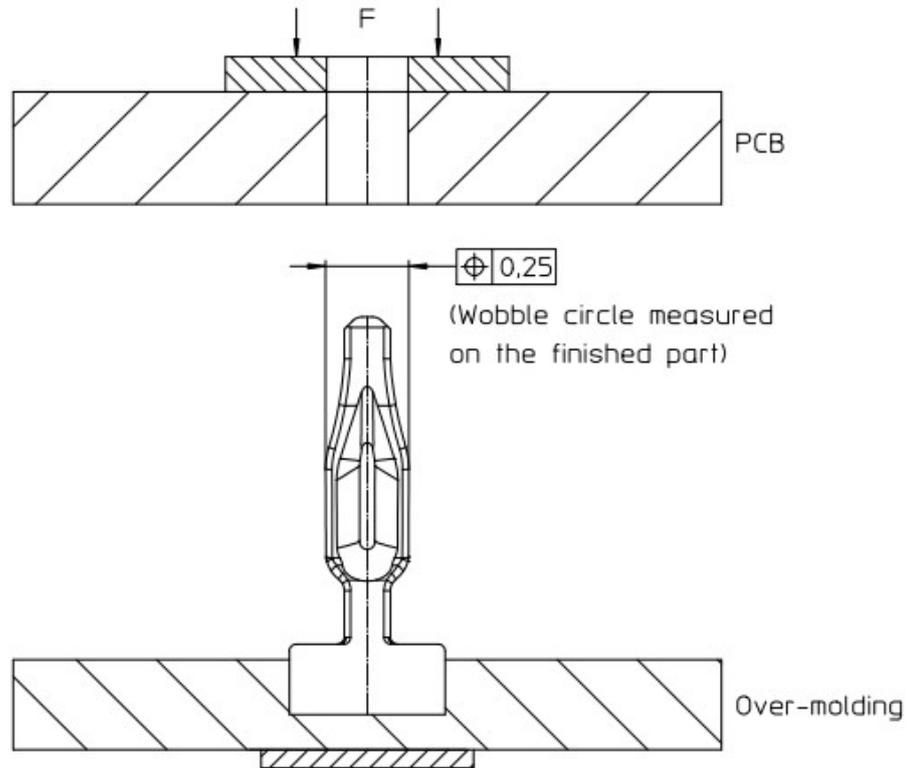
2.1.1. Non-extruded contacts

For non-extruded contacts (not over-molded), the marked area should be used for applying the force: $F_1 = F_2$

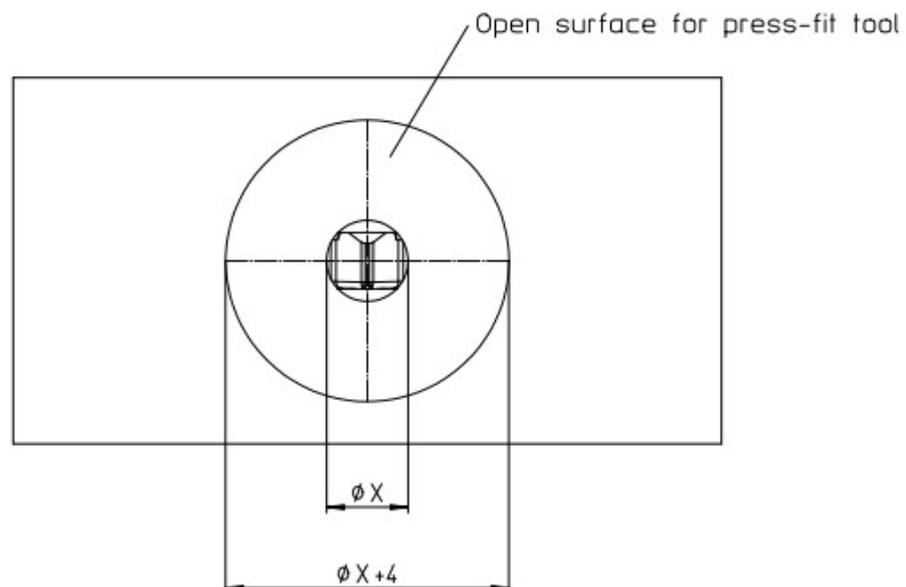


2.1.2. Extruded contacts

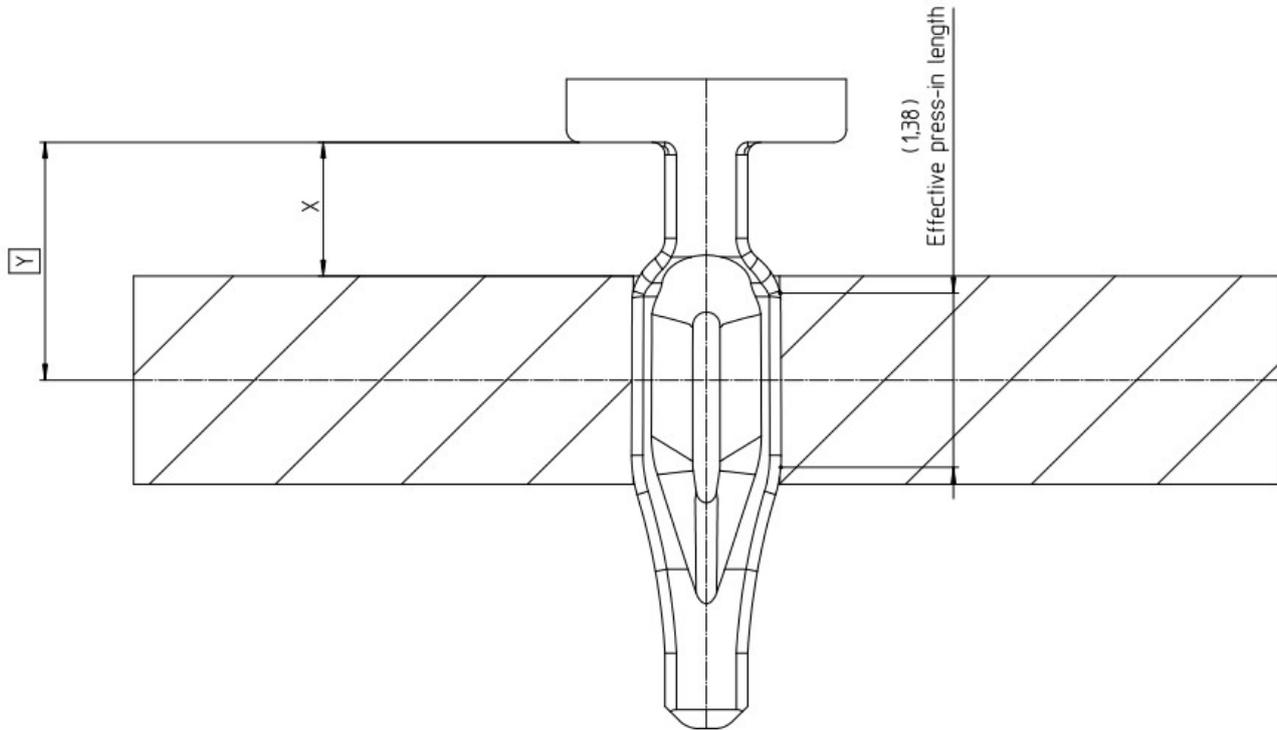
For extruded (over-molded) contacts, the position tolerances are listed in the corresponding assembly drawing. They should be confirmed with the press pin.



Open surface for counter bearing
(Size as specified by the end user)



2.2. Mounting in the PCB

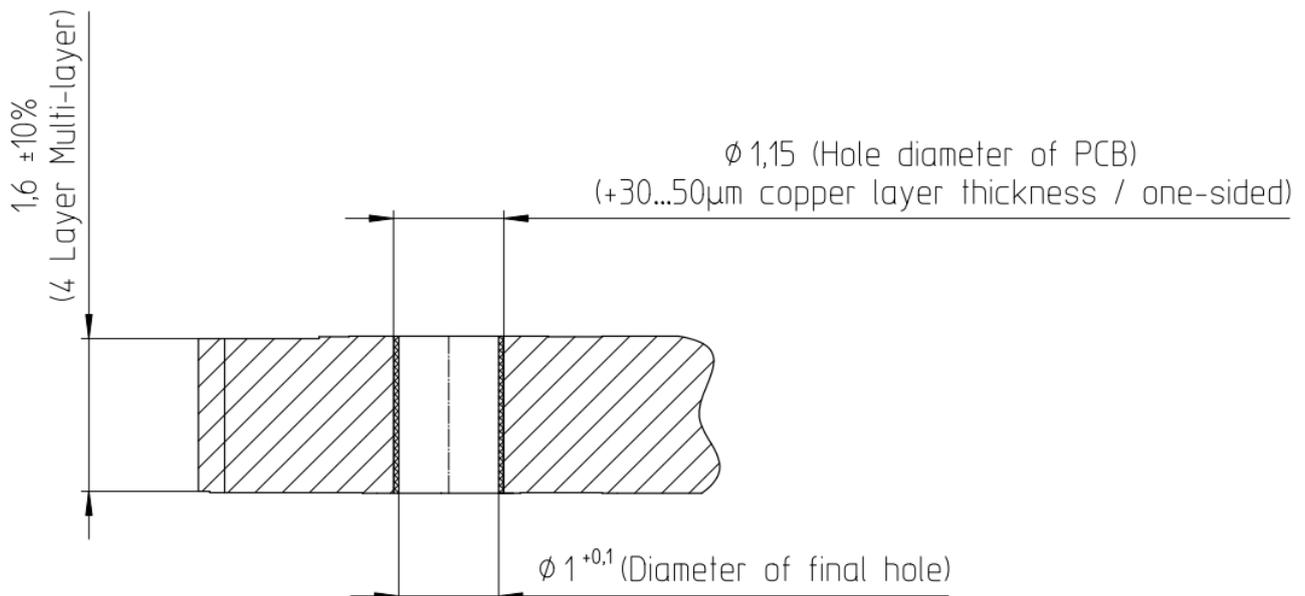


	Press-fit zone 0,6
Dimension X	1,33 ±0,12
Dimension Y	

3. PCB

The PCB specifications provided must be followed. Any deviations must be coordinated with and approved by Lumberg.

- Material: FR4 (IPC 4101C) min. TG (DSC) = 150°C
- Recommendation: Resin-filled
- According to IPC-A-600H-class3, IPC-6011-class3, IPC-6012C or IPC-TM-650
- Outer layer thickness: min. 70 µm Cu
- Inner layer thickness: min. 35 µm Cu
- Surface: chem. Sn 0,8 µm – 1,5 µm



4. Quality assurance measures

If there are work / process steps or changes (product launch, PCB change, tool or machine change, etc.) that can influence the quality of the product or the press-fit connection, then the organization responsible for the corresponding production step must define suitable quality assurance measures and ensure that such measures are implemented.

4.1. Quality characteristics

The following quality characteristics should be considered:

4.1.1 – 4.1.3: New condition, 4.1.4: Installed condition

4.1.1. Quality characteristics of the press-fit zone

- Integrity of the press-fit zone

4.1.2. Quality characteristics of the PCB

- PCB specification according to point 3
- Position tolerances depend on the component and must be agreed with the end user
- Agreed hole diameter

4.1.3. Geometry of the press-fit zone

The manufacturer ensures that the delivered state complies with the press-fit geometry specifications.

4.1.4. Quality characteristics of the press-fit zone

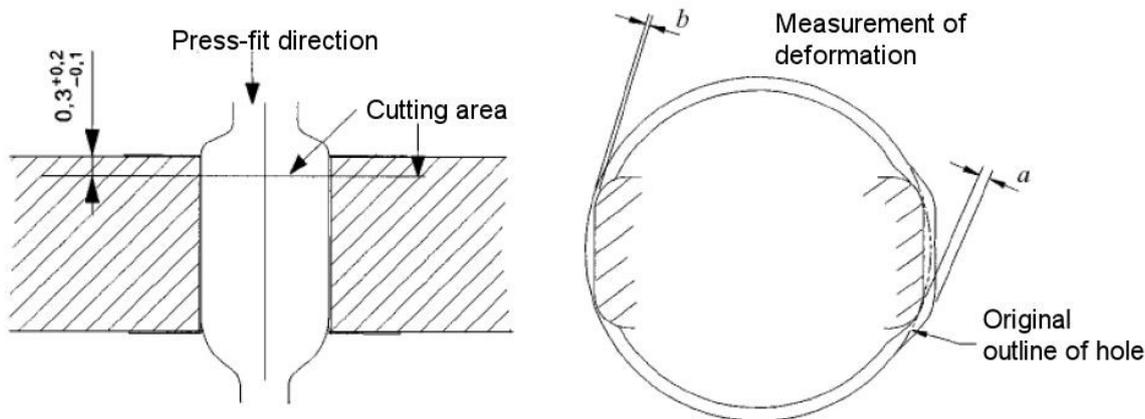
- Press-in depth (Table 1)
- Press-in force (Table 1)
- Press-out force (Table 1)
- Contact resistance (Table 1)

4.2. General requirements

The fact that Lumberg has tested a press-fit zone for approval does not release the user from his responsibilities to ensure proper contact, the qualification of the overall system, system suitability and monitoring of the processes being used. The connection may need to be re-tested and re-approved if there are changes made in the data-sheet specifications (for the PCB, etc.).

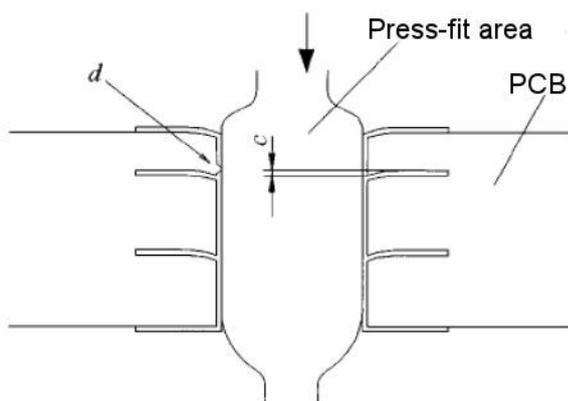
4.3. Deformation during the press-fit process

A deformation "a" in the outline of the hole for the plated-through (metallized) hole may not exceed 70 microns. The smallest residual thickness "b" of the metallization should be at least 8 microns. The metallization of the hole must be free of cracks. Compliance must be checked by a test and measurement, and then documented.



Dimensions in millimeters

The deformation "c" of the conductive pattern of the plated-through hole may not exceed 60 microns. There must be no cracks ("d") in the metallization of the hole or the conductor. This requirement applies to the outer layers on double-sided PCBs. Compliance must be checked by a test, measurement and visual inspection, and then documented. The position of the longitudinal section shall be determined with reference to the opposite press-fit contact zones (whereby the contact zones must be clearly visible in the micrograph).



4.4. Tests for mass production and machine approval

Total (100%) monitoring must be implemented for the mass (series) production. This is normally carried out by evaluating the force present or the force curve during the press-fit process in relation to the distance traveled or the time. A detected irregularity would indicate a faulty soldering process and should thus automatically lead to a process stoppage.

The finished state should normally be inspected to 100%. This means an inspection of whether the press-fit contact(s) were pressed in fully and completely.

This inspection can be carried out electrically, mechanically and/or visually.

We recommend that you check the quality of the press-fit connection for the mass (series) production at regular intervals.

The press-fit connection must first be stored for at least 24 hours after it is created. Then a press-out inspection should be carried out. Eventually, the inspections can be carried out less frequently if no errors are detected.

5. Storage

Physical processes cause components to age. This aging may adversely affect any further processing of the components. In order to maintain the best processing characteristics, make sure that the following instructions are closely followed during additional processing steps.

Storage conditions:

The parts should ideally be stored in the original, closed packaging at a constant temperature of 21 – 25° C, with a relative humidity of no more than 55%. The components should not be exposed to direct sunlight. They should also be protected from any extreme ambient conditions (such as air pollution or moisture).

Because of the physical properties of these components, their actual storage time should be kept as short as possible. The components should be processed within six months of their delivery.

These specifications are based on experience using components stored under optimal conditions. They do not constitute a binding commitment for the fulfillment of any characteristics.

Ask Lumberg for more information about alternative packaging options for other temperatures and environmental conditions.

6. General information

These processing instructions are not necessarily all-encompassing; they should only be used as a guideline for press-fit processing.

Please contact the manufacturer if you have questions about the suitability of the EPZ system for specific applications.