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Processing Instructions for WIZON terminations

1. General

WIZON terminations have three functional areas: retention, winding, and contacting (see illustration below).

They require a retention hole in an insulating (plastic) carrier.
This hole, with the correct diameter and depth, is used to hold and position the termination accurately in all three axes (x, y, z).

- The **x**–y plane is defined by the hole positions in the printed circuit board (PCB).
- The z position (hole depth) defines the correct vertical position of the press-fit contact, typically centered in the PCB thickness or in another application (e.g. connector, welding tab).

2. Conditions

The plastic carrier is defined by the user and must be matched to the properties of the WIZON termination.
Due to the rotational winding force applied during wire winding, the plastic must have sufficient mechanical strength to ensure reliable termination retention.

This capability must be verified in a preliminary test. If required, the retention area can be reinforced.

For thermoplastic carriers, the diameter of the retention hole must be equal to the width of the termination's retention area**.**
The hole edge must be sharp and without chamfer**, so** that the wire winding is properly supported during insertion.
A chamfer may pull the wire into the hole and cause wire breakage.

To allow easier insertion and to prevent damage to the hole edge (support surface), the termination has a tapered tip**.**
However, this reduced tip area also reduces the support surface for press-in force into the PCB.
Depending on the hardness of the plastic carrier, the hole depth must be adjusted accordingly**.**

After winding, the insertion process sets the termination to the correct height for press-fitting into the PCB.

After press-fitting the PCB, the WIZON termination must not move**.**
This means the retention force must be higher than the maximum press-in force required for the PCB**.**

Within certain limits, the termination and carrier can be adapted to each other by design.

For dimensional coordination between PCB, PCB support surface, and press-fit contact, the following document is helpful:
https://www.bizon-kontakt.de/en/files/WIZON-termination.pdf

3. Preliminary Tests

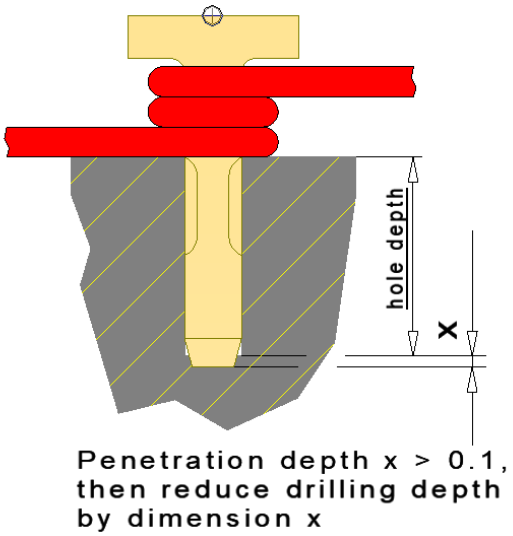
3.1 Mechanical strength of the plastic carrier

The winding tension must not cause unacceptable loosening or tilting of the termination.
Reinforcement of the termination retention area is possible.

If the termination bends due to excessive winding force from an overly thick wire, the next larger termination size must be used**.**

3.2 Support at the bottom of the hole

Due to the reduced support area of the termination tip, soft plastics may allow the termination to sink further when the PCB is press-fitted.
This secondary movement must be prevented.



Procedure:

- Measure the force required to press the wound termination fully into the retention hole.
- If this force is higher than the maximum expected PCB press-in force, the design is acceptable.
- If it is lower, increase the force at least to the maximum PCB press-in force and measure the additional insertion depth (x)**.**
- Reduce the hole depth by this measured insertion depth **x**.

After PCB press-fitting, the termination must not move.

In production, correct press-in depth into the PCB has priority over force (force/displacement principle).

4. Processing

The wire turns must be wound tightly next to each other**.**
Overwinding is not permitted **–** no turn may lie on top of another turn.

The same winding tension as used for coil winding may be applied.

For reliable electrical connection, at least three full wire turns must be wound onto the winding area.
After press-fitting the termination into its final position, all three turns must be located on the sharp-edged contact area**.**

The height of the winding area is designed for the maximum specified wire outer diameter, according to:
$Hw = 3 \times Da$

If wires smaller than the maximum diameter are used, it must still be ensured that **at least three turns** are positioned within the contact area.
For thinner wires, additional turns may be applied if necessary.

If the winding area is fully embedded inside the plastic carrier in the final position, correct assembly is ensured.
With thinner wire and three turns, the termination may be inserted deeper (deeper hole), creating additional space above the carrier.

However, the shoulder must never press onto the wire winding**.**
The thinner the wire, the more critical this becomes.

The wire winding must not be compressed simultaneously from above and below (statically overconstrained).
A clearance gap must remain between the shoulder and the wire.

If **two separate windings are applied to one termination**, external measures (fixing, winding strategy) must prevent the end of the first winding and the start of the second winding from loosening or shifting during press-in.

To provide even support for the second winding, the end of the first and the start of the second winding should be as close together as possible**,** as if the winding were continuous.

Unintentional winding-on can only occur in the rounded winding area, where the wire can slip and the second winding may rest on the first.
In the sharp-edged contact area, the winding is self-locking.

For **thin wires below 0.15 mm**, ensure that the winding tension is not excessive.
Cracks in the insulation are an indication of excessive tension and are not permissible.

Significant wire stretching at the small edge radii of the winding area is not allowed, as this may exceed the permissible strain in the contact area.

Pressing the termination into the retention hole must be done only via the shoulder**.**
Never apply force to the tip of the BIZON contact**.**

The hole in the press-in tool must guide the BIZON contact without applying force.

5. Summary

Plastic carrier

- Verify material strength for suitability

Retention hole

- Diameter = stamping width of the termination retention area
- Fine adjustment according to material properties (thermoplastic / duroplast)
- Adjust depth if required

Printed circuit board (PCB)

- Hole according to BIZON contact size and applicable standards
- Coordinate height between plastic carrier (support surface) and BIZON
- contact
- Target: contact center aligned with PCB thickness center + 0.2 mm

WIZON termination

- Wind at least 3 turns, tight and non-overlapping
- Termination must always be pressed against the hole bottom (defined insertion depth)
- At least 3 turns must be located within the contact area
- For two separate windings per termination, see Section 4