QUICKINFO
FITTING OF COPPER AND CABLE LUGS

2016

Recently we have been receiving an increasing number of complaints from customers and users about deliveries of allegedly incorrect cable cross sections as well as inquiries if the cable has been compacted. Mostly NYY-types between 50 and 630 mm² are affected.

These complaints usually relate to a) a calculated geometrical cross section or b) or to a cable lug with a smaller nominal cross section which can be slid over the cable (respectively there is too much space between the lug of the same cross-section and the cable, so the lug can not be pressed).

In this context the following should be noted:

Conductors for cables and wires are described in VDE 0295 (EN 60228).
These standards define maximum and minimum values for compacted multi-core round conductors and maximum values for non-compacted round conductors.

For sector-shaped conductors only guide values are given and a tolerance is specified only for the height "d". According to VDE 0276-603 (the standard for low voltage cable) round and sector-shaped conductors ≥ 50 mm² have to be compacted.

Table: Diameters of compacted round conductors acc. to VDE 0295

Nominal cross section mm²	Minimum value mm	Maximum value mm
50	7,7	8,6
70	9,3	10,2
95	11,0	12,0
120	12,3	13,5
150	13,7	15,0
185	15,3	16,8
240	17,6	19,2
300	19,7	21,6
400	22,3	24,6
500	25,3	27,6
630	28,7	32,5

In any case the determining factor for the nominal cross section is the conductor resistance (at 20°C) for which the standard mentioned above defines exact maximum values. In order to prove that definitively a wrong cross section has been delivered / installed, the conductor resistance would have to be measured as geometrical deviation due to slightly differing copper qualities as well as more and more used conductor compression can vary.

Case a) is only problematic because the single wires of compacted conductors lost their circular form and therefore their cross-section can be determined only roughly.

In case b) it is essential to inform the customer that under no circumstances the cable lugs of smaller cross sections should be used. Cable lugs also have an ampacity and it could no longer be provided. In fact manufacturers offer so called reduction sleeves for all types of conductors to facilitate smaller cable cross sections to adjust them to the cable lug.cross sections to adjust them to the cable lug.

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