



Certificates



Maintaining electrical functionality

Effective support measures for vertical cable routing

Expert opinion no. GA-2020/049 - Nau, valid until 12-05-2025

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Expert Opinion No. GA-2020/049 -Nau dated 12.05.2020

Client: OBO BETTERMANN Produktion Deutschland GmbH & Co. KG
Hüingser Ring 52
D-58710 Menden

Order date: 27.04.2020

Order No. Mr. Fabry / Order No. 494320

Order receipt: 27.04.2020

Content of order: Expert opinion on the fire behaviour of electric cable systems required to maintain circuit integrity in accordance with DIN 4102-12 when using „standard support constructions“ (vertical cable routing) in conjunction with effective support measures within the meaning of section 8.3 of DIN 4102-12.

This expert opinion has 6 pages, cover sheet included and 7 annexes.

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1 Order and Occasion

IBB GmbH, Groß Schwülper, was commissioned by OBO BETTERMANN Produktion Deutschland GmbH & Co. KG, Menden with order no. 494320 dated 27.04.2020 to provide a fire protection assessment of electric cable systems required to maintain circuit integrity when using standard support constructions from OBO BETTERMANN Produktion Deutschland GmbH & Co. KG, Menden, in conjunction with effective support measures according to DIN 4102-12.

2 Basis and documents of the expert opinion

The documents listed below are the basis for the expert opinion:

- (1) Test certificates and test reports as well as „allgemeine bauaufsichtliche Prüfzeugnisse“ with regard to electric cable systems required to maintain circuit integrity in conjunction with “standard support construction” according to DIN 4102-12,
- (2) Expert opinions for the assessment of vertical routing of cables as standard support construction according to DIN 4102-12,
- (3) „Allgemeine Bauartgenehmigung (aBG)“ No. Z-19.53-2338 dated 20.02.2019 for fire resistant penetration seals of electric cables and/or pipes made of plastics or metal „PYROSIT NG“, issued to OBO BETTERMANN Produktion Deutschland GmbH & Co. KG, Menden,
- (4) „Allgemeine Bauartgenehmigung (aBG)“ No. Z-19.53-2391 dated 19.08.2019 for fire resistant penetration seals of electric cables and/or pipes made of plastics or metal „PYROPLUG Block“, issued to OBO BETTERMANN Produktion Deutschland GmbH & Co. KG,
- (5) DIN 4102:12 : 1998-11 and
- (6) Detailed construction drawings according to annexes 1 to 7 of this expert opinion.

In addition to these documents, the extensive fire protection experience of the authors of this expert opinion from fire tests on various support constructions of electric cable systems required to maintain circuit integrity in conjunction with effective support measures are incorporated into the fire protection assessment. The author of this expert opinion gained over 30 years of professional experience, among other things, through continuous work at approved testing laboratories, so that this provides equivalent significance to that of an approved material testing laboratory. This is also confirmed by the fact that expert opinions from the author are accepted by both the lower and higher building supervisory authorities on an equal basis with opinions from approved material testing laboratories.

This expert opinion only applies in terms of fire protection and functional integrity. Further requirements may arise from the technical building regulations applicable to the constructions being assessed and the respective “Landesbauordnung” (*state building regulations*) or the regulations for special buildings.

The overall fire protection concept of buildings is not the subject of this expert opinion.

3 Description of the construction

Only details regarding the fire protection and the functional integrity are described as follows.

The effective support measures for strain relief which are to be evaluated shall be used for a vertical cable installation directly to the wall using single clips or clamp clips on profile rails or vertical ladders or on suspended vertical ladders. According to the client’s information the above-mentioned support constructions correspond to the conditions for standard support constructions according to DIN 4102-12.

The cladding measure to protect the cable fasteners as an effective support measure within the meaning of DIN 4102-12 at a distance of ≤ 3.5 m is carried out with a three-sided housing for direct wall mounting or a four-sided housing for suspended mounting. The housing consists of Promatect-H or Promatect-LS boards with a thickness of 25 mm with the maximum dimensions thickness x width x height = 200 mm x 700 mm x 200 mm. The cavity within the housing is filled with "PYROPLUG Block FBA-B200-14" foam block or "PYROSIT NG FBS-S" fire protection foam on basis of the “allgemeine Bauartgenehmigung (aBG)” according to [3] and [4]. When using the above-mentioned foam blocks, the joints are sealed with "PYROPLUG Screed FBA-SP" filler. In case of the four-sided housing of the suspended vertical ladder, additional steel lock plates are arranged on the back.

For the fastening of the described fire protection board housings the front plates of three-sided housings are fixed with M8 threaded rods either directly in the wall or in the C-rail. In case of four-sided board housing of the suspended vertical ladder the back plate is screwed with the steel lock plate to the ladder rails and the M10 threaded rod is fastened to the screw using a connection sleeve.

Further construction details can be found in annexes 1-7 to this expert opinion, so that no further description is required

4 Assessment of the cable support systems with regard to fire protection

Based on the available test results there are no concerns in terms of functional integrity and fire protection, despite the in section 3 described deviations of the support constructions from the above-mentioned expert opinions regarding standard support constructions according to DIN 4102.

Based on the available test results as well as further testing experience on electric cable systems required to maintain circuit integrity from OBO BETTERMANN Produktion Deutschland GmbH & Co. KG, Menden, the electric cable systems required to maintain circuit integrity according to section 3 can be classified as

Functional integrity classes „E30“, „E60“ or „E90“ according to DIN 4102-12 : 1998-11

in case of fire exposure according to the standard temperature-time curve (ETK), when

- a functional integrity class "E30", "E60" or "E90" (depending on the cables used) according to DIN 4102-12 : 1998-11 is available for the installed cable types for the installation type "vertical routing of cables", "profile rails with clamp clips" or "single clamp installation".
- an "allgemeines bauaufsichtliches Prüfzeugnis" for the cable support constructions or an expert opinion for vertical routing of cables is available and
- otherwise, the boundary conditions and construction principles of the corresponding "allgemeinen bauaufsichtlichen Prüfzeugnisse" for electric cable systems required to maintain circuit integrity in conjunction with the expert opinions for vertical routing of cables ("standard support construction") are met.

The electric cable systems required to maintain circuit integrity described in section 3 and shown in annexes 1 to 7 in conjunction with the effective support measures do not represent a significant deviation from classified constructions if the above-mentioned boundary conditions are complied with.

This expert opinion can be used together with the corresponding "allgemeinen bauaufsichtlichen Prüfzeugnis" for electric cable systems required to maintain circuit integrity in conjunction with the expert opinions for vertical routing of cables ("standard support construction") in the building regulation procedure.

The design variants according to section 3 and annexes 1-7 of this expert opinion can be evaluated as effective support measures within the meaning of section 8.3 of DIN 4102-12

5 Special Information

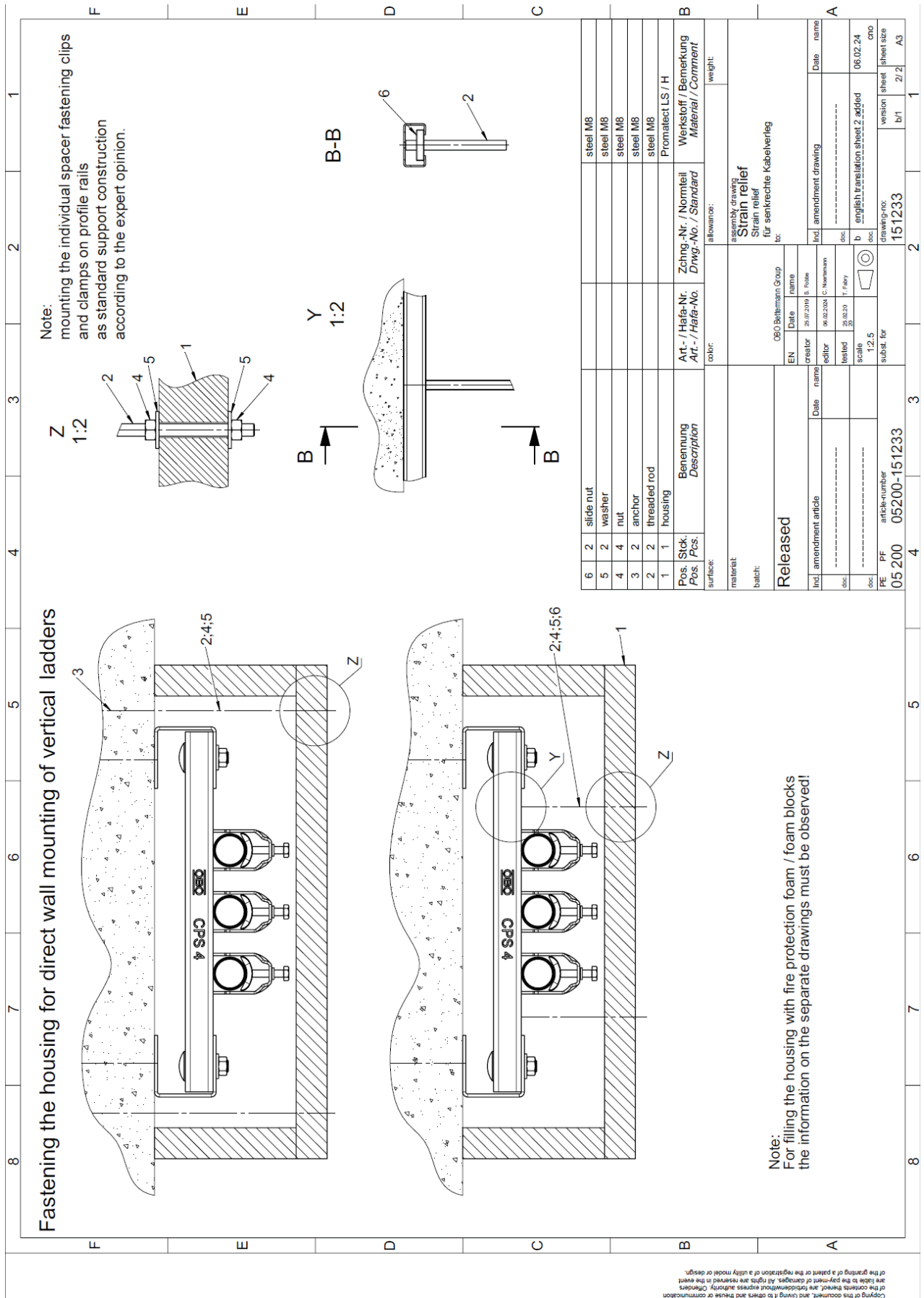
- This expert opinion in conjunction with the corresponding “allgemeines bauaufsichtliches Prüfzeugnis” can be used in the building regulation procedure as basis for the certificate of conformity (Übereinstimmungsnachweis), as the deviations from the certificate mentioned before are evaluated as "not significant" in terms of fire protection. The issue of the certificate of conformity for the construction (with the note that the construction is a "non-significant" deviation from the construction principles and boundary conditions in accordance with the above-mentioned certificate with regard to fire protection) is the responsibility of the manufacturer of the construction.
- Changes and additions to construction details (derived from this expert opinion) are only possible after consultation with IBB GmbH, Groß Schwülper.
- This expert opinion only applies if the adjoining load-bearing (reinforcing or load-distributing) building elements have at least the same fire resistance class as the cable systems.
- The proper execution is the sole responsibility of the executing company.
- The manufacturer's valid processing guidelines must be observed when processing the specified building materials or products.
- The validity of this expert opinion ends on 12.05.2025.
- The period of validity can be extended upon request and depending on the state of the art.

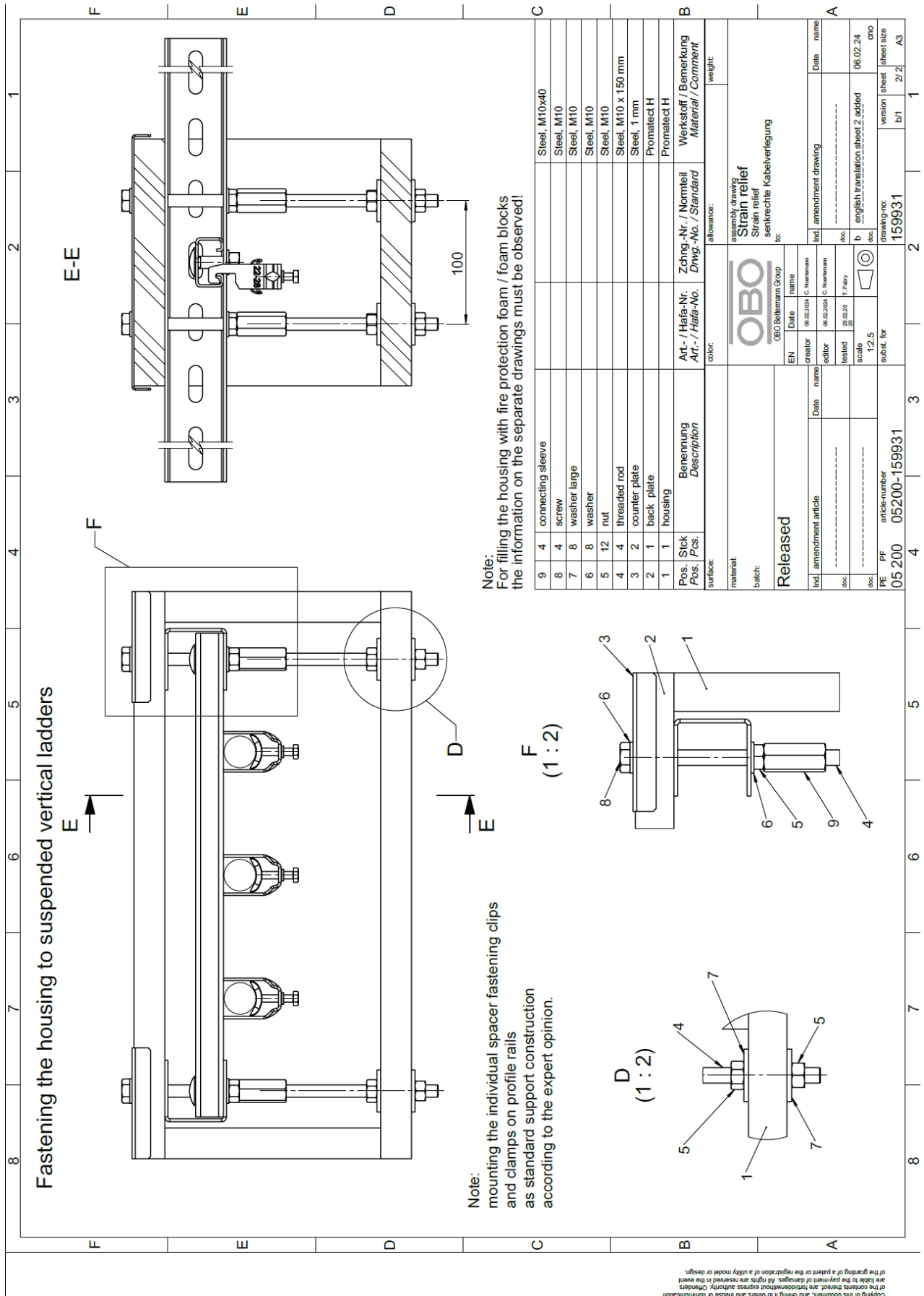
Best regards

Dr.-Ing. Peter Nause
Expert for fire protection

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Building Connections

