Certificates

Maintaining electrical functionality

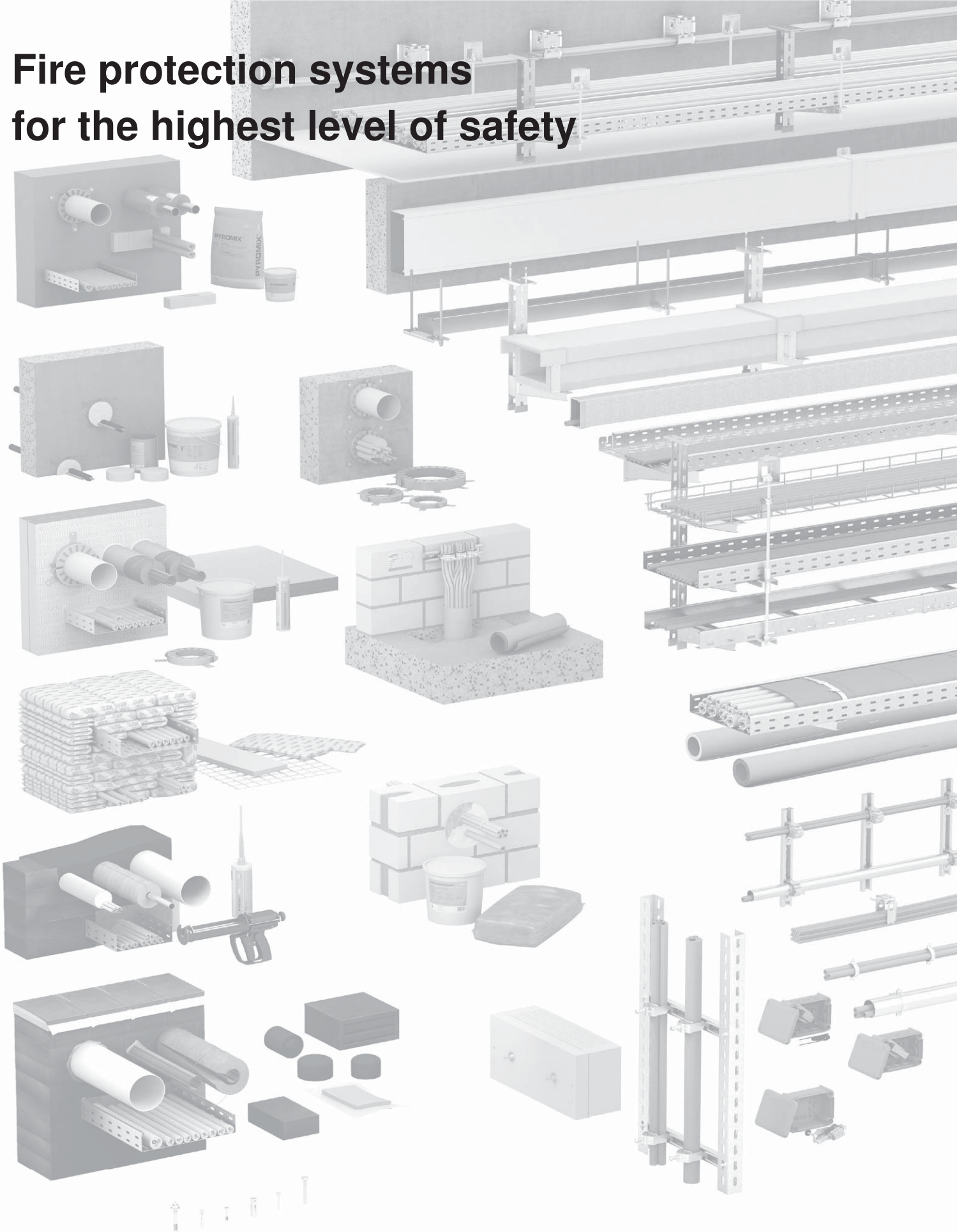
Fastening clips types 1015/1015D

Expert opinion no. GS 3.2/18-387-1, valid until 14.11.2023

This is a translation of the original German version, which has neither been checked nor approved by the MFPA Leipzig GmbH Testing Office. Only the original German document is valid.

OBO BETTERMANN

Fire protection systems for the highest level of safety



Be it in a residential building or an industrial complex – OBO has the appropriate solution for fireproof electrical installations. Our tested and certified fire protection systems cover all the relevant fire protection guidelines and provide you with an electrical installation that really serves its purpose.
We will be happy to provide you with more details – on our website or personally.

This is a translation of the original German version, which has neither been checked nor approved by the MFPA Leipzig GmbH testing office. Only the original German document is valid.

MFPA Leipzig GmbH

Testing, monitoring and certification body for building materials, building products and building systems

Business Unit III – Structural Fire Protection

Dipl.-Ing. Sebastian Hauswaldt

Working group 3.2 – Fire behaviour of construction types and special constructions

Dr.-Ing. P. Nause

Telephone +49 (0)341 658 2113

nause@mfpa-leipzig.de

Expert Opinion No. GS 3.2/18-387-1

Dated 14 November 2018
1st issue

Subject:	Expert opinion on the fire and functional behaviour of cable support structures made by OBO Bettermann Produktion Deutschland GmbH & Co. KG, Menden, with regard to their classification as "standard support structures" in accordance with DIN 4102-12:1998-11, when cables are laid using type 1015 and type 1015D fastening clips.
Commissioned by:	OBO Bettermann Produktion Deutschland GmbH & Co. KG Hüingser Ring 52 58710 Menden
Order date:	9 November 2018
Valid until:	14 November 2023
Drawn up by:	Dr.-Ing. P. Nause

This document comprises 4 pages and 5 annexes.

This letter remains valid until 14 November 2023 and may be extended upon request, provided it remains technically up to date.

1 Background and brief

In an order dated 9 November 2018, MFPA Leipzig GmbH was commissioned by OBO Bettermann Produktion Deutschland GmbH & Co, Menden, to prepare an expert opinion on the fire and functional behaviour of cable support structures made by OBO Bettermann Produktion Deutschland GmbH & Co. KG, Menden, with regard to their classification as **"standard support structures"** in accordance with DIN 4102-12: 1998-11, **when cables are laid using type 1015 and 1015D fastening clips**.

According to DIN 4102-12: 1998-11, test results achieved by cable systems with integrated maintenance of electrical function can be transferred to tested cable support structures made by other manufacturers, as an alternative to the tested cable support structures themselves, provided that these can be considered "standard support structures" in the sense of DIN 4102-12.

That is why this expert opinion aims to compare the cable support structure being assessed – cables laid using individual type 1015 and 1015D clips made by OBO Bettermann Produktion Deutschland GmbH & Co. KG, Menden – with the design features of the "standard support structure" defined in DIN 4102-12.

This expert opinion will then be used in conjunction with valid, general building authority test certificates for cable systems with integrated maintenance of electrical function using "standard support structures" in the building authority planning procedure.

2 Foundations and documents on which the expert opinion is based

The following are used as a basis for this expert opinion regarding the cable support structure:

- [1] DIN 4102-12: 1998–11
- [2] The following test reports determining the maintenance of electrical function of cable systems pursuant to DIN 4102-12 using type 1015 and 1015D fastening clips, each issued to OBO Bettermann GmbH & Co. KG, Menden:
  - 210006560-1 by MPA NRW dated 22.01.2014,
  - 210006560-2 by MPA NRW dated 17.02.2014,
  - 210006560-3 by MPA NRW dated 19.03.2014,
  - FIRES-FR-007-18-AUNE by FIRES s.r.o., Slovakia;
- [4] General building authority test certificates regarding cable systems with integrated maintenance of electrical function in conjunction with "standard support structures" as defined in DIN 4102-12,
- [5] DIN 4102-4: 2016-05,
- The construction drawings of support structures for laying cable with individual clips, and the associated data sheets provided in Annexes 1 to 5 to this expert opinion.
-

In addition to these foundations, MFPA Leipzig GmbH's extensive testing experience around cable systems with integrated maintenance of electrical function is incorporated into the fire protection assessment.

3 Description of the support structure – laying cables using individual type 1015 and 1015D clips

3.1 General

Only the technical details relating to fire and the maintenance of electrical function are described below.

This expert opinion aims to evaluate the support structure consisting of type 1015 and 1015D fastening clips made by OBO Bettermann GmbH & Co. KG, Menden, regarding its categorisation as a “standard support structure” as defined in DIN 4102-12, in terms of fire protection and the maintenance of electrical function.

The steel components of supporting structures subjected to tensile and shear stresses must be designed so that a maximum steel stress of $\sigma \leq 9$ N/mm^2 (E 30) or $\sigma \leq 6$ N/mm^2 (E 90) or $T \leq 15$ N/mm^2 (E 30) or $T \leq 10$ N/mm^2 (E 90) on the basis of Table 11.1 of [5] is not exceeded.

The fastening clips must be attached to solid structures using ≥ M6 fasteners designed for the relevant load and proven in terms of fire protection.

3.2 Type 1015 and 1015D fastening clips for attaching cables to solid ceilings and walls

Cables for the maintenance of electrical function should be fixed to solid ceilings and walls using type 1015 and 1015D fastening clips (double clips) at a distance of a ≤ 300 mm. It should be possible to fix the cables horizontally to walls and ceilings. And it should be possible to fix them vertically on walls.

Further structural details of the aforementioned fastening clips can be found in Annexes 1 to 5, so no further description is necessary.

4 Fire protection and maintenance of electrical function assessment

According to the submitted test reports [2], numerous fire tests have been conducted on cable systems with integrated maintenance of electrical function using type 1015 and 1015D fastening clips, pursuant to DIN 4102-12. A range of different cables were tested while mounted horizontally on walls and ceilings, each with a clip spacing of 60 cm.

According to Section 7.3.3.3 of DIN 4102-12, a single installation with single clips is considered a standard support structure, provided the clips have a width of 15 mm (± 5 mm). For this purpose, the maximum fastening distance is defined as 30 cm. The design of the single clip is not defined or described in any further detail.

The tested type 1015 clips have a width of 12–14 mm, depending on size. The aforementioned requirement of DIN 4102-12 is therefore easily met in this respect. The fire tests were carried out with a clip spacing of 60 cm, which was twice as far as defined by DIN 410212 for a standard support structure with single clips. The basic usability of this clip for the maintenance of electrical function, and its mechanical load-bearing capacity, were thus sufficiently demonstrated.

Section 8.3 of DIN 4102 Part 12 contains information regarding the vertical installation of cables with maintenance of electrical function. According to that information, single clips tested for ceiling installation can also be used for vertical cable installation. The maximum cable fastening distance is again 30 cm, as with horizontal ceiling mounting. Since the type 1015 clips have also been tested beneath ceilings, the specifications of the standard regarding the use of clips for vertical cable routing are also fulfilled without difficulty.

Therefore, from the point of view of fire protection and the maintenance of electrical function, there is nothing to prevent type 1015 and 1015D clips from being considered standard support structures for both horizontal and vertical cable routing on walls, and standard support structures as defined in DIN 4102-12.

The load-bearing construction involving type 1015 and 1015D fastening clips described in Section 3, which I have been asked to assess, can be considered a “standard load-bearing construction” pursuant to DIN 4102-12 [1], provided that the conditions specified in the following sections are complied with.

5 Summary

A classification of cable systems with integrated maintenance of electrical function when using cable support structures as defined in Section 3 can only be done in conjunction with valid, general building authority test certificates issued by a recognised materials testing institute. It must be checked in each individual case whether the maintenance of electrical function classes of the cable systems with integrated maintenance of electrical function with support structures – individual clips, which correspond to the “standard support structures” of DIN 4102-12 [1], have been achieved, as verified in the general building authority test certificates.

6 Special notes

6.1 This expert opinion can be used in conjunction with the corresponding general building authority test certificate in the building authority approval procedure, as the basis for proof of conformity, since the divergences from the above-mentioned proof are considered “not significant” in terms of fire protection. The manufacturer of the construction is responsible for issuing a certificate of compliance for the construction, stating that the construction produced is a “non-substantial” divergence from the construction principles and peripheral conditions defined in the aforementioned fire protection certificate.

6.2 This expert opinion only concerns the maintenance of electrical function and fire protection. Further requirements may arise from the technical building regulations applicable to cable systems with integrated maintenance of electrical function and the relevant state building regulations or regulations for special buildings – e.g. structural physics, structural engineering, electrical engineering, ventilation technology and similar.

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

6.4 The above fire protection assessment only applies if the load-bearing (load-dissipating and stiffening) components have at least the same fire resistance duration as the cable system with integrated maintenance of electrical function .

6.5 Changes and additions to construction details (derived from this expert opinion) are only permitted after consultation with MFPA Leipzig.

6.6 Proper execution is the sole responsibility of the executing companies.

6.7 This opinion ceases to be valid on 14 November 2023 but may be extended upon request, provided it remains technically up to date.

This document does not replace a certificate of conformity or usability as stipulated by the building regulations (national/European)

Leipzig, 14 November 2018

Dipl. Ing. S. Hauswaldt
Business Unit Manager

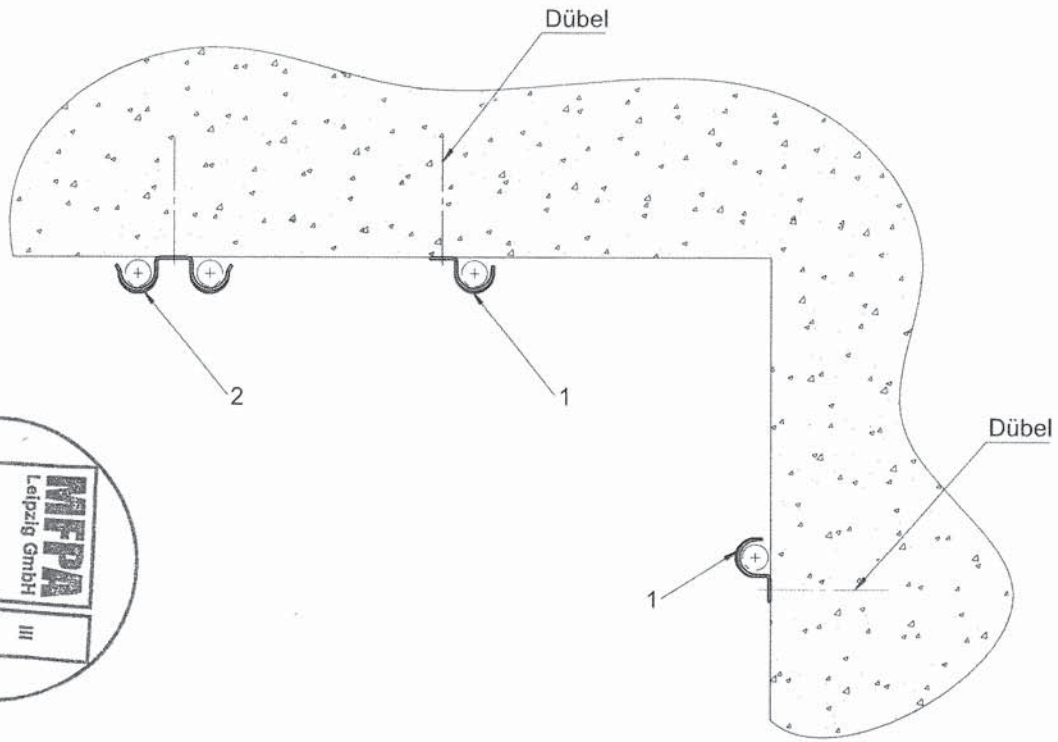
Dipl. Ing. P. Nause
Clerk

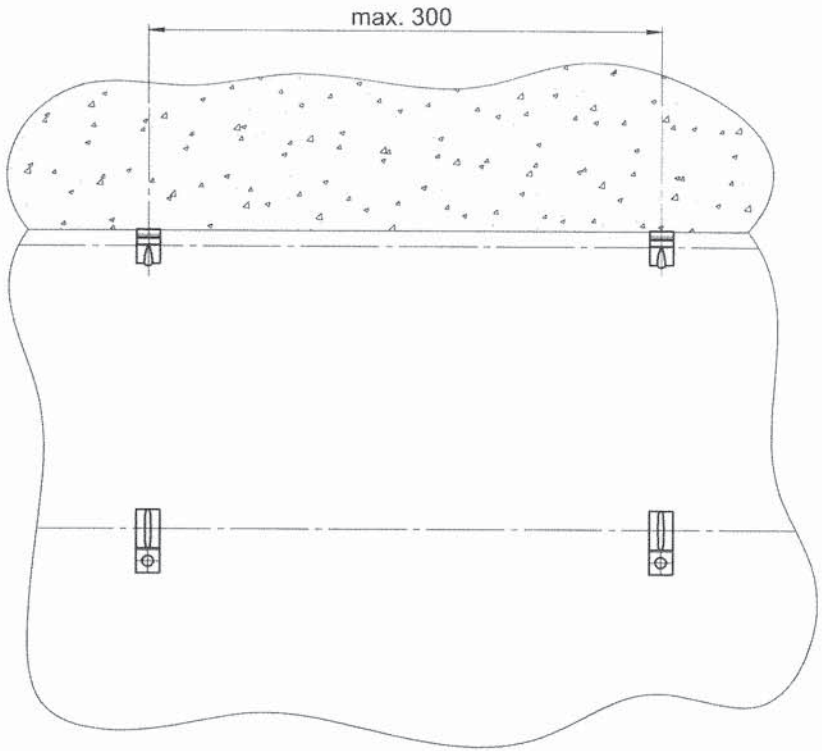
MFPA Leipzig GmbH
Baulicher Brandschutz

GS 3.2/18-387-1
vom 14. November 2018

Anlage 1

Wand- und Deckenmontage, waagerechter Kabelverlauf





Pos.	Stck.	Benennung	Art.-/ HAFA-Nr.	Zeichnung-Nr. / Normteil	Werkstoff/Bemerkung
2		Befestigungsschelle	Typ: 1015 D ...		St verzinkt
1		Befestigungsschelle	Typ: 1015 ...		St verzinkt

Oberflaeche:
Farbe:
zulaessige Abweichung:
Gewicht:

Werkstoff:

Freigegeben

OBO Bettermann Produkten Deutschland GmbH & Co. KG

Baugruppenzeichnung
Funktionserhalt
Einzelverlege-Systeme
Einzelschelle, 1015 ...
zu:
Funktionserhalt-Systeme, nach DIN 4102-12

	DE	Datum	Name
Ersteller		31.10.18	S. Febbe
Bearb.		31.10.18	S. Febbe
Geprueft		06.11.18	S. Febbe

Maßstab 1:3

Ind.	Aenderung Artikel	Datum Name
Dok.		
Dok.		

Ind.	Aenderung Zeichnung	Datum Name
Dok.		
Dok.		

PE PF Artikel-Nummer
05 200 05200-132691

Ersatz fuer

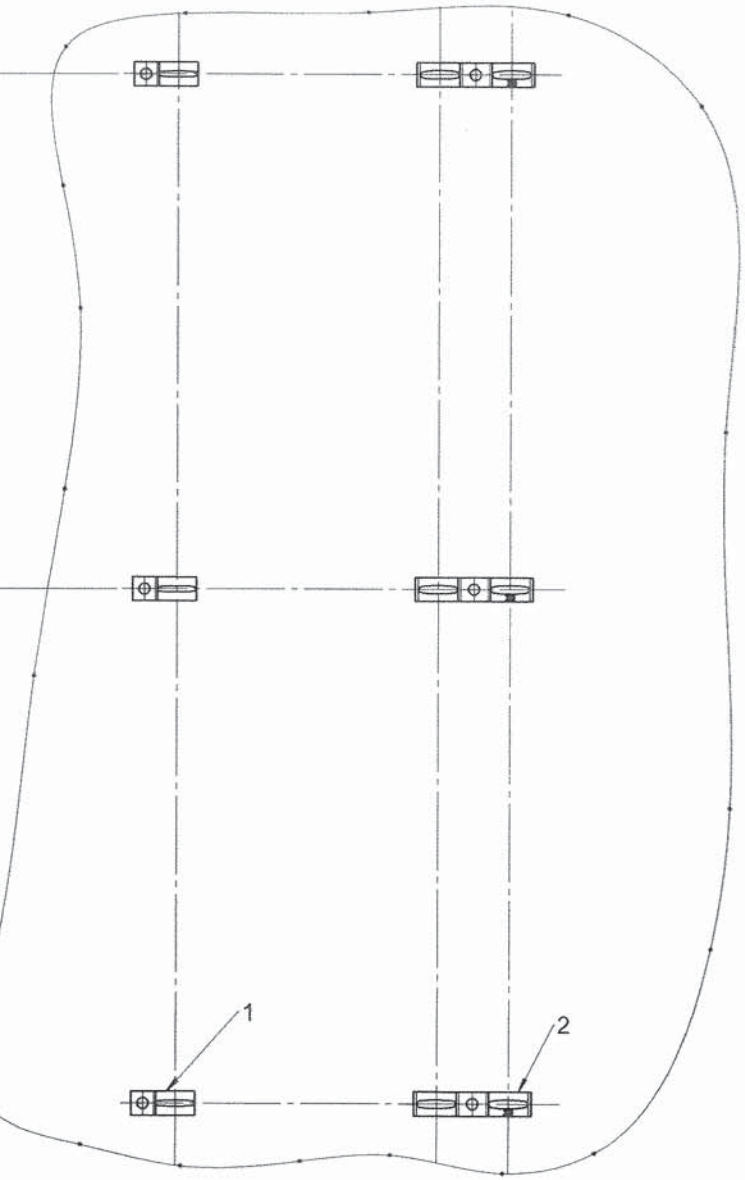
Zeichnungs-Nr.: 132691 | Zg-Vers. 0/1 | Blatt 1/2 | Format A3

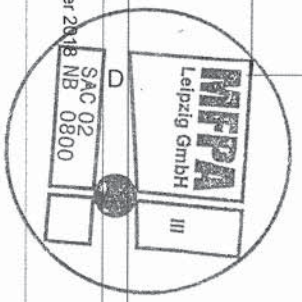
MFPA Leipzig GmbH
Baulicher Brandschutz

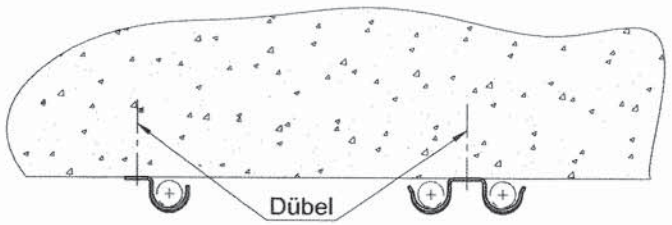
GS 3.2/18-387-1
vom 14. November 2018

Anlage 2

Wandmontage, senkrechter Kabelverlauf







Pos.	Stck.	Benennung	Art.-/ HAFA-Nr.	Zeichnung-Nr. / Normteil	Werkstoff/Bemerkung
2		Befestigungsschelle	Typ: 1015 D ...		St verzinkt
1		Befestigungsschelle	Typ: 1015 ...		St verzinkt

Oberflaeche:
Farbe:
zulaessige Abweichung:
Gewicht:

Werkstoff:

Freigegeben

OBO Bettermann Produktion Deutschland GmbH & Co. KG

Baugruppenzeichnung
Funktionserhalt
Einzelverlege-Systeme
Einzelschelle, 1015 ...
ZU:
Funktionserhalt-Systeme, nach DIN 4102-12

	DE	Datum	Name
Ersteller		31.10.18	S. Febbe
Bearb.		31.10.18	S. Febbe
Geprueft		06.11.18	S. Febbe
Maßstab	1:3		

Ind.	Aenderung Artikel	Datum Name
Dok.		
Dok.		

Ind.	Aenderung Zeichnung	Datum Name
Dok.		
Dok.		

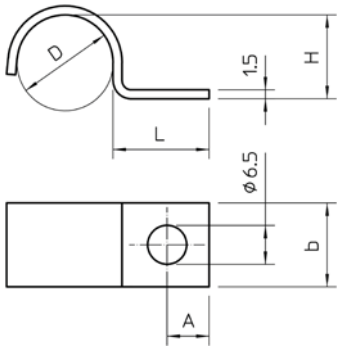
PE	PF	Artikel-Nummer
05	200	05200-132691

Ersatz fuer

Zeichnungs-Nr:	Zg-Vers	Blatt	Format
132691	0/1	1/2	A3

Data sheet

Fastening clip type 1015

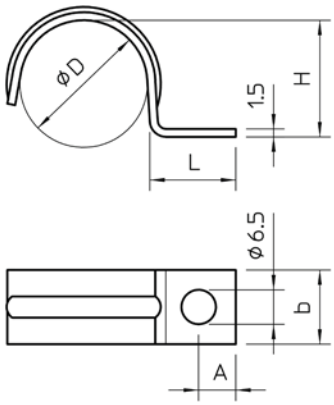


Material: steel, electrogalvanized

Type	D	L	H	b	A
1015/5	5 mm	16 mm	4 mm	12 mm	7 mm
1015/6	6 mm	16 mm	5 mm	12 mm	7 mm
1015/7	7 mm	16 mm	6 mm	12 mm	7 mm
1015/8	8 mm	16 mm	7 mm	12 mm	7 mm
1015/9	9 mm	16 mm	8 mm	12 mm	7 mm
1015/10	10 mm	16 mm	9 mm	12 mm	7 mm
1015/11	11 mm	16 mm	10 mm	14 mm	7 mm
1015/12	12 mm	16 mm	11 mm	14 mm	7 mm
1015/13	13 mm	16 mm	12 mm	14 mm	7 mm
1015/14	14 mm	16 mm	12,5 mm	14 mm	7 mm
1015/15	15 mm	16 mm	13,5 mm	14 mm	7 mm
1015/16	16 mm	16 mm	14 mm	14 mm	7 mm
1015/17	17 mm	16 mm	15 mm	14 mm	7 mm
1015/18	18 mm	16 mm	16 mm	14 mm	7 mm

Data sheet

Fastening clip type 1015

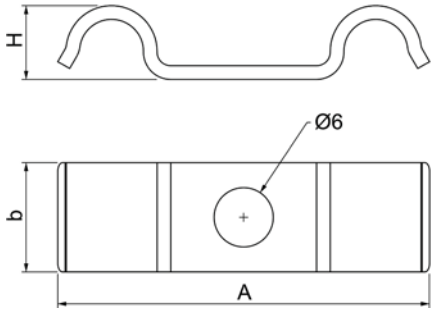


Material: steel, electrogalvanized

Type	D	L	H	b	A
1015/20	20 mm	16 mm	18 mm	14 mm	7 mm
1015/25	25 mm	16 mm	22,5 mm	14 mm	7 mm
1015/28	28 mm	16 mm	25 mm	14 mm	7 mm

Data sheet

Fastening clip type 1015D



Material: steel, electrogalvanized

Material thickness: 1.5 mm

Type	D	H	b	A
1015/5	5 mm	6 mm	12 mm	33 mm
1015/6	6 mm	7 mm	12 mm	35 mm
1015/7	7 mm	8 mm	12 mm	41 mm
1015/8	8 mm	9 mm	12 mm	43 mm
1015/9	9 mm	10 mm	12 mm	45 mm
1015/10	10 mm	10,5 mm	12 mm	47 mm
1015/12	12 mm	12 mm	14 mm	51 mm
1015/14	14 mm	14 mm	14 mm	55 mm
1015/15	15 mm	15 mm	14 mm	58 mm
1015/16	16 mm	16 mm	14 mm	60 mm
1015/18	18 mm	18 mm	14 mm	64 mm
1015/20	20 mm	21 mm	14 mm	69 mm
1015/22	22 mm	22 mm	14 mm	72 mm
1015/25	25 mm	25 mm	14 mm	79 mm

OBO Bettermann Holding GmbH & Co. KG
P.O. Box 1120
58694 Menden
GERMANY

Customer Service
Tel.: +49 23 73 89-13 00
Fax: +49 23 73 89-71442
toi@obo.de

www.obo-bettermann.com

Building Connections