

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-15/0816  
of 3 March 2016

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-  
KL"

Product family  
to which the construction product belongs

Kit for use in cable penetration seals

Manufacturer

FLAMRO  
Brandschutz Systeme GmbH  
Am Sportplatz 2  
56291 Leiningen  
DEUTSCHLAND

Manufacturing plant

FLAMRO  
Brandschutz Systeme GmbH  
Werk I, PU-Halle  
Am Sportplatz 2  
56291 Leiningen  
Deutschland

This European Technical Assessment  
contains

14 pages including 9 annexes which form an integral part  
of this assessment

This European Technical Assessment is  
issued in accordance with Regulation (EU)  
No 305/2011, on the basis of

Guideline for European technical approval of "Fire  
Stopping and Fire Sealing Products", ETAG 026 Part 2:  
"Penetration Seals",  
used as European Assessment Document (EAD)  
according to Article 66 Paragraph 3 of Regulation (EU)  
No 305/2011.

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## Specific part

### 1 Technical description of the product

The kit is composed of the construction products "FLAMRO BSB-K plug" and "FLAMRO-KL". The construction product "FLAMRO BSB-K plug" is a cylindrical mould, consisting mainly of intumescent materials as well as binders, that expands when heated.

The dimensions of the moulds are  $\leq 182 \text{ mm} \times 60 \text{ mm}$  (diameter x height).

The construction product "FLAMRO-KL" is a paste-like mineral material that is supplied in tubs or cartridges.

Detailed technical descriptions and fire safety related performance criteria for the construction products are given in Annex 1.

NOTE:

The characteristics listed are suitable both for identifying the construction products as well as for performing the manufacturer's factory production control.

### 2 Specification of the intended use in accordance with the applicable European Assessment Document

The kit is intended for use in cable penetration seals. Cable penetration seals are used to seal openings in fire-resistant walls, penetrated by cables and/ or service conduits and/or control lines and serve to preserve the walls' fire resistance in the area of the penetrations.

The cable penetration seals, which are produced using the kit, consist of a closure of the opening with a mould. Any gaps, joints and spaces present between the plug and the cables and/ or service conduits and/or control lines after their installation shall be closed with the paste-like material. If required, the wall in the area of the penetration seal shall be additionally cladded with plasterboard fire protection panels on both sides.

More detailed information and data on the penetration seals for which the fire resistance was verified are given in Annexes 1 to 9. The performance characteristics given in Section 3 apply exclusively to these penetration seals (e.g. type, thickness and design of the component, design and arrangement of the penetration seal components, and type and position of the services).

The test and assessment methods upon which this European Technical Assessment is based lead to the assumption of a working life of the "FLAMRO BSB-K plug" moulds of at least 10 years. The specified working life cannot be interpreted as a guarantee given by the manufacturer, but shall be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the construction.

Table 1 – Components of the verified penetration seals

| Product type                                   | Trade name  |
|--|---|
| Moulds   | "FLAMRO BSB-K plug"                                 |
| Fire protection paste                          | "FLAMRO-KL"   |
| 15 mm thick plasterboard fire protection panel | Type DF in accordance with EN 520 supplied by Knauf |

### 3 Product performance and methods used for assessment

#### 3.1 Intended use: use in penetration seals

| Product type: kit, composed of the construction products given in Section 1 |  |  |
|---|--|--|
| BWR   | Essential characteristic   | Performance  |
| 2   | Reaction to fire<br>"FLAMRO BSB-K plug"  | Class E in accordance with<br>EN 13501-1                           |
|   | "FLAMRO-KL"  | Class A1 in accordance with<br>EN 13501-1                          |
|   | Fire resistance of a cable<br>penetration seal that incorporates<br>the components of the kit <sup>1,2</sup><br>(see Annexes 1 to 9) | Class EI 60 or EI 90 or<br>EI 120 in accordance with<br>EN 13501-2 |
| 3   | Release of dangerous substances  | No dangerous substances <sup>3</sup>                               |

#### 3.2 General aspects

The verification of durability shall be part of testing the essential characteristics.

The construction product "FLAMRO BSB-K plug" may be used in end-use application in accordance with the conditions of use category X and the construction product "FLAMRO-KL" may be used in end-use application in accordance with the conditions of use category Y<sub>2</sub>, without significant changes in the characteristics relevant for fire protection to be expected.

The kit, used in penetration seals as described in this ETA, may therefore be exposed to the conditions of use category Y<sub>2</sub> (temperatures below 0°C, without exposure to the UV radiation and rain).

### 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with the European Technical Approval Guideline "Fire Stopping and Fire Sealing Products", ETAG 026, Part 2: "Penetration Seals", January 2008, which is used as European Assessment Document (EAD), the following legal base shall apply: 1999/454/EC.

The system to be applied is: system 1.

<sup>1</sup> The fire resistance depends on the fire-resistant component and the opening in which the penetration seal was installed the services that have been fed through and the design/installation of the penetration seal. Details on the penetration seals for which the fire resistance indicated was verified are provided in the annexes.

<sup>2</sup> Technical provisions of the Member States relating to the design of electrical services and the admissibility of cable penetrations shall remain unaffected.

<sup>3</sup> In accordance with the manufacturer's indications and the chemical composition deposited with DIBt.

English translation prepared by DIBt

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 3 March 2016 by Deutsches Institut für Bautechnik

Prof. Gunter Hoppe  
Head of Department

*beglaubigt:*  
Bisemeier

The kits for sealing openings in fire-resistant walls penetrated by cables and/ or service conduits and/ or control lines is composed of moulds of the type "FLAMRO BSB-K plug" and the paste-like material "FLAMRO-KL".

'Properties and performances criteria of the construction products "FLAMRO BSB-K plug" and "FLAMRO-KL"

| Komponente                           | Beschreibung  |
|--------------------------------------|---|
| "FLAMRO BSB-K plug"                  | Dimensions: $\varnothing_{\text{outer}} \leq 182$ mm; Thickness = 60 mm<br>Material: intumescent material<br>Classification of fire behavior according to EN 13501-1: E |
| "FLAMRO-KL" according to ETA-14/0307 | Material: mineral material<br>Classification of fire behavior according to EN 13501-1: A1   |

Description of the additional ingredients of the tested sealings

|                                     |  |
|-------------------------------------|--|
| Plasterboard fire protection panels | Thickness = 15 mm;<br>DF according to EN 520<br>Classification of fire behavior according to EN 13501-1: A2-s1, d0 |
|-------------------------------------|--|

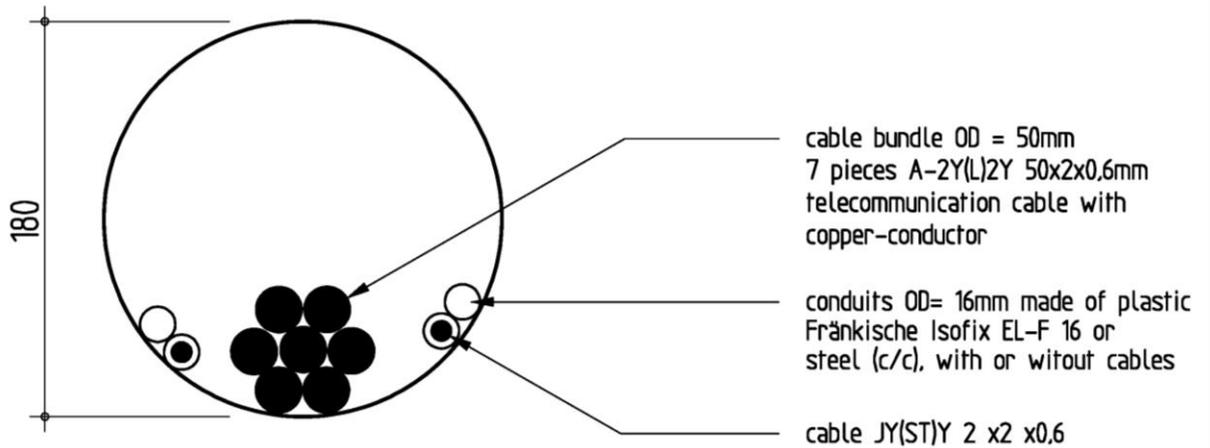
Bausatz aus "FLAMRO BSB-K Stopfen" und "FLAMRO-KL"

Description of the construction products, properties and performances

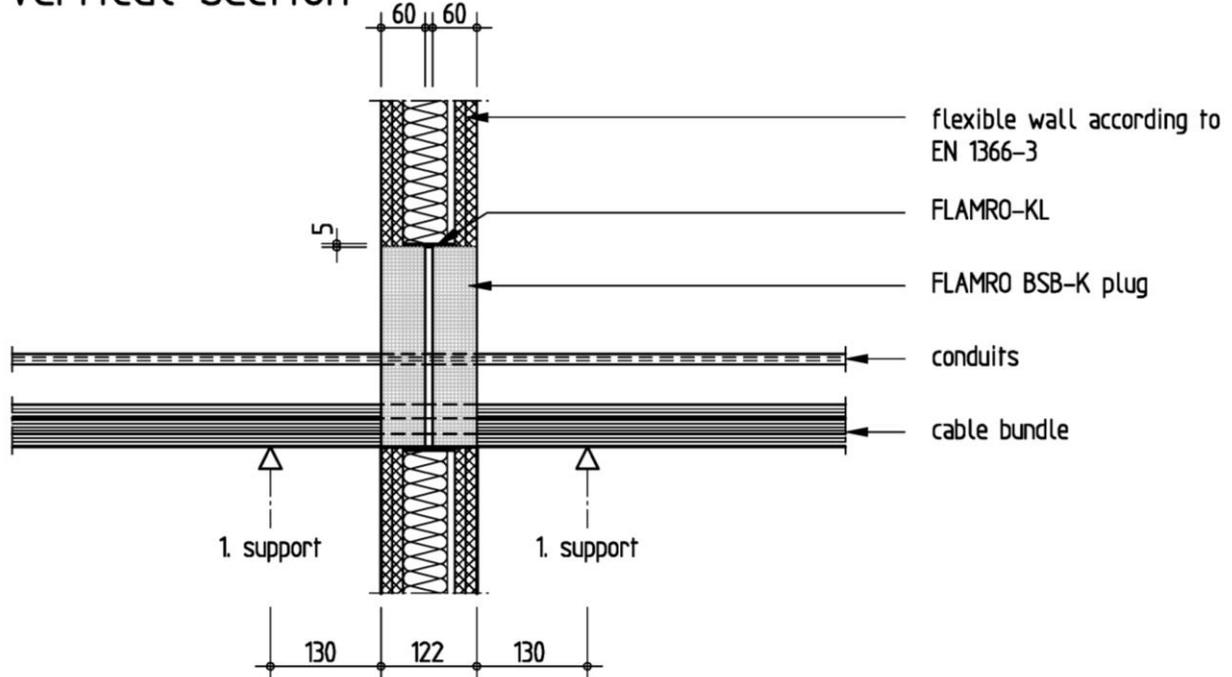
Anhang 1

view

EI 60 / E 120



vertical section



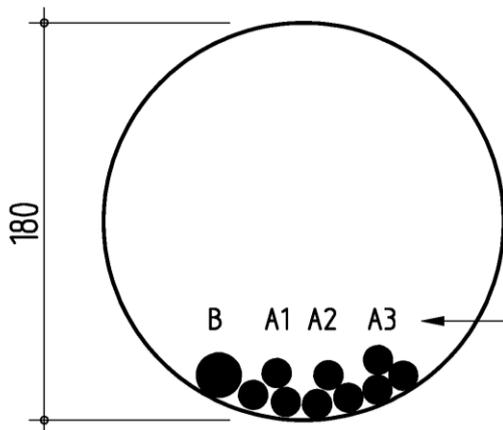
Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 60 or E 120  
Wall installation - view and vertical section

Annex 2

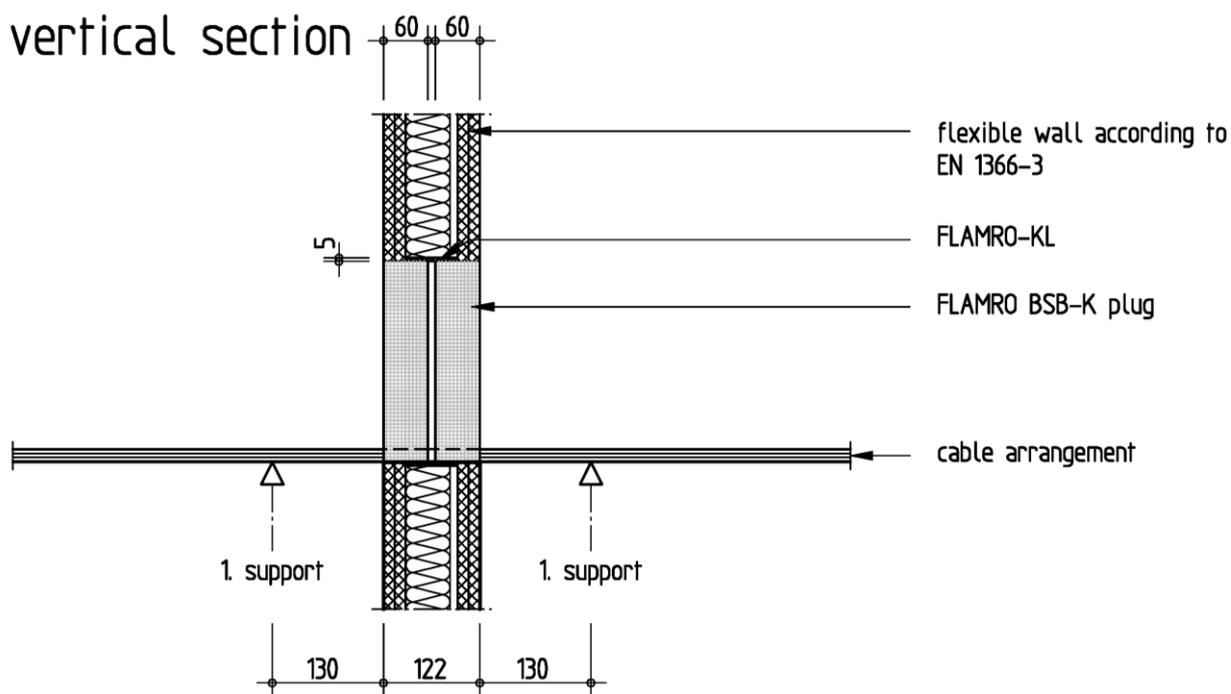
view

EI 90 / E 120



cable arrangement:  
A1 = 3 pieces NYY-J 5x1,5 RE  
A2 = 3 pieces H07RN-F 5G 1,5  
A3 = 3 pieces N2XH-J 5x1,5RE  
B = 1 piece NYY-J 1x95RM

vertical section



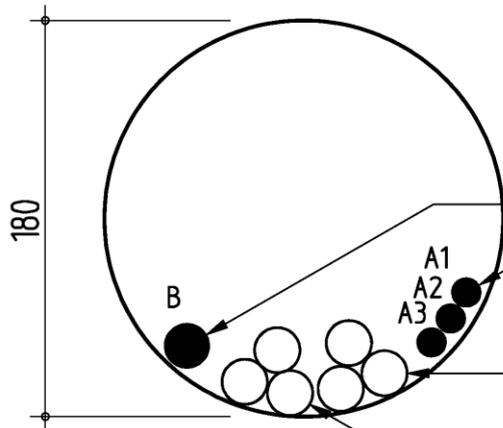
Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 90 or E 120  
Wall installation - view and vertical section

Annex 3

view

EI 120 / E 120

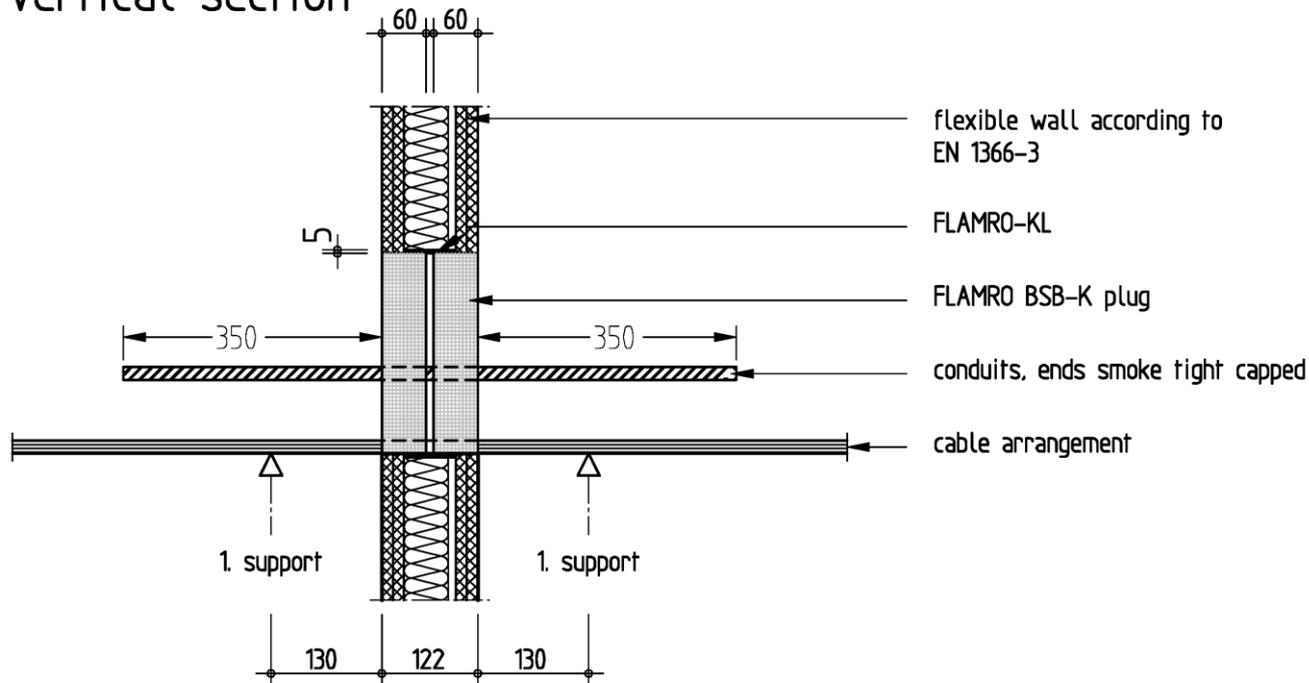


cable arrangement:  
A1 = 1 piece NYY-J 5x1,5 RE  
A2 = 1 piece H07RN-F 5G 1,5  
A3 = 1 piece N2XH-J 5x1,5RE  
B = 1 piece NYY-J 1x95RM

conduits c/c, OD = 20 mm  
1 piece polyolefin Kupa-EL rigid  
2 pieces polyolefin FBY-EL flexible

conduits c/c, OD = 20 mm  
1 piece PVC FPKu-EM-F rigid  
2 pieces PVC FFKu-EL-F flexible

vertical section



flexible wall according to  
EN 1366-3

FLAMRO-KL

FLAMRO BSB-K plug

conduits, ends smoke tight capped

cable arrangement

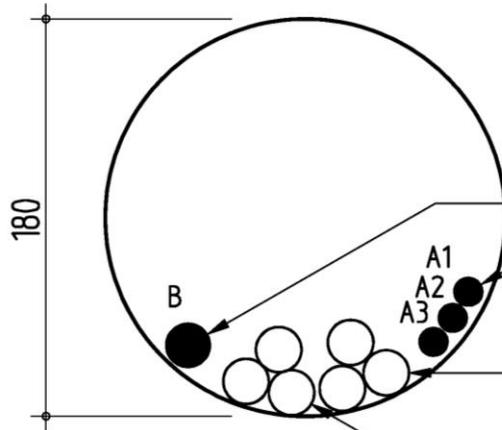
Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 120 or E 120  
Wall installation - view and vertical section

Annex 4

view

EI 120 / E 120

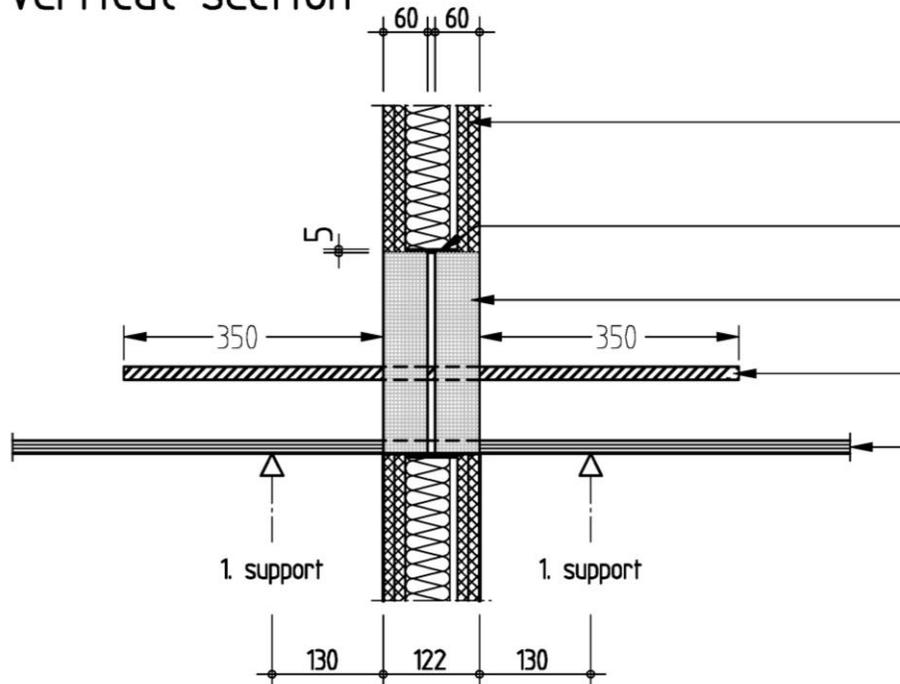


cable arrangement:  
A1 = 1 piece NYY-J 5x1,5 RE  
A2 = 1 piece H07RN-F 5G 1,5  
A3 = 1 piece N2XH-J 5x1,5RE  
B = 1 piece NYY-J 1x95RM

conduits c/c, OD = 20 mm  
1 piece steel Staro Steck ES rigid  
2 pieces steel FFS-ES flexible

conduits c/c, OD = 20 mm  
1 piece polyolefin FPKu-EM-F-H0 rigid  
2 pieces polyolefin FBY-EL-F flexible

vertical section



flexible wall according to  
EN 1366-3

FLAMRO-KL

FLAMRO BSB-K plug

conduits

cable arrangement

1 support

1 support

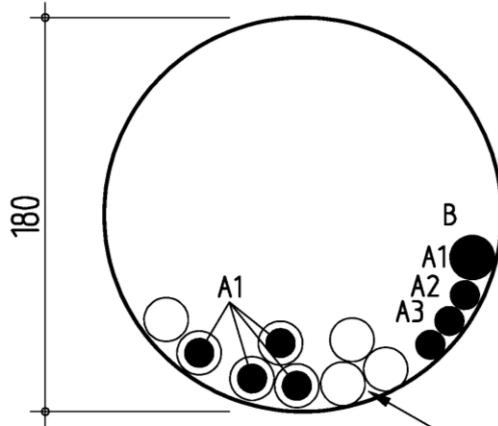
Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 120 or E 120  
Wall installation - view and vertical section

Annex 5

view

EI 120 / E 120

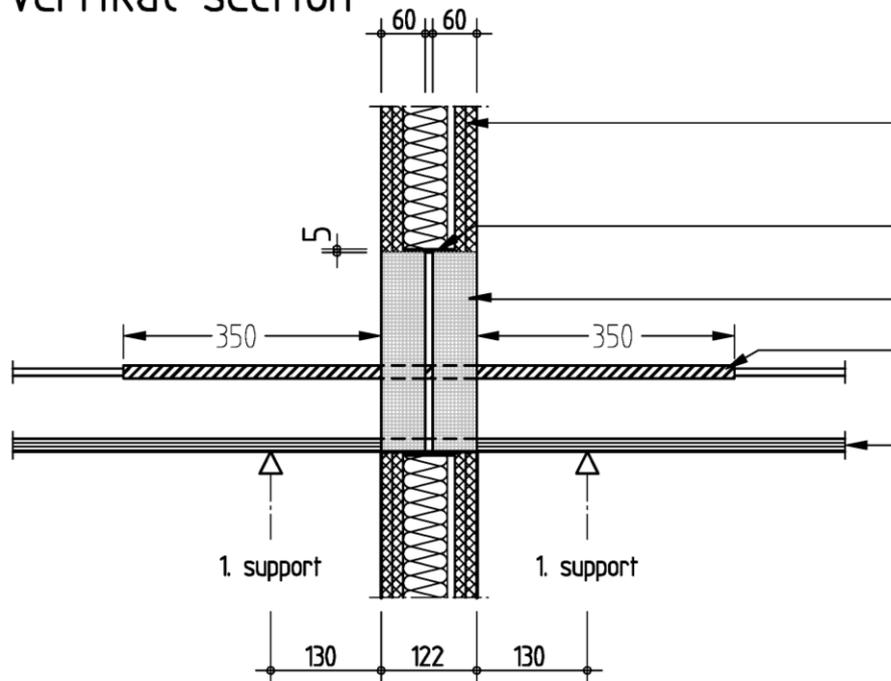


cable arrangement:  
A1 = 1 piece NYY-J 5x1,5 RE  
A2 = 1 piece H07RN-F 5G 1,5  
A3 = 1 piece N2XH-J 5x1,5RE  
B = 1 piece NYY-J 1x95RM

conduits c/c, OD = 20 mm  
2 pieces steel Staro Steck ES rigid \*)  
2 pieces polyolefin FBY-EL flexible \*)  
2 pieces polyolefin FBY-EL-F flexible\*)  
2 pieces PVC FPKu-EM-F rigid \*)

\*) one conduit filled with cable  
A1 = 1 piece NYY-J 5x1,5 RE

vertikal section



flexible wall according to  
EN 1366-3

FLAMRO-KL

FLAMRO BSB-K plug

conduits, ends smoke tight capped

cable arrangement

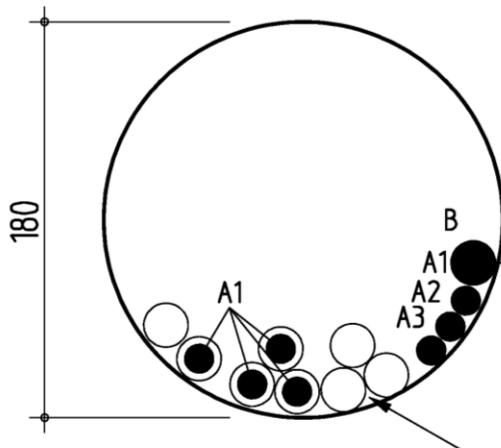
Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 120 or E 120  
Wall installation - view and vertical section

Annex 6

view

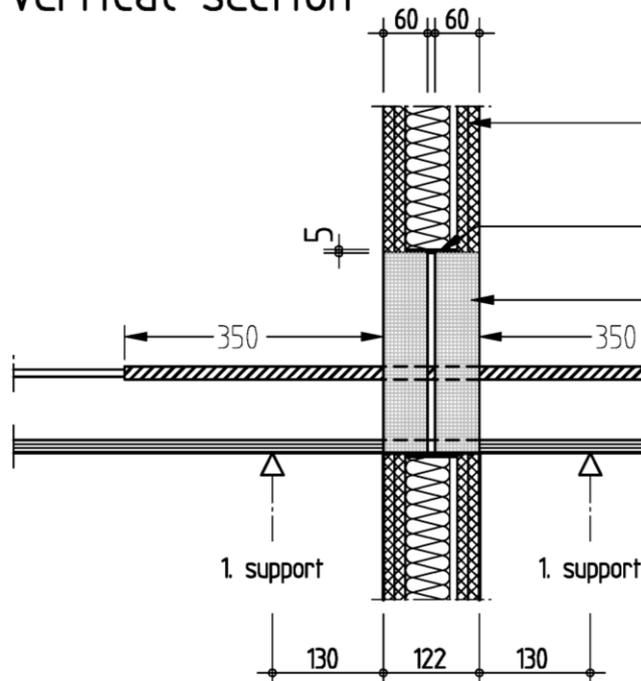
EI 120 / E 120



cable arrangement:  
A1 = 1 piece NYY-J 5x1,5 RE  
A2 = 1 piece H07RN-F 5G 1,5  
A3 = 1 piece N2XH-J 5x1,5RE  
B = 1 piece NYY-J 1x95RM

conduits c/c, OD = 20 mm  
2 pieces steel FFS-ES flexible \*)  
2 pieces polyolefin Kupa-EL rigid \*)  
2 pieces PVC FFKu-EL-F flexible \*)  
2 pieces special-plastic  
FPKu-EM-F-H0 rigid \*)  
\*) one conduit filled with cable  
A1 = 1 piece NYY-J 5x1,5 RE

vertical section



flexible wall according to  
EN 1366-3

FLAMRO-KL

FLAMRO BSB-K plug

conduits, ends smoke tight capped

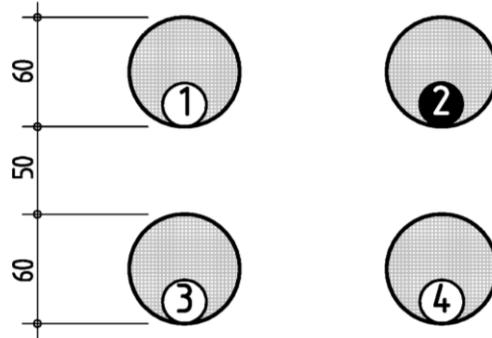
cable arrangement

Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 120 or E 120  
Wall installation - view and vertical section

Annex 7

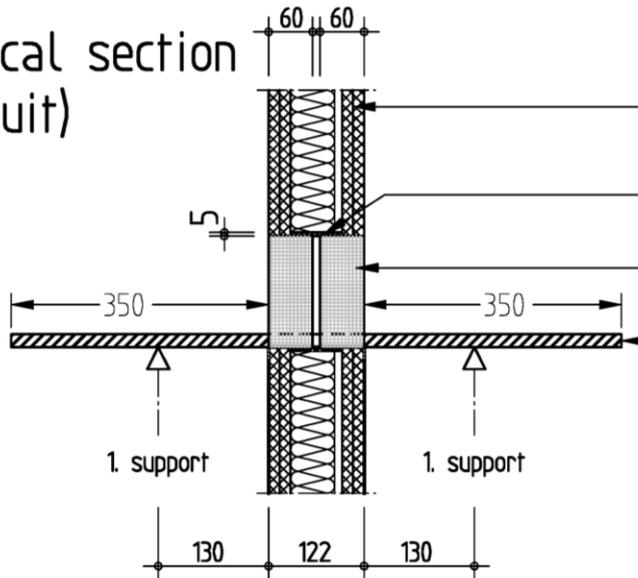
view



EI 120 / E 120

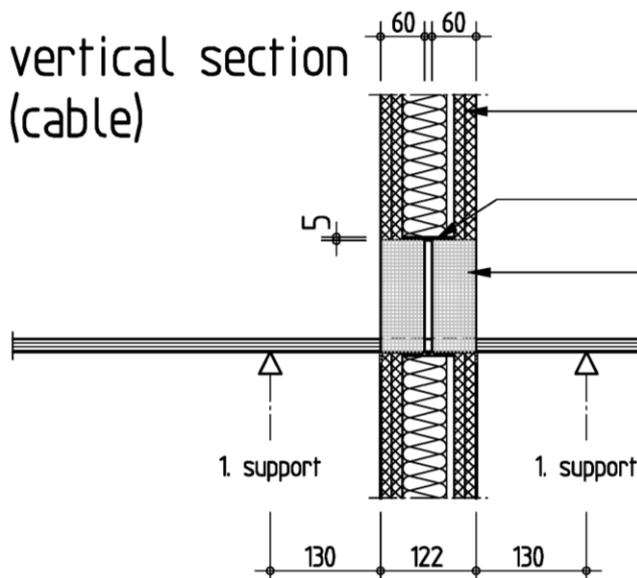
- ① conduit c/c, OD=20 mm, polyolefin FBY-EL flexible
- ② cable arrangement:  
B= 1 piece NY-Y-J 1x95 RM
- ③ conduit c/c, OD=20 mm, PVC FFKu-EL-F flexible
- ④ conduit c/c, OD=20 mm, polyolefin FBY-EL-F flexible

vertical section  
(conduit)



- flexible wall according to EN 1366-3
- FLAMRO-KL
- FLAMRO BSB-K plug
- conduits, ends smoke tight capped

vertical section  
(cable)

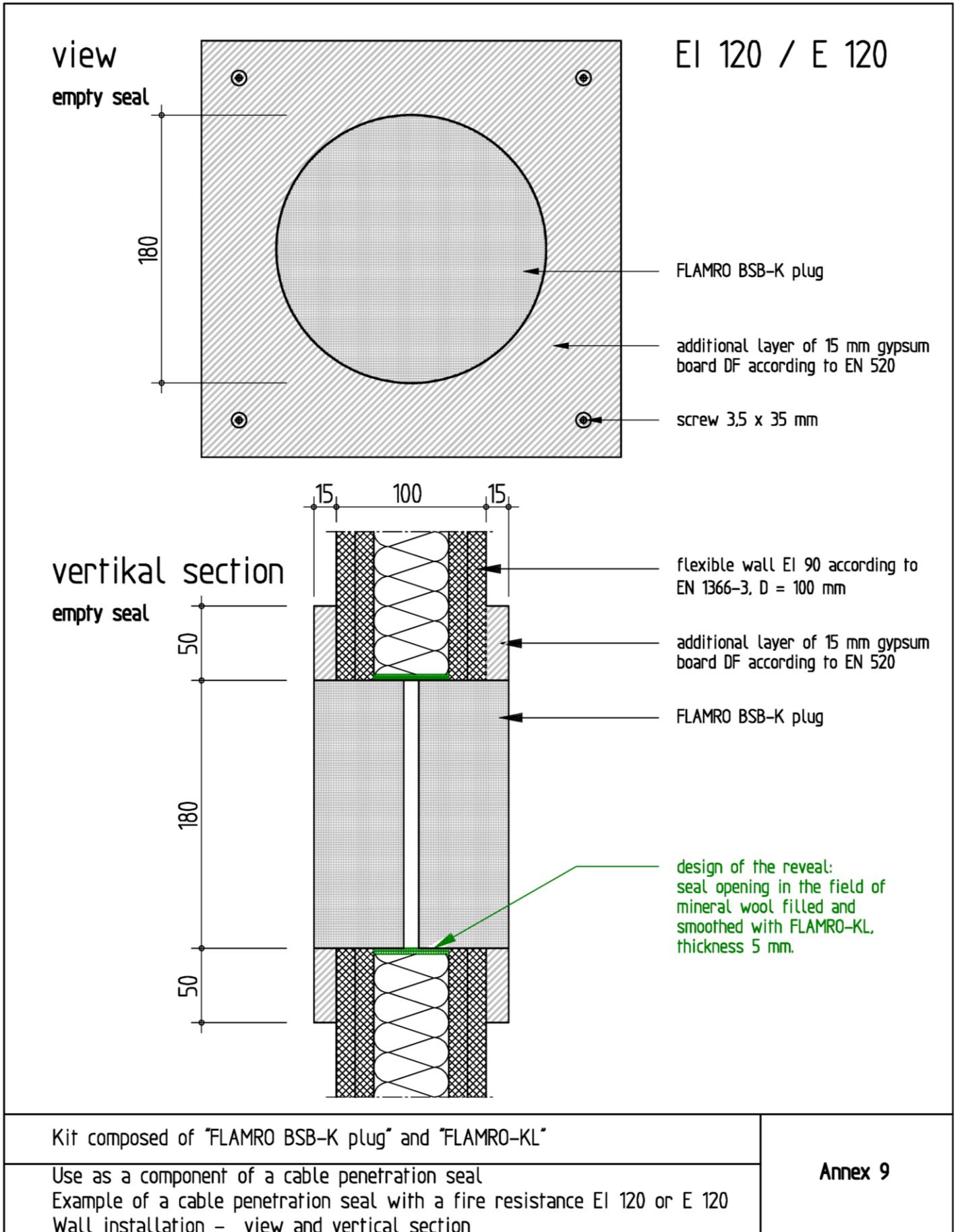


- flexible wall according to EN 1366-3
- FLAMRO-KL
- FLAMRO BSB-K plug
- cable arrangement

Kit composed of "FLAMRO BSB-K plug" and "FLAMRO-KL"

Use as a component of a cable penetration seal  
Example of a cable penetration seal with a fire resistance EI 120 or E 120  
Wall installation - view and vertical section

Annex 8



electronic copy of the eta by dibt: eta-15/0816