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I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by the Österreichisches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by the Council Directive 93/68/EEC[2] and Regulation (EC) no. 1882/2003 of the European Parliament and of the Council[3];
- Wiener Bauprodukte- und Akkreditierungsgesetz – WBAG. LGBl. Nr. 30/1996, zuletzt geändert durch das Gesetz LGBl. für Wien Nr. 24/2008;
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[4];
- Guideline for European technical approval for "Fire Stopping and Fire Sealing Products" ETAG no. 026, edition January 2008.
- EOTA technical Report "Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products" TR no. 024, edition November 2006, amended July 2009.

2 The Österreichisches Institut für Bautechnik is authorised to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturer other than those indicated on page 1; or manufacturing plants other than those laid down in the context of this European technical approval.

4 This European technical approval may be withdrawn by the Österreichisches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of the Österreichisches Institut für Bautechnik. In this case, partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

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1 Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

2 Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

3 Official Journal of the European Union no. L 284, 31.10.2003, p. 1

4 Official Journal of the European Communities no. L 17, 20.1.1994, p. 34

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II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of Mixed penetration seal "bst AK-2.50" and intended use

The Mixed penetration seal "bst AK-2.50" is designed and installed in accordance with the ETA-holder's design and installation instructions, deposited at the Österreichisches Institut für Bautechnik. The Mixed penetration seal "bst AK-2.50" comprises the following components, which are factory-produced by the ETA-holder or a supplier. The holder is ultimately responsible for the Mixed penetration seal "bst AK-2.50".

1.1 Definition of the construction product

The intumescent component – Fire stop coating "bst-A" and Fire stop mastic "bst-K" – is a permanently elastic, halogen free, water-dilutable, resistant to aging, white fire protective mass which is used in combination with – the other component of Mixed penetration seal "bst AK-2.50" – mineral wool boards. All visible surfaces of the mineral wool boards will be coated single-sided either prefabricated or in situ. In the case of fire the intumescent component reacts by temperature induced expansion of its volume thus forming a heat-insulating layer for fire protection.

Fire stop coating "bst-A" is being supplied ready for use and can be diluted by adding max. 10 % water, if need be (first layer). To be applied by brush, spray (airless) or rolls.

Fire stop mastic "bst-K" is to be applied undiluted by hand with trowel, spatula or from a cartridge.

	Components of Mixed penetration seal "bst AK-2.50"	**Density** (kg/m³)	**Thickness** (mm)	**Coverage** (kg/m²)
Coating and / or Mastic	➢ Fire stop coating "bst-A": Polymerdispersion - intumescent material	1300 ± 50 (paint)	≥ 0,75	5,0
	➢ Fire stop mastic "bst-K": Polymerdispersion with glass fibre particles - intumescent material	1300 ± 50 (paste)		
Insulation material	➢ Mineral wool board (slabs) "Rockwool 'RP-15'" according to EN 13162:2008 Class A1 according to EN 13501-1:2007	150	≥ 50	/

1.2 Intended use, use category and working life

1.2.1 Intended use

The Mixed penetration seal "bst AK-2.50" is intended to be used to temporarily or permanently reinstate the fire resistance performance of flexible wall constructions, rigid wall constructions and rigid floor constructions where they have been provided with apertures which are penetrated by various cables, conduits/pipes, metal pipes, plastic pipes (carrying Fire stop collar "bst PPC Pipe Collar" – for details see ETA-10/0154) and installation supports (perforated or non-perforated steel cable trays and steel ladders).

The maximum area of the seal in flexible walls and rigid walls is 0,72 m².

The minimum perimeter length to seal area ratio of the seal in rigid floors is – according to clause A.3.4.2 of prEN 1366-3.2:N185:2007-07 – 5,000 m/m², resp. 0,005 mm/mm².

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The Mixed penetration seal “bst AK-2.50” can be installed only in the types of separating elements as specified in the following table.

Separating element	Construction	Maximum opening size of the seal (width x height)
Flexible walls	➢ Timber or steel studs lined on both faces ➢ Minimum thickness 100 mm ➢ Classification according to EN 13501-2:2003: ≥ EI 90 ➢ This ETA does not cover sandwich panel construction – penetrations in such constructions shall be tested on a case by case basis	1200 mm x 600 mm with a maximum seal area of 0,72 m²
Rigid walls	➢ Aerated concrete, concrete, reinforced concrete, masonry ➢ Minimum density 530 kg/m³ ➢ Minimum thickness 100 mm ➢ Classification according to EN 13501-2:2003: ≥ EI 90	1200 mm x 600 mm with a maximum seal area of 0,72 m²
Rigid floors	➢ Aerated concrete, concrete, reinforced concrete ➢ Minimum density 530 kg/m³ ➢ Minimum thickness 150 mm ➢ Classification according to EN 13501-2:2003: ≥ REI 90	see Annex D of the ETA

The Mixed penetration seal “bst AK-2.50” can only be configured as specified in the following table.

Penetrating element	Construction characteristics for installation of the penetrating element in Mixed penetration seal „bst AK-2.50“ in flexible walls, rigid walls and rigid floors
Cables	➢ Sheathed electrical/telecommunication/optical fibre cables up to a maximum diameter of 80 mm ➢ Tied bundles[5] up to 100 mm overall diameter containing sheathed electrical / telecommunication / optical fibre cables of a maximum diameter up to 21 mm ➢ Non-sheathed electrical cables up to a maximum diameter of 24 mm
Conduits / Pipes[6]	➢ Steel conduits/pipes up to 16 mm diameter (U/U), (U/C), (C/U), (C/C) with/without cables ➢ Plastic conduits/pipes up to 16 mm diameter (U/U), (U/C), (C/U), (C/C) with / without cables ➢ Plastic conduit/pipe (PVC) according to EN ISO 1452-1:2009 and DIN 8061:2009 / DIN 8062:2009 of 25 mm diameter with a minimum wall thickness of 1,2 mm (U/U), (U/C), (C/U), (C/C) with/without cables ➢ Plastic conduits/pipes (PVC) according to EN ISO 1452-1:2009 and DIN 8061:2009 / DIN 8062:2009 with a diameter of 25 mm to 50 mm with a wall thickness of 1,2 mm to 3,7 mm (U/U), (U/C), (C/U), (C/C) with / without cables carrying Fire stop collar “bst PPC Pipe Collar” according to ETA-10/0154 (for interpolation between diameter and wall thickness see Annex F of the ETA)

[5] Several cables running in the same direction and bound closely together by mechanical means

[6] Only rigid conduits / pipes are to be used

Penetrating element	Construction characteristics for installation of the penetrating element in Mixed penetration seal „bst AK-2.50“ in flexible walls, rigid walls and rigid floors
Plastic pipes	➢ PE pipes – only to be used in Mixed penetration seal “bst AK-2.50” in rigid floors – according to EN 1519-1:1999 and DIN 8074:1999 / DIN 8075:1999 (or as amended) with a diameter of 110 mm and a wall thickness of 2,9 mm (U/U), (U/C), (C/U), (C/C), carrying Fire stop collar “bst PPC Pipe Collar” according to ETA-10/0154 ➢ PVC pipes according to EN ISO 1452-1:2009 and DIN 8061:2009 / DIN 8062:2009 with a diameter of 25 mm to 125 mm and a wall thickness of 1,2 mm to 3,7 mm (U/U), (U/C), (C/U), (C/C), carrying Fire stop collar “bst PPC Pipe Collar” according to ETA-10/0154 (for interpolation between diameter and wall thickness see Annex F of the ETA)
Metal pipes	➢ Steel pipes of reaction to fire class A1 according to EN 13501-1:2007 with a melting or decomposition point greater than 1000 °C (e.g. steel, cast iron) with a diameter of 16 mm to 51 mm (2 ”) and a wall thickness of 1 mm to 3,6 mm and a diameter of 51 mm (2 “) with a wall thickness of 3,6 mm to 14,2 mm (U/U), (U/C), (C/U), (C/C), either insulated (with a sustained insulation made from elastomeric foam according to EN 14304:2009 e.g. “Kaimann ‘Kaiflex HT Plus’”, with a thickness of 19 mm, a minimum length of 100 mm – measured from the surface of the sealing – and a minimum reaction to fire classification B-s3, d0 according to EN 13501-1:2007) or non-insulated (for interpolation between diameter and wall thickness see Annex G of the ETA) ➢ Copper pipes of reaction to fire class A1 according to EN 13501-1:2007 with a melting or decomposition point greater than 1000 °C (e.g. copper, copper alloys) with a diameter of 30 mm and a wall thickness of 1,5 mm to 14,2 mm (U/U), (U/C), (C/U), (C/C), either insulated (with a sustained insulation made from elastomeric foam according to EN 14304:2009 e.g. “Kaimann ‘Kaiflex HT Plus’”, with a thickness of 19 mm, a minimum length of 100 mm – measured from the surface of the sealing – and a minimum reaction to fire classification B-s3, d0 according to EN 13501-1:2007) or non-insulated (for interpolation between wall thickness see Annex G of the ETA) ➢ Included in this group are the above pipes with a coating provided the overall reaction to fire class is minimum A2-s1,d0 according to EN 13501-1:2007
Installation supports	➢ Steel cable trays (perforated or non-perforated) ➢ Steel ladders ➢ Steel cable trays (perforated or non-perforated) and steel ladders with organic coatings shall at least be classified A2-s1,d0 according to EN 13501-1:2007

1.2.2 Use category

The Mixed penetration seal “bst AK-2.50” is intended for internal use with humidity classes other than Z_1, excluding temperatures below 0 °C, and can therefore – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Z_2.

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1.2.3 Working life

The provisions made in this ETA are based on an assumed intended working life of the product for the intended use of 10 years, provided that it is subject to appropriate use and maintenance.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

2 Characteristics of the product and methods of verification

2.1 General

The identification tests and the assessment of the fitness for use according to the Essential Requirements were carried out in compliance with the "ETA Guidance no. 026-Part 2" concerning Penetration Seals –edition January 2008 (called ETAG 026-Part 2 in this ETA) and with the "EOTA technical Report no. 024" concerning Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products –edition November 2006, amended July 2009 (called TR 024 in this ETA).

Clause No.	ETA Clause No.	Characteristic	Test procedure / Evaluation
Mechanical resistance and stability			
	2.2	None	Not relevant
Safety in case of fire			
ETAG 2.4.1	2.3.1	Reaction to fire	Classes A1-F according to EN 13501-1:2007
ETAG 2.4.2	2.3.2	Resistance to fire	Classification according to EN 13501-2:2003
Hygiene, health and environment			
ETAG 2.4.3	2.4.1	Air permeability (material property)	No Performance Determined
ETAG 2.4.4	2.4.2	Water permeability (material property)	No Performance Determined
ETAG 2.4.5	2.4.3	Release of dangerous substances	Declaration of manufacturer
Safety in use			
ETAG 2.4.6	2.5.1	Mechanical resistance and stability	No Performance Determined
ETAG 2.4.7	2.5.2	Resistance to impact/movement	No Performance Determined
ETAG 2.4.8	2.5.3	Adhesion	No Performance Determined

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Protection against noise			
ETAG 2.4.9	2.6.1	Airborne sound insulation	No Performance Determined
Energy economy and heat retention			
ETAG 2.4.10	2.7.1	Thermal properties	No Performance Determined
ETAG 2.4.11	2.7.2	Water vapour permeability	No Performance Determined
General aspects relating to fitness for use			
TR 024 4.2.7	2.8	Exposure conditions	Test results of unexposed and exposed specimens

2.2 Mechanical resistance and stability

Not relevant.

2.3 Safety in case of fire

2.3.1 Reaction to fire

The intumescent component – Fire stop coating “bst-A” and Fire stop mastic “bst-K” – was assessed according to ETAG 026-Part 2 clause 2.4.1, EN 13823:2002, EN ISO 11925-2:2002 and classified according to EN 13501-1:2007 (taking into consideration the specifications given in clause 1.1 of the ETA).

Component	Class according to EN 13501-1:2007
Fire stop coating “bst-A”	**B-s1, d0**
Fire stop mastic “bst-K”	**B-s1, d0**

2.3.2 Resistance to fire

The Mixed penetration seal “bst AK-2.50” was tested according to ETAG-Part 2 clause 2.4.2 and prEN 1366-3.2:N185:2007-07. The tests were conducted under the following conditions:

- Standard flexible walls and standard rigid floors
- Maximum aperture size
- Standard configuration for large cable penetration seals
- Metal pipes with (case CS) and without insulation
- Plastic pipes (critical pipes), carrying Fire stop collar “bst PPC Pipe Collar” according to ETA-10/0154
- Standard service support construction and installation supports

Based upon the gained test results and the field of direct application specified within prEN 1366-3.2:N185:2007-07 the Mixed penetration seal “bst AK-2.50” has been classified according to EN 13501-2:2003.

Penetration seal in	Class according to EN 13501-2:2003
Flexible walls and Rigid walls according to clause 1.2.1 of the ETA (vertical separating element)	**EI 90**
Rigid floors according to clause 1.2.1 of the ETA (horizontal separating element)	**EI 90, E 120**

General

The Cable penetration seal Mixed penetration seal “bst AK-2.50” can be used in apertures in walls (vertical separating element) and floors (horizontal separating element) according to clause 1.2.1 of the ETA.

The penetration of cables, conduits/pipes, metal pipes, plastic pipes (carrying Fire stop collar “bst PPC Pipe Collar” – for details see ETA-10/0154) and installation supports in accordance with clause 1.2.1 of the ETA is allowed.

The total cross section of the installations must not be more than 60 % of the opening size of the seal.

For plastic and steel conduits/pipes the pipe end configuration can be U/U, U/C, C/U, C/C.

Conduits/pipes, metal pipes and plastic pipes have to be installed perpendicular to the surface of the sealing.

All types of cables, conduits/pipes, metal pipes and plastic pipes (carrying Fire stop collar “bst PPC Pipe Collar” – for details see ETA-10/0154) – in flexible walls, rigid walls and rigid floors – have to be supported on both side of the sealing by steel cable trays (perforated or non-perforated), steel ladders or alternative service support constructions according to the ETA-holder’s installation instructions. Steel cable trays (perforated or non-perforated) or steel ladders can pass through or end at the surface of the sealing.

The first support (service support construction) for installations in flexible walls, rigid walls and rigid floors has to be at maximum 250 mm (measured from the surface of the sealing).

All types of cables, conduits/pipes, metal pipes and plastic pipes (carrying Fire stop collar “bst PPC Pipe Collar” – for details see ETA-10/0154) have to be fixed according to the ETA-holder’s installation instructions to the installation supports / service support construction.

The installation supports have to be fixed according to the ETA-holder’s installation instructions to the service support constructions.

The installation supports and the service support constructions have to be fixed according to the ETA-holder’s installation instructions to the separating element or a suitable adjacent building element on both sides of the penetration seal in such a manner that in the case of fire no additional load is imposed on the seal. Furthermore it is assumed that this support is maintained for the required period of fire resistance.

Other parts or service support constructions must not penetrate the seal.

Provisions according to the ETA-holder’s installation instructions have to be taken that penetration seals installed in rigid floors cannot be stepped on.

Details for installation of Mixed penetration seal "bst AK-2.50" (see Annex A to E of the ETA)

The Mixed penetration seal "bst AK-2.50" has to be installed according to the ETA-holder's installation instructions.

For the installation of Mixed penetration seal "bst AK-2.50" two (prefabricated) mineral wool boards according to clause 1.1 of the ETA with a thickness of minimum 50 mm have to be used.

The (prefabricated) mineral wool boards have to be coated single-sided on the visible surface with Fire stop coating "bst-A" and/or Fire stop mastic "bst-K" according to clause 1.1 of the ETA.

Gaps and joints have to be filled with shredded mineral wool and/or Fire stop mastic "bst-K".

All types of cables, conduits/pipes, metal pipes (insulated/non-insulated) as well as installation supports have to be coated at a length of 100 mm with Fire stop coating "bst-A" and/or Fire stop mastic "bst-K" with a minimum total thickness of 0,75 mm on both sides of the sealing.

The minimum working clearance between cables and all type of pipes/conduits as defined in clause 1.2.1 of the ETA is 70 mm. The minimum working clearance between all types of pipes/ conduits (except for conduits/pipes up to 16 mm diameter) as defined in clause 1.2.1 of the ETA is 70 mm. The exact minimum working clearances and the minimum clearance between the seals are specified in the ETA-holder's installation instructions.

Details for installation in flexible wall constructions (see Annex A of the ETA)

The aperture within the wall has to be lined with steel studs (construction and installation according to the ETA-holder's installation instructions) and minimum 2 layers of ≥ 12,5 mm thick type F gypsum boards according to EN 520:2004 (classification A2-s1,d0 according to EN 13501-1:2007) or boards with a minimum thickness of 12,5 mm and minimum classification A2-s1,d0 according to EN 13501-1:2007. The boards have to be installed and fixed according to the ETA-holder's installation instructions.

For timber stud walls there must be a minimum distance of 100 mm of the seal to any timber stud. The cavity between timber stud and seal must be closed completely with insulation with classification A1 or A2-s1,d0 according to EN 13501-1:2007. The dimensions of the timber studs shall be ≥ 50 mm x 75 mm (breadth / depth).

2.4 Hygiene, health and environment

2.4.1 Air permeability

No Performance Determined.

2.4.2 Water permeability

No Performance Determined.

2.4.3 Release of dangerous substances

According to the manufacturer's declaration, the product specification has been compared with the list of dangerous substances of the European Commission to verify that that it does not contain such substances above the acceptable limits.

A written declaration in this respect was submitted by the ETA-holder.

In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Product Directive, these requirements need also to be complied with, when and where they apply.

2.5 Safety in use

2.5.1 Mechanical resistance of stability

No Performance Determined.

2.5.2 Resistance to impact/movement

No Performance Determined.

2.5.3 Adhesion

No Performance Determined.

2.6 Protection against noise

2.6.1 Airborne sound insulation

No Performance Determined.

2.7 Energy economy and heat retention

2.7.1 Thermal properties

No Performance Determined.

2.7.2 Water vapour permeability

No Performance Determined.

2.8 General aspects relating to fitness for use

The intumescent components Fire stop coating “bst-A” and Fire stop mastic “bst-K” were tested according to ETAG 026-Part 2 clause 2.4.12.

The intumescent components Fire stop coating “bst-A” and Fire stop mastic “bst-K” fulfil the requirements for the intended use category.

The Mixed penetration seal “bst AK-2.50” is therefore appropriate for internal use with humidity classes other than Z_1, excluding temperatures below 0 °C, and can – according to ETAG 026-Part 2 clause 2.4.12.1.3.3 – be categorized as Type Z_2.

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3 Evaluation of Conformity and CE Marking

3.1 Attestation of Conformity system

According to the Decision 1999/454/EC of the European Commission[7] system 1 of the attestation of conformity applies.

Additionally according to the Decision 2001/596/EC of the European Commission[8] system 1 of the attestation of conformity is to be used in relation to the reaction-to-fire performance. This system of attestation of conformity is to be described in the following:

System 1: Certification of the conformity of the product by a Notified Certification Body on the basis of:

a) Tasks of the manufacturer
   1) Factory Production Control
   2) Further testing of samples taken at the factory in accordance with a prescribed control plan

b) Tasks of the Notified Body
   3) Initial type-testing of the product
   4) Initial inspection of factory and of factory production control
   5) Continuous surveillance, assessment and approval of factory production control

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control that applies. The documentation to be carried out by the manufacturer and the applicable procedures shall be appropriate to the product and manufacturing process. The factory production control shall ensure the conformity of the product to an appropriate level. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations.
b) the effective implementation of these procedures and instructions.
c) the recording of these procedures and their results.
d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the factory production control to rectify the cause of non-conformity.
e) a procedure to ensure that both the approval Body and the Notified (Certification) Bodies are advised before any significant change to the product, its components or manufacturing process, is made.
f) a procedure to ensure that personnel involved in the production processes and the quality control procedures are qualified and adequately trained to carry out their required tasks.

[7] Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

[8] Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

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g) that all testing and measuring equipment is maintained and up to date calibration records are documented.

h) maintenance of records to ensure every batch produced is clearly labelled with the batch number, which allows traceability to its production to be identified.

The manufacturer may only use components stated in the technical documentation of this European technical approval.

For the components which the ETA-holder does not manufacture by himself, he shall make sure that factory production control carried out by the other manufacturers gives the guaranty of the components compliance with the European technical approval.

The factory production control and the provisions taken by the ETA-holder for components not produced by himself shall be in accordance with the control plan[9] relating to this European technical approval which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Österreichisches Institut für Bautechnik.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks of the manufacturer

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

- technical data sheet:

a) Field of application:
   1) Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and – in case of lightweight constructions – the construction requirements.
   2) Services for which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. cable trays).
   3) Limits in size, minimum thickness etc. of the penetration seal.

b) Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.

- Installation instruction:

a) Steps to be followed.

b) Procedure in case of retrofitting.

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) notified for the tasks referred to in section 3.1 in the field of approval product in order to undertake the actions laid down in section 3.3. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the Notified Body or Bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval

[9] The control plan is a confidential part of the European technical approval and only handed over to the Notified Body or Bodies involved in the procedure of conformity.

3.2.2 Tasks of the Notified Bodies

The Notified Body (Bodies) shall perform the:

- initial type-testing of the product (for system 1)
  The results of the tests performed as part of the assessment for the European technical approval can be used unless there are changes in the production line or plant. In such cases, the necessary initial type testing has to be agreed between the Österreichisches Institut für Bautechnik and the Notified Bodies involved.
- initial inspection of factory and of factory production control
  The Notified Body (Bodies) shall ascertain that, in accordance with the control plan, the factory (in particular the employees and the equipment) and the factory production control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.
- continuous surveillance, assessment and approval of factory production control
  The Notified Body (Bodies) shall visit the factory at least once a year for surveillance of this manufacturer having a FPC system complying with a quality management system covering the manufacturing of the approval product components. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking into account the control plan

These tasks shall be performed in accordance with the provisions laid down in the control plan of this European technical approval.

The Notified Body (Bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in written report.

- In the case of Attestation of Conformity system 1:
  The Notified Body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

  In cases where the provisions of the European technical approval and its control plan are no longer fulfilled, the Certification Body shall withdraw the certificate of conformity and inform the Österreichisches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed either on the product itself, on a label attached to it, on its packaging or on the commercial documents accompanying the components of the product. The letters « CE » shall be followed by the identification number of the Notified Body involved and be accompanied by the following additional information:

- the name or identifying mark and address of the ETA-holder
- the last two digits of the year in which the CE marking was affixed
- the number of the EC certificate of conformity for the product
- the number of the European technical approval
- the number of the ETAG (ETAG N° 026 part 2)
- the designation of the product (trade name)
- the use category in accordance with the ETA section 1 and 2
- for other relevant characteristics (e.g. resistance to fire) see ETA-10/0155

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4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with the Österreichisches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the Österreichisches Institut für Bautechnik before the changes are introduced. The Österreichisches Institut für Bautechnik will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

4.2 Installation

The ETA is issued under the assumption that the installation of the approval product shall be in accordance with the manufacturer's technical literature.

5 Indications to the manufacturers

5.1 Packaging, transport and storage

In the accompanying document and/or on the drums the manufacturer shall give information as to transport and storage.

At least the following shall be indicated: storing temperature, type of storage, maximum duration of storage and required data related to minimum temperature for transport and storage.

5.2 Use, maintenance and repair

The product shall be installed and used as described in this ETA.

The assessment of the fitness for use is based on the assumption that necessary maintenance and repair if required is carried out in accordance with the manufacturer's instructions during the assumed intended working life.

On behalf of Österreichisches Institut für Bautechnik

Rainer Mikulits
Managing Director

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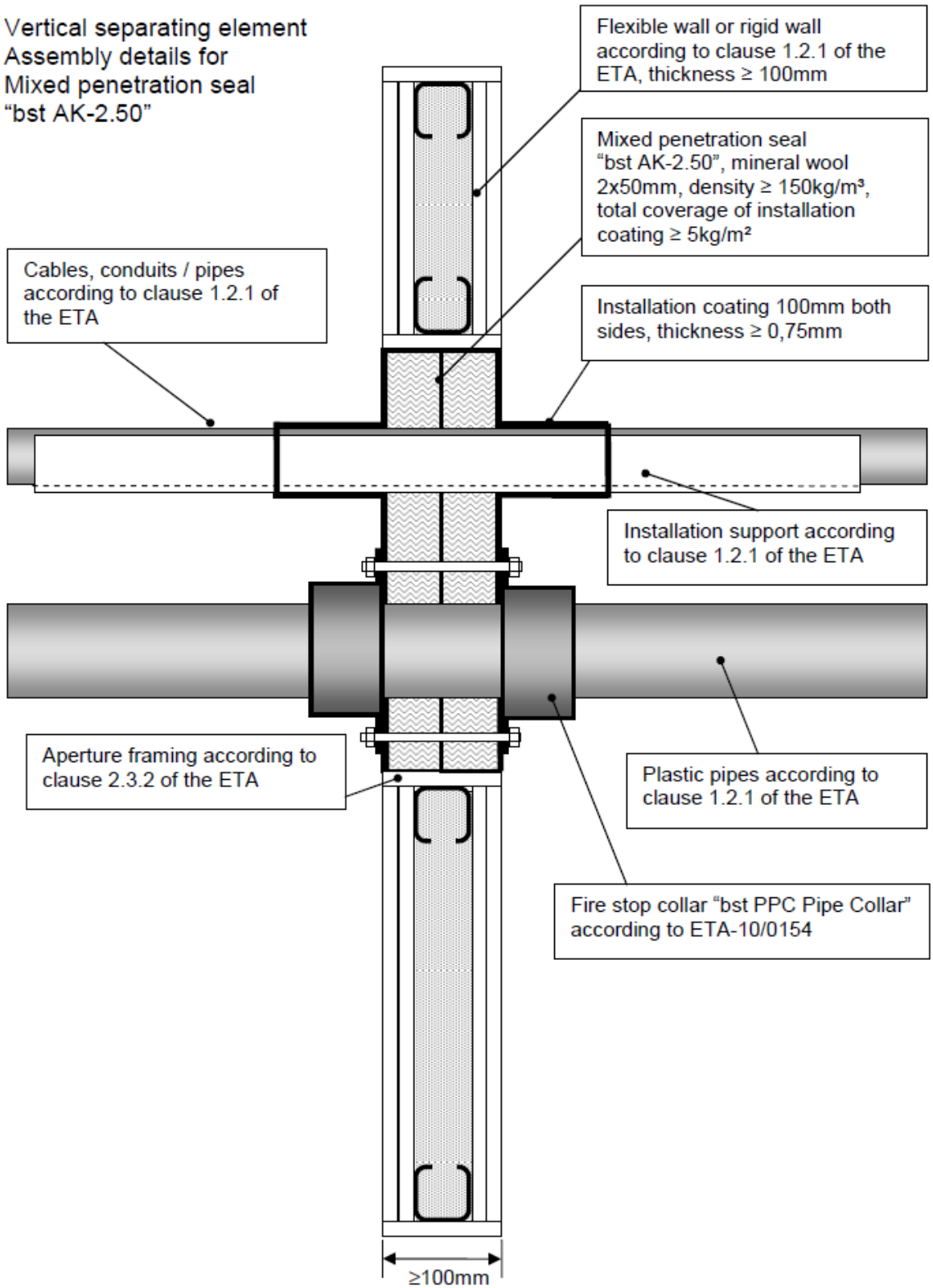
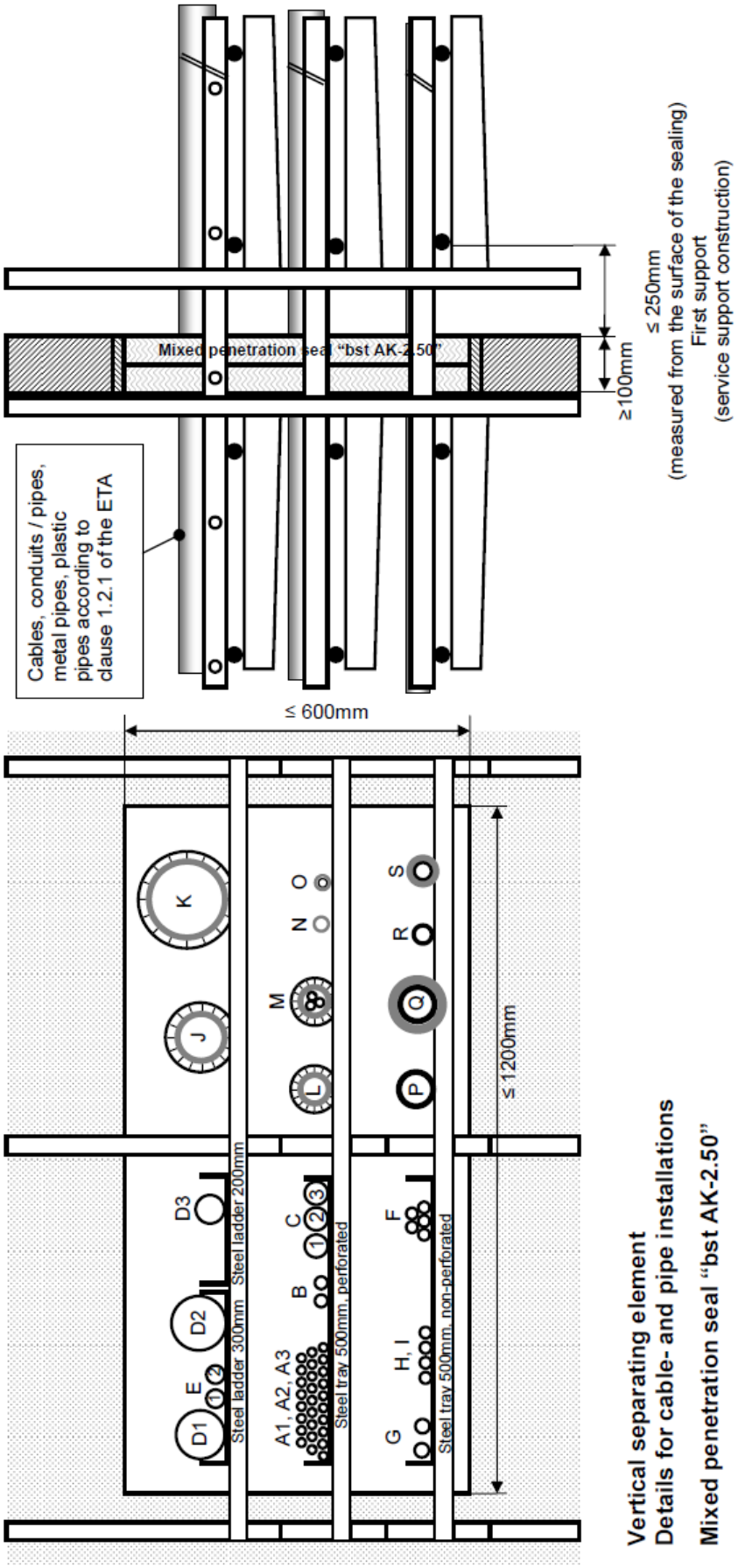
ANNEX A – Schematic diagram of Mixed penetration seal "bst AK-2.50" – in flexible walls and rigid walls (vertical separating element)





Vertical separating element
Details for cable- and pipe installations

Mixed penetration seal "bst AK-2.50"

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ANNEX B – Configuration of resistance to fire test according to prEN 1366-3.2:N185:2007-07 – vertical separating element – List of tested services and classification according to EN 13501-2:2003

service	qty	description	closure	remark	class
A1	5	cable E-YY 5x1,5 RE-J	U/C	small sheathed, PVC/PVC, ∅ 14 mm	EI 90
A2	5	cable H07RN-F 5G1,5	U/C	small sheathed, EPR/PO, ∅ 11-14 mm	EI 90
A3	5	cable N2XH 5x1,5 RE	U/C	small sheathed, XLPE/EVA, ∅ 11-14 mm	EI 90
B	2	cable E-YY 1x95 RM-J	U/C	small sheathed, PVC/PVC, ∅ 18-21 mm	EI 90
C1	1	cable E-YCWY 4x95 SM/50	U/C	medium sheathed, PVC/PVC, ∅ 42-49 mm	EI 90
C2	1	cable H07RN-F 4G95	U/C	medium sheathed, EPR/PO, ∅ 48-61 mm	EI 90
C3	1	cable E-2XH 4x95 SM-J	U/C	medium sheathed, XLPE/EVA, ∅ 37-45 mm	EI 90
D1	1	cable E-YCWY 4x185 SM/95-O	U/C	large sheathed, PVC/PVC, ∅ 57 mm	EI 90
D2	1	cable H07RN-F 4G185	U/C	large sheathed, EPR/PO, ∅ 64-80 mm	EI 90
D3	1	cable N2XH 4x185 SM	U/C	large sheathed, XLPE/EVA, ∅ 52-62 mm	EI 90
E1	1	cable E-YY 1x185 RM-J	U/C	large sheathed, PVC/PVC, ∅ 24-28 mm	EI 90
E2	1	cable E-YY 1x185 RM-J	U/C	large sheathed, PVC/PVC, ∅ 24-28 mm	EI 90
F	4	cable 20x2x0,6 mm²	U/C	bundle of telecommunication cables, ∅ 100 mm	EI 90
G	1	cable H07V-R 1x185 mm²	U/C	wire with insulation	EI 90
H	3	steel pipe ∅ 16x1 mm	U/C	EN 10305-4/6	EI 90-U/C
I	3	plastic conduit ∅ 16 mm	U/C	IEC 61386-21	EI 90-U/C
N	1	plastic conduit ∅ 25x1,2 mm	U/U	cable installation conduit, empty	EI 90-U/U
O	1	plastic conduit ∅ 25x1,2 mm	U/U	cable installation conduit + cable E-YY 5x1,5	EI 90-U/U
P	1	steel pipe ∅ 2 “	U/C	without insulation	EI 90-U/C
Q	1	steel pipe ∅ 2 “	U/C	with insulation „Armaflex“	EI 90-U/C
R	1	copper pipe ∅ 30 mm	U/C	without insulation	EI 90-U/C
S	1	copper pipe ∅ 30 mm	U/C	with insulation „Armaflex“	EI 90-U/C

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service	qty	description	closure	remark	class
J	1	plastic pipe PVC, ∅ 75x3,6	U/U	2 of pipe collars “PPC-82” / design group 63 to 82	EI 90-U/U
K	1	plastic pipe PVC, ∅ 125x3,7	U/U	2 of pipe collars “PPC-135” / design group 90 to 135	EI 90-U/U
L	1	plastic pipe PVC, ∅ 50x3,7	U/U	2 of pipe collars “PPC-55” / design group 25 to 50	EI 90-U/U
M	1	plastic conduit PVC, ∅ 50x3,7	U/U	2 of pipe collars “PPC-55” + 3 cables E-YY 5x1,5	EI 90-U/U

Note: The pipe collars (Fire stop collar “bst PPC Pipe Collar”) used on services J, K, L, M are part of ETA 10/0154.

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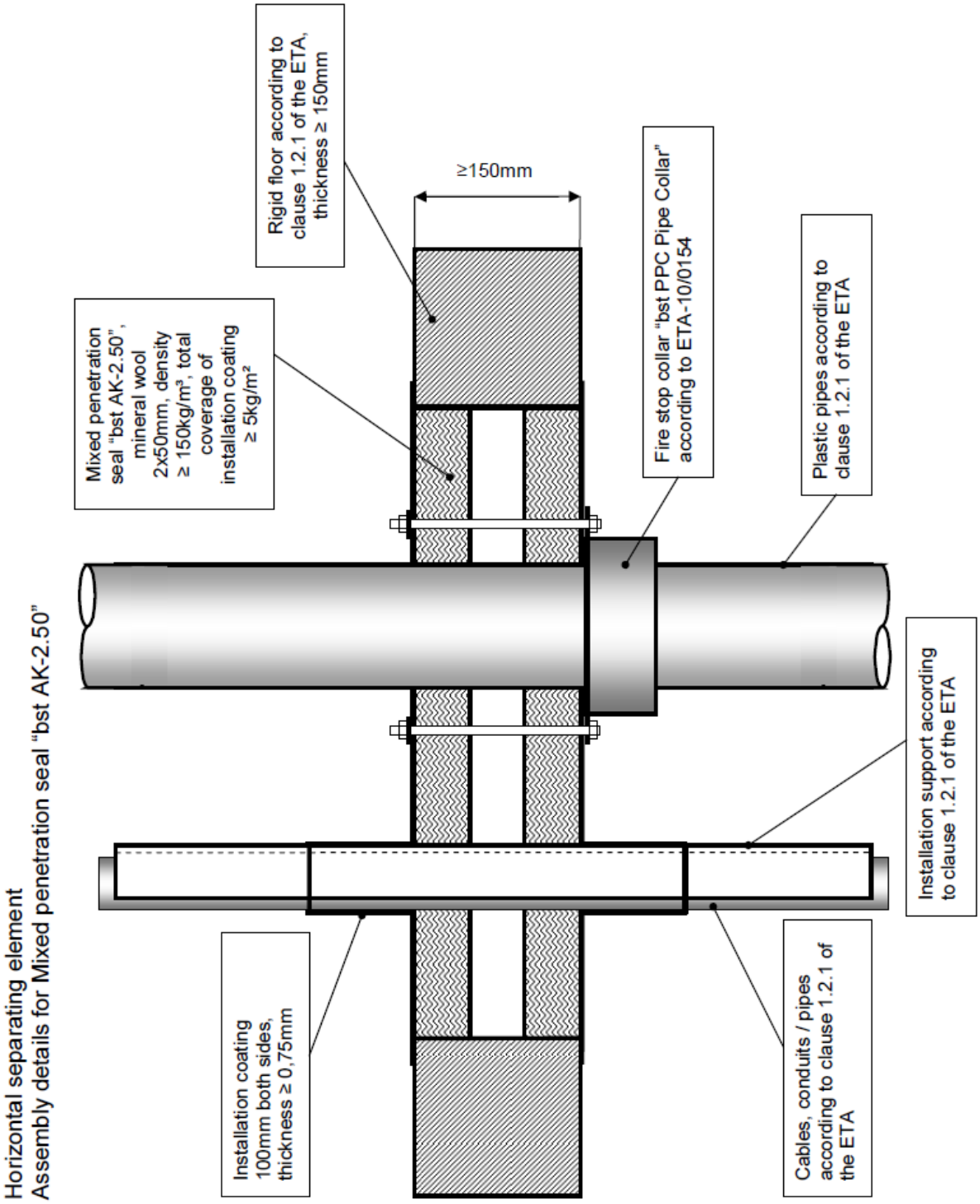
ANNEX C – Schematic diagram of Mixed penetration seal "bst AK-2.50" – in rigid floors (horizontal separating element)



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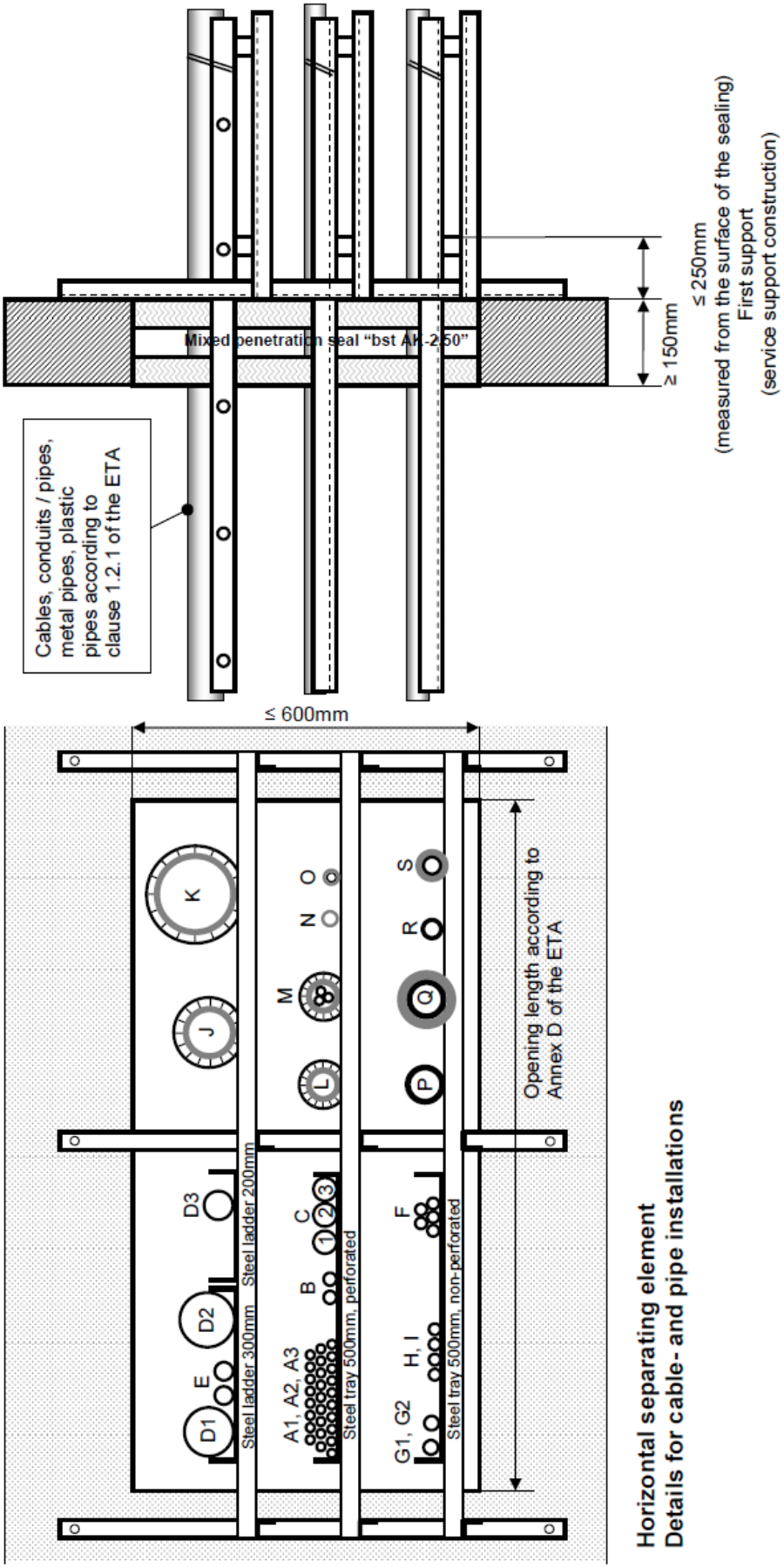

Horizontal separating element
Details for cable- and pipe installations

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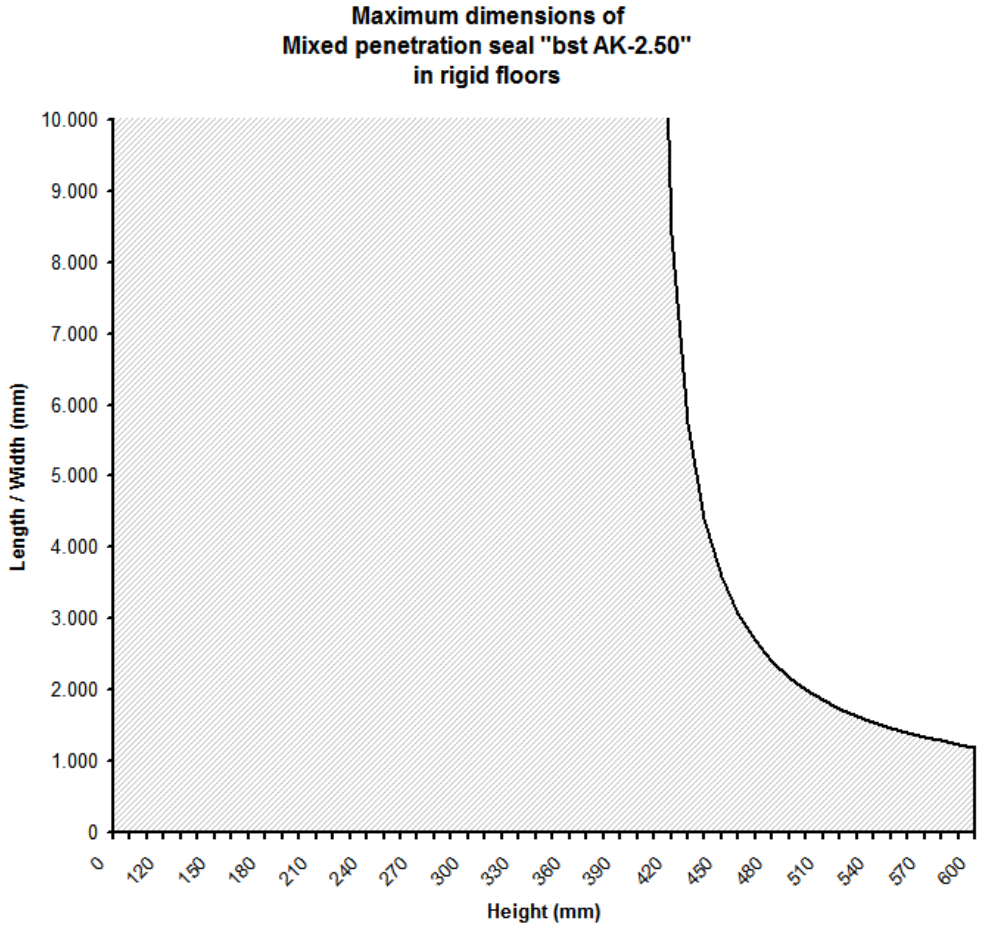
ANNEX D – Maximum dimensions of Mixed penetration seal “bst AK-2.50“ in rigid floors (horizontal separating element) according to prEN 1366-3.2:N185:2007-07 clause A.3.4.2



The maximum area of the seal in rigid floors is 0,72 m².

The maximum height of the seal in rigid floors is 600 mm.

The maximum length (width) of the seal in rigid floors has to be calculated as follows:

$$Length\ \ (Width) = \frac{Height}{(((c_{tested} / 2) * Height) - 1)}$$

$$c_{tested} = \frac{Perimeter\ length_{tested}}{Seal\ area_{tested}} = 5{,}000\ m/m^2; resp.\ 0{,}005\ mm/mm^2$$

The minimum perimeter length to seal area ratio of the aperture in rigid floors is 5,000 m/m², resp. 0,005 mm/mm²; c_{tested} was calculated from the dimensions of the tested seal (1200 mm x 600 mm).

The area on the left side of the graph gives an overview of all possible combinations of length (width) and height where the minimum perimeter length to seal area ratio is ≥ c_{tested}.

For a length (width) of e.g. 1200 mm the allowed height is 600 mm; for a length (width) of e.g. 2000 mm the allowed height is 500 mm.

For a height smaller than 410 mm no limitation of length (width) is required.

Note: The dimensions of the graph are not true to scale.

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ANNEX E – Configuration of resistance to fire test according to prEN 1366-3.2:N185:2007-07 – horizontal separating element – List of tested services and classification according to EN 13501-2:2003

service	qty	description	closure	remark	class
A1	5	cable E-YY 5x1,5 RE-J	U/C	small sheathed, PVC/PVC, ∅ 14 mm	EI 120
A2	5	cable H07RN-F 5G1,5	U/C	small sheathed, EPR/PO, ∅ 11-14 mm	EI 120
A3	5	cable N2XH 5x1,5 RE	U/C	small sheathed, XLPE/EVA, ∅ 11-14 mm	E 120, EI 90
B	2	cable E-YY 1x95 RM-J	U/C	small sheathed, PVC/PVC, ∅ 18-21 mm	E 120, EI 90
C1	1	cable E-YCWY 4x95 SM/50	U/C	medium sheathed, PVC/PVC, ∅ 42-49 mm	EI 120
C2	1	cable H07RN-F 4G95	U/C	medium sheathed, EPR/PO, ∅ 48-61 mm	EI 120
C3	1	cable E-2XH 4x95 SM-J	U/C	medium sheathed, XLPE/EVA, ∅ 37-45 mm	EI 120
D1	1	cable E-YCWY 4x185 SM/95-O	U/C	large sheathed, PVC/PVC, ∅ 57 mm	EI 120
D2	1	cable H07RN-F 4G185	U/C	large sheathed, EPR/PO, ∅ 64-80 mm	E 120, EI 90
D3	1	cable N2XH 4x185 SM	U/C	large sheathed, XLPE/EVA, ∅ 52-62 mm	EI 120
E	2	cable E-YY 1x185 RM-J	U/C	large sheathed, PVC/PVC, ∅ 24-28 mm	EI 120
F	4	cable 20x2x0,6 mm²	U/C	bundle of telecommunication cables, ∅ 100 mm	EI 120
G1	1	cable H07V-R 1x95 mm²	U/C	wire with insulation	EI 120
G2	1	cable H07V-R 1x185 mm²	U/C	wire with insulation	EI 120
H²	3	steel pipe ∅ 16x1 mm	U/C	EN 10305-4/6	EI 120-U/C
I	3	plastic conduit ∅ 16 mm	U/U	IEC 61386-21	EI 120-U/U
N	1	plastic conduit ∅ 25x1,2 mm	U/U	cable installation conduit, empty	E 120-U/U, EI 90-U/U
O	1	plastic conduit ∅ 25x1,2 mm	U/U	cable installation conduit + cable E-YY 5x1,5	EI 120-U/U
Q²	1	steel pipe ∅ 2 “	U/C	with insulation „Armaflex“	EI 120-U/C
S²	1	copper pipe ∅ 30 mm	U/C	with insulation „Armaflex“	E 120-U/C, EI 90-U/C

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service	qty	description	closure	remark	class
J	1	plastic pipe PVC, ∅ 75x3,6	U/U	1 of pipe collars “PPC-82” / design group 63 to 82	EI 120-U/U
K	1	plastic pipe PVC, ∅ 125x3,7	U/U	1 of pipe collars “PPC-135” / design group 90 to 135	EI 120-U/U
L	1	plastic pipe PVC, ∅ 50x3,7	U/U	1 of pipe collars “PPC-55” / design group 25 to 55	EI 120-U/U
M	1	plastic conduit PVC, ∅ 50x3,7	U/U	1 of pipe collars “PPC-55” + 3 cables E-YY 5x1,5	EI 120-U/U
T²	1	plastic pipe PE, ∅ 110x2,9	U/U	1 of pipe collar “PPC-110”	EI 120-U/U

Note: The pipe collars (Fire stop collar “bst PPC Pipe Collar”) used on services J, K, L, M, T² are part of ETA 10/0154.

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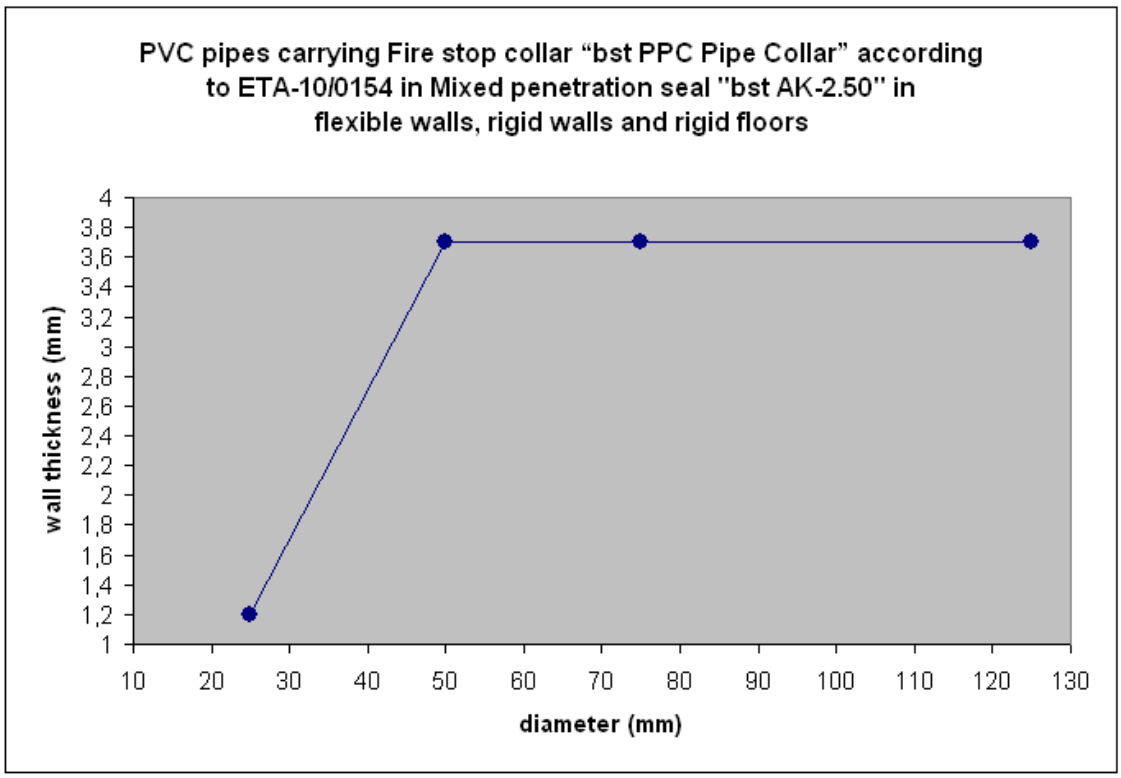
ANNEX F – Diagrams for the interpolation between pipe diameter and wall thickness for PVC pipes carrying Fire stop collar "bst PPC Pipe Collar" according to ETA-10/0154 in Mixed penetration seal "bst AK-2.50" in flexible walls, rigid walls and rigid floors

An interpolation between the pipe diameter and the wall thickness to be used is only possible along the line drawn in the graph.



Note: The dimensions of the graph are not true to scale.

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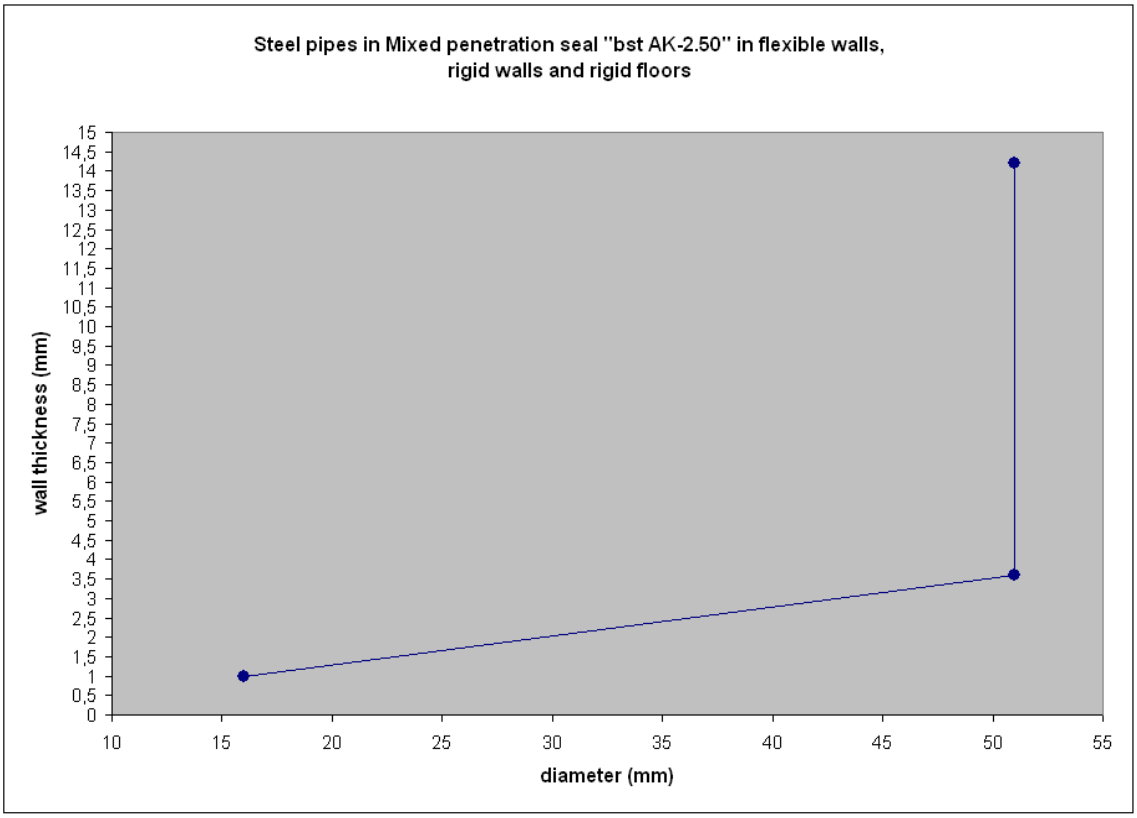
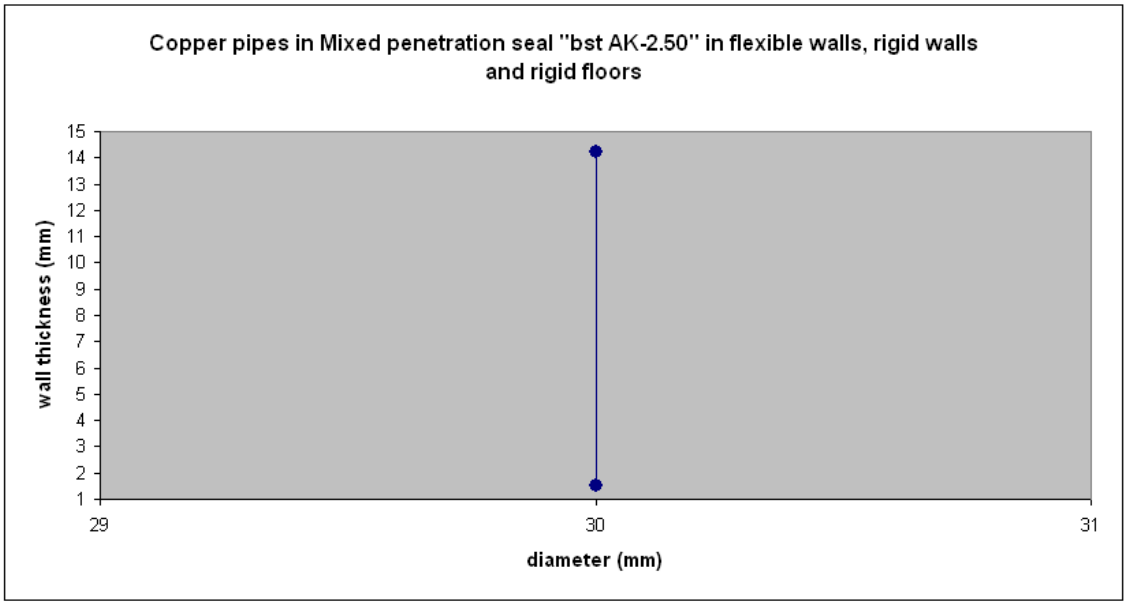
ANNEX G – Diagrams for the interpolation between pipe diameter and wall thickness for steel pipes and copper pipes in Mixed penetration seal “bst AK-2.50” in flexible walls, rigid walls and rigid floors

An interpolation between the pipe diameter and the wall thickness to be used is only possible along the line drawn in the graphs.





Note: The dimensions of the graph are not true to scale.