



**SLOVENSKI STANDARD**  
**SIST EN 1366-3:2022**

**01-februar-2022**

**Nadomešča:**  
**SIST EN 1366-3:2009**

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**Preskusi požarne odpornosti servisnih inštalacij - 3. del: Tesnitve prebojev**

Fire resistance tests for service installations - Part 3: Penetration seals

Feuerwiderstandsprüfungen für Installationen - Teil 3: Abschottungen

Essais de résistance au feu des installations techniques - Partie 3 : Calfeutrements de trémies

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**Ta slovenski standard je istoveten z: EN 1366-3:2021**

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**ICS:**

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
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**SIST EN 1366-3:2022**

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EUROPEAN STANDARD

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NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2021

ICS 13.220.50

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English Version

## Fire resistance tests for service installations - Part 3: Penetration seals

Essais de résistance au feu des installations techniques  
- Partie 3 : Calfeutrements de trémies

Feuerwiderstandsprüfungen für Installationen - Teil 3:  
Abschottungen

This European Standard was approved by CEN on 20 September 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction.....	6
<b>1 Scope</b> .....	<b>7</b>
<b>2 Normative references</b> .....	<b>7</b>
<b>3 Terms and definitions, symbols, units and abbreviations</b> .....	<b>9</b>
<b>3.1 Terms and definitions</b> .....	<b>9</b>
<b>3.2 Symbols, units and abbreviations</b> .....	<b>19</b>
<b>4 Test equipment</b> .....	<b>20</b>
<b>5 Test conditions</b> .....	<b>20</b>
<b>5.1 Heating conditions</b> .....	<b>20</b>
<b>5.2 Pressure conditions</b> .....	<b>20</b>
<b>6 Test specimen</b> .....	<b>21</b>
<b>6.1 Size and distances</b> .....	<b>21</b>
<b>6.2 Number</b> .....	<b>23</b>
<b>6.3 Design</b> .....	<b>24</b>
<b>6.4 Construction</b> .....	<b>25</b>
<b>6.5 Verification</b> .....	<b>25</b>
<b>7 Installation of test specimen</b> .....	<b>25</b>
<b>7.1 General</b> .....	<b>25</b>
<b>7.2 Installation of the supporting construction including penetration(s)</b> .....	<b>25</b>
<b>7.3 Installation of service(s)</b> .....	<b>30</b>
<b>7.4 Installation of the penetration seal</b> .....	<b>37</b>
<b>8 Conditioning</b> .....	<b>38</b>
<b>9 Application of instrumentation</b> .....	<b>38</b>
<b>9.1 Thermocouples</b> .....	<b>38</b>
<b>9.2 Pressure</b> .....	<b>46</b>
<b>10 Test procedure</b> .....	<b>46</b>
<b>10.1 General</b> .....	<b>46</b>
<b>10.2 Integrity</b> .....	<b>46</b>
<b>10.3 Other observations</b> .....	<b>46</b>
<b>11 Performance criteria</b> .....	<b>46</b>
<b>11.1 Integrity</b> .....	<b>46</b>
<b>11.2 Insulation</b> .....	<b>46</b>
<b>11.3 Multiple service penetration seals and mixed penetration seals</b> .....	<b>47</b>
<b>11.4 Several penetrations in a test construction</b> .....	<b>47</b>
<b>12 Test report</b> .....	<b>47</b>
<b>13 Field of direct application of test results</b> .....	<b>48</b>
<b>13.1 General</b> .....	<b>48</b>
<b>13.2 Orientation</b> .....	<b>48</b>
<b>13.3 Supporting construction</b> .....	<b>48</b>
<b>13.4 Services</b> .....	<b>54</b>

13.5	Service support construction.....	54
13.6	Penetration seal size .....	54
13.7	Distances .....	55
Annex A (normative) Configuration and field of direct application for cable penetration seals.....		57
Annex B (normative) Special penetration seal systems.....		75
Annex C (normative) Test configuration and field of direct application for conduits and trunkings for cables .....		85
Annex D (normative) Test specimen design and field of direct application for bus bars / bus bar trunking units.....		99
Annex E (normative) Test specimen design, test procedure and field of direct application for pipe penetration seals .....		103
Annex F (normative) Test specimen design, test procedure and field of direct application for mixed penetration seals.....		143
Annex G (normative) Critical service approach .....		152
Annex H (informative) Explanatory notes .....		157
Bibliography.....		194

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**EN 1366-3:2021 (E)****European foreword**

This document (EN 1366-3:2021) has been prepared by Technical Committee CEN/TC 127 “*Fire Safety in Buildings*”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1366-3:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Annexes A to G are normative. Annex H is informative.

EN 1366 ‘*Fire resistance tests for service installations*’ consists of the following:

- *Part 1: Ventilation ducts*
- *Part 2: Fire dampers*
- *Part 3: Penetration seals*
- *Part 4: Linear joint seals*
- *Part 5: Service ducts and shafts*
- *Part 6: Raised access floors and hollow core floors*
- *Part 7: Closures for conveyors and track bound transportation systems*
- *Part 8: Smoke extraction ducts*
- *Part 9: Single compartment smoke extraction ducts*
- *Part 10: Smoke control dampers*
- *Part 11: Fire protective systems for cable systems and associated components*
- *Part 12: Non-mechanical fire barrier for ventilation ductwork*
- *Part 13: Chimneys*
- *Part 14: Kitchen extraction ducts*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria,

Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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**EN 1366-3:2021 (E)****Introduction**

This part of the EN 1366 series has been prepared to provide a method of test for assessing the contribution of a penetration seal to the fire resistance of separating elements when they have been penetrated by a service or services.

**Caution**

The attention of all persons concerned with managing and carrying out fire resistance testing is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases will be emitted during the test. Mechanical and operational hazards might also arise during the construction of the test elements or structures, their testing and disposal of test residues.

An assessment of all potential hazards and risks to health needs to be made and safety precautions need to be identified and provided. Written safety instructions will be given to relevant personnel. Appropriate training should be given to relevant personnel. Laboratory personnel will ensure that they follow written safety instructions at all times.

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## 1 Scope

This part of the EN 1366 series specifies a method of test and criteria for the evaluation (including field of direct application rules) of the ability of a penetration seal to maintain the fire resistance of a separating element at the position at which it has been penetrated by a service or services. Penetration seals used to seal gaps around chimneys, air ventilation systems, fire rated ventilation ducts, fire rated service ducts, shafts and smoke extraction ducts as well as combined penetration seals are excluded from this part of the EN 1366 series.

NOTE EN 15882-5 [6] deals with penetration seals including ducts and dampers.

Supporting constructions are used in this part of the EN 1366 series to represent separating elements such as walls or floors. These simulate the interaction between the test specimen and the separating element into which the sealing system is to be installed in practice.

This part of the EN 1366 series is intended to be used in conjunction with EN 1363-1.

The purpose of a test described in this part of the EN 1366 series is to assess the integrity and insulation performance of the penetration seal, of the penetrating service or services and of the separating element in the surrounding area of the penetration seal.

No information can be implied by the test concerning the influence of the inclusion of such penetrations and penetration seals on the loadbearing capacity of the separating element.

It is assumed that in each case the lintel above a penetration seal in the wall is designed in hot and cold state in a way that it does not apply any additional vertical load on the penetration seal.

It is not the intention of this test to provide quantitative information on the rate of leakage of smoke and/or hot gases or on the transmission or generation of fumes. Such phenomena are only noted in the test report in describing the general behaviour of test specimens during the test.

Tests in accordance with this part of the EN 1366 series are not intended to supply any information on the ability of the penetration seal to withstand stress caused by movements or displacements of the penetrating services.

The risk of spread of fire downwards caused by burning material which drips e.g. through a pipe downwards to floors below, is at present excluded from this document.

Tests in accordance with this part of the EN 1366 series do not address any risks associated with leakage of dangerous liquids or gases caused by failure of pipes in case of fire.

Tests in accordance with this part of the EN 1366 series of pipe penetration seals for pipes of pneumatic dispatch systems, pressurized air systems, etc. simulate a situation where the systems are shut off in case of fire.

Explanatory notes to this test method are given in Annex H.

All values given without tolerances in this document are nominal ones unless otherwise specified.

All pipe diameters are outside diameters unless otherwise specified.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 338, *Structural timber – Strength classes*

EN 520, *Gypsum plasterboards – Definitions, requirements and test methods*

**EN 1366-3:2021 (E)**

EN 1329-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Unplasticized poly(vinyl chloride) (PVC-U) – Part 1: Specifications for pipes, fittings and the system*

EN 1363-1, *Fire resistance tests – Part 1: General Requirements*

EN 1363-2, *Fire resistance tests – Part 2: Alternative and additional procedures*

EN 1451-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Polypropylene (PP) – Part 1: Specifications for pipes, fittings and the system*

EN 1453-1, *Plastics piping systems with structured-wall pipes for soil and waste discharge (low and high temperature) inside buildings – Unplasticized poly(vinyl chloride) (PVC-U) – Part 1: Specifications for pipes and the system*

EN 1455-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Acrylonitrile-butadiene-styrene (ABS) – Part 1: Requirements for pipes, fittings and the system*

EN 1519-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Polyethylene (PE) – Part 1: Requirements for pipes, fittings and the system*

EN 1566-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Chlorinated poly(vinyl chloride) (PVC-C) – Part 1: Specifications for pipes, fittings and the system*

EN 1995-1-2, *Eurocode 5: Design of timber structures – Part 1-2: General – Structural fire design*

EN 10305-4, *Steel tubes for precision applications – Technical delivery conditions – Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems*

EN 10305-6, *Steel tubes for precision applications – Technical delivery conditions – Part 6: Welded cold drawn tubes for hydraulic and pneumatic power systems*

EN 12201-1; *Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) – Part 1: General*

EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) – Part 2: Pipes*

EN 12449, *Copper and copper alloys – Seamless, round tubes for general purposes*

EN 12666-1, *Plastics piping systems for non-pressure underground drainage and sewerage – Polyethylene (PE) – Part 1: Specifications for pipes, fittings and the system*

EN 13381-3, *Test methods for determining the contribution to the fire resistance of structural members – Part 3: Applied protection to concrete members*

EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*

EN 13501-2, *Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services*

- EN 13600, *Copper and copper alloys – Seamless copper tubes for electrical purposes*
- EN 14195, *Metal framing components for gypsum board systems – Definitions, requirements and test methods*
- EN 50525-2-31, *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U<sub>o</sub>/U) – Part 2-31: Cables for general applications – Single core non-sheathed cables with thermoplastic PVC insulation*
- EN 61386-21, *Conduit systems for cable management – Part 21: Particular requirements – Rigid conduit systems (IEC 61386-21)*
- EN ISO 1452-2, *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure – Unplasticized poly(vinyl chloride) (PVC-U) – Part 2: Pipes (ISO 1452-2)*
- EN ISO 13943, *Fire safety – Vocabulary (ISO 13943)*
- EN ISO 15493, *Plastics piping systems for industrial applications – Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) – Specifications for components and the system – Metric series (ISO 15493)*
- EN ISO 15494, *Plastics piping systems for industrial applications – Polybutene (PB), polyethylene (PE), polyethylene of raised temperature resistance (PE-RT), crosslinked polyethylene (PE-X), polypropylene (PP) – Metric series for specifications for components and the system (ISO 15494)*
- EN ISO 15875-2, *Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X)*
- EN ISO 15877-2, *Plastics piping systems for hot and cold water installations – Chlorinated poly(vinyl chloride) (PVC-C)*
- HD 603 S1, *Distribution cables of rated voltage 0,6/1 kV*
- HD 604 S1, *0,6/1 kV and 1,9/3,3 kV power cables with special fire performance for use in power stations*
- ISO 19220, *Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings – Styrene copolymer blends (SAN + PVC)*

### 3 Terms and definitions, symbols, units and abbreviations

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1 and EN ISO 13943 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

##### 3.1.1

##### penetration

aperture in a separating element with one or more services passing through

**EN 1366-3:2021 (E)****3.1.2****penetration seal**

system used to maintain the fire resistance of a separating element at the position where one or more services pass through or where there is provision for services to pass through a separating element

Note 1 to entry: For the latter see blank penetration seal.

**3.1.3****blank penetration seal**

aperture in the separating element without services passing through which is sealed or closed by the specified seal

**3.1.4****single service penetration seal**

penetration seal intended for penetrations with only one service passing through

**3.1.5****multiple service penetration seal**

penetration seal intended for penetrations where more than one service of the same type (e.g. cables) or pipe material group pass through

**3.1.6****mixed penetration seal**

penetration seal intended for penetrations where more than one type of services (e.g. cables and pipes or pipes of different pipe material groups) pass through

**3.1.7****combined penetration seal**

mixed penetration seal with fire ducts or fire dampers passing through in addition to other services

**3.1.8****aperture part of the penetration seal**

part of the penetration seal used to fill the penetration

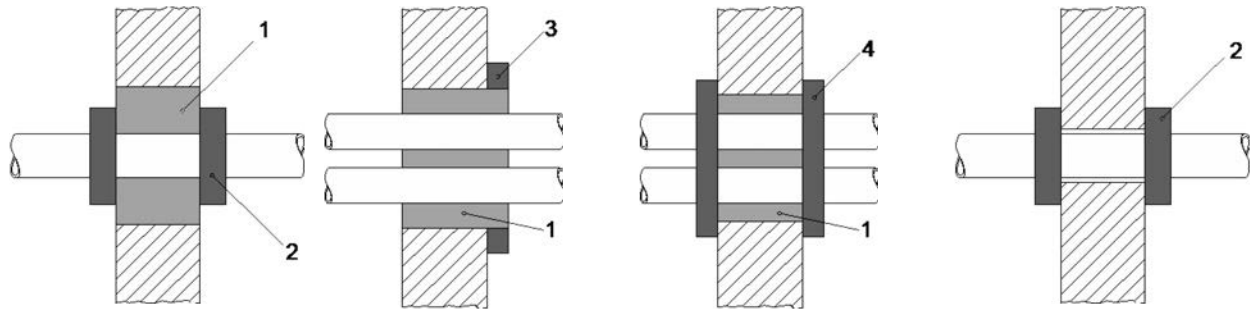
Note 1 to entry: See Figure 1.

Note 2 to entry: A beading, a pattress and parts of the penetration seal filling the space created by a beading or extending over the penetration on the separating element (e.g. a coating of a slab) are also taken as part of the aperture part of the penetration seal.

**3.1.9****service part of the penetration seal**

part of the penetration seal that is related to a service

EXAMPLE Insulation material on pipes, intumescent coatings on cables and/or pipe closure devices on plastic pipes; see Figure 1.

**Key**

- 1 aperture part of the penetration seal (e.g. mortar, foam)
- 2 service part(s) of the penetration seal (as an example pipe collars are shown)
- 3 beading
- 4 pattress

**Figure 1 — Aperture part and service part of the penetration seal**

**3.1.10****modular system**

pre-sized frame into which are installed elastomeric insert blocks, compressed around the service

**3.1.11****single opening frame**

rectangular or circular frame of a modular system, with predefined dimensions in different sizes and variations

Note 1 to entry: See Annex B, Figure B.1.

**3.1.12****combination frame**

rectangular frame of a modular system incorporating two or several single openings

Note 1 to entry: See Annex B, Figure B.1.

**3.1.13****single opening**

area of the modular system within a single opening frame or one division of a combination frame which is available for the modules

Note 1 to entry: See Annex B, Figure B.1.

**3.1.14****module**

block, available in different sizes, to be used inside a single opening of a modular system, to seal around penetrating services in different sizes and shapes or as blanks or filler blocks

Note 1 to entry: See Annex B, Figure B.1.

**3.1.15****single module**

module to seal around a single service

## EN 1366-3:2021 (E)

## 3.1.16

**multi-service module**

module allowing sealing around several services in one module

Note 1 to entry: See Figure 2 for an example.

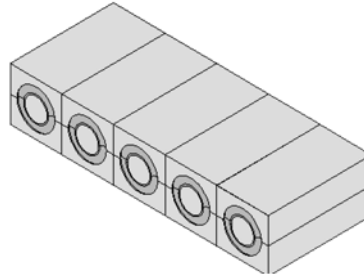


Figure 2 — Example of an undividable multi-cable module for more than one cable

## 3.1.17

**annular space**

width of the gap between a centred positioned circular single service and the aperture edge in a circular penetration

## 3.1.18

**cable box**

housing with intumescent inlays that forms a channel

## 3.1.19

**pipe closure device**

reactive device to seal penetrations for insulated or non-insulated pipes

## 3.1.20

**service**

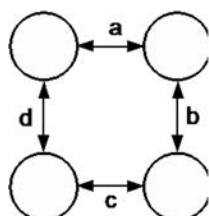
part of a line to convey electrical power, waves, liquids or gases such as cables, conduits, pipes (with or without insulation) or trunkings

## 3.1.21

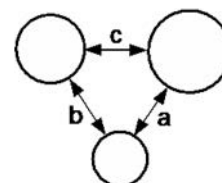
**single arrangement**

arrangement of penetration seals or services with a distance of  $\geq 100$  mm between all penetration seals / services

Note 1 to entry: See Figure 3.



$a, b, c, d \geq 100$  mm



$a, b, c \geq 100$  mm

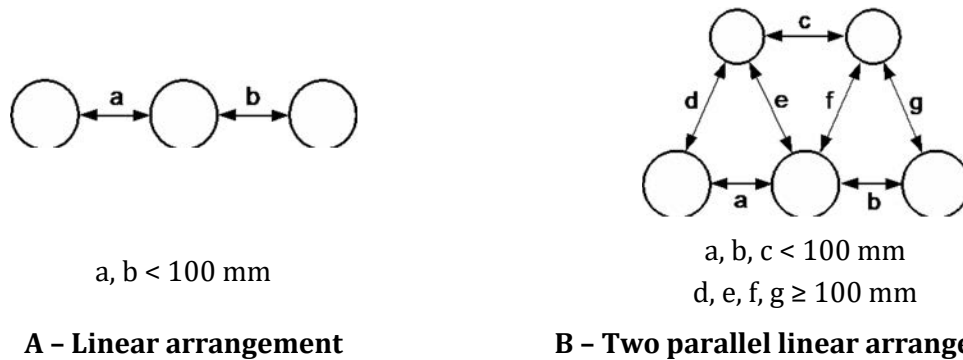
NOTE The orientation of the triangle configuration shown is an example only.

Figure 3 — Single arrangement of penetration seals / services

**3.1.22****linear arrangement**

arrangement of minimum two penetration seals or minimum two services in a line with a distance of less than 100 mm between the penetration seals or services and where the distance to other penetration seals/services not in this line is  $\geq 100$  mm

Note 1 to entry: See Figure 4.

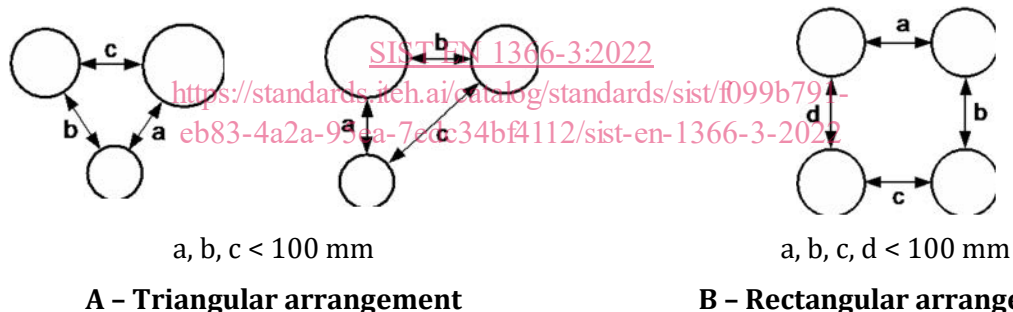


**Figure 4 — Linear arrangement of penetration seals / services**

**3.1.23****cluster arrangement**

arrangement of minimum three penetration seals or minimum three services with a distance of less than 100 mm between all of the penetration seals or services

Note 1 to entry: See Figure 5 A and B.



NOTE The orientation of the triangle configuration shown is an example only.

**Figure 5 — Cluster arrangement of penetration seals / services**

**3.1.24****bus bar**

strip or bar of copper, brass, aluminium or a combination that conducts electricity, either as a single element or within a bus bar trunking unit

**3.1.25****bus bar trunking unit**

unit of bus bar trunking system complete with bus bars, their supports and insulation, external enclosure and any fixing and connection means to other units, with or without tap-off facilities

[SOURCE: EN 60439-2:2000, 2.3.5]