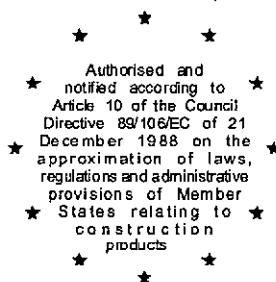


TECHNICKÝ A ZKUŠEBNÍ ÚSTAV  
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MEMBER OF EOTA

## European Technical Approval ETA-13/0560

(English language translation, the original version in Czech language)

Obchodní název  
*Trade name*

**SPIT ISOMAX**

Držitel schválení  
*Holder of approval*

SPIT S.A.S.  
150 Rte. De Lyon  
26501 Bourg Les Valence-Cedex  
France

Typ a použití výrobku

Plastové kotvy pro kotvení vnějších kontaktních  
tepelně izolačních systémů s omítkou v betonu a  
zdivu

*Generic type and use  
of construction product*

*Screwed-in plastic anchors for fixing of external  
thermal insulation composite systems with rendering  
in concrete and masonry*

Platnost  
*Validity*

od  
*from*  
do  
*to*

04.06.2013

24.04..2018

Výrobna  
*Manufacturing plant*

BRAVOLL spol. s r.o.  
Sídliště č.p. 696  
394 68 Žirovnice  
Czech Republic

Toto evropské technické schválení  
obsahuje  
*This European technical approval  
contains:*

20 stran včetně 10 příloh

*20 pages including 10 Annexes*



European Organisation for Technical Approvals  
Evropská organizace pro technické schvalování

## I. LEGAL BASES AND GENERAL CONDITIONS

- 1 - This European Technical Approval is issued by the Technical and Test Institute for Construction Prague (Technický a zkušební ústav stavební Praha, s.p.) 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<sup>1</sup>, modified by the Council Directive 93/68/EEC<sup>2</sup>; and Regulation (EC) No.1882/2003 of the European Parliament and of the Council<sup>3</sup>
  - the Government Decree No. 190/2002 Collection of Law <sup>4</sup>, as amended
  - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC<sup>5</sup>;
  - Guideline for European Technical Approval of „Plastic Anchors for Fixing of External Thermal Insulation Composite Systems with Rendering“, ETAG 014, Edition November 2001.
- 2 - The Technical and Test Institute for Construction Prague 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 Technical and Test Institute for Construction Prague in particular pursuant to information by the Commission according to Article 5.1 of the 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 Technical and Test Institute for Construction Prague. 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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<sup>1</sup> Official Journal of the European Communities N° L 40, 11.02.1989, p. 12

<sup>2</sup> Official Journal of the European Communities N° L 220, 30.08.1993, p. 1

<sup>3</sup> Official Journal of the European Union no. L 284, 31.10.2003, p. 1

<sup>4</sup> Collection of Law of the Czech Republic Vol.79 No190 , 21.5.2002

<sup>5</sup> Official Journal of the European Communities N° L 17, 20.01.1994, p. 34

## **II. SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL**

### **1 Definition of product and intended use**

#### **1.1 Definition of product**

The anchors SPIT ISOMAX consist of plastic sleeve with a plate made of material according to Table 2 Annex 5 and an accompanying specific expansion screw of material according to Table 2 Annex 5. The anchors are intended for countersunk and surface assembly (surface of the insulation material), which it are shown in Annex 1 and 2. For countersunk assembly the plate of anchor is closed by insulation cover of thermal insulation, which is applied at (to) the thermal insulation composite systems.

The anchors SPIT ISOMAX for surface assembly may additionally be combined with the additive anchor plates BRAVOLL® IT PTH 100 and IT PTH 140, which are shown in Annex 9.

For countersunk assembly may additionally be combined with Installer tools BRAVOLL® ZP with Insulation covers IZ which are shown in Annex 5 and plates BRAVOLL® ZT PTH 100, ZT PTH 120 see Annex 11 with Insulation covers IZ which are shown in Annex 4.

#### **1.2 Intended use**

The anchor is intended to be used for anchorages for which requirements for safety in use in the sense of the Essential Requirement 4 of Council Directive 89/106/EEC shall be fulfilled and failure of anchorages made with these products would cause low risk to human life. The anchor is to be used only as multiple fixing for the anchorage of bonded thermal insulation composite systems (ETICS) according to ETAG 004 in concrete and masonry. The base material shall consist of reinforced or unreinforced normal weight concrete of strength class C12/15 at minimum and C50/60 at maximum according to EN 206-1:2000-12 or of masonry walls from prefabricated reinforced components of lightweight aggregate concrete (LAC) according to EN 1520:2002+AC:2003 or autoclaved aerated concrete according to Table 5, Annex 8.

The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system. The dead loads have to be transmitted by the bonding of the thermal insulation composite system.

The provisions made in this European Technical Approval are based on an assumed working life of the anchor of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the products in relation to the expected economically reasonable working life of the works.

### **2 Characteristics of the product and methods of verification**

#### **2.1 Characteristics of the product**

The anchors correspond to the drawings and information give in Annexes 3. The characteristic material values, dimensions and tolerances of the anchor not indicated in these Annexes shall correspond to the respective values laid down in the technical documentation<sup>6</sup> of this European Technical Approval.

<sup>6</sup> The technical documentation of this European Technical Approval is deposited at the Technický a zkušební ústav stavební Praha, s.p., as far as relevant for the tasks of the approved bodies involved in the attestation of conformity producer, is handed over to the approved bodies.

The characteristic values for the desing of the anchorages are given in Annexes 5 to 7.

Each anchor is to be marked with the producer name, brand name the type and the length of the anchor. The minimum effective anchorage depth also shall be marked.

The anchor shall only be packaged and supplied as a complete unit.

## **2.2 Methods of verification**

The assessment of the fitness of the anchor for the intended use in relation to the requirements for safety in use in the sense of Essential Requirement 4 has been made in compliance with

- the Guideline for European Technical Approval of "Plastic Anchors for Fixing of External Thermal Insulation Composite Systems with Rendering", ETAG 014, based on the use categories A, B, C, D and E respectively
- the EOTA Technical Report TR 025 "Determination of point thermal transmittance of plastic anchors for the anchorage of external thermal insulation composite systems (ETICS)".
- the EOTA Technical Report TR 026 "Evaluation of plate stiffness from plastic anchors for fixing of external thermal insulation composite systems with rendering (ETICS)".

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, 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 Products Directive, these requirements need also to be complied with, when and where they apply.

## **3 Evaluation of conformity of the product and CE marking**

### **3.1 System of attestation of conformity**

The system of attestation of conformity 2 (ii) (allocated to system 2+) according to Council Directive 89/106/EEC Annex III provides:

- (a) tasks of the manufacturer:
  - (1) initial type-testing of the product
  - (2) factory production control
  - (3) testing of samples taken at the factory by the manufacturer in accordance with a control plan<sup>7</sup>
- (b) tasks of the approved body:
  - (4) certification of factory production control on the basis of
    - initial inspection of factory and of factory production control
    - continuous surveillance, assessment and approval of factory production control

### **3.2 Responsibility**

#### **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 may only use raw materials stated in the technical documentation of this European Technical Approval.

The factory production control shall be in accordance with the control and tests plan of which is part of the technical documentation of this European Technical Approval. The control and tests plan<sup>7</sup> is laid down in the context of the factory production control system operated by the manufacturer and deposited at Technický a zkušební ústav stavební Praha, s.p.

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

### **3.2.1.2 Other tasks of manufacture**

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of anchors in order to undertake the actions laid down in section 3.2.2. 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 approved body 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.

### **3.2.2 Tasks of approved bodies**

The approved body shall perform the:

- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control, in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the factory production control of this European Technical Approval.

In cases where the provisions of the European Technical Approval and its control plan<sup>7</sup> are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Technický a zkušební ústav stavební Praha, s.p without delay.

### **3.3 CE marking**

The CE-marking<sup>8</sup> shall be affixed on each packaging of the anchor. The symbol "CE" shall be accompanied by the following information:

- name or identifying mark of producer and manufacturing plant;
- identification mark of product
- identification number of an approved body;
- the last two digits of the year in which the CE-marking was affixed;
- the number of the European Technical Approval;
- the number of the guideline for European Technical Approval;
- the number of the EC certificate of the factory production control,
- use categories A, B, C, D and E

<sup>7</sup> The control and tests plan is a confidential part of the documentation of the European Technical Approval, but not published together with the ETA and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

<sup>8</sup> Notes on the CE marking are stated in Guidance Paper D „CE marking under the Construction Products Directive“, Brussels, 01 August 2002

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

### **4.1 Manufacturing**

The anchor is manufactured in accordance with the provisions of the European Technical Approval using the automated manufacturing process as verified by the inspection of the plant performed by the Technický a zkušební ústav stavební Praha, s.p. as laid down in the technical documentation.

The European Technical Approval is issued for the product on the basis of agreed data/information, deposited with Technický a zkušební ústav stavební Praha,s.p, 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 Technický a zkušební ústav stavební Praha,s.p before the changes are introduced. Technický a zkušební ústav stavební Praha,s.p 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**

#### **4.2.1 Design of anchorages**

##### **4.2.1.1 General**

The ETA only applies to the manufacture and use of the anchor. Verification of stability of the external thermal insulation composite system including application of load on the anchor and on the additional plate are not subject of this European Technical Approval.

Fitness for the intended use of the anchor is given under the following conditions:

The design of anchorages is carried out in compliance with ETAG 014"Guideline for European Technical Approval of Plastic Anchors for Fixing of External Thermal Insulation Composite Systems with Rendering" under the responsibility of an engineer experienced in anchorages.

Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials, the thickness of insulation and the dimensions of the anchorage as well as of the relevant tolerances.

Proof of direct local application of load on the base material shall be delivered.

The anchor shall only be used for the transmission of wind suction loads. All other loads such as dead load and restraints shall be transmitted by the adhesion of the relevant external thermal insulation composite system.

##### **4.2.1.2 Resistance**

The characteristic values of the tension resistance of the anchor are given in Table 5, Annex 7. If there is a difference to the given characteristic values of the base material or use of similar base material of category B, C, D and E supposed; the job-site tests according to 4.2.3 shall be carried out and the characteristic tension resistance shall be determined.

##### **4.2.1.3 Characteristic values, spacing and dimensions of anchorage member**

The minimum spacing and dimensions of anchorage member according to the Annex 7 shall be observed.

#### 4.2.1.4 Displacement behavior

The displacement are given in the following table

Assembly  Material	Surface		Countersunk	
	Tension load $N_{Sk}$ [kN]	Displacements $\Delta\delta_N$ [mm]	Tension load $N_{Sk}$ [kN]	Displacements $\Delta\delta_N$ [mm]
C12/15 EN 206-1	0,5	0,88	0,5	0,51
C16/20 EN 206-1	0,5	0,88	0,5	0,66
C50/60 EN 206-1	0,5	0,69	0,5	0,61
Solid clay bricks EN 771-1	0,5	0,73	0,5	0,59
Vertically perforated clay bricks ÖNORM B6124	0,2	0,56	0,25	0,36
Perforated clay bricks POROTHERM P+D 44 EN 771-1	0,25	0,66	0,3	0,56
Calcium silicate solid units EN 771-2	0,4	0,72	0,5	0,62
Lightweight concrete hollow blocks EN 771-3	0,5	0,68	0,5	0,72
Lightweight aggregate concrete EN 1520 (LAC)	0,5	0,85	0,4	0,60
Autoclaved aerated concrete P2-400 according to EN 771- 4	0,25	0,50	0,2	0,31

#### 4.2.1.5 Point thermal transmittance according EOTA Technical Report TR 025

The point thermal transmittance (CHI-value) of the anchor according EOTA Technical Report TR 025 "Determination of point thermal transmittance of plastic anchors for the anchorage of external thermal insulation composite systems (ETICS)" is given in the following table for use category A, B, C, D and E respectively:

Anchor type	Insulation thickness $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]
PTH-S	60-540	0,002

#### 4.2.1.6 Plate stiffness according EOTA Technical Report TR 026

The plate stiffness of the anchor according EOTA Technical Report TR 026 "Evaluation of plate stiffness from plastic anchors for fixing of external thermal insulation composite systems with rendering (ETICS)" is given in the following table:

Anchor type	Diameter of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
PTH-S	60	2,6	0,9

#### 4.2.2 Installation of anchor

The fitness for use of the anchor can only be assumed if the following conditions of installation are met:

- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the tools.

- Checks before placing the anchor, to ensure that the characteristic values of the base material in which the anchor is to be placed, is identical with the values, which the characteristic loads apply for.
- Observation of the drill method (Drill holes in masonry made of perforated clay bricks, vertically perforated clay bricks, lightweight concrete hollow blocks, lightweight aggregate concrete (LAC) and autoclaved aerated concrete may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests according to 4.2.3 evaluate the influence of hammer or impact drilling).
- The total embedment depth of the anchor is different depending on user categories see Table 3 in Annex 7.
  - BRAVOLL® PTH-S:  $h_{nom} \geq 25$  mm (A, B, C, D)  
 $h_{nom} \geq 65$  mm (E)
- When the anchors are applied for countersunk assembly their plates are covered by the installation covers which are made from same material as ETICS.
- Placing drill holes without damaging the reinforcement.
- Temperature during installation of the anchor  $\geq 0^{\circ}\text{C}$ .
- Exposure to UV due to solar radiation of the anchor not protected by rendering  $\leq 6$  weeks.

#### 4.2.3 Job site tests

The characteristic tension resistance of the anchor may be determined by means of job site pull-out tests carried out on the material actually used, if a characteristic resistance of the base material does not exist (for example masonry made of other solid masonry units or made of perforated clay bricks).

The characteristic resistance of the anchor shall be determined by carrying out at least 15 centric tension load pull-out tests on site. These tests are also possible under the same conditions in a laboratory.

Execution and evaluation of the tests as well as the issue of the test report and the determination of the characteristic resistance should be under the responsibility of approved testing laboratories or the supervision of the person responsible for the execution of the works on site.

Number and position of the anchors to be tested shall be adapted to the relevant special conditions of the site and, for example, to be increased in the case of hidden and larger areas, such that reliable information about the characteristic resistance of the anchor in the base material in question can be derived. The tests shall take into account the most unfavourable conditions of the practical execution.

##### 4.2.3.1 Assembly

The anchor to be tested shall be installed (e.g. preparation of drill hole drilling tool to be used, drill bit) and the spacing and the edge distances shall be in the same way as planned for the fixing of the external thermal insulation composite system.

Depending on the drilling tool and according to ISO 5468, hard metal hammer-drill bits or hard metal percussion drill bits, respectively, shall be used. The cutting diameter shall be at the upper tolerance limit.

##### 4.2.3.2 Execution test

The test rig used for the pull-out test shall provide a continuous slow increase of the load, controlled by calibrated load cell. The load shall be applied perpendicularly to the surface of the base material and shall be transmitted to the anchor via an hinge. The reaction force shall be transmitted into the base material at a distance of at least 150 mm from the anchor. The load shall be increased continuously in a way,



that the ultimate load is reached after about 1 minute. The load is measured when the ultimate load ( $N_1$ ) is achieved.

#### **4.2.3.3 Test report**

The test report shall include all information necessary to assess the resistance of the tested anchor. It shall be included in the construction dossier.

The minimum data required are:

- Construction site, owner of building; date and location of the tests, air temperature; type of member (ETICS) to be fixed
- Masonry (type of brick, strength class, all dimensions of bricks, mortar group); visual assessment of masonry (flush joints, joint clearance, regularity)
- Plastic sleeve and special screw, value of the cutting diameter of hard metal hammer-drill bits, measured before and after drilling
- Test rig; results of tests including the indication of value  $N_1$
- Tests carried out or supervised by; signature.

#### **4.2.3.4 Evaluation of test results**

The characteristic resistance  $N_{Rk1}$  is derived from the measured values  $N_1$  as follows

$$N_{Rk1} = 0,6 \cdot N_1 \leq 1,5 \text{ kN}$$

$N_1$  = the mean value of the five smallest measured values at ultimate load

#### **4.2.4 Responsibility of the manufacturer**

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1 and 2 including Annexes referred to 4.2.1, 4.2.2 and 5 is given to those who are concerned. This information may be made by reproduction of the respective parts of the European Technical Approval. In addition, all installation data shall be shown clearly on the packaging and/or on an enclosed instruction sheet, preferably using illustrations.

The minimum data required for manual are:

- base material for the intended use A, B, C, D, E
- drill bit diameter
- maximum thickness of the ETICS
- minimum effective anchorage depth
- minimum hole depth
- information on the installation procedure
- identification of the manufacturing batch

All data shall be presented in a clear and explicit form.

## **5 Recommendations for the manufacturer**

### **5.1 Recommendations on packaging, transportation and storage**

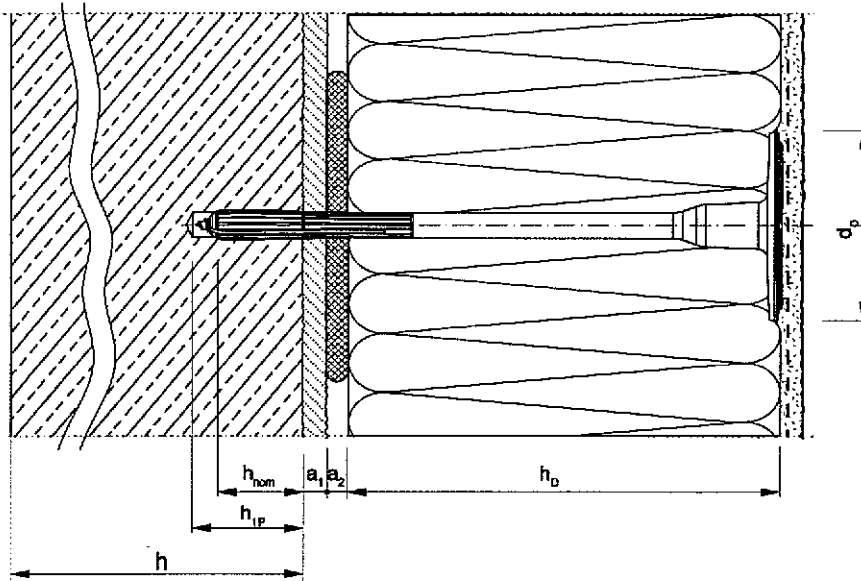
The anchor shall only be packaged and supplied as a complete unit.

The anchor shall be stored under normal climatic conditions in its original light-proof packaging. Before installation, it shall neither be extremely dry nor frozen.

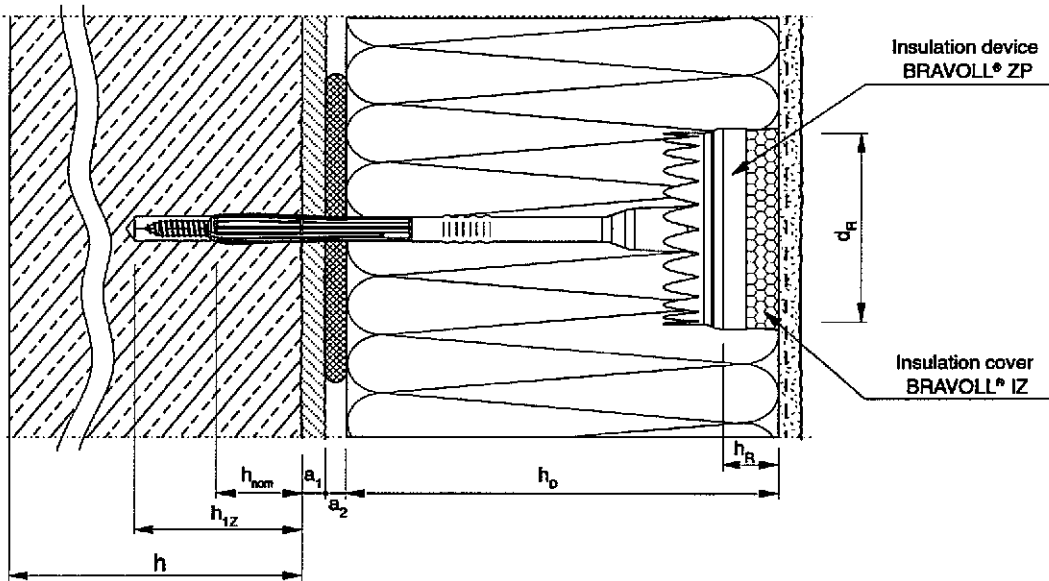
The original Czech version is signed by

**Ing. Jozef Pôbiš**  
Head of the Approval Body

**Surface assembly for fixing of ETICS in categories A, B, C and D.**



**Countersunk assembly for fixing of ETICS in categories A, B, C and D**

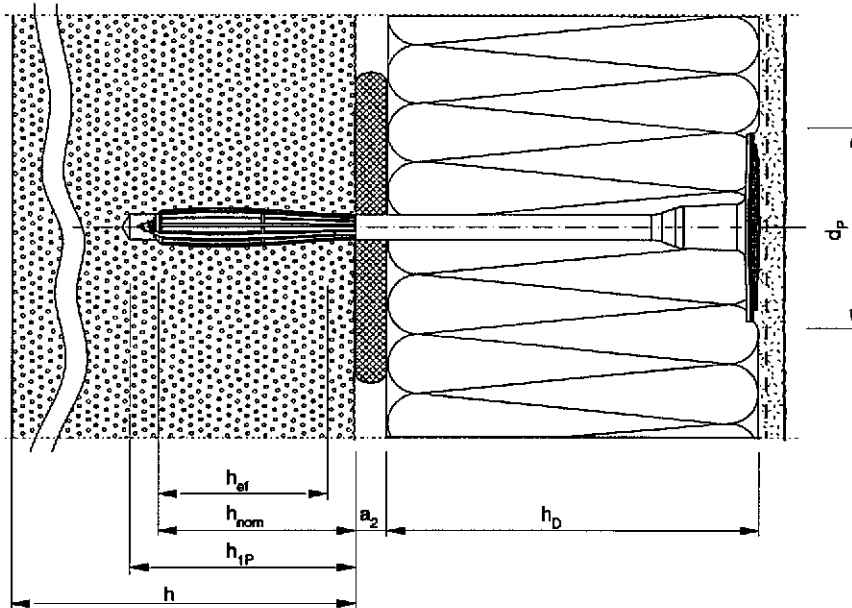


- |  |   |
|--|---|
| $h_{nom}$ = overall embedment depth                | $a_1$ = thickness of equalization layer or non-load bearing coating   |
| $h_{ef}$ = effective anchorage depth               | $a_2$ = thickness of compound and toleration of thickness of equalization layer or non-load bearing coating |
| $h_{1p}$ = drill hole depth – Surface assembly     |   |
| $h_{1z}$ = drill hole depth – Countersunk assembly |   |
| $h$ = thickness of base material                   | $d_p$ = diameter of plate   |
| $h_D$ = thickness of insulation material           | $h_R$ = diameter of insulation cover  |
| $h_R$ = thickness of insulation cover              | $L_a$ = total length of the anchor  |

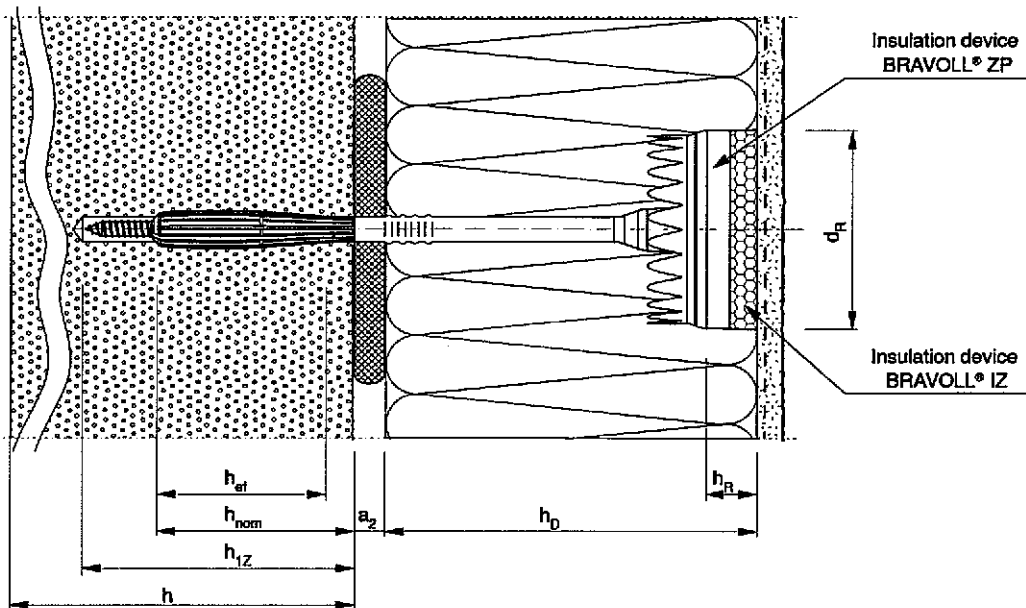
Determination of total length of the anchor  
 $L_a \geq h_D + \min. h_{nom} + \max. a_1 + \max. a_2$

<b>SPIT ISOMAX</b>	<b>Annex 1</b>
Intended use	of European Technical Approval ETA –13/0560

### Surface assembly for fixing of ETICS in categories E



### Countersunk assembly for fixing of ETICS in category E



$h_{nom}$  = overall embedment depth  
 $h_{ef}$  = effective anchorage depth  
 $h_{1p}$  = drill hole depth – Surface assembly  
 $h_{1z}$  = drill hole depth – Countersunk assembly  
 $h$  = thickness of base material

$h_D$  = thickness of insulation material  
 $h_R$  = thickness of insulation cover  
 $a_1$  = thickness of equalization layer or non-load bearing coating  
 $a_2$  = thickness of compound and toleration of thickness of equalization layer or non-load bearing coating  
 $d_p$  = diameter of plate  
 $d_R$  = diameter of Insulation cover  
 $L_a$  = total length of the anchor

Determination of total length of the anchor  
 $L_a \geq h_D + \min. h_{nom} + \max. a_1 + \max. a_2$

**SPIT ISOMAX**

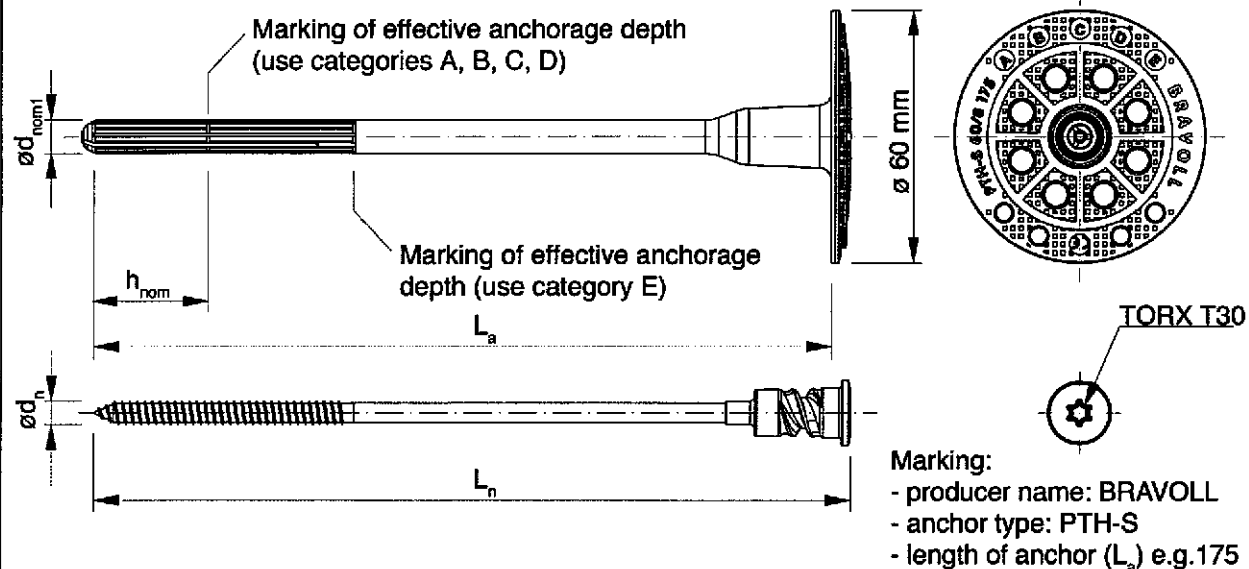
Intended use

**Annex 2**

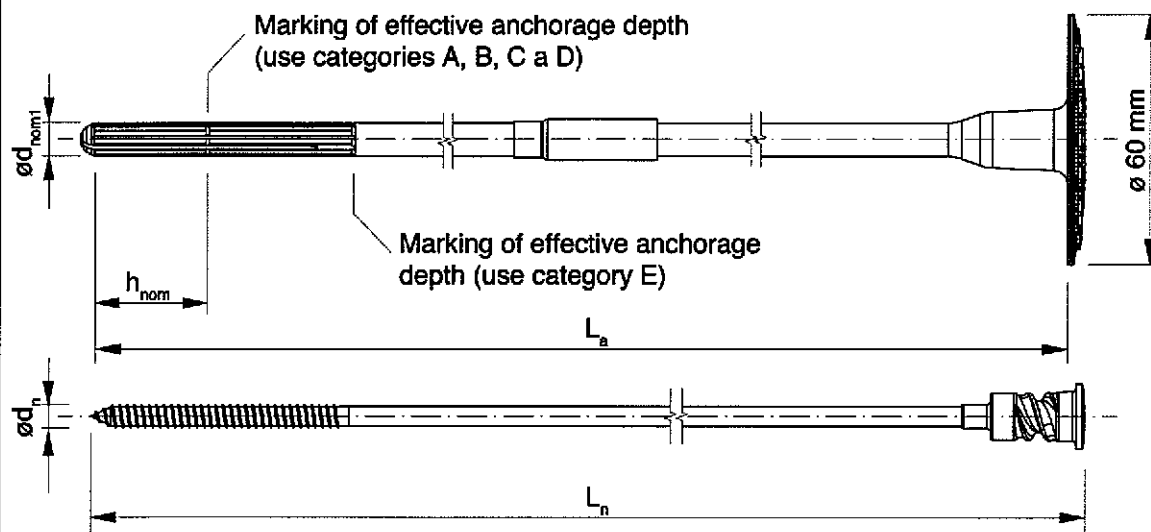
of European Technical Approval  
 ETA –13/0560

chor sleeve and expansion screw

**SPIT ISOMAX - anchor shape  $L_a$  95 – 335 mm**

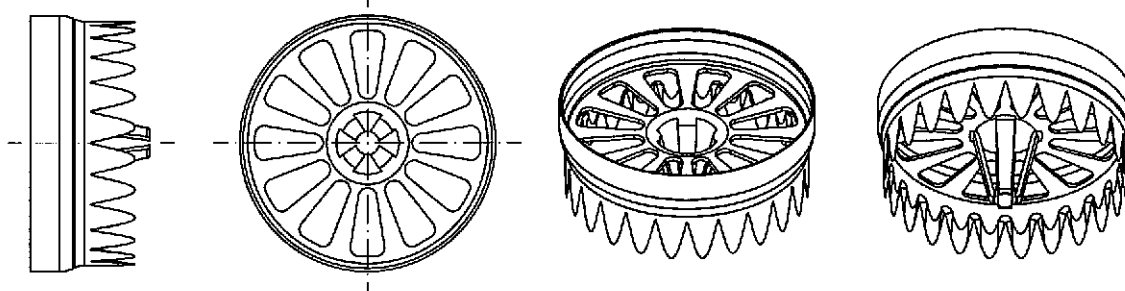


**SPIT ISOMAX - anchor shape  $L_a$  355 – 555 mm**

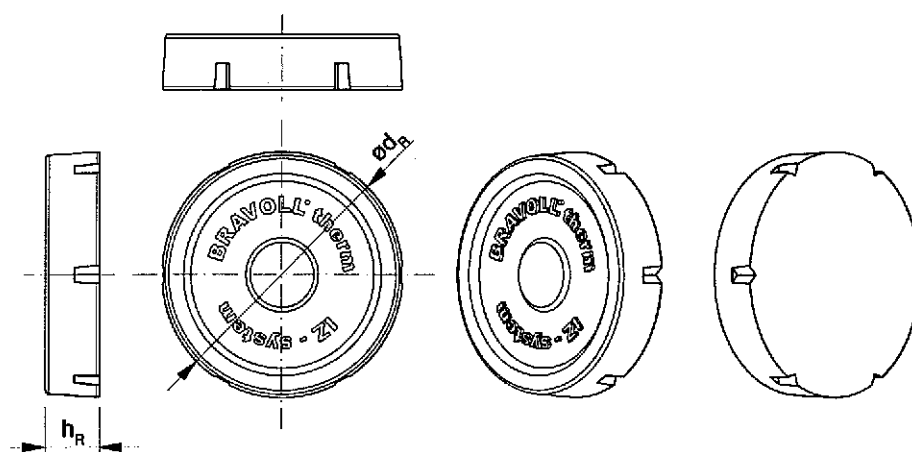


<b>SPIT ISOMAX</b>	Annex 3 of European Technical Approval ETA –13/0560
Anchor types	

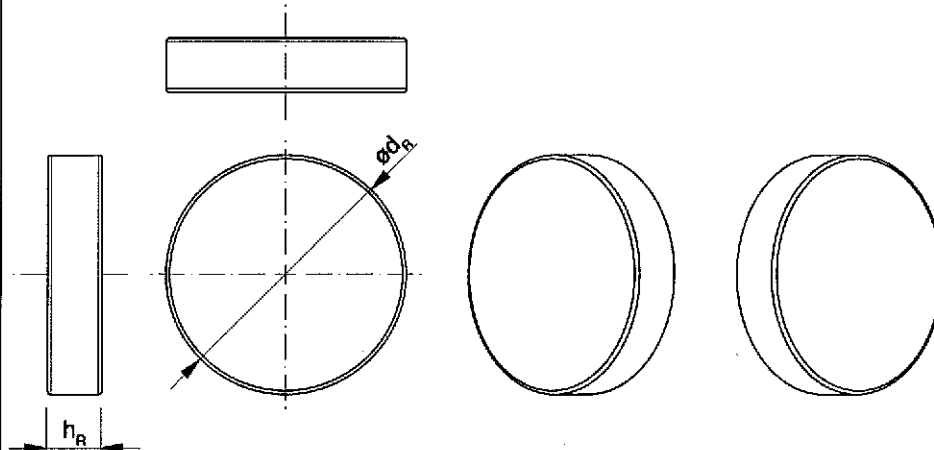
**Installer tool BRAVOLL® ZP**



**Insulation cover BRAVOLL® IZ for EPS**



**Insulation cover BRAVOLL® IZ for MW**



**BRAVOLL® ZP, BRAVOLL® IZ**

Installer tool, insulation covers

**Annex 4**

of European Technical Approval  
 ETA -13/0560

## Installer tool BRAVOLL® MPS

- for Countersunk assembly

- for Surface assembly

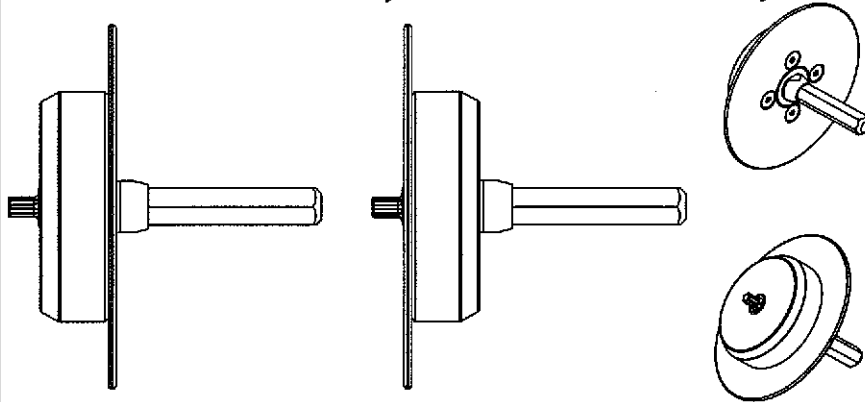


Table 1: Anchor types and dimensions [mm]

Anchor type	Anchor sleeve				Expansion screw $L_n$
	$d_{nom1}$	$h_{ef}$	$h_{nom}$ A, B, C, D	$h_{nom}$ E	
Category of material				$L_a$	
SPIT ISOMAX	8	45	25	65	95-555

Table 2: Materials

Designation	Colour	Material
Anchor sleeve SPIT ISOMAX	natural, orange	Copolymer polypropylene PP
Expansion screw SPIT ISOMAX	screw is colour of galvanized and pins head is colour natural	Steel strength class 5.8, galvanized $\geq 5\mu\text{m}$ with head of pin has plastic coating
Plate IT PTH 100 / IT PTH 140	natural	Polyamide PA6 GF30
Installer tool ZP	natural	Polyamide PA6 GF30
Plate ZT 100 / ZT 120	natural	Polyamide PA6 GF30
Insulation cover IZ-EPS	white, gray	Polystyren EPS 100
Insulation cover IZ-MW	brown	Mineral wool HD

**SPIT ISOMAX , BRAVOLL® MPS**

Anchor types and dimensions, materials

**Annex 5**

of European Technical Approval  
 ETA –13/0560

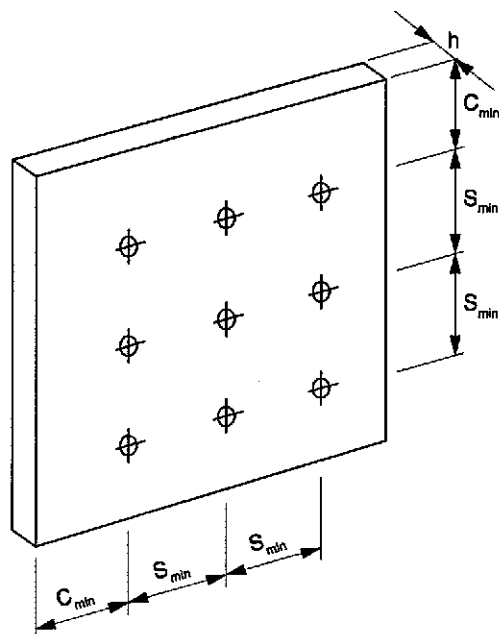
Table 3: Installation Characteristics

Anchor types	SPIT ISOMAX	
Category of material	A, B, C, D	E
Nominal diameter of drill bit $d_o$ [mm]	8	8
Min. diameter of drill bit $d_{cut, min} \geq$ [mm]	8,0	8,0
Max. diameter of drill bit $d_{cut, max} \leq$ [mm]	8,45	8,45
Depth of drill hole		
- Countersunk assembly $h_{1Z} \geq$ [mm]	55	90
- Surface assembly $h_{1P} \geq$ [mm]	35	75
Overall embedment depth $h_{nom} \geq$ [mm]	25	65

Table 4: Minimum thickness of base material, edge distance and anchor spacing

Anchor type	Minimum thickness of base material $h$ [mm]	Minimum spacing $s_{min}$ [mm]	Minimum edge distance $c_{min}$ [mm]
SPIT ISOMAX	100	100	100

Scheme of distance and spacing




**SPIT ISOMAX**

Installation Characteristics

**Annex 6**  
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Table 5: Characteristic resistance to tension loads  $N_{Rk}$  [kN] in concrete and masonry for single anchor

Base material	Bulk density class [kg/dm <sup>3</sup> ]	Min. compressive strength $f_c$ [N/mm <sup>2</sup> ]	General remarks	Drill method	SPIT ISOMAX [kN]
Concrete C12/15 e.g. according to EN 206-1				Impact drilling	1,5
Concrete C16/20 – C50/60 e.g. according to EN 206-1				Impact drilling	1,5
Solid clay bricks e.g. according to EN 771-1	≥ 1,7	20	Vertically perforation up to 15%	Impact drilling	1,5
Calcium silicate solid units e.g. according to EN 771-2	≥ 1,8	12		Impact drilling	1,2
Lightweight concrete hollow block e.g. according to EN 771-3	≥ 0,5	4	see Annex 9	Rotary drilling	1,5
Lightweight aggregate concrete e.g. according to EN 1520 (LAC)	≥ 1,2	4		Rotary drilling	1,0
Perforated clay bricks e.g. according to EN 771-1	≥ 0,7	10	Vertically perforation more than 15% and less than 55%	Rotary drilling	0,75
Vertically perforated clay bricks e.g. according to ÖNORM B6124	≥ 0,9	10		Rotary drilling	0,6
Autoclaved aerated concrete P2-400 e.g. according to EN 771-4	≥ 0,4	2		Rotary drilling	0,6
Partial safety factor	$\gamma_M =$	2*			

\* in the absence of other national regulations

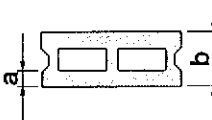
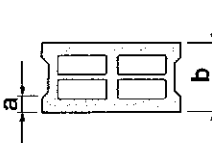
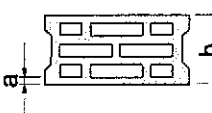
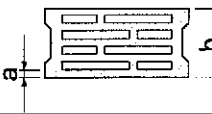
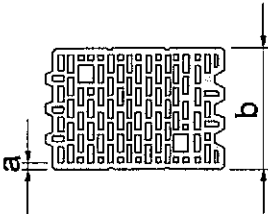
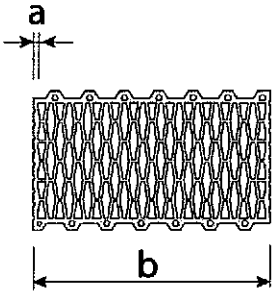
**SPIT ISOMAX**

Characteristic resistance

**Annex 7**

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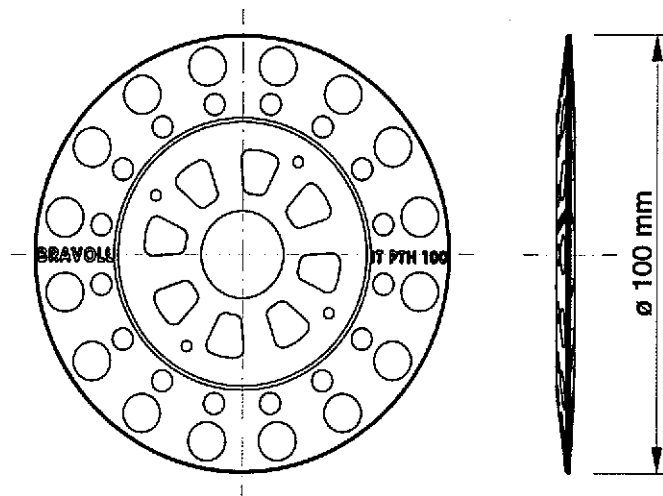
Table 6: Assignment type anchor for lightweight concrete hollow blocks according to EN 771-3 and Solid clay bricks according to EN 771-1 and according to ÖNORM B6124

Geometry	Thickness of brick b [mm]	Outer web in longitudinal direction a [mm]	Anchor type PTH-S
	175	50	●
	240 300	50	●
	175	35	●
	240 300 365	35	●
	240 300 365	30	●
Reference brick ÖNORM B6124 	250	10,3	●
	250	10,1	●

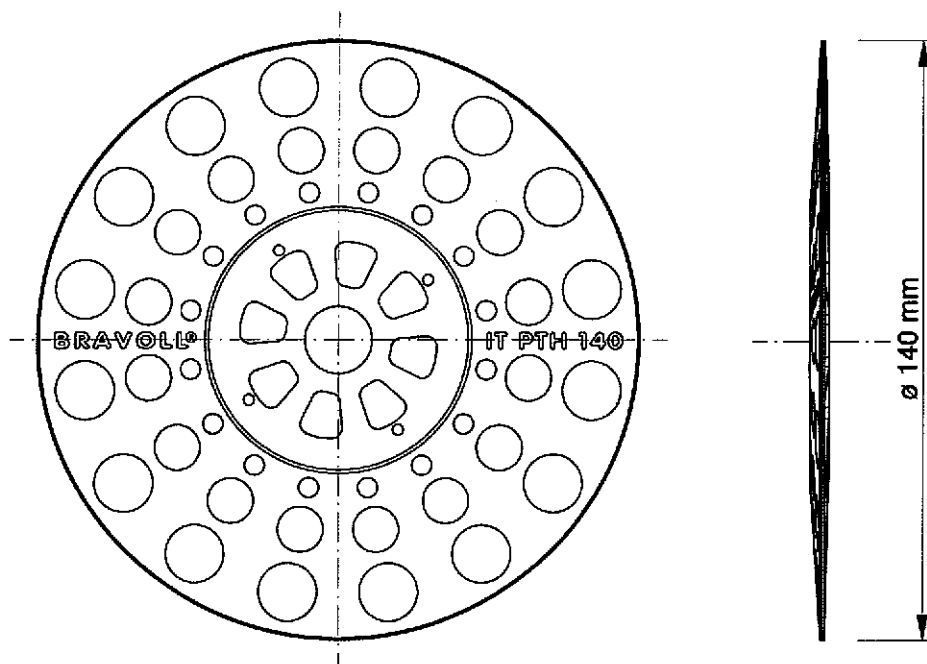
Anchor shall be placed in the brick in such way, that the spreading part of the expansion sleeve is located in the outer web (marked a).

<b>SPIT ISOMAX</b>	<b>Annex 8</b> of European Technical Approval ETA -13/0560
Anchorage in various types of masonry.	

### **BRAVOLL® IT PTH 100**



### **BRAVOLL® IT PTH 140**

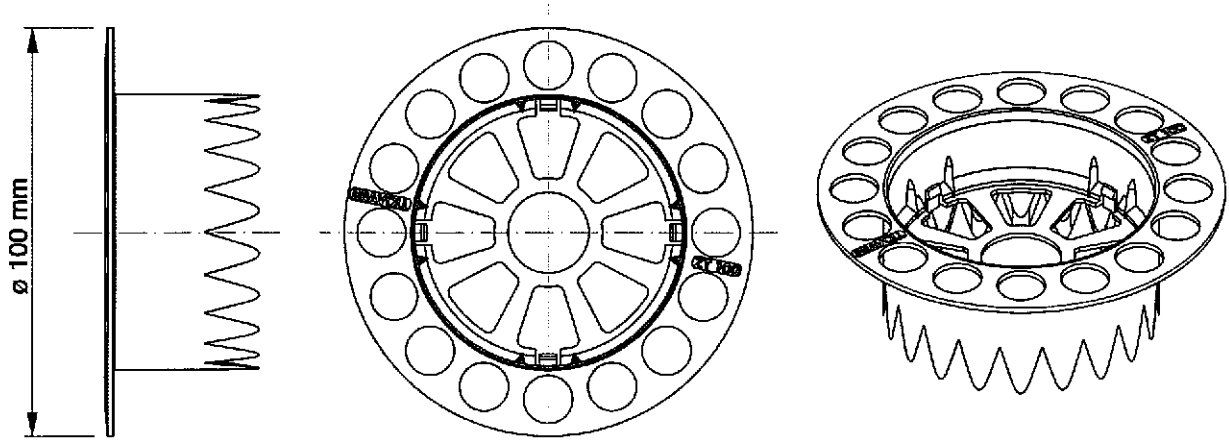


**BRAVOLL®**  
**IT PTH 100 and IT PTH 140**

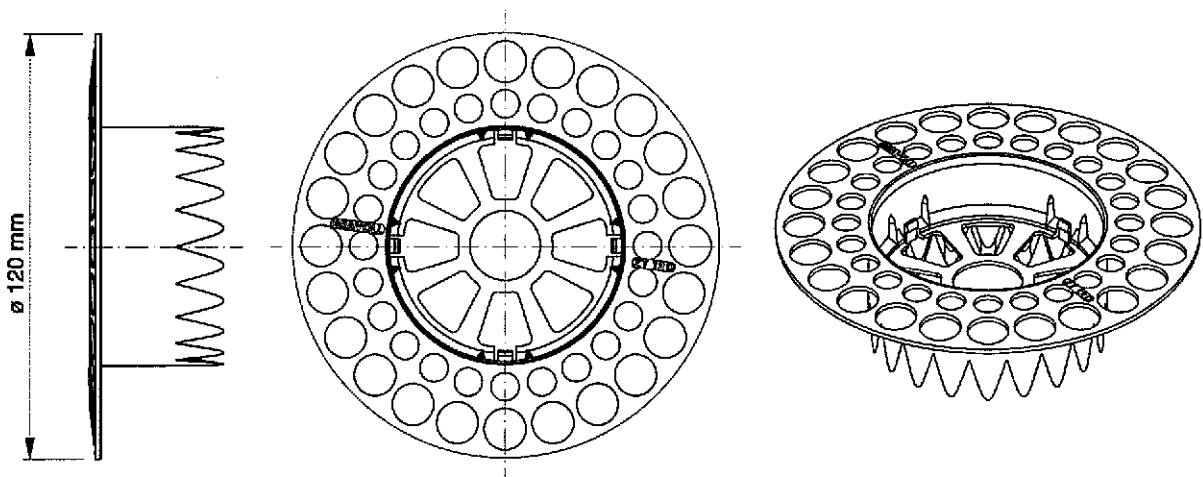
Plate in combination with SPIT ISOMAX  
for Surface assembly

**Annex 9**  
of European Technical Approval  
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### **BRAVOLL® ZT 100**



### **BRAVOLL® ZT 120**



#### **BRAVOLL® ZT 100 and ZT 120**

Plate ZT in combination with SPIT ISOMAX  
for Countersunk assembly

**Annex 10**  
of European Technical Approval  
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