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Autorizzato e notificato conformemente all'articolo 10 della Direttiva 89/106/CEE del Consiglio del 21 dicembre 1988, relativa all'avvicinamento delle disposizioni legislative, regolamentari ed amministrative degli Stati membri, relativa ai prodotti da costruzione.

Membro EOTA

European Technical Approval ETA 11/0375

(English language translation prepared by ITC CNR; original version in Italian)

Nome commerciale **Trade name**	**"SPIT UNIVERSAL FRAME FIXING PROLONG" in the alternatives PROLONG-H, PROLONG-F, PROLONG-H SSA4, PROLONG-F SSA4**
Beneficiario **Holder of approval**	**ITW Construction Products Italy S.r.l.** **V.le Regione Veneto, 5** **I-35127 Padova (PD)**
Tipologia del prodotto da costruzione ed utilizzo **Generic type and use of construction product**	**Plastic anchors for multiple use in concrete and masonry for non-structural applications** Ancoraggio plastico per usi multipli in calcestruzzo e muratura per applicazioni non strutturali
Validità da/a **Validity from/to**	**17.10.2011/16/10.2016**
Indirizzo stabilimento di produzione **Manufacturing plant**	**ITW Construction Products Italy S.r.l.** **V.le Regione Veneto, 5** **I-35127 Padova (PD)**
Questo Benestare Tecnico Europeo contiene: **This European Technical Approval contains:**	17 pagine **17 pages**

I LEGAL BASIS AND GENERAL CONDITIONS

1. This European Technical Approval is issued by Istituto per le Tecnologie della Costruzione - Consiglio Nazionale delle Ricerche (called ITC-CNR in the following text) 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 of 22 July 1993[2] and by Regulation EC n. 1882/2003 of the European Parliament and of the Council[3];
   - DPR 246 of 21/04/93[4] and DPR 499 of 10/12/97[5], concerning the implementation of Council Directive 89/106/EEC;
   - Common Procedural Rules for Requesting, Preparing and Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC[6];
   - Guideline for European Technical Approval "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications" Edition July 2006, (called ETAG 020 in the following text).
2. ITC-CNR 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 this 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 manufacturers other than those indicated on cover page, or manufacturing plants other than those as laid down in the context of this European Technical Approval.
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6. The European Technical Approval is issued by the Approval Body in its official language. This version corresponds fully to the version used by EOTA for circulation. Translations into other languages have to be designated as such.

[1] Official Journal of the European Communities N° L 40, 11.02.1989, p.12
[2] Official Journal of the European Communities N° L 220, 30.08.1993, p.1
[3] Official Journal of the European Union N° 1 L 220, 30.10.2003, p.1
[4] Gazzetta Ufficiale della Repubblica Italiana n. 170 of 22.07.1993
[5] Gazzetta Ufficiale della Repubblica Italiana n. 21 of 27.01.1998
[6] 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 the construction product

The SPIT UNIVERSAL FRAME FIXING PROLONG in the alternatives PROLONG-H, PROLONG-F, PROLONG-H SSA4, PROLONG-F SSA4, is a plastic anchor for use in normal weight concrete, in solid masonry and in hollow or perforated masonry for non-structural applications.
It comprises the following components whose dimensions are given Table 1 and Table 2:
- a plastic sleeve made in polymeric material,
- a special screw made in carbon steel of a strength class of 6.8 (zinc coated) or in stainless steel of a strength class A4-80.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole. The installed anchor is shown in Annex 1.
The components are factory-made by the ETA Holder or by his suppliers. The ETA Holder is ultimately responsible for the kit.
The anchor is designed and installed in accordance with the ETA Holder design and installation instructions, deposited at ITC-CNR.

The dimensions of the components are the following:

Trade name of the sleeve	$Ød_{nom}$ mm	h_{nom} mm	$t_{fix,min}$ mm	$t_{fix,max}$ mm	$L_{a,min}$	$L_{a,max}$
Prolong 10[7]	10	70	10	140	80	210

Table 1: Dimensions of sleeve

Trade name of the screws[8]	$Ød_s$ mm	$Ød_{k,nom}$ mm	$L_{s,min}$ mm	$L_{s,max}$ mm
IDEX 7 X L CK- 45°	7	5.6	85	215
IDEX 7 X L HEX- 45°	7	5.6	85	215
IDEX 7 X L CK- 35°	7	5.6	87	220
IDEX 7 X L HEX- 35°	7	5.6	87	220

Table 2: Dimensions of special screws

The difference in the alternatives of anchor lays only in the type of screw used, as follows:
PROLONG-H: Carbon steel screw with hexagonal head; geometry of the end of the screw: 35°, 45°.
PROLONG-F: Carbon steel screw with countersunk head; geometry of the end of the screw: 35°, 45°.
PROLONG-H SSA4: Stainless steel screw with hexagonal head; geometry of the end of the screw: 35°.
PROLONG-F SSA4: Stainless steel screw with countersunk head; geometry of the end of the screw: 35°.

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 the fixture represents an immediate risk to human life.
The anchor is to be used only for multiple fixing for non-structural applications in concrete and masonry. The base material shall consist of reinforced or unreinforced normal weight concrete of strength class C12/15 at minimum according to EN 206-1:2000-12 and of masonry walls according to Annex 6. The anchor may be used in cracked and non-cracked concrete. The mortar strength class of the masonry has to be M2,5 according to EN 998-2:2003 at minimum.

[7] Manufacturer: ITW Construction Products Italy S.r.l., Padova, Italy
[8] Manufacturers: Codes F00993 and F03120.

The anchor may also be used in concrete with requirements related to resistance to fire according 4.2.2. The specific screw made of galvanised steel may only be used in structures subject to dry internal conditions.
The specific screw made of stainless steel may be used in structures subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist. Such particular aggressive conditions are e. g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e. g. in desulphurization plants or road tunnels where de-icing materials are used).
The specific screw made of galvanised steel may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rain-screen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e. g. undercoating or body cavity protection for cars).
The anchor may be used in the following temperature range:

- Temperature range b): -40 °C to +80 °C (max long term temperature +50 °C and max short term temperature +80 °C).
- Temperature range c): -40 °C to +50 °C (max long term temperature +30 °C and max short term temperature +50 °C).

The provisions made in this European Technical Approval are based on an assumed working life of the anchor of 50 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 right products in relation to the expected economically reasonable working life of the works.

2 CHARACTERISTICS OF PRODUCTS AND METHODS OF VERIFICATION

General

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 the Essential Requirement 4 has been made in compliance with the Guideline for European Technical Approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications", ETAG 020:
- Part 1: "General",
- Part 2: "Plastic Anchors for Use in Normal Weight Concrete",
- Part 3: "Plastic Anchors for Use in Solid Masonry Materials" and
- Part 4: "Plastic Anchors for Use in Hollow or Perforated Masonry", based on the use categories a, b and c.

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 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.
The ETA is issued for the kit on the basis of admitted information/data, deposited at ITC-CNR, which identify the kit that was assessed and judged. Changes to the production process of the components or to the components of the kit which could result in deposited information/data being incorrect, shall be notified to ITC-CNR before they are introduced and ITC-CNR will assess whether or not such changes affect the ETA and, if so, whether further assessment and/or alteration to the ETA shall be necessary[9].

[9] The ETA Holder could change, under his own responsibility, some of the suppliers of a component, but only provided that the characteristics and the performances of the new components and the final performances of the system do not change at all. These changes must be fully recorded within the Factory Production Control documents in order to grant full traceability.

The characteristics of the components and of the system not mentioned in this ETA nor in the annexes shall correspond to the respective values laid down in the Technical Documentation of this ETA, checked by ITC-CNR and there deposited.

2.1 Characteristics of the product

The anchor corresponds to the drawings given in Annex 2 and to the information given in Annex 3. The characteristic material values, dimensions and tolerances of the anchor not given in these Annexes shall correspond to the respective values laid down in the technical documentation of this European Technical Approval.
The characteristic values for the design of the anchorages are given in Annex 3 to 7. Each anchor is to be marked with the identifying mark, the type, the diameter and the length of the anchor sleeve according to Annex 2. The minimum embedment depth shall be marked. The anchor shall only be packaged and supplied as a complete unit.

3 EVALUATION OF CONFORMITY AND CE MARKING

3.1 Attestation of conformity system

The system of attestation of conformity specified by the European Commission is system 2+ described in the Council Directive 89/106/EEC Annex III, 2 (ii), First possibility and described as follows:
Declaration of Conformity of the product by the manufacturer on the basis of:

a) Tasks of the manufacturers:
1. Initial type testing of the product
2. Factory Production Control, including testing of samples taken at the factory in accordance with a control plan[10].

b) Tasks of the Notified Body:
3. Certification of Factory Production Control on the basis of:
   - Initial inspection of the factory and of factory production control
   - Continuous surveillance, assessment and approval of Factory Production Control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Initial Type testing (system 2+)

For Initial Type Testing, the results of the test performed as part of the assessment for this European Technical Approval shall be used unless there are changes in the production line or plant. In such cases, the necessary new initial type testing has to be agreed between ITC-CNR and the Manufacturer. These tests could be taken over by the Manufacturer for Declaration of Conformity.

3.2.1.2 Factory production control

The ETA Holder has a Factory Production Control system in his plant (manufacturing the sleeve) and exercises permanent internal control of production, including testing samples in accordance with his control plan.
For the components of “SPIT UNIVERSAL FRAME FIXING PROLONG” which the ETA Holder does not manufacture by himself, he makes sure that a proper Factory Production Control carried out by the other manufacturers gives the guaranty of the components compliance with the European Technical Approval. In this aim:
- he relies on national certification bodies,

and

[10] The control plan has been deposited at ITC-CNR and is only made available to the Notified Bodies involved in the conformity attestation procedure.

- has specified through contracts with his suppliers the awaiting characteristics, the needed controls and the frequencies,
and
- he carries out by himself controls on these components.

The control plan and the provisions taken by the ETA Holder for components not produced by himself have been agreed with the Approval Body and deposited with ITC-CNR where it is only made available to the Notified Body involved in the Conformity attestation procedure. This control plan will be given to the Notified Body chosen by the ETA Holder to perform the foreseen tasks on attestation of conformity.
The manufacturer only uses raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.
All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written processes and procedures. This production control system ensures that "SPIT UNIVERSAL FRAME FIXING PROLONG" and its components are in conformity with this European Technical Approval.
The results of Factory Production Control are recorded and evaluated. The records include, among the others, the following information:
- designation of the product, raw materials and components;
- type of control or testing;
- date of the product's manufacture and date of testing of the product or raw materials and components;
- results of controls and testing and, if appropriate, comparison with requirements;
- signature of person responsible for Factory Production Control.

The records shall be presented to the inspection body during the continuous surveillance. On request, they shall be presented to ITC-CNR.
Details of the extent, nature and frequency of testing and controls to be performed within the Factory Production Control shall correspond to the control plan which is part of the technical documentation of this European Technical Approval.

3.2.2. Tasks of the Notified Bodies

3.2.2.1 Initial inspection of factory and Factory Production Control

The Notified Body 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 this ETA.

3.2.2.2 Continuous surveillance, assessment and approval of factory production control

The Notified Body should visit the factory at least once a year for surveillance. It has to be verified that the system of Factory Production Control and the specified manufacturing process are maintained taking into account the deposited control plan. Continuous surveillance and assessment of Factory Production Control have to be performed in accordance with the control plan.
During each visit, the Notified Body shall utilize an ad-hoc check list and shall examine, among the others:
- the control registers of raw materials, products in course of manufacture and finished products,
- the document attesting the respect of the control frequencies,
- the conformity of the products subjected to this ETA.

In cases where the provisions of the European Technical Approval and the control plan are no longer fulfilled, the conformity certificate should be withdrawn.

3.3. CE Marking

The CE Marking shall be affixed on the packaging and, in case, on transport documents (DDT) accompanying the components of the kit when they are intended to be used in the kit. The symbol « CE » shall be followed by identification number of the Notified Body involved and shall be accompanied by the following information:

- name or identifying mark of the ETA Holder and name of his manufacturing plant,
- legal address of the ETA Holder,
- the last two digits of the year in which the CE-marking was affixed,
- number of the EC certificate of conformity of Factory Production Control,
- number of this European Technical Approval,
- "SPIT UNIVERSAL FRAME FIXING PROLONG",
- ETAG 020 – Edition July 2006
- Use categories a, b, and c.

4 ASSUMPTIONS UNDER WHICH THE FITNESS OF THE PRODUCT FOR THE INTENDED USE WAS FAVOURABLY ASSESSED

4.1 Design of anchorages

4.1.1 General

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 020, Guideline for European Technical Approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications", Annex C under the responsibility of an engineer experienced in anchorages. This design method applies to plastic anchors subject to static or quasi-static actions in tension, shear or combined tension and shear or bending; it is not applicable to plastic anchors loaded in compression or subject to fatigue, impact, or seismic actions.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances.
- The anchor is to be used only for multiple fixing for non-structural applications.
  Therefore the design of the fixture may specify the number n_1 of fixing points to fasten the fixture and the number n_2 of anchors per fixing point. Furthermore by specifying the design value of actions N_{Sd} on a fixing point to a value ≤ n_3 (kN) up to which the strength and stiffness of the fixture are fulfilled and the load transfer in the case of excessive slip or failure of one anchor need not to be taken into account in the design of the fixture.
  The following default values for n_1, n_2 and n_3 may be taken:
  $n_1 \geq 4$; $n_2 \geq 1$ and $n_3 \leq 4.5$ kN or
  $n_1 \geq 3$; $n_2 \geq 1$ and $n_3 \leq 3.0$ kN.

Shear loads acting on an anchor may be assumed to act without lever arm if both of the following conditions are fulfilled:

- The fixture shall be made of metal and in the area of the anchorage be fixed directly to the base material either without an intermediate layer or with a levelling layer of mortar with a thickness ≤ 3 mm.
- The fixture shall be in contact with the anchor over its entire thickness. (Therefore the diameter of clearance hole in the fixture d_f has to be equal or smaller than the values given in Annex 3, Table 3.)

If these two conditions are not fulfilled the lever arm is calculated according to ETAG 020, Annex C. The characteristic bending moment is given in Annex 3, Table 4.

4.2.2 Resistance in concrete (use category "a")

The characteristic values of resistance of the anchor for use in concrete are given in Annex 3, Table 4 and Annex 4, Table 5 and 6. The design method is valid for cracked and non-cracked concrete.
According to the Technical Report TR 020 "Evaluation of anchorages in concrete concerning resistance to fire" it can be assumed that for fastening of facade systems the load bearing behaviour of the SPIT UNIVERSAL FRAME FIXING PROLONG has a sufficient resistance to fire at least 90 minutes (R90) if the admissible load $[F_{Rk} / (\gamma_M \cdot \gamma_F)]$ is ≤ 0.8 kN (no permanent centric tension load).

4.2.3 Resistance in solid masonry (use category "b")

The characteristic values of resistance of the anchor for use in solid masonry are given in Annex 3, Table 4 and Annex 6, Table 9. These values are independent of the load direction (tension, shear or combined tension and shear) and the mode of failure.

The characteristic resistances given in Annex 6 for use in solid masonry are only valid for the base material and the bricks according this table or larger brick sizes and larger compressive strength of the masonry unit.

If smaller brick sizes are present on the construction site or if the mortar strength is smaller than the required value, the characteristic resistance of the anchor may be determined by job site tests according to 4.4.

4.2.4 Resistance in hollow or perforated masonry (use category "c")

The characteristic resistances for use in hollow or perforated masonry given in Annex 6 are only valid for the bricks and blocks according this table regarding base material, size of the units, compressive strength and configuration of the voids.

These values are independent of the load direction (tension, shear or combined tension and shear) and the mode of failure and are valid for h_{nom} = 70 mm only.

The influence of larger embedment depths (h_{nom} > 70 mm) and/or different bricks and blocks (according Annex 6 regarding base material, size of the units, compressive strength and configuration of the voids) has to be detected by job site tests according to 4.4.

4.2.5 Specific conditions for the design method in solid and hollow or perforated masonry

The mortar strength class of the masonry has to be M2,5 according to EN 998-2:2003 at minimum.

The characteristic resistance F_{Rk} for a single plastic anchor may also be taken for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min}.

The distance between single plastic anchors or a group of anchors should be s ≥ 250 mm.

If the vertical joints of the wall are designed not to be filled with mortar then the design resistance N_{Rd} has to be limited to 2,0 kN to ensure that a pull-out of one brick out of the wall will be prevented. This limitation can be omitted if interlocking units are used for the wall or when the joints are designed to be filled with mortar.

If the joints of the masonry are not visible the characteristic resistance F_{Rk} has to be reduced with the factor α_j = 0,5.

If the joints of the masonry are visible (e.g. unplastered wall) following has to be taken into account:

- The characteristic resistance F_{Rk} may be used only, if the wall is designed such that the joints are to be filled with mortar.
- If the wall is designed such that the joints are not to be filled with mortar then the characteristic resistance F_{Rk} may be used only, if the minimum edge distance c_{min} to the vertical joints is observed. If this minimum edge distance c_{min} can not be observed then the characteristic resistance F_{Rk} has to be reduced with the factor α_j = 0.5.

4.2.6 Characteristic values, spacing and dimensions of anchorage member

The minimum spacing and dimensions of anchorage member according to Annex 5, Table 8 and Annex 7, Table 12 and 13 shall be observed depending on the base material.

4.2.7 Displacement behaviour

The displacements under tension and shear loading are given in Annex 5, Table 7 (concrete) and Annex 6, Table 10 (masonry).

4.3 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 indicated in this European Technical Approval:
- Checks before placing the anchor, to ensure that the characteristic values of the base material in which the anchor is to be placed, are identical with the values, which the characteristic loads apply for.
- Observation of the drill method according to Annex 6 (Drill holes in hollow or perforated masonry may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests according to 4.4 evaluate the influence of hammer or impact drilling).
- Placing drill holes without damaging the reinforcement.
- Holes to be cleaned of drilling dust.
- In case of aborted hole: New drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar.
- The plastic sleeve is inserted through the fixture by slight hammer blows and the special screw is screwed in until the head of the screw touches the sleeve. The anchor is correct mounted in concrete or in solid clay masonry and in hollow masonry with h_{nom} > of the dimension of the hole if there is no turn-through of the plastic sleeve in the drill hole and if slightly move on turning of the screw is impossible after the complete turn-in of the screw; for the use in concrete this condition is verified when a torque moment is approximately 13 Nm (see Annex 1 fig. 1 and fig.2).
  For the use in hollow masonry with h_{nom} < of the dimension of the unit hole, the correct mounting takes place when, after the head of the screw has touched the sleeve, approximately further 12 turns of the screw are applied (see Annex 1 fig. 3).
- Temperature during installation of the anchor ≥ - 5°C (plastic sleeve and base material).

4.4 Job site tests according to ETAG 020, Annex B

4.4.1 General

In the absence of national requirements the characteristic resistance of the plastic anchor may be determined by job site tests, if the plastic anchor has already characteristic values given in Annex 6 for the same base material as it is present on the construction works.
Furthermore job site tests for use in (different) solid masonry are possible only if the plastic anchor has already characteristic values given in Annex 6 for use in solid masonry.
Job site tests for use in (different) hollow or perforated masonry are possible only if the plastic anchor has already characteristic values given in Annex 6 for use in hollow or perforated masonry.
Job site tests are also possible, if another drill method is been used as it is given in Annex 6.
The characteristic resistance to be applied to a plastic anchor should be determined by means of at least 15 pull-out tests carried out on the construction work with a centric tension load acting on the plastic anchor. These tests may also be performed in a laboratory under equivalent conditions as used on construction work.
Execution and evaluation of the tests as well as issue of the test report and determination of the characteristic resistance should be supervised by the person responsible for execution of works on site and be carried out by a competent person.
Number and position of the plastic anchors to be tested should be adapted to the relevant special conditions of the construction work in question and, for example, in the case of blind and larger areas be increased such that a reliable information about the characteristic resistance of the plastic anchor embedded in the base material in question can be derived.
The tests should take account of the unfavourable conditions of practical execution.

4.4.2 Assembly

The plastic anchor to be tested shall be installed (e.g. preparation of drill hole, drilling tool to be used, drill bit, type of drilling hammer or rotation, thickness of fixture) and as far as spacing and edge distances are concerned be distributed in the same way as foreseen for the intended use. Depending on the drilling tool hard metal hammer drill bits or hard metal percussion drill bits,

respectively, according to ISO 5468 should be used. New drill bits should be used for one test series or drill bits with
$d_{cut,m}$ = 10.25 mm < d_{cut} ≤ 10.45 mm = $d_{cut,max}$ (SPIT UNIVERSAL FRAME FIXING PROLONG)

4.4.3 Execution of test

The test rig used for the pull-out tests shall provide a continuous slow increase of the load, controlled by a calibrated load cell. The load shall apply perpendicular to the surface of the base material and shall be transmitted to the anchor via a hinge. The reaction forces shall be transmitted into the base material such that possible breakout of the masonry is not restricted. This condition is considered as fulfilled, if the support reaction forces are transmitted either in adjacent masonry units or at a distance of at least 150 mm from the plastic anchors. 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.
If no pull-out failure occurs, other test methods are needed, e.g. proof-loading.

4.4.4 Test report

The test report shall include all information necessary to assess the resistance of the tested anchor. It shall be given to the person responsible for the design of the fastening and shall be included in the construction dossier.
The minimum data required are:
- Name of product
- Construction site, owner of building, air temperature;
- Date and place of tests
- Test rig
- Type of structure to be fixed
- Masonry (type of brick, strength class, all dimensions of bricks, mortar group if possible); visual assessment of masonry (flush joints, joint clearance, regularity)
- Plastic anchor and special screw
- Value of the cutting diameter of hard metal hammer-drill bits, measured before and after drilling if no new drill bits are used
- Results of tests including the indication of value N_1; mode of failure
- Tests carried out or supervised by …; signature.

4.4.5 Evaluation of test results

The characteristic resistance F_{Rk1} is derived from the measured values N_1 as follows:
$F_{Rk1} = 0.5 \cdot N_1$
The characteristic resistance F_{Rk1} has to be equal or smaller than the characteristic resistance F_{Rk} which is given in the ETA for similar masonry (bricks or blocks) N_1 = the mean value of the five smallest measured values at ultimate load In absence of national regulations the partial safety factors for the resistance of the plastic anchor may be taken as γ_M = 2.5 for use in masonry.

5 INDICATIONS TO THE MANUFACTURER

5.1 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 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 are:
- base material for the intended use,
- ambient temperature of the base material during installation of the anchor,
- drill bit diameter,
- overall anchor embedment depth in the base material,
- minimum hole depth,
- information on the installation procedure,

- identification of the manufacturing batch.
All data shall be presented in a clear and explicit form.

5.2 Packaging, transport 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 not be extremely dried nor frozen.

The original version is signed by
Arch. Roberto Vinci
(ITC Director)

ANNEX 1 of ETA 11/0375

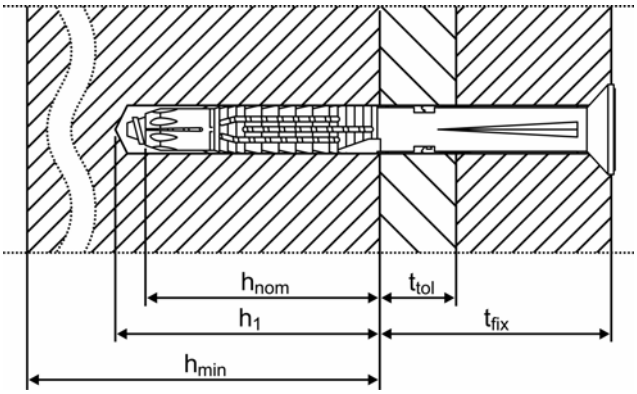


Fig 1: Installed anchor in concrete and solid masonry

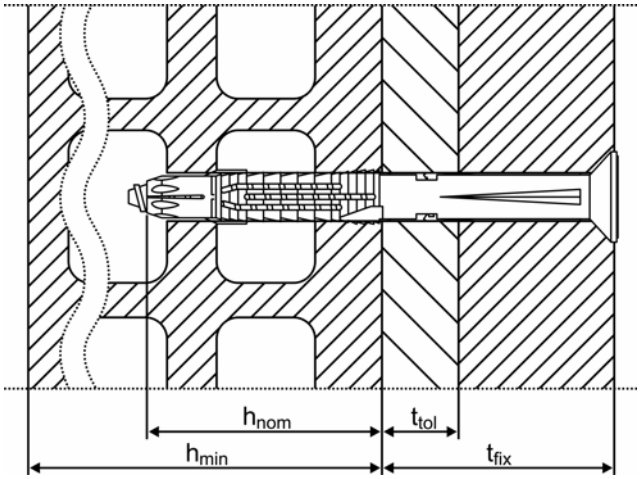


Fig 2: Installed anchor in hollow masonry in bricks (h_{nom} 70 mm, > of the dimension of the hole)

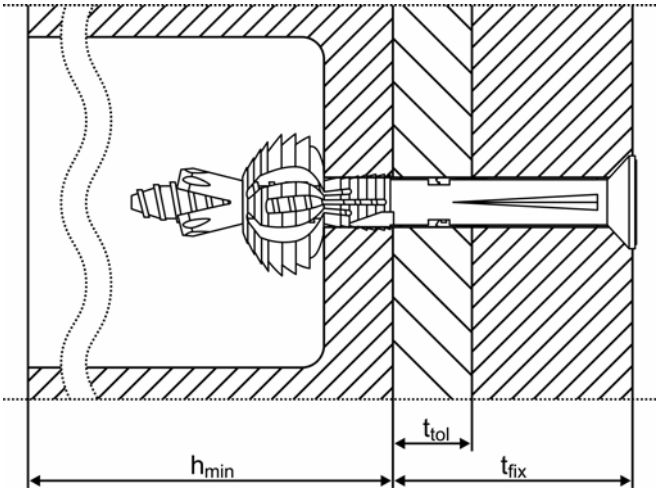


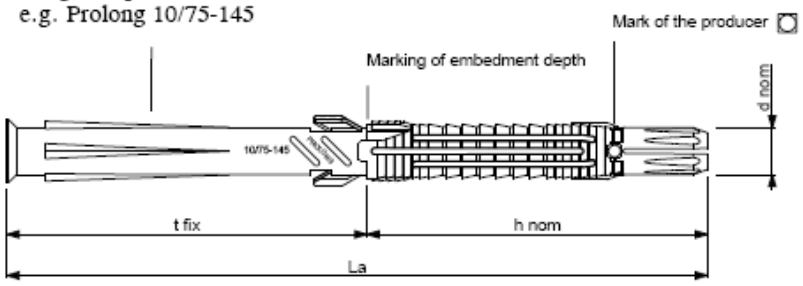
Fig 3: Installed anchor in hollow concrete units (h_{nom} 70 mm, < of the dimension of the hole)

h_{nom} Overall plastic anchor embedment depth in the base material
h_1 depth of drilled hole to deepest point
h thickness of member (wall)
t_{fix} thickness of fixture
t_{tot} thickness of layer or non-load bearing coating

View of installed anchor	**Annex 1 of the ETA 11/0375 "SPIT UNIVERSAL FRAME FIXING PROLONG"**

ANNEX 2 of ETA 11/0375

Marking:
- Commercial name
- Drill hole diameter
- t fix max
- Length of plastic sleeve
  e.g. Prolong 10/75-145



	$Ød_{nom}$ mm	h_{nom} mm	$t_{fix,min}$ mm	$t_{fix,max}$ mm	$L_{a,min}$	$L_{a,max}$
Prolong 10	10	70	10	140	80	210

Fig. 4: View and dimensions of sleeve

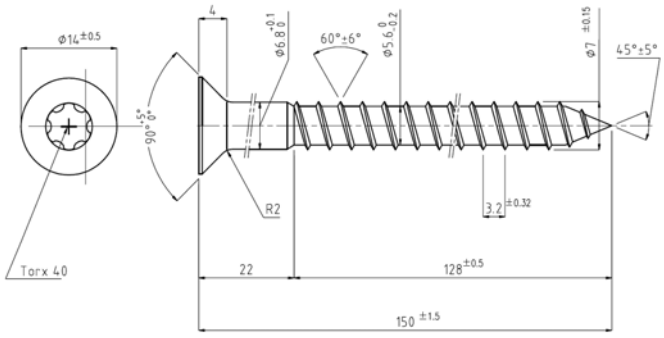


Fig. 5: IDEX 7 X L CK– 45°

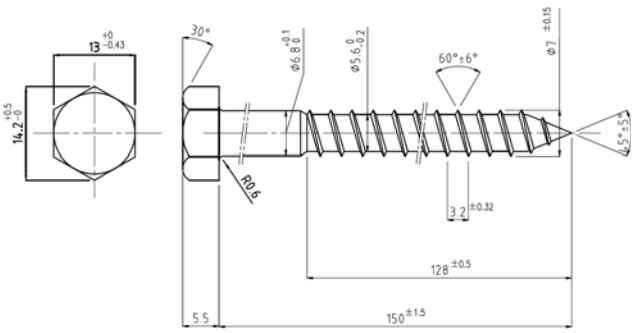


Fig. 6 : IDEX 7 X L HEX – 45°

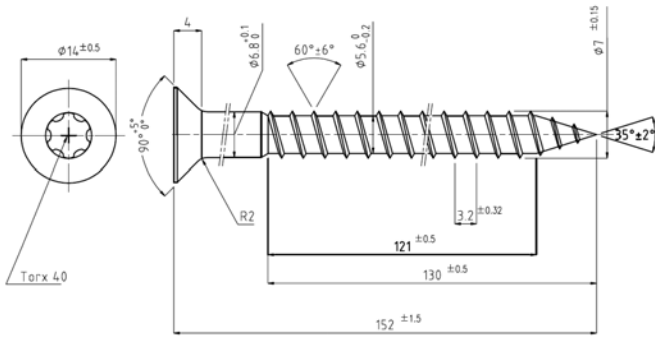


Fig. 7: IDEX 7 X L CK– 35°

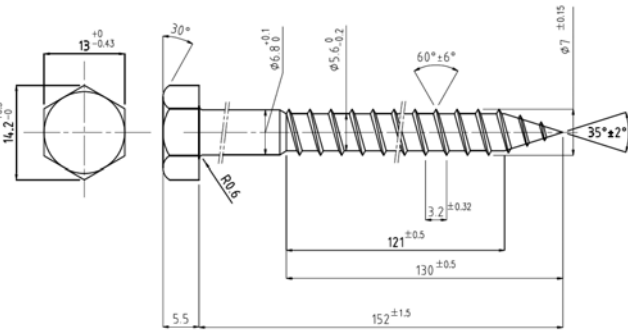


Fig. 8: IDEX 7 X L HEX– 35°

	$Ød_s$ mm	$Ød_{k,nom}$ mm	$Ød_{k,min}$ mm	$L_{s,min}$ mm	$L_{s,max}$ mm
IDEX 7 X L CK- 45°	7	5.6	5.4	85	215
IDEX 7 X L HEX- 45°	7	5.6	5.4	85	215
IDEX 7 X L CK- 35°	7	5.6	5.4	87	220
IDEX 7 X L HEX- 35°	7	5.6	5.4	87	220

Tab.1: Dimensions of special screws

View and dimensions of sleeve and of screws	**Annex 2 of the ETA 11/0375 "SPIT UNIVERSAL FRAME FIXING PROLONG"**

ANNEX 3 of ETA 11/0375

Components	**Material**
Anchor sleeve	Polyamide PA66, colour: grey
Special screw	Carbon steel, strength class 6.8, electrogalvanic coating Zn ≥ 5 µm (f_{yk} ≥ 480 N/mm², f_{uk} ≥ 600 N/mm²)
	Stainless steel A4-80 (f_{yk} ≥ 600 N/mm², f_{uk} ≥ 800 N/mm²)

Table 2: Materials

Installation parameters of the Anchor		
Drill hole diameter	d_0 = [mm]	10
Cutting diameter of drill bit	d_{cut} ≤ [mm]	10.45
Depth of drilled hole to deepest point 1)	h_1 ≥ [mm]	85
Overall plastic anchor embedment depth in the base material 1), 2)	h_{nom} ≥ [mm]	70
Diameter of clearance hole in the fixture	d_f ≤ [mm]	10.5

Table 3: Installation parameters
1) See Annex 1
2) For hollow and perforated masonry the influence of h_{nom} > 70 mm has to be detected by job site tests according 4.2.4 and 4.4.

Screw		**Characteristic bending resistance**	
		Galvanized	Stainless steel
Characteristic bending resistance	$M_{Rk,s}$ [Nm]	11.12	14.83
Partial safety factor	γ_{Ms} 1)	1.25	1.33

Table 4: Characteristic bending resistance of the screw in concrete and masonry
1) In absence of other national regulations

Materials **Installation parameters** **Characteristic bending resistance**	**Annex 3 of the ETA 11/0375** **"SPIT UNIVERSAL FRAME FIXING PROLONG"**

ANNEX 4 of ETA 11/0375

Failure of expansion element (special screw)		**Galvanized screw**	**Stainless steel screw**
Characteristic tension resistance	$N_{Rk,s}$ [kN]	13.73	18.31
Partial safety factor	γ_{Ms} 1)	1.5	1.6
Characteristic shear resistance	$V_{Rk,s}$ [kN]	6.87	9.16
Partial safety factor	γ_{Ms} 1)	1.25	1.33

Table 5: Characteristic resistance of the screw for use in concrete and masonry
1) In absence of other national regulations

Pull-out failure (plastic sleeve)		Temperature range c (30/50°C)	Temperature range b (50/80°C)
Concrete ≥ C16/20			
Characteristic resistance	$N_{Rk,p}$ [kN]	2.5	2.5
Partial safety factor	γ_{Mc} 1)	1.8	1.8
Concrete C12/15			
Characteristic resistance	$N_{Rk,p}$ [kN]	2.0	2.0
Partial safety factor	γ_{Mc} 1)	1.8	1.8
Concrete cone failure and concrete edge failure for single anchor and anchor group			
Tension load2): $N_{Rk,c} = 7.2\sqrt{f_{ck,cube}} * h_{ef}^{1,5} * \frac{c}{c_{cr,N}} = N_{Rk,p} * \frac{c}{c_{cr,N}}$ with $h_{ef}^{1,5} = \frac{N_{Rk,p}}{7.2 * \sqrt{f_{ck,cube}}}$ $\frac{c}{c_{cr,N}} \le 1$			
Shear Load2): $V_{Rk,c} = 0.45 * \sqrt{d_{nom}} * (h_{nom}/d_{nom})^{0.2} * \sqrt{f_{ck,cube}} * c_1^{1,5} * (\frac{c_2}{1.5c_1}) * (\frac{h}{1.5c_1})^{0.5}$ with $(\frac{c_2}{1.5c_1}) \le 1$ $(\frac{h}{1.5c_1})^{0.5} \le 1$			
c_1 Edge distance closest to the edge in loading direction c_2 Edge distance perpendicular to direction 1 $f_{ck,cube}$ Nominal characteristic concrete compression strength (based on cubes), value for C50/60 at maximum			
Partial safety factor	γ_{Mc} 1)	1.8	

Table 6: Characteristic resistance for use in concrete
1) In absence of other national regulations
2) The design method according to ETAG 020, Annex C is to be used

Characteristic resistance of the screw for use in concrete and masonry **Characteristic resistance for use in concrete**	**Annex 4 of the ETA 11/0375** **"SPIT UNIVERSAL FRAME FIXING PROLONG"**

ANNEX 5 of ETA 11/0375

Type	Tension load			Shear load		
	F 1) [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	F 1) [kN]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
	0.99	0.07	0.15	2.73	1.65	2.48

Table 7: Displacements under tension und shear loading in concrete
1) Intermediate values by linear interpolation

Type	Minimum thickness h_{min}	Characteristic edge distance $c_{cr,N}$	Minimum allowable edge distances c_{min}	Minimum allowable spacing s_{min}
	[mm]	[mm]	[mm]	[mm]
Concrete C12/15	140	98	85	70
Concrete ≥ C16/20	140	70	60	50

Table 8: Minimum thickness of member, edge distance and spacing in concrete
Note**:** Fixing points with a spacing s ≤ 85 mm are considered as a group with a max characteristic resistance $N_{Rk,p}$ acc. to Table 6 of Annex 4.
For s > 85 mm the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table 5 of Annex 4.

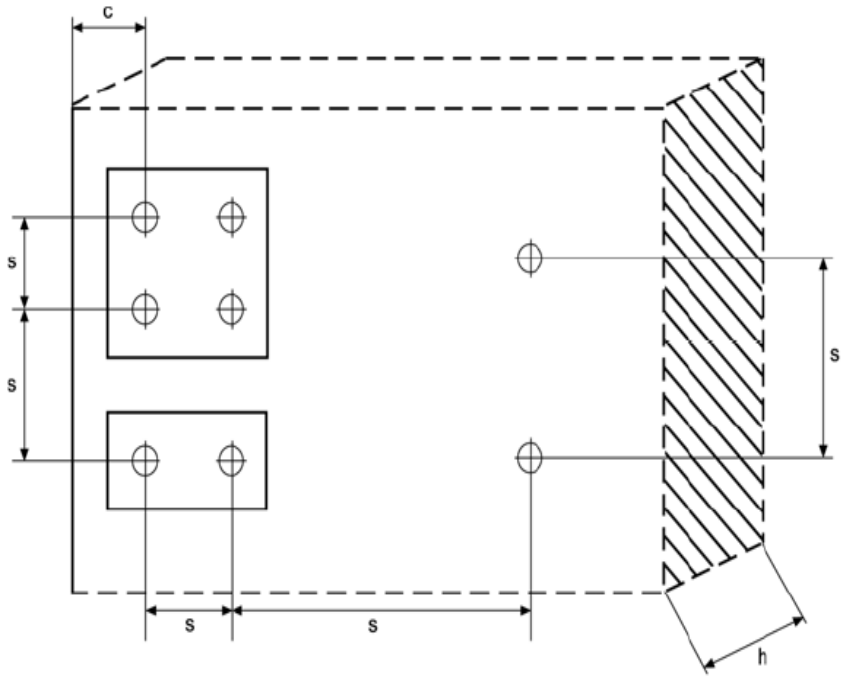


Fig. 10: Scheme of distance and spacing in concrete

Displacements under tension und shear loading in concrete **Minimum thickness of member, edge distance and spacing in concrete**	**Annex 5 of the ETA 11/0375** **"SPIT UNIVERSAL FRAME FIXING PROLONG"**

ANNEX 6 of ETA 11/0375

Use category	Base material	Min. DF or min.size mm	Bulk density class ρ Kg/dm²	Minimum compressive strength f_b N/mm²	Drill method	Thickness of wall h mm	Figure	Characteristic resistance F_{RK} [1] [kN] temperature range 30/50°C	50/80°C
b	Clay brick DIN EN 771-1	240x110x60	≥ 1.6	> 10	H[2]	110	//	1.5[7][8]	1.5[7][8]
				> 20				2.5[7][8]	2.5[7][8]
				> 10		240		2.5[7] 3.5[8]	2.5[7] 3.5[8]
				> 20				4[7] 5[8]	4[7] 5[8]
c	Hollow clay bricks[3]	370x250x249	≥ 0.7	8	R[4]	250	See annex 7	1	1
	Hollow concrete units[5]	500x200x200	0.9	4	R[4]	200		1	1
Partial safety factor[6]						γMm		2.5	

Table 9: Characteristic resistance F_{Rk} in [kN] in solid and hollow or perforated masonry (use category “b” and "c")

1) Resistance F_{RK} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 11 and 12. The specific conditions for the design method have to be considered according to chapter 4.2.5 of the ETA.
2) Hammer drilling
3) Porotherm Biomur R37 - Wienerberger sas
4) Rotary drilling
5) Creux B40 - FABEMI
6) In absence of other national regulations
7) Only valid for an edge distance of c ≥ 100 mm
8) Only valid for an edge distance of c ≥ 150 mm

Base material for masonry for range b and c	F kN	Displacement			
		Tension load		Shear load	
		δ_{N0}	$\delta_{N\infty}$	δ_{V0}	$\delta_{V\infty}$
Solid clay brick		0.03	0.06	1.19	1.79
Hollow clay brick		0.10	0.20	0.57	0.86
Hollow concrete units		0.08	0.16	0.57	0.86

Table 10: Displacements under tension und shear loading in solid and hollow or perforated masonry

Characteristic resistance FRk in [kN] in solid and hollow or perforated masonry (use category “b” and "c") Displacements under tension und shear loading in solid and hollow or perforated masonry	**Annex 6 of the ETA 11/0375 “SPIT UNIVERSAL FRAME FIXING PROLONG”**

ANNEX 7 of ETA 11/0375

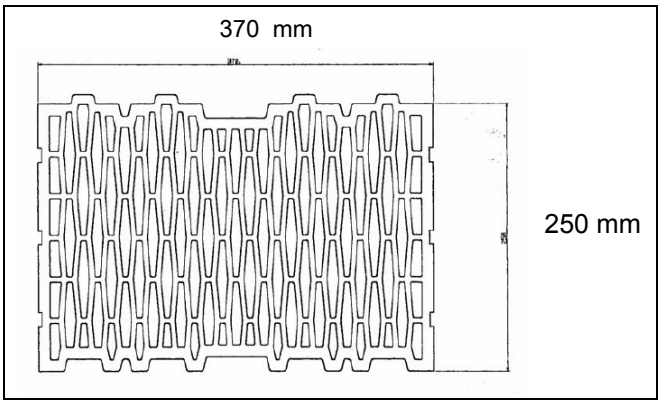


Fig.9: Geometry of the hollow brick

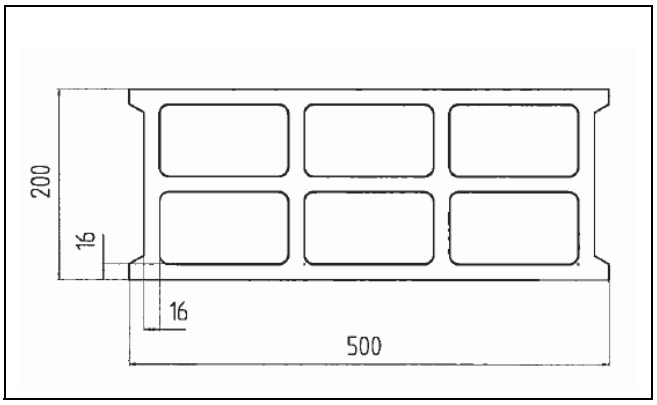


Fig.10: Geometry of the hollow concrete unit

Minimum thickness of member	h_{min}	mm	110
Single anchor			
Minimum allowable spacing	s_{min}	mm	250
Minimum allowable edge distance	c_{min}	mm	100
Anchor Group			
Minimum allowable spacing perpendicular to free edge	$s_{1,min}$	mm	200
Minimum allowable spacing parallel to free edge	s_{2min}	mm	400
Minimum allowable edge distance	c_{min}	mm	100

Table 11: Minimum distances and dimensions in solid masonry

			Hollow clay bricks[1)]	Hollow concrete units[1)]
Minimum thickness of member	h_{min}	mm	250	200
Single anchor				
Minimum allowable spacing	s_{min}	mm	250	250
Minimum allowable edge distance	c_{min}	mm	100	100
Anchor Group				
Minimum allowable spacing perpendicular to free edge	$s_{1,min}$	mm	200	200
Minimum allowable spacing parallel to free edge	s_{2min}	mm	400	400
Minimum allowable edge distance	c_{min}	mm	100	100

Table 12: Minimum distances and dimensions in hollow or perforated masonry. - 1) See Annex 6

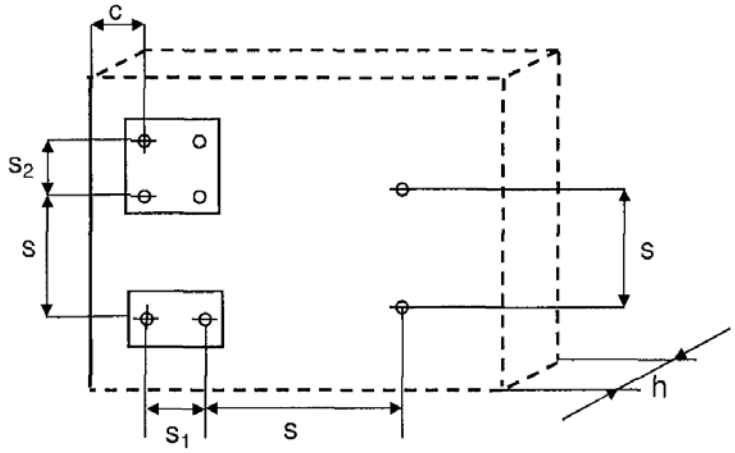


Fig.11: Scheme of distance and spacing in masonry

Geometry of the hollow brick Minimum distances and dimensions in solid masonry	**Annex 7 of the ETA 11/0375 "SPIT UNIVERSAL FRAME FIXING PROLONG"**