Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment

ETA-21/0894 of 21 December 2022

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	ejotherm STR-P 10
Product family to which the construction product belongs	Screwed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in conrete and masonry
Manufacturer	EJOT SE & Co. KG Astenbergstraße 21 57319 Bad Berleburg DEUTSCHLAND
Manufacturing plant	manufacturing plant EJOT 1, 2, 3 and 4
This European Technical Assessment contains	16 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330196-01-0604, Edition 07/2017

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Specific part

1 Technical description of the product

The EJOT screwed-in anchor type ejotherm STR-P 10 with a plate consists of a plastic part made of virgin polyethylene, an accompanying specific screw made of polyamide. Ejotherm STR-P 10 can be mounted flushed to the surface into the insulating material or deep mounting in the insulating material. For deep mounting of the anchor in the insulating material the ejotherm STR-P consists in addition of an accompanying insulation cover made of polystyrol or mineral wool.

For mounting on the surface the anchor may in addition be combined with the anchor plates SBL 140 plus, VT 90 or VT 2G, made of polyamide.

An illustration and the description of the product are given in Annex A.

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

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 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 right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic tension resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 2
Displacements	See Annex C 2

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

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

In accordance with EAD No. 330196-01-0604, the applicable European legal act is: [97/463/EC].

The system to be applied is: 2+

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

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

Issued in Berlin on 21 December 2022 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Aksünger

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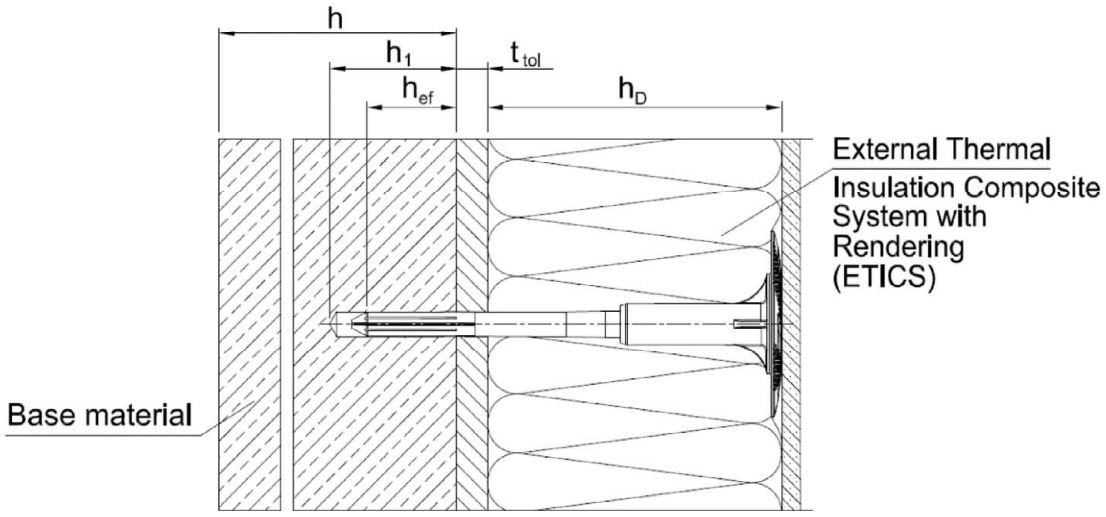
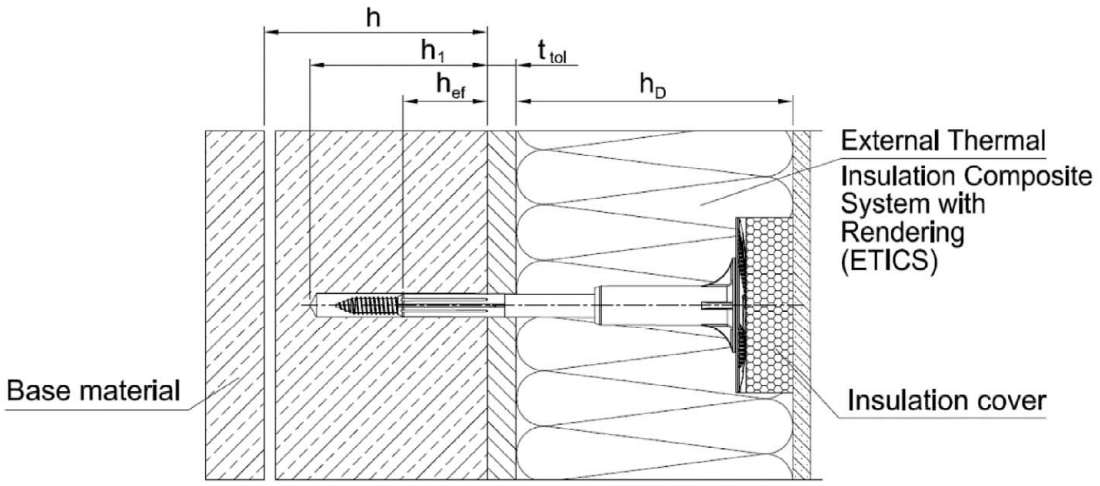
ejotherm STR-P 10, mounting on the surface installation



ejotherm STR-P 10, deep mounting installation



Legend:
- h_D = thickness of insulation material
- h_{ef} = effective anchorage depth
- h = thickness of member (wall)
- h_1 = depth of drilled hole to deepest point
- t_{tol} = thickness of equalizing layer or non-load-bearing coating

ejotherm STR-P 10	**Annex A 1**
Product description Installed condition	

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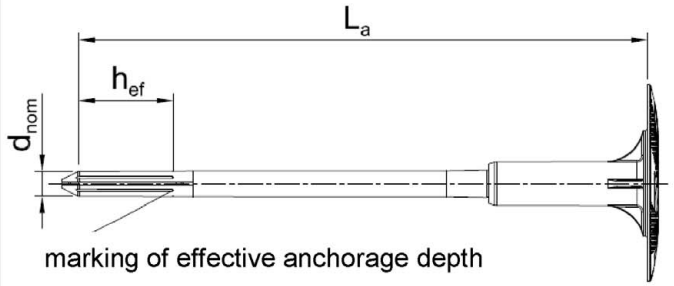
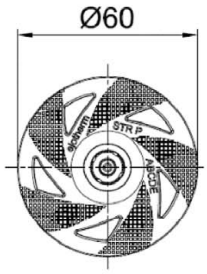
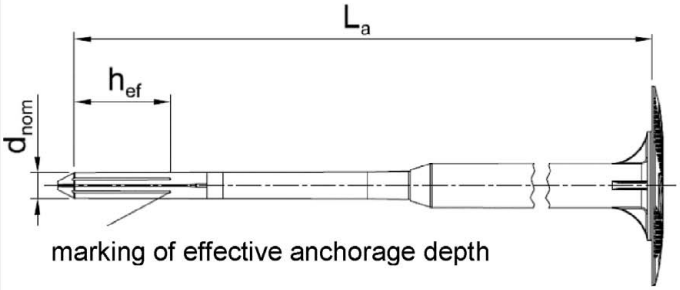
ejotherm STR-P 10 in base material group A, B, C, D - one and two-part anchor sleeve, mounting on the surface installation



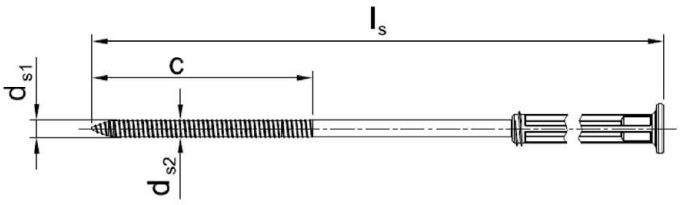


Marking of the anchor sleeve:
Identifying mark (ejotherm)
Anchor type (STR-P 10)
Base material group (A, B, C, D, E)
Length of anchor (e.g. 195)

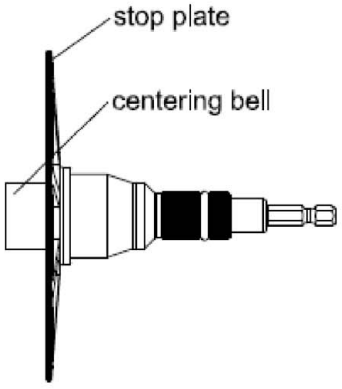
ejotherm STR-P 10: one-part anchor sleeve



ejotherm STR-P 10: two-part anchor sleeve



ejotherm STR-P 10: plastic screw



ejotherm STR-P 10: mounting tool, mounting on the surface installation

Table A1: Dimensions

Anchor Type	Anchor sleeve d_{nom} [mm]	h_{ef} [mm]	min L_a max L_a [mm]	Plastic screw d_{s1} [mm]	d_{s2} [mm]	c [mm]	min l_s max l_s [mm]
ejotherm STR-P 10 (one-part anchor sleeve)	10	25	95 295	7,0	5,8	70	95 295
ejotherm STR-P 10 (two-part anchor sleeve)	10	25	95 295	7,0	5,8	70	95 295

Determination of maximum thickness of insulation h_D [mm] ejotherm STR-P 10 (one and two-part anchor sleeve):

$h_D = L_a - t_{tol} - h_{ef}$
e.g. $h_D = 195 - 10 - 25$
$h_{Dmax} = 160$

ejotherm STR-P 10

Annex A 2

Product description
Marking and dimension of the one-part and two-part anchor sleeve from ejotherm STR-P 10
base material group: A, B, C, D; plastic screw, mounting on the surface installation

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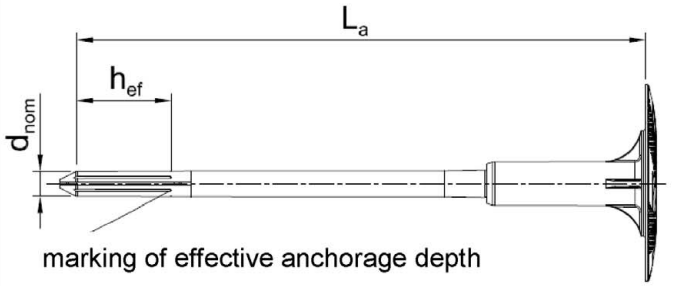
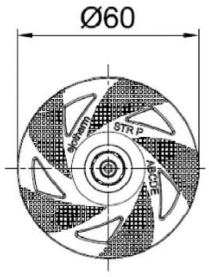
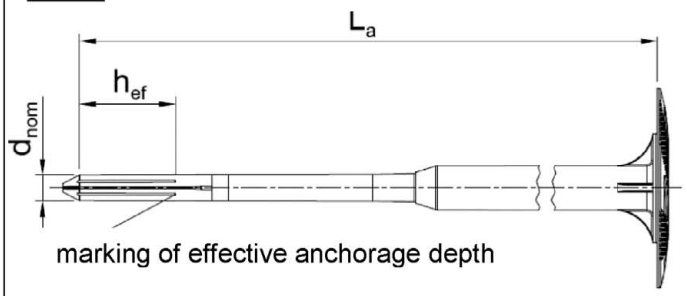
ejotherm STR-P 10 in base material group A, B, C, D - one and two-part anchor sleeve, deep mounting installation



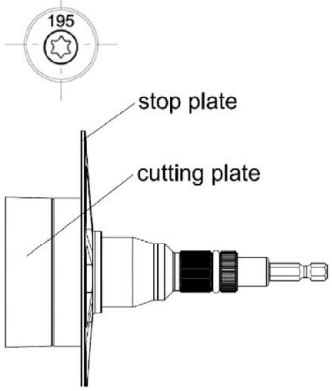


Marking of the anchor sleeve:
Identifying mark (ejotherm)
Anchor type (STR-P 10)
Base material group (A, B, C, D, E)
Length of anchor (e.g. 195)

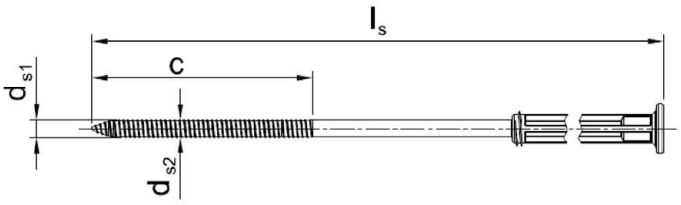
ejotherm STR-P 10: one-part anchor sleeve



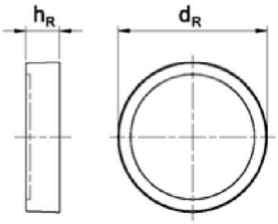
ejotherm STR-P 10: two-part anchor sleeve



ejotherm STR-P 10: mounting tool, deep mounting



ejotherm STR-P 10: plastic screw



ejotherm STR-P 10: insulation cover

Table A2: Dimensions

Anchor Type	Anchor sleeve d_{nom} [mm]	h_{ef} [mm]	min L_a max L_a [mm]	Plastic screw d_{s1} [mm]	d_{s2} [mm]	c [mm]	min l_s max l_s [mm]	Insulation cover h_R [mm]	d_R [mm]
ejotherm STR-P 10 (one-part anchor sleeve)	10	25	95 295	7,0	5,8	70	95 295	15	66
ejotherm STR-P 10 (two-part anchor sleeve)	10	25	95 295	7,0	5,8	70	95 295	15	66

Determination of maximum thickness of insulation h_D [mm] ejotherm STR-P 10 (one and two-part anchor sleeve):

$h_D = L_a - t_{tol} - h_{ef}$
e.g. $h_D = 195 - 10 - 25$
$h_{Dmax} = 160$

ejotherm STR-P 10

Annex A 3

Product description
Marking and dimension of the one-part and two-part anchor sleeve from ejotherm STR-P 10 base material group: A, B, C, D; plastic screw, deep mounting

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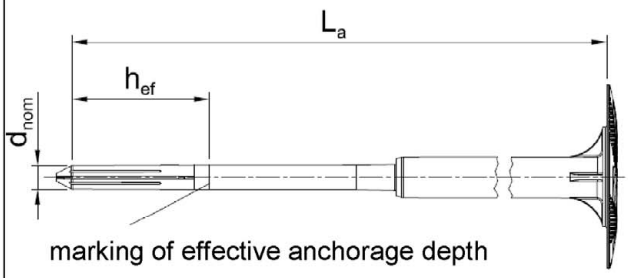
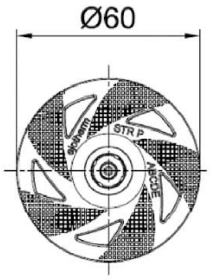
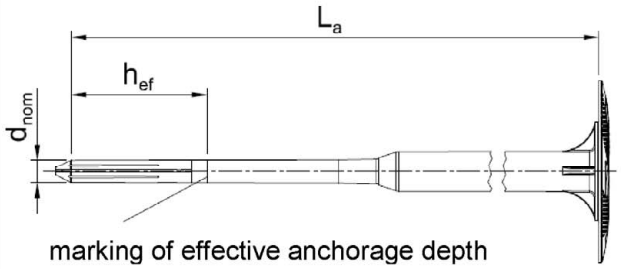
ejotherm STR-P 10 in base material group E - one and two-part anchor sleeve, mounting on the surface installation



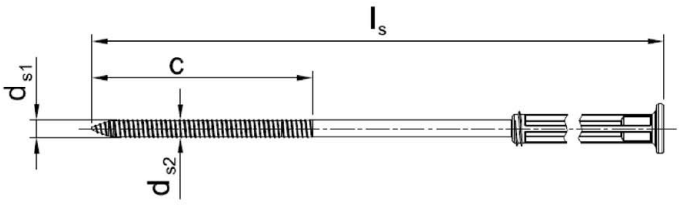


Marking of the anchor sleeve:
Identifying mark (ejotherm)
Anchor type (STR-P 10)
Base material group (A, B, C, D, E)
Length of anchor (e.g. 195)

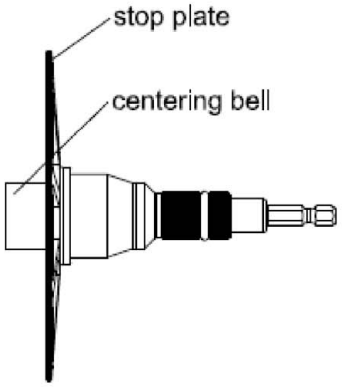
ejotherm STR-P 10: one-part anchor sleeve



ejotherm STR-P 10: two-part anchor sleeve



ejotherm STR-P 10: plastic screw



ejotherm STR-P 10: mounting tool, mounting on the surface installation

Table A3: Dimensions

Anchor Type	Anchor sleeve d_{nom} [mm]	h_{ef} [mm]	min L_a max L_a [mm]	Plastic screw d_{s1} [mm]	d_{s2} [mm]	c [mm]	min l_s max l_s [mm]
ejotherm STR-P 10 (one-part anchor sleeve)	10	45	95 295	7,0	5,8	70	95 295
ejotherm STR-P 10 (two-part anchor sleeve)	10	45	95 295	7,0	5,8	70	95 295

Determination of maximum thickness of insulation h_D [mm] ejotherm STR-P 10 (one and two-part anchor sleeve):

$h_D = L_a - t_{tol} - h_{ef}$
e.g. $h_D = 195 - 10 - 45$
$h_{Dmax} = 140$

ejotherm STR-P 10

Annex A 4

Product description
Marking and dimension of the one-part and two-part anchor sleeve from ejotherm STR-P 10
base material group: E; plastic screw, mounting on the surface installation

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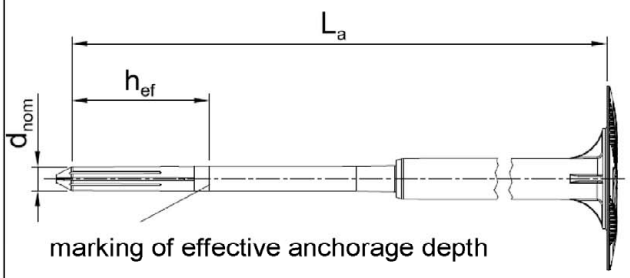
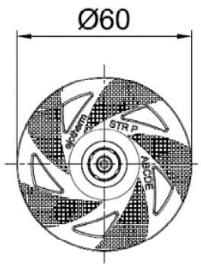
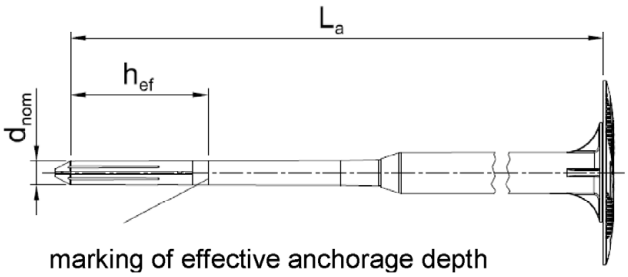
ejotherm STR-P 10 in base material group E - one and two-part anchor sleeve, deep mounting installation



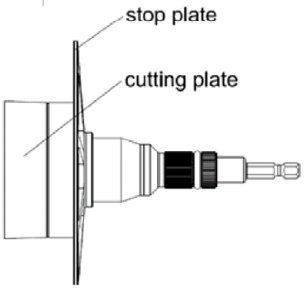


ejotherm STR-P 10: one-part anchor sleeve

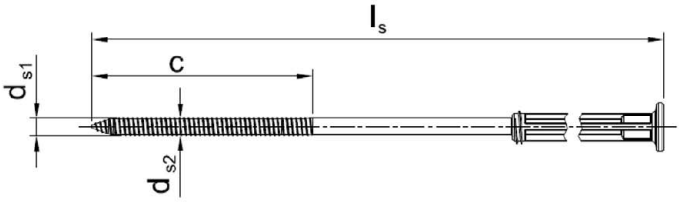
Marking of the anchor sleeve:
Identifying mark (ejotherm)
Anchor type (STR-P 10)
Base material group (A, B, C, D, E)
Length of anchor (e.g. 195)



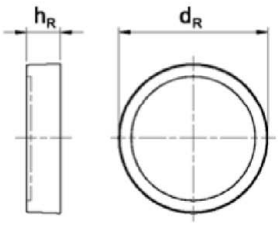
ejotherm STR-P 10: two-part anchor sleeve



ejotherm STR-P 10: mounting tool, deep mounting



ejotherm STR-P 10: plastic screw



ejotherm STR-P 10: insulation

Table A4: Dimensions

Anchor Type	Anchor sleeve			Plastic screw				Insulation cover	
	d_{nom} [mm]	h_{ef} [mm]	min l_a max l_a [mm]	d_{s1} [mm]	d_{s2} [mm]	c [mm]	min l_s max l_s [mm]	h_R [mm]	d_R [mm]
ejotherm STR-P (one-part anchor sleeve)	10	45	95 295	7,0	5,8	70	95 295	15	66
ejotherm STR-P (two-part anchor sleeve)	10	45	95 295	7,0	5,8	70	95 295	15	66

Determination of maximum thickness of insulation h_D [mm] ejotherm STR-P 10 (one and two-part anchor sleeve):

$h_D = L_a - t_{tol} - h_{ef}$
e.g. $h_D = 195 - 10 - 45$
$h_{Dmax} = 140$

ejotherm STR-P 10

Annex A 5

Product description
Marking and dimension of the one-part and two-part anchor sleeve from ejotherm STR-P 10
base material group: E; plastic screw, deep mounting

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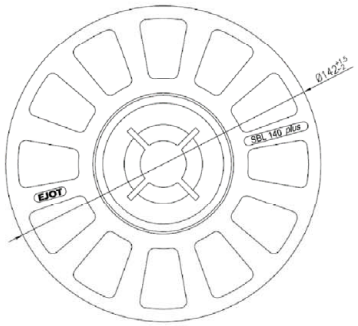
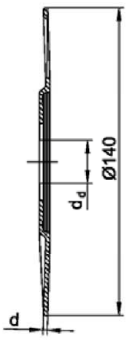
Table A5: Materials ejotherm STR-P 10	
Anchor plate (two-part anchor)	Polyethylene (virgin material) PE-HD colour: nature, yellow, orange, red, blue, grey, white, green, anthracite
Anchor sleeve (two-part anchor)	Polyethylene (virgin material) PE-HD colour: nature, yellow, orange, red, blue, grey, white, green, anthracite
Anchor (one-part)	Polyethylene (virgin material) PE-HD colour: nature, yellow, orange, red, blue, grey, white, green, anthracite
Plastic screw	Polyamide (virgin material) PA 6 GF 50 colour: nature, black, anthracite
Slip-on plate	Polyamide (virgin material) PA 6 or PA 6 GF 50 colour: nature

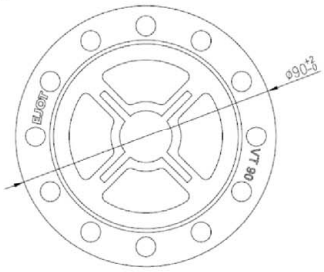
SBL 140 *plus*

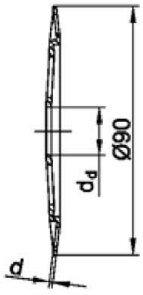




SBL 140 plus		
d_d	[mm]	21,0
d	[mm]	2,0

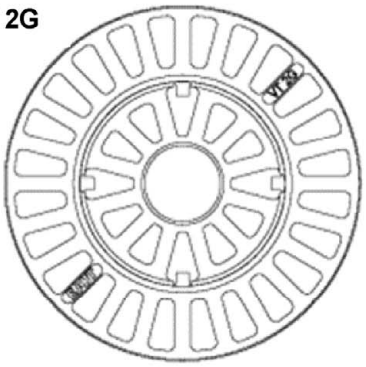
VT 90

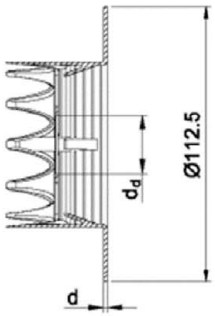




VT 90		
d_d	[mm]	18,5
d	[mm]	1,2

VT 2G





VT 2G		
d_d	[mm]	29,0
d	[mm]	1,5

ejotherm STR-P 10	**Annex A 6**
Product description Materials and slip on plates	

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Specifications of intended use

Anchorages subject to:

- 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.

Base materials:

- Compacted normal weight concrete without fibres (base material group A) according to Annex C 1.
- Solid masonry (base material group B), according to Annex C 1.
- Hollow or perforated masonry (base material group C), according to Annex C 1.
- Prefabricated reinforced components of lightweight aggregate concrete (LAC) (base material group D), according to Annex C 1.
- Autoclaved aerated concrete (base material group E), according to Annex C 1.
- For other base materials of base material groups A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests in accordance with EOTA Technical Report TR 51 edition April 2018.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed under the responsibility of an engineer experienced in accordance and masonry work with the partial safety factors γ_m = 2,0 and γ_F = 1,5 if there are no other regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C 1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks

ejotherm STR-P 10	**Annex B 1**
Intended use Specifications	

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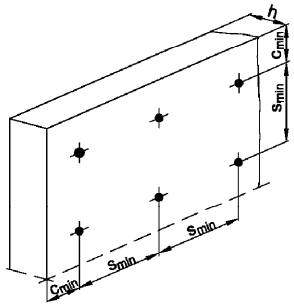
Table B1: Installation parameters			
Anchor type		ejotherm STR-P 10	
		Base material group	
		A, B, C, D	E
Drill hole diameter	d_0 [mm] =	10	10
Cutting diameter of drill bit	d_{cut} [mm] ≤	10,45	10,45
Depth of drilled hole to deepest point			
- deep mounting	h_1 [mm] ≥	55	75
- mounting on the surface	h_2 [mm] ≥	35	55
Effective anchorage depth	h_{ef} [mm] ≥	25	45

Table B2: Anchor distances and dimensions of members			
Anchor type		ejotherm STR-P 10	
Use category		A B C D	E
Minimum spacing	s_{min} ≥ [mm]	100	100
Minimum edge distance	c_{min} ≥ [mm]	100	100
Minimum thickness of member			
- deep mounting	h ≥ [mm]	100 40 (only skins of concrete)	120
- mounting on the surface	h ≥ [mm]	100 40 (only skins of concrete)	120

Scheme of distance and spacing



ejotherm STR-P 10	**Annex B 2**
Intended use Installations parameters, Edge distances and spacing	

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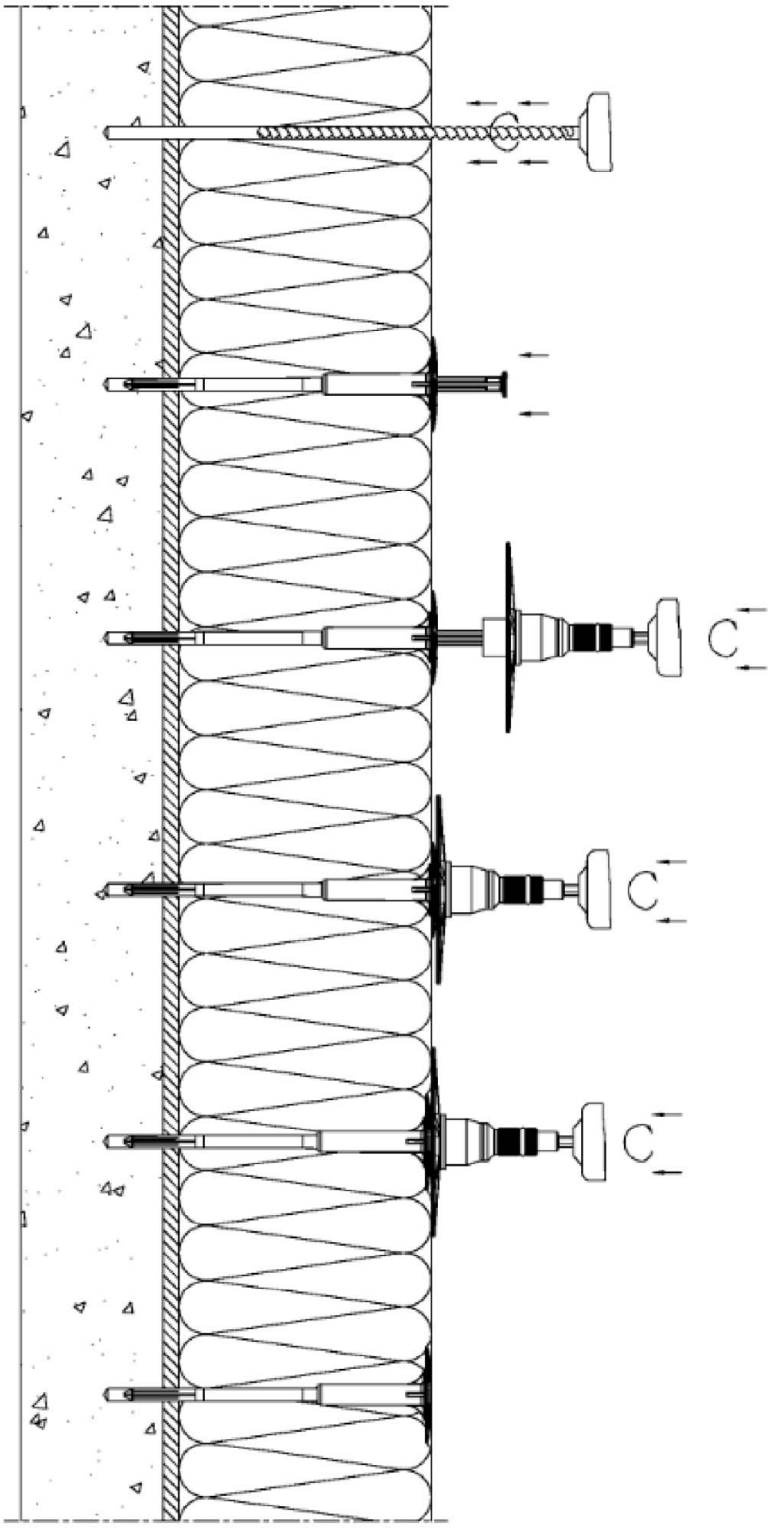
Installation instructions: ejotherm STR-P 10, mounting on the surface installation



Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.

Place the anchor into the drill hole. The bottom side of the plate must be mounted on the surface with the insulation.

Placing the mounting tool ejotherm STR-P for mounting on the surface installation (see Annex A2) on the anchor screw

Mounting the screw

Top side of the anchor plate mounting on the surface with the insulation board surface.
Assembly tool decoupled.

Installed conditions ejotherm STR-P 10.

ejotherm STR-P 10	**Annex B 3**
Intended use Installation instructions ejotherm STR-P 10, mounting on the surface installation	

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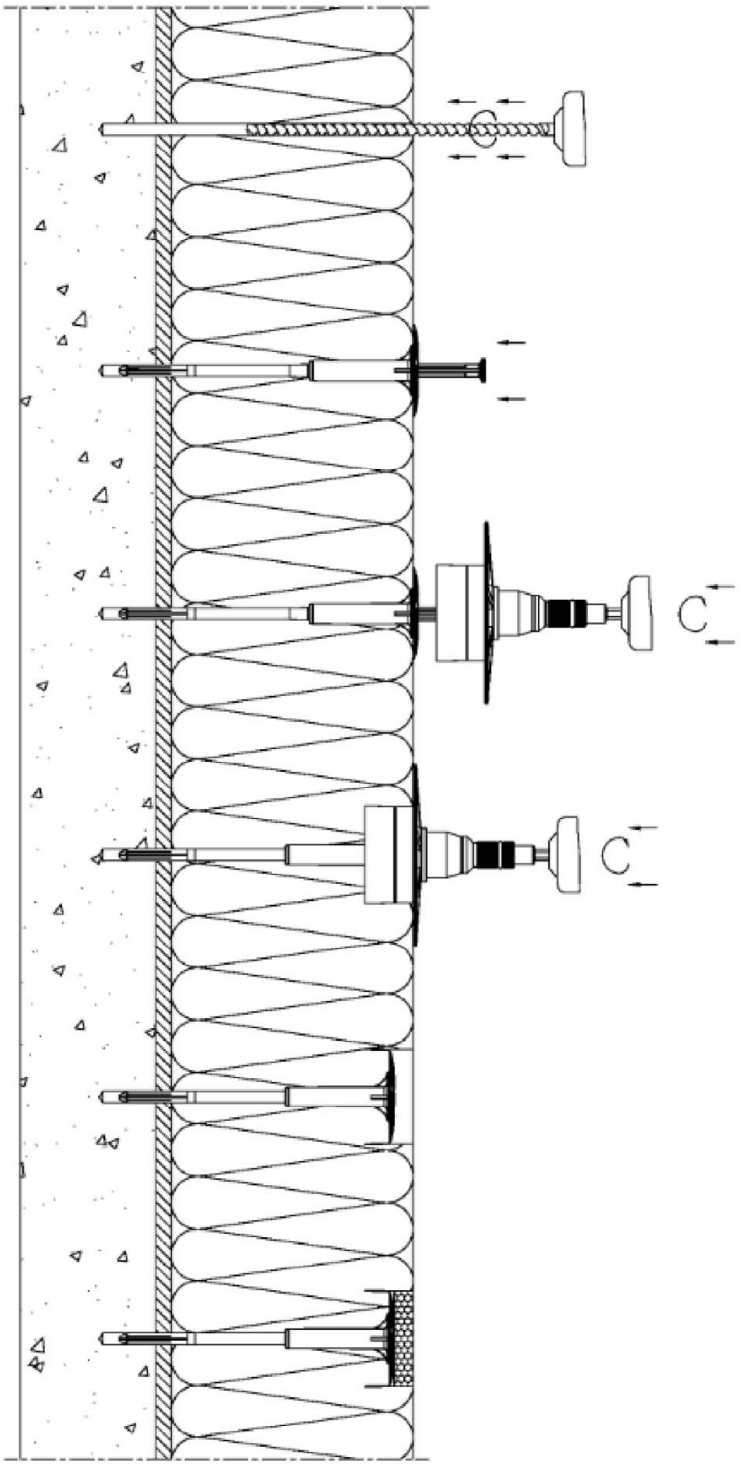
Installation instructions: ejotherm STR-P 10, deep mounting installation



Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.

Place the anchor into the drill hole. The bottom side of the plate must be mounted on the surface with the insulation.

Placing the mounting tool ejotherm STR-P for deep mounting installation (see Annex A3) on the anchor screw

Mounting the screw, the stop plate of the mounting tool must be mounted on the surface with the insulation material

Top side of the anchor plate deep mounted into insulation material, till the installation-tool decoupled.

Installed conditions ejotherm STR-P 10, deep mounting version. Insert the insulation cover with the help of a float.

ejotherm STR-P 10	**Annex B 4**
Intended use Installation instructions ejotherm STR-P 10, deep mounting	

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Table C1: Characteristic resistance to tension loads N_{Rk} in concrete and masonry for a single anchor in kN

Anchor type					ejotherm STR-P 10
Base materials	Bulk density ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	General remarks	Drill method	N_{Rk} [kN]
Concrete C 20/25 – C50/60 as per EN 206:2013+A1:2016			Compacted normal weight concrete without fibres	hammer	1,5
Thin concrete members (e.g. weather resistant skin) Concrete C20/25 – C50/60 as per EN 206:2013+A1:2016			Compacted normal weight concrete without fibres Thickness of the thin skin: 100 mm > h ≥ 40 mm	hammer	1,5
Clay bricks, Mz as per EN 771-1:2011+A1:2015	≥ 1,8	12	Vertically perforation[4] up to 15 %.	hammer	1,5
Sand-lime solid bricks, KS as per EN 771-2:2011+A1:2015	≥ 1,8	12	Vertically perforation[4] up to 15 %.	hammer	1,5
Vertically perforated clay bricks, HLz as per EN 771-1:2011+A1:2015	≥ 0,8	12	Vertically perforation[4] > 15 % and ≤ 50 %.	hammer / rotary	1,5[1]
Sand-lime perforated bricks, KSL as per EN 771-2:2011+A1:2015	≥ 1,6	12	Vertically perforation[4] > 15 % and ≤ 50 %.	hammer / rotary	1,5[2]
Lightweight concrete hollow blocks, Hbl as per EN 771-3:2011+A1:2015	≥ 1,2	6		hammer / rotary	1,5[3]
lightweight aggregate concrete, LAC as per EN 1520:2011, EN 771-3:2011+A1:2015	≥ 0,8	4		rotary	1,2
Autoclaved aerated concrete as per EN 771-4:2011 +A1:2015	≥ 0,6	4		rotary	1,2

1) The value applies only for outer web thickness ≥ 11 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.
2) The value applies only for outer web thickness ≥ 20 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.
3) The value applies only for outer web thickness ≥ 40 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.
4) Cross section reduced by perforation vertically to the resting area

ejotherm STR-P 10	**Annex C 1**
Performances Characteristic resistance	

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Table C2: Point thermal transmittance according EOTA Technical Report TR 025:2016-05		
anchor type	insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
ejotherm STR-P 10, mounting on the surface	100 - 260	0,000
ejotherm STR-P 10, deep mounting	100 - 260	0,000

Table C3: Plate stiffness according EOTA Technical Report TR 026:2016-05			
anchor type	diameter of the anchor plate [mm]	load resistance of the anchor plate [kN]	plate stiffness [kN/mm]
ejotherm STR-P 10	60	1,5	0,7

Table C4: Displacements ejotherm STR-P 10				
Base materials	Bulk density ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	Tension load N [kN]	Displacements $\Delta\delta_N$ [mm] L_a = 95 - 295 mm
Concrete C12/15 – C50/60 (EN 206:2013+A1:2016)			0,5	0,3
Thin concrete members Concrete C16/20 – C50/60 (EN 206:2013+A1:2016)			0,5	0,3
Clay bricks, Mz (EN 771-1:2011+A1:2015)	≥ 1,8	12	0,5	0,3
Sand-lime solid bricks, KS (EN 771-2:2011+A1:2015)	≥ 1,8	12	0,5	0,3
Vertically perforated clay bricks, HLz (EN 771-1:2011+A1:2015)	≥ 0,8	12	0,5	0,3
Sand-lime perforated bricks, KSL (EN 771-2:2011+A1:2015)	≥ 1,6	12	0,5	0,4
Lightweight concrete hollow blocks, Hbl (EN 771-3:2011+A1:2015)	≥ 1,2	6	0,5	0,3
Lightweight aggregate concrete, LAC (EN 1520:2011 / EN 771-3:2011+A1:2015)	≥ 0,8	4	0,4	0,3
Autoclaved aerated concrete EN 771-4:2011+A1:2015)	≥ 0,6	4	0,4	0,3

ejotherm STR-P 10	**Annex C 2**
Performances Point thermal transmittance, plate stiffness, displacements	