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to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of 9
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MEMBER OF EOTA



European Technical Assessment ETA-21/0756 of 2021/09/03

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the
construction product:

EJOT CROSSFIX

Product family to which the
above construction product
belongs:

Kits for external wall claddings

Manufacturer:

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Geschäftsbereich Building Fasteners
In der Stockwiese 35
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Manufacturing plant:

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This European Technical
Assessment contains:

34 pages including 28 annexes which form an integral
part of the document

This European Technical
Assessment is issued in
accordance with Regulation
(EU) No 305/2011, on the
basis of:

EAD 090034-00-0404 – Kit composed by subframe and
fixings for fastening cladding and external wall elements

This version replaces:

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The EJOT CROSSFIX subframe kit for external wall elements is composed by brackets, fixings to the subframe and the subframe profiles.

The components identified in Table 1 have the geometrical characteristics defined in Annexes 1 to 3 and are factory produced by different suppliers. The kit is made of components mechanically assembled and the ETA holder is ultimately responsible for the kit.

| Component | Name | Geometrical characteristics [Annex] |
|---------------------------------|--|-------------------------------------|
| Brackets | Mouse 40 | 1-5 |
| | Mouse 60 | |
| | K1 80 | |
| | K1 100 | |
| | K1 120 | |
| | K1 140 | |
| | K1 160 | |
| | K1 180 | |
| | K1 200 | |
| | K1 220 | |
| | K1 240 | |
| | K1 260 | |
| | K1 280 | |
| | K1 300 | |
| | K1 320 | |
| | K1 340 | |
| K1 360 | | |
| K1 380 | | |
| K1 400 | | |
| Subframe fixings | JT6-2/5-5,0x25 E14 VARIO JT9-2/5-5,0x25 E14 VARIO | 6 |
| Subframe | Vertical or horizontal profiles | 7, 8 & 9 |
| Optional subframe stabilisation | Power key | 1, 2 & 5 |
| Skin element fixings | JT4-LT-3-5,5x25 KD16 | 6 |

Table 1: Components for the EJOT CROSSFIX subframe kit.

The brackets are made of stainless steel A2 (1.4301) or A4 (1.4404). The brackets are composed of the bracket, a stress plate for load distribution, a thermostat (PA6) to prevent thermal bridging, and an optional Power key which can be twisted up to 2 times, as given in Annex 1 & 25.

The self-drilling screw (JT6-2/5-5,0x30 E14 VARIO or JT9-2/5-5,0x25 E14 VARIO) between vertical or horizontal profile and the brackets are made of austenitic stainless steel A4 and zinc plated and shown in Annex 6. The vertical or horizontal profile are made of aluminum (EN AW 6063-T66 or EN AW 6060-T66, 2 mm) in different shapes, given in Annex 7.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The subframe kit “EJOT CROSSFIX” is intended to be used as subframe for façades with air space, ventilated or not, which can be fixed to supporting structure and the external wall in new or existing buildings. The supporting structure is made of masonry (bricks or blocks), concrete (cast on site or as prefabricated panels), timber or metal frame. An insulation layer is usually fixed on the external wall.

The kit is a non-load-bearing construction element. It does not contribute to the stability of the structure on which are installed, neither to ensure the airtightness of the building structure, but it can contribute to durability of the works by providing enhanced protection from the effect of weathering.

The installation should be carried out according to the ETA holder’s specifications, using the specific kit components, manufactured by suppliers of the ETA holder and carried out by appropriately qualified staff with supervision of the technical responsible of the site. Maintenance of the assembled systems or kit components includes inspections on site, taking into account the following aspects:

- any damage such as cracking or detachment due to permanent and irreversible deformation of the cladding elements.
- corrosion or water accumulation at metallic components.

Furthermore, necessary repairs should be done rapidly, using the same kit components and following the repair instructions given by ETA holder.

The façade kit is assessed as a system 6 in accordance with EAD 090034-00-0404.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of at least 25 years, that the conditions lay down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer but are to be regarded only as a means for choosing the right product 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.

Characteristic

Assessment of characteristic

3.2 Safety in case of fire (BWR 2)

Reaction to fire

The EJOT CROSSFIX subframe kit are classified as **Euroclass A1** in accordance with EN 13501-1.

3.4 Safety and accessibility in use (BWR 4)

Wind load resistance

| Profile | Max. load Q [Pa] | Maximum deflection under load [mm] | Maximum permanent deflection [mm] | Calculated values [Pa] |
|----------------------|------------------|------------------------------------|-----------------------------------|------------------------|
| horizontal T-profile | 10.265 | 51,1 | 17,5 | 6.646 |
| vertical T-profile | 7.674 | 29,7 | 6,7 | 6.015 |

Resistance to vertical load of the whole assembled system

Calculated values:

| Assembled system | Sum of bracket resistance F_{3d} [N] | Shear resistance of: | |
|--------------------------------------|--|----------------------|--------------------------|
| | | subframe fixings [N] | skin element fixings [N] |
| Horizontal profiles with powerkey | 699 | 21828 | 8229 |
| Horizontal profiles without powerkey | 396 | 21828 | 8229 |
| Vertical profiles with powerkey | 1758 | 10914 | 8229 |
| Vertical profiles without powerkey | 828 | 10914 | 8229 |

Resistance to vertical load:

| Assembled system | R_v [N] | Q_w [N] | Q_{ad} [N] | Δ deflection | | |
|--------------------------------------|-----------|-------------|--------------|---------------------|-------------|-------------|
| | | | | Initial [mm] | 1 hour [mm] | 2 hour [mm] |
| Horizontal profiles with powerkey | 233 | 1348 | 50 | 0,00 | 1,78 | 0,06 |
| Horizontal profiles without powerkey | 132 | 359 | 37 | 0,00 | 2,15 | 0,04 |
| Vertical profiles with powerkey | 586 | 1743 | 15 | 0,00 | 1,83 | 0,01 |
| Vertical profiles without powerkey | 276 | 689 | 139 | 0,00 | 2,67 | 0,03 |

Resistance to vertical load of skin element fixings

No performance assessed

Resistance to horizontal load of skin element fixings

No performance assessed

Resistance to pulsating load of skin element fixings

No performance assessed

Resistance of skin element fixings in case of inaccuracies of installation

No performance assessed

Pull-through resistance of fixings (from profiles)

Not relevant

Pull-out resistance of fixings (from profiles)

$F_m = 2.068$ N

$F_c = 1.905$ N

Inertia and resistance of profiles

For information see annex 7

Resistance to vertical loads of brackets

For information see annex A

Resistance to horizontal load of brackets

For information see annex B

Mechanical characteristics of subframe fixings

For information see annex C and annex 6

| Characteristic | Assessment of characteristic |
|----------------|--|
| Corrosion | The kits may be used in the following external atmosphere exposure: Rural environment, moderate industrial/urban environment, but excluding industrial and marine environment. The kits may be used in other external atmospheric conditions exposure if the components are protected as specified in the standard EN 1999. |

3.8 Methods of verification

The product is fully covered by EAD EAD 090034-00-0404. According to the Regulation (EU) No 305/2011.

3.9 General aspects related to the fitness for use of the product.

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, 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 ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The EJOT CROSSFIX subframe kit for external wall elements is manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

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

4.1 AVCP system

According to the decision 2003/640/EC of the European Commission, as amended by 2001/596/EC, the system(s) of assessment and verification of constancy of performance (see Annex III to Regulation (EU) No 305/2011) is 2+.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark.

Issued in Copenhagen on 2021-09-03 by



Thomas Bruun
Managing Director, ETA-Danmark

Vertical profiles:

| Bracket | without powerkey | | | | with powerkey | | | |
|----------|------------------|-----------------|-----------------|----------------|----------------|-----------------|-----------------|----------------|
| | F _r | F _{1d} | F _{3d} | F _s | F _r | F _{1d} | F _{3d} | F _s |
| | [N] | [N] | [N] | [N] | [N] | [N] | [N] | [N] |
| Mouse 40 | 1381 | 1494 | 3374 | 3046 | - | - | - | - |
| Mouse 60 | 785 | 974 | 2607 | 2766 | - | - | - | - |
| K1 80 | 1057 | 854 | 2204 | 2372 | - | - | - | - |
| K1 100 | 937 | 843 | 2179 | 2180 | - | - | - | - |
| K1 120 | 916 | 579 | 1558 | 1649 | 1018 | 611 | 1652 | 1770 |
| K1 140 | 819 | 510 | 1380 | 1531 | 963 | 600 | 1548 | 1647 |
| K1 160 | 722 | 441 | 1202 | 1413 | 908 | 590 | 1444 | 1523 |
| K1 180 | 624 | 372 | 1023 | 1294 | 853 | 579 | 1339 | 1400 |
| K1 200 | 527 | 303 | 845 | 1176 | 798 | 569 | 1235 | 1276 |
| K1 220 | 430 | 234 | 667 | 1058 | 743 | 558 | 1131 | 1153 |
| K1 240 | 413 | 219 | 624 | 985 | 739 | 532 | 1068 | 1150 |
| K1 260 | 396 | 204 | 580 | 912 | 735 | 507 | 1006 | 1147 |
| K1 280 | 379 | 188 | 537 | 840 | 730 | 481 | 943 | 1143 |
| K1 300 | 362 | 173 | 493 | 767 | 726 | 456 | 881 | 1140 |
| K1 320 | 346 | 158 | 450 | 694 | 722 | 430 | 818 | 1137 |
| K1 340 | 329 | 143 | 406 | 621 | 671 | 387 | 760 | 1082 |
| K1 360 | 312 | 127 | 363 | 549 | 619 | 345 | 702 | 1026 |
| K1 380 | 295 | 112 | 319 | 476 | 568 | 302 | 644 | 971 |
| K1 400 | 278 | 97 | 276 | 403 | 516 | 259 | 586 | 915 |

Horizontal profiles:

| Bracket | without powerkey | | | | with powerkey | | | |
|----------|------------------|-----------------|-----------------|----------------|----------------|-----------------|-----------------|----------------|
| | F _r | F _{1d} | F _{3d} | F _s | F _r | F _{1d} | F _{3d} | F _s |
| | [N] | [N] | [N] | [N] | [N] | [N] | [N] | [N] |
| Mouse 40 | - | - | - | - | - | - | - | - |
| Mouse 60 | - | - | - | - | - | - | - | - |
| K1 80 | 160 | 124 | 313 | 456 | - | - | - | - |
| K1 100 | 226 | 102 | 295 | 415 | - | - | - | - |
| K1 120 | 206 | 94 | 271 | 370 | 236 | 100 | 276 | 477 |
| K1 140 | 202 | 90 | 261 | 368 | 275 | 98 | 276 | 506 |
| K1 160 | 198 | 85 | 251 | 366 | 314 | 97 | 277 | 534 |
| K1 180 | 195 | 81 | 240 | 364 | 352 | 95 | 277 | 563 |
| K1 200 | 191 | 76 | 230 | 362 | 391 | 94 | 278 | 591 |
| K1 220 | 187 | 72 | 220 | 360 | 430 | 92 | 278 | 620 |
| K1 240 | 179 | 69 | 210 | 354 | 429 | 91 | 276 | 620 |
| K1 260 | 171 | 66 | 200 | 347 | 428 | 90 | 273 | 619 |
| K1 280 | 163 | 63 | 191 | 341 | 427 | 88 | 271 | 619 |
| K1 300 | 155 | 60 | 181 | 334 | 426 | 87 | 268 | 618 |
| K1 320 | 147 | 56 | 171 | 328 | 425 | 86 | 266 | 618 |
| K1 340 | 139 | 53 | 161 | 321 | 424 | 86 | 258 | 617 |
| K1 360 | 131 | 50 | 152 | 315 | 423 | 85 | 250 | 616 |
| K1 380 | 123 | 47 | 142 | 308 | 421 | 85 | 241 | 614 |
| K1 400 | 115 | 44 | 132 | 302 | 420 | 84 | 233 | 613 |

F_r Load that causes a residual distortion on the bracket equal to L/500F_{1d}/F_{3d} Loads that causes a displacement under load of 1 mm and 3 mm.F_s Failure load (Defined as residual distortion = max(0,75 mm; L/150))

EJOT CROSSFIX subframe kit

Resistance to vertical load of brackets, vertical/horizontal profiles

Annex A

Vertical profiles:**Horizontal profiles:**

| Bracket | F_m | F_t |
|----------|-------|-------|
| | [N] | [N] |
| Mouse 40 | 2179 | 3049 |
| Mouse 60 | 2309 | 3059 |
| K1 80 | 3149 | 4625 |
| K1 100 | 3149 | 4625 |
| K1 120 | 3149 | 4625 |
| K1 140 | 3149 | 4625 |
| K1 160 | 3149 | 4625 |
| K1 180 | 3149 | 4625 |
| K1 200 | 3149 | 4625 |
| K1 220 | 3149 | 4625 |
| K1 240 | 3149 | 4625 |
| K1 260 | 3149 | 4625 |
| K1 280 | 3149 | 4625 |
| K1 300 | 3149 | 4625 |
| K1 320 | 3149 | 4625 |
| K1 340 | 3149 | 4625 |
| K1 360 | 3149 | 4625 |
| K1 380 | 3149 | 4625 |
| K1 400 | 3149 | 4625 |

| Bracket | F_m | F_t |
|----------|-------|-------|
| | [N] | [N] |
| Mouse 40 | - | - |
| Mouse 60 | - | - |
| K1 80 | 2118 | 3231 |
| K1 100 | 2118 | 3231 |
| K1 120 | 2118 | 3231 |
| K1 140 | 2118 | 3231 |
| K1 160 | 2118 | 3231 |
| K1 180 | 2118 | 3231 |
| K1 200 | 2118 | 3231 |
| K1 220 | 2118 | 3231 |
| K1 240 | 2118 | 3231 |
| K1 260 | 2118 | 3231 |
| K1 280 | 2118 | 3231 |
| K1 300 | 2118 | 3231 |
| K1 320 | 2118 | 3231 |
| K1 340 | 2118 | 3231 |
| K1 360 | 2118 | 3231 |
| K1 380 | 2118 | 3231 |
| K1 400 | 2118 | 3231 |

F_m Load that causes a residual distortion on the bracket equal to 1 mm.
 F_t Failure load (Defined as residual distortion equal to 3 mm)

EJOT CROSSFIX subframe kit

Resistance to horizontal load of brackets, vertical/horizontal profiles

Annex B

The EJOT self-drilling screw JT4-LT-3-5,5x25 KD16 (stainless steel A2) is used to connect the skin element fixing to the subframe.

The screw is shown in the following figure.

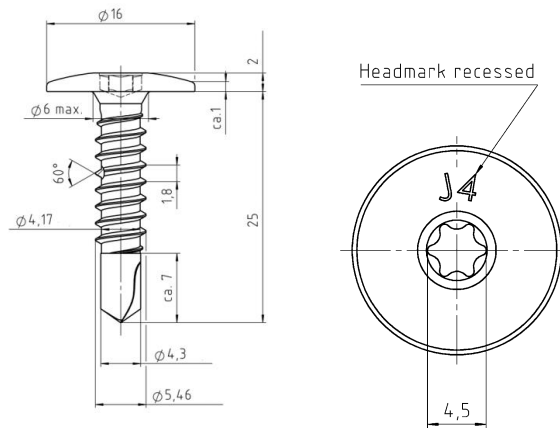


Figure 1: EJOT self-drilling screw JT4-LT-3-5,5x25 KD16

The EJOT self-drilling screws JT9-2/5-5,0xL Vario (stainless steel A4) with carbon steel drill tip) and JT6-2/5-5,0xL Vario (stainless steel A4) used to connect the subframe to the wall brackets.

The screws are shown in the following figure.

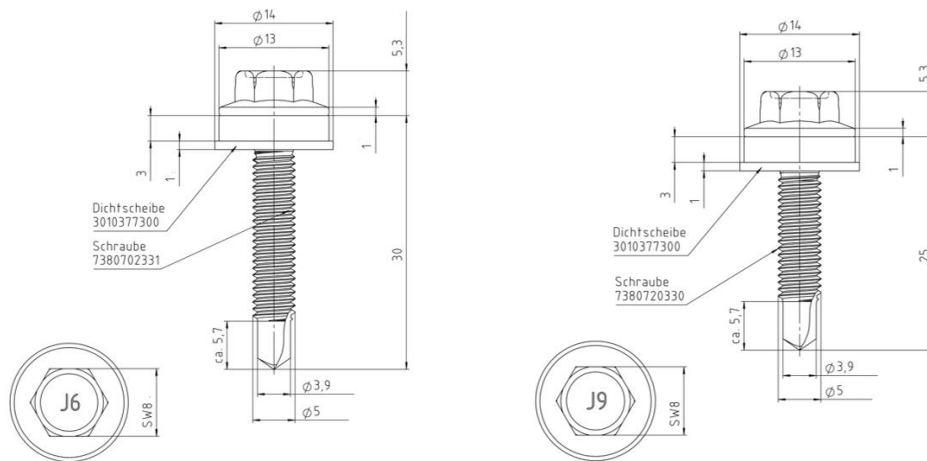


Figure 2: EJOT self-drilling screws JT6-2/2-5,0xL Vario and JT9-2/2-5,0xL Vario

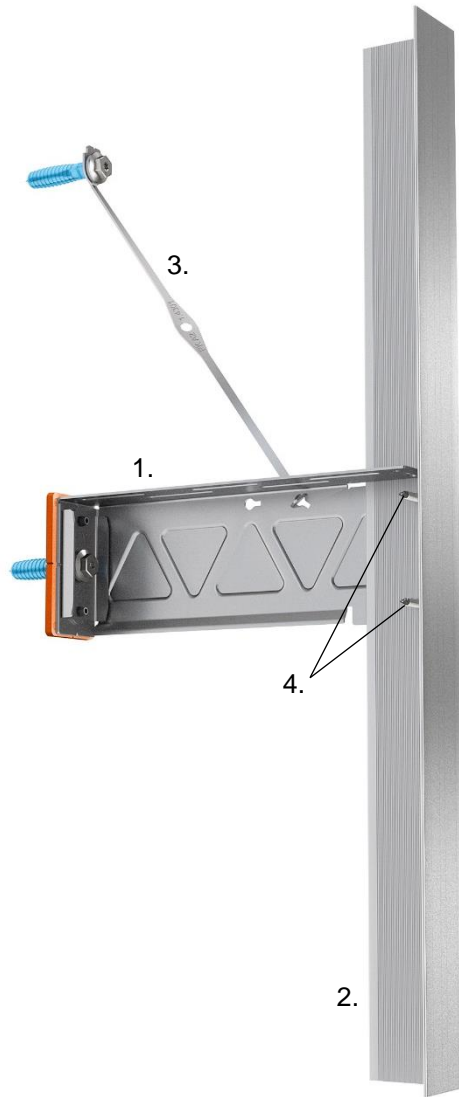
The detailed characteristic shear and tensile strength of the screws are given in Annex 6.

EJOT CROSSFIX subframe kit

Mechanical characteristics of subframe fixings

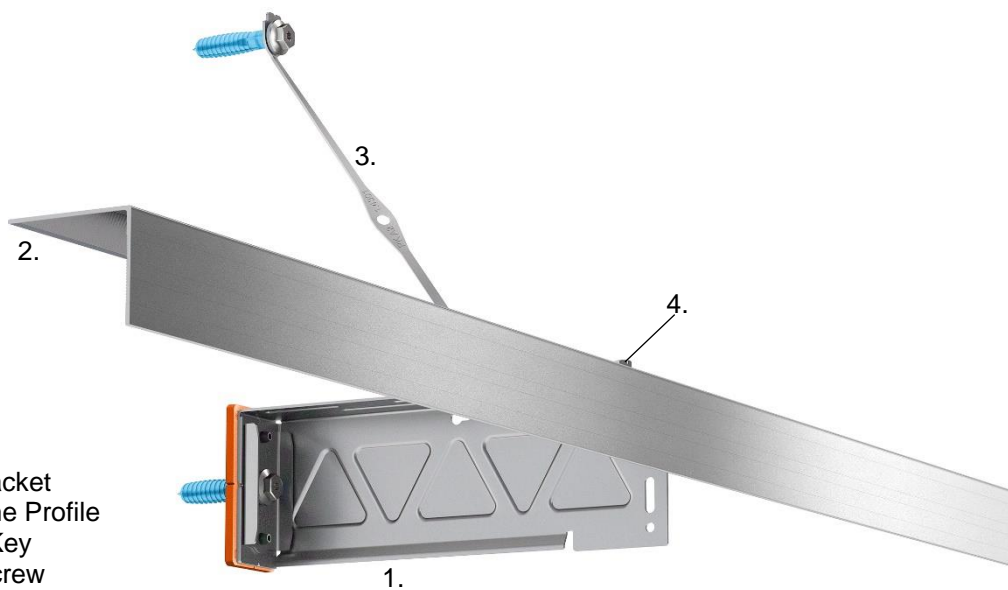
Annex C

Vertical assembled CROSSFIX system



- 1. Wall Bracket
- 2. Subframe Profile
- 3. Power-Key
- 4. Vario Screw

Horizontal assembled CROSSFIX system

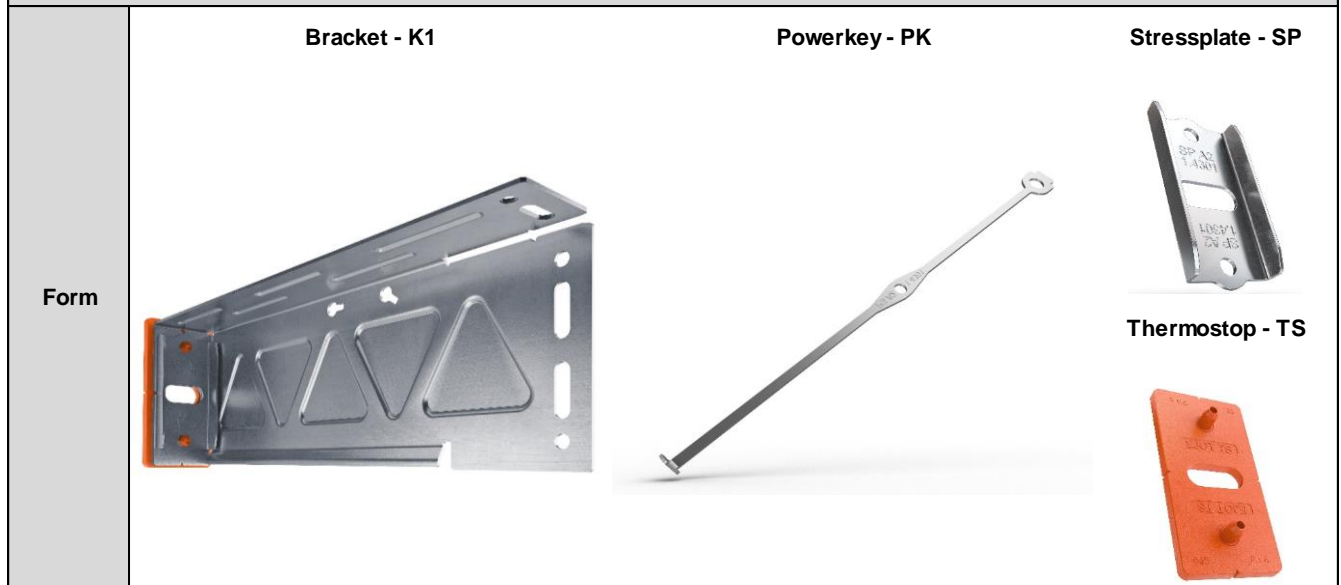


- 1. Wall Bracket
- 2. Subframe Profile
- 3. Power-Key
- 4. Vario Screw

Terms and explanations

System overview

Annex 1

Brackets and components**Geometry characteristics**

| Dimensions | Width | Height | Length | Thickness | Cross section | Weight | Drawing |
|--------------------|-----------|-----------|-----------|-----------|-------------------------|---------------|----------------------|
| | w [mm] | h [mm] | L [mm] | t [mm] | A [mm ²] | m [kg/pcs] | |
| Bracket | 40 | 84 | 45 - 405 | ≥ 1,5 | 185,91 | 0,089 - 0,692 | Figure 1.1 to 1.5 |
| Stressplate | 36,7 | 72 | - | ≥ 1,5 | - | 0,036 | |
| Thermostop | 44,5 | 88,5 | - | ≥ 5 | - | 0,016 | |
| Powerkey | 21 | - | 334 | ≥ 1,5 | - | 0,025 | Figure 1.6 |

| Material properties | Symbol | Unit | Value | | |
|-------------------------------|-------------------|----------------------|---------------------------------|--------------------------------|------------|
| | | | Brackets, Stressplate, Powerkey | | Thermostop |
| Type of material | - | [-] | Stainless steel A2 (1.4301) | Stainless steel A4 (1.4404) | PA 6 - I |
| Density | ρ | [kg/m ³] | 7.900 | 7.980 | 1.100 |
| Modulus of elasticity | E | [MPa] | 200.000 | | 790 - 840 |
| Thermal expansion coefficient | α | [K ⁻¹] | 16*10 ⁻⁶ | | - |
| Elastic limit | R _{p0,2} | [MPa] | 230 | 240 | - |
| Tensile strength | R _m | [MPa] | 500 - 750 | 500 - 700 | - |
| Elongation | A | [%] | 35 | 55 | 42 - 50 |
| Elongation | A _{50mm} | [%] | | 40 | - |
| Brinell hardness | H | [HB] | ≥ 215 | | - |

Design

Brackets and components

Annex 2

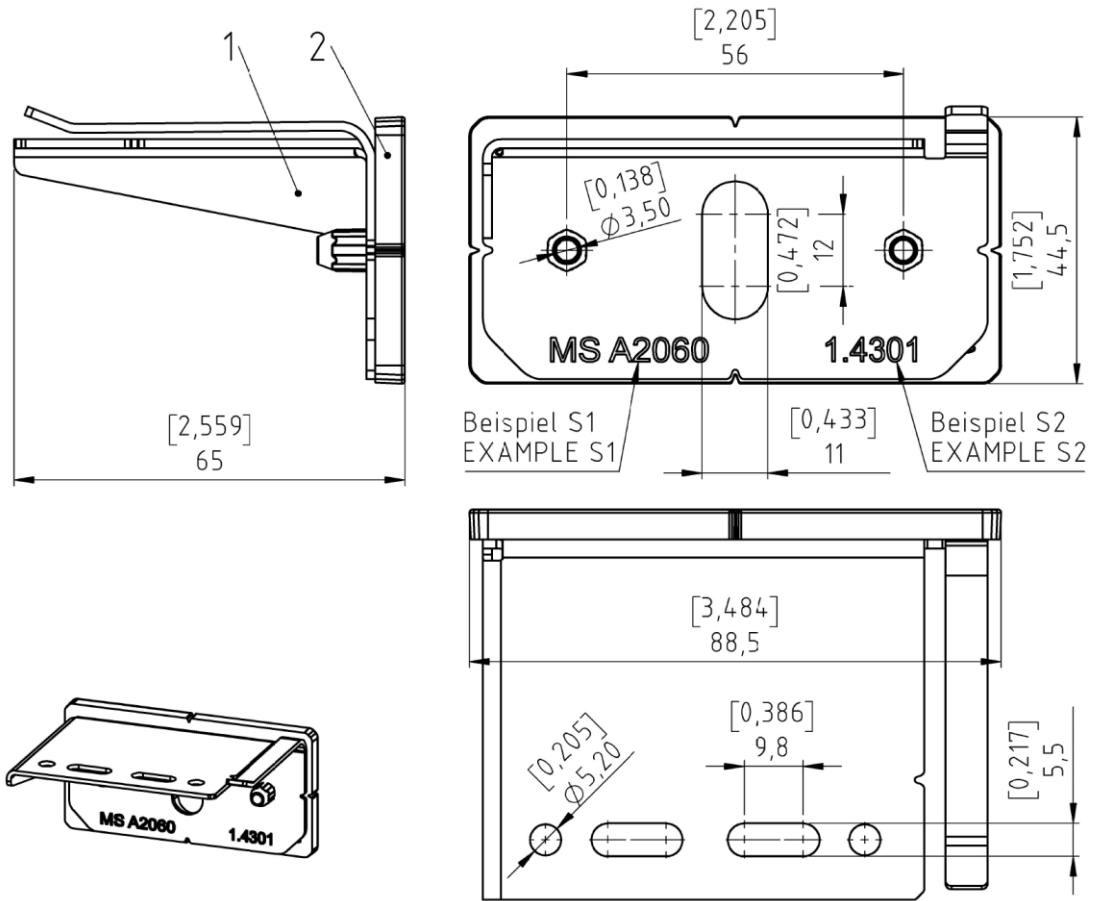


Figure 1.1: Bracket EJOT CF Console MS 60

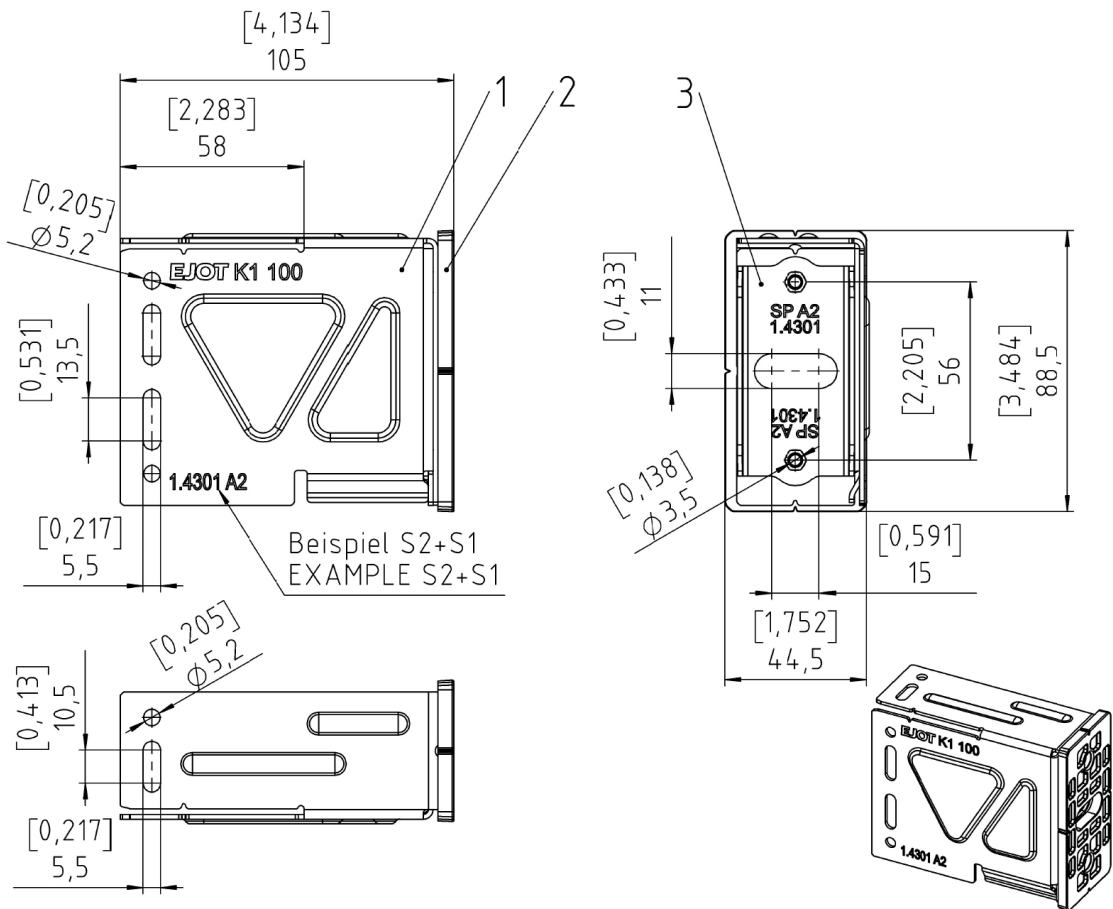


Figure 1.2: Bracket EJOT CF Console K1 80

Terms and explanations

Brackets and components

Annex 3

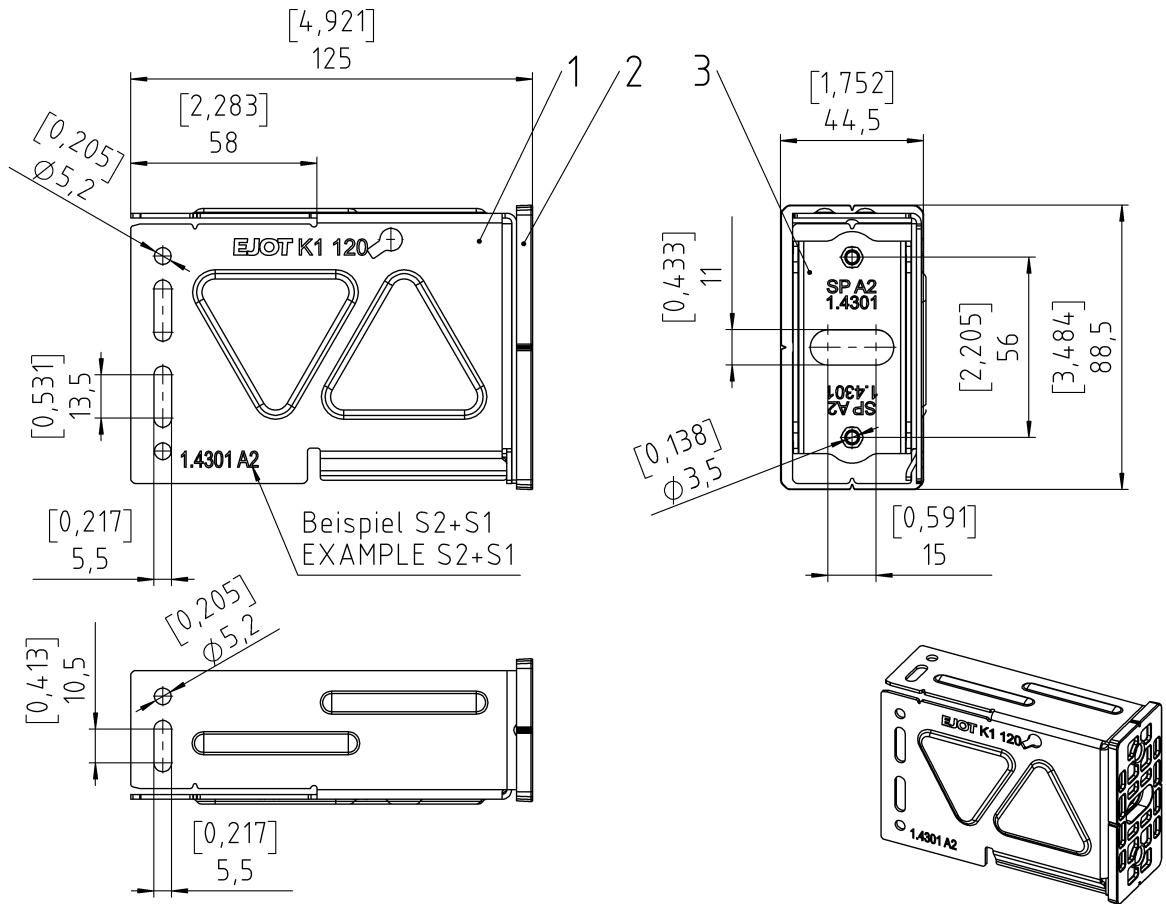


Figure 1.3: Bracket EJOT CF Console K1 120

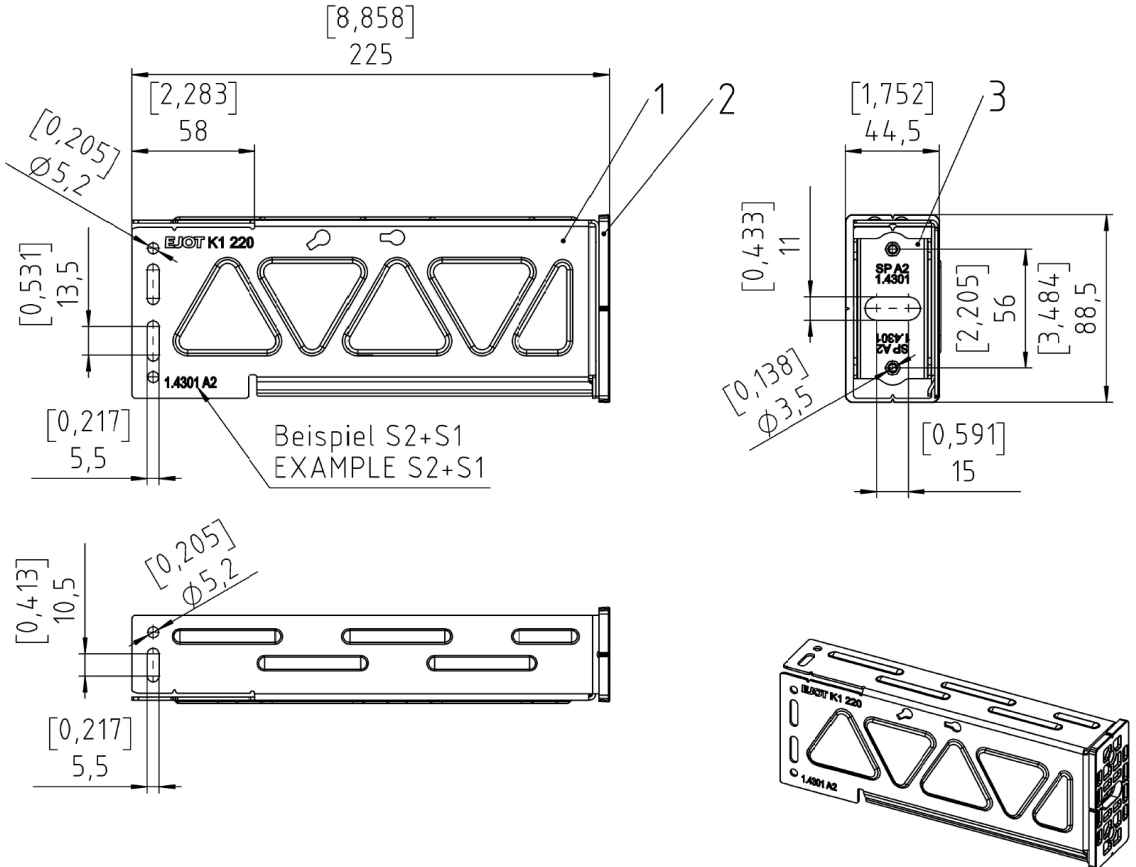


Figure 1.4: Bracket EJOT CF Console K1 220

| | |
|-------------------------|---------|
| Terms and explanations | |
| Brackets and components | Annex 4 |

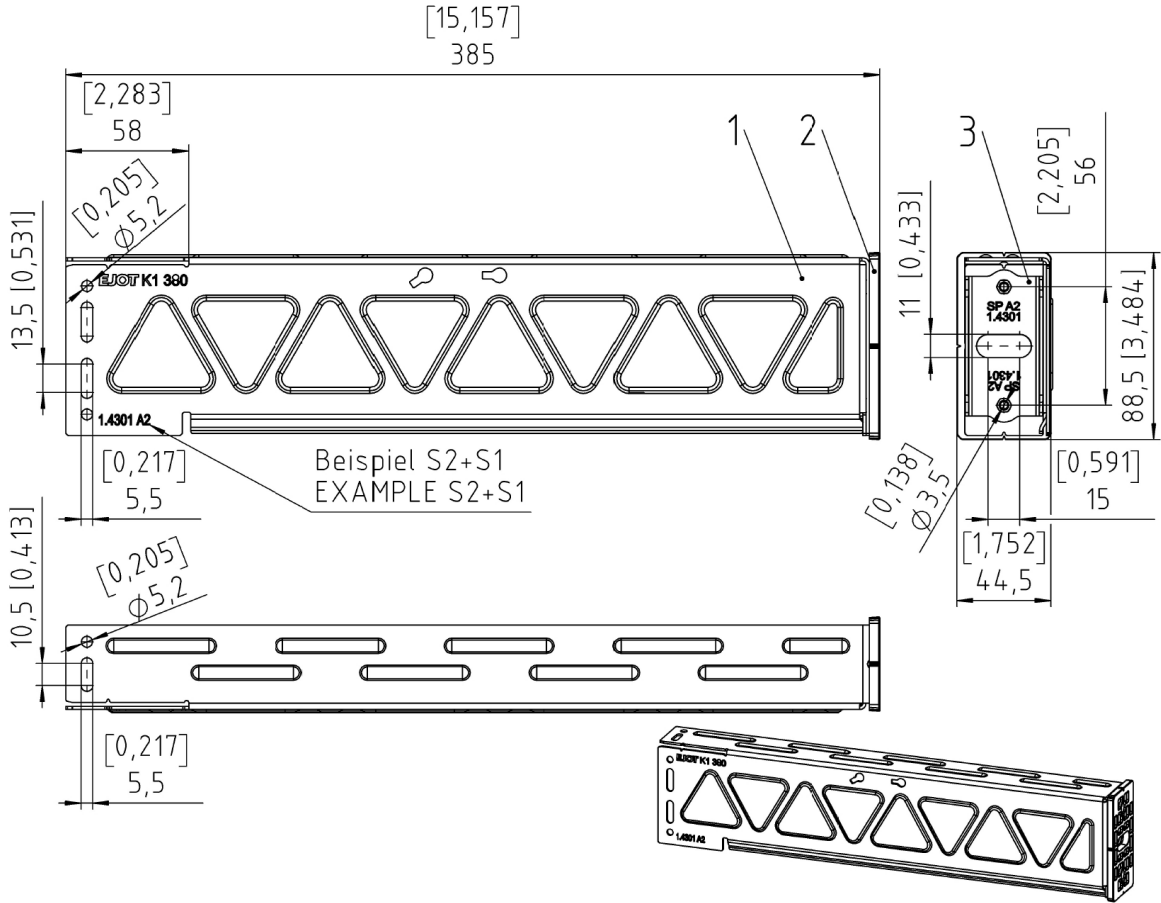


Figure 1.5: Bracket EJOT CF Console K1 400

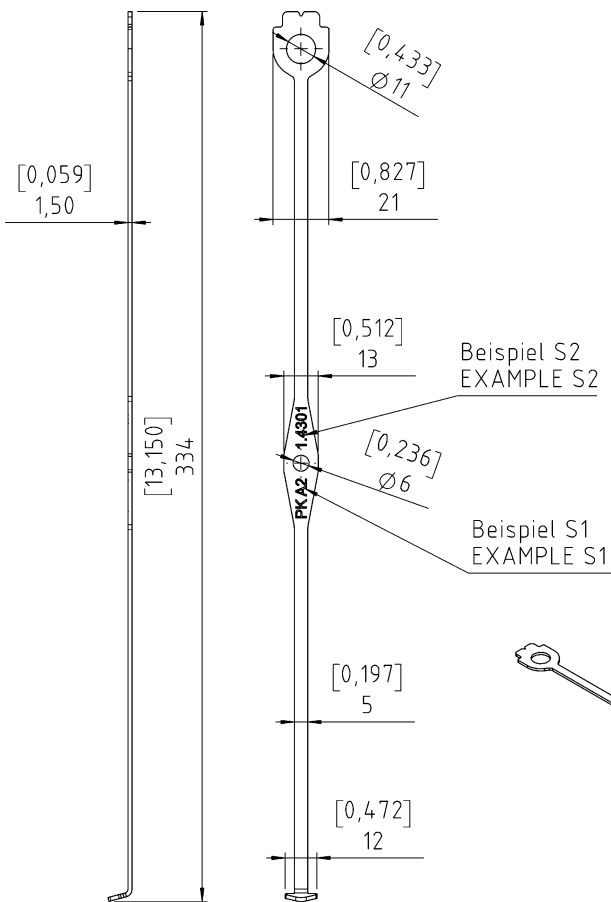


Figure 1.6: Powerkey EJOT CF Kraftschlüssel PK



Terms and explanations

Brackets and components

Annex 5

Subframe and skin element fixings

Geometry characteristics

| Form | Subframe fixing | Skin element fixing |
|------|---|---|
| | JT6-2/5-5,0xL Vario & JT9-2/5-5,0xL Vario | JT4-LT-3-5,5xL KD16 |
| |  |  |

| Dimensions | Diameter | Length | Drawing |
|---------------------|----------|--------|----------------|
| | Ø [mm] | L [mm] | - [-] |
| JT6-2/5-5,0xL Vario | 5 | 30 | See Figure 2.1 |
| JT9-2/5-5,0xL Vario | 5 | 25 | See Figure 2.2 |
| JT4-LT-3-5,5xL KD16 | 5,5 | 25 | See Figure 2.3 |

| Material properties | Symbol | Unit | Reference | Value | | |
|---------------------|-------------------|-------|-------------|--|---------------------|---------------------|
| | | | | JT6-2/5-5,0xL Vario | JT9-2/5-5,0xL Vario | JT4-LT-3-5,5xL KD16 |
| Type of material | - | [-] | EN ISO 3506 | Stainless steel A4 with carbon steel drill tip | Stainless steel A4 | Stainless steel A2 |
| Elastic limit | R _{p0,2} | [MPa] | | 210 | 210 | 210 |
| Tensile strength | R _m | [MPa] | | 500 | 500 | 500 |
| Elongation | A | [%] | | 0,6 · d | 0,6 · d | 0,6 · d |
| Shear load | - | [kN] | - | 8,0 | 8,0 | 8,0 |

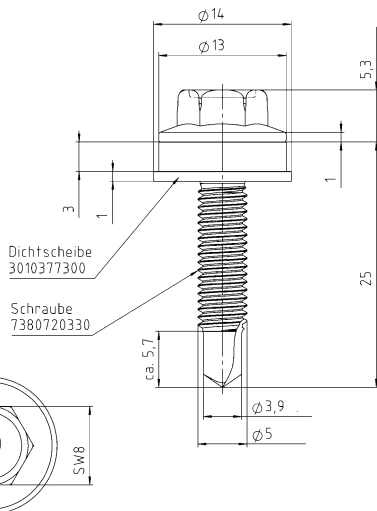


Figure 2.1: JT6-2/2-5,0xL Vario

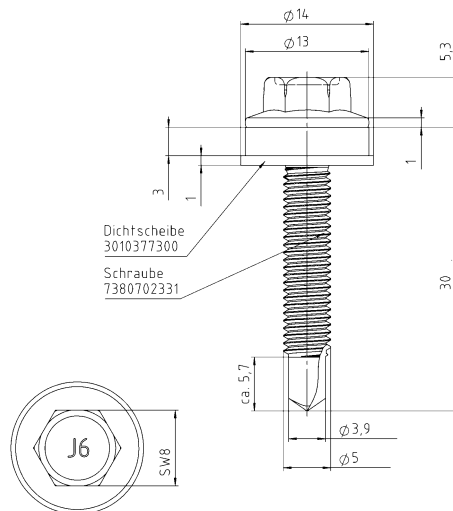


Figure 2.2: JT9-2/5-5,0xL Vario

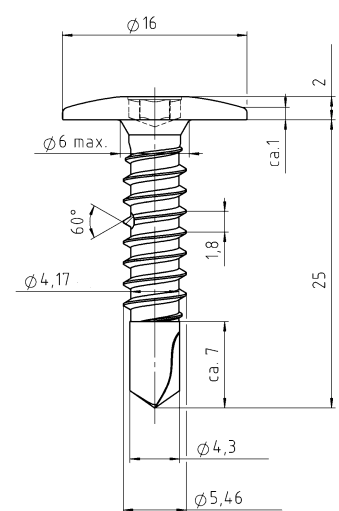


Figure 2.3: JT4-LT-3-5,5xL KD16

Installation and additional provisions

Subframe and skin element fixing

Annex 6

Subframe Profiles

| Geometry characteristics | | | | | |
|--------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------------|
| Form | L - Profile without grooves | L - Profile with grooves | T - Profile without grooves | T - Profile with grooves | T - Profile with grooves and slot |
| | Z - Profile with grooves | Ω - Profile with grooves | C - Profile with grooves | LB - Profile | Y - Profile with grooves |

| Dimensions | Width [mm] | Height [mm] | Thickness t [mm] | Cross section A [mm ²] | Weight m [kg/m] | Inertia of profile section | | Drawing - [-] |
|-----------------------------------|---------------|----------------|------------------------|---|-----------------------|---------------------------------------|---------------------------------------|---------------------|
| | | | | | | I _{xx} [cm ⁴] | I _{yy} [cm ⁴] | |
| L - Profile without grooves | 40 | 60 | 2 | 196 | 0,529 | 7,52 | 2,78 | Figure 3.1 |
| L - Profile with grooves | 40 | 60 | 2 | 184 | 0,497 | 7,09 | 2,62 | Figure 3.2 |
| T - Profile without grooves | 100 | 60 | 2 | 317 | 0,855 | 9,71 | 15,38 | Figure 3.3 |
| T - Profile with grooves | 120 | 60 | 2 | 355 | 0,958 | 9,26 | 26,92 | Figure 3.4 |
| T - Profile with grooves and slot | 120 | 60 | 2 | 368 | 0,994 | 8,99 | 29,63 | Figure 3.5 |
| Z - Profile with grooves | 40 | 27 | 2 | 184 | 0,497 | 2,43 | 4,74 | Figure 3.6 |
| Ω - Profile with grooves | 120 | 27 | 2 | 364 | 0,982 | 4,41 | 35,23 | Figure 3.7 |
| C - Profile with grooves | 20 | 66 | 2 | 224 | 0,604 | 12,31 | 1,08 | Figure 3.8 |
| LB - Profile | 50 | 27 | 1,6 | 240 | 0,648 | 4,96 | 10,18 | Figure 3.9 |
| Y - Profile without grooves | 110 | 87 | 2 | 468 | 1,264 | 21,62 | 35,03 | Figure 3.10 |
| Y - Profile with grooves | 120 | 87 | 2 | 468 | 1,264 | 24,82 | 36,83 | Figure 3.11 |

| Material properties | Symbol | Unit | Value | Reference |
|-------------------------------|-------------------|----------------------|-----------------------|------------------------|
| Type of material | - | [-] | EN AW 6063 - T66 | EN 1999-1-1 |
| Density | ρ | [kg/m ³] | 2.700 | EN 1999-1-1 |
| Modulus of elasticity | E | [MPa] | 70.000 | EN 1999-1-1 |
| Thermal expansion coefficient | α | [K ⁻¹] | 23,4*10 ⁻⁶ | EN 1999-1-1 |
| Elastic limit | R _{p0,2} | [MPa] | 200 | EN 1999-1-1 & EN 755-2 |
| Tensile strength | R _m | [MPa] | 245 | EN 1999-1-1 & EN 755-2 |
| Elongation | A | [%] | 8 | EN 1999-1-1 & EN 755-2 |
| Elongation | A _{50mm} | [%] | 6 | EN 1999-1-1 & EN 755-2 |
| Brinell hardness | H | [HB] | 75 | EN 1999-1-1 |

Installation and additional provisions

Subframe profiles

Annex 7

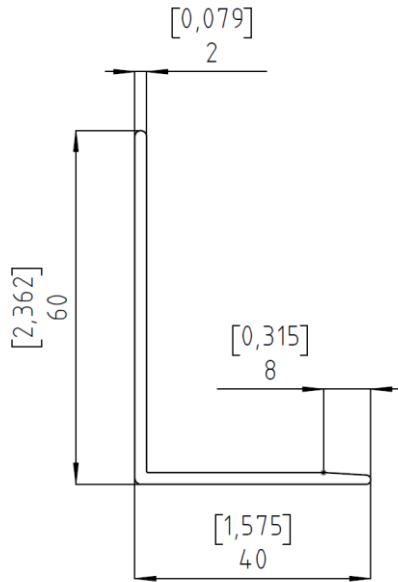


Figure 3.1: L – Profile without grooves

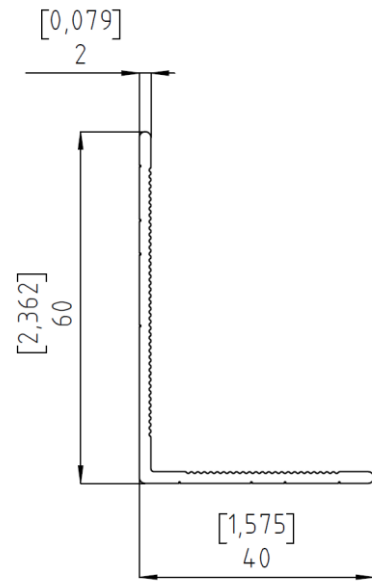


Figure 3.2: L – Profile with grooves

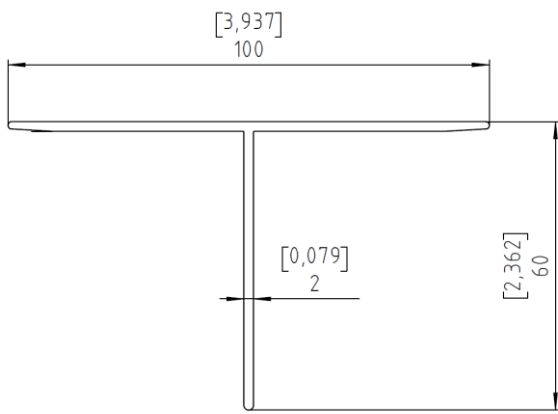


Figure 3.3: T – Profile without grooves

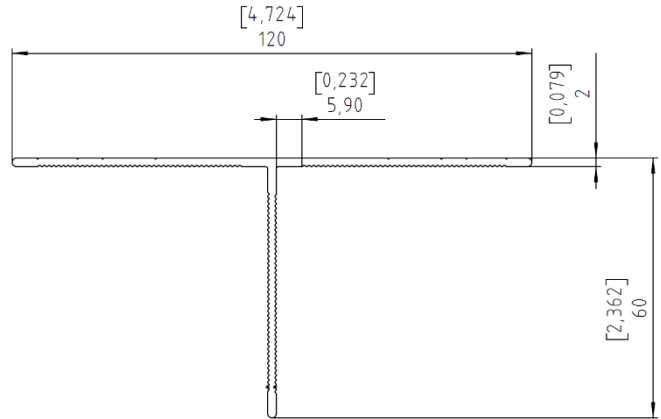


Figure 3.4: T – Profile with grooves

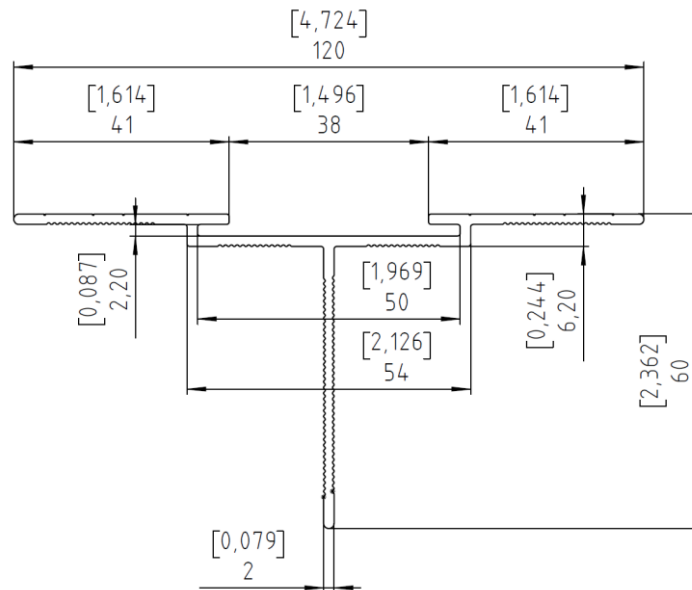


Figure 3.5: T – Profile with grooves and slot

| | |
|------------------------|---------|
| Terms and explanations | Annex 8 |
| Subframe profiles | |

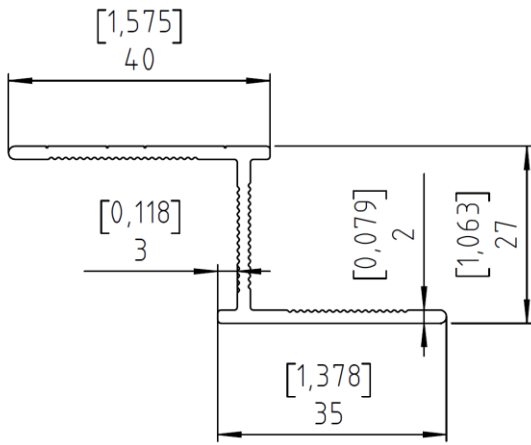


Figure 3.6: Z – Profile with grooves*

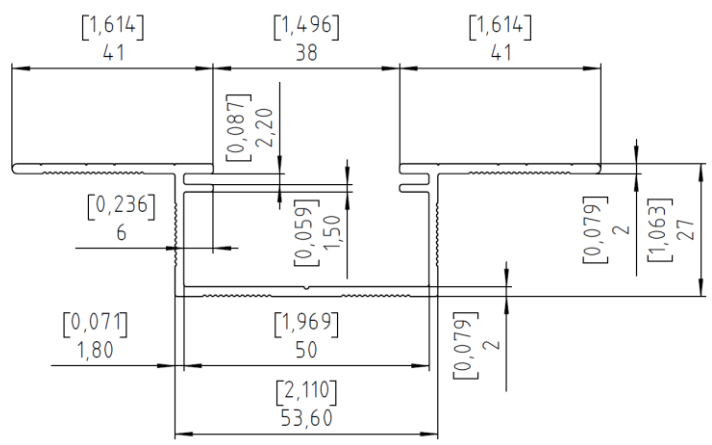


Figure 3.7: Ω – Profile with grooves*

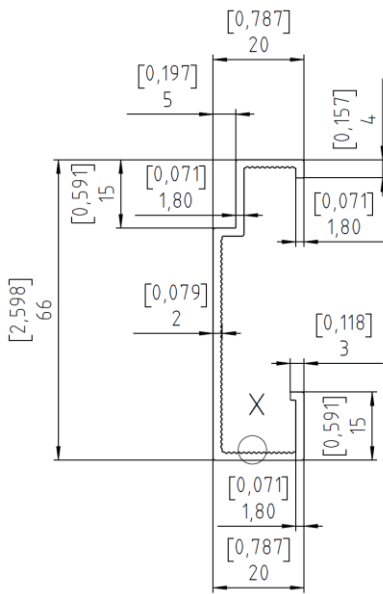


Figure 3.8: C – Profile with grooves*

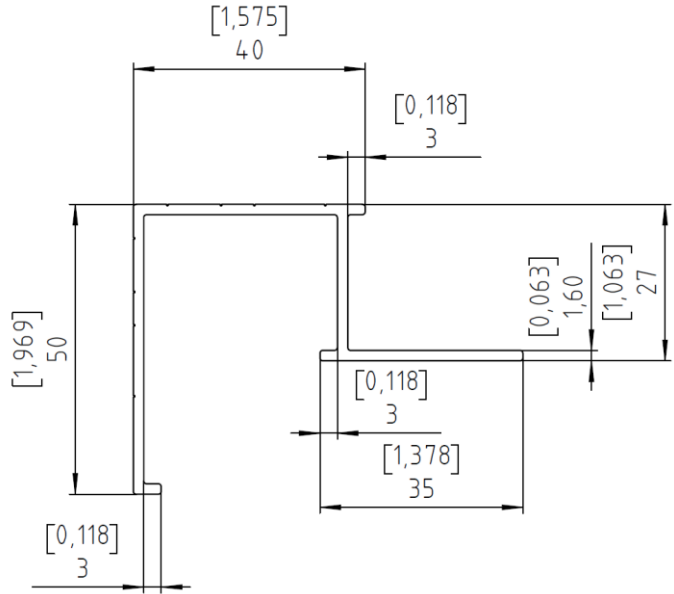


Figure 3.9: LB – Profile

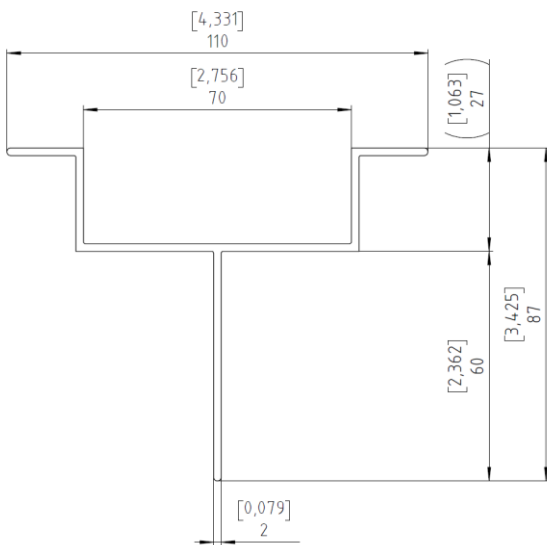


Figure 3.10: Y – Profile without grooves

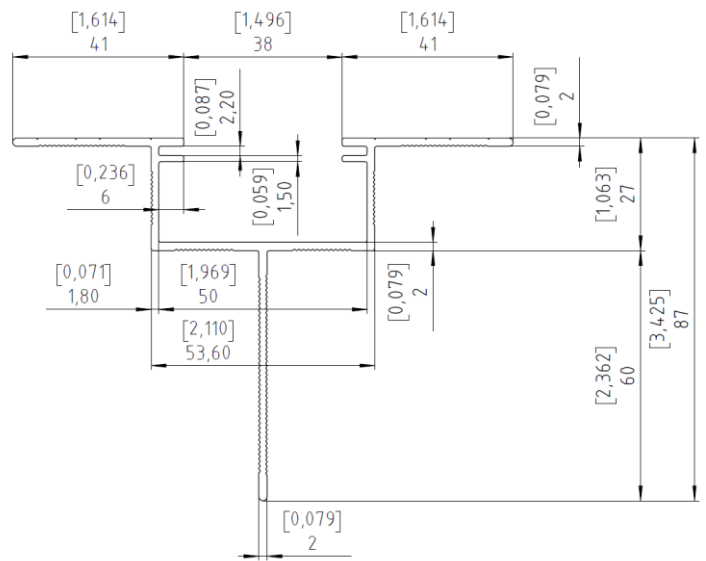


Figure 3.11: Y – Profile with grooves

*Profile can be pre-punched.

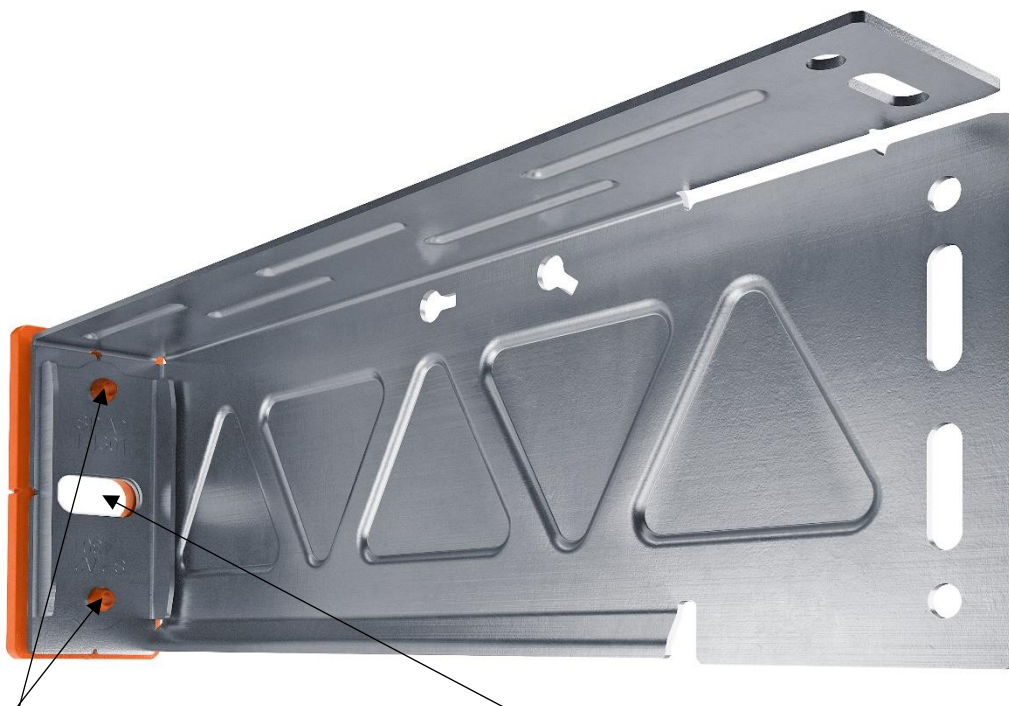
| | | |
|--|--|---------|
| Installation and additional provisions | | Annex 9 |
| Subframe profiles | | |

Installation of the substrate fixing (Anchoring element)

The fixings between subframe and substrate are not part of the kit, therefore have not been assessed. Even so it is important to define type position and number of the anchorage according to the substrate material and the resistance required. CE marking according to the ETA via EAD is recommended.

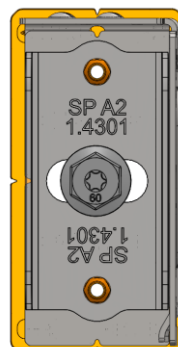
Substrate fixings or anchoring elements are not part to the kit, but they are needed for the execution of the CROSSFIX subframe kit as fixings between the brackets and the substrate. The main specifications to be met by these products to be used with the kit are:

- Fixings must be chosen according to the substrate or supporting structure material (concrete, masonry, timber or metal frame, etc.) and the resistance required due to wind load and dead load (pull-out and shear strength respectively).
- Fixings between the brackets and the substrate may be CE marked according to an ETA on the basis of the relevant EAD (see www.eota.eu) as long as this CE marking is mandatory in the Member State where the kit is used.



Anchoring points for metal or timber substrate
Anchor example: JF6-6,8xL E16
(See also Figure 4.7 and 4.8)

Anchoring point for concrete or masonry
Anchor example: SDF-KB-10HxL
(See also Figure 4.1 to 4.6)



Terms and explanations

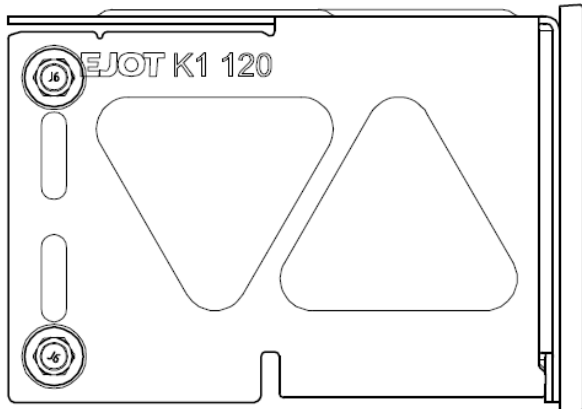
Installation of subframe fixing

Annex 10

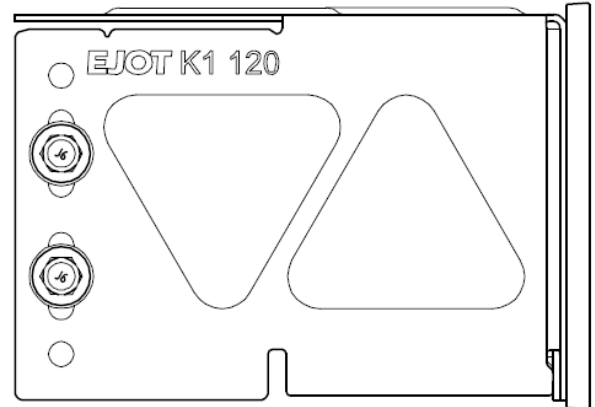
Installation of the subframe fixing

Fixed and sliding points must be installed central in the correct holes as shown, the positions of the fixed and sliding brackets are given by the planning documents.

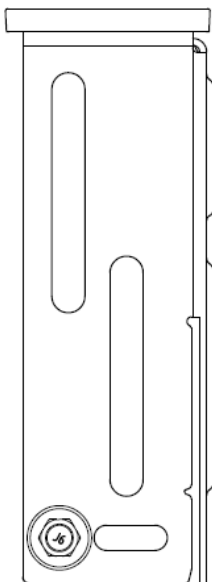
Fixed point



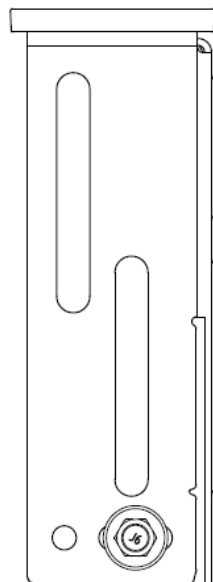
Sliding point



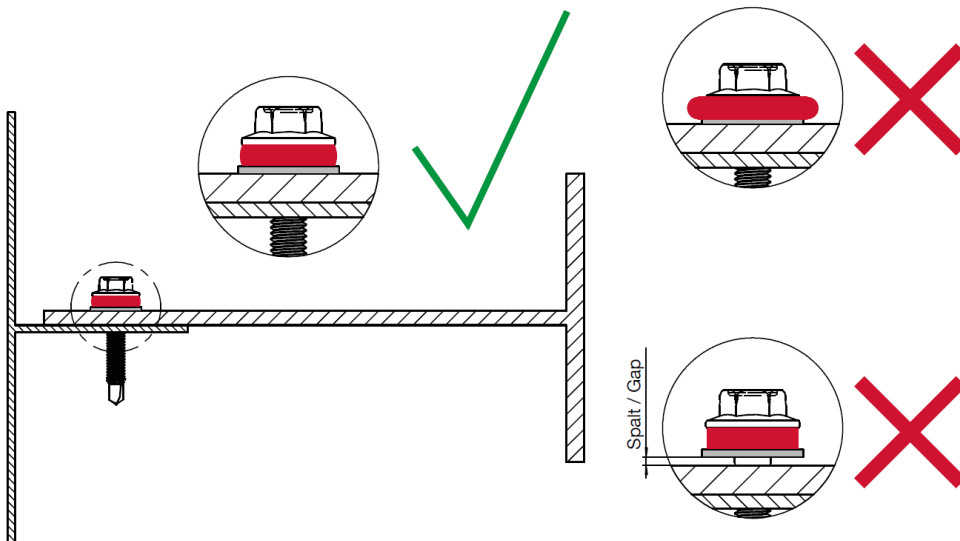
Fixed point



Sliding point



The correct compression of the JT6-2/5-5,0xL Vario and JT9-2/5-5,0xL Vario screw is important for its function



Terms and explanations

Installation of subframe fixing

Annex 11

Installation of the skin element fixing

The skin element must be fixed constraint-free, using fixed and sliding points.

The combination of the skin element fixing JT4-LT-3-5,5xL KD16 with EJOT centering grommets Ø11 is recommended to ensure centering of the screw, prevent damage on the panel surface and generate defined fixed and sliding points.

The screwing process needs to be stopped once the screw head touches the surface to ensure moderate pressure within the connection and allow for expansion or contraction movements.



Terms and explanations

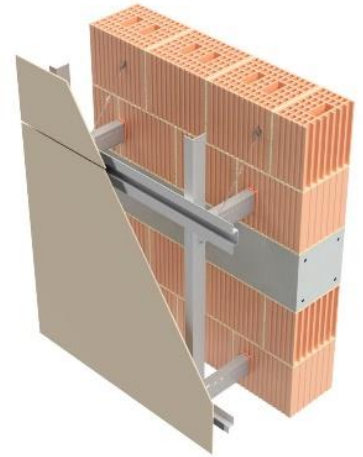
Installation of subframe fixing

Annex 12

Overview of assembly examples



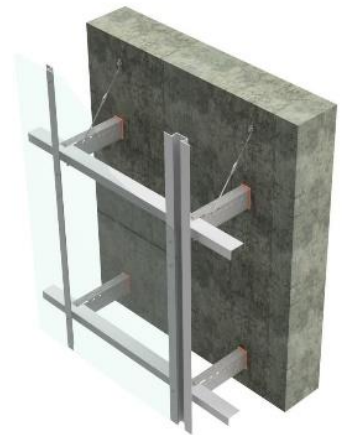
CF-U-102 (Figure 4.1)



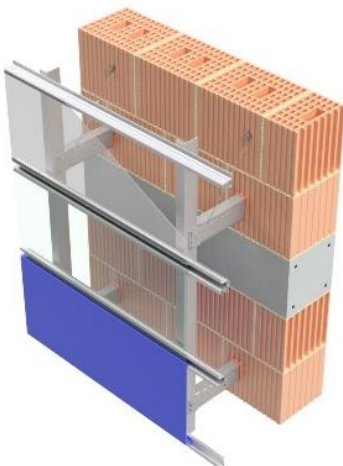
CF-S-301 (Figure 4.2)



CF-U-108 (Figure 4.3)



CF-U-400 (Figure 4.4)



CF-U-104 (Figure 4.5)



CF-U-503 (Figure 4.6)

Terms and explanations

Overview of system examples

Annex 13

Assembly examples and details of execution

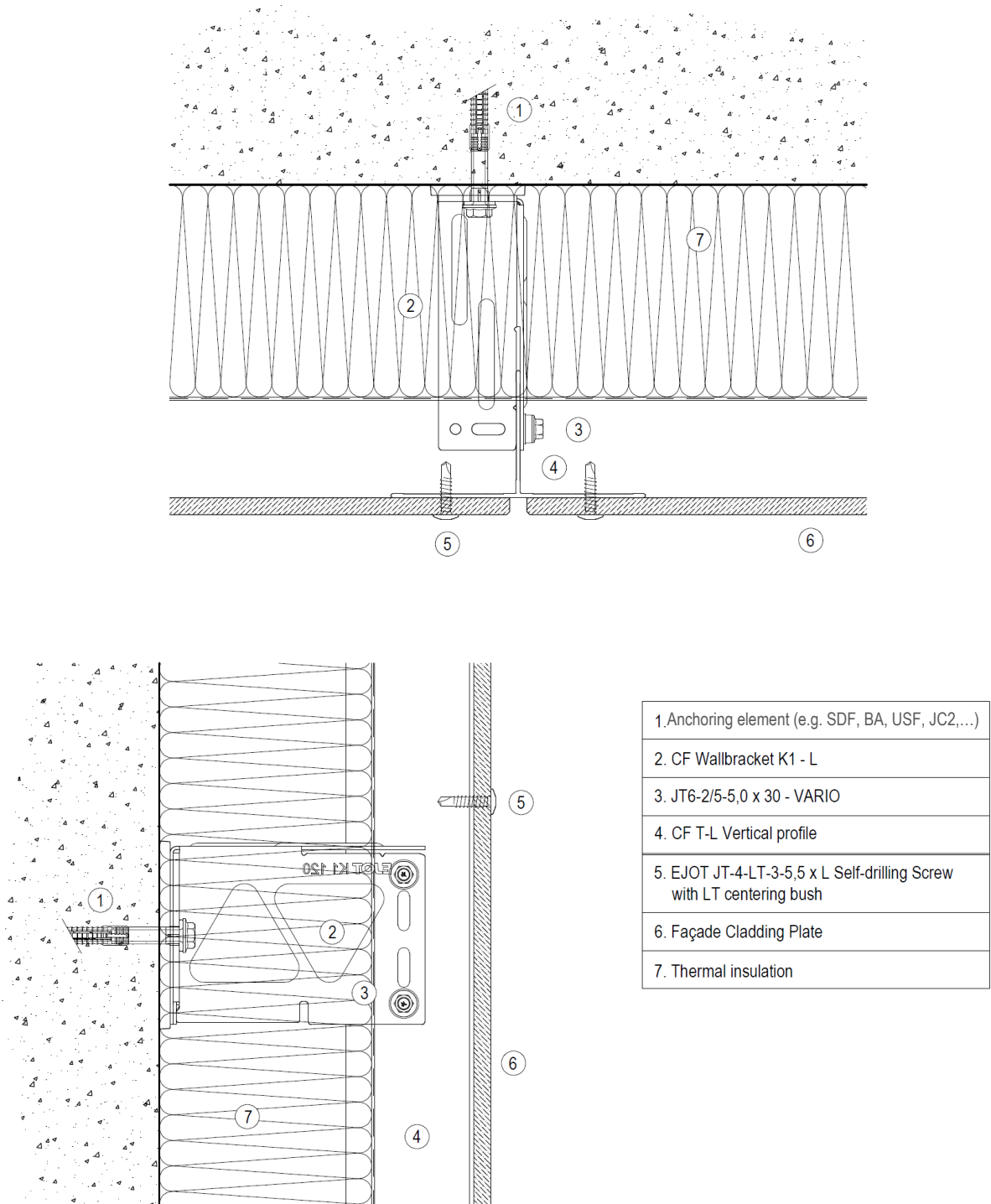


Figure 4.1: CF-U 102

Terms and explanations

System examples and Details of execution

Annex 14

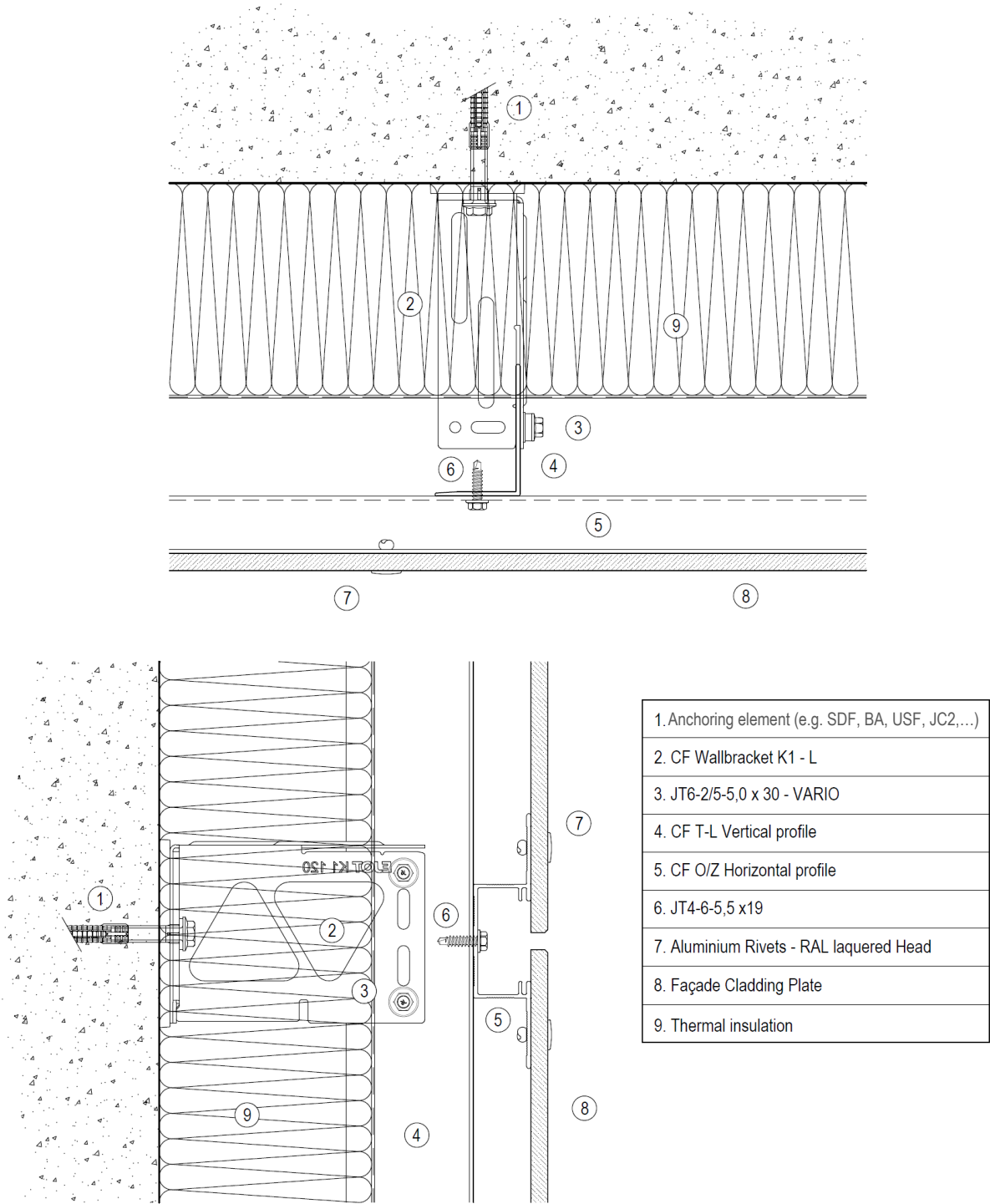


Figure 4.2: CF-S 301

Terms and explanations

System examples and Details of execution

Annex 15

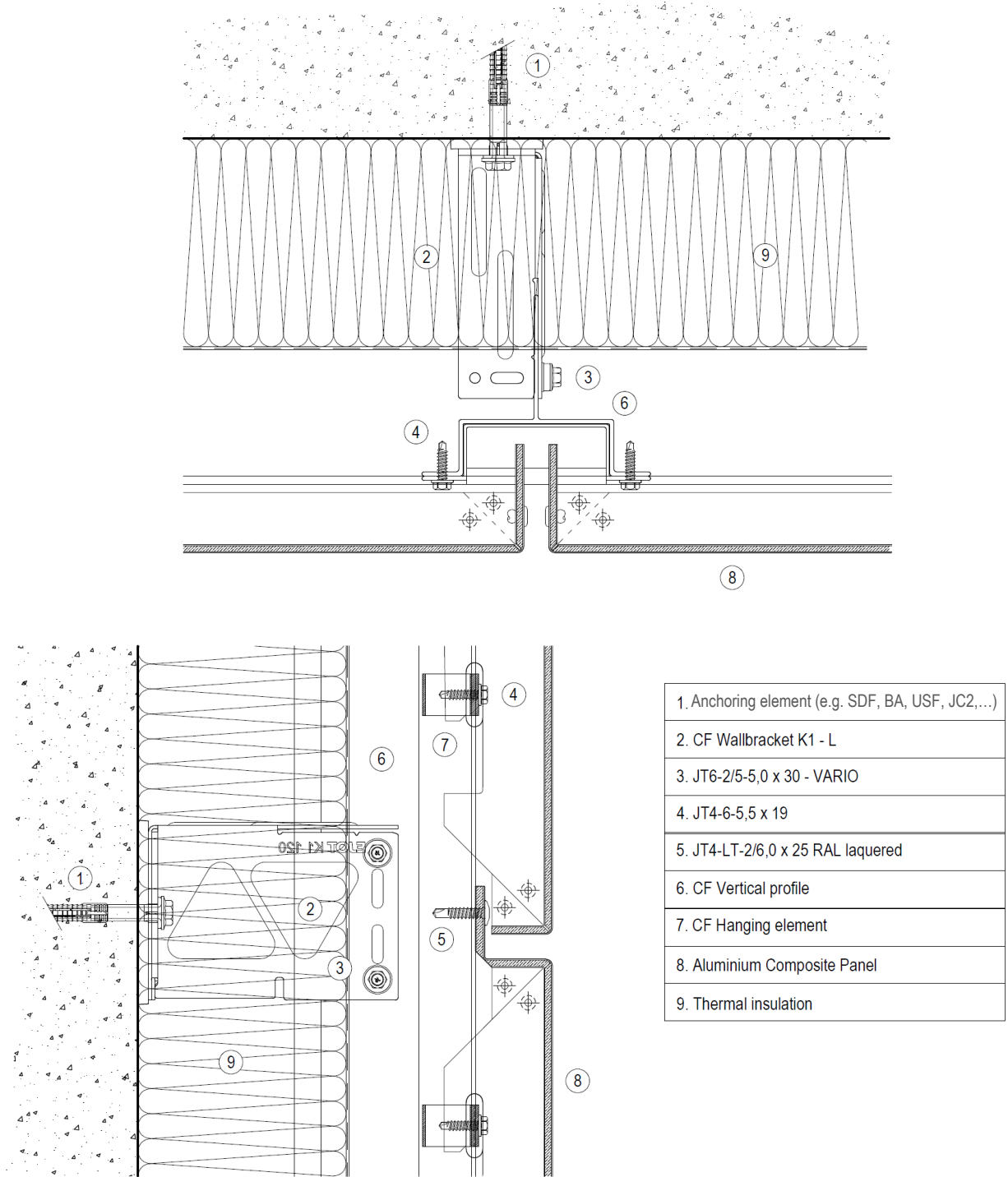
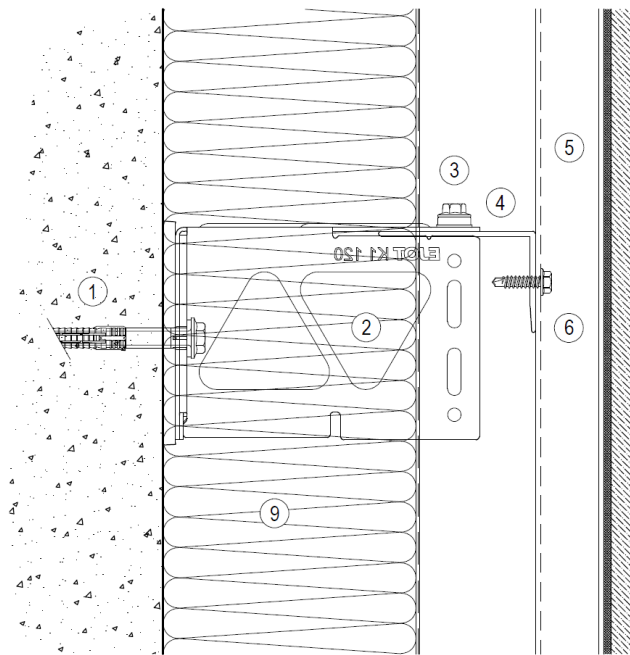
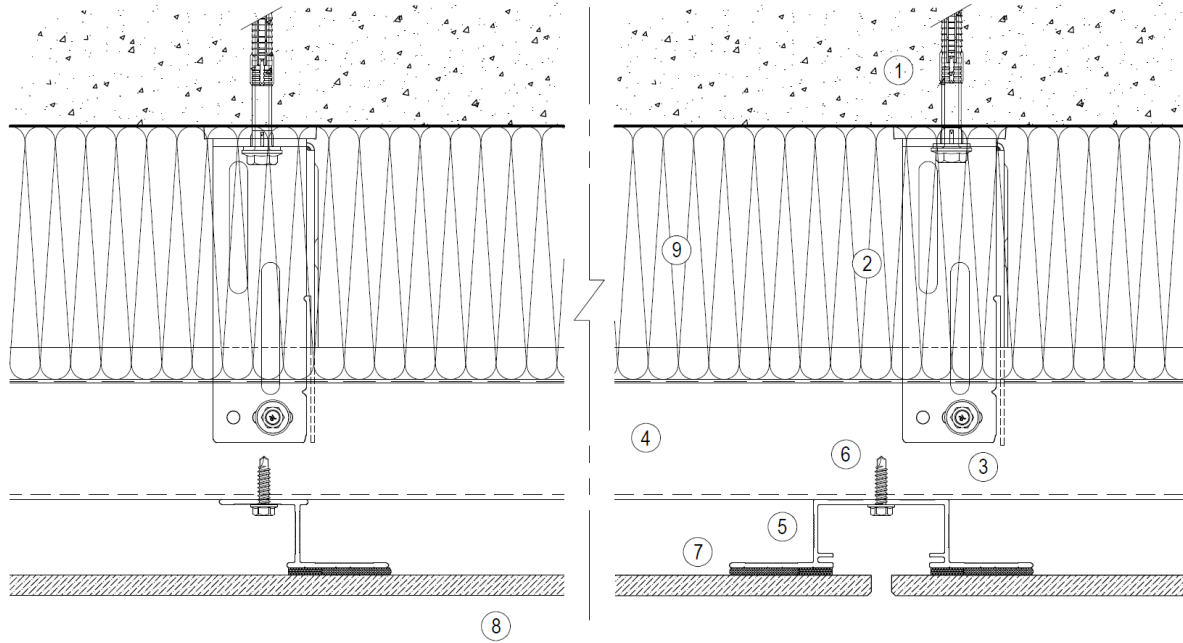


Figure 4.3: CF-U 108

Terms and explanations

System examples and Details of execution

Annex 16



| |
|---|
| 1. Anchoring element (e.g. SDF, BA, USF, JC2,...) |
| 2. CF Wallbracket K1 - L |
| 3. JT6-2/5-5,0 x 30 - VARIO |
| 4. CF L Horizontal profile |
| 5. CF O/Z Vertical profile |
| 6. JT4-6-5,5 x 19 |
| 7. Structural Bonding System |
| 8. Façade Cladding Plate |
| 9. Thermal insulation |

Figure 4.4: CF-U 400

Terms and explanations

System examples and Details of execution

Annex 17

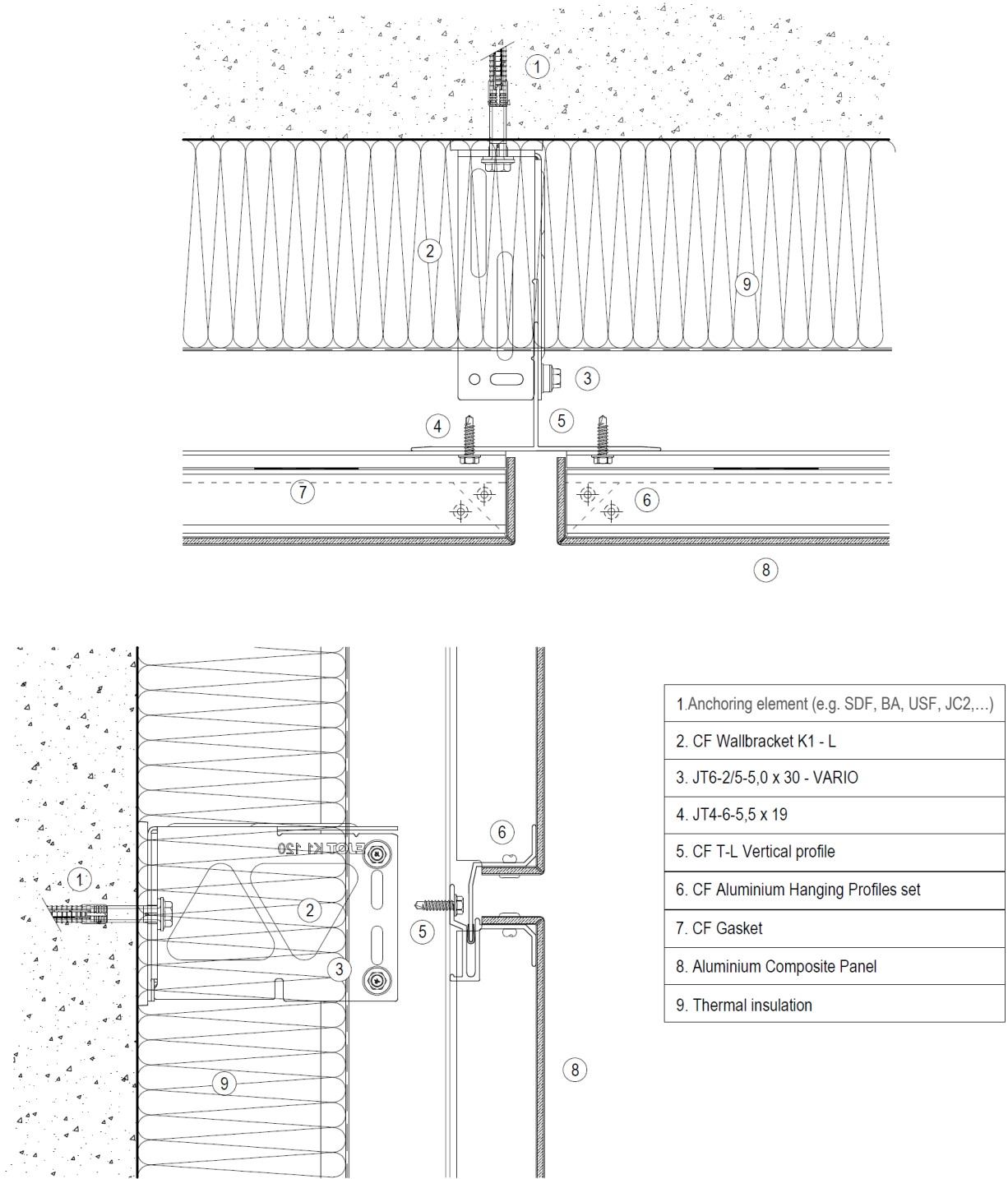
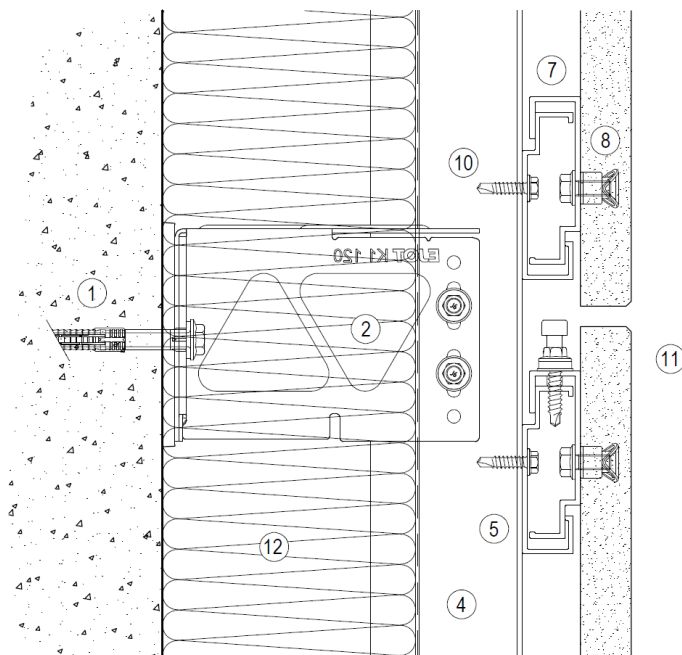
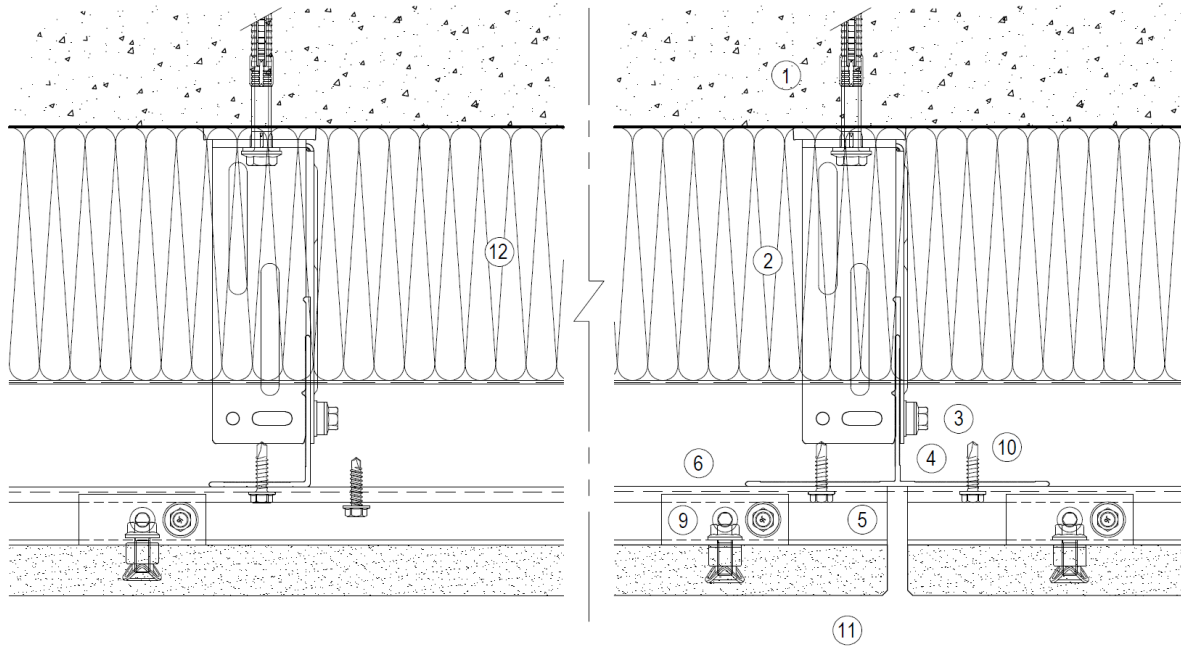


Figure 4.5: CF-U 104

Terms and explanations

System examples and Details of execution

Annex 18



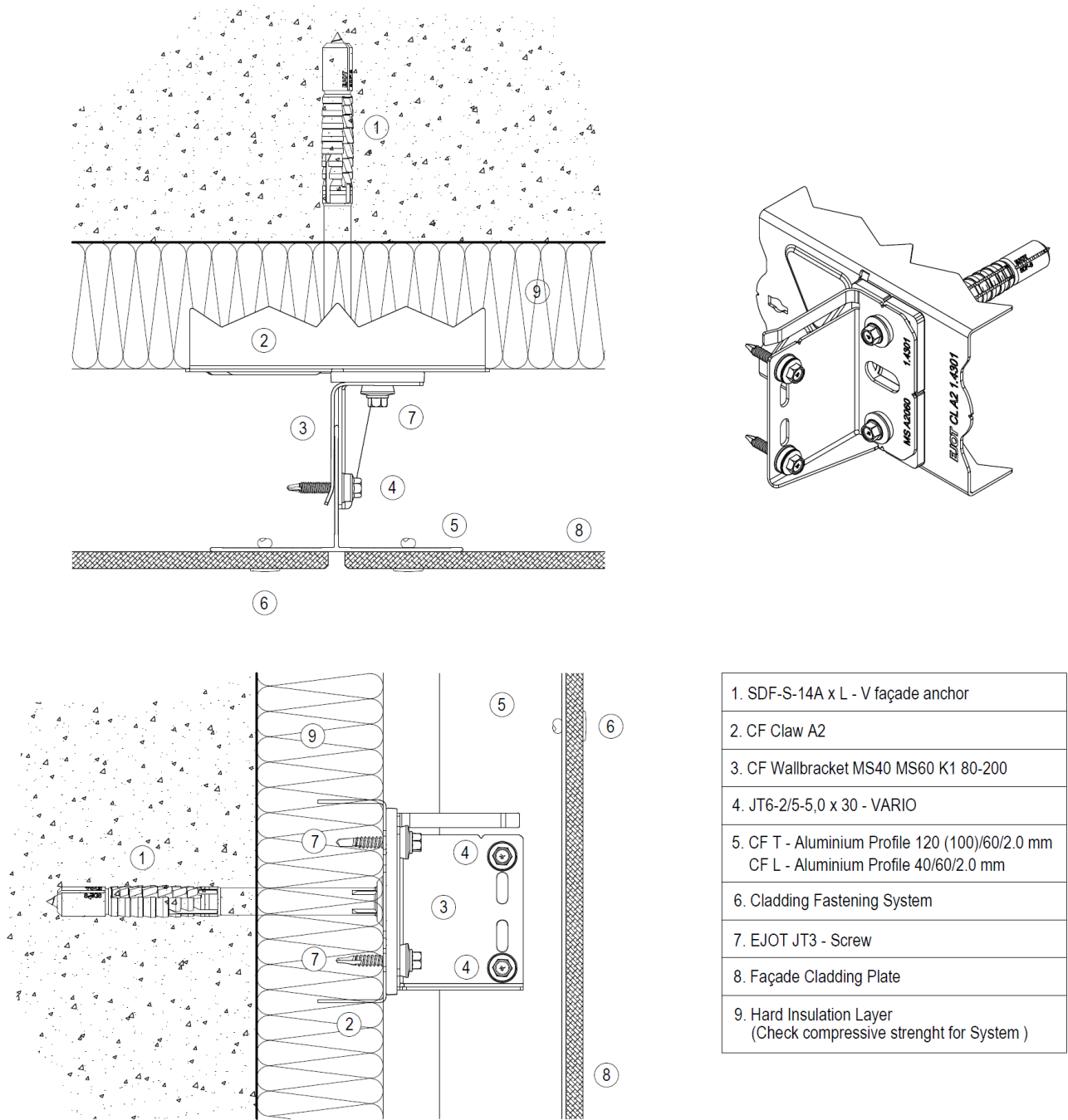
| |
|---|
| 1. Anchoring element (e.g. SDF, BA, USF, JC2,...) |
| 2. CF Wallbracket K1 - L |
| 3. JT6-2/5-5,0 x 30 - VARIO |
| 4. CF L/T Vertical profile |
| 5. CF C Profile - Fixing rail |
| 6. CF C-A Top adjustable clip |
| 7. CF C-A Bottom clip |
| 8. EU-I-13 x L A4 Undercut Anchor |
| 9. M6x20 A2 Adjustment screw |
| 10. JT4-6-5,5 x 22 |
| 11. Façade Cladding Plate |
| 12. Thermal insulation |

Figure 4.6: CF-U 503

Terms and explanations

System examples and Details of execution

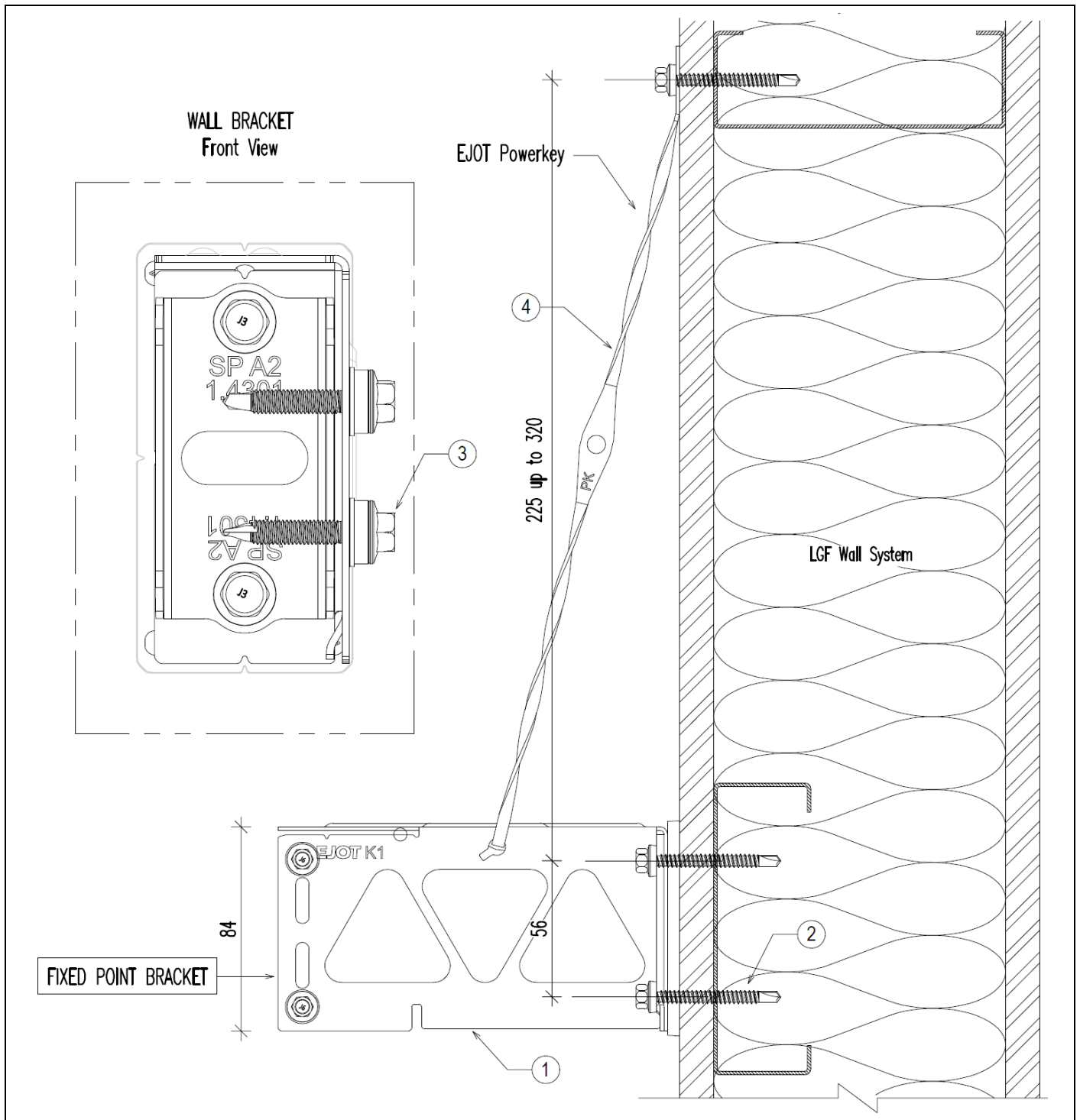
Annex 19



| |
|--|
| 1. SDF-S-14A x L - V façade anchor |
| 2. CF Claw A2 |
| 3. CF Wallbracket MS40 MS60 K1 80-200 |
| 4. JT6-2/5-5,0 x 30 - VARIO |
| 5. CF T - Aluminium Profile 120 (100)/60/2.0 mm CF L - Aluminium Profile 40/60/2.0 mm |
| 6. Cladding Fastening System |
| 7. EJOT JT3 - Screw |
| 8. Façade Cladding Plate |
| 9. Hard Insulation Layer (Check compressive strenght for System) |

Figure 4.7: CROSSFIX Claw anchoring example on ETICS

| | |
|--|----------|
| Terms and explanations | Annex 20 |
| System examples and Details of execution | |



CROSSFIX SYSTEM ELEMENTS

| Nr | Description |
|----|------------------------|
| 1 | CF Wall bracket K1 - L |
| 2 | JT3-3-5,5XL E16 |
| 3 | JT6-2/5-5,0X30 - VARIO |
| 4 | EJOT Powerkey |

Figure 4.8: Anchoring example on metal substrate

| | | |
|--|--|----------|
| Terms and explanations | | Annex 21 |
| System examples and Details of execution | | |

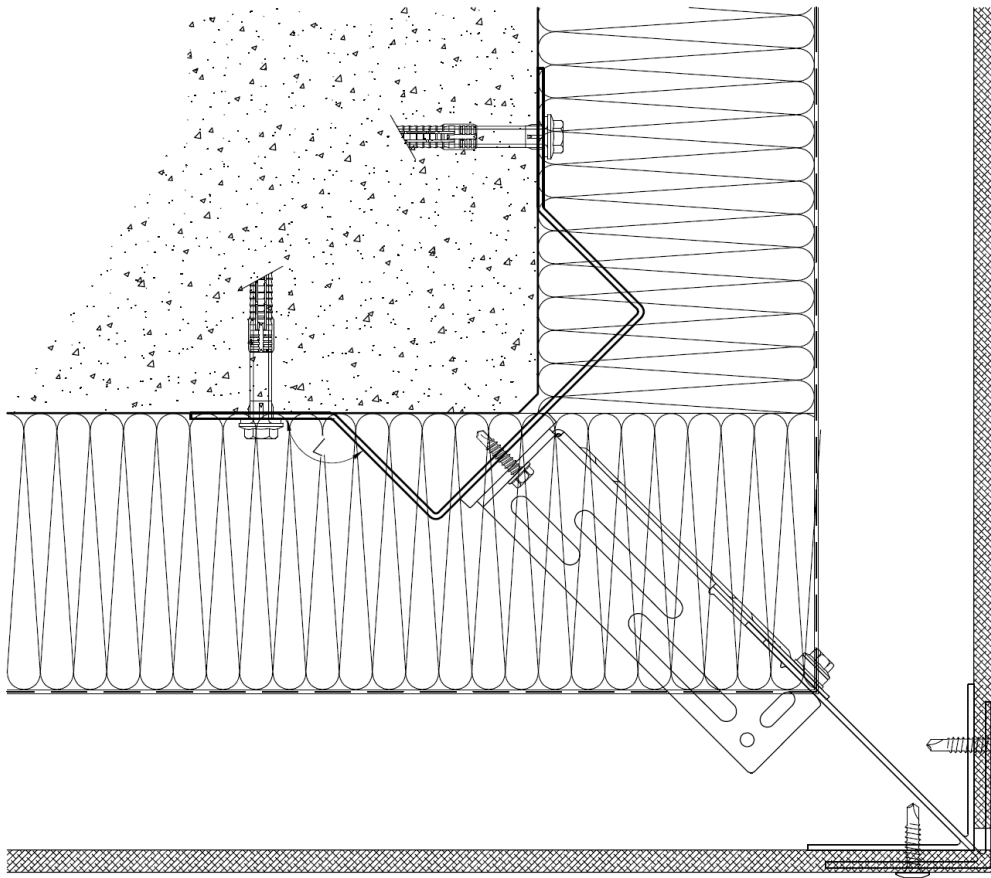


Figure 4.9: Example for corner support (Corner bracket)

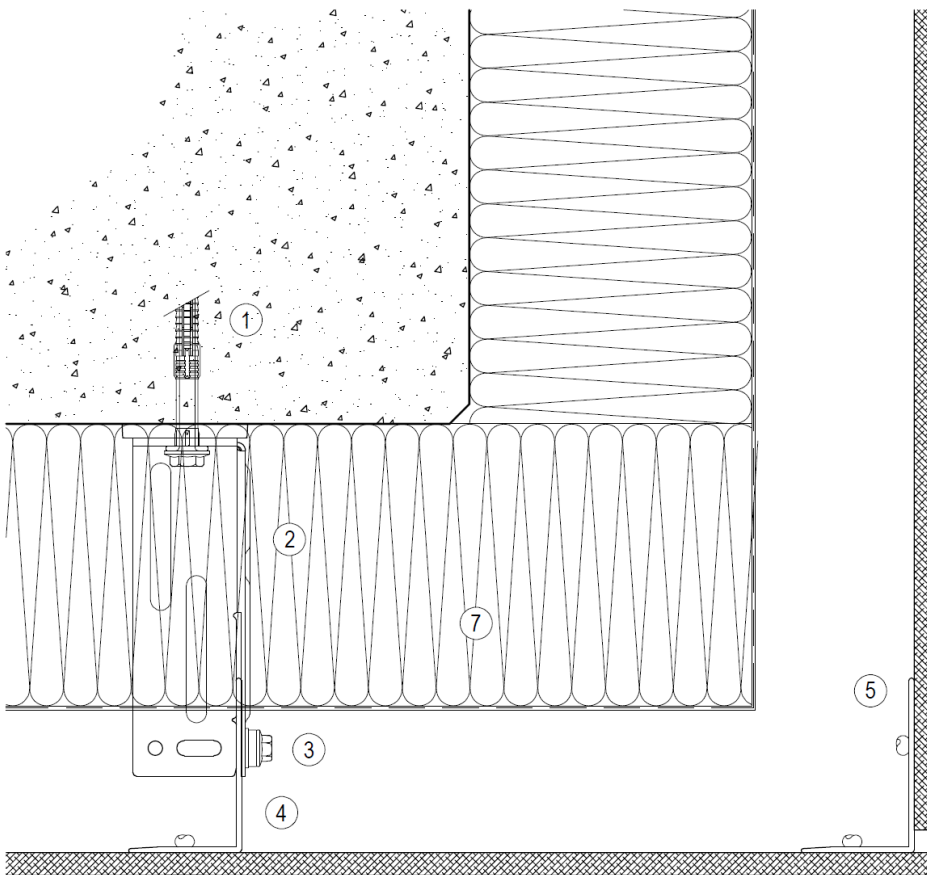


Figure 4.10: Example for corner support (Corner joint)

Terms and explanations

System examples and Details of execution

Annex 22

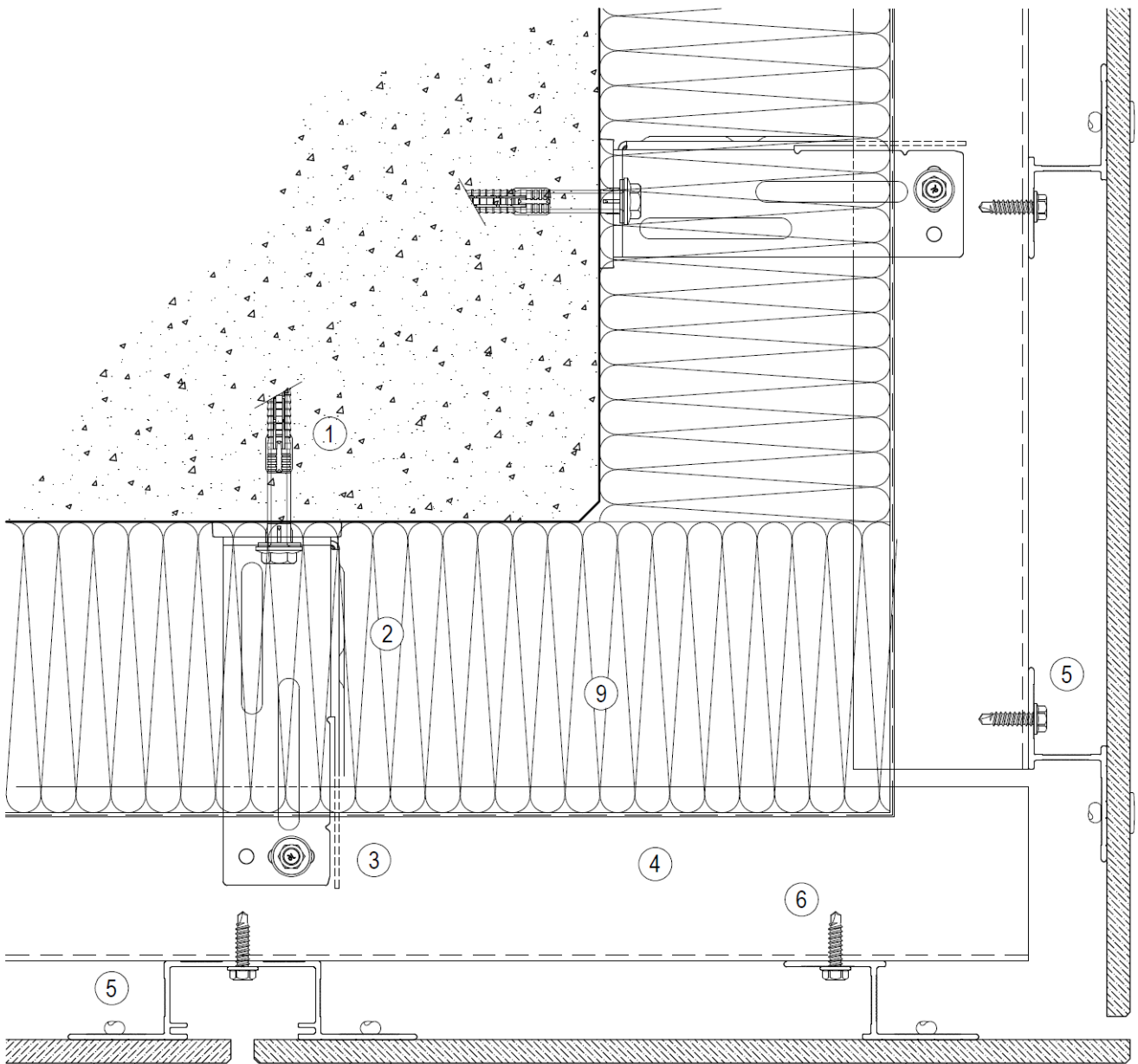


Figure 4.11: Example for corner support (Two-layer installation)

Terms and explanations

System examples and Details of execution

Annex 23

Design

The design of the CROSSFIX subframe system, its anchorage, subframe and skin element fixings should consider:

- The verification of the designed system by means of calculation, considering the mechanical characteristic values of the kit components to resist the actions (dead loads, wind loads, etc.) applying on the specific components. National safety factors and other national provisions must be followed.
- The actions according to the EN 1991 (EC1) series of standards and the respective national annexes must be considered.
- The ultimate limit state and serviceability limit state shall be verified in accordance with EN 1990 using the resistance values from this approval.
- The selection and verification of the anchors between the brackets and the external walls (substrate), taking into account the substrate material and the minimum resistance required (pull-out and shear resistance) according to the envisaged actions obtained from the mechanical calculation of the designed system.
- The anchorage is verified according to the specifications of the ETA or national approval of the respective anchorage element. The anchor positions, depending on the substrate are shown in annex 10.
- Power keys are an optional component and used on fixed point brackets to increase resistance.
- Alternative skin element fixings are possible, therefore consider the element manufacturers approval and installation instructions.
- Multi-layer substructures (vertical / horizontal or horizontal / vertical) can be calculated in accordance with EN 1999-1-1.
- The system must allow for expansion and contractions movements, using fixed and sliding points according to annex 11.
- The system examples shown are on annex 13 to 23 are possible solutions, but the system is not limited to the examples given.

Storage and handling

- All system elements should be handled with care, and in such way that handling does not cause any damage to the element that could, in term, have a negative influence on element's chemical and/or physical properties, or to an entire system it will be used in.
- All aluminum elements (i.e., profiles) should be stored in a way that prevents a direct atmospheric and/or corrosive influence and/or direct contact with other organic or inorganic material that may harm the profile.
- It is suggested that all aluminum profiles, pre installation, be protected from natural occurring oxidation and/or corrosion by applying electrolytic passivation process of anodization or powder coating its surface area.

| | |
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| Terms and explanations | Annex 24 |
| Design, Storage and handling | |

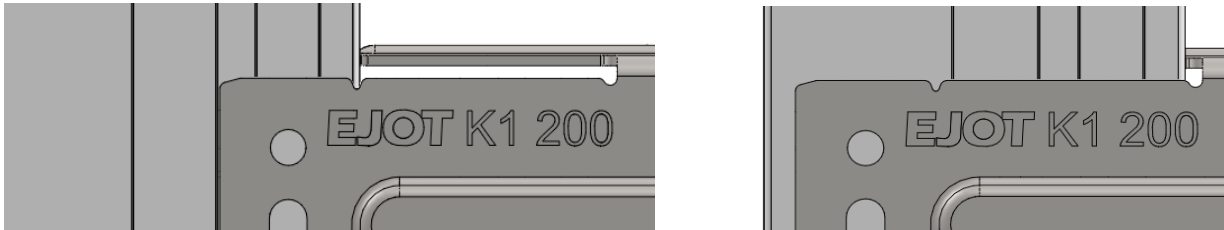
Installation and Maintenance

Installation of the subframe system should be carried out:

- According to the specifications of the manufacturer and using the components specified in this ETA.
- In accordance with the design and drawings prepared for the specific works. The manufacturer should ensure that the information on these provisions is given to those concerned.
- By appropriately qualified staff and under the supervision of the technical responsible of the specific works.
- If the façade panel will be mechanically fixed, EJOT recommends aluminum profiles with decorative protection layer to be installed (anodization of powder coating).

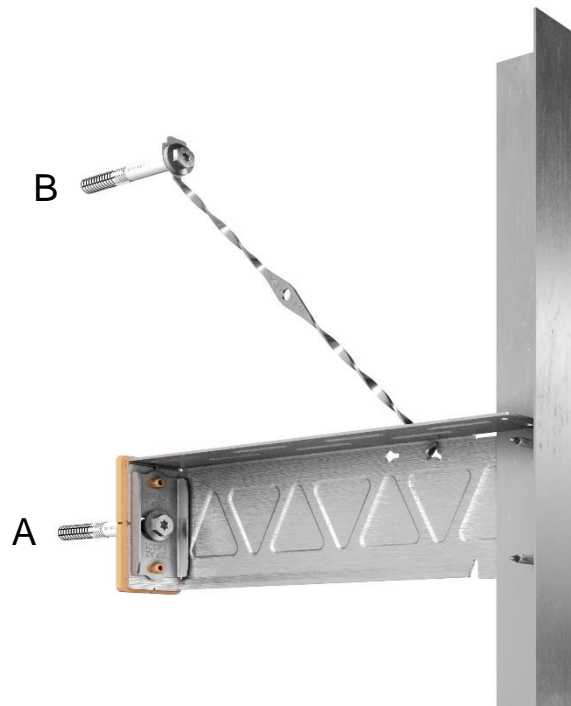
Profile insertion depth marking on the bracket

The minimal and maximal profile insertion is marked on the brackets and ensures correct edge distance of the subframe fixing to the profile.



Tolerance compensation with the Powerkey

In case of small inaccuracies of the anchor distance (A and B) the Powerkey can be twisted up to two revolutions to preload anchor B.



Maintenance

Maintenance of the subframe system includes inspections on site, considering the following aspects:

- the appearance of any permanent irreversible deformation.
- the presence of corrosion or presence of water accumulation.

When necessary, any repair to localized damaged areas must be carried out with the same components and following the repair instructions given by the manufacturer.

| | |
|------------------------------|----------|
| Terms and explanations | Annex 25 |
| Installation and maintenance | |