BBA

Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-22/6562 of 03/02/2023
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	Hilti S-HP02SS 7,2x9
Product family to which the construction product belongs:	Product code 33 - Fixings Fastener for the rear fixing of façade panels made of high-pressure decorative laminates (HPL) according to EN 438-7
Manufacturer:	Hilti Corporation Feldkircherstrasse 100, 9494 Schaan Liechtenstein
Manufacturing plant(s):	Hilti AG, Plant 8040
This UK Technical Assessment contains:	17 pages including 10 annexes which form an integral part of the document
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330030-00-0601 Fastener of external wall claddings

1. **Technical description of the product**

   The Hilti S-HP02SS 7,2x9 is a mechanical fastener made of corrosion resistant stainless steel 1.4401 (A4) according to EN 10088-2: 2014 for the rear fixing of façade panels made of high-pressure decorative laminates (HPL) according to EN 438-7: 2005.

   The Hilti S-HP02SS 7,2x9 fastener requires a pre-drilled hole in the HPL façade panel. The fastener is screwed into the pre-drilled hole and taps its own internal mating threads into the HPL façade panel. For pre-drilling the hole in the HPL façade panels, the corresponding stepped drill bit TS-HP5,9-90HPL shall be used to ensure a defined hole geometry (hole depth and diameter).

   The product description is given in Annex A.

2. **Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)**

   The Hilti S-HP02SS 7,2x9 fastener is intended to be used for the rear fixing of façade panels made of high-pressure decorative laminates (HPL) according to EN 438-7: 2005 to metal substructures for which requirements for mechanical resistance and stability in the sense of Basic Works Requirements 1 of Regulation 305/2011 shall be fulfilled. The façade panels shall correspond to the drawings and specifications of this UK Technical Assessment. The intended use specifications of the fastener are detailed in Annex B1.

   The façade panels fixed by the Hilti S-HP02SS 7,2x9 fasteners may only be used for rear ventilated facades. Each façade panel shall be fixed technically strain-free with at least six Hilti S-HP02 SS 7,2x9 fasteners in a rectangular arrangement via single hangers on a capable substructure.

   The intended use of the fastener regarding environmental conditions results from its corrosion resistance class (CRC) according to EN 1993-1-4: 2006 + A2: 2020 and its UK national annex.

   The provisions made in this UK Technical Assessment are based on an assumed working life of the fastener of 50 years.

   The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body 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.

   Verification of stability of the clamp, the panel and the substructure including its fixing with wall fasteners and their anchorage in the construction works as well as verification of stability of the fixing of any thermal insulation material used are not the subject of this UKTA.

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

3.1. Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to breakout or pull-out failure under tension load	See Annex C2
Characteristic resistance to breakout or pull-out failure under shear load	See Annex C2
Characteristic resistance to breakout or pull-out failure under combined tension and shear load	See Annex B2
Edge distance and spacing	See Annexes C1 and C2
Durability	The fasteners are made from stainless steel 1.4401 – EN 10088-2: 2014. Corrosion Resistance Class (CRC) III in accordance with EN 1993-1-4: 2006 + A2: 2020.
Characteristic resistance to steel failure under tension and shear load	See Annex C1

3.2. Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1 – EN 13501-1: 2018
Resistance to fire	No performance assessed

3.3. Health, hygiene, and the environment (BWR 3)

Regarding dangerous substances, there may be additional legislative requirements falling outside of the scope of this document. These requirements must be complied with as appropriate.

3.4. Safety and accessibility in use (BWR 4)

Not relevant.

3.5. Protection against noise (BWR 5)

Not relevant.

3.6. Energy economy and heat retention (BWR 6)

Not relevant.

3.7. Sustainable use of natural resources (BWR 7)

No performance assessed.

4. **Assessment and verification of constancy of performance (hereinafter AVCP) system applied**

4.1. **System of assessment and verification of constancy of performance**
According to UKAD No. 330030-00-0601 and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011 as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 2+ applies.

5. **Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

5.1. **UKCA marking for the product/ system must contain the following information:**

- Identification number of the Approved Body
- Name/address of the manufacturer of the product/ system
- Marking with intention of clarification of intended use
- Date of marking
- Number of Certificate of Conformity of Factory Production Control
- UKTA number.

On behalf of the British Board of Agrément	
Date of Issue: 3 February 2023	**Hardy Giesler** Chief Executive Officer

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ANNEX

This annex applies to the product described in the main body of the UK Technical Assessment.

Annex A1 – Terms and symbols

Annex A2 – Installed fastener and fixing example

Annex A3 – System components, materials, stepped drill bit and drill hole geometry

Annex B1 – Specifications of intended use

Annex B2 – Specifications of intended use (continued)

Annex B3 – Installation

Annex B4 – General installation instruction for fastener Hilti S-HP02SS 7,2x9

Annex B5 – General installation instruction for fixing screw Hilti S-FP01SS 5,5x32

Annex C1 – Requirements to the HPL façade panels, Definition of edge distance and spacing. Characteristic tension and shear resistance to steel failure

Annex C2 – Characteristic tension and shear resistance to breakout or pull-out failure

Terms and symbols used in this UKTA

Fastener

h_s	=	embedment depth of the fastener
T_{inst}	=	installation torque

Façade panel

a_{rx}, a_{ry}	=	edge distance – distance of a fastener to the panel edge
a_x, a_y	=	spacing between outer fastener in adjoining fastener groups or spacing between single fasteners
h_{nom}	=	nominal thickness of façade panel
$\sigma_{Rk,L}$	=	characteristic value of the bending stress resistance of the façade panel (longitudinal) in accordance with EN ISO 178:2019
$\sigma_{Rk,T}$	=	characteristic value of the bending stress resistance of the façade panel (transverse) in accordance with EN ISO 178:2019
σ_{Rd}	=	design value of the bending stress resistance of the façade panel
σ_{Ed}	=	design value of the bending stress action of the façade panel
δ_w	=	maximum mass increase of the façade panel due to water absorption
L_x	=	greater length of the façade panel
L_y	=	smaller length of the façade panel

Design

N_{Rk}	=	characteristic fastener resistance to breakout or pull-out failure under tension load
$N_{Rk,s}$	=	characteristic fastener resistance to steel failure under tension load
V_{Rk}	=	characteristic fastener resistance to breakout or pull-out failure under shear load
$V_{Rk,s}$	=	characteristic fastener resistance to steel failure under shear load
N_{Rd}	=	design fastener resistance to breakout or pull-out failure under tension load
$N_{Rd,s}$	=	design fastener resistance to steel failure under tension load
V_{Rd}	=	design fastener resistance to breakout or pull-out failure under shear load
$V_{Rd,s}$	=	design fastener resistance to steel failure under shear load
$F_{Ek,G}$	=	characteristic action from dead load
$F_{Ek,W}$	=	characteristic action from wind load
$F_{Ed,II}$	=	design action parallel to the façade panel
$F_{Ed,\perp}$	=	design action perpendicular to the façade panel
N_{Ed}	=	design value of the tensile force acting on the fastener
V_{Ed}	=	design value of the shear force acting on the fastener
α_{F0}	=	increasing factor
α_{wet}	=	reduction factor
γ_M	=	partial factor
γ_G	=	partial factor permanent load
γ_Q	=	partial factor variable load

Hilti S-HP02SS 7,2x9	**Annex A1**
Terms and symbols	

Figure A1: Example of an installed fastener Hilti S-HP02SS 7,2x9

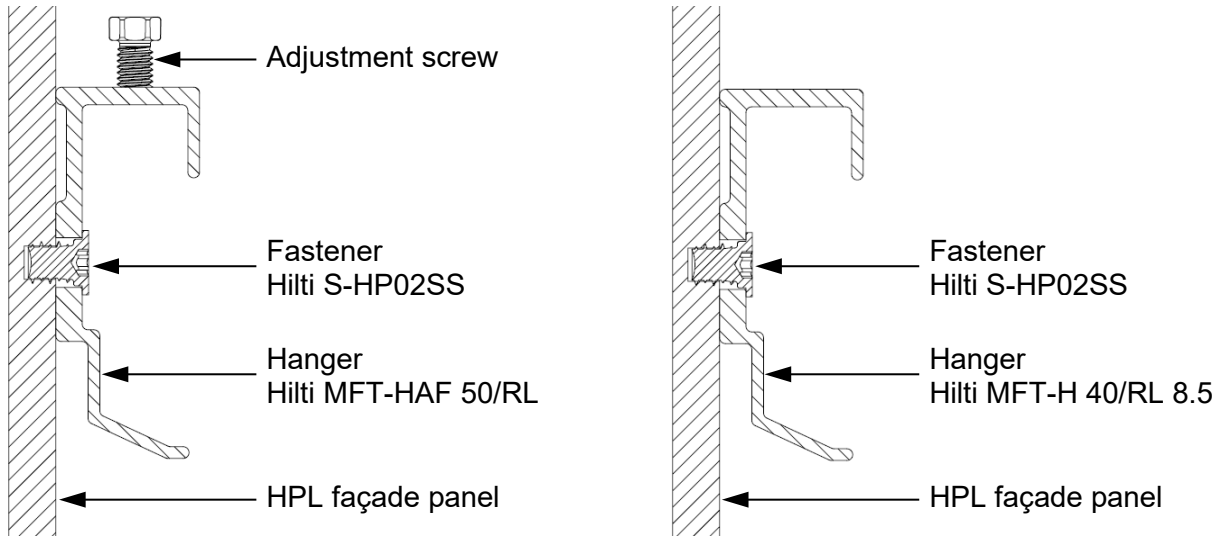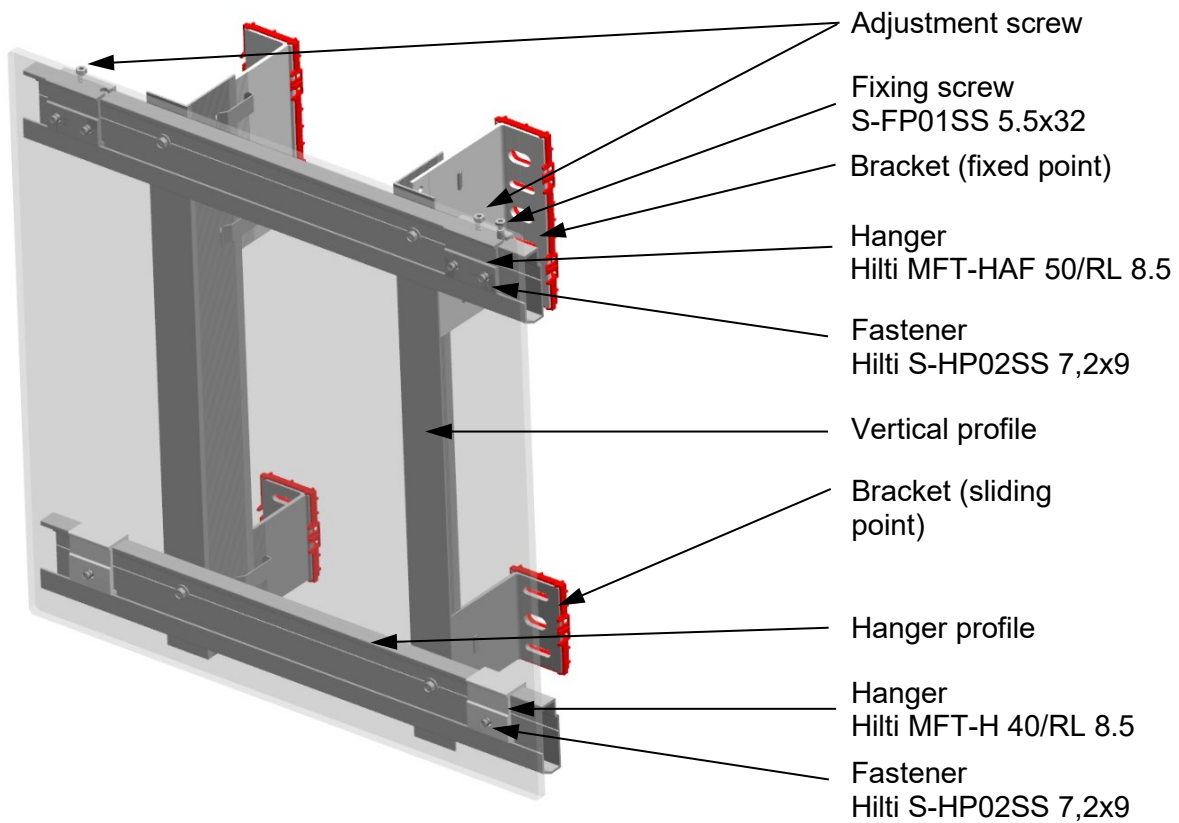1) Hanger Hilti MFT-HAF 50/RL 8.5

2) Hanger Hilti MFT-H 40/RL 8.5

Adjustment screw

Fastener
Hilti S-HP02SS

Hanger
Hilti MFT-HAF 50/RL

HPL façade panel

Fastener
Hilti S-HP02SS

Hanger
Hilti MFT-H 40/RL 8.5

HPL façade panel

Figure A2: Fixing example (façade panel on substructure)

Adjustment screw

Fixing screw
S-FP01SS 5.5x32

Bracket (fixed point)

Hanger
Hilti MFT-HAF 50/RL 8.5

Fastener
Hilti S-HP02SS 7,2x9

Vertical profile

Bracket (sliding point)

Hanger profile

Hanger
Hilti MFT-H 40/RL 8.5

Fastener
Hilti S-HP02SS 7,2x9

Hilti S-HP02SS 7,2x9	
Installed fastener and fixing example	**Annex A2**

Figure A3: System Components

1) Hanger Hilti MFT-HAF 50/RL 8.5
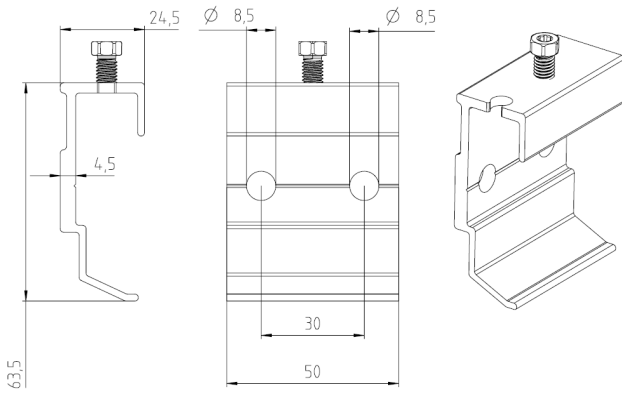
2) Hanger Hilti MFT-H 40/RL 8.5
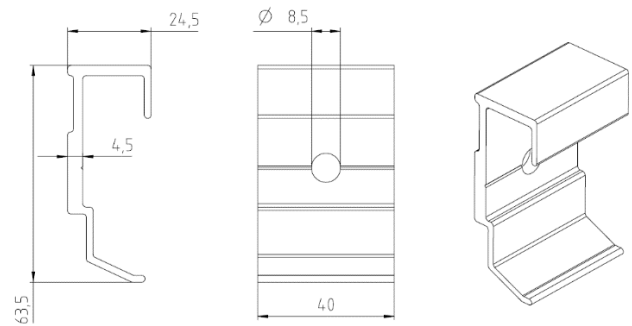
3) Fastener Hilti S-HP02SS 7,2x9
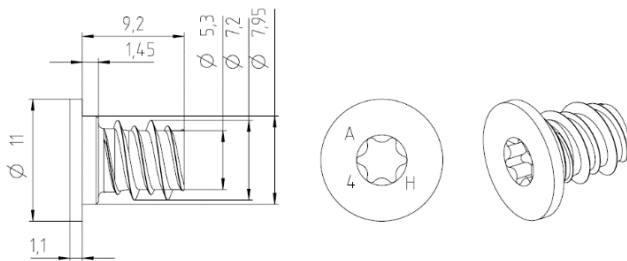
4) Fixing screw Hilti S-FP01SS 5,5x32
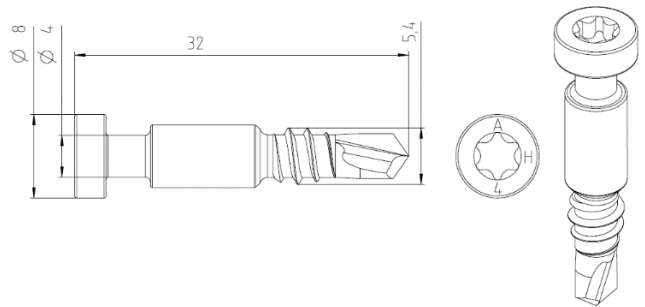
Marking: A4 (Material) and H (Producer)

Table A1: Materials

Designation	Material
Hanger Hilti MFT-HAF 50/RL 8.5 Hilti MFT-H 40/RL 8.5	Aluminium EN AW-6063 T66 – EN 573-1: 2004 with $R_m \geq 245$ N/mm²
Fastener Hilti S-HP02SS 7,2x9	Stainless steel Type 316 - ASTM A276 resp. 1.4401 (A4) - EN 10088-2: 2014
Fixing screw Hilti S-FP01SS 5,5x32	Stainless steel Type 316Cu - ASTM A276 resp. 1.4578 (A4) - EN 10088-2: 2014

Figure A4: Stepped drill bit and drill hole geometry

1) Stepped drill bit TS-HP 5,9-90 HPL
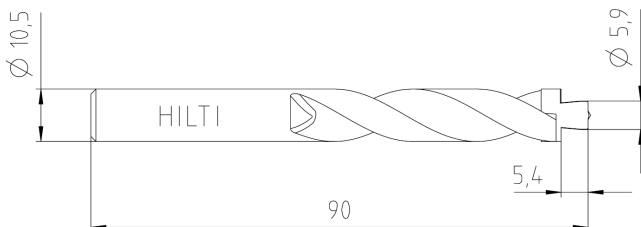
2) Drill hole geometry in HPL façade panel
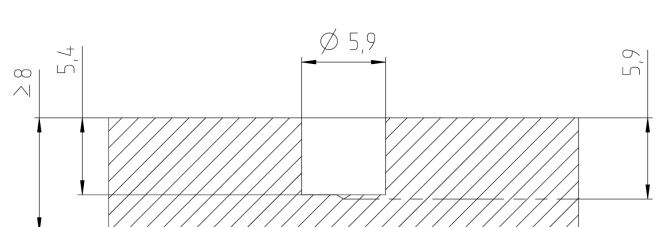
Hilti S-HP02SS 7,2x9	
System components, materials, stepped drill bit and drill hole geometry	**Annex A3**

Specifications of intended use

The Hilti S-HP02SS 7,2x9 fastener is intended to be used for the rear fixing of façade panels made of high-pressure decorative laminates (HPL) according to EN 438-7: 2005 in combination with the Hanger Hilti MFT-HAF 50/RL 8.5 and Hilti MFT-H 40/RL 8.5.

Use fastening system:
Static and quasi-static loading.

Use conditions (environmental conditions):
- The Hilti S-HP02SS 7,2x9 fastener is made of stainless steel, type 1.4401 - EN 10088-2: 2014.
  The fastener material is allocated to the corrosion resistance class (CRC) III according to EN 1993-1-4: 2006 + A2: 2020.

Specification of the HPL façade panels:
- HPL façade panels in accordance with EN 438-7 classified as "EDS" or "EDF" in accordance with EN 438-6: 2016 from the manufacturers Trespa (Type Meteon), Fundermax (Type Max Compact) and Resopal (Type Resoplan).
- Characteristic values of the HPL façade panels correspond to Table C1.

Design:
- The façade panels, their fixings as well as the substructure including its connection to wall brackets and their connection to the construction works are designed for the respective case of application under the responsibility of an engineer skilled in the field of façade construction.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the fasteners, their designation and the UKTA number is indicated on the design drawings.
- Actions:
  The design values of the actions shall be calculated on basis of EN 1990: 2002 + A1: 2005 in consideration of the existing loads. The combinations of actions shall be equal to EN 1990: 2002 + A1: 2005. The actions shall be specified according to EN 1991-1-1: 2002 to EN 1991-1-7: 2006 + A1: 2014. Corresponding national regulations shall be taken into consideration. The unfavourable combination is decisive. Where necessary for the design of the fastener and the façade panel several combinations shall be analysed separately.

  The typical fundamental combination for façade panels considers actions from dead load $F_{Ek,G}$ (permanent action) and wind $F_{Ek,W}$ (leading variable action).

  According to EN 1990: 2002 + A1: 2005 the following fundamental combination depending on the load direction results for a vertical façade panel:

  Fundamental combination for loads parallel to the façade panel: $F_{Ed,II} = F_{Ek,G} \cdot \gamma_G$

  Fundamental combination for loads perpendicular to the façade panel: $F_{Ed,\perp} = F_{Ek,W} \cdot \gamma_Q$

  The recommended partial safety factors are $\gamma_G = 1,35$ and $\gamma_Q = 1,50$, if no partial safety factor is given in national regulations.

Hilti S-HP02SS 7,2x9

Specifications of intended use	**Annex B1**

Design (continued):

- Resistance of Hilti S-HP02SS 7,2x9 fastener and HPL façade panel:

$N_{Rd} = (N_{Rk} / \gamma_M) \cdot \alpha_{F0} \cdot \alpha_{wet}$

$V_{Rd} = (V_{Rk} / \gamma_M) \cdot \alpha_{F0} \cdot \alpha_{wet}$

$\sigma_{Rd} = \sigma_{Rk} / \gamma_M$

with:

N_{Rk} = characteristic fastener resistance under tension load in accordance with Annex C2, Table C3 and C4

V_{Rk} = characteristic fastener resistance under shear load in accordance with Annex C2, Table C3 and C4

σ_{Rk} = characteristic value of the bending stress resistance of the façade panel in accordance with Annex C1, Table C1

α_{F0} = if the façade panels exceed the minimum requirements regarding bending stress according to Annex C1, Table C1, the characteristic fastener resistance to breakout or pull-out failure under tension load / shear load can be multiplied by the increasing factor α_{F0}.

Applicable only for façade panels from manufacturer Resopal (Type Resoplan) und Trespa (Type Meteon) and for $\sigma_{Rk,L} \leq 139$ N/mm² and $\sigma_{Rk,T} \leq 105$ N/mm².

$$\alpha_{F0} = \min \left\{ \frac{\sigma_{Rk,L}}{80 \; N/mm^2} \; ; \; \frac{\sigma_{Rk,T}}{80 \; N/mm^2} \right\}$$

α_{wet} = if the façade panels do not meet the requirements regarding the maximum mass increase of the façade panel due to water absorption according to Annex C1, Table C1, the characteristic fastener resistance under tension load / shear load given in Table C3 and C4 shall be multiplied by the reduction factor $a_{wet} = 0,78$.

γ_M = partial safety factor. If no partial safety factor is given in national regulations, the recommended partial safety factor is $g_M = 1,8$.

Verification:

The calculation shall be carried out in a linear elastic manner. The stiffness of the substructure shall be considered for the respective case of application.

For the determined fastener loads it shall be verified, that the following equations are met.

Equation 1: $\quad \frac{N_{Ed}}{N_{Rd}} \leq 1$

Equation 2: $\quad \frac{V_{Ed}}{V_{Rd}} \leq 1$

Equation 3: $\quad \frac{N_{Ed}}{N_{Rd}} + \frac{V_{Ed}}{V_{Rd}} \leq 1$

with:

N_{Ed} = design value of the tensile force acting on the fastener

V_{Ed} = design value of the shear force acting on the fastener

N_{Rd} = design fastener resistance to breakout or pull-out failure under tension load

V_{Rd} = design fastener resistance to breakout or pull-out failure under shear load

For the determined panel loads it shall be verified, that the following equation is met:

Equation 4: $\quad \frac{\sigma_{Ed}}{\sigma_{Rd}} \leq 1$

with:

σ_{Ed} = design value of the bending stress action of the façade panel

σ_{Rd} = design value of the bending stress resistance of the façade panel

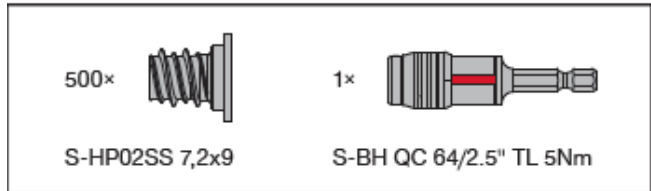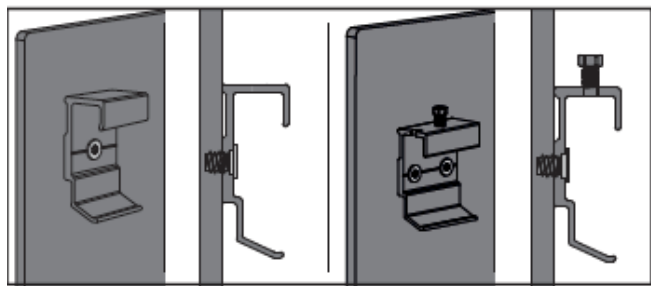| **Hilti S-HP02SS 7,2x9**	
Specifications of intended use (continued)	**Annex B2**

Installation:

- The product description is given in Annex A3. The material values, dimensions, and tolerances of the components of the fastener not indicated in the annexes shall correspond to the respective values laid down in the technical documentation of this United Kingdom Technical Assessment.

- The HPL façade panels correspond to the specifications of the Annex C1, Table C1.

- The drillings on the backside of the HPL façade panel shall be made at the factory or under workshop conditions on site using the Hilti TS-HP 5,9-90 stepped drill bit according to Annex A3 and a suitable drill driver. The drilling chips and drill dust shall be removed from the drill hole.

- Each Hilti S-HP02SS 7,2x9 sales box includes the corresponding Hilti TS-HP 5,9-90 stepped drill bit. The used Hilti TS-HP 5,9-90 stepped drill bit shall be disposed once the complete sales packaging Hilti S-HP02SS 7,2x9 fasteners are consumed. A new Hilti TS-HP 5,9-90 stepped drill bit out of the new sales packaging shall be used.

- The drilling is always perpendicular (90°-angle) to the panel's surface.

- The minimum edge distance of the drilling is 40,0 mm.

- Each façade panel shall be fixed with at least six Hilti S-HP02SS 7,2x9 fasteners and four Hilti MFT hangers in rectangular arrangement to the substructure. The substructure is constructed such that the façade panels are fixed technically strain-free via skids (loose bearings) and one fixed bearing.

- At least two fixing points of the façade panel are designed such that they can carry the dead load of the facade panel.

- The load-bearing profiles are arranged symmetrically. The arrangement of the Hilti MFT hangers ensures a symmetric introduction of the load into the substructure.

- The fixings have not been assessed for use to transmit impact loads or for guard rail.

- Joint construction between the façade panels is done by a joint filler or is kept open. It is ensured that additional stresses (e.g., by temperature) do not lead to additional loadings.

- The installation is carried out by appropriately qualified personnel and under the supervision of the site manager according to the manufacturer's specifications with the tools and devices defined therein.

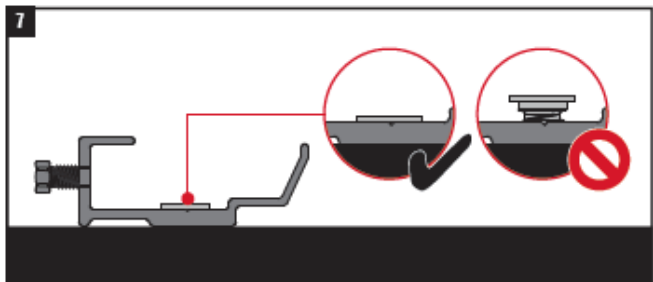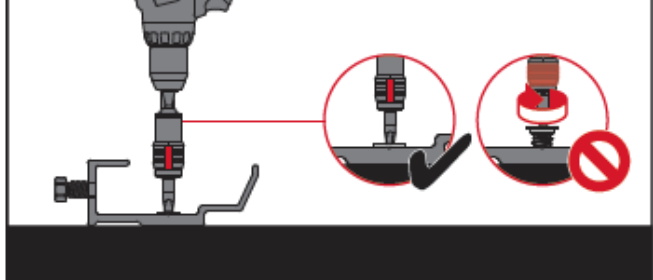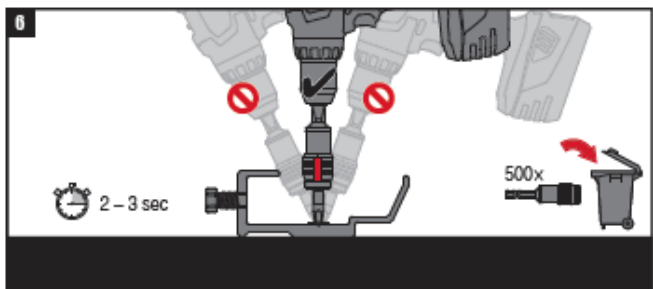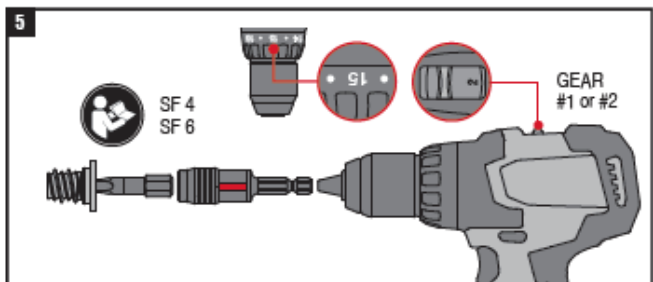- Overhead installation is allowed.
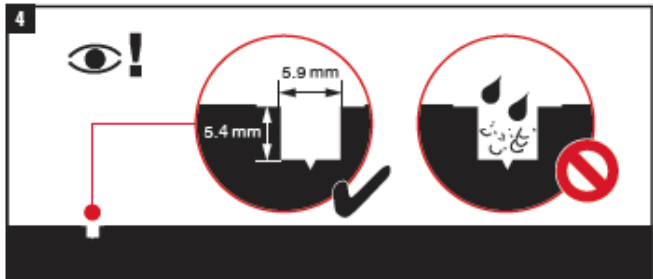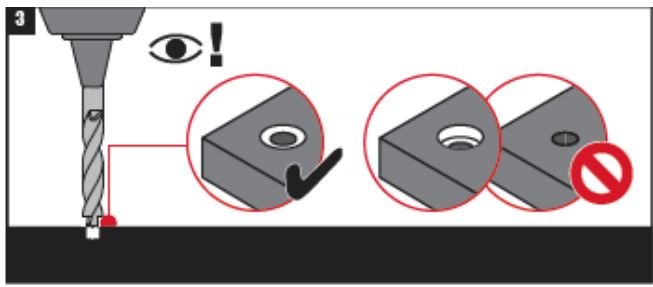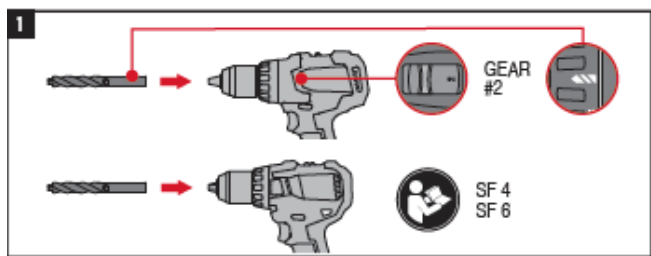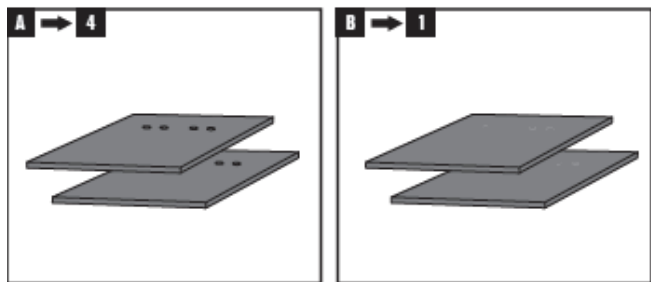
Hilti S-HP02SS 7,2x9	
Installation	**Annex B3**

Figure B1: Installation instruction for fastener Hilti S-HP02SS 7,2x9 with Hanger Hilti MFT-H 40/RL 8,5 and MFT-HAF 50/RL 8,5

0-1km   Rostfrei/Inox/Stainless A4

500× S-HP02SS 7,2x9   1× S-BH QC 64/2.5" TL 5Nm

SF 4-A22 SF 6-A22	
Stepped Drill Bit TS-HP 5,9-90 HPL	
S-B TX25 25/1" T-HF	

A → 4   B → 1

1 GEAR #2   SF 4 SF 6

2 1000x

3 (eye warning)

4 5.9 mm / 5.4 mm

5 SF 4 SF 6   GEAR #1 or #2

6 2–3 sec   500x

7

Hilti S-HP02SS 7,2x9

General installation instruction for fastener Hilti S-HP02SS 7,2x9 | **Annex B4**
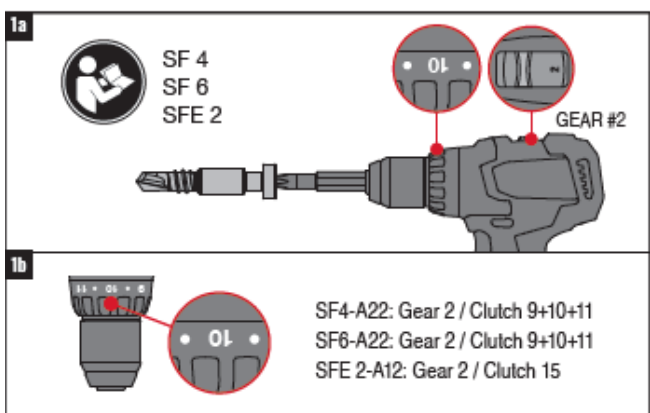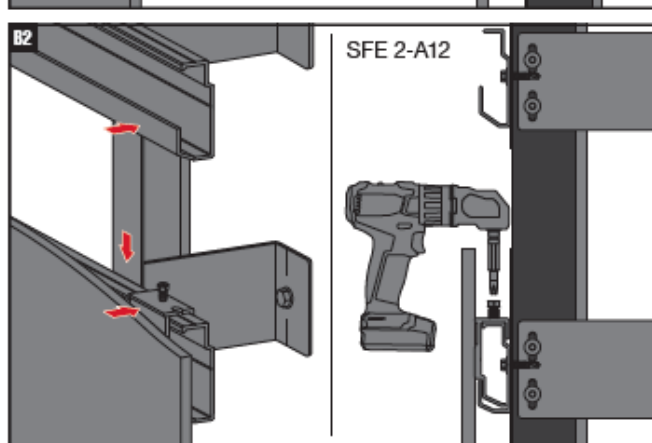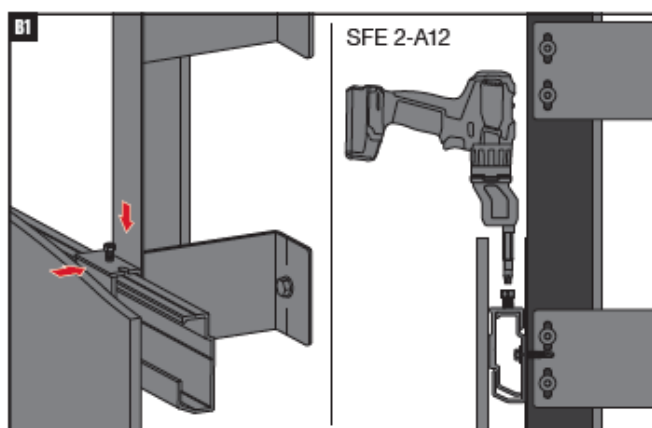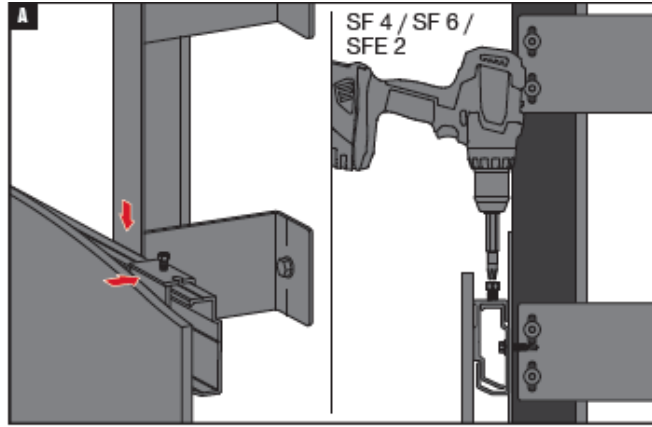
Figure B2:   Installation instruction for fixing screw Hilti S-FP01SS 5,5x32 with Hanger Hilti MFT-HAF 50/RL 8,5
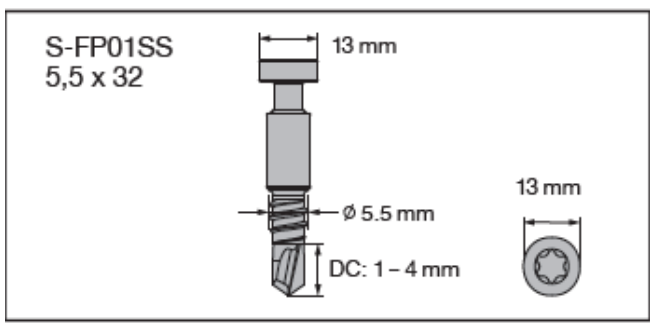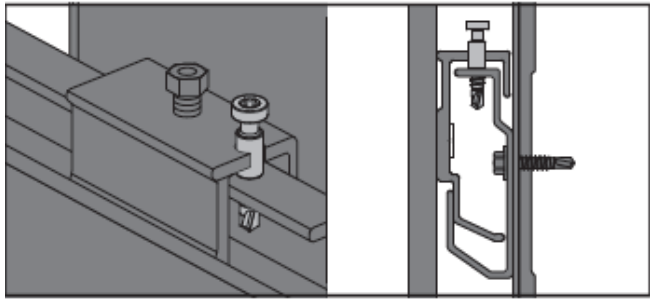
A		SF 4-A22 SF 6-A22
B		SFE 2-A12
B1		Chuck SFE 2-A12 offset
B2		Chuck SFE 2-A12 right angle
		S-B TX25 50/2" T-HF
		Chuck SFE 2-A12 Drill Driver
		Chuck SFE 2-A12 Hex
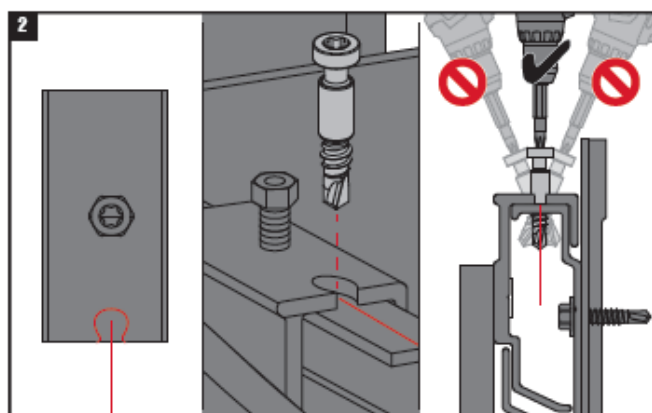
S-FP01SS 5,5 x 32 — 13 mm, Ø 5.5 mm, DC: 1 – 4 mm, 13 mm

Rostfrei / Inox / Stainless A4 — 0–1km

A SF 4 / SF 6 / SFE 2

B1 SFE 2-A12

B2 SFE 2-A12

1a SF 4 / SF 6 / SFE 2 — GEAR #2

1b SF4-A22: Gear 2 / Clutch 9+10+11
SF6-A22: Gear 2 / Clutch 9+10+11
SFE 2-A12: Gear 2 / Clutch 15

Hilti S-HP02SS 7,2x9

General installation instruction for fixing screw Hilti S-FP01SS 5,5x32

Annex B5

Table C1: Characteristic values for the design of HPL façade panels according to EN 438-7: 2005 classified as "EDS" or "EDF" according to EN 438-6: 2016

Minimum requirements for HPL façade panel – EN 438-6: 2016			
Nominal thickness	h_{nom}	[mm]	≥ 8
Characteristic value of the bending stress resistance (longitudinal) according to EN ISO 178	$\sigma_{Rk,L}$	[N/mm²]	≥ 80
Characteristic value of the bending stress resistance (transverse) according to EN ISO 178	$\sigma_{Rk,T}$	[N/mm²]	≥ 80
Maximum mass increase according to EN 438-2, section 15 (resistance to wet conditions)	δ_w	[%]	2,0 [2]
Partial safety factor [1]	γ_M	[-]	1,8

[1] In absence of other national regulations

[2] if the façade panels do not meet the requirements regarding the maximum mass increase due to water absorption, the reduction factor $\alpha_{wet} = 0,78$ given in Annex B2 shall be considered.

Figure C1: Definition of edge distance and spacing
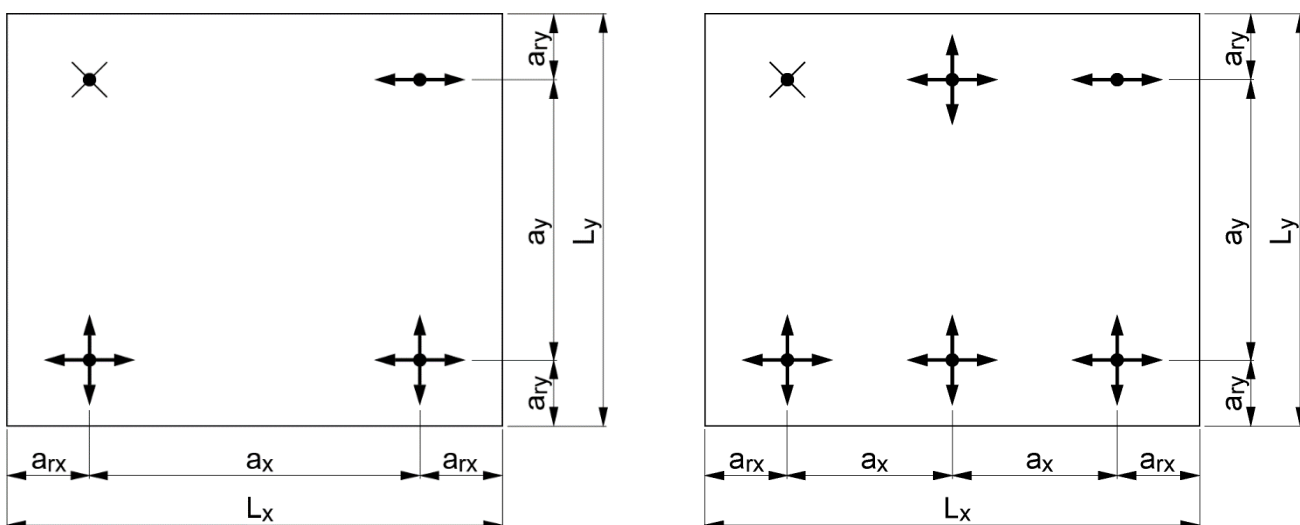
a) four hangers   b) six hangers

✗   fixed point (fixed bearing) MFT-HAF 50/RL 8,5 with fixing pin

↔   horizontally sliding point MFT-HAF 50/RL 8,5 w/o fixing pin

✛   horizontally and vertically sliding point MFT-H 40/RL 8,5 or MFT-HAF 50/RL 8,5 w/o fixing pin

Table C2: Characteristic tension and shear resistance for fastener Hilti S-HP02SS 7,2x9 to steel failure

Characteristic steel tension resistance	$N_{Rk,s}$	[kN]	10,62
Partial safety factor [1]	$\gamma_{Ms,N}$	[-]	1,5
Characteristic steel shear resistance	$V_{Rk,s}$	[kN]	5,31
Partial safety factor [1]	$\gamma_{Ms,V}$	[-]	1,25

[1] In absence of national regulations

Hilti S-HP02SS 7,2x9	
Requirements to the HPL façade panels, Definition of edge distance and spacing, Characteristic tension and shear resistance to steel failure	**Annex C1**

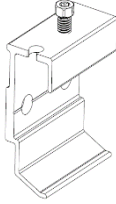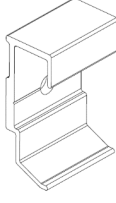**Table C3: Characteristic resistance for fastener Hilti S-HP02SS 7,2x9 to breakout or pull-out failure**

			S-HP02SS 7,2x9 with MFT-HAF 50/RL 8,5		
Fastener with Hanger					
Panel manufacturer and panel type			Trespa (Meteon)	Fundermax (Max Compact)	Resopal (Resoplan)
Embedment depth of the fastener	h_s	[mm]	4,7		
Characteristic tension resistance	N_{Rk}	[kN]	0,94 [3]	1,38 [3]	1,14 [3]
Characteristic shear resistance	V_{Rk}	[kN]	3,52 [3]	2,97 [3]	3,39 [3]
Edge distance	a_{rx}, a_{ry}	[mm]	≥ 40		
Spacing [2]	a_x, a_y	[mm]	≥ 135 ≤ 1000 for 8 mm ≤ h_{nom} < 10 mm ≤ 1286 for 10 mm ≤ h_{nom} < 12 mm ≤ 1715 for 12 mm ≤ h_{nom} < 13 mm ≤ 2000 for h_{nom} ≥ 13 mm		
Installation torque	T_{inst}	[Nm]	5,0 Nm		
Partial safety factor [1]	γ_M	[-]	1,8		

Table C4: Characteristic resistance for fastener Hilti S-HP02SS 7,2x9 to breakout or pull-out failure

			S-HP02SS 7,2x9 with MFT-H 40/RL 8,5		
Fastener with Hanger					
Panel manufacturer and panel type			Trespa (Meteon)	Fundermax (Max Compact)	Resopal (Resoplan)
Embedment depth of the fastener	h_s	[mm]	4,7		
Characteristic tension resistance	N_{Rk}	[kN]	0,54	0,71	0,67
Characteristic shear resistance	V_{Rk}	[kN]	2,06	1,86	2,26
Edge distance	a_{rx}, a_{ry}	[mm]	≥ 40		
Spacing [2]	a_x, a_y	[mm]	≥ 135 ≤ 1000 for 8 mm ≤ h_{nom} < 10 mm ≤ 1286 for 10 mm ≤ h_{nom} < 12 mm ≤ 1715 for 12 mm ≤ h_{nom} < 13 mm ≤ 2000 for h_{nom} ≥ 13 mm		
Installation torque	T_{inst}	[Nm]	5,0 Nm		
Partial safety factor [1]	γ_M	[-]	1,8		

[1] In absence of national regulations

[2] The maximum supporting distance from the load bearing capacity calculation of the HPL panel must be considered. The smaller value governs.

[3] Characteristic value valid for two fastener Hilti S-HP02SS 7,2x9

The characteristic values for tension and shear resistance given in Table C3 and C4 refer to the minimum value of the bending stress resistance and the minimum modulus of elasticity of the HPL sheets corresponding to EN 438-6: 2016 and Table C1 respectively. The characteristic resistance values for tension and shear force can be increased by taking into consideration the factor α_{F0} as defined in Annex B2.

Hilti S-HP02SS 7,2x9	
Characteristic tension and shear resistance to breakout or pull-out failure	**Annex C2**

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