

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-18/0176
of 1 October 2018

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

Hilti suspended brackets MQK-41/3/300, MQK-41/3/450,
MQK-41/3/600, MQK-41/300, MQK-41/450 and
MQK-41/600 with load introduction components

Product family
to which the construction product belongs

Products related to installation systems supporting
technical equipment for building services such as pipes,
conduits, ducts and cables

Manufacturer

Hilti AG
Feldkircherstraße 100
9494 Schaan
FÜRSTENTUM LIECHTENSTEIN

Manufacturing plant

L 1000511, L 1000446, L 1000405, L 106663, L 1005049,
L 1000446, L 1069983

This European Technical Assessment
contains

12 pages including 8 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 280016-00-0602

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Specific Part

1 Technical description of the product

Objects of this European Technical Assessment are the Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components. The brackets consist of a steel baseplate with three elongated holes and a welded-on, thin-walled steel channel profile with parallel flanges and a connecting web. The elongated holes in the steel plate are arranged centrally on their longitudinal axis. The edges of the channel flanges are folded over. The flange faces are grooved to enable matching channel fixtures to be firmly interlocked to the channel. The channel web is slotted at regular intervals.

Loads are applied to the channel profile of the bracket using the MQA-M12-B pipe ring saddle in conjunction with M12 threaded rod and M12 hexagonal nut. The MQA-M12-B pipe ring saddle consists of a nut and a steel clamping plate connected to each other with a spring element made of PET. The pipe ring saddle has a centred round opening. The opening in the nut is for receiving the threaded rod.

The brackets are suspended with threaded rods M10 connected to the channel profile by means of two drilled plates MQZ-L11 and two hexagon nuts M10.

Annex A describes the dimensions and materials of the Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600.

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

The performance given in Section 3 can only be assumed if the Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 are used in compliance with the specifications and under boundary conditions set out in Annex B. The test and assessment methods on which this European Technical Assessment is based lead to an assumption of a working life of the Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 of at least 50 years in final use under ambient temperatures in indoor areas. 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.

In accordance with the European Assessment Document EAD 280016-00-0602, the product is intended to be used in

- a) installations for the support of sprinkler kits;
- b) installations for the support of other building service elements such as pipes, conduits, ducts and cables.

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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Reaction to fire: Plastic parts	not relevant for fire growth based on TR021 and therefore do not need to be classified

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Shape	see Annex A
Dimensions	see Annex A
Material	see Annex A
Resistance and deformation at elevated temperatures determined for suspended cantilever kits without pipe clamps	see Annex C

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

In accordance with the European Assessment Document EAD 280016-00-0602, the following legal bases apply:

- In case of intended use a) specified in Section 2:
Decision of the commission N° 1996/577/EC:
System 1 applies for the assessment and verification of constancy of performance (AVCP).
- In case of intended use b) specified in Section 2:
Decision of the commission N° 1999/472/EC:
System 3 applies for the assessment and verification of constancy of performance (AVCP).

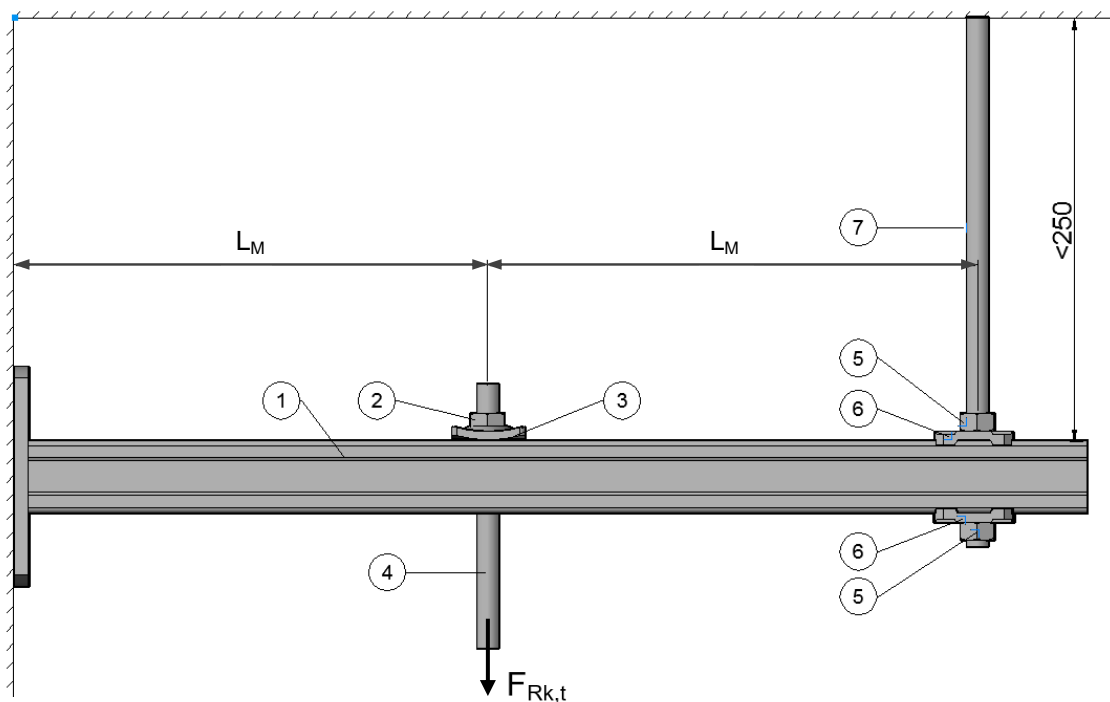
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

The technical details necessary for the implementation of the system for the assessment and verification of constancy of performance are laid down in the control plan (confidential part of this European Technical Assessment) deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 1 October 2018 by Deutsches Institut für Bautechnik

Dr.-Ing. Lars Eckfeldt
p. p. Head of Department

beglaubigt:
Häßler



Legend

- 1 MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/600, MQK-41/600 or MQK-41/600
- 2 Hexagon nut M12
- 3 Saddle nut MQA-M12-B
- 4 Threaded rod M12
- 5 Hexagon nut M10
- 6 Drilled plate MQZ-L11
- 7 Threaded rod M10

$L_M = 115$ mm for MQK-41/3/300 and MQK-41/300

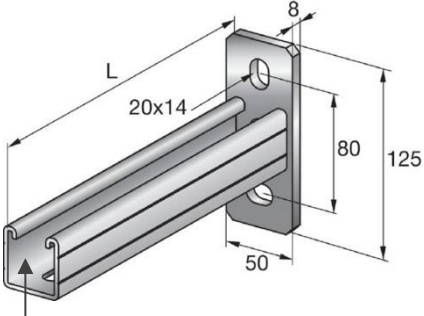
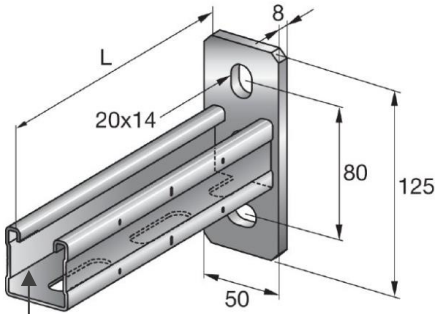
$L_M = 190$ mm for MQK-41/3/450 and MQK-41/450

$L_M = 265$ mm for MQK-41/3/600 and MQK-41/600

Dimensions in mm.

Figure A1: Suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

Table A2: Dimensions and materials of the brackets¹⁾

Illustration of bracket and associated channel [Dimensions in mm]	Designation	Item number	L [mm]	Material channel	Material baseplate
 <p>Channel</p> <p>Dimensions of channel</p>	MQK-41/3/300	370595	300	S235JR in accordance with EN 10025-2, zinc coated	S235JR in accordance with EN 10025-2, zinc coated
	MQK-41/3/450	370596	450		
	MQK-41/3/600	370597	600		
 <p>Channel</p> <p>Dimensions of channel</p>	MQK-41/300	369609	300	S235JR in accordance with EN 10025-2, zinc coated	S235JR in accordance with EN 10025-2, zinc coated
	MQK-41/450	369610	450		
	MQK-41/600	369611	600		

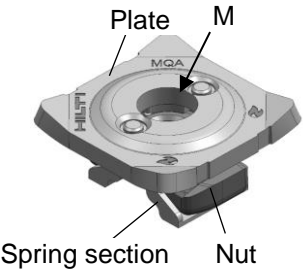
¹⁾ Brackets see ETA-18/0245

Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

Description of product (kit)
Dimensions and materials of the components of the kit

Annex A2

Table A3.1: Dimensions and materials of pipe ring saddle MQA-M12-B

Illustration	Item number	Designation	M [mm]	Materials
	2199453	MQA-M12-B	12	Plate: DD11 in accordance with EN 10111 ²⁾ , zinc coated Nut: C4C in accordance with EN 10263-2, zinc coated Spring section: PET

²⁾ with $235 \text{ N/mm}^2 \leq R_{eL} \leq 340 \text{ N/mm}^2$, Method of deoxidation: fully killed

Table A3.2: Dimensions of the components of pipe ring saddle MQA-M12-B [in mm]

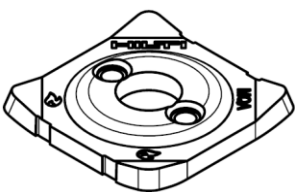
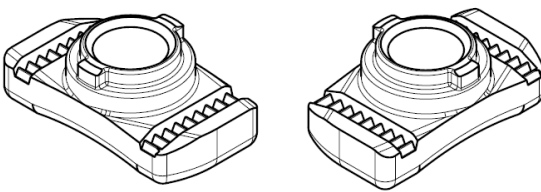
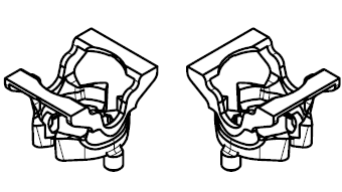
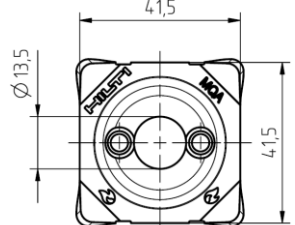
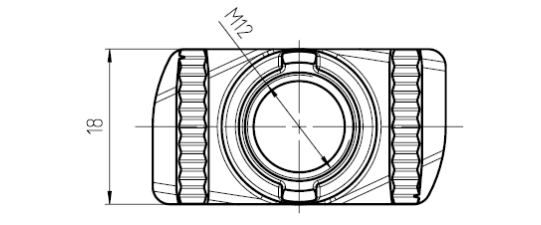
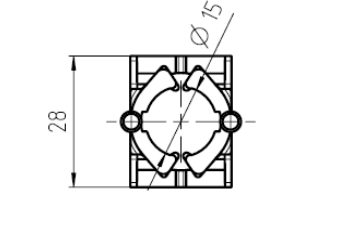
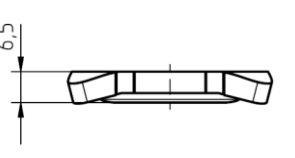
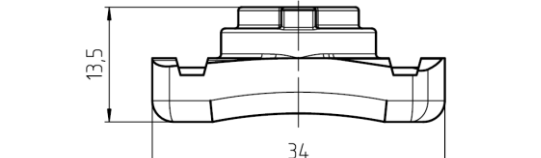
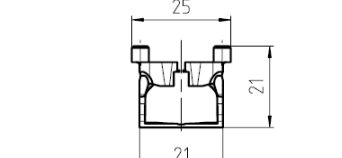

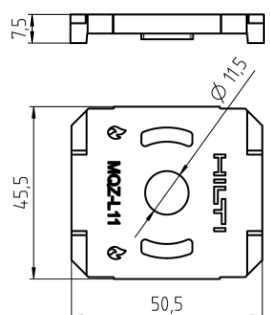
Plate	Nut	Spring section
		
		
		

Table A3.3: Dimensions and materials of drilled plate MQZ-L11

Illustration	Dimensions [mm]	Designation	Item number	Material
		MQZ-L11	2199455	S235JR in accordance with EN 10025-2, zinc coated

Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

Description of product (kit)
Dimensions and materials of the components of the kit

Annex A3

Table A4.1: Threaded rods for use with pipe ring saddle MQA-M12-B

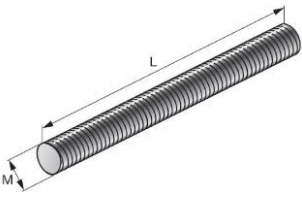
Illustration	Designation	Item number	M thread	L [mm]	Material
	AM12x3000 4.8	216421	M12	3000	Strength class 4.8 in accordance with DIN 976-1, zinc coated
	AM12x2000 4.8	216420	M12	2000	
	AM12x1000 4.8	339797	M12	1000	

Table A4.2: Threaded rods for use with drill plate MQZ-L11

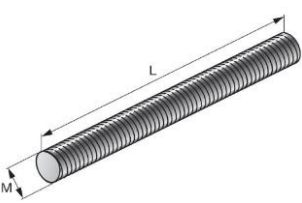
Illustration	Designation	Item number	M thread	L [mm]	Material
	AM10x3000 4.8	216418	M10	3000	Strength class 4.8 in accordance with DIN 976-1, zinc coated
	AM10x2000 4.8	339796	M10	2000	
	AM10x1000 4.8	339795	M10	1000	

Table A4.3: Hexagonal nut for use with pipe ring saddle MQA-M12-B

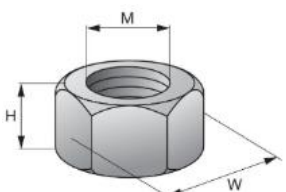
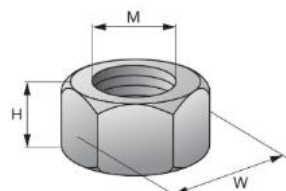
Illustration	Designation	Item number	M thread	W [mm]	H [mm]	Material
	M12 hexagonal nut	216467	M12	19	10	Strength class 8 in accordance with ISO 4032, zinc coated

Table A4.4: Hexagonal nut for use with drill plate MQZ-L11

Illustration	Designation	Item number	M thread	W [mm]	H [mm]	Material
	M10 hexagonal nut	216466	M10	17	8	Strength class 8 in accordance with ISO 4032, zinc coated

Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

Description of product (kit)
Dimensions and materials of the components of the kit

Annex A4

- Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components used to transfer building services component loads such as ducts and equipment for sprinklers, water, heating, cooling, ventilation, electrical and other systems. Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components are performing this loadbearing function under the conditions described in Section 2 of this European Technical Assessment.
- The resistance at elevated temperatures applies for static and centric actions on the threaded rod M12 according to Annex A1.
- The resistance at elevated temperatures refers to the boundary conditions of the standard temperature / time curve (STTC) in accordance with EN 1363-1.
- The brackets are attached directly to the base material with the channel cross-section facing upwards. The fastening of the base connector and the threaded rod to the base material are made with appropriate anchors.
- The centre distance of the drilled plates MQZ-L11 from the channel end is 70 mm according to Annex A1.
- Prior to installation, it must be ensured that the component to be supported by the bracket, the anchoring of the bracket and the threaded rod to the base material and the base material itself are suitable to withstand the resistance values of the installation system and that they have a fireproof certificate.
- Installation must be carried out by trained personnel and under the supervision of the site manager. The general assembly instructions of the manufacturer are to be observed.

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Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components	Annex B
Requirements for performance assessment	

Table C1.1: Resistance $F_{Rk,t}$ of the brackets MQK-41/3/300, MQK-41/3/450 and MQK-41/3/600 with single load according to Annex A1 at elevated temperatures

Bracket	$F_{Rk,30}$ [N]	$F_{Rk,60}$ [N]	$F_{Rk,90}$ [N]	$F_{Rk,120}$ [N]
MQK-41/3/300 MQK-41/3/450 MQK-41/3/600	2151	1150	817	650

Table C1.2: Resistance of the brackets MQK-41/3/300, MQK-41/3/450 und MQK-41/3/600 with single load according to Annex A1 at elevated temperatures.

Parameter of the regression curve $F_{Rk}(t) = c_3 (c_1 + c_2 / t)$ [N]

Bracket	c_1	c_2	c_3	t_{min} [minutes]	t_{max} [minutes]
MQK-41/3/300 MQK-41/3/450 MQK-41/3/600	179.411	71910.413	0.8348	23	150

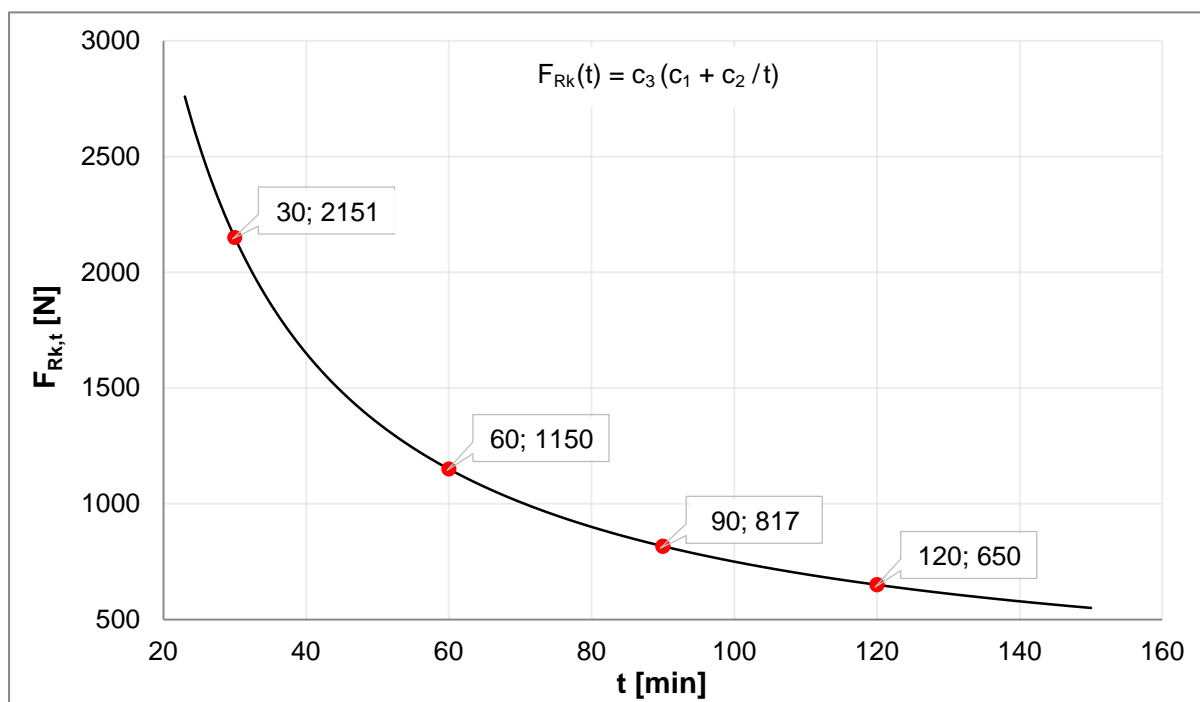


Figure C1: Regression curve according to Table C1.2

Designation

- $F_{Rk,t}$ Resistance after an exposure time t to elevated temperatures
- $F_{Rk}(t)$ Resistance time function at elevated temperatures

Hilti suspended brackets MQK-41/3/300, MQK-41/3/450 and MQK-41/3/600 with load introduction components

Resistance at elevated temperatures

Annex C1

Table C2.1: Resistance $F_{Rk,t}$ of the brackets MQK-41/300, MQK-41/450 und MQK-41/600 with single load according to Annex A1 at elevated temperatures

Bracket	$F_{Rk,30}$ [N]	$F_{Rk,60}$ [N]	$F_{Rk,90}$ [N]	$F_{Rk,120}$ [N]
MQK-41/300 MQK-41/450 MQK-41/600	1465	833	622	NPA ³⁾

³⁾ NPA: No performance assessed

Table C2.2: Resistance of the brackets MQK-41/300, MQK-41/450 und MQK-41/600 with single load according to Annex A1 at elevated temperatures. Parameter of the regression curve $F_{Rk}(t) = c_3 (c_1 + c_2 / t)$ [N]

Bracket	c_1	c_2	c_3	t_{min} [minutes]	t_{max} [minutes]
MQK-41/300 MQK-41/450 MQK-41/600	311.171535	58644.5383	0.64646602	30	114

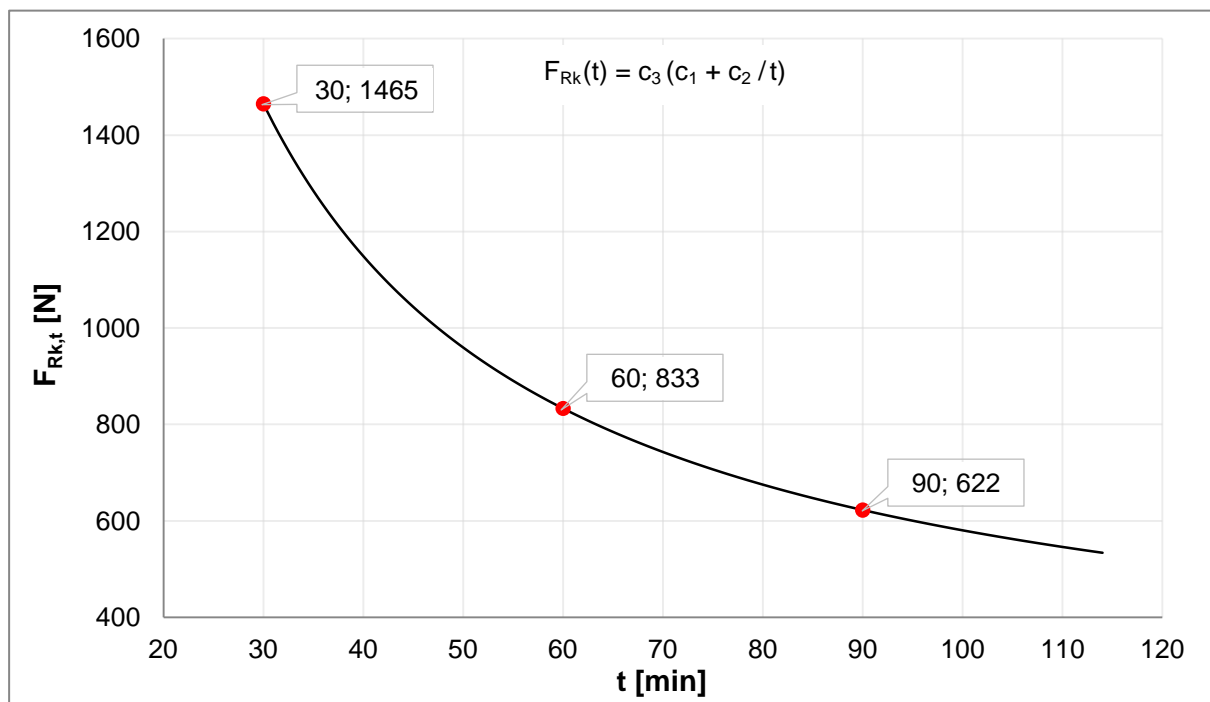


Figure C2: Regression curve according to Table C2.2

Designation see Annex C1

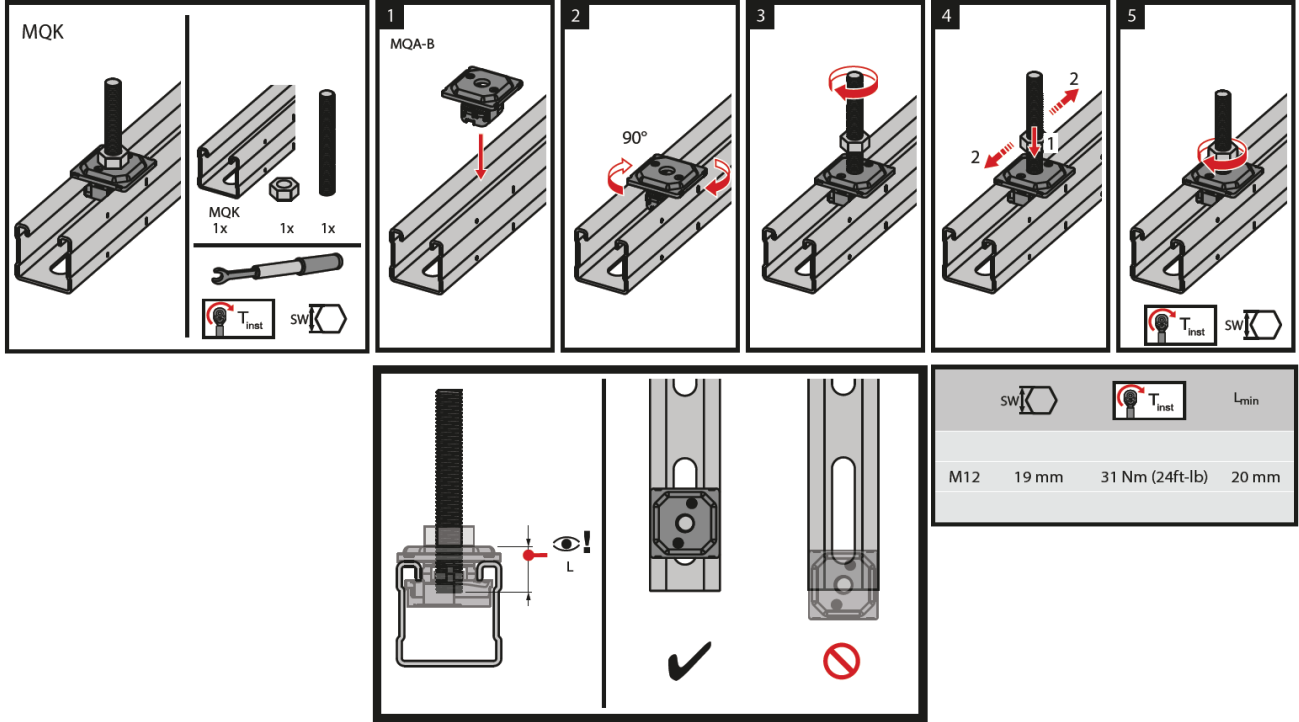
Hilti suspended brackets MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

Resistance at elevated temperatures

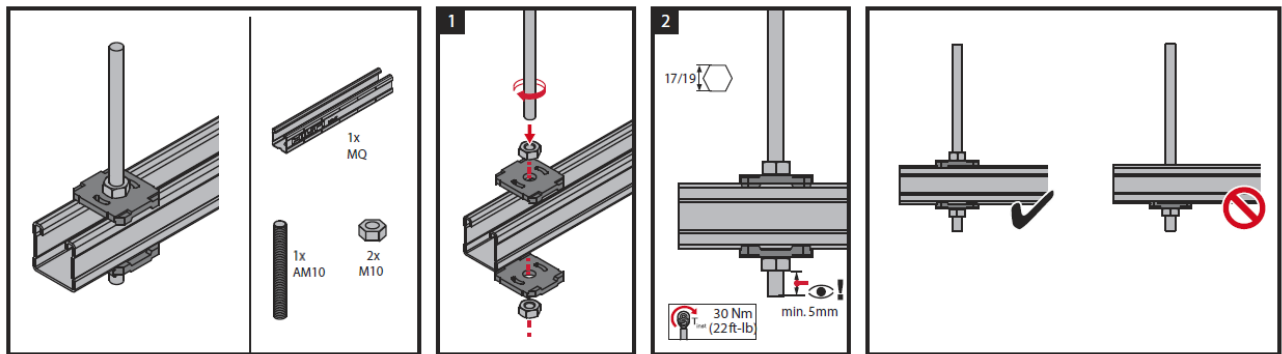
Annex C2

English translation prepared by DIBt

- The installation of the pipe ring saddle and the threaded rod is carried out according to the following principles:



- The installation of the drilled plate and the threaded rod is carried out according to the following principles:



Hilti suspended brackets MQK-41/3/300, MQK-41/3/450, MQK-41/3/600, MQK-41/300, MQK-41/450 and MQK-41/600 with load introduction components

General assembly instructions

Annex D
(informative)