



European Technical Assessment

ETA-21/0803 of 28/01/2022

English translation prepared by CSTB - Original version in French language

General Part

Trade name:	Hilti residential pipe clamps MP-HI and MP-H
Product family:	Products for installation systems for supporting technical building equipment
Manufacturer:	Hilti AG Liechtenstein Feldkircherstraße 100 9494 Schaan FÜRSTENTUM LIECHTENSTEIN
Manufacturing plants:	L 1097347
This European Technical Assessment contains:	29 pages including 26 pages of 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:	European Assessment Document (EAD) 280016-00-0602 version August 2017
This version replaces:	-

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Specific Part

1 Technical description of the product

Objects of this European Technical Assessment are Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10. The pipe clamps consist of two profiled steel strips, which are designed to be able to surround a pipe circularly. The clamping strips are connected together on one side by a steel screw and on the other side by a hock-in lock system. The clamping stripes are pressed onto the outside of the pipe to be fastened by tightening the screw. Each pipe clamp has a designated clamping range. The top clamping strip features welded connection heads with M8/M10 combi-threads.

The clamping strips of MP-HI M8/10 are fitted with an EPDM profile on the inside to aid structure-borne sound insulation, to balance unevenness and to prevent contact corrosion.

Annex A describes the dimensions and materials of the Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10. The requirements for performance assessment are given in Annex B.

2 Specification of the intended use

The performance given in Section 3 can only be assumed if the Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10 are used in compliance with the specifications and under boundary conditions set out in Annexes A to D. The test and assessment methods on which this European Technical Assessment is based lead to an assumption of a working life of the pipe clamps 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 supporting technical building equipment-

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
Resistance and deformations of Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10 in case of fire	see Annex D

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Dimensions and materials of Hilti residential pipe clamps MP-HI M8/10, and MP-H M8/10	see Annex A
Characteristics of Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10 at ambient temperature	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° 96/577/EC as amended by Commission Decision 2002/592/EC.:
System 1 applies for the assessment and verification of constancy of performance (AVCP).
- In case of intended use a) specified in Section 2:
Decision of the commission N° 97/161/EC:
System 2+ 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 as amended by Commission Decision 2001/596/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

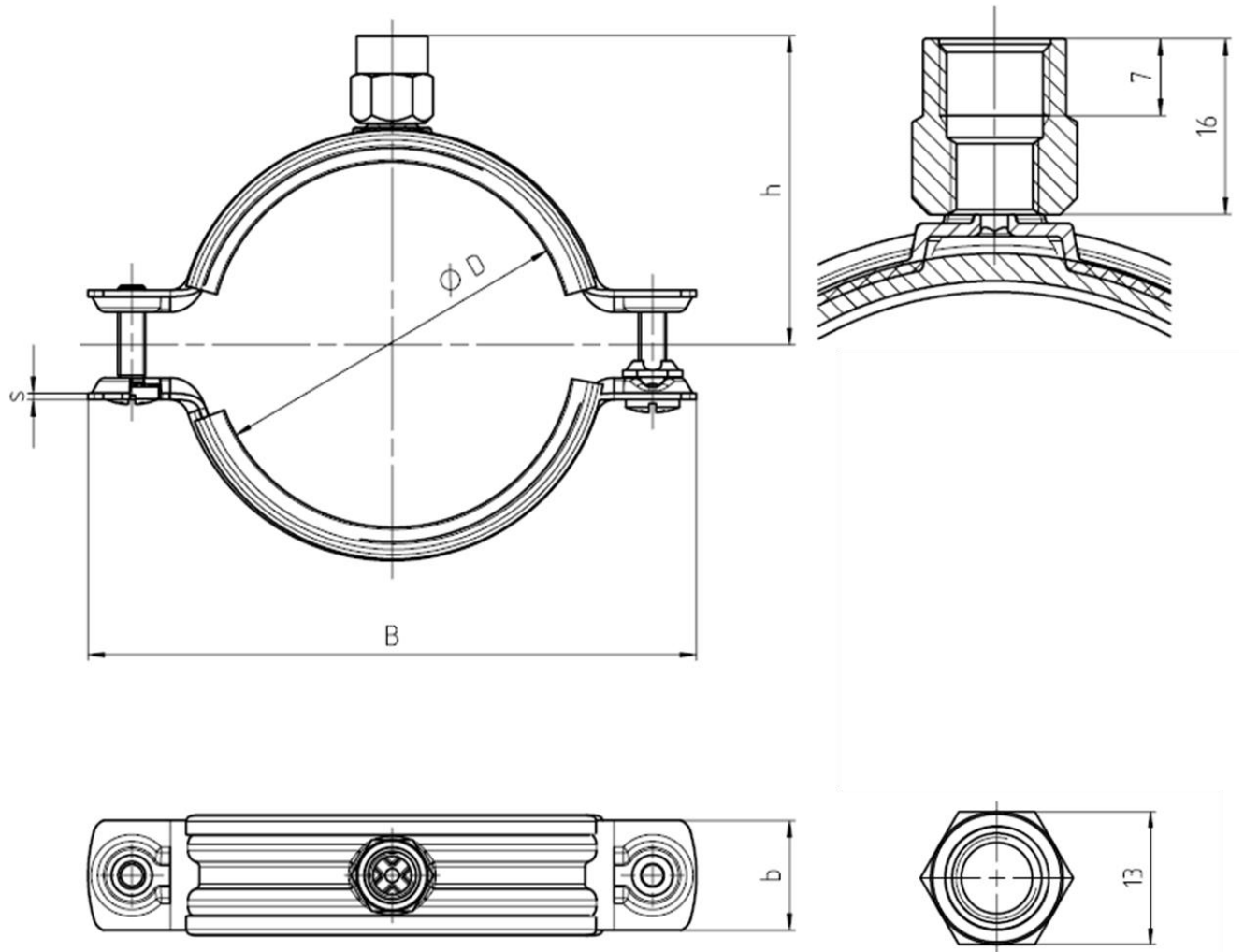
The technical details necessary for the implementation of the system for the assessment and verification of constancy of performance are laid down in the control plan (confidential part of this European Technical Assessment) deposited at Centre Scientifique et Technique du Bâtiment.

The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchor channels for issuing the certificate of conformity CE based on the control plan.

The original French version is signed by

La cheffe de division, Anca CRONOPOL

Figure A1: Geometry and dimensions of the pipe clamp MP-HI M8/M10



Dimensions in mm

Table A1: Materials of pipe clamps MP-HI M8/M10

Components of pipe ring	Materials
Clamping strip	DC01 in accordance with EN 10130
Connection head	Property class 6 in accordance with EN ISO 898-2
Clamping screw M5, M6	Strength class ≥ 4.6 in accordance with EN ISO 898-1
Rubber inlays	MP-HI 8-12: rubber in accordance with ISO 3302-1 MP-HI 12-16 to MP-HI 163-172: EPDM
Washer	PE

Hilti residential pipe clamps MP-HI and MP-H

Product Description
Dimensions and materials

Annex A1

Table A2: Dimensions and tightening torque of pipe clamps MP-HI M8/M10

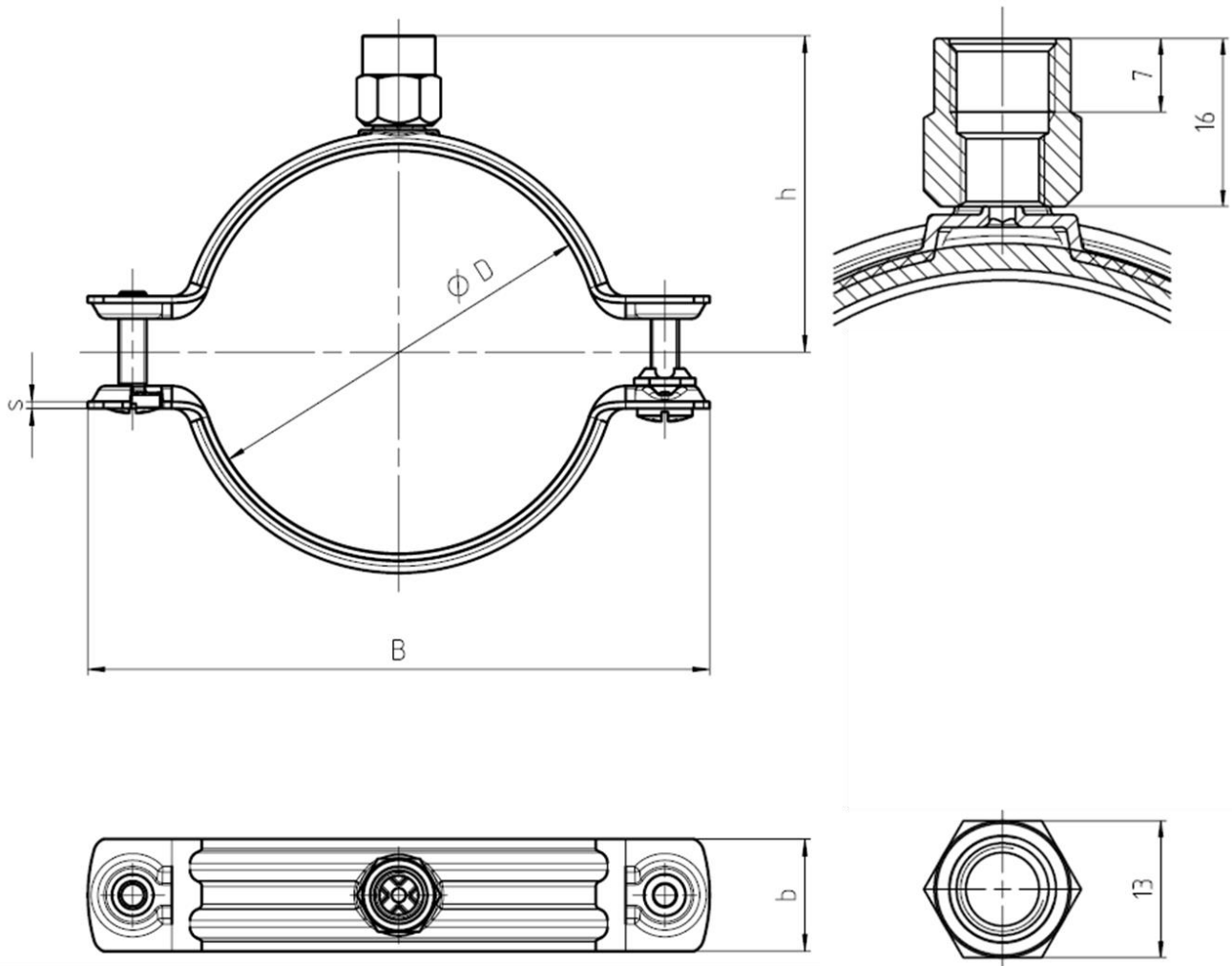
Item number	Designation	D [mm]	B [mm]	b x s [mm]	h [mm]	Tightening torque [Nm]	Screw size
386402	MP-HI 8-12 M8/M10	21,0	54,0	20 x 1,2	26,0	1	M5
386403	MP-HI 12-16 M8/M10	21,0	54,0	20 x 1,2	26,0	1	M5
386404	MP-HI 16-20 M8/M10	25,0	58,5	20 x 1,2	28,1	1	M5
386405	MP-HI 20-25 M8/M10	30,0	63,2	20 x 1,2	30,4	1	M5
386406	MP-HI 25-31 M8/M10	36,6	72,0	20 x 1,2	33,3	1	M5
386407	MP-HI 31-38 M8/M10	44,6	78,3	20 x 1,2	36,3	1	M5
386408	MP-HI 38-45 M8/M10	51,4	88,5	20 x 1,2	39,7	1	M5
386409	MP-HI 45-52 M8/M10	59,0	96,2	20 x 1,2	43,3	1	M5
386410	MP-HI 52-59 M8/M10	66,0	103,6	20 x 1,2	46,7	1	M5
386411	MP-HI 59-66 M8/M10	74,0	112,5	20 x 1,2	50,3	1	M5
386412	MP-HI 66-75 M8/M10	83,0	130,0	25 x 1,8	55,8	2	M6
386413	MP-HI 75-84 M8/M10	92,6	140,0	25 x 1,8	60,1	2	M6
386414	MP-HI 84-93 M8/M10	102,0	148,5	25 x 1,8	64,5	2	M6
386415	MP-HI 93-101 M8/M10	111,2	159,7	25 x 1,8	69,0	2	M6
386416	MP-HI 101-110 M8/M10	121,0	169,3	25 x 1,8	72,8	2	M6
386417	MP-HI 110-119 M8/M10	128,6	178,7	25 x 2,3	78,3	2	M6
386418	MP-HI 119-129 M8/M10	140,0	190,0	25 x 2,3	83,0	2	M6
386419	MP-HI 129-137 M8/M10	150,8	199,5	25 x 2,3	87,7	2	M6
386420	MP-HI 137-145 M8/M10	159,4	210,3	25 x 2,3	91,5	2	M6
386421	MP-HI 145-155 M8/M10	169,0	222,7	25 x 2,3	95,0	2	M6
386422	MP-HI 155-163 M8/M10	178,0	232,0	25 x 2,3	99,7	2	M6
386423	MP-HI 163-172 M8/M10	186,0	241,5	25 x 2,3	103,5	2	M6

Hilti residential pipe clamps MP-HI and MP-H

Product Description
Dimensions

Annex A2

Figure A2: Geometry and dimensions of Hilti residential pipe clamps MP-H M8/10



Dimensions in mm

Table A3: Materials of pipe clamps MP-H M8/10

Components of pipe ring	Materials
Clamping strip	DC01 in accordance with EN 10130
Connection head	Property class 6 in accordance with EN ISO 898-2
Clamping screw M5, M6	Strength class $\geq 4,6$ in accordance with EN ISO 898-1
Washer	PE

Hilti residential pipe clamps MP-HI and MP-H

Product Description
Dimensions and materials

Annex A3

Table A4: Dimensions and tightening torque of pipe clamps MP-H M8/M10

Item number	Designation	D [mm]	B [mm]	b x s [mm]	h [mm]	Tightening torque [Nm]	Screw size
386424	MP-H 16-20 M8/M10	21,0	54,0	20 x 1,2	28,1	1	M5
386425	MP-H 20-25 M8/M10	25,0	58,5	20 x 1,2	30,4	1	M5
386426	MP-H 25-31 M8/M10	30,0	63,2	20 x 1,2	33,3	1	M5
386427	MP-H 31-38 M8/M10	36,6	72,0	20 x 1,2	36,3	1	M5
386428	MP-H 38-45 M8/M10	44,6	78,3	20 x 1,2	39,7	1	M5
386429	MP-H 45-52 M8/M10	51,4	88,5	20 x 1,2	43,3	1	M5
386430	MP-H 52-59 M8/M10	59,0	96,2	20 x 1,2	46,7	1	M5
386431	MP-H 59-66 M8/M10	66,0	103,6	20 x 1,2	50,3	1	M5
386432	MP-H 66-74 M8/M10	74,0	112,5	20 x 1,2	55,8	1	M5
386433	MP-H 74-83 M8/M10	83,0	130,0	25 x 1,8	60,1	2	M6
386434	MP-H 83-92 M8/M10	92,6	140,0	25 x 1,8	64,5	2	M6
386435	MP-H 92-101 M8/M10	102,0	148,5	25 x 1,8	69,0	2	M6
386436	MP-H 101-110 M8/M10	111,2	159,7	25 x 1,8	72,8	2	M6
386437	MP-H 110-119 M8/M10	121,0	169,3	25 x 1,8	78,3	2	M6
386438	MP-H 119-127 M8/M10	128,6	178,7	25 x 2,3	83,0	2	M6
386439	MP-H 127-137 M8/M10	140,0	190,0	25 x 2,3	87,7	2	M6
386440	MP-H 137-145 M8/M10	149,0	199,5	25 x 2,3	91,5	2	M6
386441	MP-H 145-155 M8/M10	159,4	210,3	25 x 2,3	95,0	2	M6
386442	MP-H 155-163 M8/M10	169,0	222,7	25 x 2,3	99,7	2	M6
386443	MP-H 163-172 M8/M10	178,0	232,0	25 x 2,3	103,5	2	M6

Hilti residential pipe clamps MP-HI and MP-H

Product Description
Dimensions

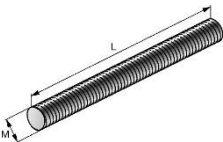
Annex A4

- Hilti residential pipe clamps MP-HI M8/10 and MP-H M8/10 are used to transfer the loads of building services components such as equipment for sprinkler, water, heating, cooling, ventilation, electrical and other installations. The pipe clamps are suitable for undertaking this load-bearing function under the conditions described in Section 2 of this European Technical Assessment.
- The resistance and deformation in case of fire are referring to the boundary conditions of the standard temperature time curve (STTC) in accordance with EN 1363-1.
- The performance data for the pipe clamp under ambient temperature results in conjunction with the threaded rods as per Table B1 and Table B2.
- The performance data for the pipe clamp in case of fire results in conjunction with the threaded rods as per Table B2.
- The pipe clamps must be installed by appropriately qualified personnel and under the supervision of the site manager. The general installation instructions of the manufacturer apply.
- The resistance and deformation at ambient temperatures and in case of fire apply for static and centric actions.
- The screw of the the pipe clamps must be tightened consistently with a torque from 1 to 2 Nm in accordance with the instructions for use.
- Prior to installation, it must be ensured that the pipe to be inserted, the anchoring of the threaded rods to the base material and the base material itself are suitable to withstand the resistance values of the pipe clamps and that they have a fireproof certificate.

Table B1: Threaded rods for use with Hilti Residential Pipe clamps MP-HI M8/10 and MP-H M8/10 under ambient temperature

Illustration	Item number	Designation	Thread	L [mm]	Material
	339793	AM8x1000 4.8	M8	1000	Strength class 4.8 in accordance with DIN 976-1, zinc coated
	339794	AM8x2000 4.8	M8	2000	
	216415	AM8x3000 4.8	M8	3000	

Table B2: Threaded rods for use with Hilti Residential Pipe clamps MP-HI M8/10 and MP-H M8/10 under ambient temperature and in case of fire

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

Hilti residential pipe clamps MP-HI and MP-H

Requirements for performance assessment

Annex B1

Table C1: Characteristic tensile strength at ambient temperature for MP-HI M8/M10 in combination with threaded rods $\geq$ M8 4.8

Item number	Designation	Characteristic tensile strength F_{Rk} [N]	Partial safety coefficient ¹⁾ γ_m [-]
386402	MP-HI 8-12 M8/M10	1643	1,30
386403	MP-HI 12-16 M8/M10		
386404	MP-HI 16-20 M8/M10		
386405	MP-HI 20-25 M8/M10		
386406	MP-HI 25-31 M8/M10		
386407	MP-HI 31-38 M8/M10		
386408	MP-HI 38-45 M8/M10	1684	1,30
386409	MP-HI 45-52 M8/M10		
386410	MP-HI 52-59 M8/M10		
386411	MP-HI 59-66 M8/M10		
386412	MP-HI 66-75 M8/M10	2731	1,69
386413	MP-HI 75-84 M8/M10		
386414	MP-HI 84-93 M8/M10		
386415	MP-HI 93-101 M8/M10		
386416	MP-HI 101-110 M8/M10		
386417	MP-HI 110-119 M8/M10	3494	2,15
386418	MP-HI 119-129 M8/M10		
386419	MP-HI 129-137 M8/M10		
386420	MP-HI 137-145 M8/M10		
386421	MP-HI 145-155 M8/M10		
386422	MP-HI 155-163 M8/M10		
386423	MP-HI 163-172 M8/M10		

¹⁾ provided that no other national regulations apply

Hilti residential pipe clamps MP-HI and MP-H

Characteristic tensile strength at ambient temperature

Annex C1

Table C2: Service load and deformation at ambient temperature for MP-HI M8/M10 in combination with threaded rods $\geq$ M8 4.8

Item number	Designation	Service load F_{SLS} [N]	Associated deformation [mm]
386402	MP-HI 8-12 M8/M10	1106	1,50
386403	MP-HI 12-16 M8/M10		
386404	MP-HI 16-20 M8/M10		
386405	MP-HI 20-25 M8/M10		
386406	MP-HI 25-31 M8/M10		
386407	MP-HI 31-38 M8/M10		
386408	MP-HI 38-45 M8/M10	933	1,50
386409	MP-HI 45-52 M8/M10		
386410	MP-HI 52-59 M8/M10		
386411	MP-HI 59-66 M8/M10		
386412	MP-HI 66-75 M8/M10	1425	1,50
386413	MP-HI 75-84 M8/M10		
386414	MP-HI 84-93 M8/M10		
386415	MP-HI 93-101 M8/M10		
386416	MP-HI 101-110 M8/M10		
386417	MP-HI 110-119 M8/M10	1776	2,38
386418	MP-HI 119-129 M8/M10		
386419	MP-HI 129-137 M8/M10		
386420	MP-HI 137-145 M8/M10		
386421	MP-HI 145-155 M8/M10		
386422	MP-HI 155-163 M8/M10		
386423	MP-HI 163-172 M8/M10		

Hilti residential pipe clamps MP-HI and MP-H

Service load and deformation at ambient temperature

Annex C2

Table C3: Characteristic tensile strength at ambient temperature for MP-H M8/M10 in combination with threaded rods $\geq$ M8 4.8

Item number	Designation	Characteristic tensile strength F_{Rk} [N]	Partial safety coefficient ¹⁾ γ_m [-]
386424	MP-H 16-20 M8/M10	1499	3,33
386425	MP-H 20-25 M8/M10		
386426	MP-H 25-31 M8/M10		
386427	MP-H 31-38 M8/M10		
386428	MP-H 38-45 M8/M10		
386429	MP-H 45-52 M8/M10	1655	1,65
386430	MP-H 52-59 M8/M10		
386431	MP-H 59-66 M8/M10		
386432	MP-H 66-74 M8/M10		
386433	MP-H 74-83 M8/M10		
386434	MP-H 83-92 M8/M10	2411	1,71
386435	MP-H 92-101 M8/M10		
386436	MP-H 101-110 M8/M10		
386437	MP-H 110-119 M8/M10		
386438	MP-H 119-127 M8/M10		
386439	MP-H 127-137 M8/M10	3897	2,05
386440	MP-H 137-145 M8/M10		
386441	MP-H 145-155 M8/M10		
386442	MP-H 155-163 M8/M10		
386443	MP-H 163-172 M8/M10		

¹⁾ provided that no other national regulations apply

Hilti residential pipe clamps MP-HI and MP-H

Characteristic tensile strength at ambient temperature

Annex C3

Table C4: Service load and deformation at ambient temperature for MP-H M8/10 in combination with threaded rods $\geq$ M8 4.8

Item number	Designation	Service load F_{SLS} [N]	Associated deformation [mm]
386424	MP-H 16-20 M8/M10	1322	1,50
386425	MP-H 20-25 M8/M10		
386426	MP-H 25-31 M8/M10		
386427	MP-H 31-38 M8/M10		
386428	MP-H 38-45 M8/M10		
386429	MP-H 45-52 M8/M10	1046	1,50
386430	MP-H 52-59 M8/M10		
386431	MP-H 59-66 M8/M10		
386432	MP-H 66-74 M8/M10		
386433	MP-H 74-83 M8/M10		
386434	MP-H 83-92 M8/M10	1653	1,66
386435	MP-H 92-101 M8/M10		
386436	MP-H 101-110 M8/M10		
386437	MP-H 110-119 M8/M10		
386438	MP-H 119-127 M8/M10		
386439	MP-H 127-137 M8/M10	2301	2,54
386440	MP-H 137-145 M8/M10		
386441	MP-H 145-155 M8/M10		
386442	MP-H 155-163 M8/M10		
386443	MP-H 163-172 M8/M10		

Hilti residential pipe clamps MP-HI and MP-H

Service load and deformation at ambient temperature

Annex C4

Table D1: Resistance of $F_{Rk,t}$ of residential pipe clamp MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45 in case of fire after $t = 30, 60$ and 90 minutes in combination with threaded rods M10 strength class ≥ 4.8

Item number	Designation	Parameter of regression curve	$F_{Rk,t}$ [N]		
		$F_{Rk}(t) = c_3 (c_1 + c_2 / t)$	$F_{Rk,30}$	$F_{Rk,60}$	$F_{Rk,90}$
386402	MP-HI 8-12 M8/M10	$c_1 = 77,4336$ $c_2 = 6637,3415$ $c_3 = 0,682256$ $20 \text{ min} \leq t \leq 101 \text{ min}$	203,8	128,3	103,1
386403	MP-HI 12-16 M8/M10				
386404	MP-HI 16-20 M8/M10				
386405	MP-HI 20-25 M8/M10				
386406	MP-HI 25-31 M8/M10				
386407	MP-HI 31-38 M8/M10				
386424	MP-H 16-20 M8/M10				
386425	MP-H 20-25 M8/M10				
386426	MP-H 25-31 M8/M10				
386427	MP-H 31-38 M8/M10				
386428	MP-H 38-45 M8/M10				

Designation

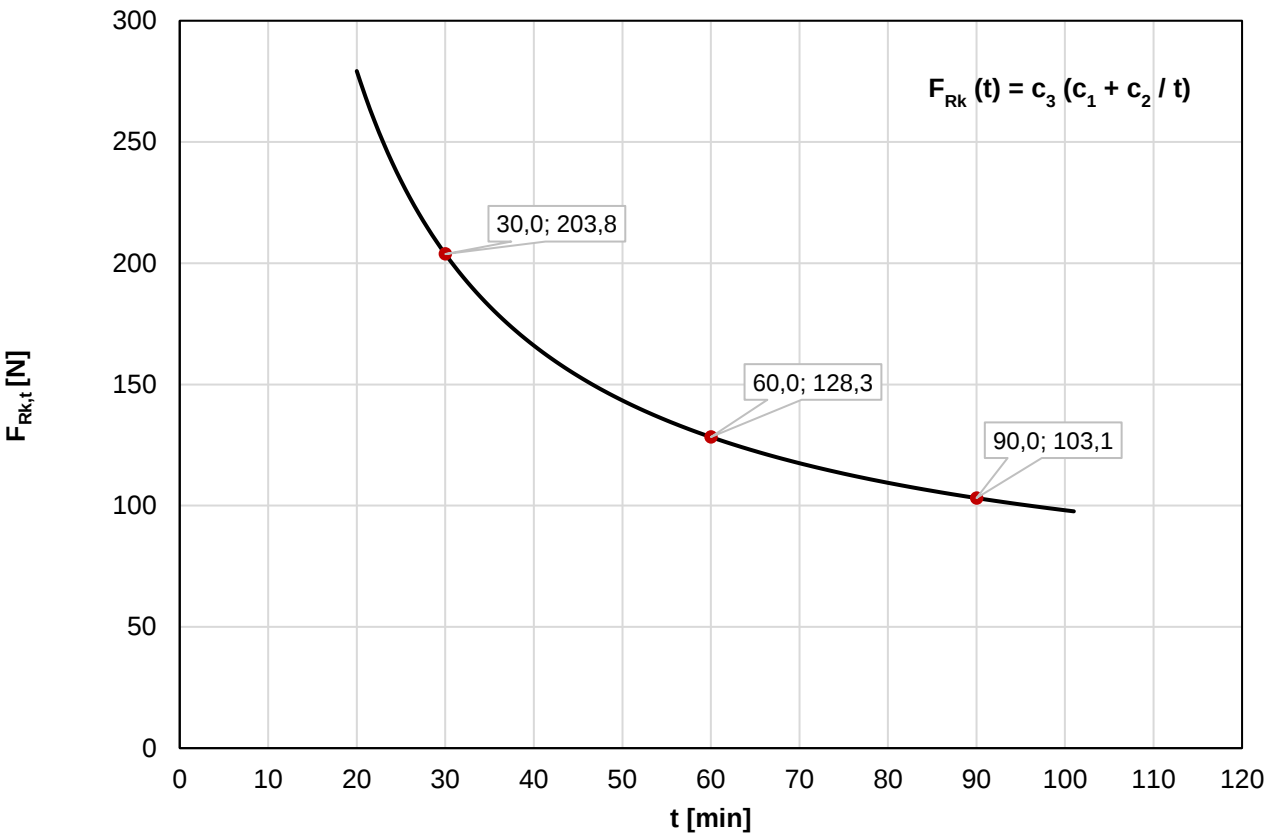
$F_{Rk,t}$ Resistance after an exposure time t in case of fire [N]
 $F_{Rk}(t)$ Resistance time function in case of fire [N]

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45

Annex D1

Figure D1: Regression curve according to Table D1



Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45

Annex D2

**Table D2: Load displacement function and deformations of residential pipe clamps
MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45 in combination with threaded
rods M10 strength class ≥ 4.8**

Item number	Designation	Parameter of regression curve	$F_{Rk,30}(\delta)$ [N]				$\delta_{max,t}$ [mm]	
		$F_{Rk,30}(\delta) = a_3(a_1 + \delta^{a_2})$	$F_{Rk,30}(15)$	$F_{Rk,30}(20)$	$F_{Rk,30}(25)$	$F_{Rk,30}(30)$	$\delta_{max,60}$	$\delta_{max,90}$
386402	MP-HI 8-12 M8/M10	$a_1 = 5,8564$ $a_2 = 1,1408$ $a_3 = 0,7945$ $14 \text{ mm} \leq \delta \leq 35 \text{ mm}$	102,2	141,9	183,0	225,3	35,7	35,7
386403	MP-HI 12-16 M8/M10							
386404	MP-HI 16-20 M8/M10							
386405	MP-HI 20-25 M8/M10							
386406	MP-HI 25-31 M8/M10							
386407	MP-HI 31-38 M8/M10							
386424	MP-H 16-20 M8/M10							
386425	MP-H 20-25 M8/M10							
386426	MP-H 25-31 M8/M10							
386427	MP-H 31-38 M8/M10							
386428	MP-H 38-45 M8/M10							

Designation

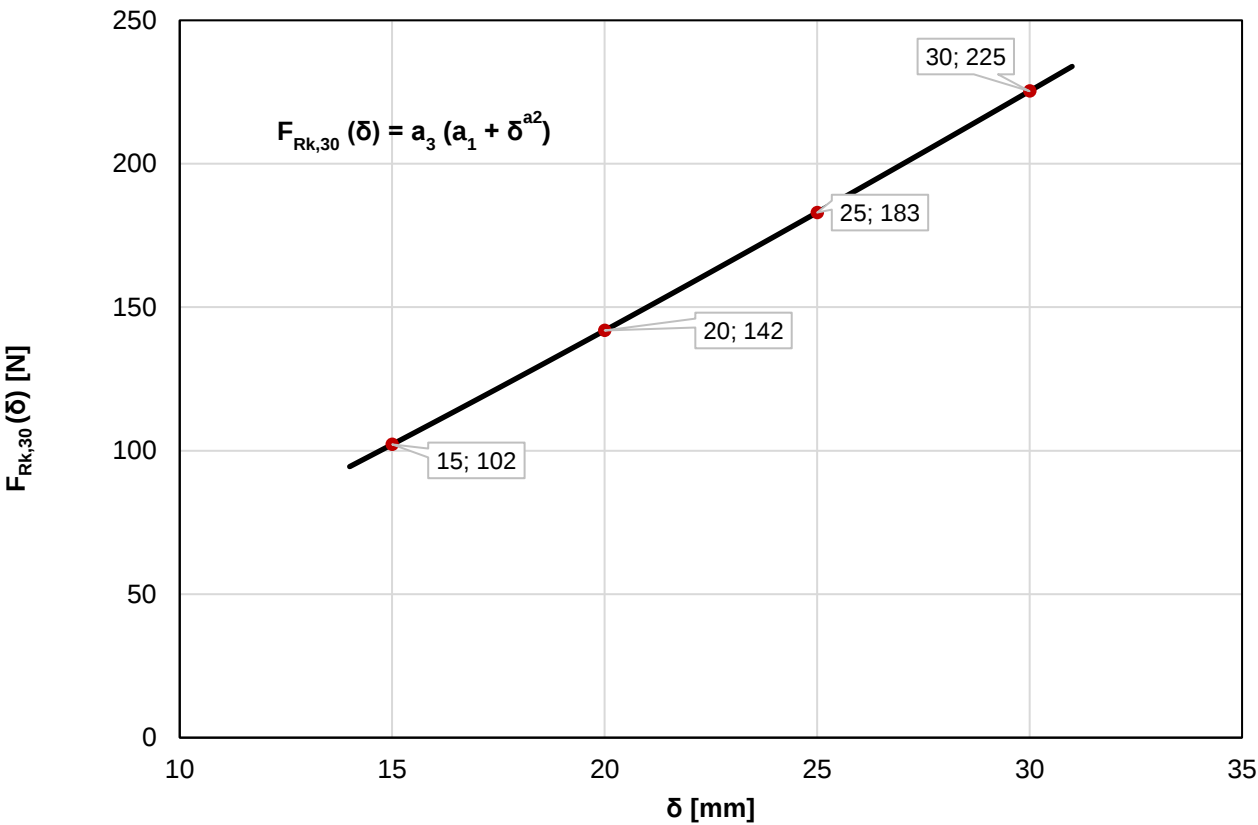
δ	Deformation
$\delta_{max,t}$	Maximum deformation after an exposure time $\leq t$ minutes in case of fire
$F_{Rk,30}(\delta)$	Load displacement function for an exposure time $t = 30$ minutes in case of fire

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45

Annex D3

Figure D2: Regression curve according to Table D2



Hilti residential pipe clamps MP-HI and MP-H	Annex D4
Resistance in case of fire of residential pipe clamps MP-HI 8-12 – MP-HI 31-38 and MP-H 16-20 – MP-H 38-45	

Table D3: Resistance of $F_{Rk,t}$ of residential pipe clamps MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74 in case of fire after $t = 30, 60$ and 90 minutes in combination with threaded rods M10 strength class ≥ 4.8

Item number	Designation	Parameter of regression curve	$F_{Rk,t}$ [N]		
		$F_{Rk}(t) = c_3 (c_1 + c_2 / t)$	$F_{Rk,30}$	$F_{Rk,60}$	$F_{Rk,90}$
386408	MP-HI 38-45 M8/M10	$c_1 = 130,0056$ $c_2 = 6113,7981$ $c_3 = 0,782223$ $22 \text{ min} \leq t \leq 117 \text{ min}$	261,1	181,4	154,8
386409	MP-HI 45-52 M8/M10				
386410	MP-HI 52-59 M8/M10				
386411	MP-HI 59-66 M8/M10				
386429	MP-H 45-52 M8/M10				
386430	MP-H 52-59 M8/M10				
386431	MP-H 59-66 M8/M10				
386432	MP-H 66-74 M8/M10				

Designation

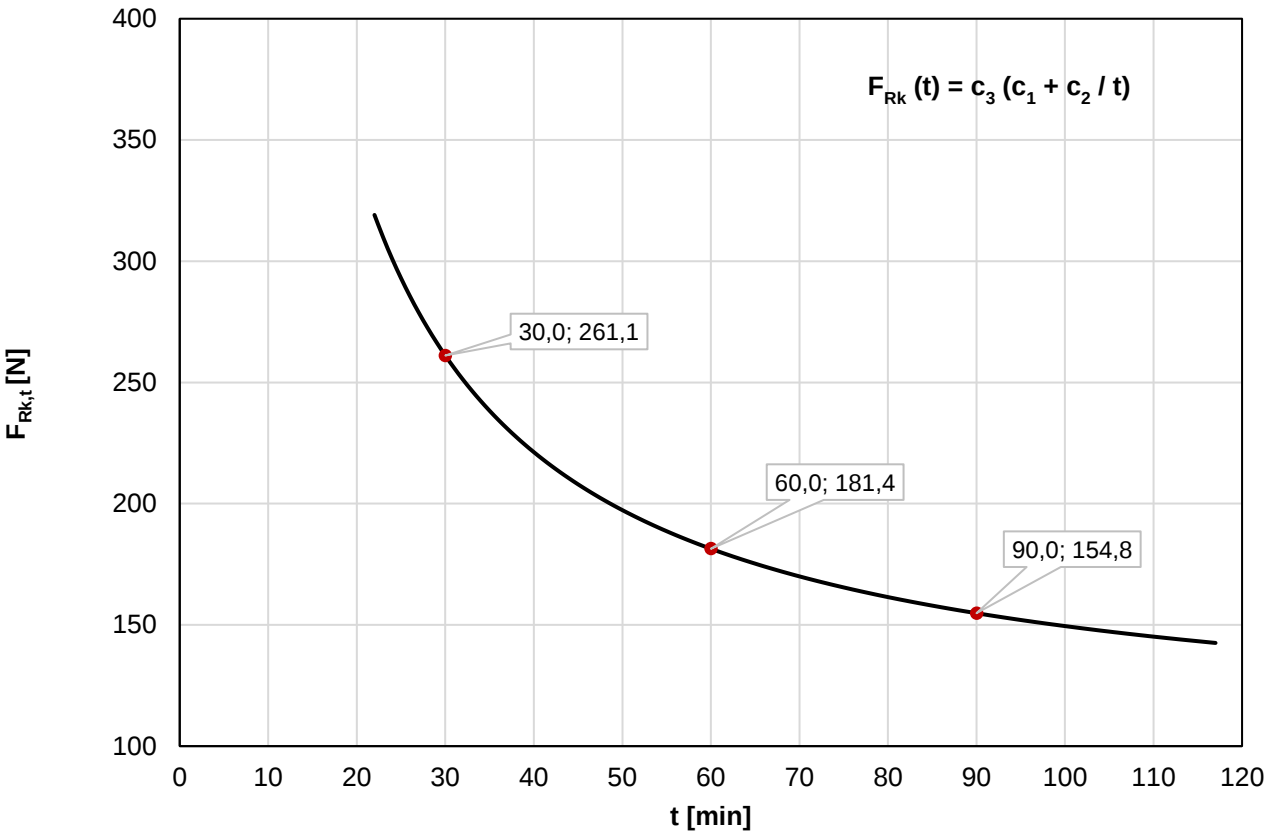
$F_{Rk,t}$ Resistance after an exposure time t in case of fire [N]
 $F_{Rk}(t)$ Resistance time function in case of fire [N]

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
 MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74

Annex D5

Figure D3: Regression curve according to Table D3



Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74

Annex D6

Table D4: Load displacement function and deformations of residential pipe clamps
MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74 in combination with
threaded rods M10 strength class ≥ 4.8

Item number	Designation	Parameter of regression curve	$F_{Rk,30}(\delta)$ [N]				$\delta_{max,t}$ [mm]	
		$F_{Rk,30}(\delta) = a_3(a_1 + \delta^{a_2})$	$F_{Rk,30}(15)$	$F_{Rk,30}(20)$	$F_{Rk,30}(25)$	$F_{Rk,30}(30)$	$\delta_{max,60}$	$\delta_{max,90}$
386408	MP-HI 38-45 M8/M10	$a_1 = 9,8588$ $a_2 = 0,9714$ $a_3 = 0,7905$ $14 \text{ mm} \leq \delta \leq 42 \text{ mm}$	108,2	143,1	177,7	212,1	42,6	42,6
386409	MP-HI 45-52 M8/M10							
386410	MP-HI 52-59 M8/M10							
386411	MP-HI 59-66 M8/M10							
386429	MP-H 45-52 M8/M10							
386430	MP-H 52-59 M8/M10							
386431	MP-H 59-66 M8/M10							
386432	MP-H 66-74 M8/M10							

Designation

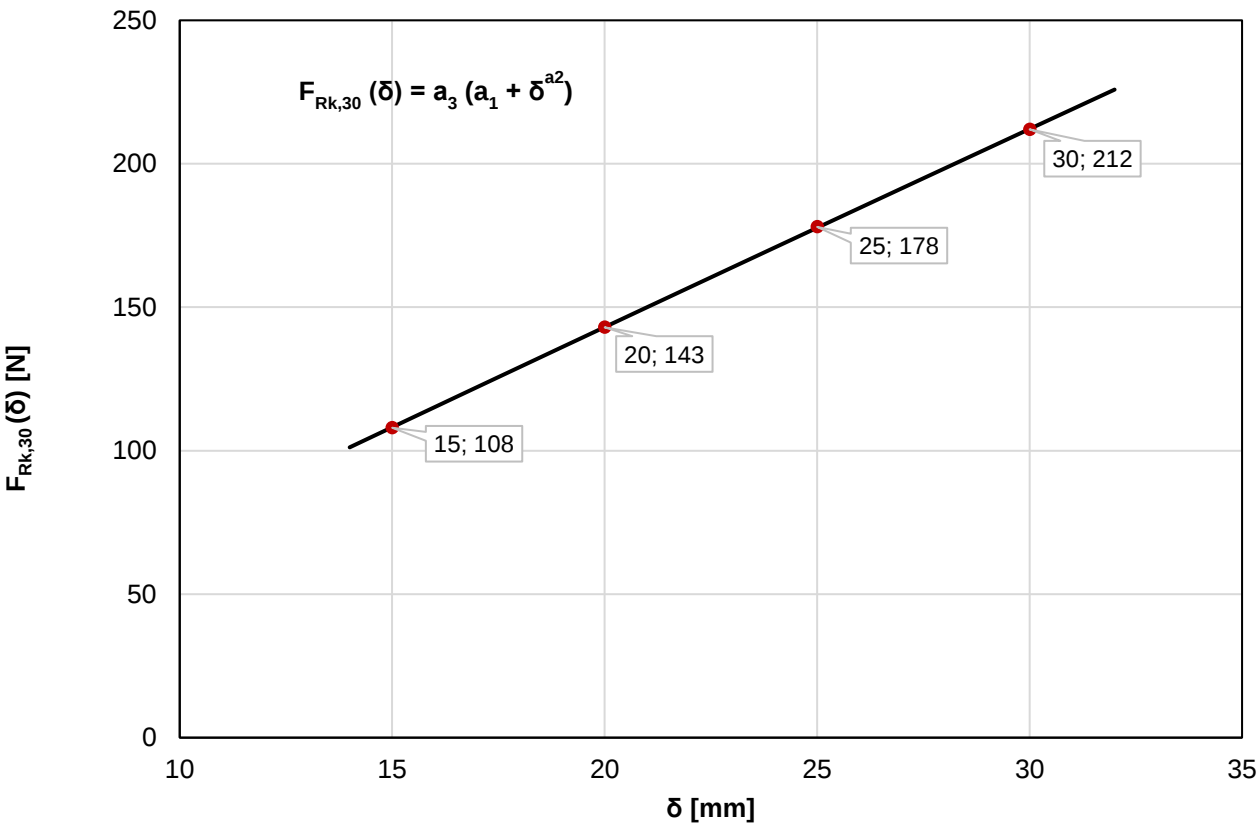
δ	Deformation
$\delta_{max,t}$	Maximum deformation after an exposure time $\leq t$ minutes in case of fire
$F_{Rk,30}(\delta)$	Load displacement function for an exposure time $t = 30$ minutes in case of fire

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74

Annex D7

Figure D4: Regression curve according to Table D4



Hilti residential pipe clamps MP-HI and MP-H	Annex D8
Resistance in case of fire of residential pipe clamps MP-HI 38-45 – MP-HI 59-66 and MP-H 45-52 – MP-H 66-74	

Table D5: Resistance of $F_{Rk,t}$ of residential pipe clamps MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119 in case of fire after $t = 30, 60$ and 90 minutes in combination with threaded rods M10 strength class ≥ 4.8

Item number	Designation	Parameter of regression curve	$F_{Rk,t}$ [N]		
		$F_{Rk}(t) = c_3 (c_1 + c_2 / t)$	$F_{Rk,30}$	$F_{Rk,60}$	$F_{Rk,90}$
386412	MP-HI 66-75 M8/M10	$c_1 = 251,4309$ $c_2 = 8335,49206$ $c_3 = 0,836356$ $17 \text{ min} \leq t \leq 116 \text{ min}$	442,7	326,5	287,7
386413	MP-HI 75-84 M8/M10				
386414	MP-HI 84-93 M8/M10				
386415	MP-HI 93-101 M8/M10				
386416	MP-HI 101-110 M8/M10				
386433	MP-H 74-83 M8/M10				
386434	MP-H 83-92 M8/M10				
386435	MP-H 92-101 M8/M10				
386436	MP-H 101-110 M8/M10				
386437	MP-H 110-119 M8/M10				

Designation

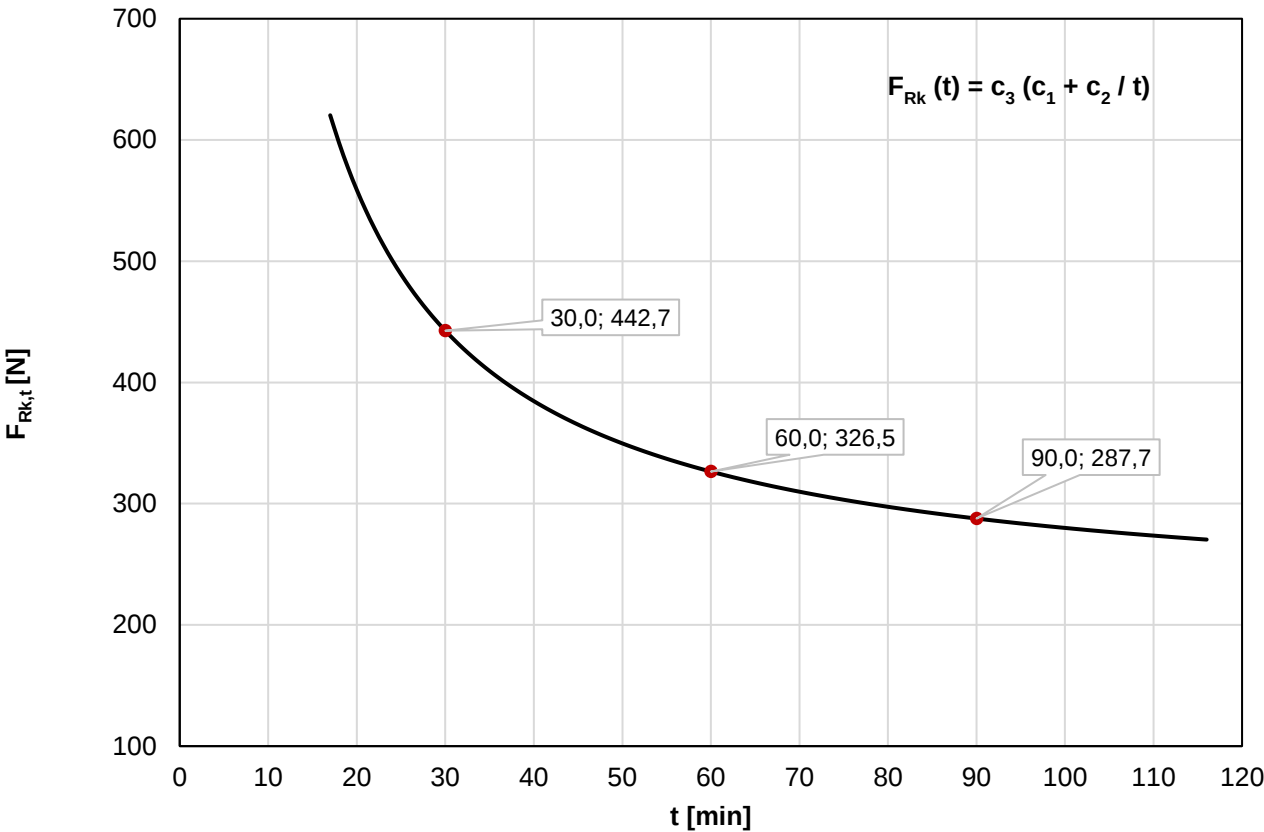
$F_{Rk,t}$ Resistance after an exposure time t in case of fire [N]
 $F_{Rk}(t)$ Resistance time function in case of fire [N]

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119

Annex D9

Figure D5: Regression curve according to Table D5



Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
 MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119

Annex D10

**Table D6: Load displacement function and deformations of residential pipe rings
MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119 in combination with
threaded rods M10 strength class ≥ 4.8**

Item number	Designation	Parameter of regression curve	$F_{Rk,30}(\delta)$ [N]				$\delta_{max,t}$ [mm]	
		$F_{Rk,30}(\delta) = a_3(a_1 + \delta^{a_2})$	$F_{Rk,30}(25)$	$F_{Rk,30}(40)$	$F_{Rk,30}(60)$	$F_{Rk,30}(80)$	$\delta_{max,60}$	$\delta_{max,90}$
386412	MP-HI 66-75 M8/M10	$a_1 = 44,7483$ $a_2 = 0,5817$ $a_3 = 0,8386$ $25 \text{ mm} \leq \delta \leq 80 \text{ mm}$	224,0	320,8	406,1	480,1	80,1	80,1
386413	MP-HI 75-84 M8/M10							
386414	MP-HI 84-93 M8/M10							
386415	MP-HI 93-101 M8/M10							
386416	MP-HI 101-110 M8/M10							
386433	MP-H 74-83 M8/M10							
386434	MP-H 83-92 M8/M10							
386435	MP-H 92-101 M8/M10							
386436	MP-H 101-110 M8/M10							
386437	MP-H 110-119 M8/M10							

Designation

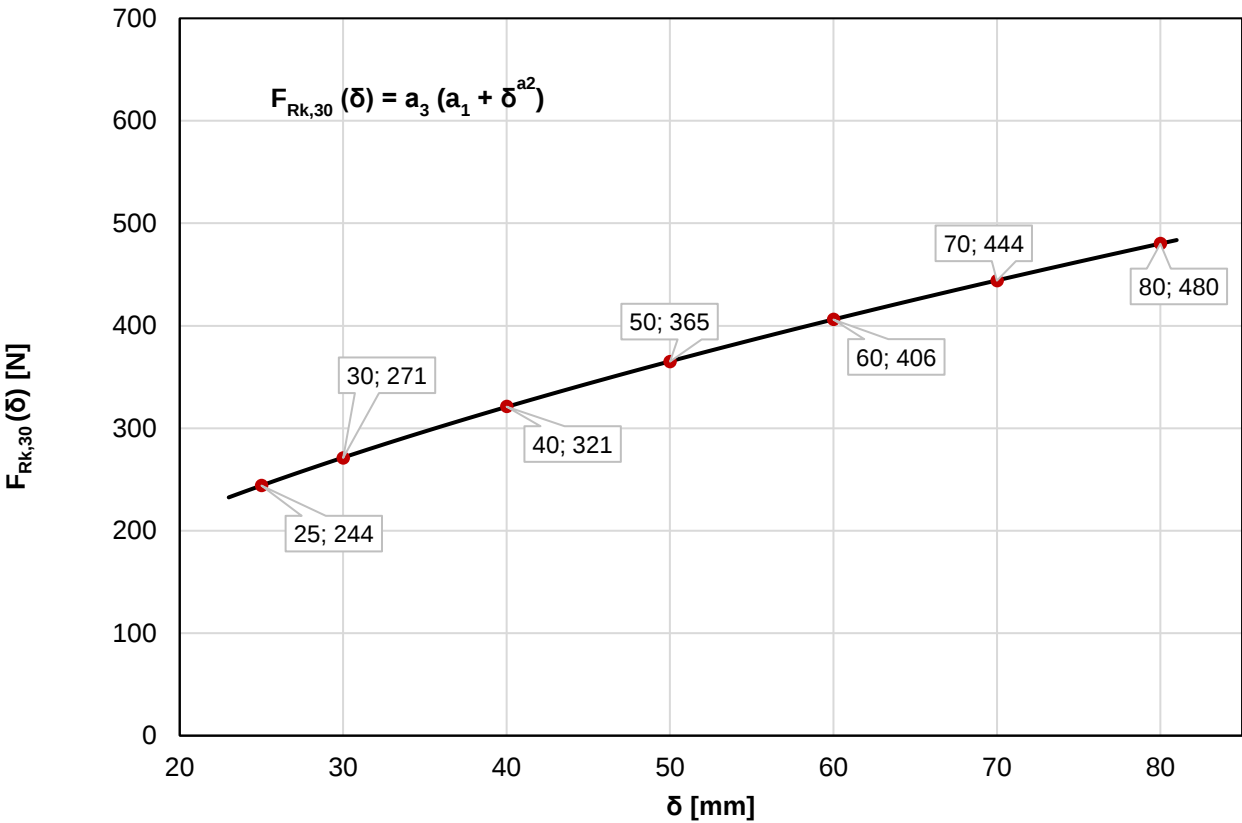
δ	Deformation
$\delta_{max,t}$	Maximum deformation after an exposure time $\leq t$ minutes in case of fire
$F_{Rk,30}(\delta)$	Load displacement function for an exposure time $t = 30$ minutes in case of fire

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119

Annex D11

Figure D6: Regression curve according to Table D6



Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 66-75 – MP-HI 101-110 and MP-H 74-83 – MP-H 110-119

Annex D12

Table D7: Resistance of $F_{Rk,t}$ of residential pipe clamp MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172 in case of fire after $t = 30, 60$ and 90 minutes in combination with threaded rods M10 strength class ≥ 4.8

Item number	Designation	Parameter of regression curve	$F_{Rk,t}$ [N]		
		$F_{Rk}(t) = c_3 (c_1 + c_2 / t)$	$F_{Rk,30}$	$F_{Rk,60}$	$F_{Rk,90}$
386417	MP-HI 110-119 M8/M10	$c_1 = 273,9652$ $c_2 = 10491,7186$ $c_3 = 0,830129$ $27 \text{ min} \leq t \leq 107 \text{ min}$	517,7	372,6	324,2
386418	MP-HI 119-129 M8/M10				
386419	MP-HI 129-137 M8/M10				
386420	MP-HI 137-145 M8/M10				
386421	MP-HI 145-155 M8/M10				
386422	MP-HI 155-163 M8/M10				
386423	MP-HI 163-172 M8/M10				
386438	MP-H 119-127 M8/M10				
386439	MP-H 127-137 M8/M10				
386440	MP-H 137-145 M8/M10				
386441	MP-H 145-155 M8/M10				
386442	MP-H 155-163 M8/M10				
386443	MP-H 163-172 M8/M10				

Designation

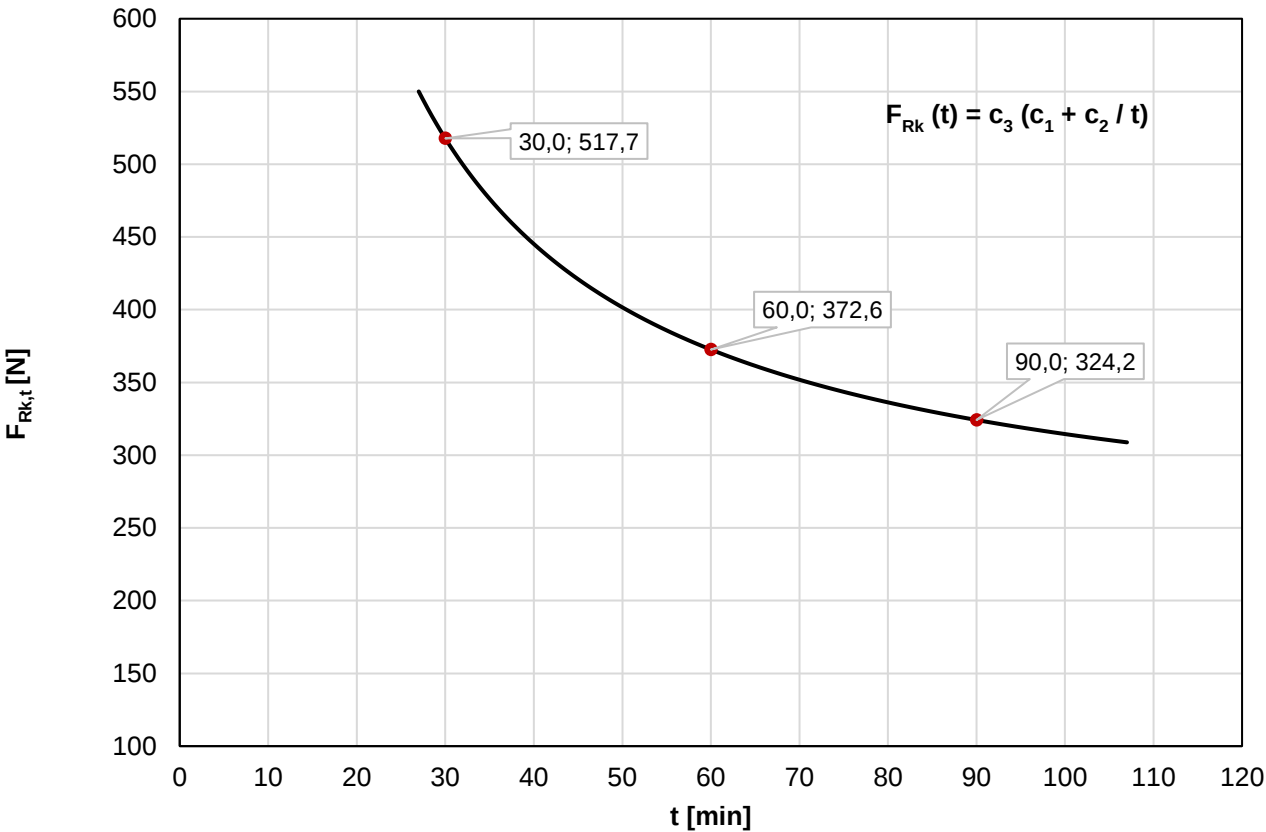
$F_{Rk,t}$ Resistance after an exposure time t in case of fire [N]
 $F_{Rk}(t)$ Resistance time function in case of fire [N]

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172

Annex D13

Figure D7: Regression curve according to Table D7



Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
 MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172

Annex D14

**Table D8: Load displacement function and deformations of residential pipe rings
MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172 in combination
with threaded rods M10 strength class ≥ 4.8**

Item number	Designation	Parameter of regression curve	$F_{Rk,30}(\delta)$ [N]				$\delta_{max,t}$ [mm]	
		$F_{Rk,30}(\delta) = a_3(a_1 + \delta^{a_2})$	$F_{Rk,30}(25)$	$F_{Rk,30}(40)$	$F_{Rk,30}(50)$	$F_{Rk,30}(55)$	$\delta_{max,60}$	$\delta_{max,90}$
386417	MP-HI 110-119 M8/M10	$a_1 = 49,3956$ $a_2 = 0,5912$ $a_3 = 0,766$ $23 \text{ mm} \leq \delta \leq 68 \text{ mm}$	253,7	335,0	382,2	404,4	68,1	68,1
386418	MP-HI 119-129 M8/M10							
386419	MP-HI 129-137 M8/M10							
386420	MP-HI 137-145 M8/M10							
386421	MP-HI 145-155 M8/M10							
386422	MP-HI 155-163 M8/M10							
386423	MP-HI 163-172 M8/M10							
386438	MP-H 119-127 M8/M10							
386439	MP-H 127-137 M8/M10							
386440	MP-H 137-145 M8/M10							
386441	MP-H 145-155 M8/M10							
386442	MP-H 155-163 M8/M10							
386443	MP-H 163-172 M8/M10							

Designation

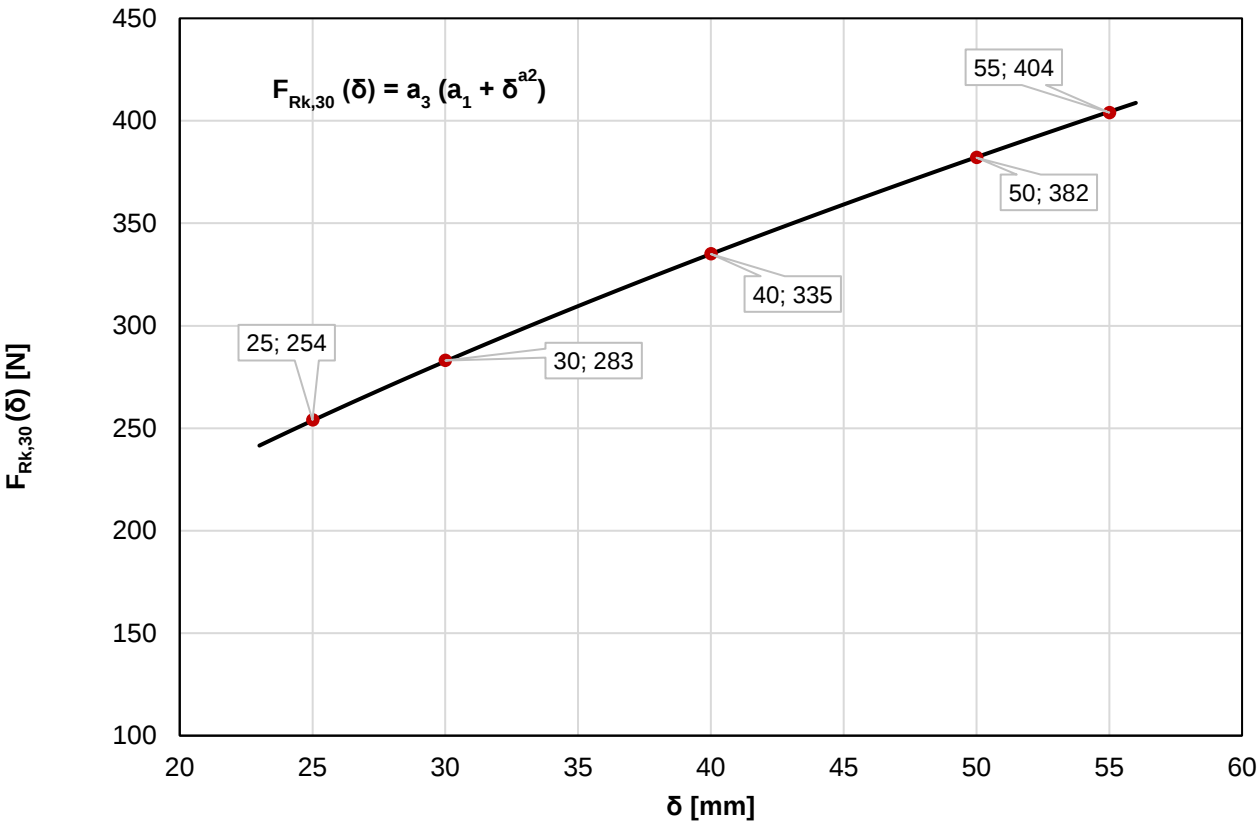
- δ Deformation
 $\delta_{max,t}$ Maximum deformation after an exposure time $\leq t$ minutes in case of fire
 $F_{Rk,30}(\delta)$ Load displacement function for an exposure time $t = 30$ minutes in case of fire

Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172

Annex D15

Figure D8: Regression curve according to Table D8

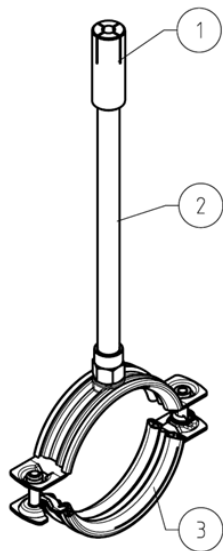


Hilti residential pipe clamps MP-HI and MP-H

Resistance in case of fire of residential pipe clamps
MP-HI 110-119 – MP-HI 163-172 and MP-H 119-127 – MP-H 163-172

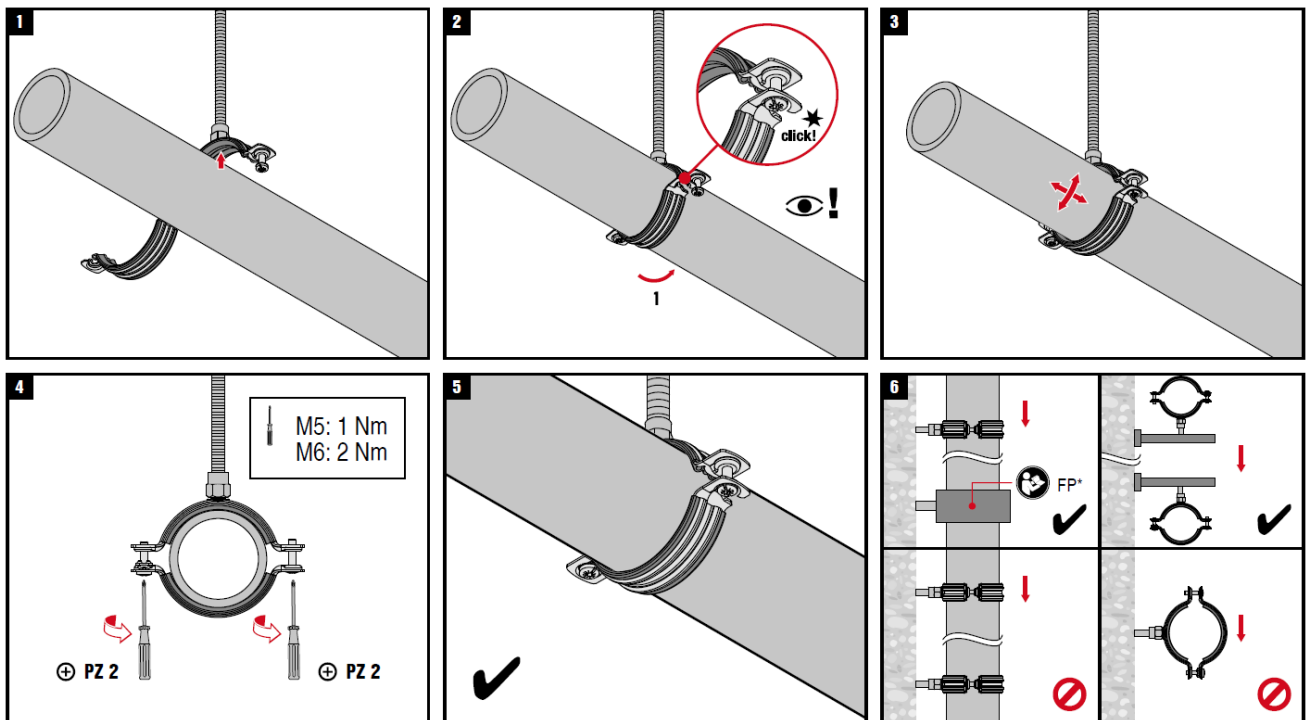
Annex D16

Figure E1: Bill of material and instructions for use



Bill of material					
Part of typical		Ref.	Opt.	Item No.	Description
Setup	Fixation	1	A	376967	HKD M10x40 drop-in anchor
		2	A*	339793	AM8x1000 4.8 threaded rod
				339794	AM8x2000 4.8 threaded rod
				216415	AM8x3000 4.8 threaded rod
		2	B**	339795	AM10x1000 4.8 threaded rod
		2	B**	339796	AM10x2000 4.8 threaded rod
				216418	AM10x3000 4.8 threaded rod
Pipe clamp	M8/M10	3	A	386402	MP-HI M8/10
			B	386443	MP-H M8/10

* Only for use under ambient temperature
** In case of fire



*FP = Fixed Point / Fixpunkt

Hilti residential pipe clamps MP-HI and MP-H

General assembly instructions

Annex E1
(informative)