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DMT GmbH & Co. KG
DMT-Test Laboratory for Fire Protection

Test Body for Fire Protection

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Test report
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DMT-DO-50-598
(translation)

Document no.	DMT-DO-50-598
Case worker	Woitschik
Order no.	8116687831
Customer	dormakaba Deutschland GmbH Dorma Platz 1 58256 Ennepetal Germany
Content of order	Test of a double leaved glazed aluminium tubular frame doors in aluminium block frame with a thickness of approx. 90 mm, in conjunction with different fitting components of dormakaba Deutschland GmbH, mounted to a standart supporting construction with low density rigid with a thickness of 175 mm for fire resistance
Test method	EN 1634-1:2014+A1:2018 in conjunction with EN 1363-1:2012 Further standards according to section 3.1
Fire exposed side	Opening side / hinge side

Test results	Integrity E	Thermal insulation EI_1	Thermal insulation EI_2	Radiation EW
	107 min.	60 min.	107 min.	107 min.

Date of order	**Test specimen receipt**	**Date of test**	**Date of report**	**Period of validity**
17.02.2019	26.03.2019	03.04.2019	14.06.2019	unlimited

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-11035-03-00

egolf member

Notified Body:
NB 2509

DMT-Prüfstelle für Brandschutz DMT

This test report consists of 19 pages and 19 annexes.

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1 Size of order and cooperation of the test lab in choosing the test specimen

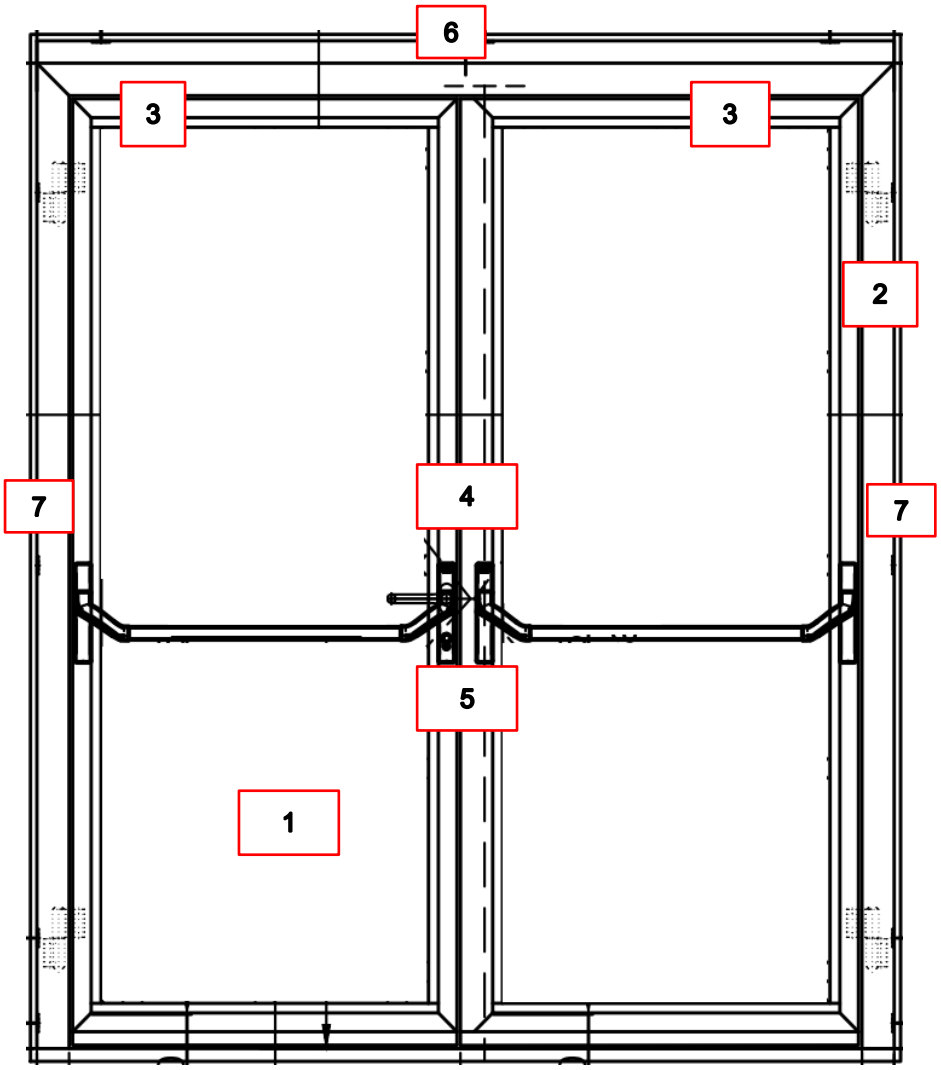
In a coordination meeting dormakaba Deutschland GmbH explained its intention to DMT GmbH & Co. KG, to carry out a test according to EN 1634-1 for the European procedure. With this test the verification of the applicability of the swing door operator **„ED100-250“**, the locks **„SVA 2000F (RR)“**, **„SVI 2000F (RR)“,** the half set **„OGRO 8350VFS“**, the panic fitting **„PHA 2500“**, the pre-selector **„MK 397“** and other fitting components of the dormakaba Deutschland GmbH regarding the performance criteria according to EN 1634-1 in conjunction with EN 1363-1 (integrity and insulation) should be provided. The fitting components are described in detail in section 2.2.

The design and construction of the fire protection door was defined by dormakaba Deutschland GmbH and die Novoferm GmbH. DMT GmbH & Co. KG was not involved in selecting the test specimen to be tested.

2 Description of the test specimen

The description of the door construction confines primarily to the description of the tested fitting components of dormakaba Deutschland GmbH.

2.1 Door overview



2.2 Test specimen description

(all dimensions stated in mm)

Door leaf:	Position 1
Construction:	Glazed tubular frame door leaf made of aluminium
Manufacturer:	Novoferm GmbH
Thickness:	90
Material:	Insulated aluminium-compound profiles, fire protection glass
Glazing:	Fire protection glass Active and inactive leaf (W x H) = 802 x 2082
Outer door leaf dimension (W x H):	Active leaf: 960,1 x 2240 Inactive leaf: 960,1 x 2240

Door leaf weight:	Active leaf: 186,7 kg Inactive leaf: 188,3 kg
Door frame:	Position 2
Construction:	Aluminium-blockframe
Additional fitting:	A combination profile consisting of an insulated aluminium profile was installed crosswise above the frame. This combination profile was used to accommodate the swing door operator
Manufacturer:	Novoferm GmbH
Material:	Insulated aluminium frame profiles
Threshold:	Without
Outer frame dimension (W x H):	2000 x 2353
Clearance of opening (W x H):	1849 x 2225
Fastening:	Dowel Hilti HRD-C 10 x 160 (top) resp. Hilti HRD-C 10 x 100 (side) through the insulation core into the supporting construction
Backfilling of the frame	Filled with mineral wool
Further details on the construction of the door, the frame, the materials used and the other fittings are deposited at DMT GmbH & Co. KG and described in detail in the test report DMT-DO-50-604.	
Swing door operator:	Position 3
Construction / designation:	ED100/250 with sliding rail
Manufacturer:	dormakaba Deutschland GmbH
Type of mounting:	Driving system: On the frame, opening side Sliding rail: On the door leaf profile, opening side
Fastening:	Driving system: Mounting plate "ED100/250" fixed to the frame with 12 pieces M6 x 30 countersunk screws and M6 rivet nuts supplied by the manufacturer. Driving system attached to mounting plate with screws supplied by manufacturer. Sliding rail: Fastening with M5 screw and M5 rivet nut to frame profile of door leaf
Locking / lock / strike plate:	Position 4
Lock active leaf:	

- Fabrication / designation:	SVA 2000F RR
- Manufacturer:	dormakaba Deutschland GmbH
- Design:	Tubular frame panic lock
- Fastening:	Screwed via the lock face plate using 2 pieces of countersunk screws M5 x 10 to 2 spacer plates, each of which is fastened to the sash profile using 2 countersunk screws M5 x 16
- Number of latches / bolts:	1 / 1
- Backset:	45
- Forend dimensions (W x H):	24 x 270, t = 3
- Material:	stainless steel
Lock inactive leaf:	
- Fabrication / designation:	Motor-panic lock with lipped face plate SVI 2000F RR
- Manufacturer:	dormakaba Deutschland GmbH
- Fastening:	Screwed via the lock face plate with 2 pieces of countersunk screws M5 x 10 to 2 spacer plates, these are each fastened to the leaf profile with 2 pieces of countersunk head screws M5 x 16.
- Number of latches / bolts:	Vertical rod top and bottom
- Backset:	40
- Lipped dimensions (W x H):	24 x 380, t = 3
Vertical rods:	Top vertical rod with spring for locking "SVI 2000F" (RR) upwards Bottom vertical rod for locking "SVI 2000F (RR)" downwards
Additional lock:	Switch lock DIN L/R usable, for automatic locking of the inactive leaf upwards
- Fastening:	Switch lock fastened with 6 pieces of countersunk screws M5 x 10 to spacer plate for switch lock
Strike plate top locking:	Lipped rod strike 24 mm dormakaba. Fastened to the frame with 2 pieces of spacers and 2 pieces of countersunk screws M5 x 10.
Strike plate bottom locking:	Floor recess plate, dimensions 80 x 53
Handle:	Position 5
Fabrication / designation:	Panic fitting PHA 2500
Manufacturer:	dormakaba Deutschland GmbH
Material:	Stainless steel

Fastening:	Closing sided on the active and inactive leaf, each screwed to the leaf profile with 4 pieces of countersunk head screws M5 and M5 rivet nuts
Handle height (distance floor to centre handle):	1050
Pre-selector	Position 6
Fabrication / designation:	MK 397
Manufacturer:	dormakaba Deutschland GmbH
Mounting / Fastening:	Mounting on inactive leaf closing side using 6 pieces of countersunk head screw M5
Cable transition:	Position 7
Fabrication / designation:	KÜ 480
Manufacturer:	dormakaba Deutschland GmbH
Mounting / Fastening:	Embedded in frame door and frame profile (recess 23 x 480), hinge side of active and inactive leaf. Fastened to 2 spacer plates with 2 pieces of countersunk screws M5 x 10. Spacer plate each screwed to door frame profile with 2 pieces of countersunk screw M5 x 10. Fastening to inactive leaf profile by means of spacer plate, screwed with 2 pieces of countersunk screw M5 x 10. Height 1570 above floor height

Further details on the design and construction of the tested fitting components can be found in annexes 1.1 to 1.12 of this test report.

2.3 Supporting construction and conditioning

The door construction was lateral embedded to a standard supporting construction according to EN 1363-1 paragraph 7.2.2.2 as a massive supporting construction with low density rigid with a thickness of 175 mm. The supporting construction consisted of blocks of aerated concrete, strength class 4, density class 0.65, size (L x W x H) 62.4 cm x 17.5 cm x 24.9 cm. To the top the connection was made to a reinforced concrete lintel. For bricklaying thin bed mortar acc. to EN 998-2 was used.

The supporting construction with a thickness of 175 mm was mounted to a test frame.

The clear opening of the furnace chamber was (W x H): 4000 mm x 4000 mm.

The supporting construction was made on 22.03.2019. The test specimen was installed on 26.03.2019.

A full conditioning of the supporting construction and the verification according to paragraph 8.2 EN 1363-1 is made.

2.4 Verification and Sampling

The selection of the test specimen was done by the sponsor.

The test specimen was manufactured as prototype in single part production, so there was no sampling out of production.

In EN 1634-1, paragraph 6.6 "Verification and sampling", the following is stated:

When the method of construction precludes a detailed survey of the test specimen, without having to permanently damage it or if it is considered that it will subsequently be impossible to evaluate construction details from a post test examination, then one of two options shall be exercised by the laboratory, either:

a) the laboratory shall request or oversee the manufacture of the doorset or openable window which is to be the subject of the test; or

b) the sponsor shall, at the discretion of the test laboratory, be requested to supply an additional test specimen or that part of the test specimen which cannot be verified (e.g. door leaf) to the number required for testing; the laboratory shall then choose freely which of these shall be submitted to the test and which shall be used to verify the construction.

The construction to be tested was a construction which admits a detailed inspection during the installation of the test specimen and after the fire test. For this reason none of the two options was performed.

The sponsor provided DMT GmbH & Co. KG prior to the test a detailed description and construction drawings on which base a detailed inspection of the test specimen was performed prior to and after the test and the correctness of the provided information could be confirmed.

The "**SVI 2000F (RR)**" and "**SVA 2000F (RR)**" locks used in the test, the "**PHA 2500**" panic fitting, the "**OGRO 8350VFS**" half-fitting and the "**MK 397**" pre-selector were sanpled from dormakaba Deutschland GmbH, DORMA Platz 1, Ennepetal plant on 13.03.2019 by an employee of the North Rhine-Westphalia Materials Testing Office (MPA NRW). The fittings were produced in the production plant of dormakaba Deutschland GmbH, DORMA Platz 1, 58256 Ennepetal, Germany. The sampler masked the fittings with the numbers 52305 to 52309 and

52314. The sampling report dated 13.03.2019 has been signed by an employee of the Materials Testing Office North Rhine-Westphalia and an employee of the manufacturing plant and is available to DMT GmbH & Co. KG.

Further information of sampling of the glass used at the fire test as also of other parts of the test specimen are not presented to DMT GmbH & Co. KG resp. are unknown.

DMT GmbH & Co. KG was not involved in the selection of samplings out of production.

3 Test requirements and preparation

3.1 Test standards

EN 1363-1:2012 "Fire resistance tests - Part 1: General Requirements"

EN 1363-2:1999 "Fire resistance tests - Part 2: Alternative and additional procedures"

EN 1634-1:2014+A1:2018 "Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows"

EN 13501-2:2016 "Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services"

EN 16034:2014 "Pedestrian doorsets, industrial, commercial, garage doors and openable windows – Product standard, performance characteristics – Fire resistance and/or smoke control characteristics"

EN 15269-5:2014+A1:2016 "Extended application of test results for fire resistance and/or smoke control for door, shutters and openable window assemblies, including their elements of building hardware - Part 5: Fire resistance of hinged and pivoted metal framed glazed doorsets and openable windows"

Please note: The above stated standards conform to the german standards DIN EN.

3.2 Selection of the exposed side to the fire

The door construction was tested from the closing side / non-hinges side.

The test is part of a test series, the selection of the fire exposed side results out of context of the test series.

The selection of the fire exposed side was made at the request of the customer and DMT GmbH & Co. KG.

3.3 Used test equipment

The test equipment was used according to the list of at DMT Test Body for Fire Protection Lathen used testing instruments.

3.4 Operability test
(according to EN 16034:2014, Annex A, paragraph A.2.2)

Prior to being mounted on the test furnace, the sample to be fire tested was checked for operability in the fire restraint frame by operating the leaf from the fully closed position to an opening of minimum 90° and back to fully closed for 25 cycles. The opening process was done manually, the closing process by the door closer. The functionality was ensured.

3.5 Self-closing for doorsets or openable windows fitted without door coordinating devices
(according to EN 16034:2014, Annex A, paragraph A.4.1)

Following the test according to 3.5 the door leaf was opened to (10 ± 2)°; this state was maintained for (20 ± 2) s and released without push. It was ensured that the leaf returned to the closed position.

Ability to releaseTo verify the ability to release the door leaf was opened three consecutive times up to 90° and hold in the opened position by the mobile hold open device of DMT GmbH & Co. KG. The release happened by simulating a fire signal (cut off main powers). The closing via the closing device into the closed and latched position was ensured. The ability to release was ensured.

3.6 Ability to release
(according to EN 16034:2014, paragraph 5.3)

To verify the ability to release each door leaf was opened three consecutive times up to 90° and hold in the opened position by the mobile hold open device of DMT GmbH & Co. KG. The release happened by simulating a fire signal (cut off main powers). The closing via the closing device into the closed and latched position was ensured. The ability to release was ensured.

3.7 Retention force measurement
(according to EN 1634-1:2014+A1:2018, paragraph 10.1.3)

The measurement of the forces of opening and closing, measured at a distance of 100 mm from the closed position, resulted in a value of approx. 26 Nm for the active leaf and a value of approx. 28 Nm for the inactive leaf with a distance of 1000 mm from the centre of the hinges.

3.8 Gap measurement
(according to EN 1634-1:2014+A1:2018, paragraph 10.1.2)

The width of the primary gaps of the functional joints measured prior to the fire test are deposited at DMT GmbH & Co. KG, as only the different fittings of dormakaba Deutschland GmbH are evaluated in this report.

3.9 Final settings
(according to EN 1634-1:2014+A1:2018, paragraph 10.1.4)

Prior to the test for fire resistance the fire protection door was submitted to a final closing procedure where the leaf was opened for approx. 300 mm and then closed again manually.

The active leaf was latched in by means of a latch, but not locked. The key was removed. The inactive leaf was latched upwards and downwards via the vertical rods into the frame resp. the floor locking recess.

3.10 Setup of furnace thermocouples

The furnace was exposed to flames according to the heating curve according to EN 1363-1:2012, paragraph 5.1.1. Twelve plate thermometers according to EN 1363-1:2012, paragraph 4.5.1.1, were used to measure the temperature in the furnace. Those 12 furnace thermocouples, used to control the temperature in the furnace, were spread equally, so every single element covered a maximum area of 1.5 m².

3.11 Setup of measuring points for furnace pressure

The tubular measuring points to control the pressure in the furnace according to EN 1363-1:2012, paragraph 4.5.2, are arranged in a way to measure the pressure in the furnace with one element at a height of 500 mm from the threshold (floor level furnace) and one element at 3900 mm. The pressure ratio at the fire exposed side of the furnace was adjusted and observed according to EN 1363-1:2012, paragraph 5.2, so a pressure of 0 Pa. appears at a height of 500 mm (measured from the threshold of the test specimen).

3.12 Thermocouples on the unexposed side of the test specimen

The temperatures on the unexposed side of the test specimen were measured by a total number of 47 thermocouples according to EN 1363-1, paragraph 4.5.1.2.

The measuring points for measuring the temperature increases - in relation to the initial temperature of the unexposed side of the test specimen - are shown in annex 2.1.

3.13 Setup of measuring points for deflection

The arrangement of the measuring points for distortion measurement are deposited at DMT GmbH & Co. KG, as this report only evaluates the different fittings of dormakaba Deutschland GmbH.

3.14 Requirements and deviations

The requirements correspond to the standard requirements. There were no deviations to the test methods resp. test conditions.

4 Test execution and results

The test specimen was put to a fire test under the conditions as specified in EN 1363-1:2012 and EN 1634-1:2014+A1:2018 on 03.04.2019.

The fire exposed side was the closing side / non-hinges side.

4.1 Measurement of temperature rise

The temperature increases above the initial temperature determined during the fire test on the side of the test specimen facing away from the fire are desposited at DMT GmbH & Co. KG, as only the various fittings of dormakaba Deutschland GmbH are evaluated in this report. The temperatures in the furnace, the deviation of the fire chamber temperatures from the set curve and the ambient temperature are shown in charts in annexes 2.3 to 2.5.

4.2 Deflection of the test specimen during fire exposure

The results of the distortion measurement are deposited at DMT GmbH & Co. KG, as only the different fittings of dormakaba Deutschland GmbH are evaluated in this report.

4.3 Observations during the fire test

The observations during the fire test relating to the fittings are given in annex 3.1.

The detailed observations are deposited at DMT GmbH & Co. KG, as only the different fittings of dormakaba Deutschland GmbH are evaluated in this report.

5 Summary of test results and comparison to the requirements of EN 1634-1:2014+A1:2018

The following Table 1 lists the key results of the door design and compares them with the requirements of EN 1634-1 for the requested categories EI_1 90 and EI_2 90 of EN 13501-2:2016.

Table 1: requirements according to EN 1634-1:2014+A1:2018 on physical barriers for fire protection; summary of key results and comparison with the requested categories EI_1 90 and EI_2 90 according to EN 13501-2:2016

Referring to a standard	Performance criteria	Test results (fire exposed side = Opening side / hinge side)			Comparison
Indications according to		Description	Results		of test results with the requirements for classes EI_1 90 and EI_2 90 according to EN 13501-2:2016 see paragraph 6
EN 1634-1 paragraph 11.1	Protection of integrity, e.g. avoidance of:	Ignition or smouldering of the cotton pad	no igniting or smouldering of the cotton pad		fulfilled
		Penetration of 6 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Penetration of 25 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Sustained flaming > 10 s at the unexposed side	Flames > 10 s at the unexposed side did not occur		
EN 1634-1 paragraph 11.2.3 and 11.2.4 and also 11.2.5	Observance of allowed temperature rise at the fire unexposed side above the initial temperature		classification time (90 min.)	End of test (101 min.)	
	Maximum allowed average value = 140 K	ΔT - mean in K:	65	70	fulfilled
	Maximum allowed single value = 180 K	ΔT - Max in K.:	82	115	EI_2 fulfilled
		at measuring point no.:	119	91	
	supplementary procedure Maximum allowed single value = 180 K	ΔT - Max in K:	219	243	EI_1 not fulfilled
		at measuring point no.:	99	99	
	Temperatures of peripheral components (frame) max. allowed value = 360 K (EI_2) max. allowed value = 180 K (EI_1)	Max. temperature increase of peripheral components	230	272	EI_1 not fulfilled EI_2 fulfilled
		at measuring point no.:	105	105	
EN 1634-1 paragraph 11.3	Observance of the surface temperature of > 300°C at the unexposed side	Radiation in kW/m²	-*)		fulfilled
EN 1363-1 paragraph 11.4.2	Insulation versus integrity	Integrity	107 min.		fulfilled
EN 1363-1 paragraph 5.6	Ambient temperature max. temperature increase +20 K max. temperature decrease -10 K	ΔT - Max in K:	0		fulfilled
		ΔT - Min in K:	0		
EN 1363-1 paragraph 9.2	Pressure inside furnace during fire exposure	Pressure in furnace at neutral pressure level	see Annex 2.6		
		Pressure furnace at the top edge of test specimen (max.)			

*) Radiation was not determined as temperatures were expected to be below 300° C.

6 Conclusions and recommendations

The test specimen mounted to standard supporting construction with low density rigid with a thickness of 175 mm, wie in den Anlagen 1.1 bis 1.12 and section 2, reached the following test results:

Table 2: summary of test results of the fire protection door when flamed from the opening side / hinge side according to EN 1634-1:2014+A1:2018

Integrity (E):	
Cotton pad	107 minutes no igniting or smouldering of the cotton pad
Gap gauge 6 mm	107 minutes was not used until the end of test
Gap gauge 25 mm	107 minutes was not used until the end of test
Permanent flames > 10 s	107 minutes no permanent flames until the end of test
Thermal insulation (I):	
Allowed average	107 minutes
Maximum temperature (supplementary procedure) I_1	60 minutes
Maximum temperature I_2	107 minutes
Radiation (W):	107 minutes
Duration of the test:	107 minutes

The test specimen met the following performance criteria:

Table 3: summary of performance criteria of the fire protection door when flamed from the opening side / hinge side according to EN 1634-1:2014+A1:2018

E - Integrity (permanent flames, cotton pad, gap gauge)	107 minutes
EI_1 – Thermal insulation (supplementary procedure)	60 minutes
EI_2 – Thermal insulation	107 minutes
EW – Radiation	107 minutes

The tested door construction ensured an integrity for the total test duration of 107 minutes. Until the end of the test there was no ignition in the area of the tested fittings of dormakaba Deutschland GmbH. Thus it can be stated in summary that the tested and above described fittings of the company dormakaba Deutschland GmbH did not significantly negatively influ-

ence the behaviour of the fire protection closure with regard to the above mentioned performance criteria integrity, thermal insulation (EI_2) and radiation over a period of at least 90 minutes, so that these criteria were fulfilled.

7 Field of direct application of test results according to EN 1634-1:2014+A1:2018 paragraph 13

Since this test report describes the results of the described fittings of dormakaba Deutschland GmbH, the field of direct application according to EN 1643-1 is not applicable.

8 General statement

This test report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1634-1, EN 1363-1, and - where appropriate - EN 1363-2. Any significant deviation with respect to size, construction details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

Lathen, 14.06.2019

Kruse
(deputy head of test lab)

DMT-Prüfstelle für Brandschutz DMT

Woitschik
(Case worker)

Annotations
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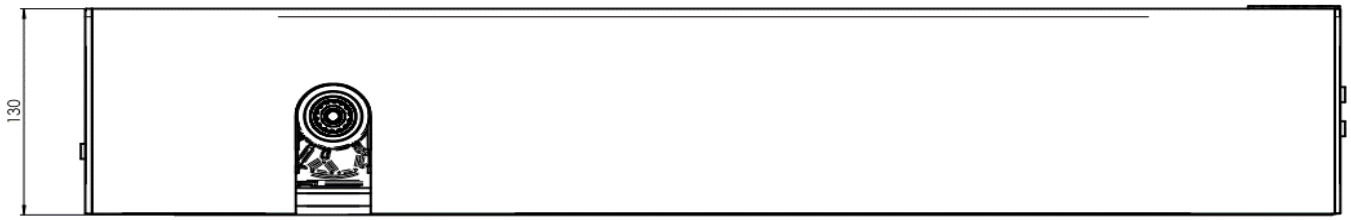

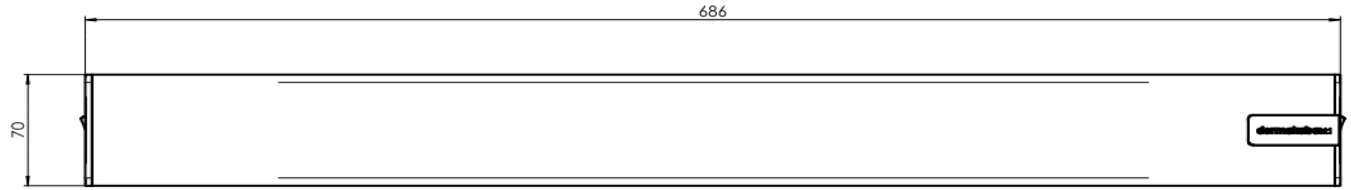

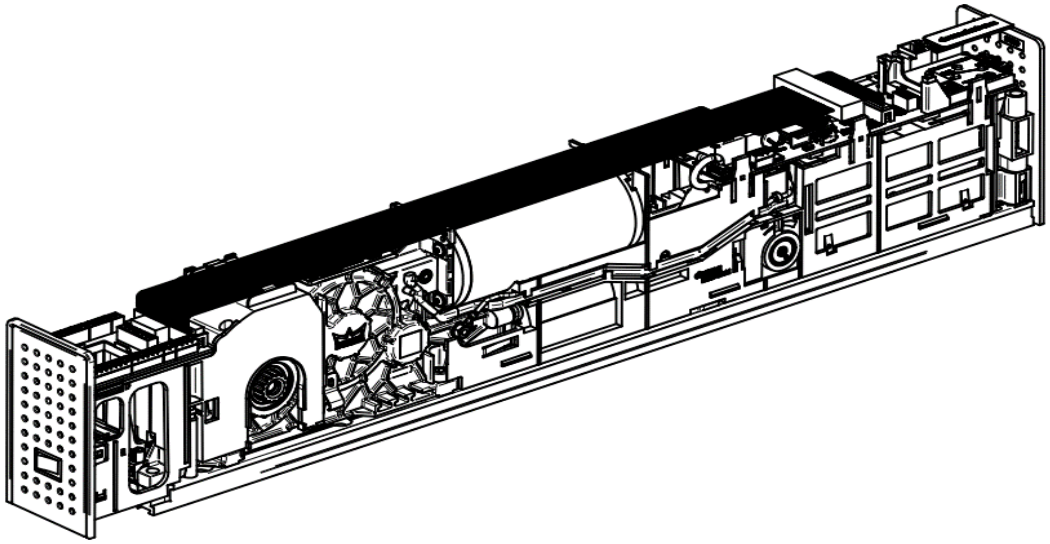

DORMA ED 250 with slide rail	annex 1.1 of
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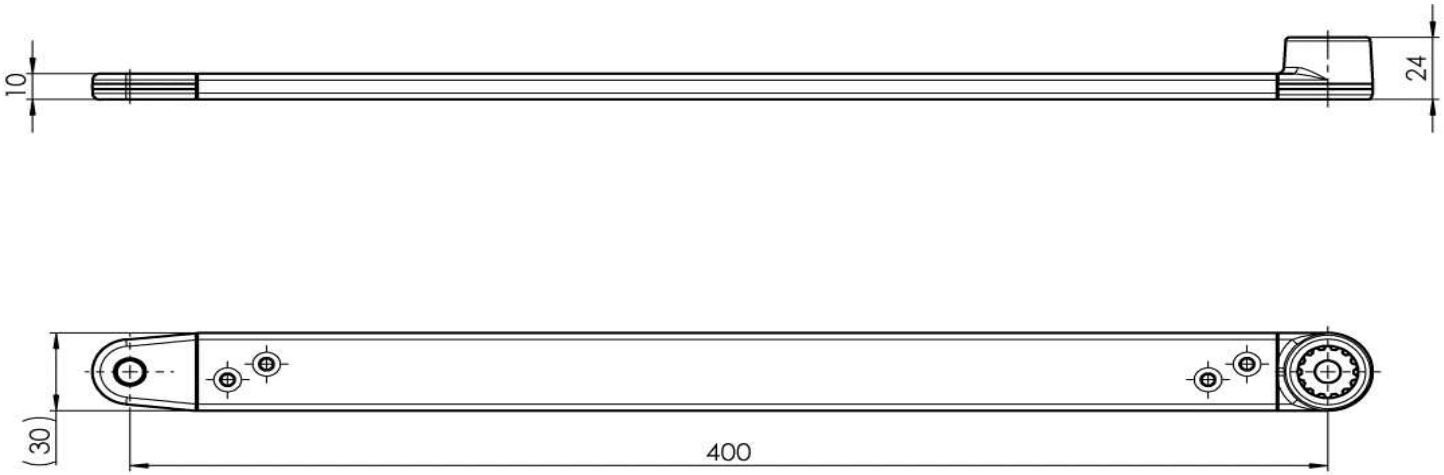

ED100/250
Gleischienenhebel
slide channel lever

ED 100/250	annex 1.2 of
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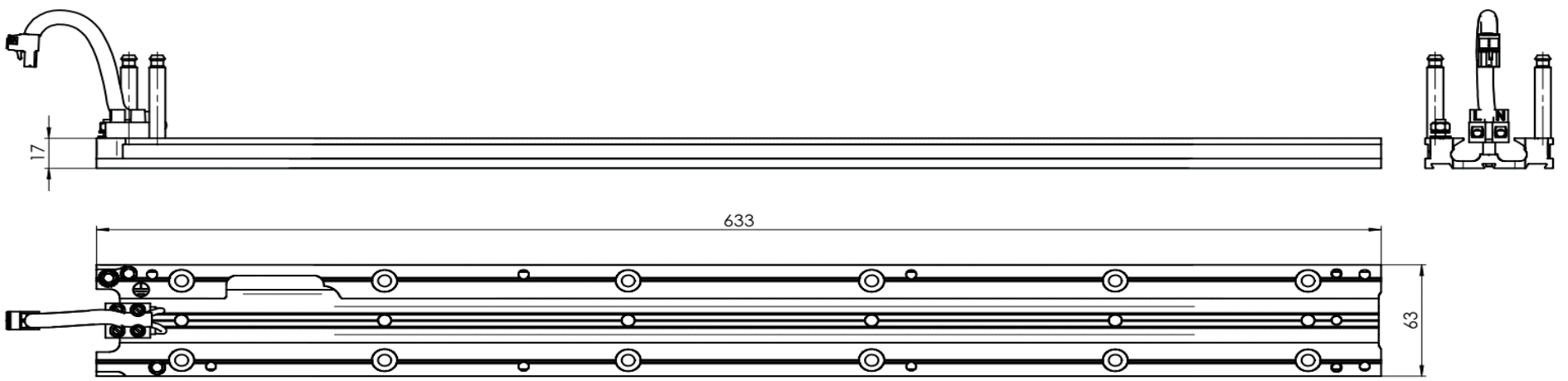
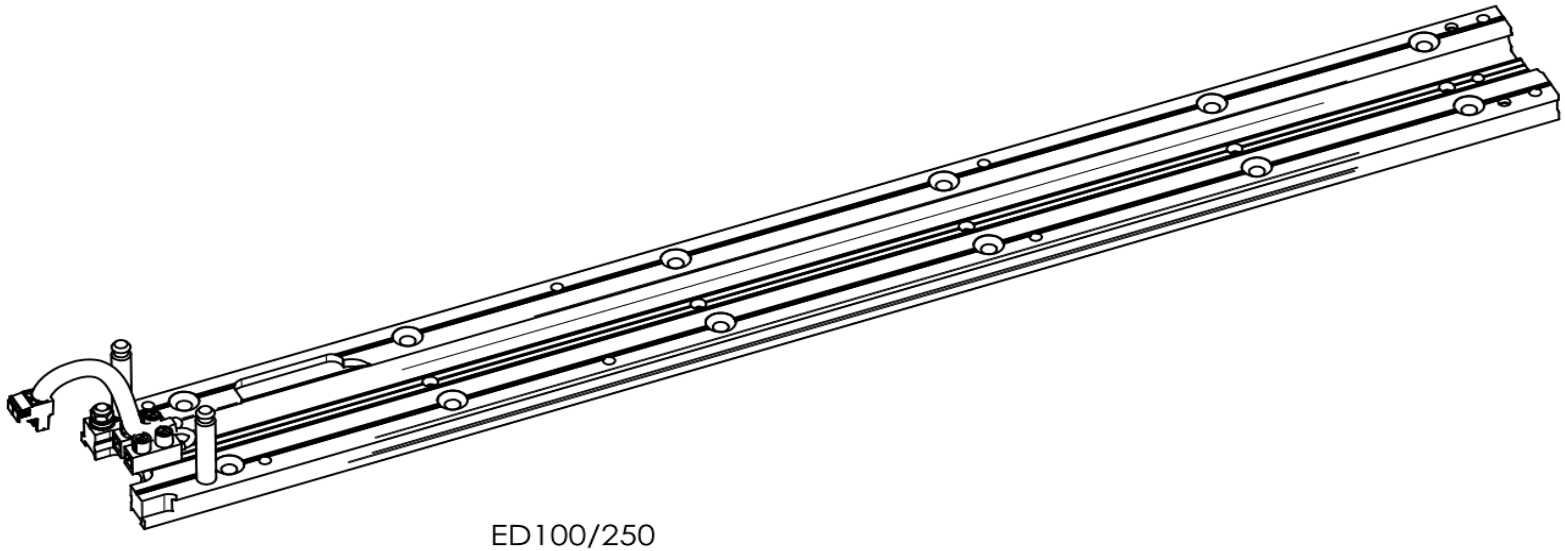
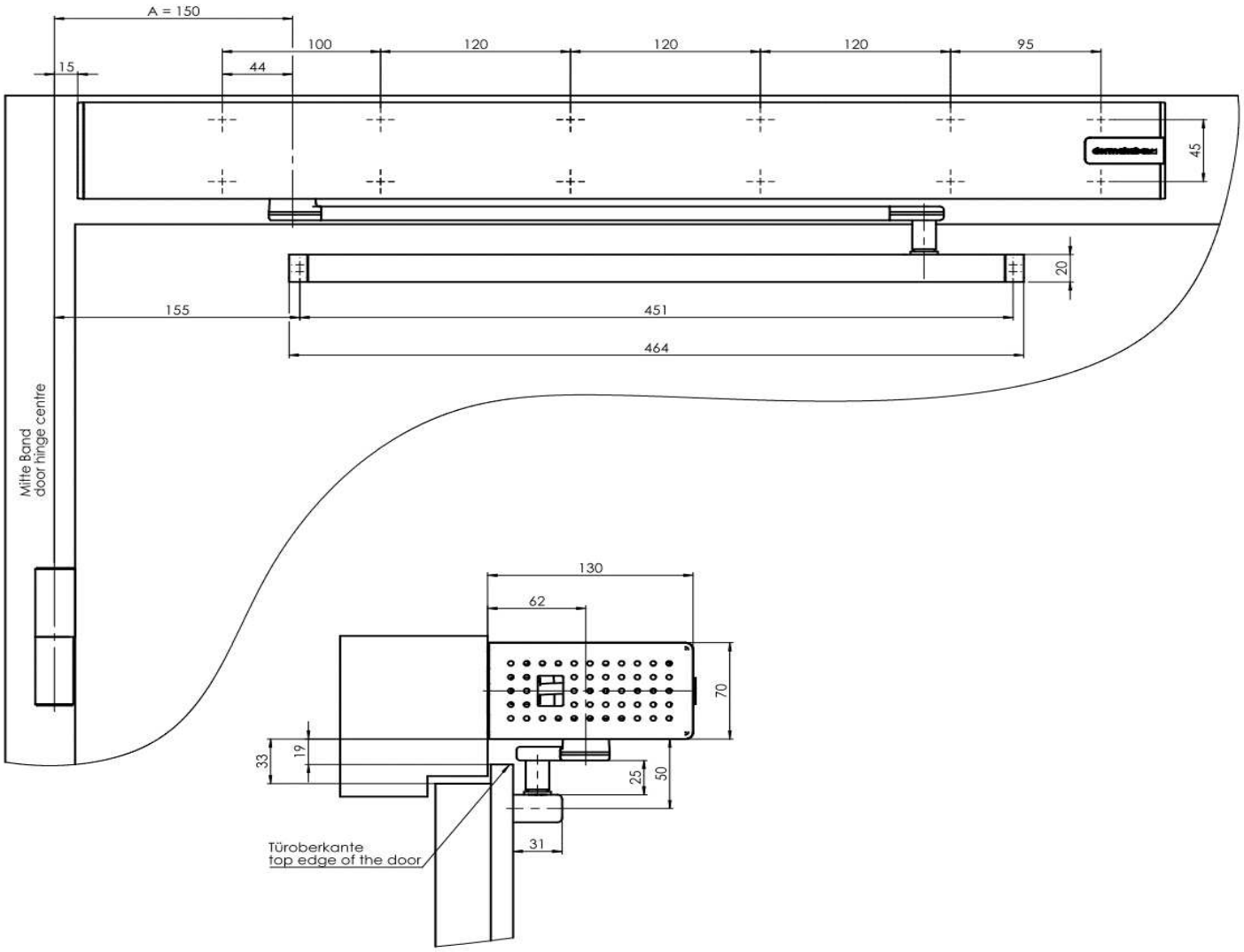




ED100/250
Montageplatte kpl.
mounting plate assy

Mounting plate	annex 1.3 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598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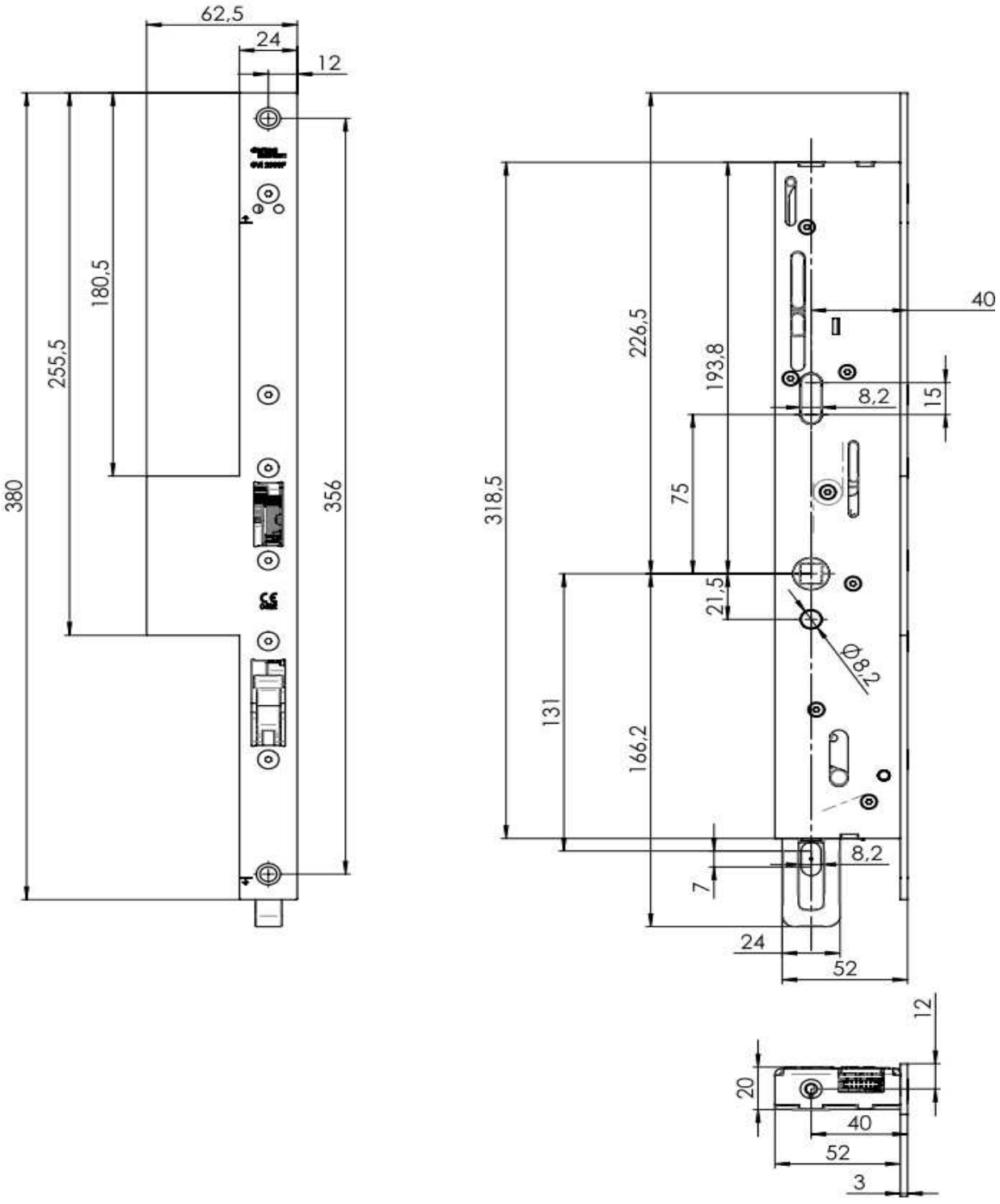
top edge of the door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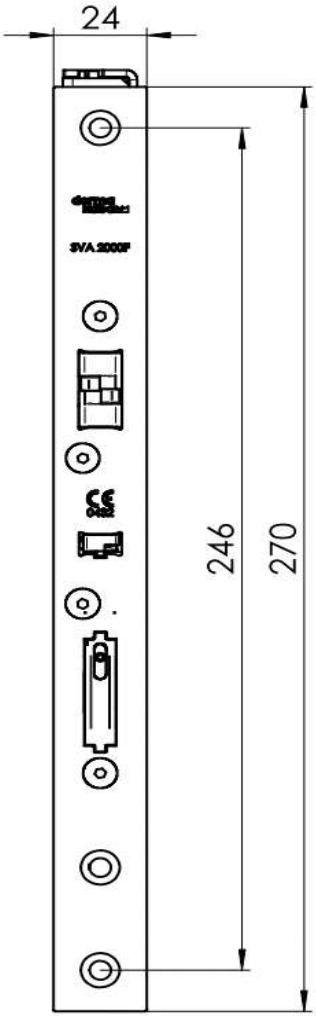
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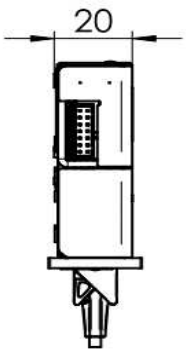
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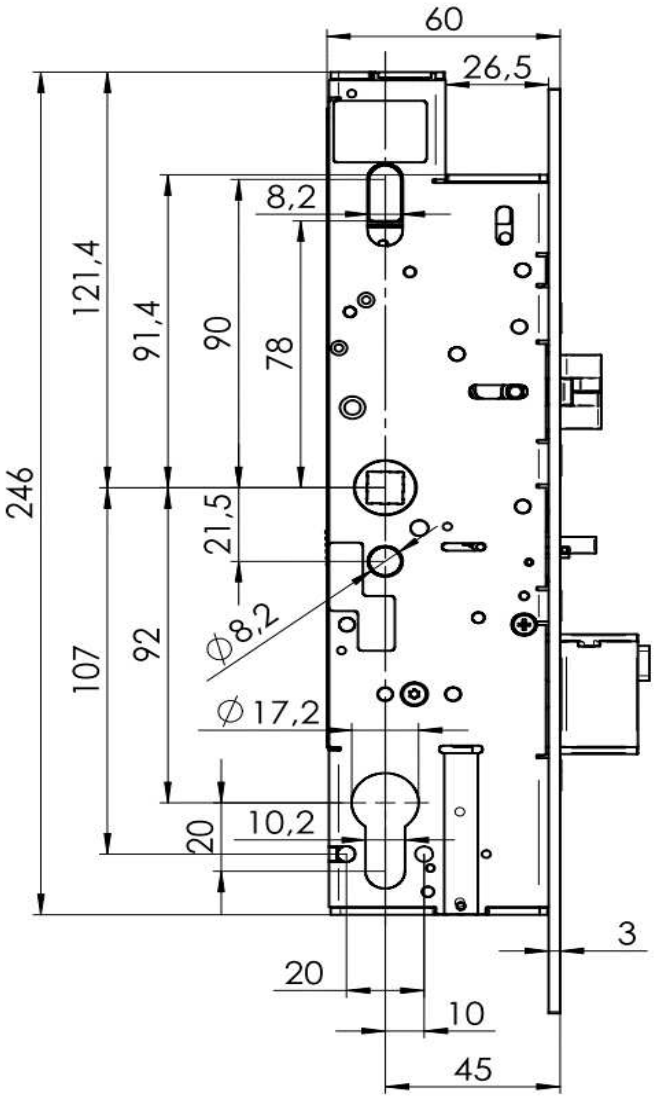
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3
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10
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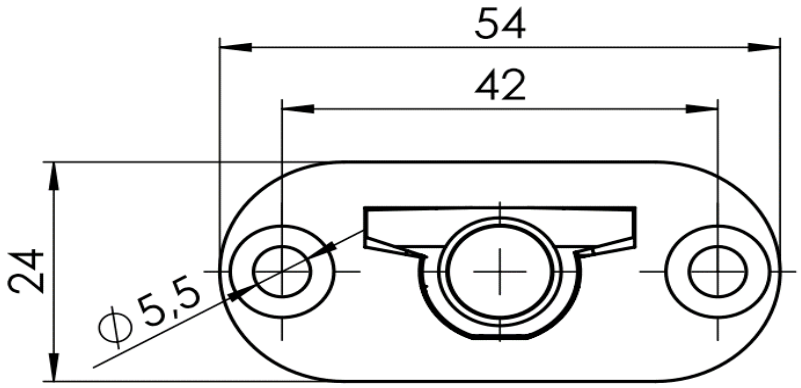
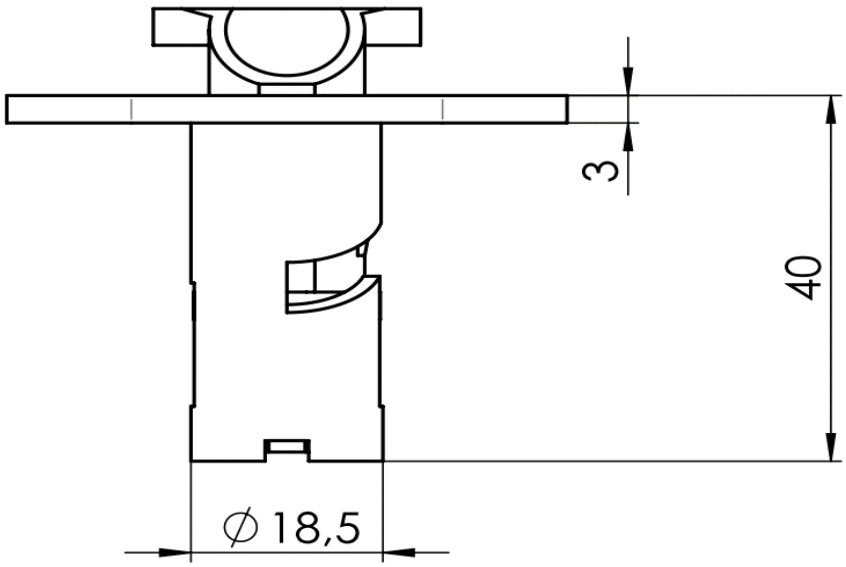
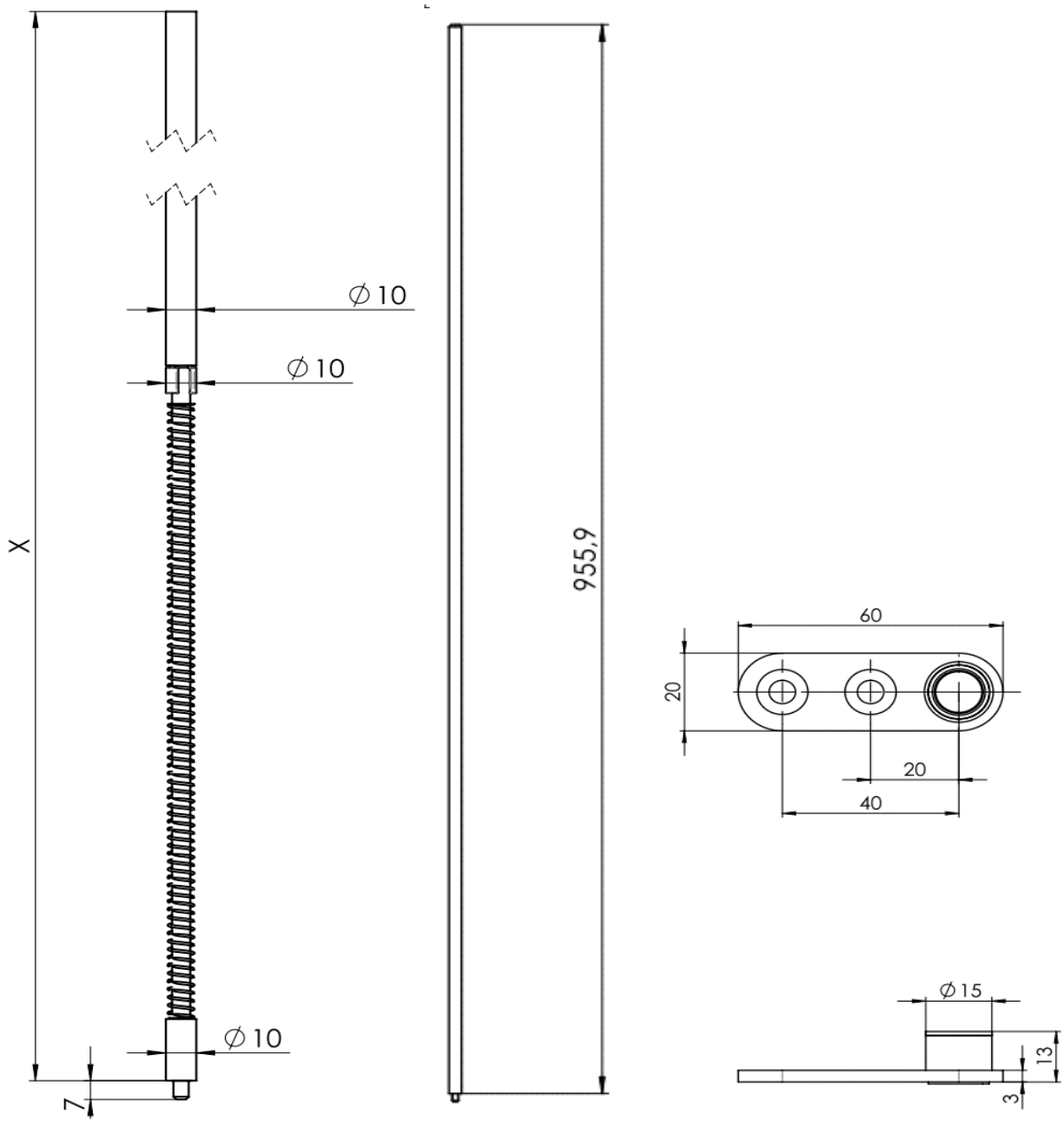
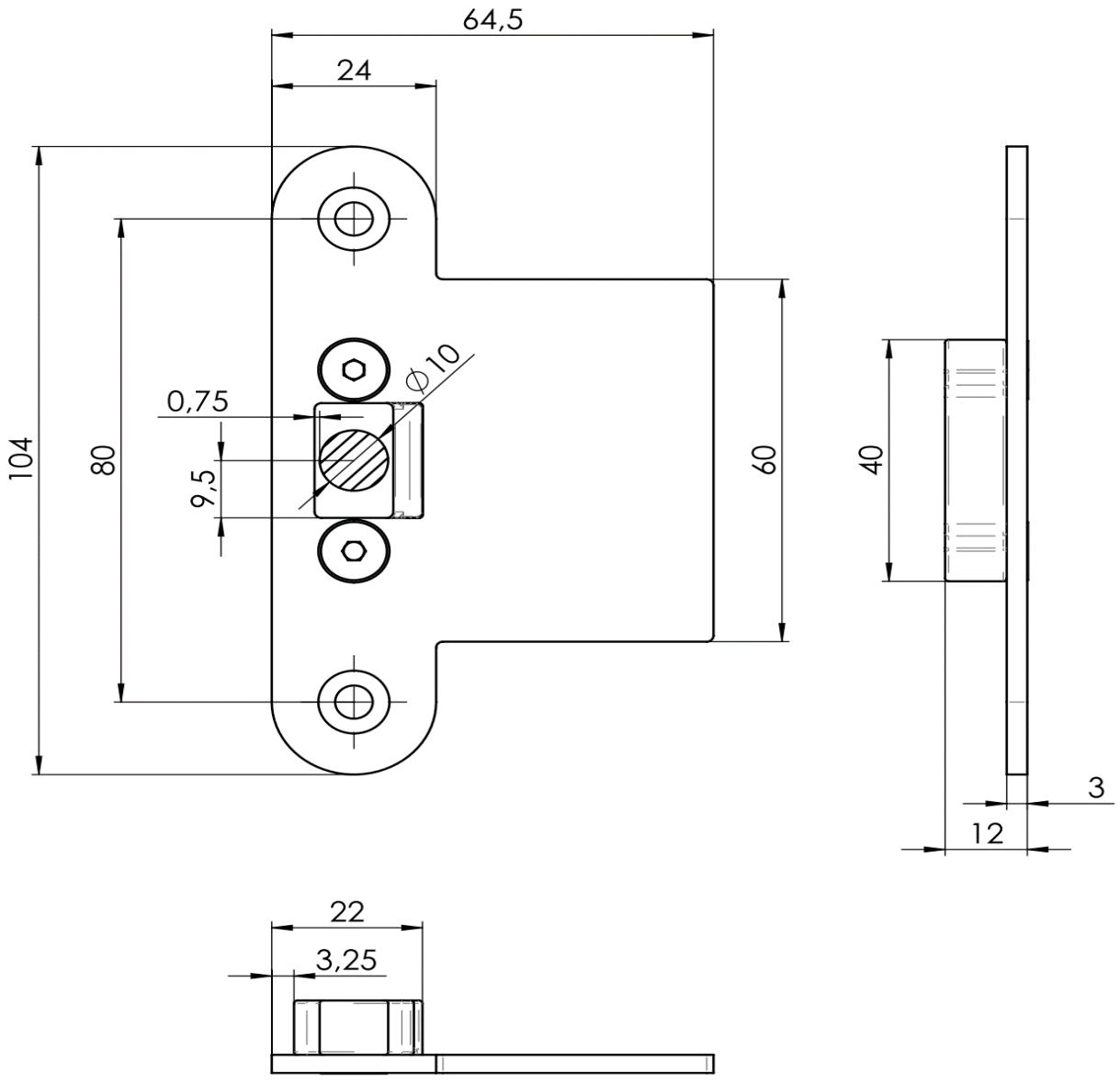




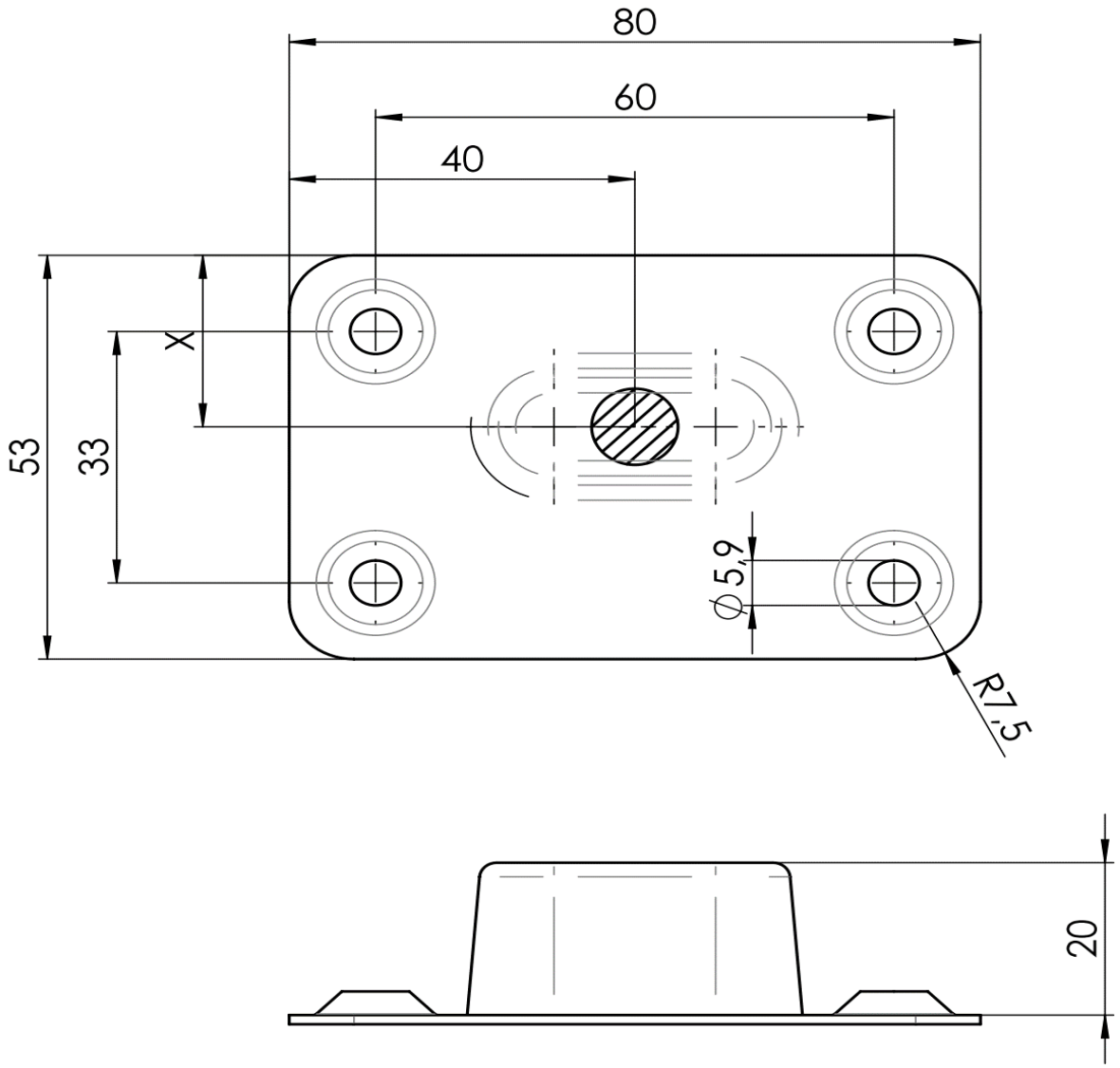
Switch lock kpl	annex 1.7 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598



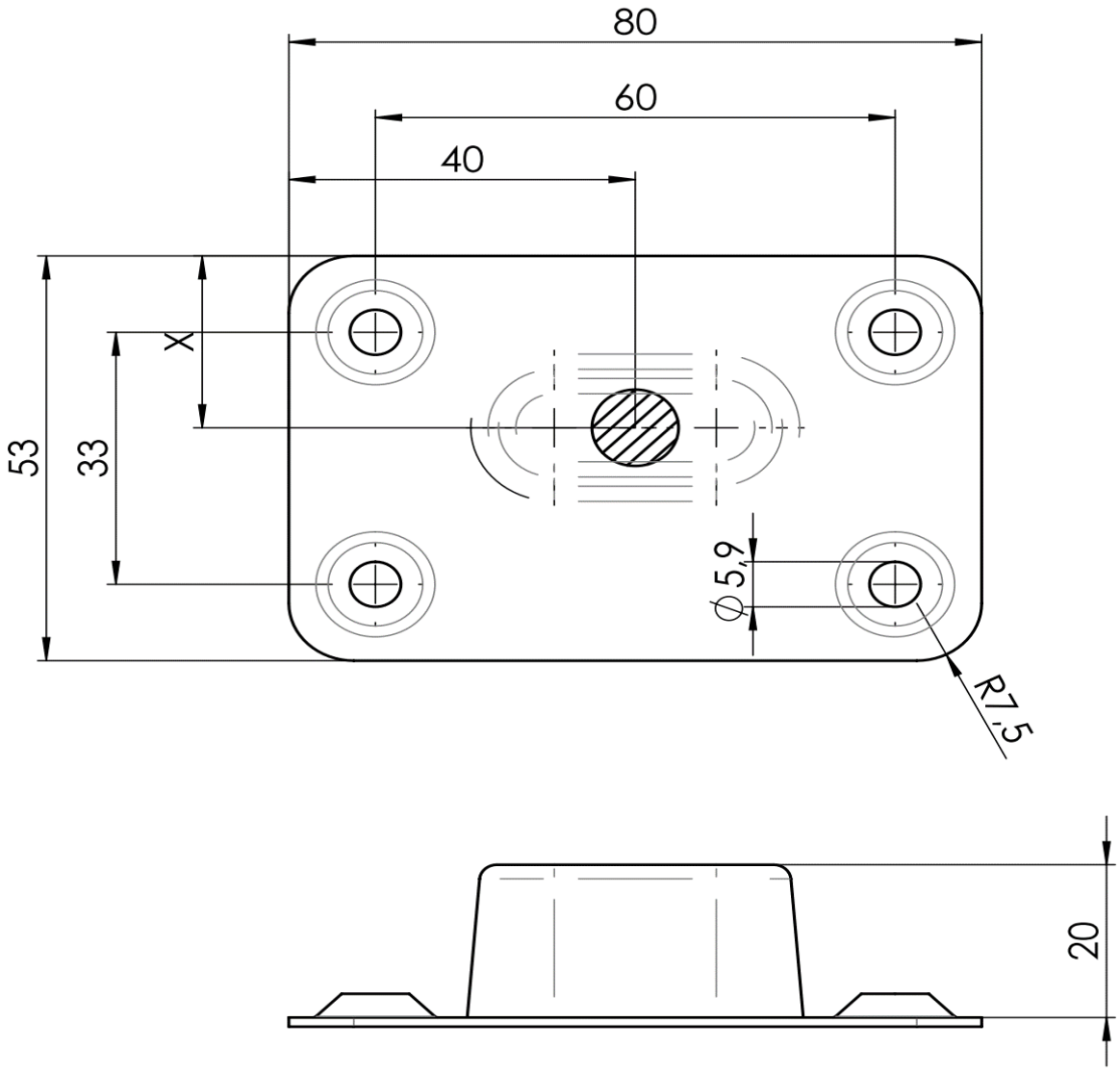
Espagnolette bolt top and bottom, rod guide plate	annex 1.8 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598



Lipped rod strike plate	annex 1.9 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598



Floor recess	annex 1.10 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598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R7,5
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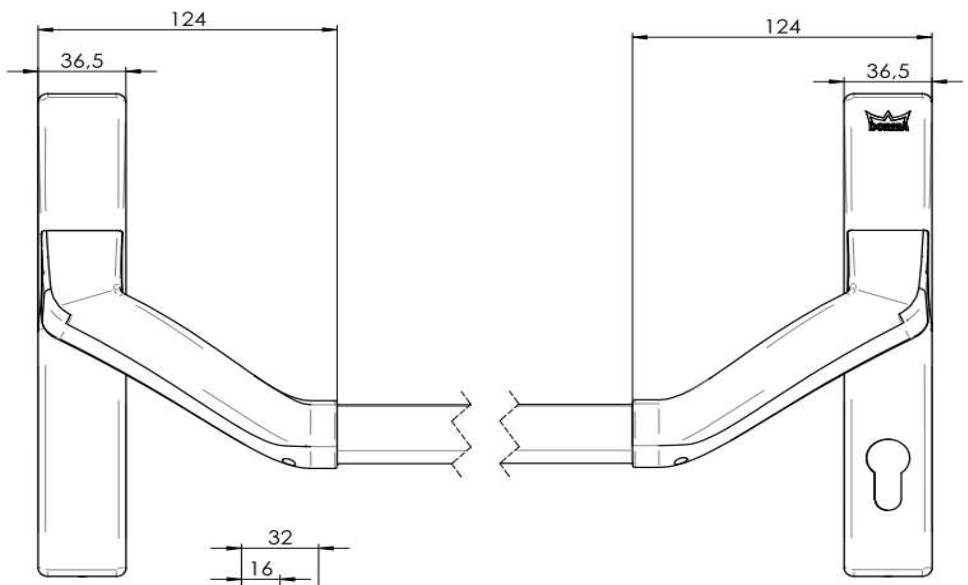
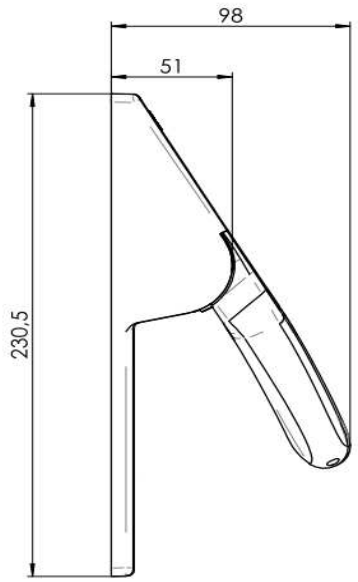
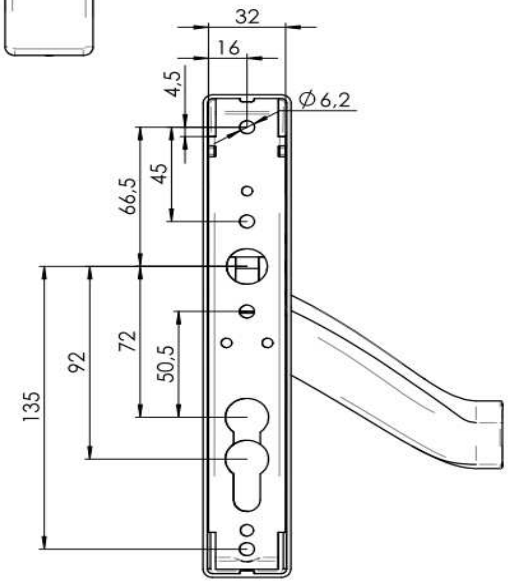
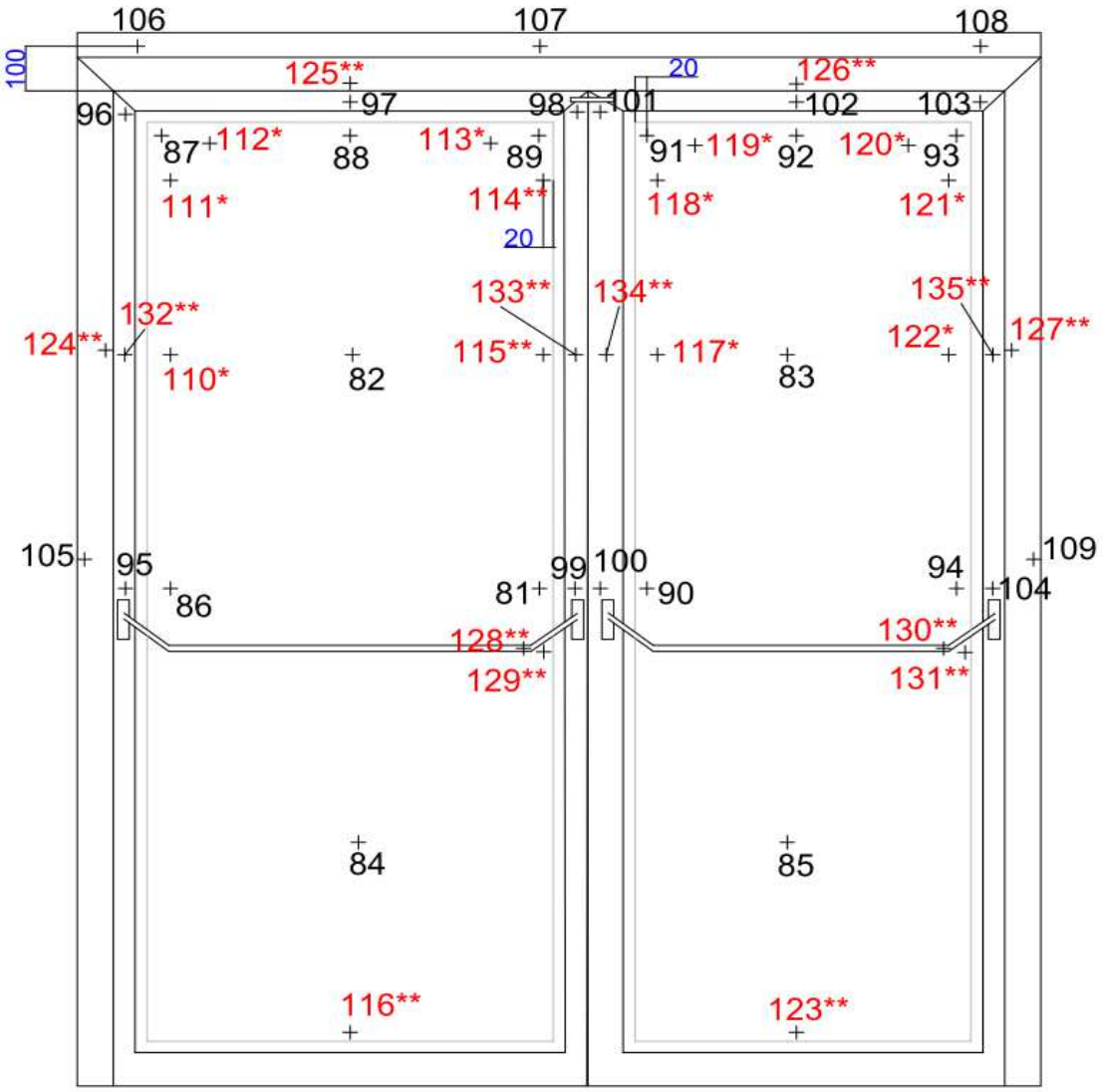






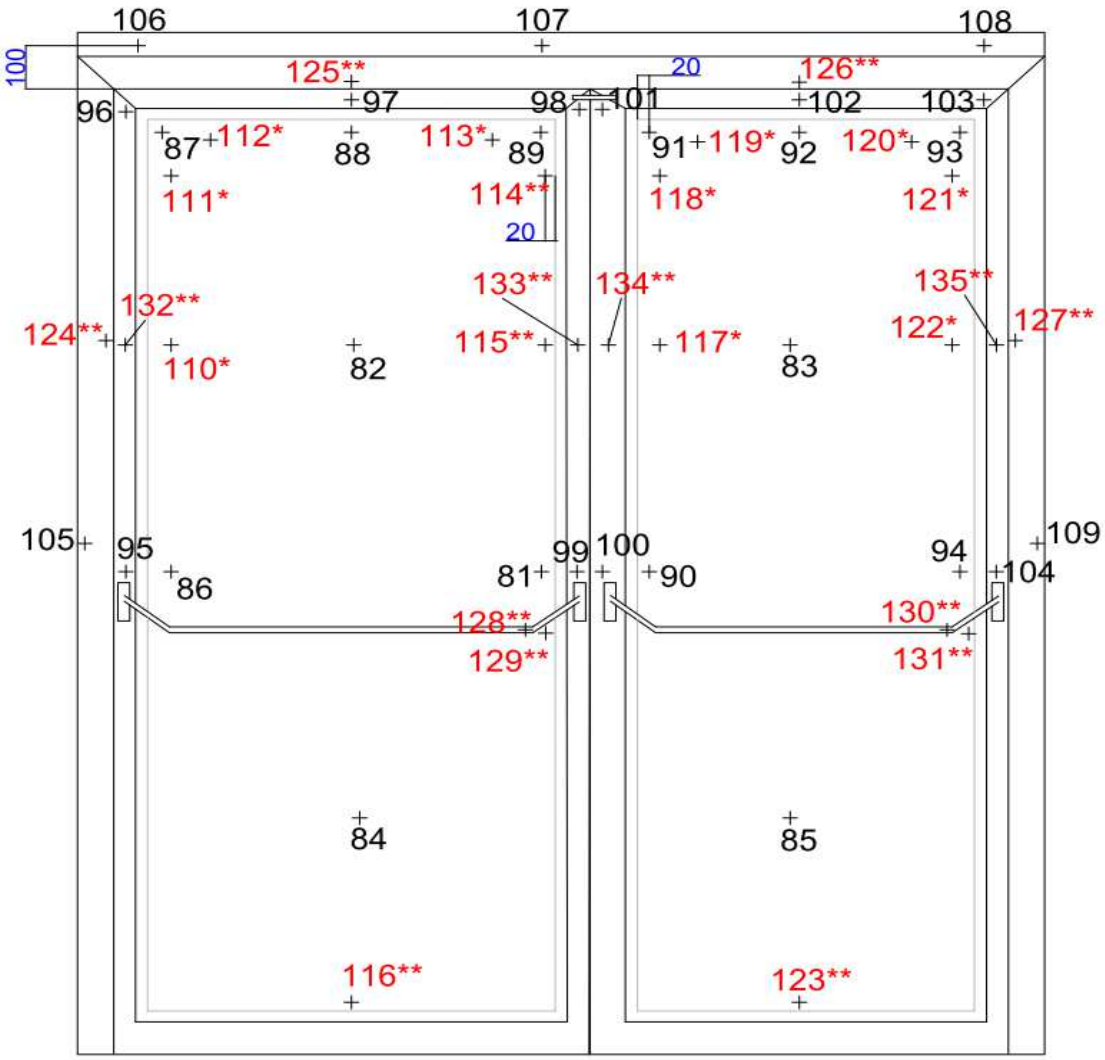
PHA 2501	annex 1.12 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for Fire Protection	test report no. DMT-DO-50-598



Thermocouples nr.	Title	Max. temp. Increase [K]	standard
81 - 85	Average value	140	EN 1634-1
81 86 - 89	10 cm line active leaf	180 EI_2	EN 1634-1
90 - 94	10 cm line inactive leaf	180 EI_2	EN 1634-1
95 - 99	2,5 cm line active leaf	180 EI_1	EN 1634-1
100 - 104	2,5 cm line inactive leaf	180 EI_1	EN 1634-1
105 - 109	Frame, 15 mm from outer edge ref. 100 from inner edge	360 EI_2 / 180 EI_1	EN 1634-1
110 - 116	"DIN" 10 cm line active leaf ref. to clear opening	180	DIN 4102-1
117 - 123	"DIN" 10 cm line inactive leaf ref. to clear opening	180	DIN 4102-1
124 - 127	"DIN" frame 15 mm from inner edge	360	DIN 4102-1
128 - 129	"DIN" handle and handle´s area active leaf	180	DIN 4102-1
130 - 131	"DIN" handle and handle´s area inactive leaf	180	DIN 4102-1

Please note:
All DIN measuring points signed with * are also in the storage of EN 1634-1 and will be considered for determination of performance characteristics.
All DIN measuring points signed with ** are not in the storage of EN 1634-1 and will be not considered for determination of performance characteristics.

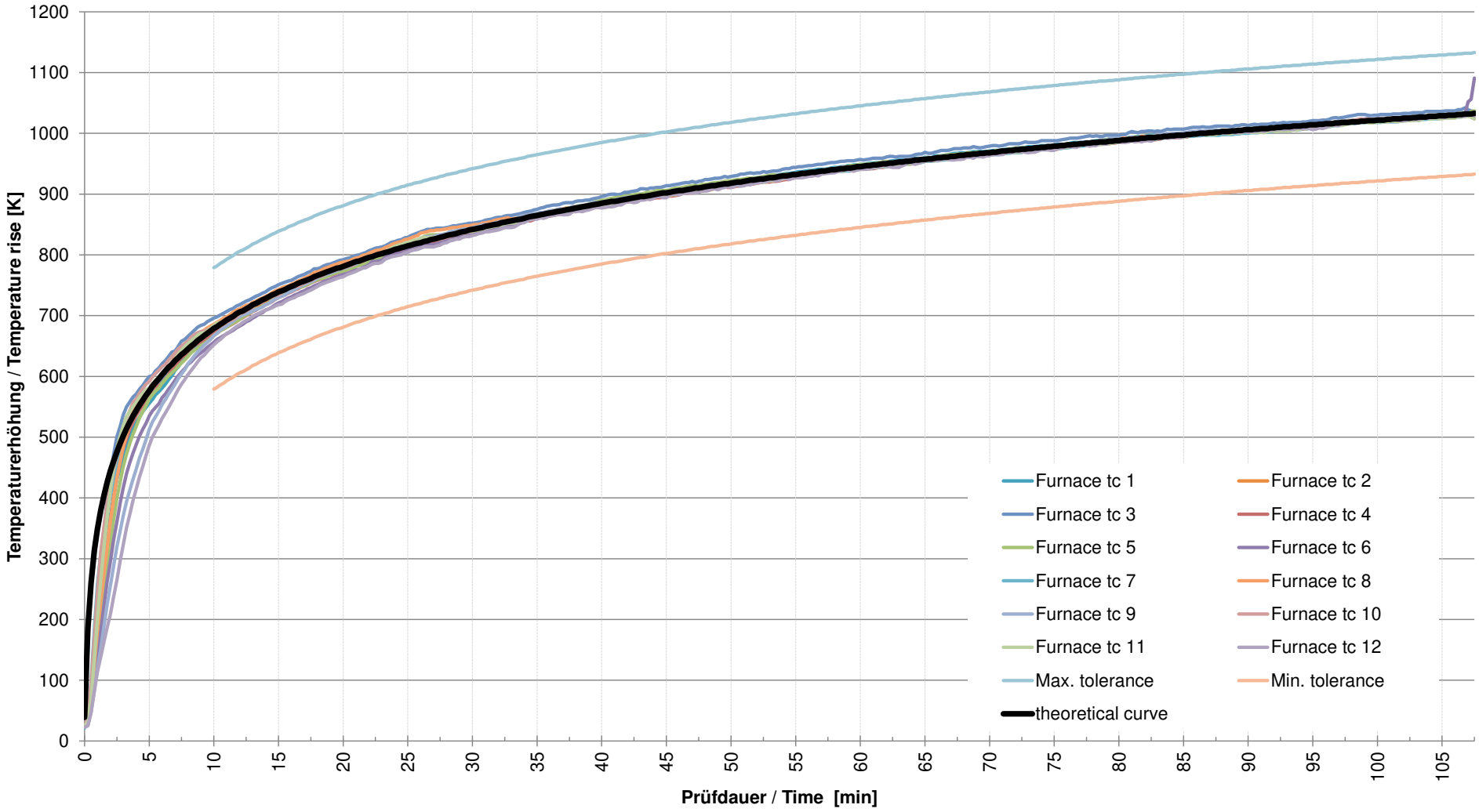
Location of thermo couples	annex 2.1 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598



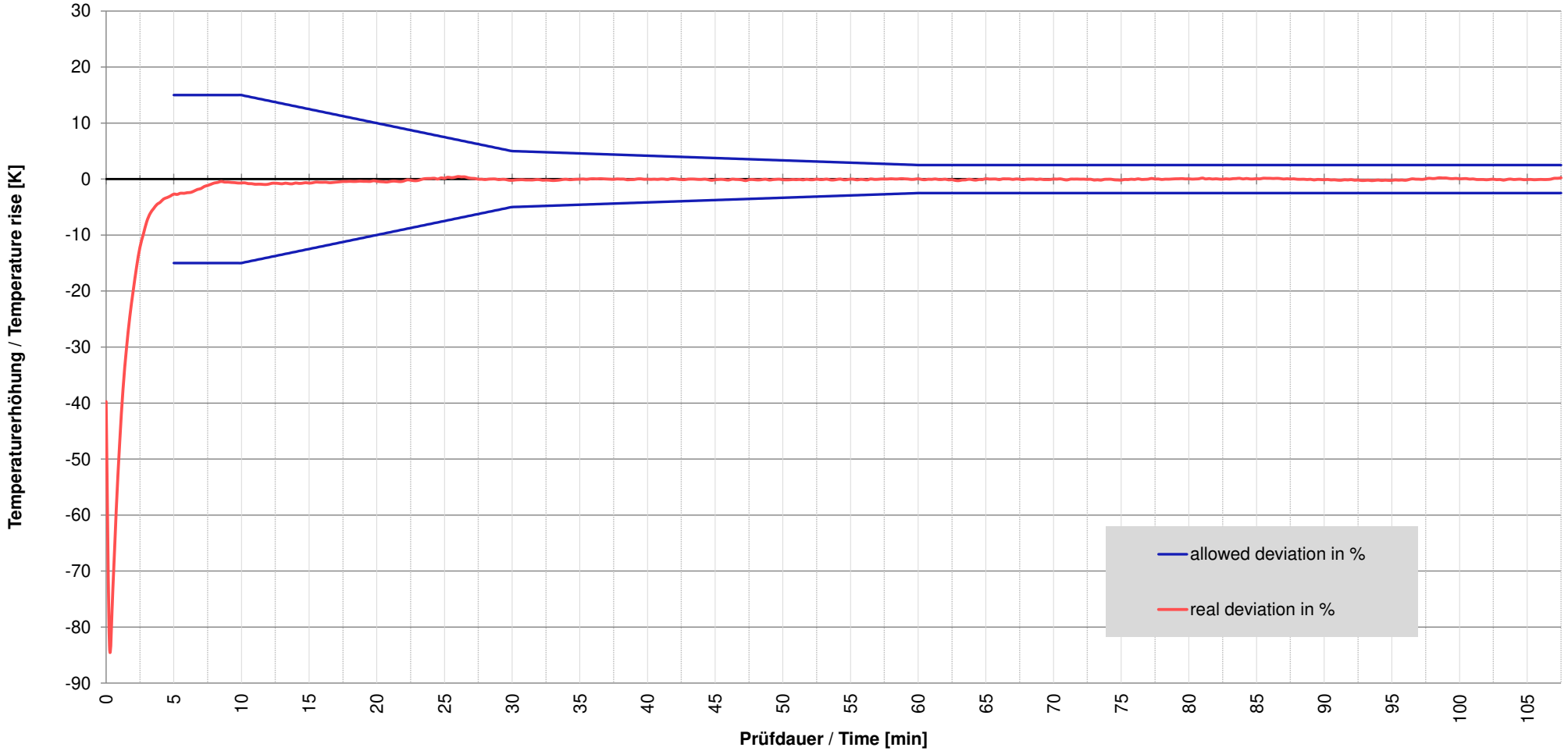
Thermocouples nr.	Title	Max. temp. Increase [K]	standard
132 - 135	"DIN" profile centre	180	DIN 4102-5

Please note:
All DIN measuring points signed with * are also in the storage of EN 1634-1 and will be considered for determination of performance characteristics.
All DIN measuring points signed with ** are not in the storage of EN 1634-1 and will be not considered for determination of performance characteristics.

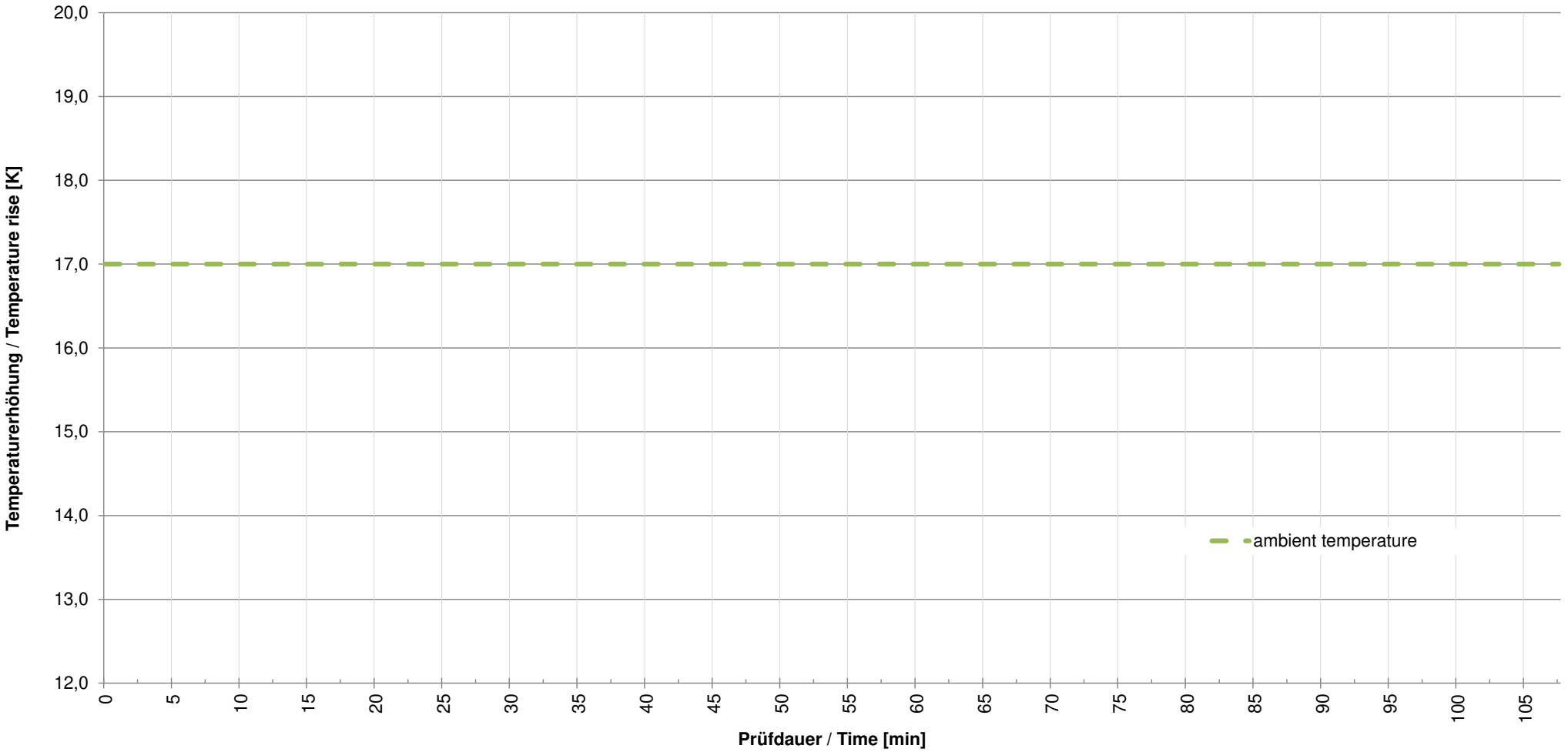
Location of thermo couples	annex 2.2 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598



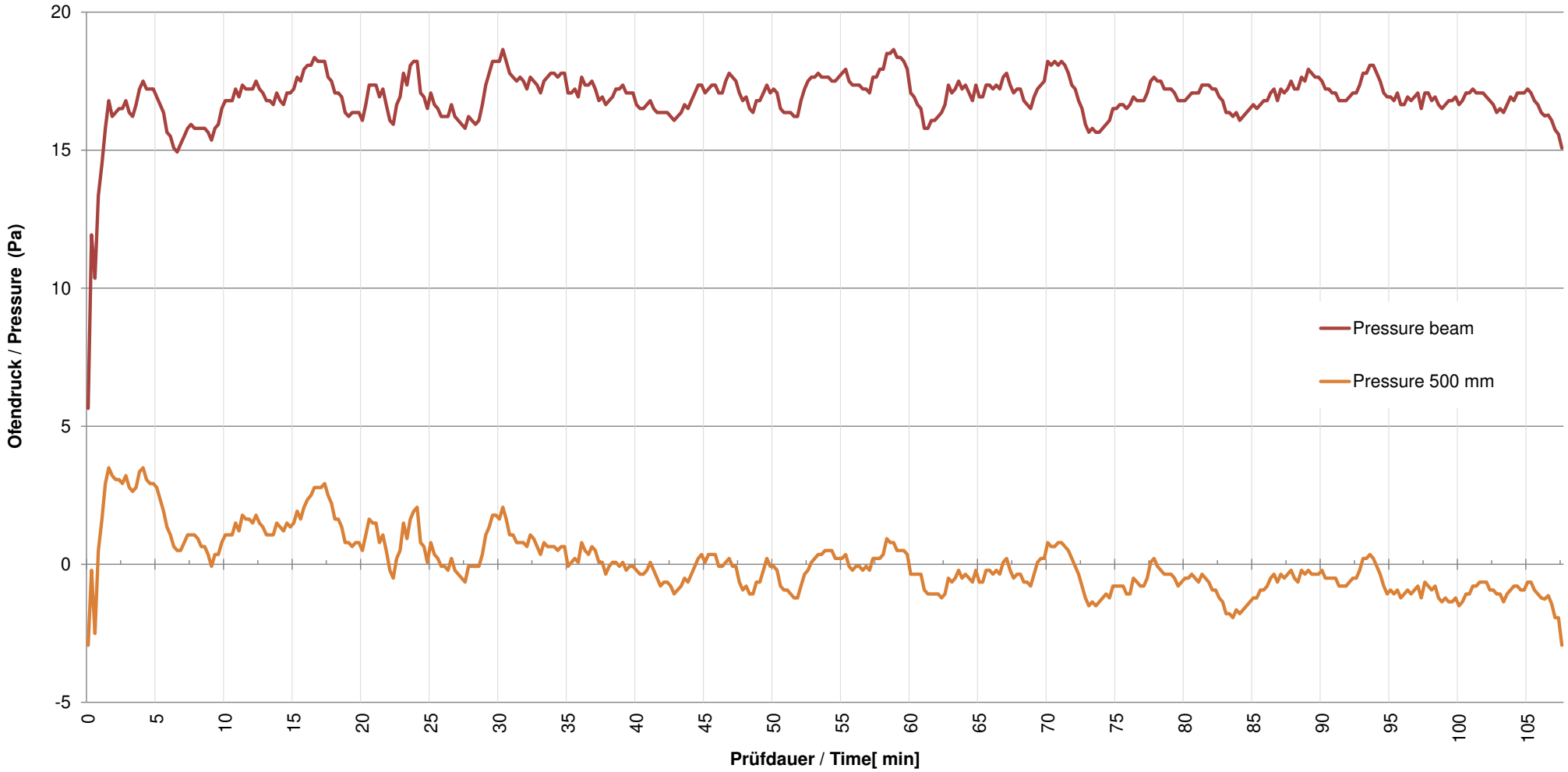
Heating curve	annex 2.3 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598



Heating curve, tolerances	annex 2.4 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598



Ambient temperature	annex 2.5 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598



Pressure during test procedure	annex 2.6 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-598

Time	side	Test specimen (system sketch) hinges side = exposed side
15 : 00	A	Smoke exits at the hinge sides and crosswise at the top
20 : 00	A	The active leaf drops. This creates a larger gap at the top between the door leaf and the frame. There is a slight offset between the active and inactive leave
30 : 00	A	The smoke emission is increasing, now also crosswise at the bottom. The frame turns brownish at the top across the inactive leaf
60 : 00	A	No significant changes are visible. The integrity is all right
66 : 00	A	The smoke emission has subsided
70 : 00	A	The dark discoloration of the frame above the inactive leaf increases. Now also slight discoloration of the frame above the active leaf
88 : 57	A	A cotton pad is held at the top of the active leaf between frame and door leaf. The cotton pad does not glow or ignite. The cotton pad has not discoloured
90 : 00	A	The integrity is all right
100 : 00	A	The integrity is all right
107 : 37		No significant changes are visible. End of the test due to customer's request

A = unexposed side
F = exposed side

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Plant and Product Safety
DMT-Test Laboratory for Fire Protection

Test Body for Fire Protection

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Lock combination "SVA/SVI 2000F RR", assessment of the flame direction

Dear Ladies and Gentlemen,

We carried out a fire resistance test according to EN 1634-1 in connection with EN 1363-1 of a double-leaf glazed aluminium tubular frame door type "NovoFire" in connection with different fittings of dormakaba Deutschland GmbH. The fire test was carried out on 03.04.2019 at the DMT test laboratory for fire protection in Lathen and is documented in the test report DMT-DO-50-598 dated 13.06.2019.

In this fire test of the double-leaf door, the active leaf was fitted with a tubular frame panic lock "SVA 2000F RR" and the inactive leaf with the motor panic lock "SVI 2000F RR" incl. accessories (vertical rod top / bottom, switch lock, floor recess and strike plate).

The test specimen reached an integrity of 107 minutes and an insulation (I_2) of also 107 minutes (completion of the test). The door was flamed from the opening side / hinge side.

The opposite side (closing side / non hinge side) of the door in connection with the lock combination described above was not tested.

From our experience, the aluminium frame doors of the "NovoFire" type do not have a "weaker" side in terms of fire protection. In two basic tests at the DMT test laboratory for fire protection on two identical double-leaf doors, the doors were flamed once from the opening side and once from the closing side. As a final result, both doors were equally good. The integrity was maintained until the end of the tests after 120 minutes, only on the glass panes

the permissible temperature rise was exceeded slightly earlier (opening side I_2 = 115 minutes, closing side I_2 = 119 minutes).

With the door type "NovoFire", the lock is arranged centrally in the profile so that there is a symmetry here.

Due to the slightly weaker result of flaming from the opening side / hinge side in the basic tests and the determined symmetry of the lock position, the opening side / hinge side was selected as the flaming direction in the fire test to verify the lock combination.

From the point of view of the signatories, a test with flaming of the closing side / non hinge side is not required for the fire protection evidence of the lock combination "SVA 2000F RR" / "SVI 2000F RR". The result of such a test with the door system "NovoFire" would be probably similar and comparable. Also the lock would not behave differently with flaming from the other side.

Kind regards
DMT GmbH & Co. KG

(Kanjahn)

(Kruse)