

DENEY SERTİFİKASI

Test Certificate



Test
TS EN ISO IEC 17025
AB-0531-T

AB-0531-T

020.1613.1/2021

12.08.2021



Façade Testing Institute

Müşterinin Adı ve Adresi / Customer's Name & Address: Asist Alüminyum Profil San. ve Tic. A.Ş.
Kırklareli OSB 2.Cad. No: 2 Kızılçıkdere / Kırklareli / TÜRKİYE

Numunenin Adı ve Tanımı / Sample's Name & Description: Asistal TM55 Series
Thermal Window & Door System

Numune Kabul Tarihi / Acceptance Date of Item: 10.08.2021 **FTI Proje No / FTI Project No:** 2021.1390

Uygulanan Normlar / Norms Applied: EN 1026, EN 1027, EN 12211

Sonuçlar / Results:
Air Permeability : EN 12207 ; Class 4 (± 600 Pa)
Watertightness : EN 12208 ; Class 9A (600 Pa)
Wind Resistance : EN 12210 ; (± 900 Pa) (L/300 Criteria) PASS
Extreme Load : EN 12210 ; (± 1350 Pa) PASS

Test Tarihi / Date of Test

10-11.08.2021

Sayfa Sayısı / Number of Pages

1/19

Deney laboratuvarı olarak faaliyet gösteren FTI Fasad Teknoloji Merkezi, TÜRKAK 'tan AB-0531-T numarası ile TS EN ISO/IEC 17025 standardına göre akredite edilmiştir.

FTI Façade Testing Institute accredited by TURKAK under registration number AB-0531-T for TS EN ISO/IEC 17025 as test laboratory.

Türk Akreditasyon Kurumu (TÜRKAK) deney laboratuvarlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşması imzalamıştır.

Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.

Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir. Bu sertifika yalnız test edilen numuneye ait sonuçları içerir ve ekte sunulan ilgili test raporu ile birlikte geçerlidir.

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages. This certificate includes the test results of the specimen which is identified above and its valid with the related test report.



Mühür / Seal

Tarih / Date

12.08.2021

Hazırlayan / Prepared by

Sinur BAYRAKTAR

Test Mühendisi / Testing Engineer

Onaylayan / Approved by

Ömer ARSLAN

Laboratuvar Müdürü / Laboratory Manager

FTI Fasad Teknoloji Merkezi / FTI Façade Testing Institute
Çakıl Mahallesi Şehit Teğmen Tamer Aydın Sok. No: 76/2 34540 Çatalca / İstanbul / TÜRKİYE

Tel: +90 212 776 42 25 Fax: +90 212 776 40 58-59
mail: info@fti-europe.com



TEST REPORT

Referenced Method : EN 14351-1:2006+A2 : 2016 Windows and doors - Product standard, performance characteristic Part 1: Windows and external pedestrian doorsets

Product / Project : Asistal TM55 Series Thermal Window & Door System

Prepared by : Sinan BAYRAKTAR



1. PREFACE

This report contains the results of performance tests, which were performed by FTI Façade Testing Institute at the address; Çakıl Mah. Şehit Teğmen Tamer Aydın Sok. No: 76/2 34540 Çatalca - İstanbul / TÜRKİYE.

Test sample is Asistal TM55 Series Thermal Window & Door System has been designed and constructed by Asist Alüminyum Profil San. ve Tic. A.Ş.

Test sample was prepared at the customer's facilities and delivered to FTI laboratory on 10.08.2021

2. CLIENT

Asist Alüminyum Profil San. ve Tic. A.Ş.

Kırklareli OSB 2.Cad. No: 2

Kızılıçıkdere / Kırklareli / TÜRKİYE

3. TEST & CLASSIFICATION METHODS

Tests have been carried out and classified according to the standards indicated below.

<u>Document No</u>	<u>Date of Publication</u>	<u>Content of Document</u>
EN 14351-1:2006+A2	2016	Windows and doors - Product standard, performance characteristic Part 1: Windows and external pedestrian doorsets
EN 1026	2016	Windows and doors - Air permeability - Test method
EN 12207	2016	Windows and doors - Air permeability - Classification
EN 1027	2016	Windows and doors - Watertightness - Test method
EN 12208	1999	Windows and doors - Watertightness - Classification
EN 12211	2016	Windows and doors - Resistance to wind load - Test method
EN 12210	2016	Windows and doors - Resistance to wind load – Classification

4. TEST DATE AND PARTICIPANTS

Tests were performed on 10-11.08.2021 by the followings:

Öner ARSLAN FTI Laboratory Manager

Sinan BAYRAKTAR FTI Testing Engineer

And witnesses;

İsmail KOÇYİĞİT Asist Alüminyum Profil San. ve Tic. A.Ş.

İsmail GÜNEŞ Asist Alüminyum Profil San. ve Tic. A.Ş.

5. DESCRIPTIONS OF TEST SAMPLE

Type of sample	Thermal Window & Door System
System name	Asistal TM55 Series
Dimensions of sample	700 x 2400 mm
Surface area of sample	1,68 m ²
Dimensions of operable parts	580 x 794 mm
Area of operable parts	0,46 m ²
Total length of operable parts	2,75 m
Glass type (vision) & (operable part)	6 MM TEMP DC + 14HB + 6MM TEMP DC

Please refer to detailed drawings presented on pages 14-19 for the system details. Information in the table above, detailed system drawings and information inside have been submitted to FTI Façade Testing Institute under the responsibility of customer.

6. CONDITIONS

Date	:	10.08.2021	11.08.2021
Local Temperature (°C)	:	20	20
Atmospheric Pressure (mbar)	:	1016,0	1017,0
Ambient Humidity (%)	:	65	66



Photo 01-02. The view of the specimen

7. TEST PERFORMANCE

Pressure Sequence

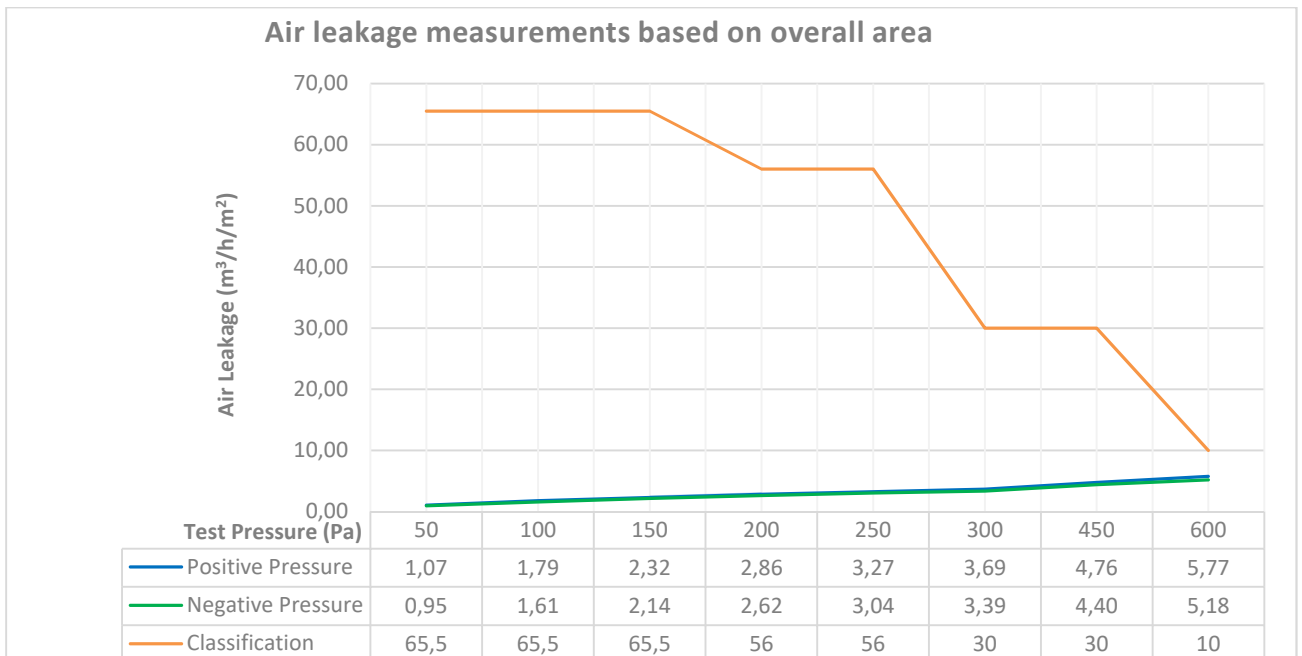
STEPS		POSITIVE PRESSURE (Pa)	NEGATIVE PRESSURE (Pa)
1	PA	600	600
2	PW	600	-
3	PD	900	900
4	PC	450	450
5	PA	600	600
6	PE	1350	1350

PA: Pressure for Airtightness ; PW: Pressure for Watertightness ; PC: Pressure Cycle

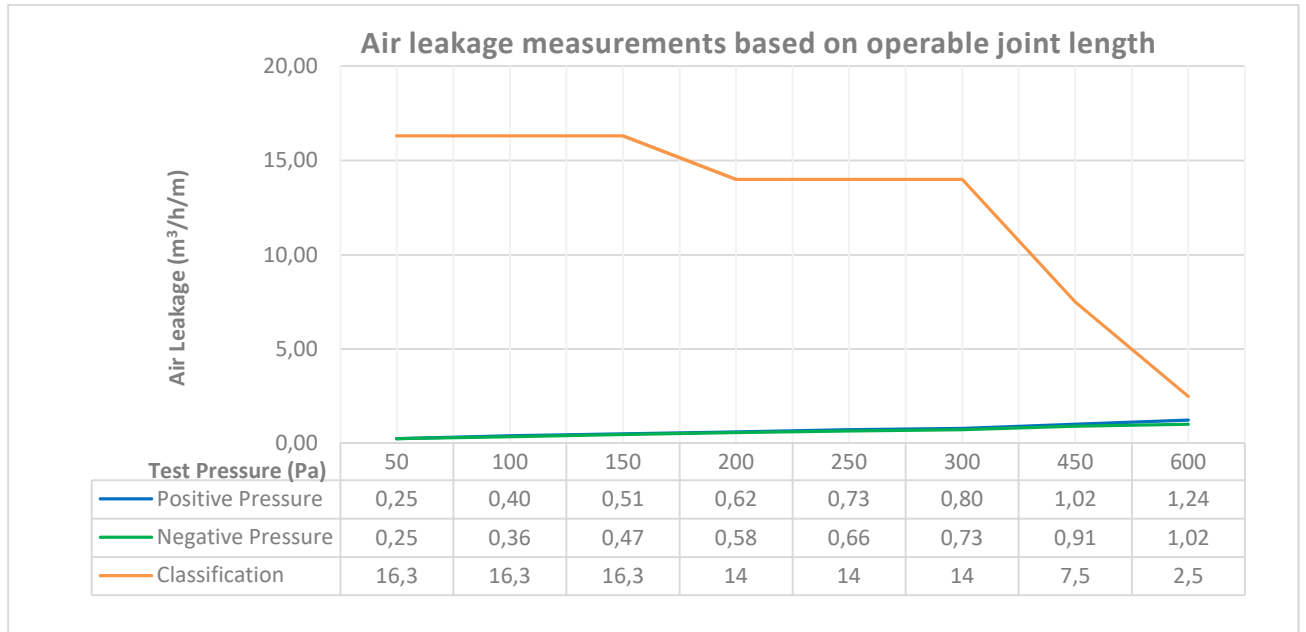
PD: Design Pressure ; PE: Extreme Pressure

7.1. Air Permeability – EN 1026

Before starting the test, 3 pulses at 660 Pa is applied to the sample. During the tests, the pressure at the following values is applied for 10 seconds. The following data includes the values of the system after tare.



Test No: 2021.1390.01-02 / 10.08.2021



Test No: 2021.1390.03-04 / 10.08.2021

7.2. Watertightness Test Under Static Pressure – EN 1027

Before starting the test, 3 pulses at 660 Pa were applied to the sample. The waiting time for each pressure stroke is 3 seconds. During the test, the sample was kept under the effect of water spraying, while the pressure values in the table were applied for the specified periods.

The amount of water sprayed to the sample = $2,0 \text{ l} / \text{m}^2 \cdot \text{min} \times 1,68 \text{ m}^2 = 3,36 \text{ l/min} \approx 201,6 \text{ l/hour}$

Observations

Pressure Value (Pa)	Time Period (min)	Observations
0	15	No water leakage was observed.
50	5	No water leakage was observed.
100	5	No water leakage was observed.
150	5	No water leakage was observed.
200	5	No water leakage was observed.
250	5	No water leakage was observed.
300	5	No water leakage was observed.
450	5	No water leakage was observed.
600	5	No water leakage was observed.

Test No: 2021.1390.05 / 10.08.2021

7.3. Resistance to Wind Load – EN 12211

Before starting the test, 3 pulses at 990 Pa were applied to the sample. The waiting time for each pressure stroke is 3 seconds. During the test, each pressure value indicated in the tables below was applied for 30 seconds.

Vertical profile height ; L = 2400 mm

Classification of the sample under positive and negative design loads is made according to the following criteria, depending on the amount of relative deflection occurring on the vertical profile (X_p , X_n) on the middle axis of the sample:

EN 12210 – Classification Criteria:	Relative Deflection Criteria Based on L Length:
<input type="checkbox"/> $X_p, X_n \leq L/150$; Class A	$d = L / 300 = \underline{\mathbf{8\text{ mm limit value.}}}$ Frontal deflection value shall be < d limit value
<input type="checkbox"/> $X_p, X_n \leq L/200$; Class B	
<input checked="" type="checkbox"/> $X_p, X_n \leq L/300$; Class C	

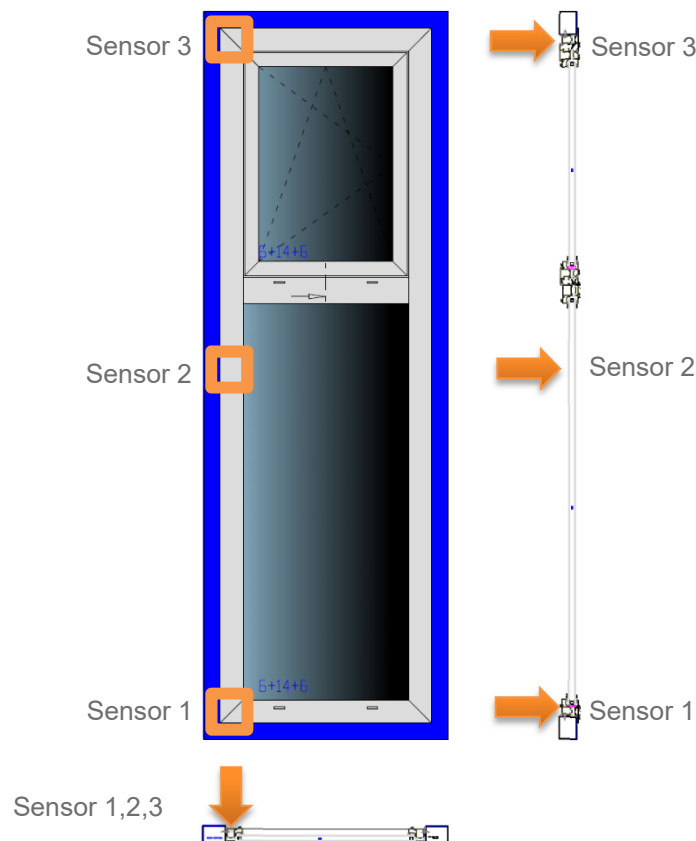
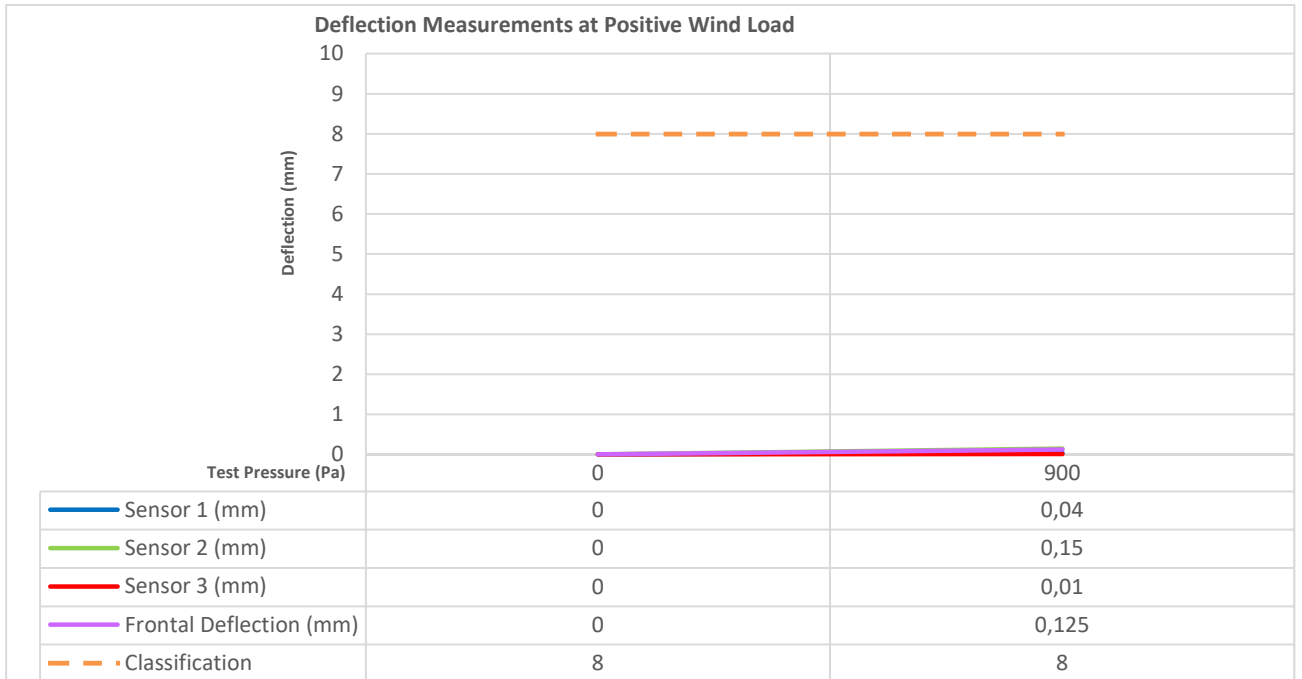
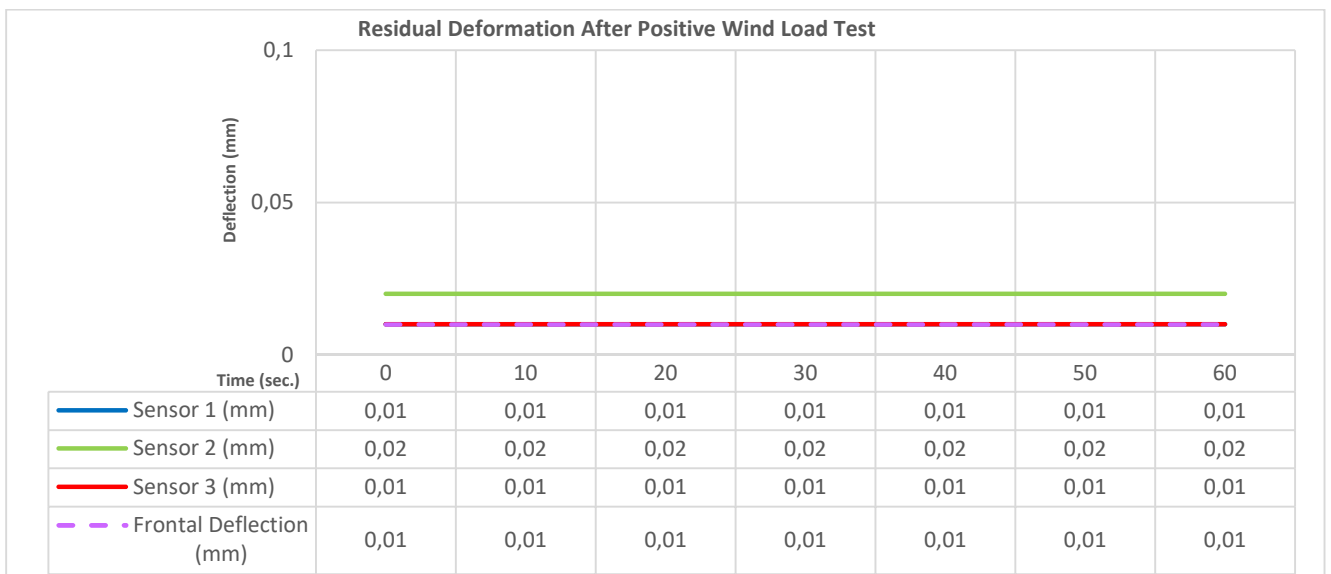


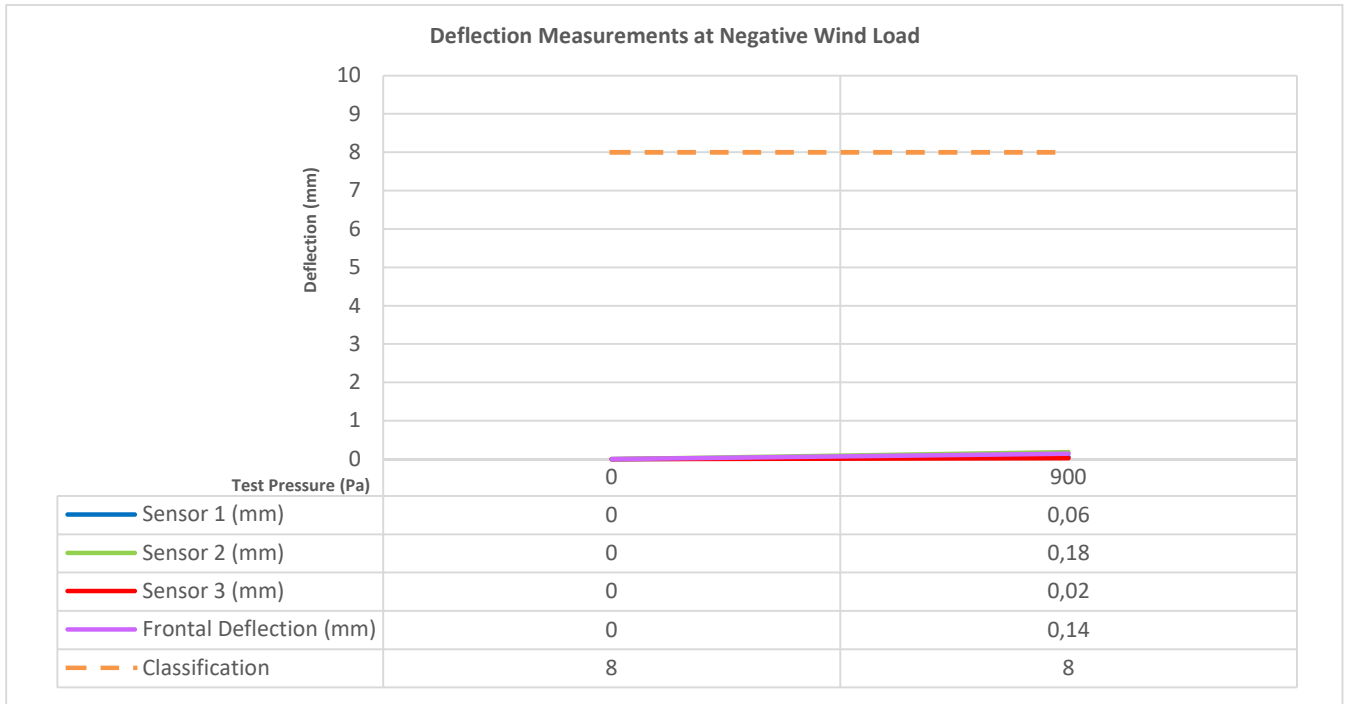
Figure 01. Location of the Sensors



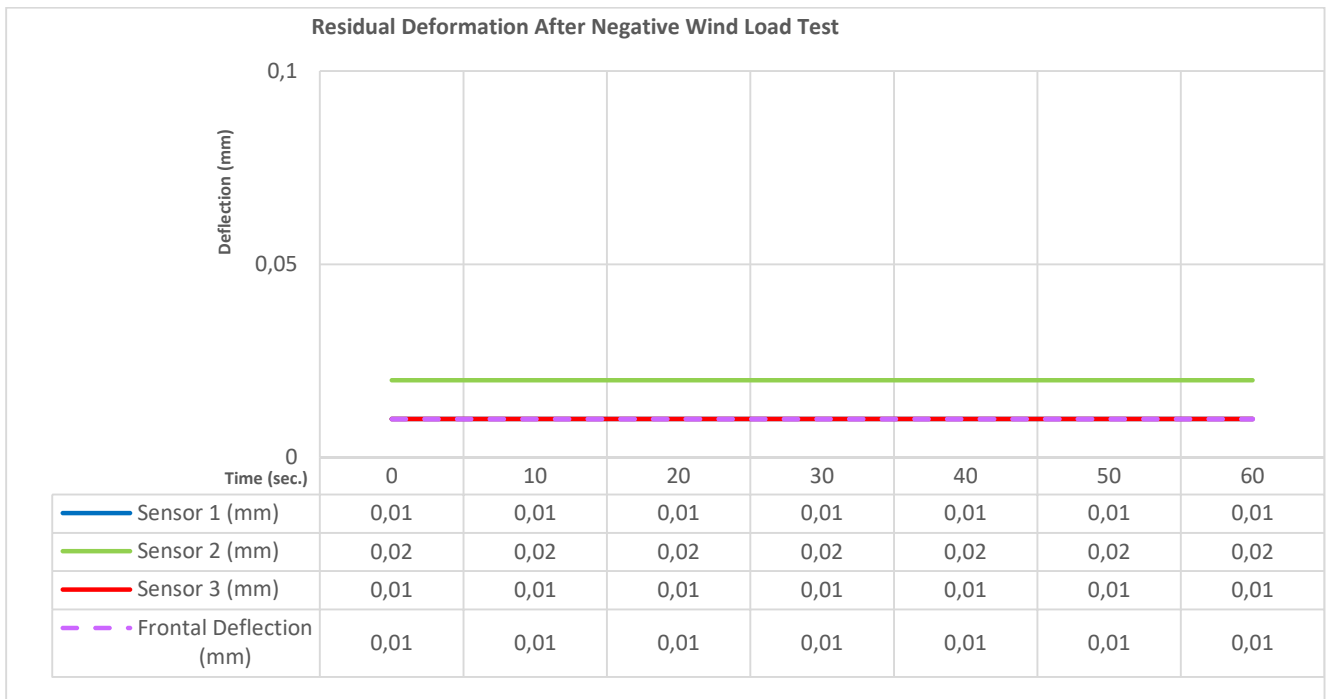
Test No: 2021.1390.06 / 10.08.2021



Test No: 2021.1390.06 / 10.08.2021



Test No: 2021.1390.07 / 10.08.2021



Test No: 2021.1390.07 / 10.08.2021

7.4. Cyclic Pressure Test

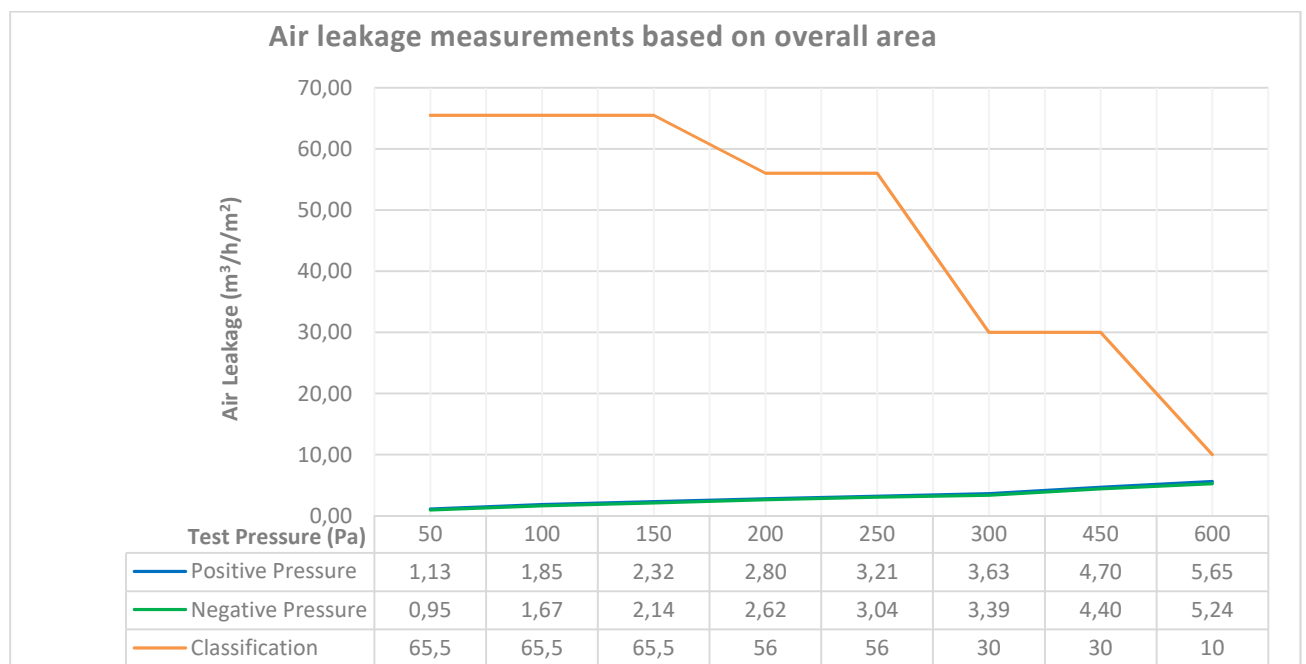
The test sample was subjected to 50 repetitions of pressure cycles under negative and positive pressure in accordance with the following criteria:

- PC (Cycle Pressure = ± 450 Pa (50% of the design load);
- First step is negative, next and last step is positive;
- Positive and negative pressure steps were applied for 7 seconds (± 3 seconds) each.

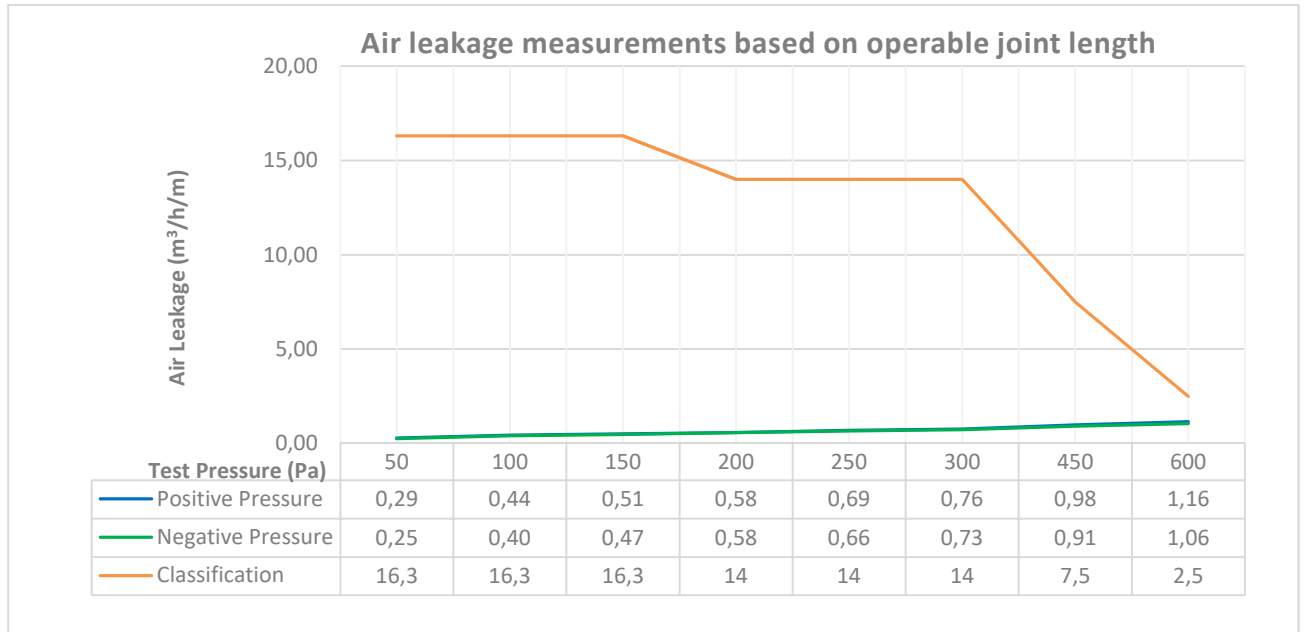
No damage was observed on the sample after the cyclic pressure application (50 cycles) was completed.
(Test No : 2021.1390.08 / 11.08.2021)

7.5. Air Permeability – EN 1026

Before starting the test, 3 pulses at 660 Pa is applied to the sample. During the tests, the pressure at the following values is applied for 10 seconds. The following data includes the values of the system after tare.



Test No: 2021.1390.09-10 / 11.08.2021



Test No: 2021.1390.03-04 / 10.08.2021

7.6. Increased Wind Load (Safety Test – Safety Load) – EN 12211

The test sample is subjected to a safety load corresponding to 1.5 times the design load.

Test Pressure	Applied (Pa)		Observations
	Positive	Negative	
PE = 1350	1350	-	No damage was observed on the sample.
	-	1350	No damage was observed on the sample.

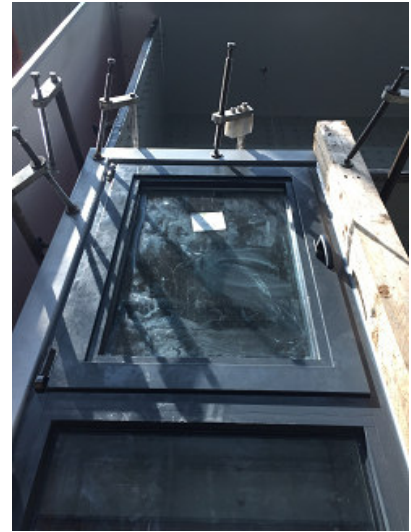
Test No: 2021.1390.11 / 11.08.2021

8. RESULTS

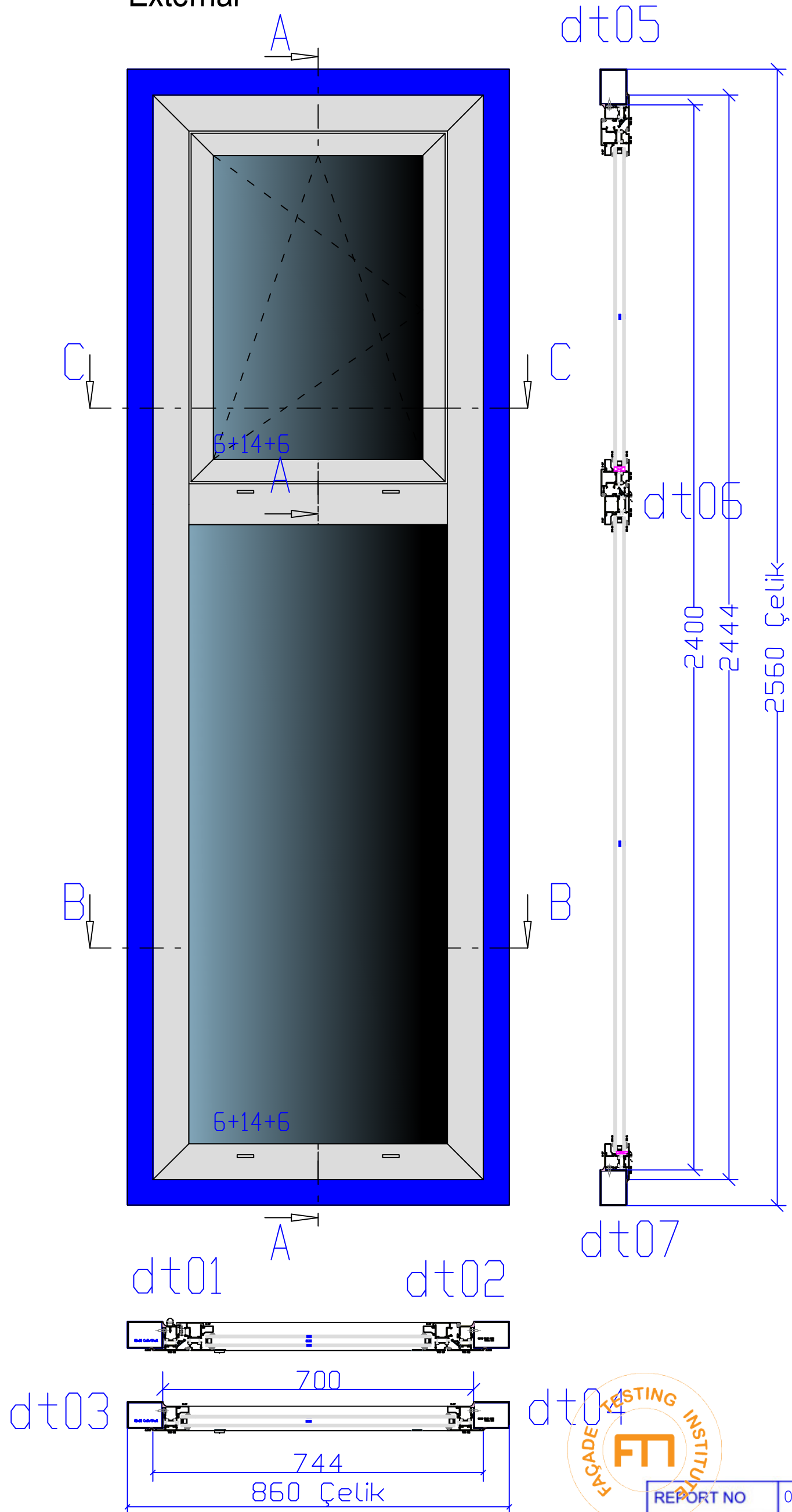
	CONDITIONS	RESULTS		CLASS	
AIR PERMEABILITY EN 12207	Air permeability for area of operable parts <10 m ³ /h.m ²	+ 600 Pa	5,77	m ³ /h.m ²	4
	Air permeability for operable joint length <2,5 m ³ /h.m		1,24	m ³ /h,m	
	Air permeability for area of operable parts <10 m ³ /h.m ²	- 600 Pa	5,18	m ³ /h.m ²	4
	Air permeability for operable joint length <2,5 m ³ /h.m		1,02	m ³ /h,m	
WATER TIGHTNESS (Static Pressure) EN 12208	There should not be any water leakage on the sample during the test carried out according to 600 Pa test conditions,	No water leakage was observed.		9A	
WIND LOAD RESISTANCE (Design Load) EN 12210	d = 8,0 mm (limit value) ; xp < d	+ 900 Pa	xp = 0,12 mm	PASS	
	d = 8,0 mm (limit value) ; xn < d	- 900 Pa	xn = 0,14 mm	PASS	
CYCLIC PRESSURE TEST	There should be no damage during the test + 450 Pa and -450 Pa for 50 cycle	No damage was observed on the sample.		PASS	
AIR PERMEABILITY EN 12207	Air permeability for area of operable parts <10 m ³ /h.m ²	+ 600 Pa	5,65	m ³ /h.m ²	4
	Air permeability for operable joint length <2,5 m ³ /h.m		1,16	m ³ /h,m	
	Air permeability for area of operable parts <10 m ³ /h.m ²	- 600 Pa	5,24	m ³ /h.m ²	4
	Air permeability for operable joint length <2,5 m ³ /h.m		1,06	m ³ /h,m	
RESISTANCE TO SAFETY LOAD EN 12210	There should not be any damage observed on the sample at ± 1350 Pa	+ 1350 Pa	No damage was observed on the sample.		PASS
		- 1350 Pa	No damage was observed on the sample.		PASS

Measurement uncertainty is not included in the test / calculation results and declarations of conformity.

9. PHOTOS



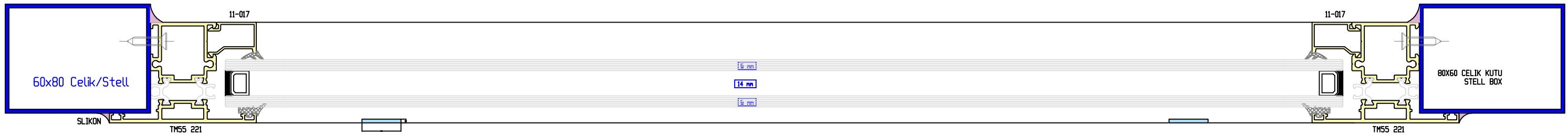
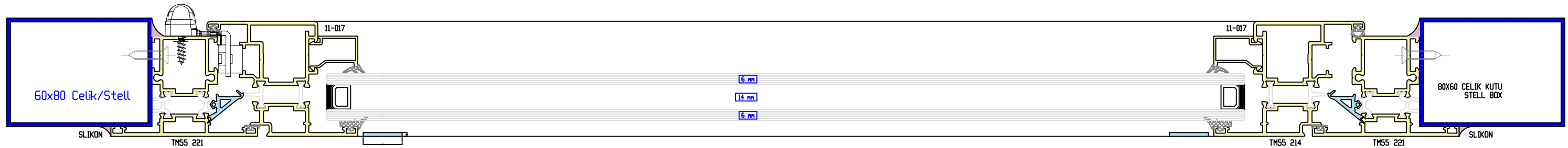
FTI
Asistal TM55 Series Thermal Window & Door System
External



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dt01

dt02

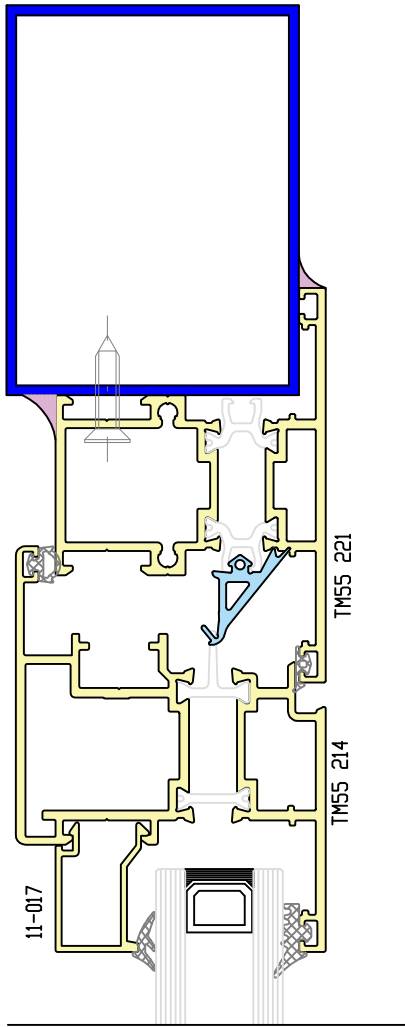


dt03

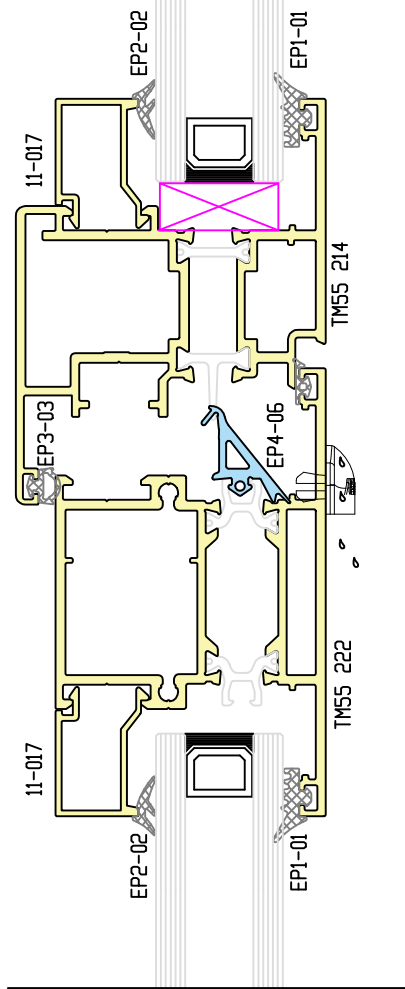
dt04



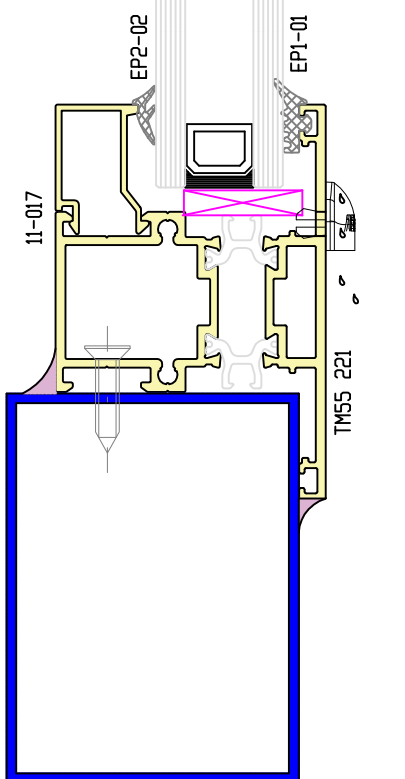
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dt05



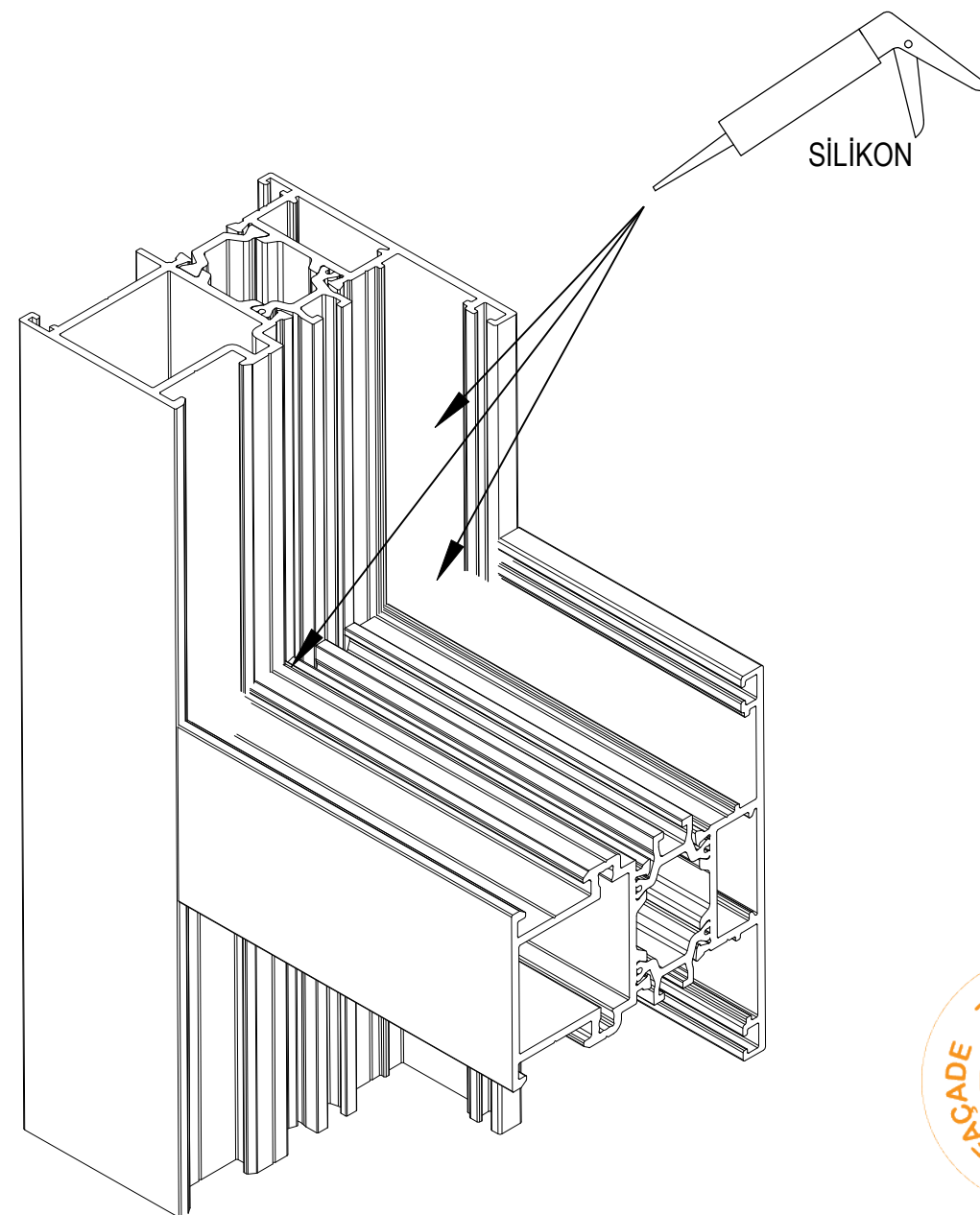
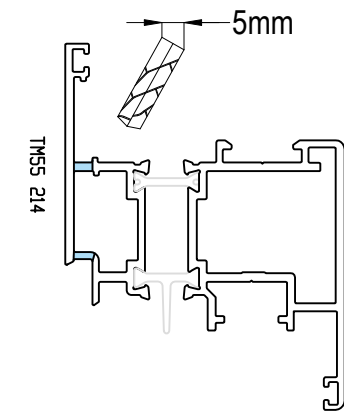
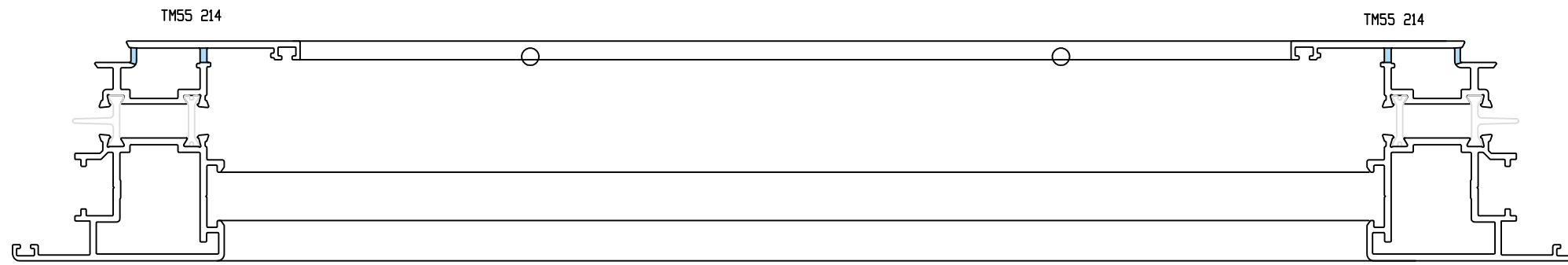
dt06



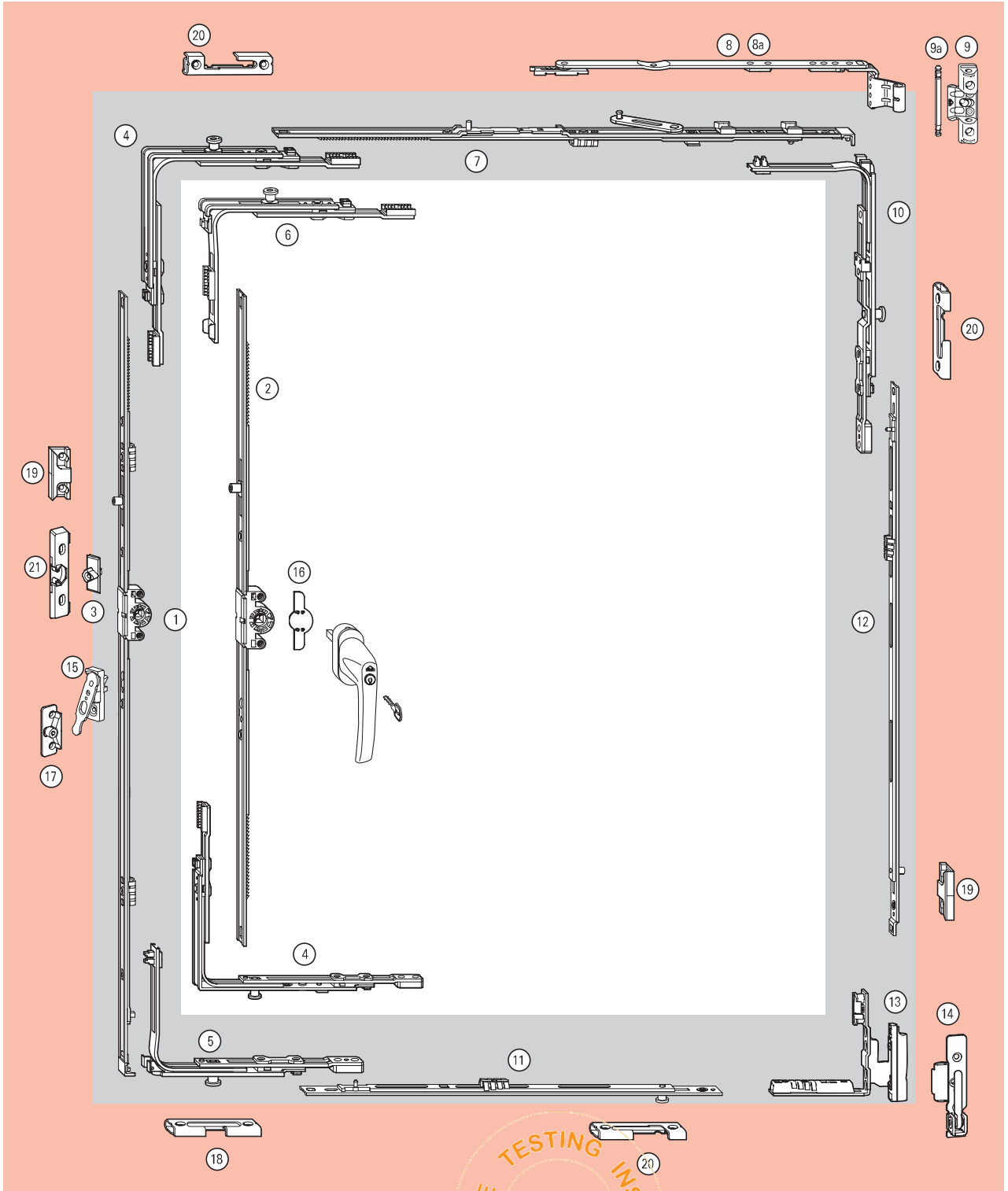
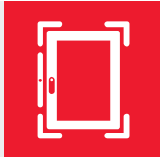
dt07



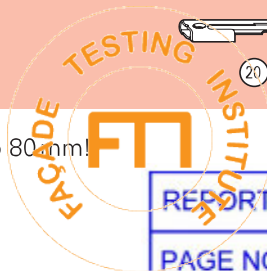
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On SRH < 500 mm, the tilt-range must be limited to 80°mm!



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Tilt&Turn hardware BRG2 ('WK2') (DIN V ENV 1627 – 1630)

Parts list

Application range

Sash Rebate Width (SRW) 490 – 1400 mm
 Sash Rebate Height (SRH)..... 600 – 2400 mm
 Sash weightmax. 150 kg

① Fixed handle-height T&T espagnolette, backset 15 mm

SRH/mm	Handle height/mm	Espag. length/mm	Material no.
600 – 800	263	690 1 V	259 832
801 – 1000	413	890 2 V	259 835
1001 – 1200	513	1090 2 V	259 837
1201 – 1400	563	1290 2 V	259 839
1401 – 1600	563	1490 3 V	259 841
1601 – 1800	563	1690 3 V	259 844
1601 – 1800	1000	1690 3 V	259 845
1801 – 2000	1000	1890 3 V	259 848
2001 – 2200	1000	2090 4 V	259 850
2201 – 2400	1000	2290 4 V	259 853

② Bullet catch cam **256 020**

③ Corner drive **1 V 260 272**

④ T&T corner drive **1 V 260 288**

⑤ Security stay guide

SRW/mm	Description/size	Material no.
490 – 600	250 / 490	256 024
601 – 800	350 / 690	260 204
801 – 1000	500 / 890	1 V 260 206
1001 – 1200	500 / 1090	1 V 260 210
1201 – 1400	500 / 1290	1 V 260 213

⑥ Stay arm E5, system 12/18-9

SRW/mm	Size	Material no.
490 – 600	250	LH 258 074
		RH 258 075
601 – 800	350	LH 258 076
		RH 258 077
801 – 1400	500	LH 258 078
		RH 258 080

⑥a Stay arm E5, system 12/20-9

SRW/mm	Size	Material no.
490 – 600	250	LH 258 083
		RH 258 084
601 – 800	350	LH 258 085
		RH 258 086
801 – 1400	500	LH 258 088
		RH 258 089

⑦ Stay bearing E5 12/18-9 **230 187**

Stay bearing E5 12/18-9 w. supporting-pins, not dep.	230 186
Stay bearing E5 12/20-9 not depicted	245 711
Stay bearing E5 12/20-9 w. supporting-pins, not dep.	245 710

⑦a Stay bearing pin **227 354**

⑧ Stay corner-drive **1 V 260 284**

⑨ Multipart centre lock, horizontal and BRG2 ('WK2') vertical

SRW/mm	SRH/mm	Size	Material no.
490 – 690	600 – 800	200 1 V	296 853
691 – 890	801 – 1000	400 1 V	296 854
891 – 1090	1001 – 1200	600 1 V	296 855
1091 – 1290	1201 – 1400	600 CON 1 V	337 711
		200 1 V	296 853
1291 – 1400	1401 – 1600	600 CON 1 V	337 711
		400 1 V	296 854
	1601 – 1800	600 CON 1 V	337 711
		600 1 V	296 855
	1801 – 2000	600 CON 1 V	337 711
		600 CON 1 V	337 711
	2001 – 2200	200 1 V	296 853
		600 CON 1 V	337 711
	2201 – 2400	600 CON 1 V	337 711
		600 CON 1 V	337 711
		600 1 V	296 855

⑩ Rebate corner hinge E5 12/18-9, w. integrated sash hardware-groove packers

LH	498 317
RH	498 318

Rebate corner hinge E5 12/20-9, w. integrated sash hardware-groove packers not depicted

LH	497 873
RH	497 874

⑪ Pivot rest E5 12/18-9 without supporting-pins

Sash weight max. 130 kg	LH 449 764
	RH 449 763
Pivot rest E5 12/18-9 with supporting-pins, not depicted	LH 449 796
	RH 449 795
Pivot rest E5 12/20-9 without supporting-pins, not depicted, Sash weight max. 130 kg	LH 450 546
	RH 450 545
Pivot rest E5 12/20-9 with supporting-pins, not depicted	LH 450 548
	RH 450 547

⑫ Lifting mishandling device, sash component **260 538**

⑬ Drilling-protection **264 601**

Profile-related components: Refer to the table on page 41

⑭ Lifting mishandling device, frame component

⑮ Steel horizontal Tilt&Turn striker

⑯ Steel security striker

⑰ Bullet catch



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