

# SARAY DÖKÜM ve MADENİ AKSAM SAN. TURİZM A.Ş. TEST REPORT

## SCOPE OF WORK

Partial tests for performance requirements including safety according to BS EN 13659:2015

## REPORT NUMBER

202200258IST-001

## ISSUE DATE

01.04.2022

## PAGES

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## PROJECT NUMBER

IST22Q.0317.01

## NAME OF TESTING LABORATORY PREPARING THE REPORT

INTERTEK TEST HİZMETLERİ A.S. ELECTRIC LABORATORY

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## TEST RAPORU /TESTING REPORT

<b>Proje No:</b> /Project Number	IST22Q.0317.01
<b>Tarih:</b> /Date	01.04.2022
<b>Hizmet:</b> /Service	Partial tests for performance requirements including safety according to BS EN 13659:2015
<b>Ürün:</b> /Product	Drive for roller shutter covering door and windows, 215x180 RG (Tested model)
<b>Ürün Tanımı:</b> /Product Description	Shutter
<b>Firma İsmi:</b> /Company Name	SARAY DÖKÜM ve MADENİ AKSAM SAN. TURİZM A.Ş.
<b>Firma Adresi:</b> /Company Address	BAĞLAR MAHALLESİ, OSMANPAŞA CADDESİ NO:89 GÜNEŞLİ 35540 İSTANBUL
<b>Kontak Kişi &amp; Pozisyonu:</b> /Contact & Position	Tennur SÖNMEZ / Export Executive

Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda belirtilmiştir.

*The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.*

İmzasız raporlar geçersizdir. Bu rapor laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz, üçüncü şahıslarla paylaşamaz ve reklam aracı olarak kullanılamaz.

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Numune müşteri tarafından sağlanmıştır ve raporda verilen ölçüm sonuçları sadece test edilen numune için geçerlidir.  
*Sample has been provided by the customer and measurement results are only valid for the appliance which are tested.*

## BÖLÜM 1

### /SECTION 1

### BAŞVURU SAHİBİ TARAFINDAN SAĞLANAN MÜHENDİSLİK NUMUNELERİNE İLİŞKİN BİLGİLER:

#### /INFORMATIONS FOR ENGINEERING SAMPLES PROVIDED BY APPLICANT

Numune /Sample	Alınan Numune /Sample Received	Seri # /Serial #	Tarih /Date
Drive for roller shutter covering door and windows	S20.156	Engineering Sample	04.02.2020

### Standartlar

#### /Standards

1- BS EN 13659:2015

### İŞARETLEME ETİKETLERİ:

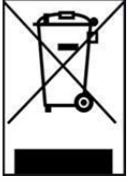
#### /MARKING PLATES

### İşaretleme Etiketleri

#### /Marking Plates

SARAY DÖKÜM ve MADENİ AKSAM SAN. TURİZM A.Ş. BAĞLAR MAHALLESİ, OSMANPAŞA CADDESİ NO:89 GÜNEŞLİ 35540 İSTANBUL	
Roller Shutter Trade:	<b>SARAY</b> ROLL
Roller Shutter Model:	215x180 RG
Roller Shutter Motor:	MTR. 060. AM. 0010
Product Voltage	230V
Product Frequency	50Hz
Product Power	155W
Product Current	0.68A
Motor Nm	10 Nm
Product IP	IPX4
Motor IP	IP44
Motor Class	H
Operating Cycles	5
Operating Time:	4 min
Wind load Resistance:	Class 4

CE



**Tested model: 215x180 RG**

Model Name	Description
215x180 CW	Exterior sliding door ALU double glazing white 215x180 with shutter elec. Cable
215x180 CG	Exterior sliding door ALU double glazing grey 215x180 with shutter elec. Cable
215x180 RG	Exterior sliding door ALU double glazing grey 215x180 with shutte RADIO
215x180 RW	Exterior sliding door ALU double glazing white 215x180 with shutter RADIO

C	Cable
R	Radio
W	White
G	Grey

**Note:** Model of 215x180 RG was completely tested in the report number 202000246TUR-001. No test performed for additional models due to same construction with the report number 202000246TUR-002. See report history section for details of updates.

**Report History:**

**202000246TUR-001/ 02.03.2020:** Initial test report was issued.

**202000246TUR-002/ 24.08.2020:**

- Model names have been changed and new models has been added. The information on the label has been revised.
- Trademark name changed from "SARAY ROLL" and "WISTAR" to "GOODHOME".
- Model WSER50-10/17 in report 202000246TUR-001 has been changed to model 215x180 RG in report 202000246TUR-002. And there is no electrical difference between these models. Only their names have changed.

**202200258IST-001/ 01.04.2022:**

- Trademark name changed from "GOODHOME" to "SARAY ROLL". No test performed on this report.

## BÖLÜM 2

### /SECTION 2

#### TEST METODU VE YAPILIŞ:

#### /TEST METHOD AND APPLICATION

### 4.1 Resistance to wind loads

The wind resistance of a shutter is characterized by its ability to withstand specified loads simulating the action of wind in positive or negative pressure.

Wind resistance is specified through classes defined by threshold values of nominal pressure  $p_N$  and safety pressure  $p_S = \gamma \times p_N$  with  $\gamma = 1,5$ :

- Nominal wind pressure  $p_N$ : it represents the wind pressure under which the shutter shall not sustain deformation or deterioration detrimental to its correct operation.
- Safety wind pressure  $p_S$ : it represents the wind pressure under which no deterioration which may be dangerous for the persons shall be observed (breakage, coming out from the fixing or locking devices).

When tested according to EN 1932, the wind resistance class of shutters shall be given according to Table 1.

**Table 1 — Classes of wind resistance**

	Classes						
	0	1	2	3	4	5	6
Nominal pressure $p_N$ (N/m <sup>2</sup> )	< 50	50	70	100	170	270	400
Safety pressure $p_S = 1,5 p_N$ (N/m <sup>2</sup> )	< 75	75	100	150	250	400	600

NOTE 1 The application of a static pressure over the shutter gives the classification shown in Table 1. It provides an accurate measurement of the intrinsic resistance of a shutter but does not consider the dynamic behaviour of such a shutter in real wind conditions. Annex B gives the rule allowing the calculation of the wind speed from the static pressure for which the shutter has been classified. This calculation rule considers the coefficient  $C_p$  of the shutter, i.e. the algebraic difference between the external pressure coefficient  $C_{pe}$  and the internal pressure coefficient  $C_{pi}$ . The coefficient  $C_p$  is mainly depending on the air permeability of the shutter.

NOTE 2 EN 1932 states that “the tests shall be carried out with the maximum dimensions defined by the manufacturer in the most unfavourable configuration for each product type. The test results obtained can then be applied to all more favourable configurations and to all smaller dimensions in the particular product design”. For External Venetian Blinds, the dimensions of the test specimens have been fixed (see Annex B and EN 1932:2013, 8.2.3).

Product is classified as Class 3 (Wind load) therefore column 3 is picked on the table 1.

$$F_N = \beta \times p \times L \times H \quad \text{with } \beta = 0,5$$
$$F_S = \gamma \times F_N$$

Test loads according to BS EN 1932;

$F_N = 0.5 \times 100 \times 2.15 \times 1.68 = 180.6$  N where L:215cm and H:180cm

$F_S = 1.5 \times 180.6 = 270.9$  N

Sample is fixed on a rigid frame according to the manufacturer's installation instructions.

The Load  $F_S$  is applied for 2 min to the external face of the curtain (direct loading) then after the release to the internal face (reverse loading).

After the test no permanent deformations on the curtain was observed.

After the test no permanent deformations on the shutter fixings, locking mechanism and guide rails was observed.

After the test no rupture on the curtain, fixing or locking mechanism was observed.

## 4.6 Resistance in case of misuse

### 4.6.1 General

#### 4.6.1.1 General requirement

Under the action of abnormal but foreseeable use (misuse), the shutter shall not become misshapen or damaged to the extent that:

- the damage impairs its correct operation;
- the damage which leads to a deterioration in appearance.

Misuse operations are related to the displacement of the curtain, the tilting of the laths and, for projected products, to the projection of the curtain.

#### 4.6.1.2 Displacement of the curtain

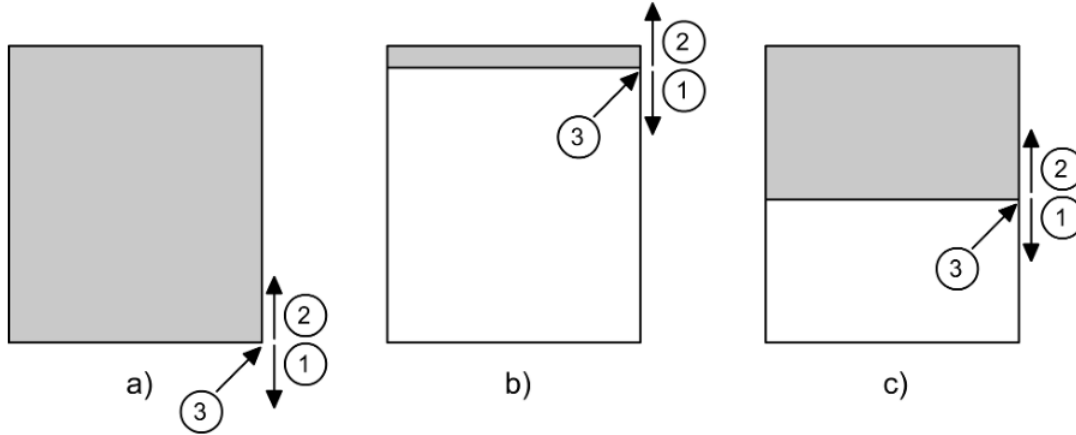
##### — Rough operation

Rough operation occurs during extension and retraction.

##### — Forced operation

Forced operation occurs in the direction of extension and retraction, the curtain being either stopped or blocked in extended or retracted position, or blocked in an intermediate position.

Figure 3 illustrates the six possibilities of forced operations.



#### Key

- 1 direction of extension
- 2 direction of retraction
- 3 obstruction
- a) curtain fully extended
- b) curtain fully retracted
- c) curtain in intermediate position, obstructed during extension and/or retraction

**Figure 3 — Illustration of the six possibilities of forced operation**

#### — Reversed operation

Reversed operations are only applicable to roller shutters or to products using a rolling mechanism for extension or retraction.

For these products, operation in situation a1 or b2 illustrated in Figure 3 is a reversed operation when the movement in the opposite direction is possible with an effort less than the limit of the class of operation. If the movement is not possible, it is a forced operation.

Reversed operation occurs on extension with the curtain fully extended and on retraction with the curtain fully retracted.



### 4.6.3 Performance requirement

After completion of each of the tests, using rough, forced and reversed operations, with the values given in Table 3, the following criteria shall be fulfilled:

- the following appearance defects shall not be visible: no permanent deformation of the curtain, fixing or locking devices and additionally for external venetian blinds a residual deflection of laths  $\leq 5\% L$ , where L is the length of the slat;
- and, for manual operation, the value of the operating effort shall be maintained within the limit of the initial class (see Table 2).

Some shutters are not designed to withstand an obstruction of the curtain in situations defined in a2, b1, c1 and c2 illustrated in Figure 3. They will not be subjected to the corresponding tests if the technical instructions of the manufacturer have a warning to the user about the risk of damage in case the curtain is obstructed in these situations.

For projecting shutters, the manufacturer shall provide a warning in the case the shutter cannot be extended or retracted in the projected position.

**Table 3 — Values of the misuse efforts by type of operation**

Effort of misuse operation		Misuse operation
Force (N)	Torque (Nm)	
$P_B = 2 F_C$	not applicable <sup>a</sup>	rough
Movement of curtain		forced <sup>b, c</sup>
$P_F = 180$	$C_F = 60 \times R$	
Projection of curtain	Tilting the laths	
$P_F = 100$	$C_F = 30 \times R$	reversed
$P_I \leq F_C$	$C_I \leq F_C \times R$	
<p><math>F_C</math> = value of operating effort of the class obtained  <math>P</math> = exerted misuse force  <math>C</math> = exerted misuse torque  <math>B</math> = rough, <math>F</math> = forced, <math>I</math> = reversed  <math>R</math> = maximum length of crank handle described in the technical instructions of the manufacturer with <math>R \leq 0,20m</math></p> <p><sup>a</sup> Operation by gear is never rough.  <sup>b</sup> If the operating mechanism is equipped with system which limits the force or the torque (see 4.10), values of <math>P_F</math> and <math>C_F</math> are those given by these systems.  <sup>c</sup> For power operated operations, the effort to be applied is the one produced by the motor.</p>		

NOTE There are no performance classes.

## 4.9 Mechanical endurance (repeated operating cycles)

### 4.9.1 General

This clause evaluates the ability of the shutter to withstand a number of operating cycles corresponding to a given use:

- the curtain: one cycle corresponds to a complete operation of extension and retraction including the rest times;
- the laths (external venetian blind, roller and wing shutters with tilting laths): one tilt cycle is defined as a complete movement of the pivoting mechanism, moving the laths from one extreme position to the other and then back again.

### 4.9.2 Determination of performance

The determination of performance shall be in accordance with the test methods specified in EN 14201.

### 4.9.3 Performance requirement

#### 4.9.3.1 General

After carrying out the cycles related to the appropriate class, the following requirements shall be fulfilled.

#### 4.9.3.2 Manual operation

- The value of the operating effort shall be maintained within the limit of the initial class;
- Wear of the constituent material of the laths: the wall of the laths shall not be perforated as a result of abrasion;
- Relevant parts involved in the safe operation of the product (e.g. storm hooks, guide pin,...) shall not present any breaking, permanent deformation or significant signs of wearing;

NOTE Carrying out a wind resistance test after the endurance test allows to verify the proper resistance of storm hooks without carrying out a visual inspection.

- Operating mechanisms shall not sustain significant damage.

The capability for use of a gear with crank handle, supplied on the market, intended to be incorporated in a shutter, may be determined according to EN 14203. Using gear with crank handle conforming to EN 14203 may allow shutter manufacturers to reach a higher endurance class.

#### 4.9.4 Classes of endurance

Table 5 gives the number of cycles corresponding to the three endurance classes specified.

**Table 5 — Classes of endurance**

Number of cycles	Class 1	Class 2	Class 3
Extension/retraction	3 000	7 000	10 000
Tilting	6 000	14 000	20 000

The orientation cycles which occur during the extension/retraction cycles shall be considered as contributing to the total number of orientation cycles to be carried out.

NOTE Class 2 corresponds to 10 years with 2 cycles per day.

Test is performed for 500 cycles under the operation of normal conditions according to IEC 60335-2-97.

Note: Motor incorporates thermal motor protector.

For 500 cycles the appliance complies with requirements of Cl.4.9.3.2 Manual operation.

#### 4.11 Impact resistance

##### 4.11.1 General

This clause evaluates the behaviour of the shutter under the action of hard body impact.

##### 4.11.2 Determination of performance

The determination of performance shall be in accordance with the test methods specified in EN 13330.

##### 4.11.3 Performance requirement

Under the action of the hard body of 50 mm diameter, steel ball of 0,5 kg and a drop Z of 0,45 m, the shutter shall not sustain deteriorations:

- which are detrimental to its correct operation; for manual operation the operating effort shall be maintained within the limit of the initial class;
- which lead to unacceptable appearance defects (local indentations and cracks); the average diameter of indents shall not be greater than 20 mm of diameter or 2 mm indentation.

0.5 kg steel ball with 50 mm diameter dropped from 0.45 m on the external-internal surface of the curtain and test is repeated for various locations.

No damage was observed that can impair the correct operation of the appliance.

Average diameter of indents was not greater than 20 mm diameter. Diameter of indentations were lower than 2 mm.

## 4.13.3 Power operated shutters – Injurious contact in operation

### 4.13.3.1 General

Crushing hazards shall be eliminated or reduced.

### 4.13.3.2 Determination of performance

The requirements specified in 4.13.3.3 shall be fulfilled and, where appropriate, in accordance with the test methods specified in EN 12045.

#### 4.13.3.3 Safety requirement

The requirement is met if, at least, one of the following conditions is fulfilled:

- In the crushing area as defined in EN 12045 and in between moving slats or laths, the transmitted force on a obstacle shall be lower than 150 N and the speed of extension of the curtain shall be lower than 0,2 m/s.

In addition, in the case of a wing shutter with two or more leaves, a minimum gap of 0,10 m shall be maintained between the leaves in the area of extension (see Figure 5).

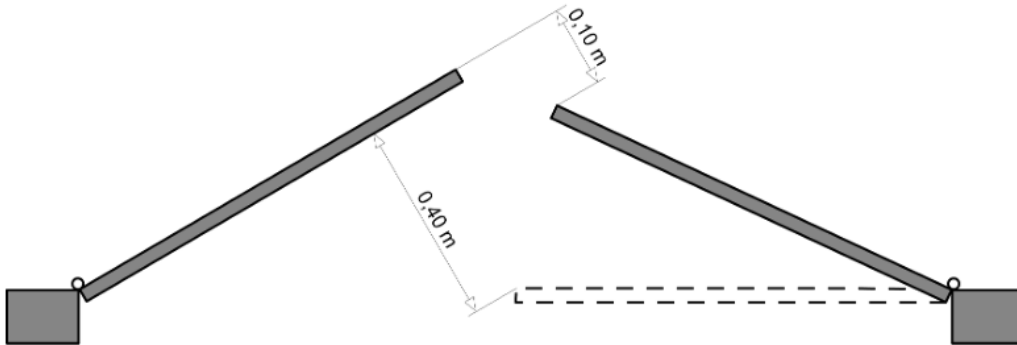


Figure 5 — Gap between the panels at the end of extension

- The shutter with accumulating or retractable laths fulfils the accumulation condition defined in EN 12045. In addition, the average speed of extension of the curtain in the last 0,40 m shall be less than 0,2 m/s.
- The shutter has a hold-to-run control and the switch is incorporated in the product or installed in such a way that it allows the control of the movement in the direct view of the complete curtain.

- d) The crushing area is at a distance Z greater than or equal to 2,50 m from the floor or any other permanent access level.
- e) The shutter:
- 1) either prevents contact in the crushing area (guards);
  - 2) or limits the transmitted force (static operation force) to a value lower than 150 N and allows removal of the obstacle either by reversing the movement of the curtain or by stopping it. With the last solution, it shall be possible to lift up the curtain with a force less than 25 N;
  - 3) or, in the case of a roller shutter fitted to a roof window, the drive shall stop the movement of the curtain, and within 5 s, start to reverse automatically. During this period, the maximum operating force shall not exceed 250 N for more than 2 s, and the average force calculated over the period of 5 s, shall not exceed 150 N.

Guards designed to protect from the mobile elements of transmission shall be fixed in such a way that they can only be dismantled with the use of a tool.

Roller shutters with perforated laths shall not allow the introduction of a finger between laths. This condition is fulfilled if a 5 mm diameter rod cannot be introduced.

The product has a hold to run control and a switch is incorporated in the product that allows to control of the movement in the direct view of the complete curtain.

The average speed of the extension of the curtain in the last 0.40 m is measured as less than 0.2 m/s.



## BÖLÜM 3 /SECTION 3

### TEST SONUÇLARI: /TEST RESULTS

#### 4.1 Resistance to wind loads

The test result is positive. No part of it has been displaced. The product continues to run after the test.

#### 4.6 Resistance in case of misuse

The test result is positive. The product continues to run after the test.

#### 4.9 Mechanical endurance (repeated operating cycles)

The test result is positive. There was no hitch in the shutter working system. The product works when the button is pressed, and when we raise our hand from the button, it stops. The slip value is 0.

Note: Since the product has a motor protector, 500 cycles were made in the Mechanical Endurance test.

#### 4.11 Impact resistance

The test result is positive. Impact trace measurements were taken. The maximum diameter of the impact trace is less than 2mm.

#### 4.13.3 Power operated shutters – Injurious contact in operation

The test result is positive. The measured velocity rating is 0.07 m / s. (0.07 m / s < 0.2 m / s)



Madde /Clause	Tanım /Description	Ortam Şartları /Ambient Conditions	Sonuç /Result
4.1	Resistance to wind loads	23 °C ± 2 °C.	P
4.6	Resistance in case of misuse	23 °C ± 2 °C.	P
4.9	Mechanical endurance (repeated operating cycles)	23 °C ± 2 °C.	P
4.11	Impact resistance	23 °C ± 2 °C.	P
4.13.3	Power operated shutters – Injurious contact in operation	23 °C ± 2 °C.	P

**P:** Uygun / Conformed  
**F:** Uygunsuzluk / Non-Conformity  
**N/A:** Uygulanabilir değil / Not Applicable

**Testi Gerçekleştiren:**

/Completed by

Burak TEYMEN

**Ünvan:**

/Title

Project Engineer

**İmza:**

/Signature

**Tarih:**

/Date

01.04.2022

**Onaylayan:**

/Reviewed by

Yusuf İdris MERAL

**Ünvan:**

/Title

Senior Project Engineer

**İmza:**

/Signature

**Tarih:**

/Date

01.04.2022



## BÖLÜM 4 /SECTION 4

### TEST EKİPMANLARI: /TEST EQUIPMENT

Ekipman Adı /Equipment Name	Üretici /Manufacturer	Ekipman # /ID #	Kalibrasyon Tarihi /Calibration Date	Sonraki Kal. Tarihi /Next Cal. Date
Calliper	MITUTOYO 573-635	EN 036	10.2021	10.2022
Force Gauge	IMADA DS2-110	EN 020	08.2021	08.2022
Chronometer	CASIO HS-80TW	EN 114	01.2021	01.2022
Steel Sphere	HÜRAY	EN 084	03.2020	03.2023
Tape	CETA FORM	EN 040	11.2019	11.2022
Automation device with timer	GÜNEY ELEKTRİK	EN 246	initial calibration	initial calibration





**BÖLÜM 5**  
*/SECTION 5*

**FOTO DOKÜMANTASYON:**  
*/PHOTO DOCUMENTATION*



**Photo 1.** General view of the product



**Photo 2.** While the shutter is moving



Photo 3. Shutter back top section



Photo 4. Shutter motor label



Photo 5. Overview of up-down move button

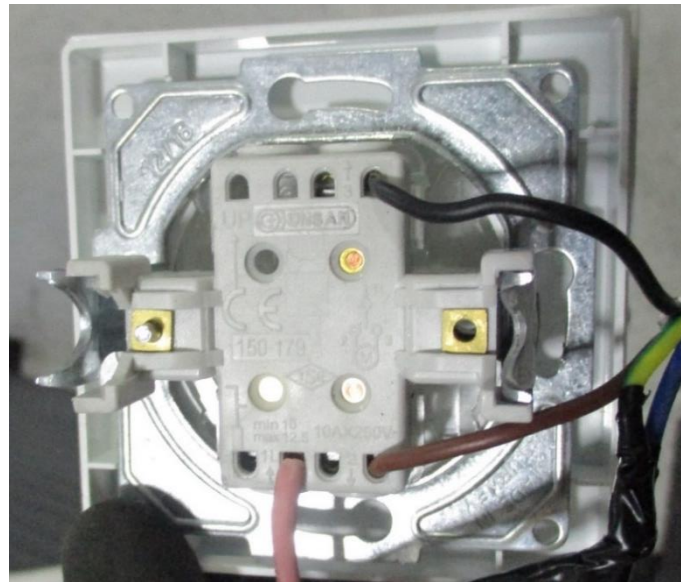


Photo 6. Rear surface of up-down move button