

# Manual



**marine glazing**

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## PREFACE

This Operation Manual is intended for the operating, maintenance and supervisory personnel.

This Operation Manual also describes peripheral objects of the vessel structure which are not in the scope of supply.

The scope of supply always refers to chapter 2 GENERAL OVERVIEW and to chapter 3.5 OPERATING MODES. The operating personnel must have read, understood and must comply with this Operation Manual. We wish to emphasize that we do not accept any liability for damage and / or downtime due to non-compliance with the Operation Manual.

We reserve the right to make any technical changes to representations and data given in this Operation Manual that may become necessary to improve the sash window.

## GENERAL NOTES

Please read this manual carefully and completely to make yourself familiar with the functions of the sash window. Make sure to observe the safety instructions to avoid any danger for you and other persons as well as damage to the window.

The system supplier disclaims any liability for damage and consequential damage caused by the nonobservance of these instructions!

## COPYRIGHT

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**Revision history**

revision	date	comment	chapter
00	2020-07-31	first edition	all

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# 1 SAFETY INSTRUCTIONS

The sash window has been constructed in accordance with:

- the specifications of customer
- the latest technology and the recognized safety guidelines
- The risk assessment was carried out according to DIN EN ISO 12100 and DIN EN ISO 13849-1

Read these safety instructions carefully and look at the equipment to become familiar with the sash window including the mechanical and electrical drive and control systems, before take in operation the sash window or performing maintenance and repairs.

## 1.1 INTENDED USE

Avoid operating temperatures below -5°C or above +40°C. Do not employ the sash window with snow or ice on top.

Only operate the sash window if all safety devices and safety-related equipment are fitted and functioning correctly.

Do not leave any objects in or around the mechanical parts of the window!

Servicing work may only be carried out when the sash window is shut down and locked to prevent accidental start-up and self-acting movement.

Never open the housings of any electrical equipment. Ensure that any repair is carried out by qualified personnel only. It is forbidden to make any modifications, additions or conversions to the sash window without the supplier's permission otherwise all warranty claims are void!

The personal protective equipment must be used for all maintenance and repairs. Activities on the sash window, especially outside of the window sections may only be carried out with safety belts and locked safety hooks.

Components and devices that are being inspected, serviced or repaired must be disconnected from the power if specified.


Never reach into moving parts like rollers, pulleys, belts at the sash window sections. Stay away from the drive units and the belt transmissions.

It is forbidden to remove any protection devices and dismantle barriers!

Do not carry out any procedure that may compromise the safety of personnel or of the sliding window.


## 1.2 SIGNAL WORDS

The following signal words are used to indicate dangers and prohibitions.

	 <b>DANGER</b> <b>DANGER</b> indicates a hazardous situation, which, if not avoided, <b>will result</b> in death or serious injury.
--	---



	 <b>WARNING</b>
--	--



	<b>WARNING</b> indicates a potentially hazardous situation, which, if not avoided, <b>can result</b> in death, serious injury or equipment damage.
--	--



	 <b>CAUTION</b>
	<b>CAUTION</b> indicates a hazardous situation, which, if not avoided, <b>can result</b> in personal injury or equipment damage.



### 1.3 GENERAL SAFETY INSTRUCTIONS

The following special messages apply to the entire window to warn of possible dangers. These instructions must be taken into account during all work on the sash window.

	 <b>DANGER</b>
	<b>Danger from window movement.</b> Risk area is monitored by optical safety sensors permanently.

	 <b>DANGER</b>
	<b>Danger from window movement.</b> Risk area is monitored by optical safety sensors permanently.




	 <b>DANGER</b>
	<b>Danger from electrical voltage</b> Electrical equipment should be serviced only by qualified personnel. Disconnect the power supply before maintenance and repair work if specified.

	 <b>CAUTION</b>
	<b>Danger from torsion spring.</b> Spring force does not cause irreversible injuries. Use spacer for maintenance and repair work if specified.

	 <b>CAUTION</b>
	<b>Warning against rotating parts</b> Maintenance and repair work only when the drive is disconnected. Keep away from moving parts e.g. belts and pulleys.

	 <b>CAUTION</b>
--	--



	<p><b>Danger from hot surfaces.</b> Don't touch the motor until after a period of time or with gloves.</p>
	<p style="text-align: center;"> <b>CAUTION</b></p> <p><b>Warning against risks of falls</b> Always ensure a safe stand during maintenance and repair work. Use suitable ladders or platforms.</p>

## 1.4 DISCLAIMER

Electrical equipment should be serviced only by qualified personnel. No responsibility is assumed by the supplier: marine glazing Brombach + Gess GmbH & Co. KG for any consequences arising out of the use of this sash window incl. its equipment. This document is not intended as an instruction manual for untrained persons.

## 1.5 SAFETY FOR PERSONNEL AND THE SASH WINDOW

The sash window may only be used for its intended purpose when it is in perfect working order.

The maintenance staff must follow the instructions in the operation manual and be fully aware of the safety requirements and hazards posed by the sash window.

In particular any faults that may compromise the safety of the sash window should be rectified immediately.

## 1.6 ORGANIZATIONAL MEASURES

The operation manual should be kept in place where it is always accessible for the cleaning and maintenance personnel.

In addition to the operation manual observe and instruct all users in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection.

Observe all safety instructions and warnings on the sash window.

Ensure that all safety instructions and warnings attached to the sash window are always complete and perfectly legible.

Never make any modifications, additions or conversions to the sash window that might compromise safety without the supplier's permission.

Spare parts must comply with the technical requirements specified by the supplier. Only use genuine spare parts.

Provide regular training to ensure the safety.

## 1.7 PERSONNEL

Any cleaning and work on the sash window may only be carried out by personnel trained for this purpose. This applies to cleaning, inspection and maintenance works on board during operation and also for maintenance work out of operation on quayside or in dock.

Activities on the sash window – especially on the outside may only be carried out with safety belts and locked safety hooks.

Works on electrical components and equipment may only be carried out by personal qualified through professional training in the field of electrical engineering.

## 1.8 BASIC DUTIES

The cleaning and service personnel for the sash window have to be instructed for the correct wear of safety belts and have to be trained for the safety locking on the sash window respective on the safety lines, which are arranged on deck.

Do not carry out any procedure that may compromise the safety of personnel or of the sash window.

Check the sash window for visible external damage and defects regularly. Also listen for unusual sounds during the sash window moving.

Servicing work may only be carried out when the sash window is shut down and locked to prevent accidental start-up and self-acting movement.

The sash window must not be started respectively opened with snow and ice accumulated.

## 1.9 GENERAL OPERATION INSTRUCTIONS

### 1.9.1 START-UP

Before switching on / starting the sash window moving systems ensure that no persons are endangered by the sash window.

### 1.9.2 SAFETY DURING CLEANING AND MAINTENANCE

All start-up and shut-down procedures specified in the operation manual have to be observed.

Safeguarding the sash window against accidental activation:

- A. Disconnect the sash window from the power supply,
- B. Keep all accessible areas along / around the sash window incl., the moving systems clean and free – especially the glasses, seals, running rails and belt transmissions.
- C. Retighten loose screw connections after finishing servicing and maintenance works.
- D. When the cleaning, inspection and maintenance works are complete, immediately refit any removed safety devices and ensure the correct sash window functioning.
- E. Dispose of operating and auxiliary materials and replacement parts in a safe and environmentally friendly manner.

## 2 GENERAL OVERVIEW

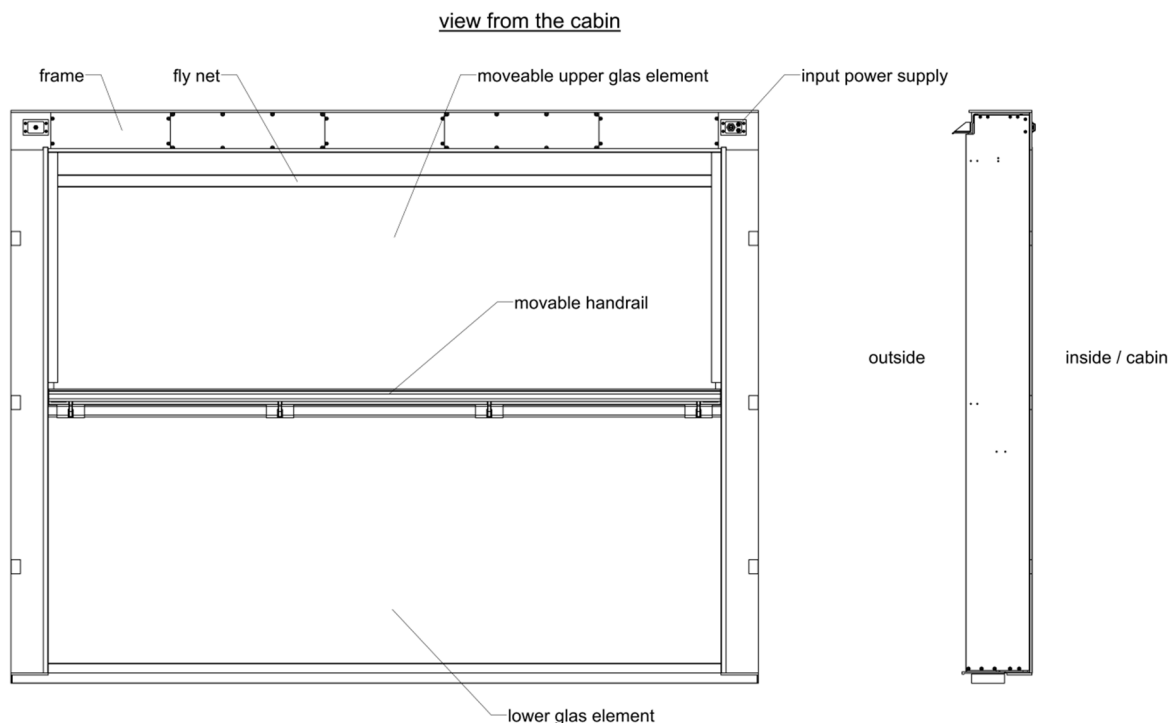
The sash window will be implemented in cabins of cruise vessels. The window element extends across the cabin wide and forms the enclosure to the outside. It is made from aluminum profiles, screwed and sealed to a frame with a lower fixed one and an upper movable glass element. In closed position the upper and lower window as well as the surrounding frame forms a flat facade.

The upper panel can be opened by the passengers. For opening the upper glass element moves outward and then down in front of the lower element.

A movable handrail is located in front of the window. It serves as a handrail when the window is closed and as a balustrade top at the open window. The movement of the handrail is spring loaded and it follows the movement of the upper glass panel. During the closing procedure, the handrail is pushed back thru the movable frame and lowered down in order to enlarge the clear view area.

If required, an integrated fly net can be lowered. The fly net movement is independent of the window position or movement.

The window as a self-supporting element with all components will be delivered and fixed on board. The group of components are dense to the outside and only has to be sealed against the surrounding structures.



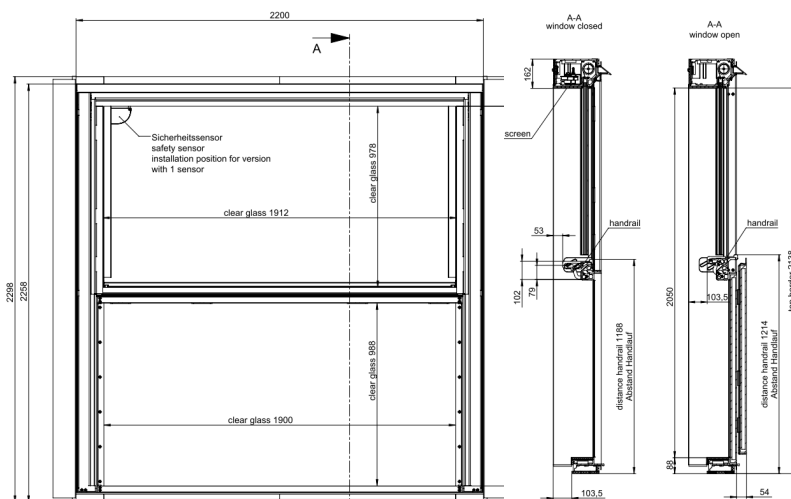
### 3 TECHNICAL MAIN DATA

#### 3.1 MATERIALS

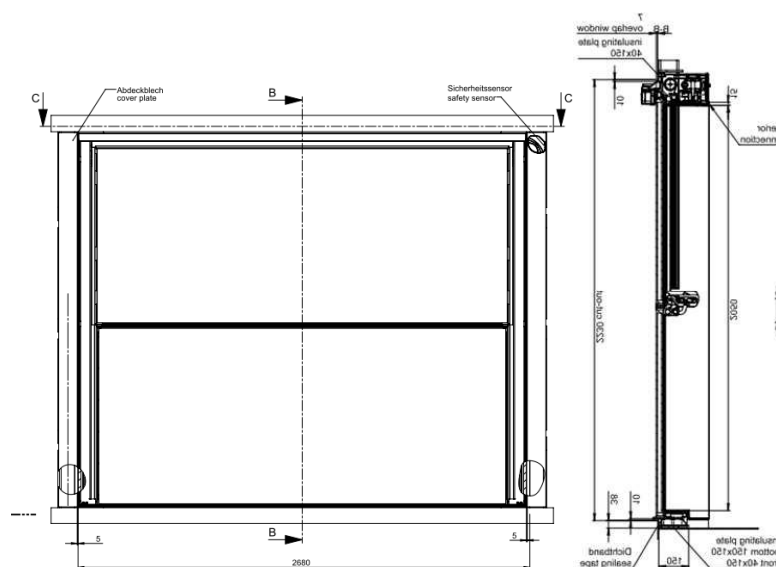
- Anodized and powder coated aluminum for the framework.
- Stainless steel for the mechanical and moving parts.
- Maintenance free plastics for bearings drive nut and fairings.
- Window elements are made from toughened coated insulated glasses.
- handrail support profile is aluminum with a customized top profile (owner supply).

#### 3.2 MEASUREMENTS

##### Cabin window

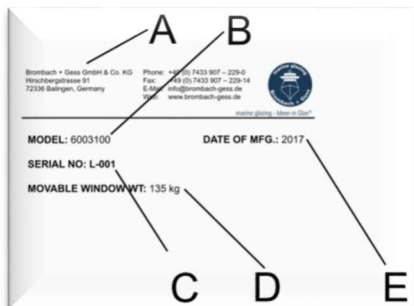


##### Restaurant window



### 3.3 NAME PLATE

The type plate is mounted above the drive motor in the roof profile.



A: address system supplier

B: model number

C: serial number

D: weight movable window

E: year of manufacture

### 3.4 ELECTRIC POWER UNIT

- Opening/Closing time for the window: approx. 40 sec – running speed max: 2m/min
- Opening/Closing time for the fly net: approx. 10sec – running speed 6m/min
- Motor for the window-movement: brushless DC-motor; voltage: 40V; amperage: 12,2A
- power: rated wattage: 250W; max. output power 400W;
- Motor for the fly net: voltage: 220/230V

### 3.5 OPERATING MODES

The sash window and the fly net can be operated from the passenger by push buttons located at the switchboard panel close to the window.

The following options are available:

- window open
- window close
- fly net up
- fly net down

The window open/close buttons are of start / stop type.

In the end positions the window stops automatically. The passenger can stop the window at any time by pressing the buttons.

Persons or objects who are detected by the laser sensor will stop the movement. After this obstruction has been removed, the window can be moved further. To do so, the actuating button must be pressed again.

The fly net open/close buttons are permanent press type and are located in the switchboard panel close to the window.

### 3.6 MANUALLY CLOSE

In case of black out, the open window can be closed manually by the crew.

For further information see chapter 4.2.7 EMERGENCY CLOSING.

### 3.7 FINISH

All visible surfaces are painted with color RAL 9010, where applicable.  
Mechanical stainless steel surfaces are not painted.

surface treatment:

1x 5µ anodisation

1x120µ polyester powder coating HWF RAL 9010 silk gloss

glue and grout:

glueing material for glasses: Sika 296 black (Polyurethane)

sealing material for glasses and joints: Sika WS 605 black (Silicone)

## 4 INSPECTION AND MAINTENANCE

### 4.1 REGULAR INSPECTION

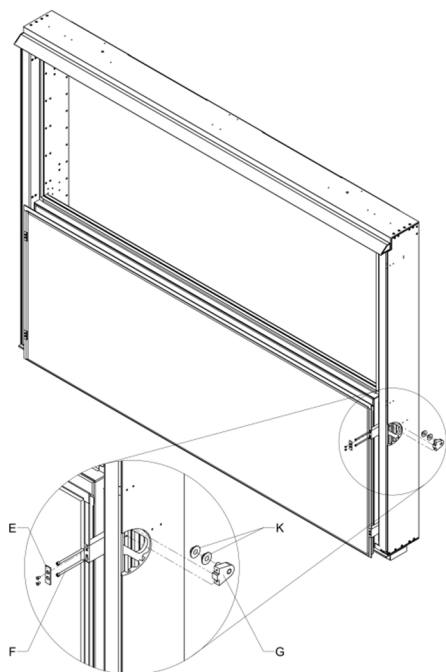
Inspection Item	procedure	value	Time periode	Maintenance action
Silicone joints	Visual inspection	No loose or damaged sealing	Once a year	Cut out damaged seal and reseal
Window sealing	Visual inspection	No loose, ripped or damaged sealing	Every six month	Replace sealing
	Replace the window sealing	All sealing	On condition	Replace sealing
Handrail movement	Test movement manually and motorized	Free movement	Once a year	Check for obstacles in guidance rails and grease with Molycote
	Check the torsion spring for breakage	No damaged or broken spring	Once a year	Replace torsion spring
	Check plastic bushes for cracking and abrasion	No damaged or broken bushes	Once a year	Replace plastic bushes
Window movement	Visual and aural check	Compare with next unit- cycles time approx. 40 sec.	Once a year	Wash spindle from outside and grease with grease: Texaco Starplex HT 1 Prod.No 835464
Glass element	Visual Check of the glasses	No damage and cracks	Once a year	Contact the supplier

Belt condition	Visual and tension check with a belt tension meter	No cracks or frazzled edges	Once a year	Adjust tensioner pulleys, when necessary (the belt tension is: window 2200 = 31-33 Hz, window 2660 = 26-28 Hz)
Slide bearings in the drive assembly	Check for cracked bearings and abrasion	Minimum material thickness 1mm	Every five years	Replace -bearings

Fly net	Check for holes and damage in the screen	No damage or hole	Once a year	Replace the fly net
	Check the lateral guidance	No damage or broken guidance or spring	Once a year	Replace the guidance or spring
	Check lower rubber lip	No loose or damaged lip	Once a year	Replace the rubber lip
Electronic check	Visual inspection	Check cables and connectors for damage	Once a year	Replace cables
	Visual inspection	Check connectors for tight fit	Once a year	connector plug firmly







- A. loosen the screws and remove the cover plate on the movable window

Attention:

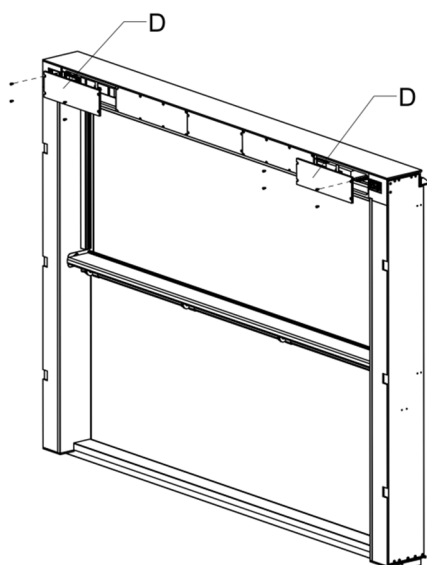
it is forbidden to remove more than one flange at a time

- B. loosen the screws of the flange
- C. remove the mounting flange with attachments
- J. replace the slide bearing (8 pieces per window), for item number and type see parts list
- D. installation in reverse order, all screws are secured with locktite 243.
- E. connect the power supply

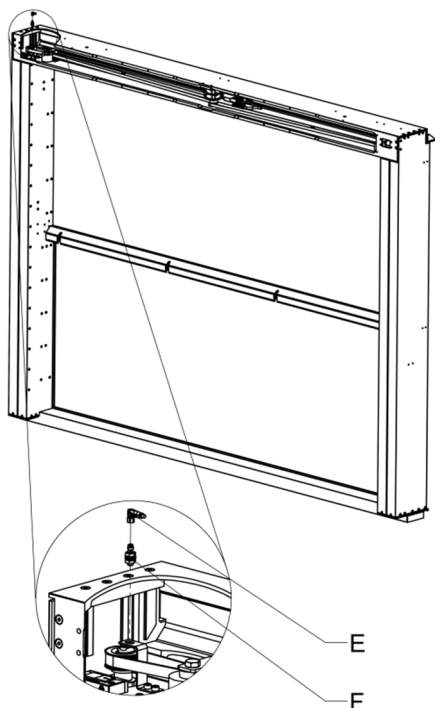
### 4.2.3 ASSEMBLY DRIVE

For further information see the assembly drawing 604043 or 604033 chapter 6 DRAWINGS and the corresponding spare parts list in chapter 7 PARTS LIST.

### REPLACE BELT BRAKE SENSORS

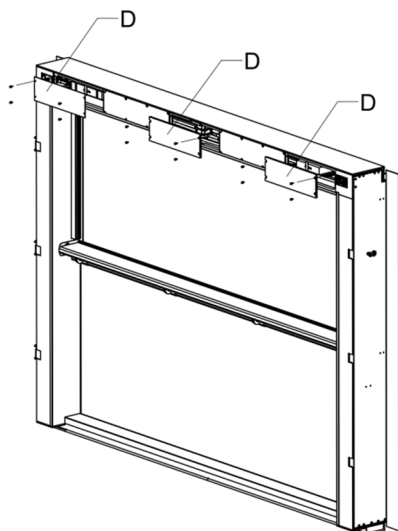


- A. close the window
- B. disconnect the power supply
- C. open the maintenance panel in the ceiling
- D. open the side maintenance panels in the upper window

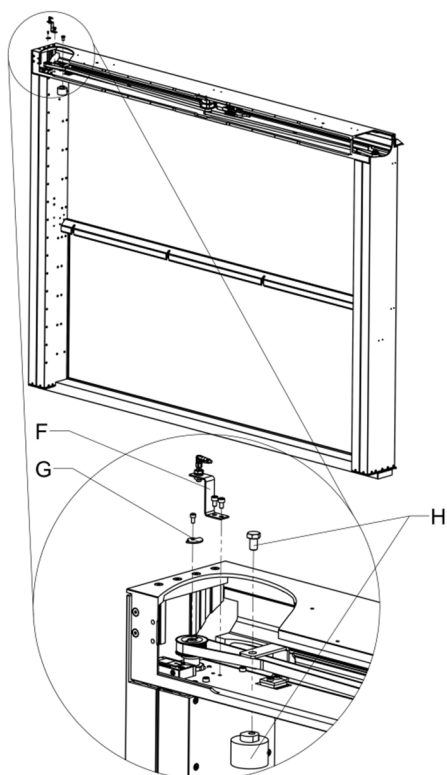


- E. remove the sensor cable
- F. replace the sensor, for item number and type see parts list
- G. switching distance see notice in the parts list
- H. installation in reverse order, all screws are secured with locktite 243.
- I. connect the power supply

## REPLACE DRIVE BELTS AND PULLEY

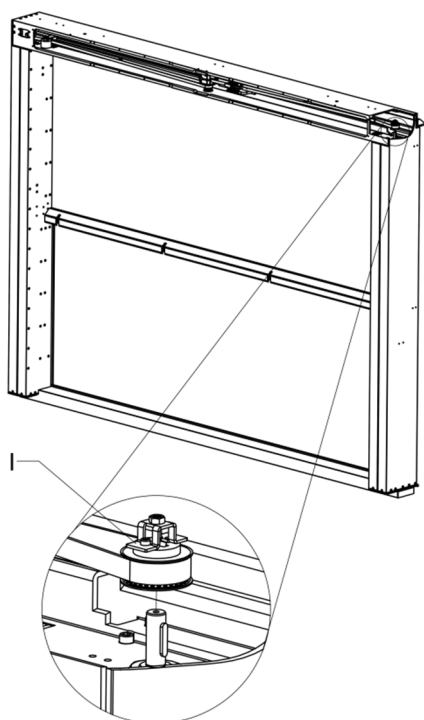


- A. open the window
- B. disconnect the power supply
- C. open the maintenance panel in the ceiling
- D. open all maintenance panels in the upper window
- E. secure the movable window



- F. remove the belt brake sensor with the holder
- G. remove the actuator disk
- H. remove the tension roller

Perform these steps on both sides.



- I. install the puller and remove the gear on both sides
- J. replace the belt, for item number and type see parts list
- K. if necessary replace also the gear at the motor, for item number and type see parts list

Please notice:

both sides tighten the belts as specified on the drawings with the help of the tension roller. A frequency measuring device must be used.

The belt tension is:

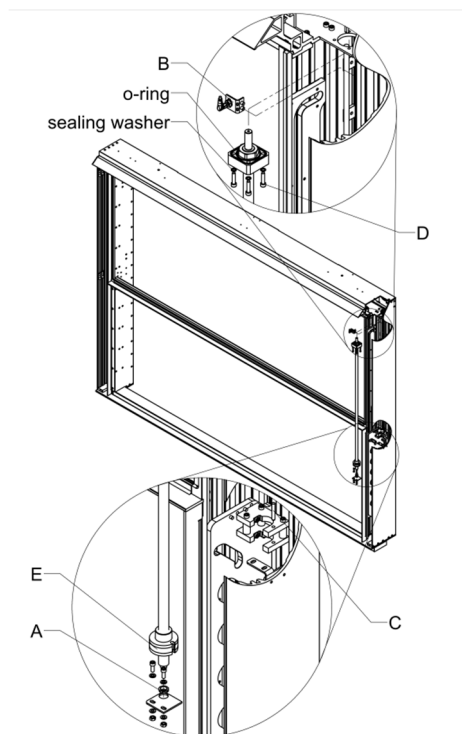
Window 2200 = 31 - 33 Hz

Window 2660 = 26 - 28 Hz

- L. installation in reverse order, all screws are secured with locktite 243.
- M. connect the power supply

## REPLACE SPINDLE NUT OR TRAPEZOID SPINDLE

At first you have to remove the drive belts, the pulley and the outside cover plates (see description at the front).



- A. remove the floating bearing at the bottom of the spindle
- B. if necessary remove the end position sensor
- C. remove the pin at the spindle nut
- D. loosen the screws at the upper side of the spindle
- E. replace the spindle nut or the complete spindle, for item number and type see parts list

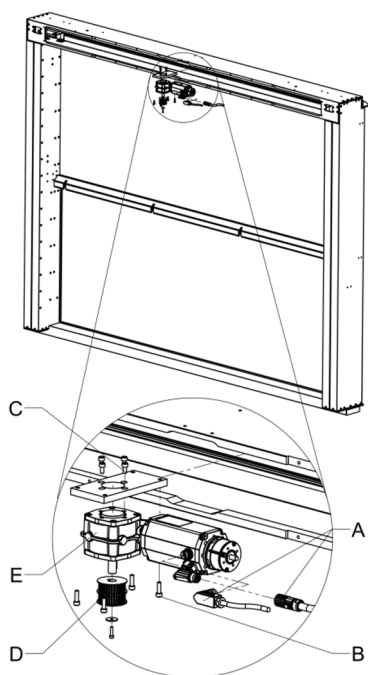
Please notice:

pay attention to the o-ring and the sealing washers to refit

- F. installation in reverse order, all screws are secured with locktite 243.
- G. mount all drive components e.g. the pulley, the belt and all the sensors and check the belt tension
- H. close all maintenance openings before restarting
- I. connect the power supply

## REPLACE MOTOR WITH THE GEAR OR THE PULLEY

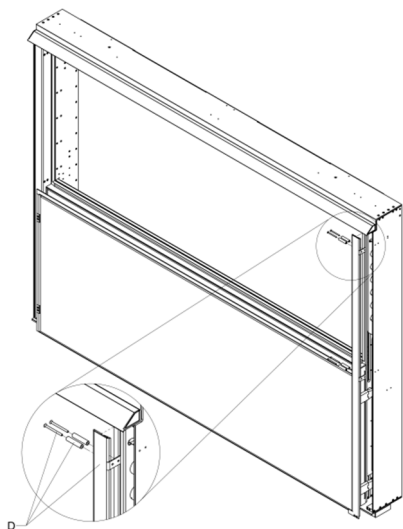
At first you have to remove the drive belts (see description at the front).



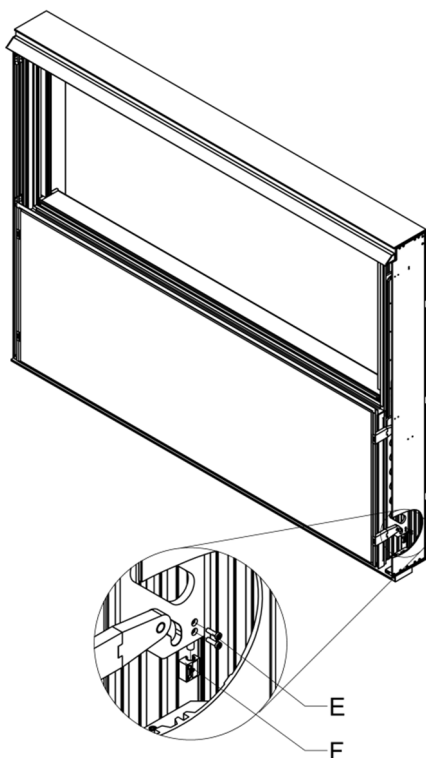
- A. remove the cable from the motor and the motor brake
- B. loosen the screws and remove the motor with the motor plate
- C. loosen the screws between the motor plate and the motor
- D. if necessary remove the pulley, for item number and type see parts list
- E. if necessary remove the motor with the gear, for item number and type see parts list
- F. installation in reverse order, all screws are secured with locktite 243.
- G. mount all drive components e.g. the pulley, the belt and all the sensors and check the belt tension
- H. close all maintenance openings before restarting
- I. connect the power supply

#### 4.2.4 ASSEMBLY WINDOW GUIDE

For further information see the assembly drawing 604032 or 604042 chapter 6 DRAWINGS and the corresponding spare parts list chapter 7 PARTS LISTS.



- A. open the window
- B. disconnect the power supply
- C. secure the movable window
- D. loosen the screws and remove the cover plate



Attention:

It is forbidden to remove more than one housing bearing at a time

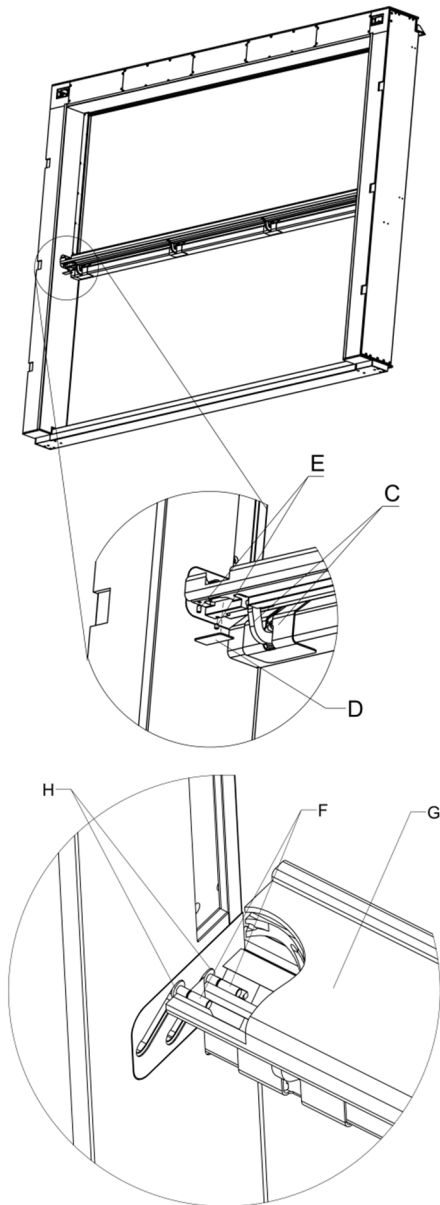
- E. loosen the screws
- F. replace the housing bearing, for item number and type see parts list
- G. installation in reverse order, all screws are secured with locktite 243.
- H. connect the power supply

#### 4.2.5 ASSEMBLY HANDRAIL

For further information see the assembly drawing 604035 or 604045 chapter 6 DRAWINGS and the corresponding spare parts list chapter 7 PARTS LISTS.

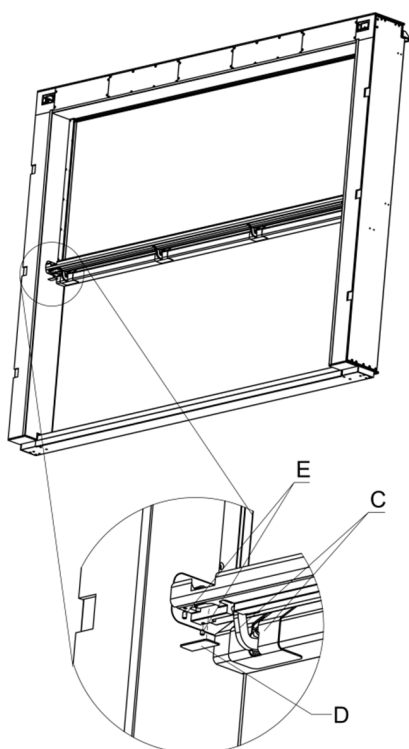
For further information to replace the teakhandrail see the drawing “assembly drawing teakhandrail” in chapter 6 DRAWINGS.

##### Remove the complete handrail

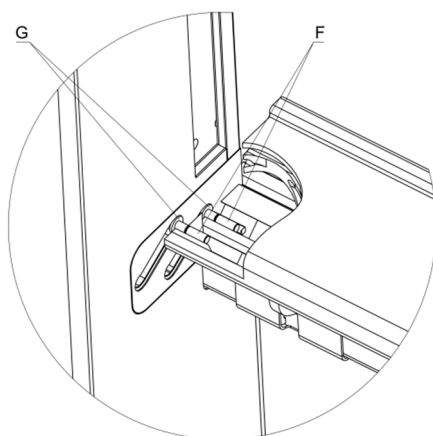


- A. close the window
- B. disconnect the power supply
- C. install spacer between the lever and the profile, this is to unload the lever from the spring force
- D. remove the glued cover plate
- E. loosen the threaded pins

- F. pull out the pins
- G. remove the handrail
- H. replace the lateral guide bushes if necessary, for item number and type see parts list
- I. installation in reverse order, all screws are secured with locktite 243.
- J. connect the power supply

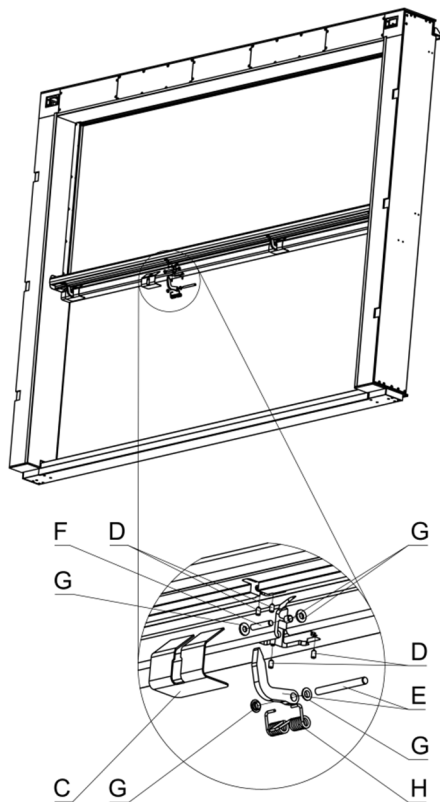
**Replace the plastic bushes at the lateral guidance**

- A. close the window
- B. disconnect the power supply
- C. install spacer between the brackets and the profile
- D. remove the glued cover plate
- E. loosen the threaded pins



- F. pull out the pins
- G. replace the plastic bushes, for item number and type see parts list
- H. installation in reverse order, all screws are secured with locktite 243.
- I. glue the openings with the cover plate new plates may be required, for item number and type see parts list
- J. connect the power supply

### Replace the plastic bushes and the torsion spring

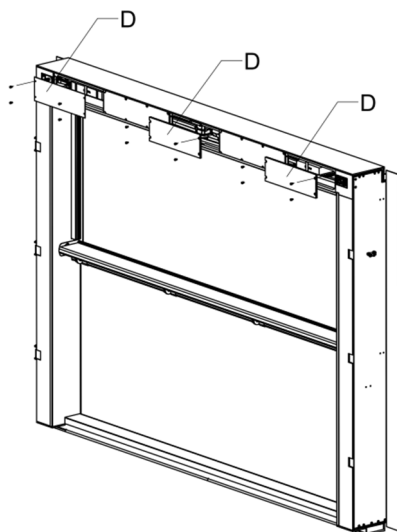


- A. close the window
- B. disconnect the power supply
- C. remove the glued cover plate
- D. loosen the threaded pins
- E. if necessary remove the assembly with the torsion spring and the bracket
- F. if necessary remove the pin with the plastic bushes. For item number and type see parts list
- G. if necessary substitute the plastic bushes, for item number and type see parts list
- H. if necessary substitute torsion spring
- I. installation in reverse order, all screws are secured with locktite 243.
- J. glue the openings with the cover plate new plates may be required, for item number and type see parts list

### 4.2.6 ELECTRICAL AND SAFETY

For further information see the assembly drawing 604037 or 604047 chapter 6 DRAWINGS, the electrical documentation chapter 5 ELECTRICAL DOKUMENTATION and the corresponding spare parts chapter 7 PARTS LISTS.

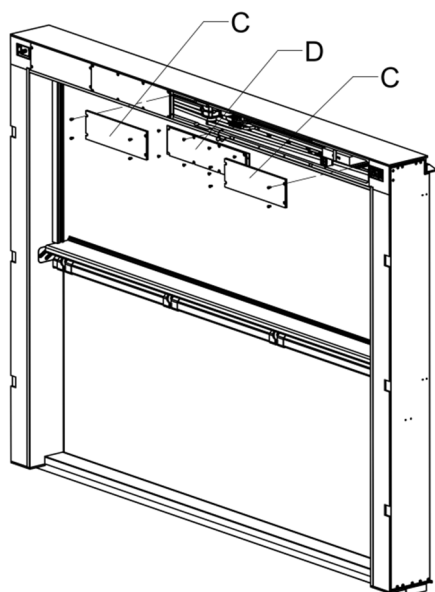
### Access to the main electronic components



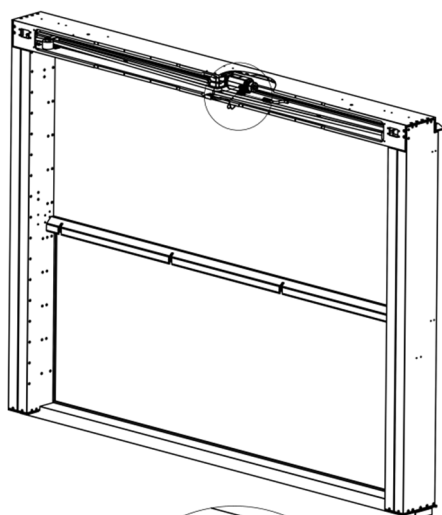
- A. close the window
- B. disconnect the power supply
- C. open the maintenance panel in the ceiling
- D. open all maintenance panels in the upper window frame



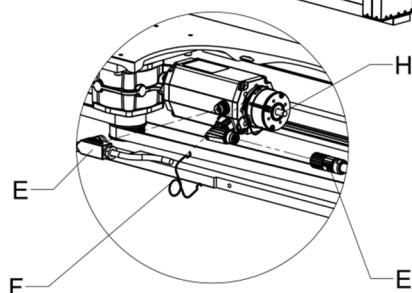
#### 4.2.7 EMERGENCY CLOSING



- A. disconnect the power supply
- B. open the maintenance panel in the ceiling
- C. open the maintenance panels in the upper window frame
- D. open the right connection plate



- E. remove the cable from the motor and the motor brake
- F. push the spring lever into the openings of the brake. For item number and type see maintenance and assembly set
- G. press the spring lever in the direction of the motor to release the brake
- H. attach a cordless screwdriver at the motorshaft
- I. close the window



## 5 ELECTRICAL DOCUMENTATION

### 5.1 GENERAL FUNCTION OF THE WINDOW

The self-monitoring microcontroller control the opening and closing of a window as well as optionally an insect roller blind. No limit switches are required for positioning. All movements of the drive are controlled electronically. A limit switch and several safety sensors are used to provide additional security. The major security sensors are observed also by a security relay.

To open or close the insect roller blind, you must press the open or close button as long as you want to move it / until it is opened or closed. There is a 2 second delay if you change the direction.

If you open and close the insect roller blind several times in a row, it will stop working for about 4 minutes to prevent itself from overheating. After that time it will work proper again automatically.

After a power failure, the window has to learn its upper and lower position again. You can press and hold the open or close button to start this process. The window will start moving at slow speed in direction "close". Press the button until it is completely closed and keep pushing it some additional seconds to make sure that the homing process has finished. Up from now the window should work again in regular mode.

### 5.2 MAINTENANCE / ERROR MANAGEMENT

The controller itself is a maintenance free system. Only proper instructed technicians are allowed to check the connectors in case of an error. Never open the controller case! If you open it, any warranty will be lost. Always switch off the power supply and also the 230V AC supply that is responsible for the related window.

**At least the connector X.5 is connected to the 230V AC line! Never touch this area until you are sure that any power connections to the related window is switched off!**

The window controller software contains an integrated error management which try to handle small, non-critical errors by itself. You can verify this with the ERROR / OPERATIONAL Signal output (X8.20 and X8.19). Before you start a detailed error search, you should switch the drive off and turn it on again after approx. 2 seconds. The drive performs a reference run once you push the open or close button. In most cases, the fault is thus eliminated and the drive is ready for operation again. If this is not the case, please proceed as described below.

The table below provides an overview of the most common faults and their remedies:

Error	Possible reason	Solution
Window open and close continuously	There must be a defect in the wiringing itself or a button is damaged.	Switch off the system and check the cables and buttons
Window move only a short way and stop then immediately.	Sluggishness / blockage in mechanics.	Check the mechanics for damages / other issues that can result in sluggishness

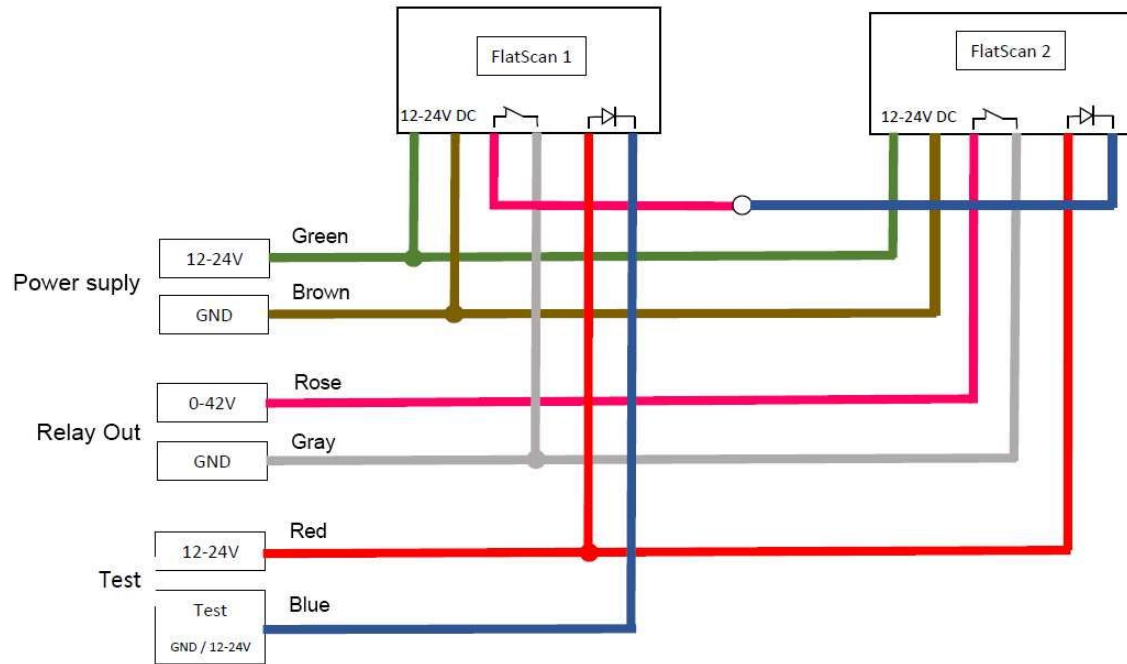
Error	Possible reason	Solution
Window do not open or close when you push the related button	One of the monitoring sensors is occupied (curtain, object, person ...) or one of the toothed belts is torn.	Check the entire detection area of the sensors for obstacles and free them. Check the LED's are lit red or green and do not flash, try again. In the case of a torn belt or broken belt sensor, the fault can only be acknowledged after the repair has been completed by switching the voltage off and on.

### 5.3 ERROR CODES

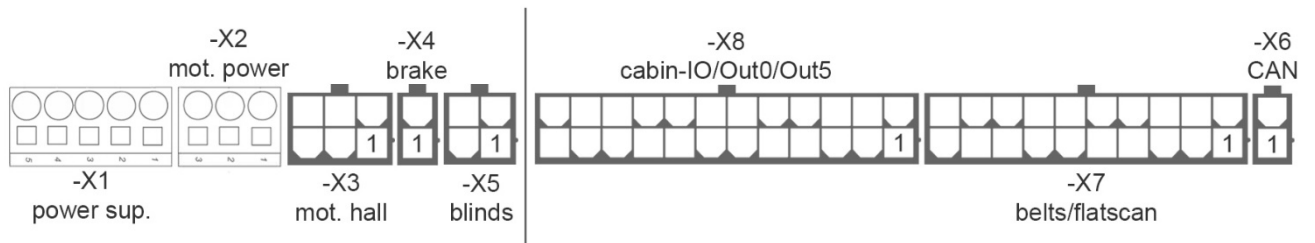
The following error codes are readable via the service plug. You need the specified software and the service adapter to read those errors, once they happen, and for deeper diagnostics. It is always possible to get additional support via TeamViewer if the connected computer has an internet connection.

Error Code	Error Description
1000	ERR_Low_FieldUnderVoltage (Voltage UP is to low)
1001	ERR_FieldOverVoltage (Voltage UP is to high)
1002	ERR_MainsUnderVoltage (Voltage UE is to low)
1003	ERR_MainsOverVoltage (Voltage UE is to high)
1021	ERR_HeatSinkOverTemperature (Controller is overheated)
1060	ERR_MotShortCircuit (shortcut in motor windings)
1061	ERR_MotOverCurrent (Motor use current which is over the max limit)
3010	ERR_Blockage (Motor was blocked unexpected)
4000	ERR_FollowingError (too much drift between command and real position)
7001	ERR_TimeDiagnose_Open (window needs to long to open)
7002	ERR_TimeDiagnose_Close (window needs to long to close)
7003	ERR_TimeDiagnose_Homing (window needs to long for homing)
7004	ERR_TimeDiagnose_HomingBlock (window is blocked in an unexpected way)
7005	ERR_TimeDiagnose_SecurityLevel (window needs to long for security feedback)
7011	ERR_BeltLeft (left belt sensor doesn't work / left belt is cracked)
7012	ERR_BeltRight (right belt sensor doesn't work / right belt is cracked)
7021	ERR_DiagnoseSensorLow (window sensor test failed at falling edge)
7022	ERR_DiagnoseSensorHigh (windows sensor test failed at rising edge)

## 5.4 SENSOR WIRING



## 5.5 TERMINAL ASSIGNMENT



X1		
1	+ 48V DC	40V DC from power supply (UP)
2	GND	
3	24V DC	24V DC from power supply (UE)
4	GND	
5	PE	PE

X2		
1	MA	Phase A
2	MB	Phase B
3	MC	Phase C

X3			X3		
1	H1	Hall Sensor 1	4	+5V DC	Powersupply, Hall Sensors
2	H2	Hall Sensor 2	5	GND	
3	H3	Hall Sensor 3	6	-	

X4		
1	+24V DC	Brake
2	GND	

X5			X5		
1	NO	230V AC rollo close	3	NO	230V AC rollo open
2	COM		4	COM	

X6			X6		
1	CAN H	CANopen	2	CAN L	CANopen

X7			X7		
1	GND	GND	11	GND	GND
2	+24V	Flatscan	12	In1	Relay Reopen NC
3	GND	Flatscan	13	In3	Relay Reopen
4	GND	Test GND	14	Out8	Test
5	+24V	Signal Reopen +24V	15	In3	Signal Reopen
6	+24V	Flatscan	16	GND	Flatscan
7	+24V	Belt Sensor right	17	GND	Belt Sensor right
8	+24V	Belt Sensor right	18	In5	Belt Sensor right
9	+24V	Belt Sensor left	19	GND	Belt Sensor left
10	+24V	Belt Sensor left	20	In7	Belt Sensor left

X8			X8		
1	+24V	Kabin Control	13	In6	Open Window
2	+24V	Kabin control	14	In4	Close Window
3	+24V	Kabin Control	15	In2	Open Rollo
4	+24V	Kabin Control	16	In0	Close Rollo
5	+24V	Kabin Control	17	AIIn0	Sensor alert
6	GND	Kabin Control	18	Out6	Window Lock
7	GND	Kabin Control	19	Out4	OPERATIONAL
8	GND	Kabin Control	20	Out3	ERROR
9	GND	Kabin Control	21	Out0	Window state
10	COM	not Used	22	COM	Floating W. State
11	NO	not Used	23	NO	Floating W. State
12	NC	not Used	24	NC	Floating W. State

## 6 DRAWINGS

The following drawings are relevant for the sash window:

- 604030 – sash window 2660
- 604040 – sash window 2200
- 604031 – base frame 2660
- 604041 – base frame 2200
- 604032 – sash window 2660
- 604042 – sash window 2200
- 604033 – drive unit 2660
- 604043 – drive unit 2200
- 604034 – window guide
- 604035 – handrail 2660
- 604045 – handrail 2200
- 604037 – electric / safety 2660
- 604047 – electric / safety 2200
- 604054 – fly net 2660
- 604079 – fly net 2200
- 604185 – gasket window 2660
- 604186 – gasket window 2200
- 601372 - Assembly drawing Teakhandrail

## 7 SPARE LIST

### 7.1 width 2200mm – cabin window Dk7

Brombach+Gess GmbH & Co. KG, Hirschbergstraße 91, D-72336 Balin-										
gen										
assembly:		sash window 2200				no.		parts list <b>604040</b>		
additional text:		<b>spare parts list</b>				chck..		27.07.2020		fi/ni
additional text:		-				appr.		28.07.2020		fi/ni
drawing:		-								
no.		revision					date		name	
1										
2										
3										
4										
pos.	part no.	piece	part name			Z	E	note		
1	600954	4	spacer washer			-	-			
2	603896	1	sealing profile			-	-	L=2m		
3	604186	1	window gaskets			-	-			
4	600973	2	inductive sensor			-	-			
5	601246	2	trapezoid spindle			-	-			
6	601313	2	spindel nut			-	-			
7	600871	2	deep groove ball bearing			-	-			
8	600875	2	radial seal ring			-	-			
9	604453	1	tension roller			-	-			
10	604137	2	belt			-	-			
11	601374	1	gear			-	-			
12	601375	1	gear			-	-			
13	601346	2	clip-type spherical bearing			-	-			
14	600889	2	housing bearing			-	-			
15	601273	2	torsion spring			-	-			
16	600970	4	bush bearing			-	-			
17	601463	4	bush bearing with flange			-	-			
18	601145	8	bush bearing			-	-			
19	601415	4	cover plate			-	-			
20	601416	2	cover plate			-	-			

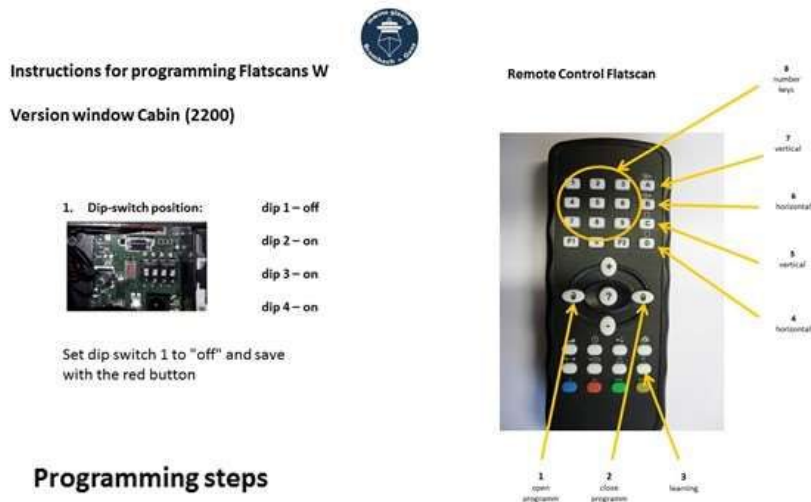
## 7.2 width 2660mm – restaurant window Dk8

Brombach+Gess GmbH & Co. KG, Hirschbergstraße 91, D-72336 Balin-						
gen						
assembly:	sash window 2660			no.	parts list <b>604030</b>	
additional text:	<b>spare parts list</b>			chck..	27.07.2020	fi/ni
additional text:	-			appr.	28.07.2020	fi/ni
drawing:	-					
no.	revision			date		name
1						
2						
3						
4						
pos.	part no.	piece	part name	Z	E	note
1	600954	4	spacer washer	-	-	
2	603896	1	sealing profile	-	-	L=2,46m
3	604185	1	window gaskets	-	-	
4	600973	2	inductive sensor	-	-	
5	601246	2	trapezoid spindle	-	-	
6	601313	2	spindel nut	-	-	
7	600871	2	deep groove ball bearing	-	-	
8	600875	2	radial seal ring	-	-	
9	604477	1	tension roller	-	-	
10	604138	2	belt	-	-	
11	601374	1	gear	-	-	
12	601375	1	gear	-	-	
13	601346	2	clip-type spherical bearing	-	-	
14	600889	2	housing bearing	-	-	
15	601273	2	torsion spring	-	-	
16	600970	4	bush bearing	-	-	
17	601463	4	bush bearing with flange	-	-	
18	601145	8	bush bearing	-	-	
19	601415	4	cover plate	-	-	
20	601416	2	cover plate	-	-	



## 8 INSTRUCTION SAFETY SENSOR

### 8.1. FLATSCAN W – cabin window inside (2200)



#### Programming steps

- 1. Learning:**
  - ➔ 1 x button 1 (lock open) - flashes red fast
  - ➔ 1 x button 3 (magic wand) - flashes red slowly
  - ➔ 1 x button -0- (numbers) - flashes red slowly
  - ➔ after 3-5 seconds flashes green ca.30 sec.
  - ➔ wait until flashes stops
  - learning is finished
- 2. Flatarea:**
  - ➔ 1x button 1 (lock open) - flashes fast red
  - ➔ 1 x button 4 (D) - flashes red slowly
  - ➔ 110 with buttons 8 (numbers) - flashes red green 2 sec.)
  - ➔ wait until - flashes red fast
  - ➔ 1 x button 5 (C) - flashes red slowly
  - ➔ 185 with buttons 8 (numbers) - flashes red green (2 sec.)
  - ➔ wait until flashes red fast
  - ➔ 1 x button 6 (B) - flashes red slowly
  - ➔ 110 with buttons 8 (numbers) - flashes red green 2 sec.)
  - ➔ wait until - flashes red fast
  - ➔ 1 x button 7 (A) - flashes red slowly
  - ➔ 020 with buttons 8 (numbers) - flashes red green (2 sec.)
  - ➔ wait until flashes red fast
  - ➔ 2 x button (lock closed)

Finish

## 8.2 FLATSCAN W – restaurant window inside (2660)

### Instructions for programming Flatscans W

#### Version window restaurant (2660)

1. Dip-switch position:
- |             |
|-------------|
| dip 1 – off |
| dip 2 – on  |
| dip 3 – on  |
| dip 4 – on  |



Set dip switch 1 to "off" and save with the red button

#### Remote Control Flatscan



### Programming steps

- 1. Learning:**
  - ➡ 1 x button 1 (lock open) - flashes red fast ★
  - ➡ 1 x button 3 (magic wand) - flashes red slowly ★
  - ➡ 1 x button -0- (numbers) - flashes red slowly ★
  - ➡ after 3-5 seconds flashes green ca.30 sec. ★
  - ➡ wait until flashes stops
  - learning is finished
- 2. Flatarea:**
  - ➡ 1x button 1 (lock open) - flashes fast red ★
  - ➡ 1 x button 4 (D) - flashes red slowly ★
  - ➡ 110 with buttons 8 (numbers) - flashes red green 2 sec.) ★★
  - ➡ wait until - flashes red fast ★
  - ➡ 1 x button 5 (C) - flashes red slowly ★
  - ➡ 225 with buttons 8 (numbers) - flashes red green (2 sec.) ★★
  - ➡ wait until flashes red fast ★
  - ➡ 1 x button 6 (B) - flashes red slowly ★
  - ➡ 110 with buttons 8 (numbers) - flashes red green 2 sec.) ★★
  - ➡ wait until - flashes red fast ★
  - ➡ 1 x button 7 (A) - flashes red slowly ★
  - ➡ 020 with buttons 8 (numbers) - flashes red green (2 sec.) ★★
  - ➡ wait until flashes red fast ★
  - ➡ 2 x button (lock closed)

**Finish**

### 8.3. FLATSCAN LZR I 100 / 110 – restaurant window outside (2660)



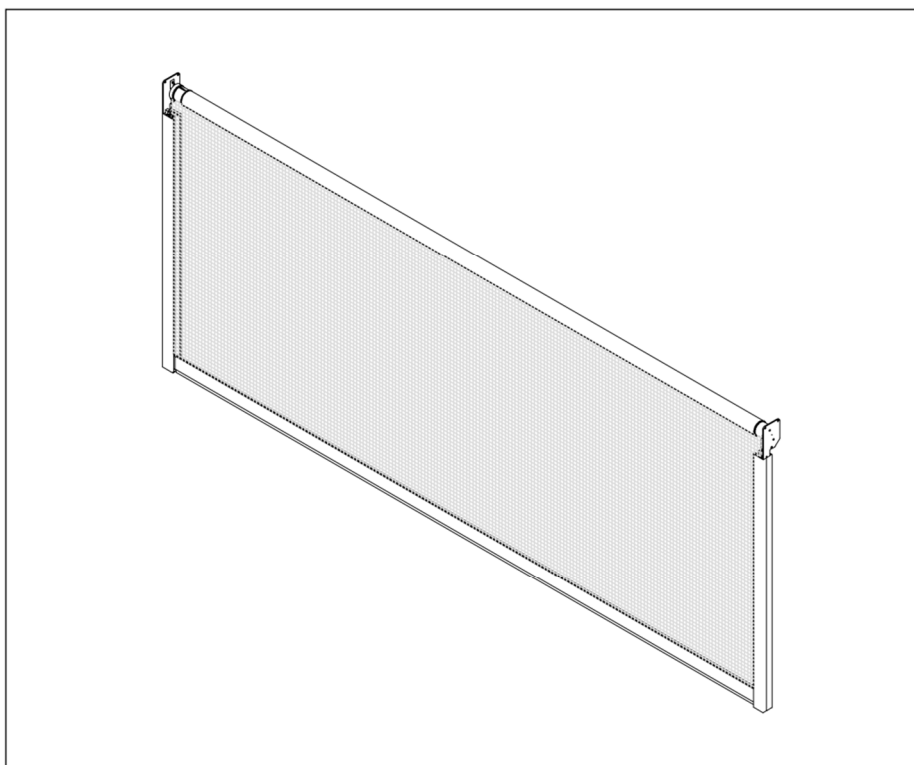
#### Programming steps

- 1. Learning:**
  - ➔ 1 x button - lock open - flashes red fast ★
  - ➔ 1 x button „magic wand“ than 1 x number 1 - flashes red slowly - after 3-5 seconds flashes green ★ ca.30 sec wait until flash stops
  - ➔ 1 x button „magic wand“ than 1 x number 2 - flashes red slowly - after 3-5 seconds flashes green ★ ca.30 sec wait until flash stops
  - ➔ learning is finished
- 2. Curtains:**
  - ➔ 1 x button - ← → Than 0,0,0,9 – flashes red fast ★
  - 2 x button (lock closed)
- 3. Flatarea:**
  - ➔ 1x button 1 (lock open) - flashes fast red ★
  - ➔ 1 x button D - flashes red slowly ★
  - ➔ 20 with buttons 1-0 (numbers) - flashes red green 2 sec.) ★★
  - ➔ wait until - flashes red fast ★
  - ➔ 1 x button C - flashes red slowly ★
  - ➔ 28 with buttons 1-0 (numbers) - flashes red green (2 sec.) ★★
  - ➔ wait until flashes red fast ★
  - ➔ 1 x button B - flashes red slowly ★
  - ➔ 20 with buttons 1-0 (numbers) - flashes red green 2 sec.) ★★
  - ➔ wait until - flashes red fast ★
  - ➔ 1 x button A - flashes red slowly ★
  - ➔ 28 with buttons 1-0 (numbers) - flashes red green (2 sec.) ★★
  - ➔ wait until flashes red fast ★
  - ➔ 2 x button (lock closed)

**Finish**

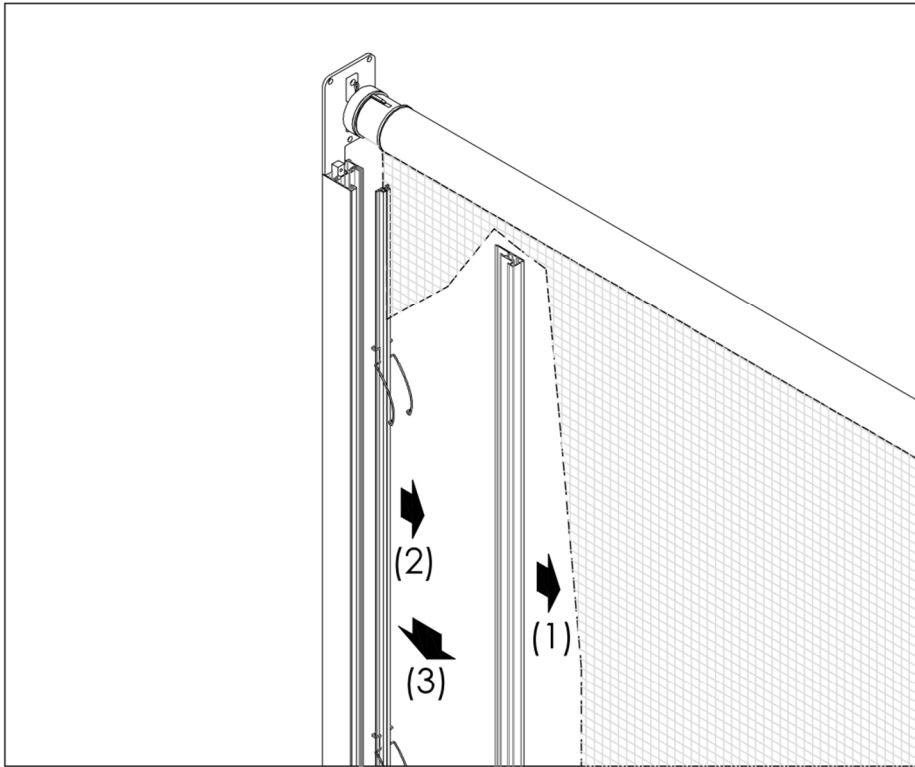
## 9 INSTRUCTION FLY NET

See also dwg. 604054 or 604079



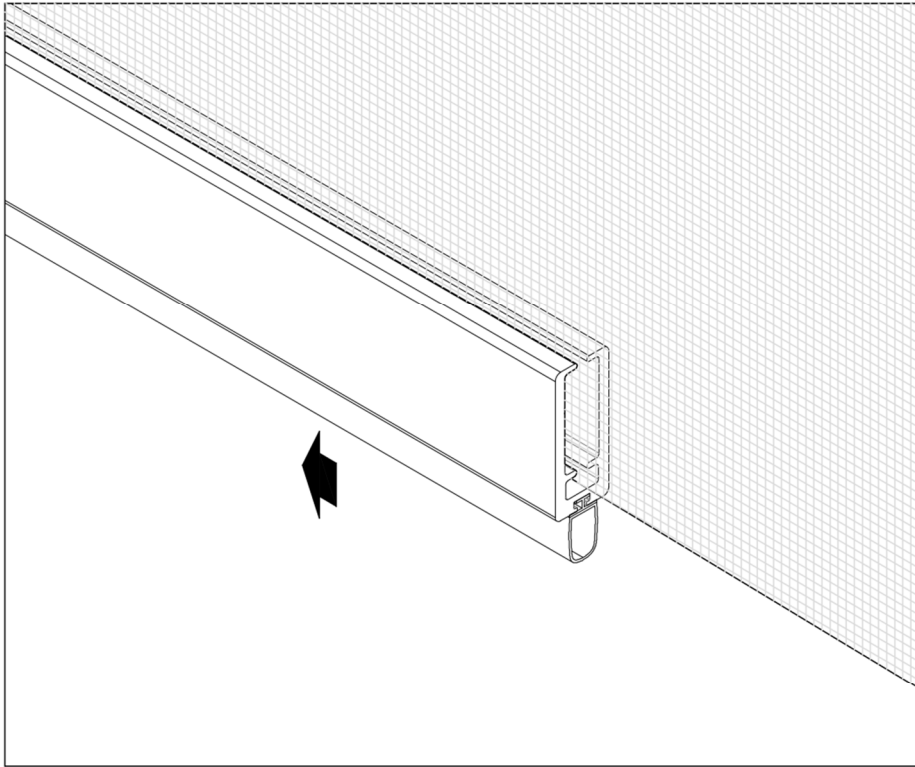
### STEP\_1

Completely unroll the net over the limit stop position until it starts to roll again in the opposite direction.



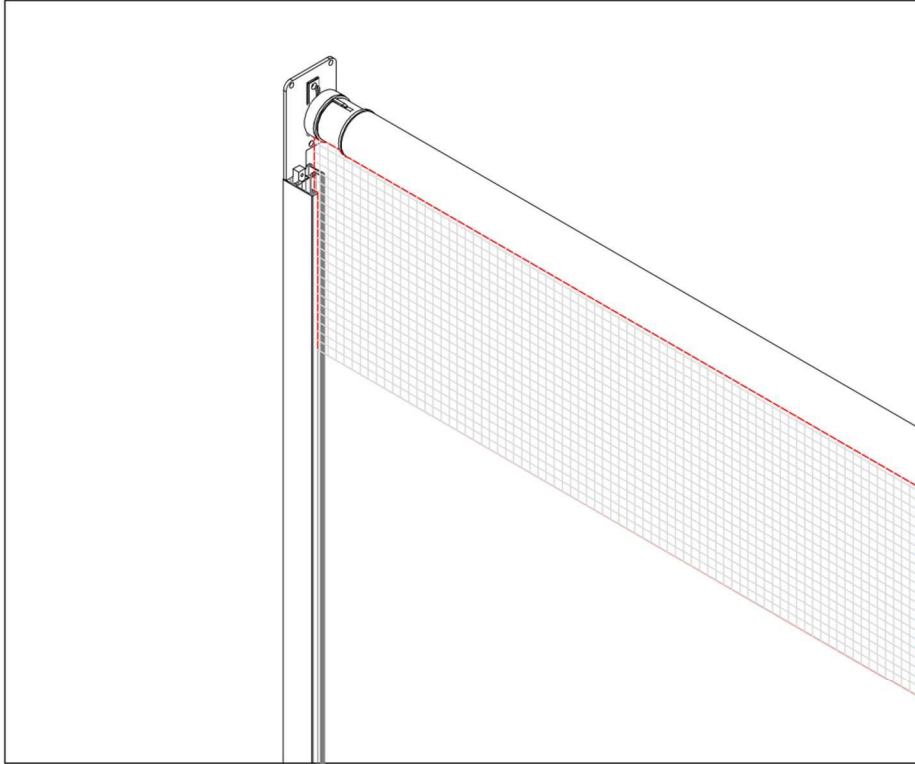
## STEP\_2

Remove from the side guides the cover profiles (1), then move the plastic profile from its seat (2) in order to pull out from below (3).



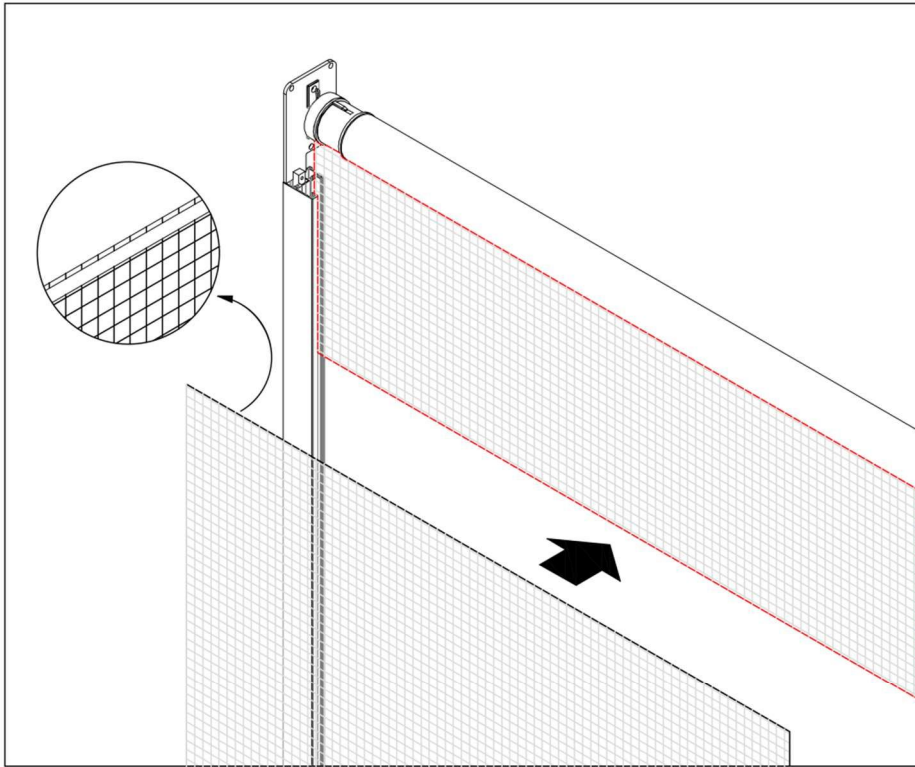
### STEP\_3

Remove the caps from the bottom bar then pull out the bottom bar to free the bottom part of the net.



#### STEP\_4

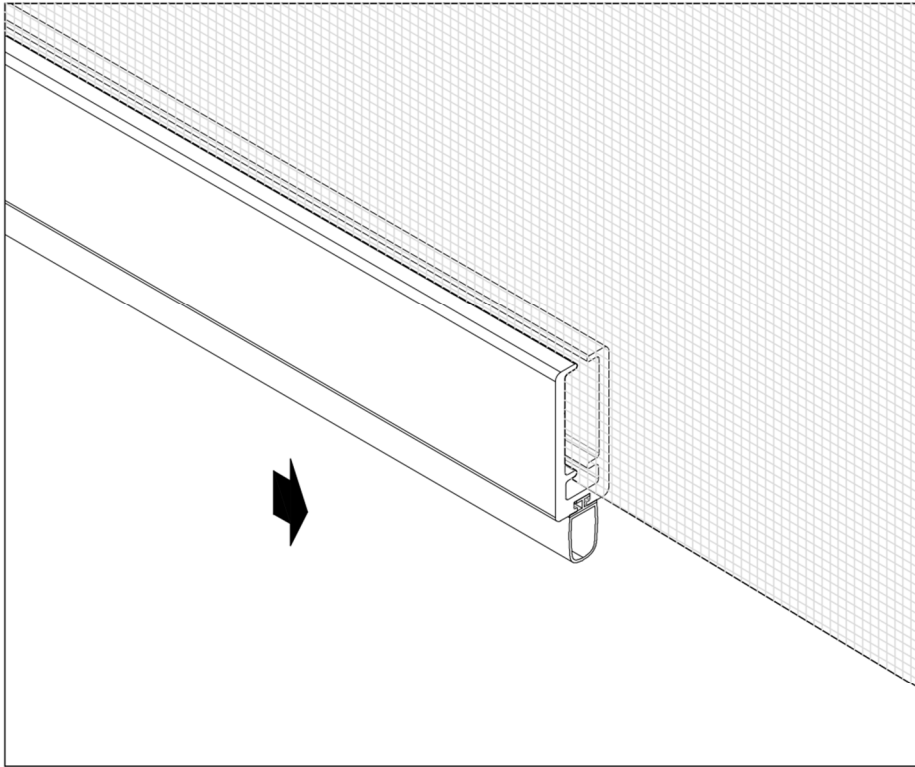
Cut the net at the fixed height by following a perfectly horizontal line.



### STEP\_5

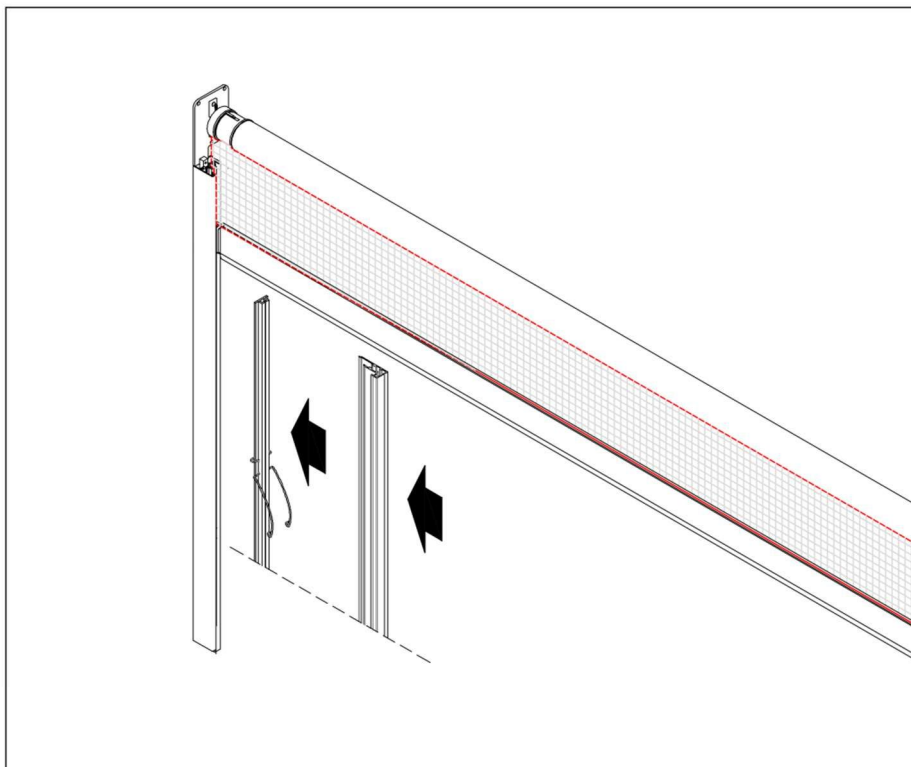
Apply the double-sided adhesive on the new net part and press firmly. Let it rest for about 15 min to make the best take.





### STEP\_6

Insert the bottom bar on the bottom part of the net, then place the caps on the bottom bar's end and screw.



### STEP\_7

Insert the plastic profile on the side of the net, then put the plastic profiles and the side guides on their seat again.

Set up the upper and lower limit stop position of the motor.

The mosquito net is ready to go.

## Teaching Fly Net (with Somfy Universal Setting Cable Set No 9015971A200)

### Altus WT Kurzanleitung

### Short instruction

#### 1. Antrieb anschließen

#### Connect the drive



#### 2. Prüfen der Drehrichtung

#### Check the directions of rotation



#### 3. Aktivieren des Antriebes

#### Connect the drive



#### 4. Speichern der AUF - Richtung

#### Save the UP-direction

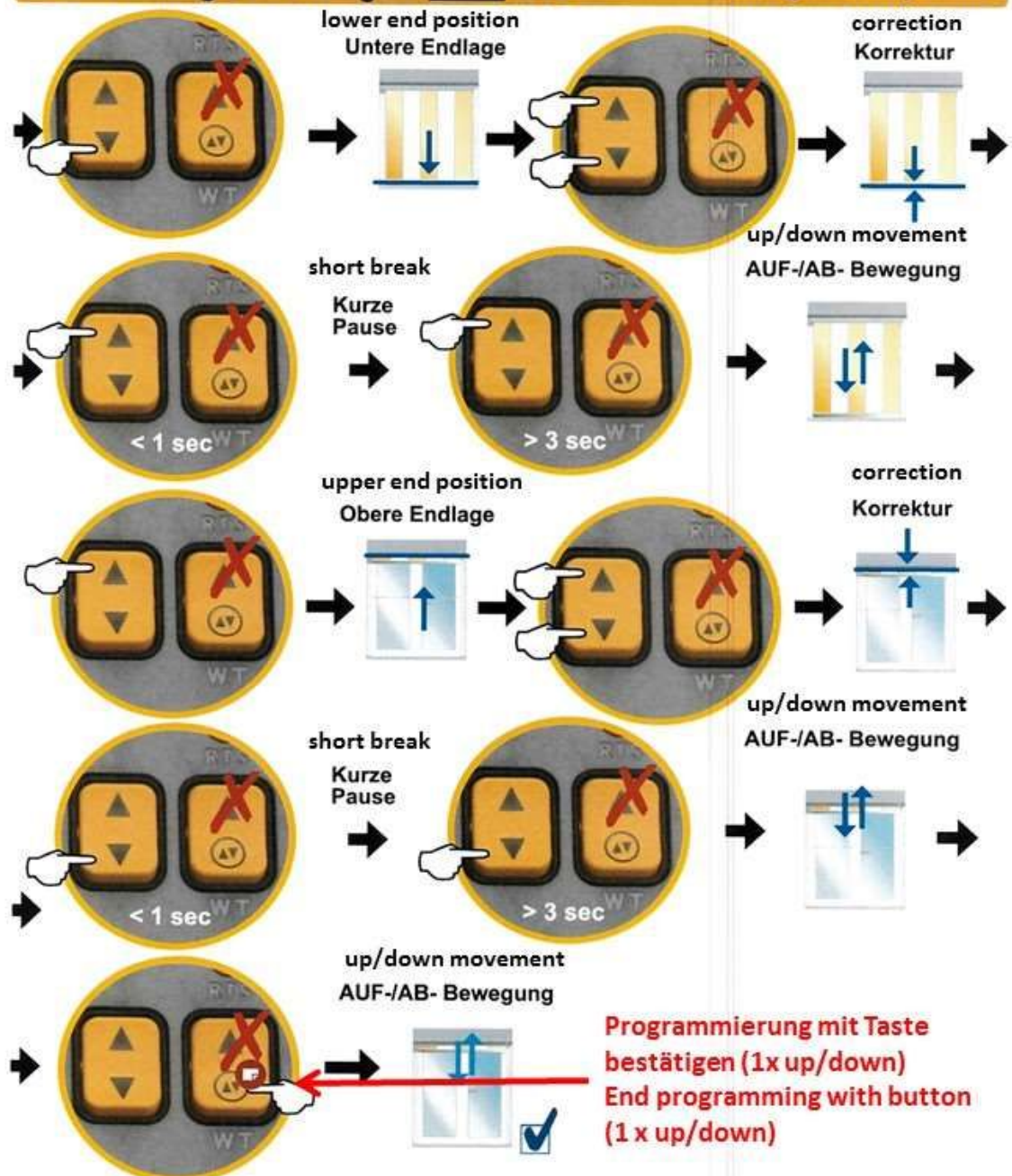


## Altus WT Kurzanleitung

## Short instruction

### 5. Einstellung der Endlagen: beide fest

### Setting the end positions



Für weitere Einstellungen und detaillierte Informationen lesen Sie bitte die Gebrauchsanleitung.

