

DUOTOUR WITH SLIDING DOORS

OPERATING MANUAL



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Preface

Manual

Keep this manual in the vicinity of the door.

Read the Manual

Please read this manual carefully before using the Duotour for the first time. After reading the manual, you will understand how to operate the Duotour and how to perform minor maintenance tasks.

Unclear Information

The manual has been written with the utmost care and attention. Nevertheless, certain parts may be unclear to you or contain errors. In that event, you can contact Boon Edam B.V. or your supplier. They will be able to tell you how to operate the Duotour.

Users of the Manual

This manual is aimed at users of the Duotour and provides information on:

- Operation of the Duotour
- Duotour models
- Maintaining the Duotour



Copyright

This manual is written and published by Boon Edam B.V.

It has been supplied to users of the Duotour and Boon Edam B.V. dealers. The information in this manual is the property of Boon Edam B.V. Disclosure of this information to third parties without written permission of Boon Edam B.V. is prohibited. This manual is based on the standard Duotour and its options. Boon Edam B.V. is customer orientated and improves its products continually. For this reason, the Duotour described in this manual may be different from the Duotour installed. Duotour is a trademark of Boon Edam B.V.

Symbols

You will encounter a few symbols in this manual. The meaning of the symbols is as follows:

	WARNING! Risk of personal injury or loss of life.
	NOTE! The material may be damaged or the operation of the door affected.

Abbreviations Used

- SRB Safety Rail Bent Wall
- SRT Safety Rail Turning Wall
- HBS Horizontal Boon Sensor
- EBS End Buffer Sensor
- TED Total Entrance Design
- PCB Print Circuit Board
- PIR Passive Infrared
- TRS Top Rail Sensor
- LED Light Emitting Diode
- UPS Unit Power Supply
- PLC Programmable Logic Controller

General information

This operating manual belongs to the Duotour as installed under the project number indicated on the drawing.

Boon Edam B.V. will service the product four months after it has been delivered. You can also purchase a maintenance contract from Boon Edam B.V. Under the terms of a maintenance contract, Boon Edam B.V. engineers will carry out preventive maintenance. Customers can also use the 24 hour service provided by Boon Edam B.V.

1 Introduction

The Duotour® is constructed from curved walls, a canopy and a revolving section. The walls can be made of non-transparent materials or of glass. They include a number of columns (6) which support the canopy construction. The canopy incorporates a rotating frame with control and drive units. In addition, two showcases and sliding door mechanics are fixed onto the rotating frame. Two sliding doors are suspended from the sliding door mechanics which secure the space between both showcases. The top of the canopy is covered by a dust cover. Boon Edam B.V. does not supply any watertight covers.

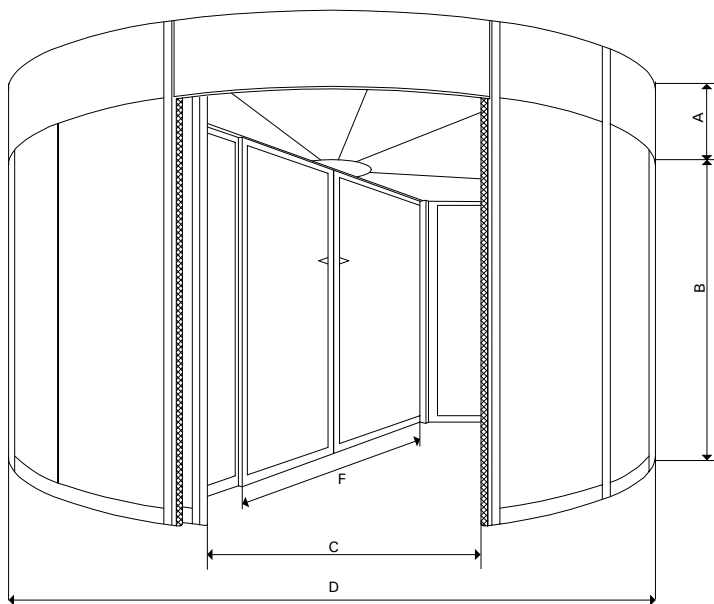


Figure 1: Duotour

DUOTOUR DIMENSIONS					
D	A	B	C	F	E
3600	300	2200	1646	1640	3804
4200	300	2200	1946	1940	4404
4800	300	2200	2246	2240	5004

1.1. Options

The following options are available for the Duotour®. The options are described later in the operating manual.

- External operating panel
- Push-button for the disabled
- Emergency Button
- Bistable lock
- Ceiling lighting (type: halogen, 20 Watts)
- Foot safety (Showcase Boon Sensor (SBS))
- Mechanical lock

- Total Entrance Design (TED)
- Connection to fire alarm

The Duotour® is installed with the options as indicated on any drawing provided.

2 Safety Features

2.1. Safety Rail Bent Wall (SRB) - Active

Each wall column has been provided with a rubber safety rail. Two are passive and two, on the entry side, are active. When the rubber profile is pressed, thus activating the active wall column, the door set will stop revolving immediately.

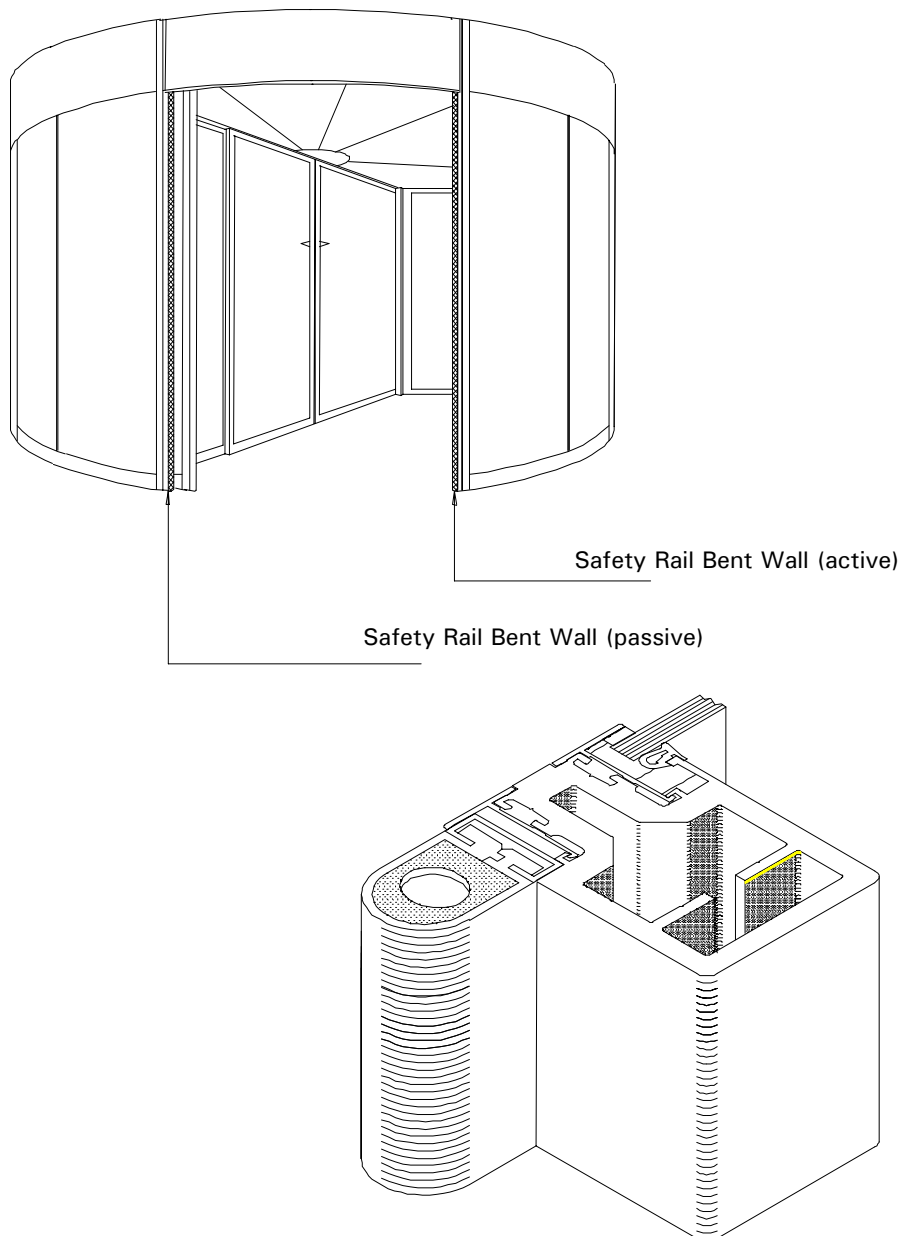


Figure 2: Safety Rail Bent Wall (SRB)

2.2. End Buffer Sensor (EBS) - Revolving

The door has been provided with an End Buffer Sensor (EBS). The door will stop immediately when a person or object activates the EBS.

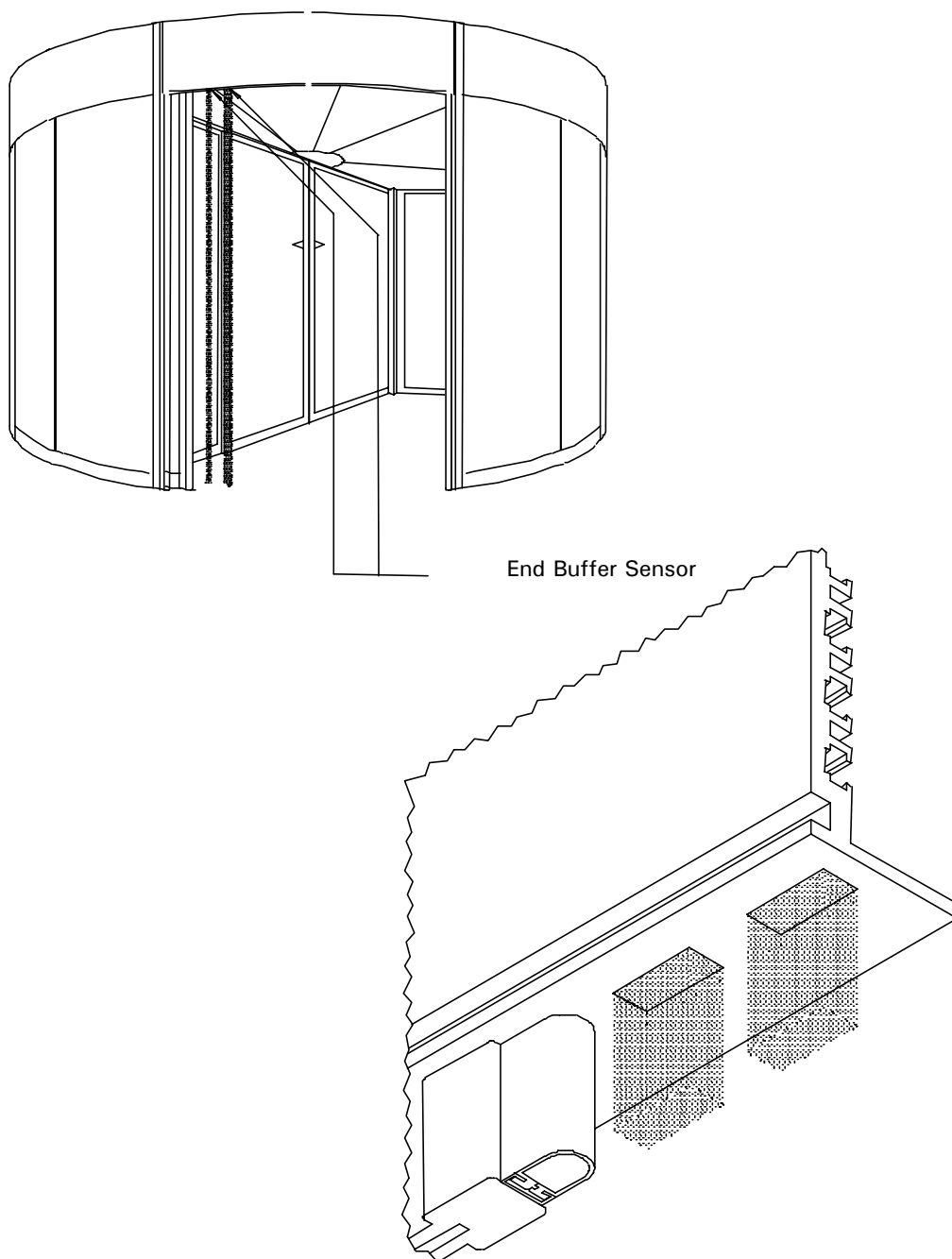


Figure 3: End Buffer Sensor

2.3. End Buffer Sensor (EBS) - Fixed

The door is provided with a fixed End Buffer Sensor (EBS). The sensors are mounted on the fixed part of the Duotour. The Duotour will stop immediately when the EBS is activated by a person or object and when the distance between the door and the bent wall is less than 800 mm. The active range of the EBS extends to a height of 250 mm above floor level.

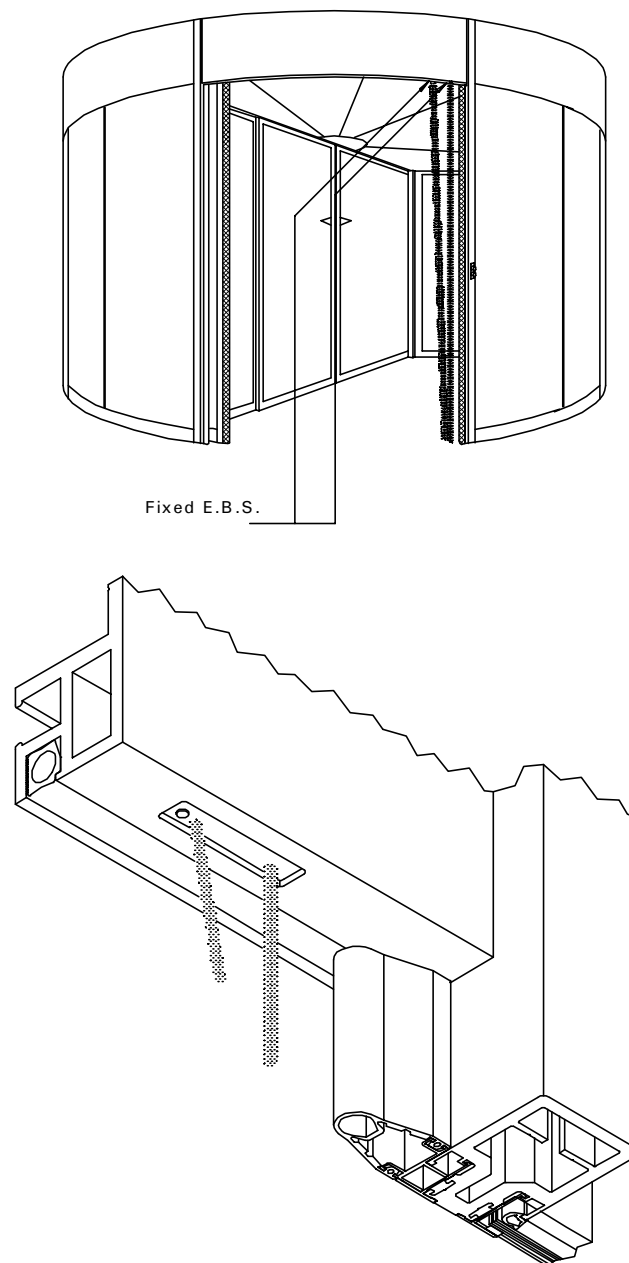


Figure 4: End Buffer Sensor

2.4. Horizontal Boon Sensor (HBS)

The double HBS is located on the front of the sliding doors and the showcases. The HBS consists of an infrared transmitter and receiver which are placed on opposite locations. The door slows down when the higher beam of the HBS is activated. The door will stop immediately when a person or object activates the lower beam. The higher beam of the HBS is used as a safety feature for the sliding doors.

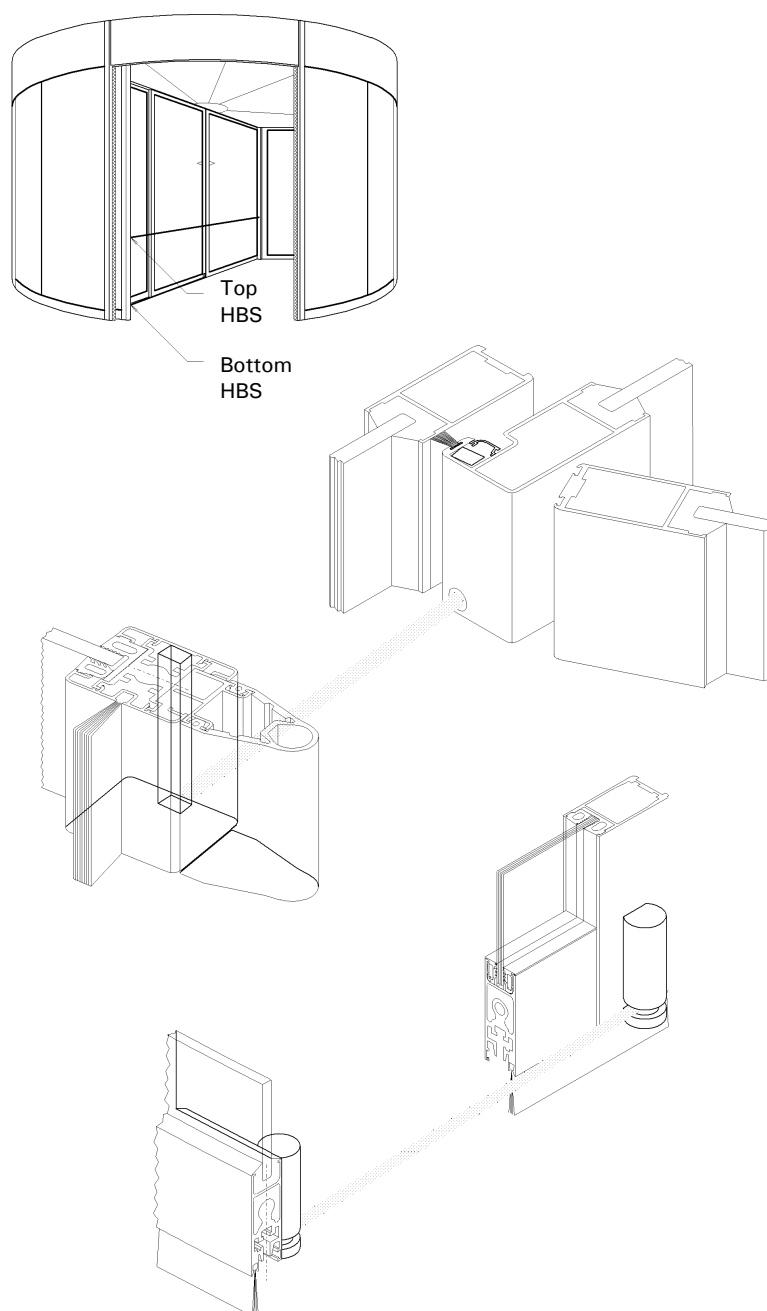


Figure 5: Horizontal Boon Sensor (HBS)

2.5. Safety Rail Turning Wall (SRT) - Revolving

The front column of the turning wall has been equipped with a rubber safety rail. The rails at the front are active and those at the back are passive. The door will stop immediately when a person or object activates the safety rail.

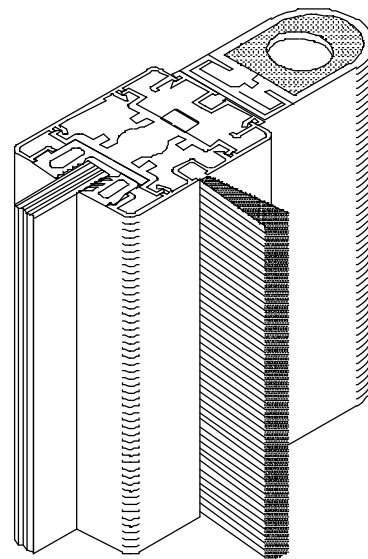
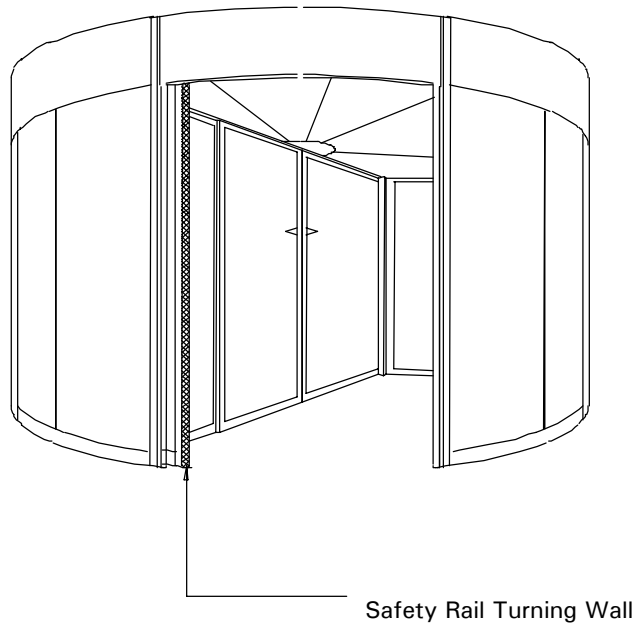


Figure 6: Safety Rail Turning Wall (SRT)

2.6. Showcase Boon Sensor (SBS) - Optional

The door can be provided with a foot safety (Showcase Boon Sensor (SBS)). The door will stop immediately when a person or object activates the SBS. The detection range can be set to a distance of 150 mm to 200 mm in front of the door.

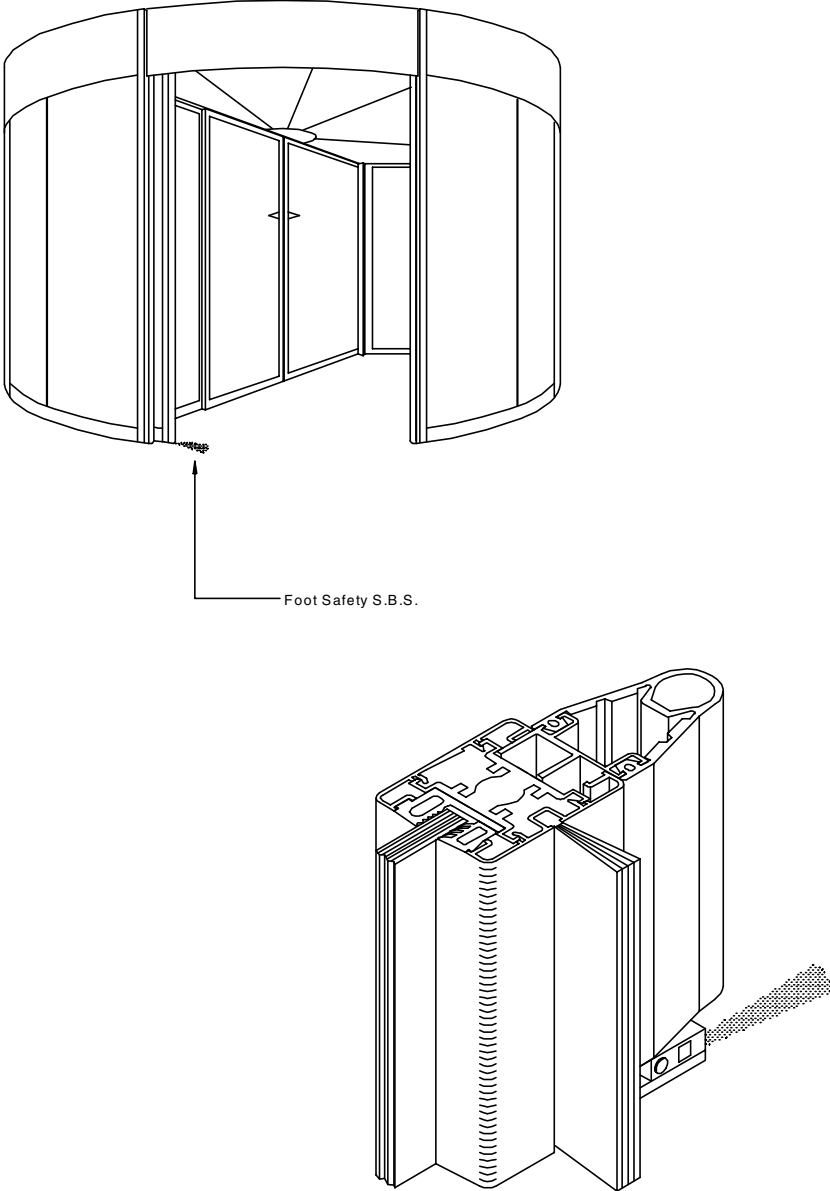


Figure 7: Showcase Boon Sensor (SBS)

2.7. Disabled Push-button

A push-button for the disabled can be installed on the main column at the outside of the door. It allows a person to slow down the door for a standard set duration of 25 seconds. The duration can be adjusted by a Boon Edam BV engineer.

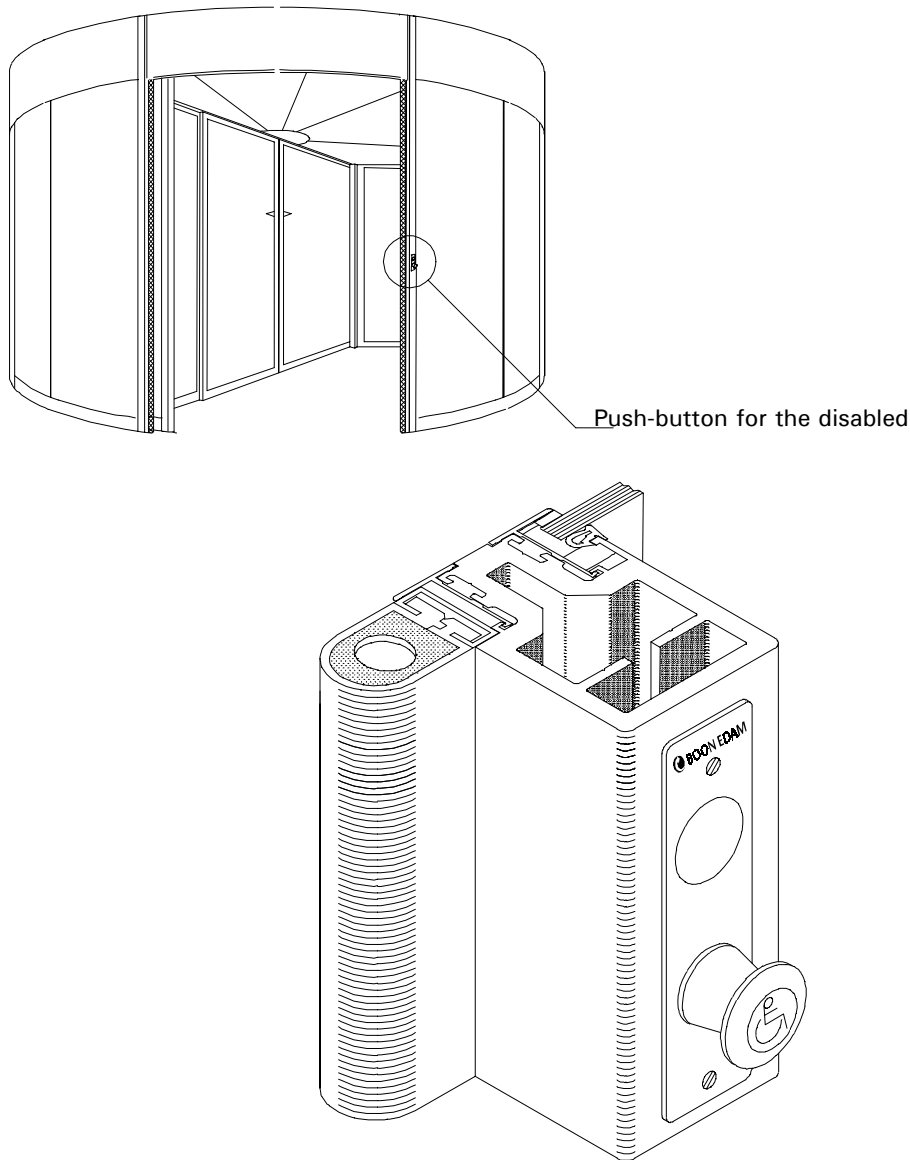


Figure 8: Disabled Push-button

2.8. Emergency Button

The emergency button is located on the wall column on the side of the active safety rail, inside the building. Optionally, an emergency button can be installed on the outside van the Duotour. Activating the emergency button will:

- immediately stop the door,
- enable manual operation.

After resetting the emergency button, the door set will not start to revolve immediately. The door can be started by activating one of the motion detectors or by switching the key switch off and on again. After a short delay, the door set will start to revolve again.

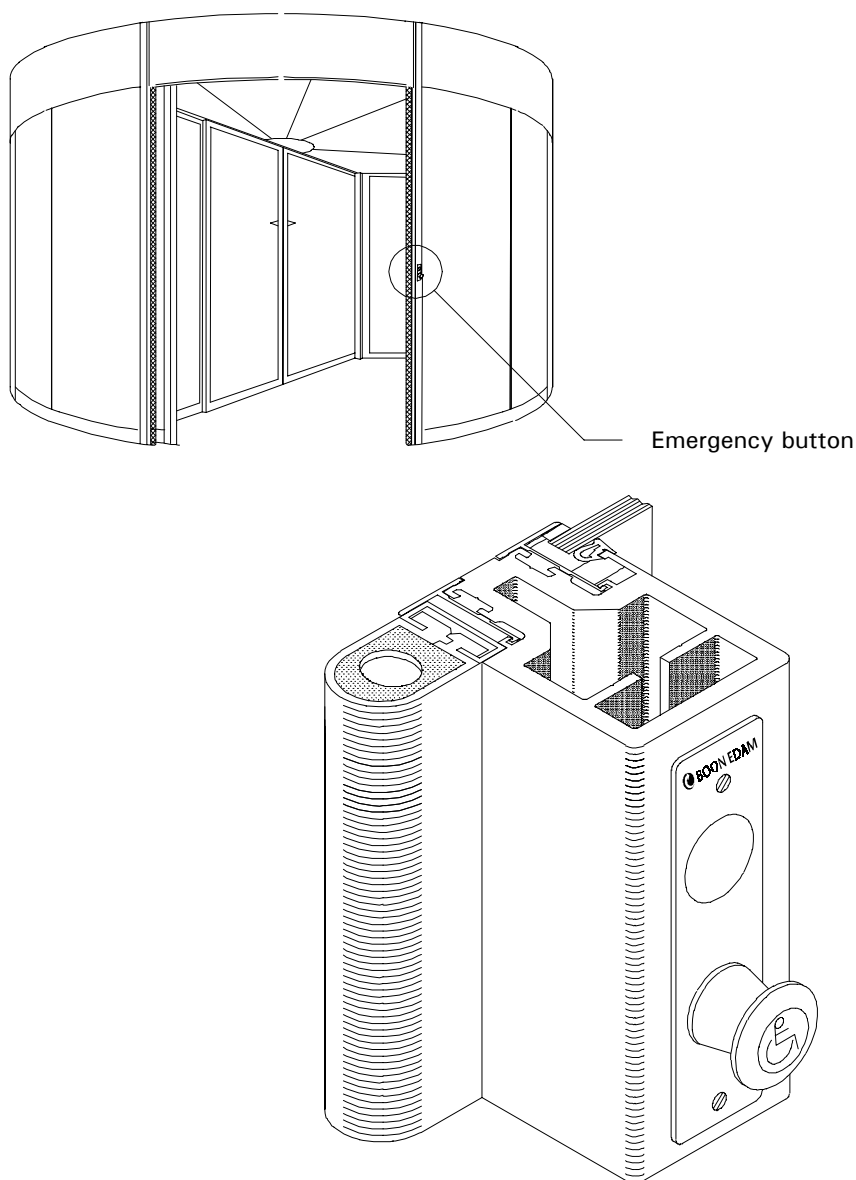


Figure 9: Emergency Button

2.9. Reversing and Stop Mechanism

The reversing and stop mechanism has been integrated in the control system of the sliding door. The reversing mechanism is only active when the door closes.

The stop mechanism is only active when the door opens. This safety is used to prevent persons or objects from getting stuck.

Both mechanisms can be set to 80 N or 150 N.

2.10. Fire Alarm

In the event of a fire alarm, the door will revolve at normal speed to its sliding door position. The moment the door slows down (near the sliding door position), the sliding doors will open and remain open.

When one of the safety features is activated for longer than 3 seconds or when the door does not reach the limit switches within 30 seconds, the door will attempt to reach the sliding door position by revolving at a slow speed in the reverse direction. Next the sliding doors will open.

When the fire alarm is over, the door will start to operate normally again.

During a fire alarm, all safety features function in the normal revolving direction.

When the limit switches cannot be reached, the door will stop and can then be operated by hand.

2.11. Emergency Power Supply

In the event of a power failure, the door will continue to operate normally using the emergency power supply. When the emergency power supply is low, the door will revolve to its sliding door position and operate as a sliding door for a while. Ultimately the sliding doors will open.

When the key is set to its off/night position, the doors will attempt to assume this position. When the off/night position has been assumed, the door will remain in that position.

2.12. Anti-Lock In Button (Option)

When the "anti-lock in button" is pressed while the door is in its off/night or winter position, the door will revolve once at normal speed. In the event of a fire alarm, power failure or communication error, the door will assume its sliding door position.

2.13. Pulse Out (Option)

When the "pulse out" button is pressed, the door will revolve once at normal speed. In the event of a fire alarm or power failure, the door will assume its sliding door position.

2.14. Top Rail Sensor (Option)

A Top Rail Sensor (TRS) can be installed above the showcases. When the TRS is activated, the door will stop immediately. Once the TRS is no longer activated, the door will start to revolve at normal speed. The TRS is inactive when the door is in its sliding door position.

3 Operating Concept

3.1. Passive Infrared (PIR) Detector

The PIR detector uses a passive infrared field to detect persons approaching the Duotour. When a person is detected, the detector signals the Duotour to start turning at normal speed. The PIR detectors are located in the canopy rim above the entry and exit. The sensitivity and detection range are adjustable.

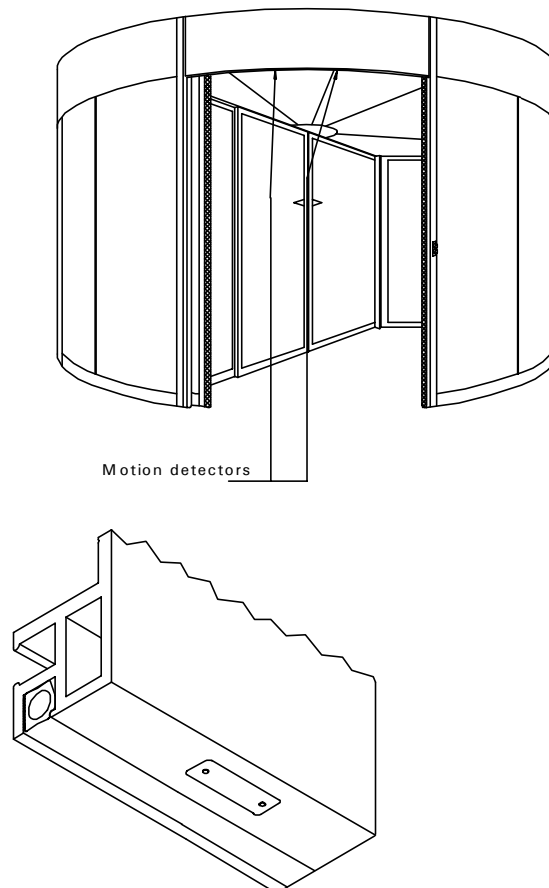


Figure 10: Motion Detectors

3.2. Electromagnetic Lock

A number of electromagnetic brake units have been installed on the outer wall of the Duotour®. Activating the brake units will block the Duotour®. The brake units disengage in the event of a power failure so that the Duotour® can be turned by hand (fail-safe).

3.3. Electronic Locking Unit (Bistable) (Option)

The electronic locking unit is bistable which means that the lock retains its last chosen position. The lock is locked or unlocked (even in the event of a power failure or power reset). The bolt of the locking unit fits into a special adapter which is installed at the top of the non-revolving section.

Concept

Locking:

- Set the key switch on the operating panel to the night position.
- The door set will start to revolve slowly and will start to creep towards the end.
- When the doorwing reaches the locking unit, the limit switch of the drive will send a signal to the PLC. The PLC will then send a signal to the locking unit to push the bolt upwards.
- The bolt will be inserted in the adapter to lock the door set with a minimum of play.

Unlocking:

- Set the key switch on the operating panel to the daytime position.
- The magnet will pull the bolt downwards after which the door set will start to revolve.

Manual locking and unlocking

In the event of e.g. a power failure, the night lock can always be locked or unlocked in combination with the manual locking/unlocking system.

Unlocking manually:

The lock is in its locked position. It can be unlocked by pulling the red button of the manual unlocking system.

Locking manually:

The lock is in its unlocked position. Push the doorwing with the adapter to align the adapter with the locking unit. Then pull the black button of the manual unlocking system to lock the door.

3.4. Espagnolet Lock (Option)

A mechanical key-operated locking system has been installed at the inside of the Duotour®. When the rod construction has been unlocked with the key, the rod can be adjusted upwards so that the Duotour® cannot be turned anymore. This lock is equipped with a limit switch which deactivates the motor.

3.5. Drive of the Revolving Door

The Duotour drive consists of two 3-phase motors with a right-angle transmission. The drive is controlled by the PLC and driven by the frequency inverter.

The drive unit has the following properties:

- Silent operation
- The motor can be stopped by hand
- Two programmable speeds
- Integrated speed control
- Easy to rotate in the event of a power failure

Technical specifications:

- Type: 3-phase asynchronous
- 3*230 V 1.4 A, 50 Hz
- Adjustable torque

3.6. Turning Speed

The turning speed of the door set can be set using the frequency inverter located in the control box. The door set can operate at two speeds which are set at the factory to:

- normal: 3-4 rpm (depending on diameter)
- slow: 1 rpm

Safety regulations in most countries limit the peripheral velocity of the door set to a maximum of 0.75 m/sec. (CE = 1 m/s) (measured at the ends of the door set).

Note:

- Normal speed range: 3 to 5.5 rpm
- Slow speed range: 1 to 3 rpm

3.7. Drive of Sliding Doors

The drive unit of the sliding doors consists of a DC motor and is microprocessor controlled.

3.8. Control Box (PLC)

The control box is installed on the rotating frame.

3.9. Secondary Control Box (Power Supply)

The secondary control box is mounted on the steel construction above the ceiling sections.

3.10. Control Box of Unit Power Supply (UPS)

The control box of the UPS is installed next to the main control box, on the rotating frame.

In the event of a power failure, the UPS will provide emergency power. When the emergency power supply displays the "low battery" message, the door will stop in a position which is at a right angle to the daytime opening.

The sliding doors will continue to operate in this position until the emergency power supply is exhausted. Ultimately the sliding doors will open using power from the battery back of the sliding doors themselves.

3.11. Main P.C.B. of Sliding Doors

The main P.C.B. is located behind the panel of the sliding door mechanism.

3.12. Battery P.C.B. of Sliding Doors

The battery P.C.B. is located behind the panel of the sliding door mechanism.

4 Operation

4.1. Operating Panel

The operating panel is located on the right of the wall column inside the Duotour.
An external operating panel is available as an **option**.

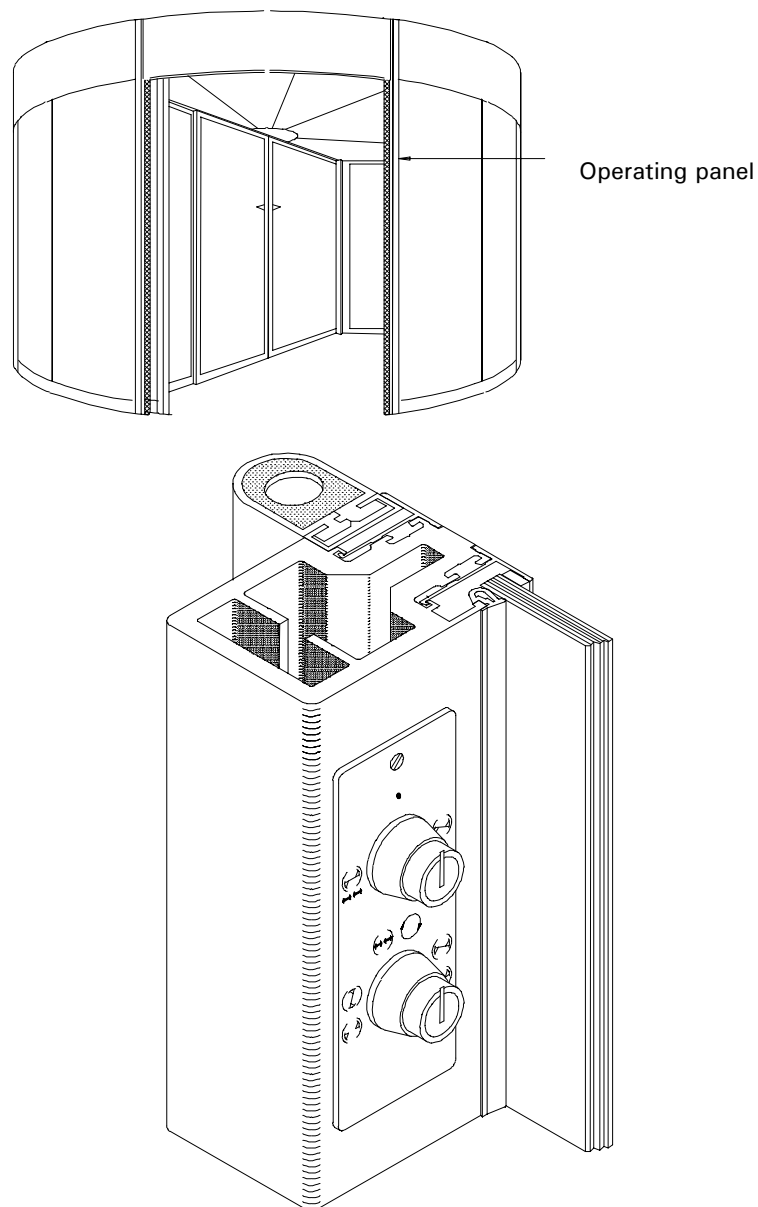
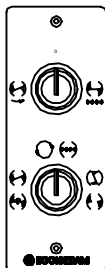


Figure 11: Operating Panel

4.2. Key Positions on Operating Panel

- Note:**
- Key number 1 is the top key.
 - Key number 2 is the bottom key.

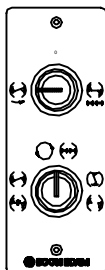


Off/Night Position

When the key is set to this position, the door will revolve at a slow speed until it reaches its rest or night position and then stop. In this position, the showcases will block the daytime opening thus closing the door. The position of key number 2 is ignored.

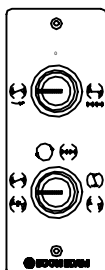
Note Any installed lights will be switched off when the door is in its Off/Night position.

Once the door is in its Off/Night position, the sliding doors will open and close once.



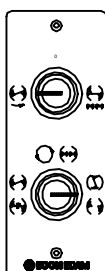
Revolving Door Position

When the key is in this position, the Duotour will revolve continuously at a slow speed. This is only true when the motion detectors are not activated. Once the motion detectors have been activated, the Duotour will turn at normal speed for at least one revolution. This cycle is repeated whenever the motion detectors are activated.



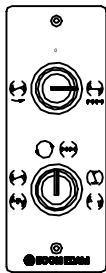
Summer Position

The Duotour is in its rest position according to the symbols, when the keys are in this position. Once the motion detectors have been activated, the Duotour will turn at normal speed for at least one revolution. This cycle is repeated whenever the motion detectors are activated.



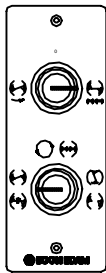
Winter Position

The Duotour is in its rest position according to the symbols, when the keys are in this position. Once the motion detectors have been activated, the Duotour will turn at normal speed for at least one revolution. This cycle is repeated whenever the motion detectors are activated.



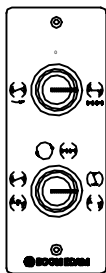
Automatic Sliding Door Position

When the key is in this position, the Duotour will stop according to the symbol and the sliding doors become operational. This position allows both incoming and outgoing traffic.



Sliding Door Position Exit

When the key is in this position, the Duotour will stop according to the symbol and the sliding doors become operational. This position only allows outgoing traffic.



Sliding Door Position Open

When the key is in this position, the Duotour will stop according to the symbol and the sliding doors will open. This position allows large objects to be carried inside since the doors are now open. This position can also be used during summer months.

4.3. Indicator Panel

The indicator panel is located on the rotating ring. When one of the LEDs is on, one of the safety features is activated.

Note:

- Depending on the type of problem, certain LEDs blink.
- See section 6.3 for an overview of alarm indicators.

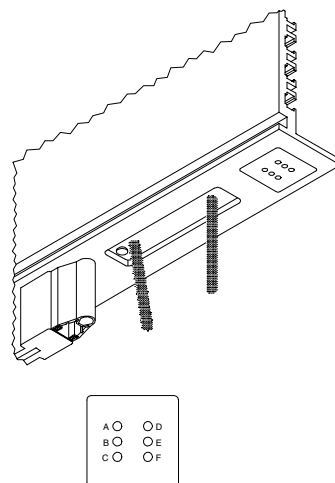




Figure 12: Indicator Panel

5 Maintenance

	<p>Switch off the power before starting maintenance or other work on the door.</p>
	<p>Do not use water near the drive unit and control boxes.</p>

This schedule may be used as a checklist for optimal maintenance of the Duotour.

5.1. Daily

Check the safety features and general operation of the Duotour®.

5.2. Weekly

Clean the anodised, enamelled and/or stainless steel surfaces with a damp cloth.

5.3. Monthly

Clean the anodised, enamelled and/or stainless steel surfaces with a damp cloth and a mild detergent.

Clean the stainless steel parts.



- Clean the parts with water and a sponge.
- Dry the parts using a clean cloth.
- Apply Stainless Steel Polish & Cleaner on any dry parts and polish using a dry, clean cloth.

Clean the draught brushes with a vacuum cleaner.

5.4. Annual

The Duotour needs to be serviced at least once a year. It is recommended to have the Duotour serviced by Boon Edam B.V. or an authorised dealer.

6 Troubleshooting

	Switch off the power before starting maintenance or other work on the door.
	Use original parts to replace defective parts to ensure proper operation.

6.1. Mechanical

Problem	Possible Cause	Action
1. Unusual noise	<ul style="list-style-type: none"> ▪ Loose mechanical parts or damaged parts 	<ul style="list-style-type: none"> ▪ Localise the source of the unusual noise. ▪ Consult the Boon Edam service department.

6.2. Electrical

Troubleshooting list for the Duotour.

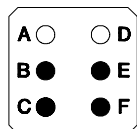
Problem	Possible Cause	Action
1. Door will not turn	<ul style="list-style-type: none"> ▪ Switch on the operating panel. ▪ Power supply 	<ul style="list-style-type: none"> ▪ Check the key position on the operating panel. ▪ Check power supply and fuses.
2. Door will not turn after motion detector has been activated	<ul style="list-style-type: none"> ▪ One or more safety features or the emergency button have been activated. ▪ Door has been locked by one of the locking units. ▪ Door is blocked by an object. ▪ Drive system fails. 	<ul style="list-style-type: none"> ▪ Check the safety features and/or emergency button. Check which safety features have been activated and reset them. ▪ Unlock the door. ▪ When the door cannot be turned by hand: check whether something is stuck between the door. ▪ Consult the Boon Edam service department.
3. Door turns continuously (does not stop in rest position)	<ul style="list-style-type: none"> ▪ Limit switch is defective or not set properly. 	<ul style="list-style-type: none"> ▪ Check the rest position limit switch.
4. Door always turns at slow speed	<ul style="list-style-type: none"> ▪ Push-button for the disabled is defective. ▪ 	<ul style="list-style-type: none"> ▪ Check the push-button for the disabled. ▪ Consult the Boon Edam service department.

6.3. Alarm Indicators (LEDs)

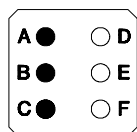
Problems are indicated on the indicator panel.

Note

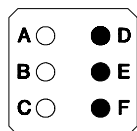
When more than one problem occurs at the same time, the problem with the highest priority is indicated. Priority 1 is the highest priority, priority 8 the lowest.



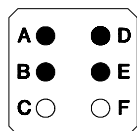
Blink 5 times followed by a pause of 2 seconds.
No remote I/O communication
Priority 1



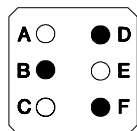
Blink 5 times followed by a pause of 2 seconds.
Fire alarm
Priority 2



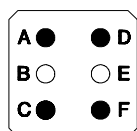
Blink 5 times followed by a pause of 2 seconds.
No power
Priority 3



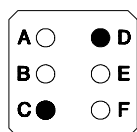
Blink 5 times followed by a pause of 2 seconds.
Bistable lock not locked
Priority 4



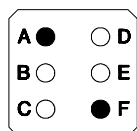
Blink 5 times followed by a pause of 2 seconds.
UPS battery defective
Priority 5



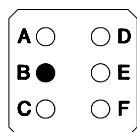
Blink 5 times followed by a pause of 2 seconds.
PLC battery low
Priority 6



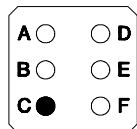
Variable in addition to pattern shown (CD/AF)
Door locked with espagnolet lock of bistable lock
Priority 7



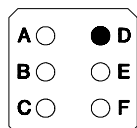
On
Emergency stop activated
Priority 8



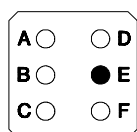
On
Safety Rail Bent Wall activated
Priority 8



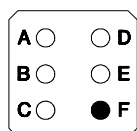
On
Safety Rail Turning Wall activated
Priority 8



On
End Buffer Sensor activated
Priority 8



On
Horizontal Boon Sensor activated
Priority 8



On
Sliding door open activated
Priority 8

6.4. Alarm Indicators (Buzzer)

Buzzer sounds every 10 seconds	Bistable lock will not lock Priority 1
Buzzer sounds every 2 minutes	UPS battery defective Priority 2
Buzzer sounds every 60 seconds	Battery of PLC memory empty Priority 3
Buzzer sounds every second	SRB activated or EBS activated or SRT activated or HBS activated or SBS activated or TRS activated Priority 4

7 Appendices

See appendix A for the CE declaration.

Other appendices may contain information specific to the project.

Appendix A

CE Declaration