

The logo for BlueSeal, featuring the word "blueSeal" in a light blue, lowercase, sans-serif font. The "b" is lowercase, while "Seal" is uppercase. A registered trademark symbol (®) is located to the upper right of the "l".

blueSeal[®]

air curtains by **brightec**

Installation & User Manual

BlueSeal Original

O-[..]-12N1-[..], O-[..]-24N2-[..], O-[..]-24N3-[..]

BlueSeal Compact

C-[..]-12N1-[..], C-[..]-24N2-[..]

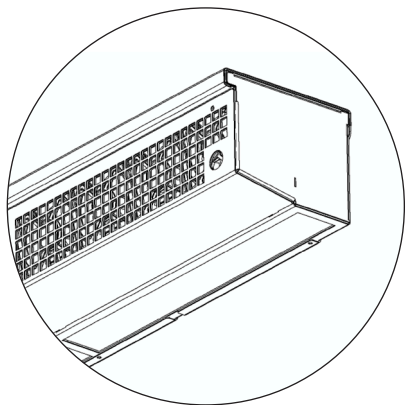
BlueControl module

BC-[..]

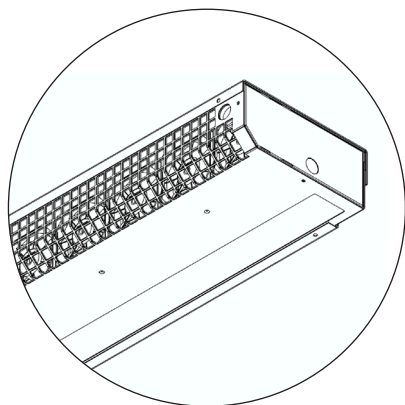
Version 3.0

These are the original English instructions - 12/23

BlueSeal air curtains are designed and manufactured in the Netherlands



blueSeal®
original



blueSeal®
compact



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blueSeal®
featuring **blueControl**

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1 DISCLAIMER

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The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the machinery contained herein. This documentation is not intended as a substitute for and is not to be used for determining the suitability or reliability of these machines for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the machines with respect to the relevant specific application or use thereof. Neither Brightec BV nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information that is contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

All pertinent state, regional, and local safety regulations shall be observed when installing and using this machine. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer shall perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions shall be followed.

Failure to observe this information can result in injury or equipment damage.

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1 INTRODUCTION

Congratulations on the purchase of your BlueSeal air curtain. You have acquired a high-quality air curtain. This manual is part of this system. The manual is intended for the installer and the user of the air curtain. Please familiarise yourself with all the included information before installing or using the system. The system shall only be used as described in this manual and for the specified application scenarios.

This manual also refers to the BlueSeal air curtain as "system" or "air curtain".

For questions, information or ordering user instructions, please contact the manufacturer:

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1.1 INTENDED AND REASONABLY FORESEEABLE UNINTENDED USE

1.1.1 INTENDED USE

The BlueSeal air curtain is intended to be used as a system for regulating the climatic conditions in vehicles by means of an air curtain.

The BlueSeal air curtain is intended for use in vehicles only.

The BlueSeal air curtain is intended to be operational only when the vehicle is stationary.

The BlueSeal air curtain shall only be used with the following original accessories and components:

- Supplied mounting bracket
- Supplied connection cable

1.1.2 REASONABLY FORESEEABLE UNINTENDED USE

The BlueSeal air curtain is not intended to be used as a system for climate control in buildings, like shops, factories or offices.

The BlueSeal air curtain shall not be used in other locations than described and shall not be used during transit when cargo doors are closed.

Only use the air curtain within the specified operating limits. The air curtain shall only be used according to the instructions as described in this manual. All use other than that described in this manual is seen as unintended use.

1.2 RETAINING INSTRUCTIONS

Read and understand this manual and its safety instructions before using this product. It contains important notes and data required for the safe handling of BlueSeal and BlueControl and its components. Failure to do so can result in serious injury or death.

Follow all the instructions. This will help to prevent fire, explosions, electric shocks or other hazards that may result in damage to property and/or severe or fatal injuries.

This manual is part of the delivery and shall be easily accessible to any user of the equipment at all times.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be void.

The information contained in the operation manuals is subject to change without notice for the purpose of modification and improvement.

1.3 SAFETY SYMBOLS USED IN THIS MANUAL

DANGER

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates information considered important, but not hazard-related.

2 DESCRIPTION OF BLUESEAL AIR CURTAIN

2.1 PROCESS OVERVIEW

The BlueSeal air curtain works as a system to regulate climatic conditions in vehicles by means of an air curtain.

Depending on the installation, BlueSeal takes ambient air from outside the vehicle or inside air from the cargo space.

BlueSeal uses this air to create an effective flow of air from the ceiling of the vehicle to the floor, that acts as a curtain. This reduces the infiltration of ambient air into the cargo space.

2.2 COMPLIANCE OF THE DEVICE

This product complies to all relevant Legislation. The product is in conformity with the following relevant product safety standards:

- FCC part 15, Subpart B

2.3 TECHNICAL DATA

2.3.1 TECHNICAL DATA OF THE BLUSEAL AIR CURTAIN



WARNING

USE THE PRODUCT ONLY WITHIN THE SPECIFIED OPERATING LIMITS.

Designation	Air curtain			
General description	BlueSeal Air Curtain is an air curtain that should be installed in vehicles. The air curtain works as a climate barrier during door openings.			
Technical life span of mechanical parts	15 years			
Protection class	IP54			
Operating temperature range	-22°F to +140°F			
Relative humidity	0 % to 100 % relative humidity			
Maximum altitude for use	n/a			
Device name	BlueSeal air curtain 'Original'		BlueSeal air curtain 'Compact'	
Weight	28.2 lb (11.7 lb per 39.4 " / 1000 mm)		27.8 lb (11.5 lb per 39.4 " / 1000 mm)	
	Standard length (95.7 " / 2430 mm)	Custom lengths (per 39.4 " / 1000 mm)	Standard length (95.7 " / 2430 mm)	Custom lengths (per 39.4 " / 1000 mm)
Type	O-[..]-24N2-[..]		C-[..]-24N2-[..]	
Power	120 W	50 W	124 W	50 W
Voltage/current	24 V / 5.0 A	24 V / 2.0 A	24 V / 5.2 A	24 V / 2.0 A
Type	O-[..]-24N3-[..]			
Power	161 W	65 W		
Voltage/current	24 V / 6.7 A	24 V / 2.7 A		
Type	O-[..]-12N1-[..]		C-[..]-12N1-[..]	
Power	105 W	45 W	109 W	45 W
Voltage/current	12 V / 8.8 A	12 V / 3.6 A	12 V / 9.1 A	12 V / 3.6 A

2.3.2 TECHNICAL DATA OF THE BLUECONTROL MODULE (OPTIONAL)

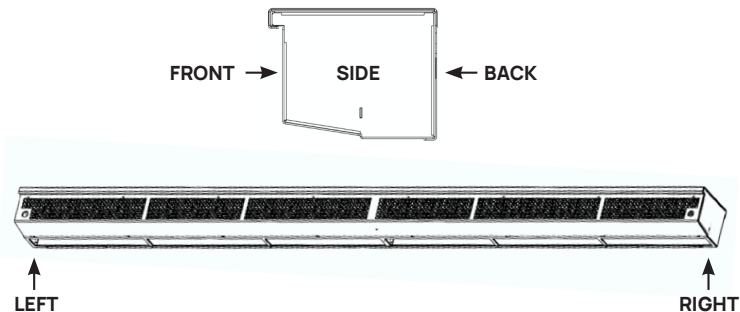
Parameter	Unit
Device name	BlueControl
Designation	Control module
General description	Control module for BlueSeal air curtain
Type	BC-[..]
Technical lifespan	15 years
Power	0.5 W
Voltage/current	10 - 28 V (0.04 A on 12 V, 0.02 A on 24 V)
Weight	0.3 lb
IP class	IP54
Operating temperature range	-22°F to +140°F
Relative humidity range	0 % to 100 % relative humidity

2.4 BLUESEAL AIR CURTAINS TYPE OVERVIEW

This table is provided to explain the different elements of your air curtain, depending on the specification of your product. We use this to accurately expand on the description of your specific unit.

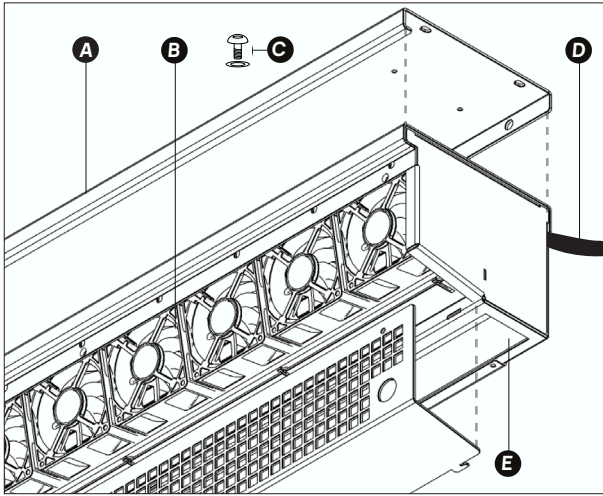
Length	Housing	Mounting bracket	Cable position		Voltage	Connection cable specs.	
			L: Left R: Right	F: Front S: Side B: Back		Cable length (m)	Cable thickness (AWG) Normal = 13 Thick = 11 Flat = 13
Length of air curtain (mm)	O : Original or C : Compact	R: Regular (1-R) E: Enclosed (1-E) S: Stainless Steel (1-S) E: Enclosed for Compact (1-C)	L: Left R: Right	F: Front S: Side B: Back	12 V or 24 V	Cable length (m)	Cable thickness (AWG) Normal = 13 Thick = 11 Flat = 13
Example type indication of 2430mm / 95.7 " BlueSeal Original air curtain, with Regular mounting bracket, with power cable positioned on Right, Back side, 24 V, 5m = / 16.4 ft long Normal cable							
2430	O-	R-	R	B-	24-	5	N
Example type indication of 1310mm / 51.6 " BlueSeal Compact air curtain, with Enclosed mounting bracket, with power cable positioned on Right, Front side, 12 V, 3m / 9.8 ft long Flat cable							
1310	C-	E-	R	F-	12-	3	F

- BlueSeal air curtains can be tailored to size depending on the measurements of your vehicle, with a maximum length of 2,430mm / 95.7 "



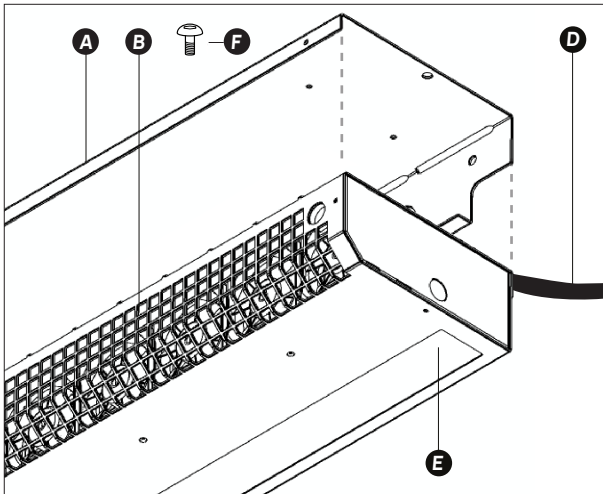
2.5 SYSTEM ELEMENTS - BLUESEAL

2.5.1 SYSTEM ELEMENTS - BLUESEAL ORIGINAL



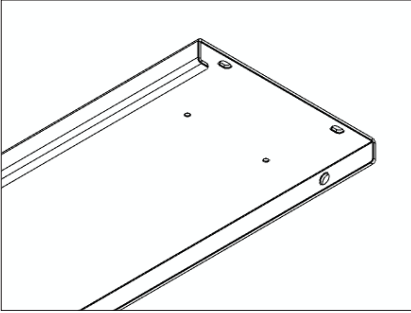
- A** Mounting bracket (type 1-R, 1-E or 1-S, see 2.6 System Elements - Mounting brackets)
- B** Air inlet
- C** Flat washers and mounting bolts
- D** Connection cable
- E** Air outlet

2.5.2 SYSTEM ELEMENTS - BLUESEAL COMPACT



- A** Mounting bracket (type 1-C, see 2.6 System Elements - Mounting brackets)
- B** Air inlet
- D** Connection cable
- E** Air outlet
- F** Self-drilling screws

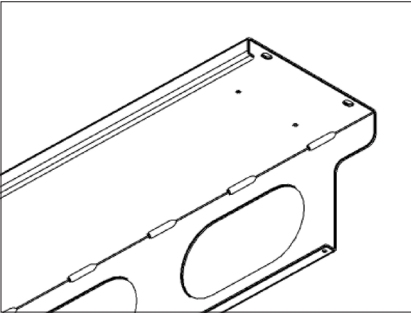
2.6 SYSTEM ELEMENTS - MOUNTING BRACKETS



1-R Regular mounting bracket

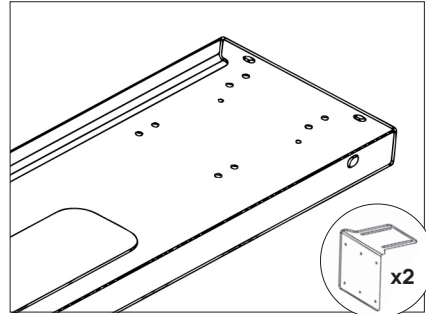
Comes with mounting bolts and flat washers

blueSeal[®]
original



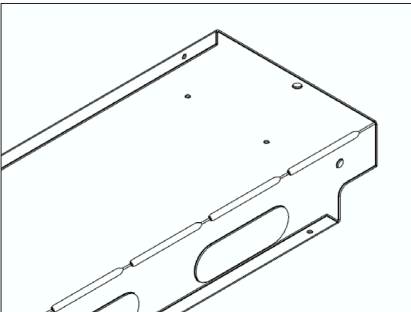
1-E Enclosed mounting bracket

Comes with self drilling screws



1-S Roller/shutter door mounting bracket

Comes with mounting bolts and flat washers



1-C Enclosed mounting bracket for Compact model

Comes with self drilling screws and plastic rivets

blueSeal[®]
compact

3 SAFETY INSTRUCTIONS

3.1 IMPORTANT SAFETY INFORMATION



DANGER

READ AND UNDERSTAND THIS MANUAL AND ITS SAFETY INSTRUCTIONS BEFORE USING THIS PRODUCT. FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY OR DEATH. SAVE THESE INSTRUCTIONS FOR FUTURE USE.

3.1.1 GENERAL SAFETY INFORMATION

- Follow all the instructions. This will avoid fire, explosions, electric shocks or other hazards that may result in damage to property and/or severe or fatal injuries.
- This product can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be voided.



WARNING

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR INJURY TO PERSONS OBSERVE THE FOLLOWING:

- USE THIS UNIT ONLY IN THE MANNER INTENDED BY THE MANUFACTURER. IF YOU HAVE QUESTIONS, CONTACT THE MANUFACTURER.
- BEFORE SERVICING OR CLEANING THE UNIT, SWITCH THE POWER OFF AT SERVICE PANEL AND LOCK THE SERVICE DISCONNECTING MEANS TO PREVENT POWER FROM BEING SWITCHED ON ACCIDENTALLY. WHEN THE SERVICE DISCONNECTING MEANS CANNOT BE LOCKED, SECURELY FASTEN A PROMINENT WARNING DEVICE, SUCH AS A TAG, TO THE SERVICE PANEL.

3.1.2 INSTALLATION AND ELECTRICAL SAFETY INFORMATION

- The air curtain shall only be installed by a qualified and trained person who has fully read and understands the contents of this user manual.
- Only a qualified electrician shall carry out the electrical installation and the initial activation. All local regulations shall be followed.
- Be vigilant at all times, and always be careful what you are doing. Do not install the product if you are lacking in concentration or awareness, or are under the influence of drugs, alcohol or medication. Even a moment of inattentiveness can lead to serious accidents and injuries when using the product.
- Always make sure that the product is well fixed during transportation.
- Check the product and the cables for damage before installation and every time it's used. If there is any visible damage, a strong odour or excessive heating of components, disconnect the power supply immediately and do not use the product.
- If the supply cord is damaged, it shall be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.
- Install the air curtain securely to the van/truck/trailer wall/ceiling. It is the responsibility of the installer to provide additional support structures if required and not to damage important structural parts or existing utilities and wires in the vehicle.
- Choose the routing of cables carefully and make sure there is no risk of damage, for example, caused by heavy loose objects that may suddenly move or sharp edges. It is the responsibility of the installer to provide conduit as required for wiring.
- Lay the cables in such a way that they cannot be stretched, squashed or kinked, and so that no one can trip over them.
- If an additional switch is installed, it is recommended to use a magnetic switch only. Mechanical switches may not work properly below 32 degrees Fahrenheit.
- Make sure that the device can be disconnected from the power supply

after installation. The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules.

- **RISK OF ENTRAPMENT!** The product contains moving parts! Keep away from clothing, fingers, hair etc. to prevent strangulation and jamming.

3.1.3 USE SAFETY INFORMATION

- If the product is damaged, it shall not be used anymore.
- If there is an accident, stop using the product and consult a doctor if necessary.
- In freezing situations, there is a possibility that the floor under the air curtain gets extra slippery due to the forming of extra ice on the floor. Take extra care when walking in/out of the vehicle.

3.1.4 MAINTENANCE SAFETY INFORMATION

- Maintenance and inspection shall be done on a frequent basis. If there is any visible damage, a strong odour or an excessive overheating of components stop using the product.
- Do not clean the system with a high-pressure cleaner or water hose.
- Do not attempt to open, modify or repair the product (other than to replace a malfunctioning fan as explained in 7.1). This will not be covered by the warranty.

⚠ WARNING

RISK OF FIRE, ELECTRIC SHOCK OR INJURY.

ONLY USE ORIGINAL ACCESSORIES AND SPARE PARTS. DO NOT USE REPLACEMENT PARTS THAT HAVE NOT BEEN RECOMMENDED BY THE MANUFACTURER (FOR EXAMPLE, PARTS MADE AT HOME USING A 3D PRINTER).

- Alterations to the product and technical modifications are not permitted.
- The product may only be disassembled and stored by a qualified and trained person.

3.2 HOW TO STOP THE BLUESEAL AIR CURTAIN IN CASE OF EMERGENCY

- Should the product appear to be malfunctioning, disconnect the power supply immediately, do not use the product and contact a qualified service agent.

3.3 TOOLS TO BE USED

Tool	Function
Caulking gun and MS polymer adhesive	To attach the mounting bracket to the ceiling
Pop rivet gun and pop rivets	To attach the mounting bracket to the ceiling
Ratchet wrench (8mm / 5-16 ")	To attach mounting brackets (1-R and 1-S)
Torx screwdriver (T20)	To attach mounting brackets (1-E and 1-C)

4 INSTALLATION OF BLUESEAL AIR CURTAIN

WARNING

- THE PRODUCT SHALL ONLY BE INSTALLED BY QUALIFIED AND TRAINED PEOPLE.
- ONLY A QUALIFIED ELECTRICIAN SHALL CARRY OUT THE ELECTRICAL INSTALLATION AND THE INITIAL ACTIVATION. ALL LOCAL REGULATIONS SHALL BE FOLLOWED.
- TWO PEOPLE ARE RECOMMENDED FOR THE INSTALLATION PROCESS.

4.1 UNPACKING AND CHECKING THE CONTENTS

WARNING

DO NOT INSTALL OR USE A DAMAGED DEVICE.

Before you install the product, check it for damage. If damage has occurred during transport, please inform the transport service provider immediately or contact your BlueSeal sales point. The device was tested before shipping to make sure it functions correctly.

CHECK TO ENSURE THE PACKAGE CONTAINS THE FOLLOWING ITEMS:

FOR BLUESEAL ORIGINAL

- BlueSeal air curtain with connection cable
- Mounting bracket: 1-R, 1-E or 1-S (including 2 x side brackets)
- Bolts and flat washers (for mounting bracket 1-R and 1-S)
- Self-drilling screws (for mounting bracket 1-E)

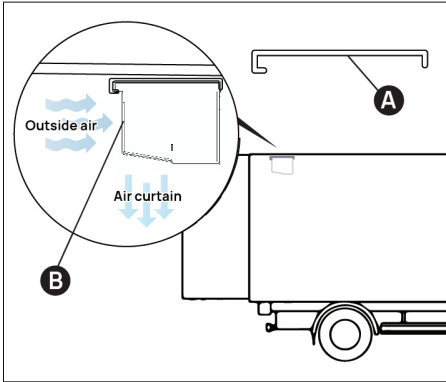
FOR BLUESEAL COMPACT

- BlueSeal air curtain with connection cable
- Mounting bracket: 1-C
- Self-drilling screws
- Plastic rivets

4.2 INSTALLING BLUESEAL ORIGINAL FOR REAR DOORS *

* for roller/shutter doors please see 4.4 for separate instructions

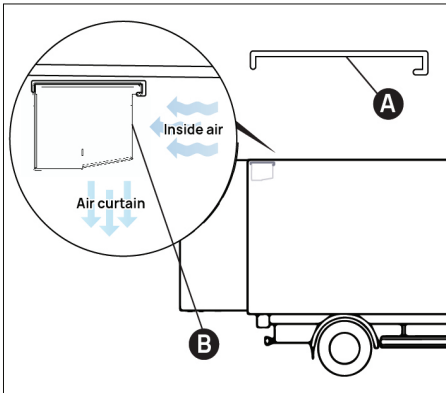
1 Determine the direction of the air inlet **B**



A. AIR INLET **B** FACING OUTSIDE

NOTICE

In general we advise letting the BlueSeal Original take in ambient air from outside. The reason is that this provides the most comfortable situation for the driver during (un)loading (if the inside temperature is significantly lower than the ambient temperature).



B. AIR INLET **B** FACING INSIDE

Recommended for installations in vehicles with:

- an upper tailgate
- lintel
- a three-panel door where only one door is used most of the time
- another kind of obstruction of the air intake

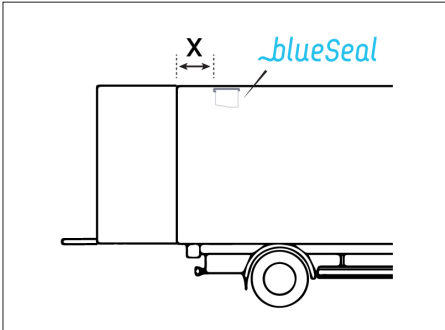
NOTICE

The direction of the air inlet **B** determines in which direction the mounting bracket (1-E or 1-R) should be fitted. This has been illustrated for reference. The drawings above only show mounting bracket 1-R.

2 Determine the position of the mounting bracket **A**

A. FOR INSTALLATION WITH THE AIR INLET **B** FACING OUTSIDE

Keep a minimum distance between the air curtain and the doors. The distance depends on the type of doors and type of transport:

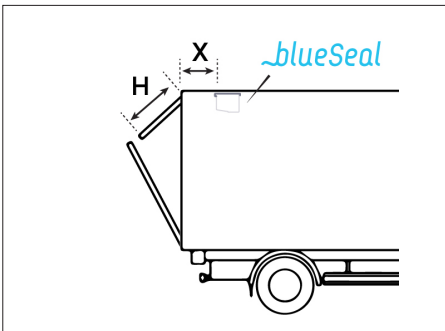


For a vehicle with swing doors:

Chilled transport: $X = > 4$ "

Frozen transport: $X = 1$ to 4 "

Chilled + Frozen: $X = 1$ to 4 "

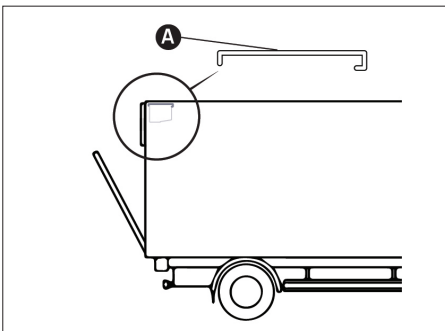


For a vehicle with an upper tailgate

If $H < 16$ " then $X > 12$ "

If $H > 16$ " then $X > 16$ "

B. FOR INSTALLATIONS WITH THE AIR INLET **B** FACING INSIDE

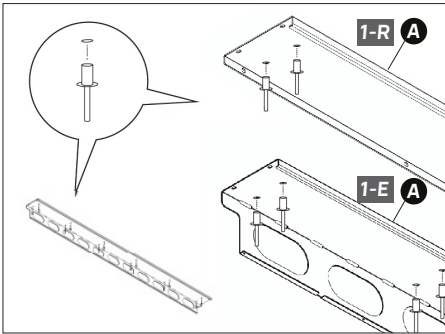


No minimal distance is required between the system and the doors.

NOTICE

For installations with the air inlet **B** facing the cargo space, the direction of the mounting bracket **A** is reversed.

- 3** Attach the **mounting bracket A** with glue and pop rivets to the ceiling of the vehicle

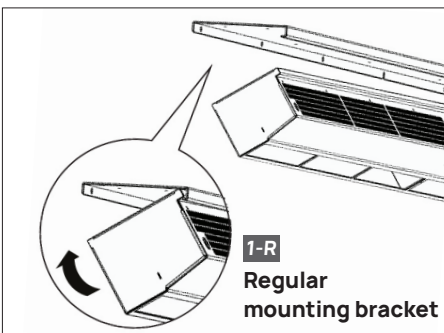


NOTICE

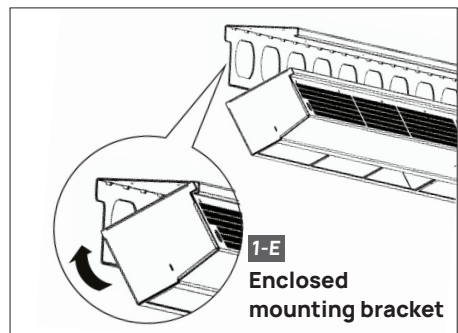
Mounting bracket 1-E is recommended for configurations where the back of the air curtain is not easily accessible.

- 4** Remove the protective film from the **air curtain**

- 5** Place the air curtain in the **U-profile** of the **mounting bracket A**

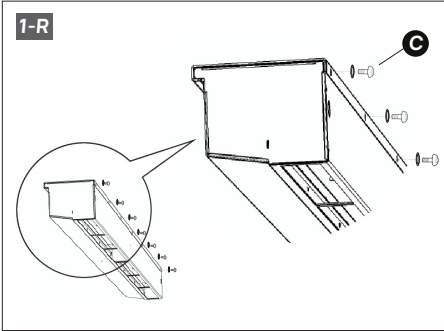


1-R
Regular
mounting bracket

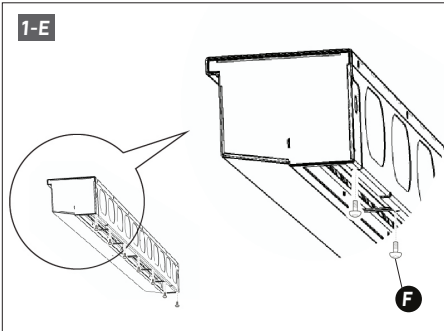


1-E
Enclosed
mounting bracket

6 Attach the air curtain to the mounting bracket **A**



**A. FOR MOUNTING BRACKET 1-R,
USE THE FLAT WASHERS AND
MOUNTING BOLTS **C****

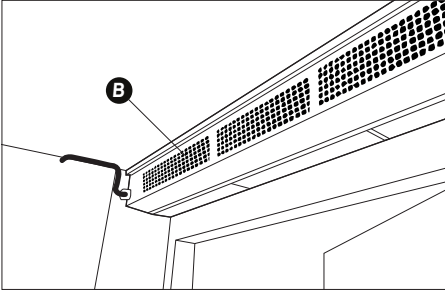


**B. FOR MOUNTING BRACKET
1-E, USE THE SELF-DRILLING
SCREWS **F****

4.3 INSTALLING BLUESEAL ORIGINAL FOR SIDE DOORS

1 Determine the direction of the air inlet **B**

A. AIR INLET **B** FACING *INSIDE*



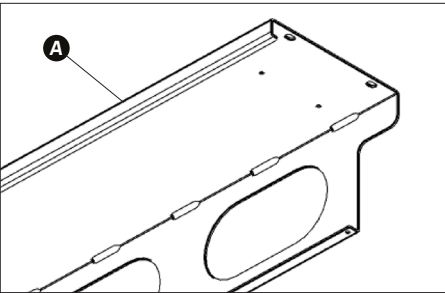
NOTICE

This is recommended when installing the air curtain above a side door to let the air curtain take in inside air, for example, let the air inlet **B** face the inside of the cargo space.

B. AIR INLET **B** FACING *OUTSIDE*

NOTICE This is not recommended.

2 Determine the position of the mounting bracket **A** **1-E**



NOTICE

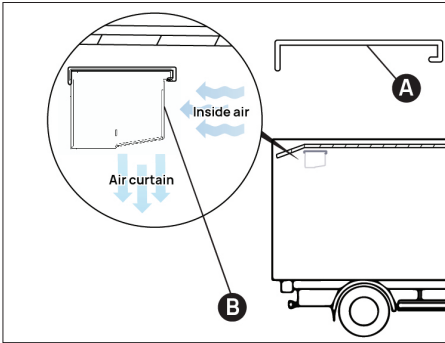
Keep a gap of approximately 5 mm between the back of the mounting bracket (1-E) and the wall of the vehicle. The gap is necessary for the mounting bracket to flex when the air curtain is clicked into it.

3 Attach the mounting bracket **A** **1-E** and the air curtain

See 4.1 **INSTALLING BLUESEAL ORIGINAL FOR REAR DOORS** - steps 3 to 6

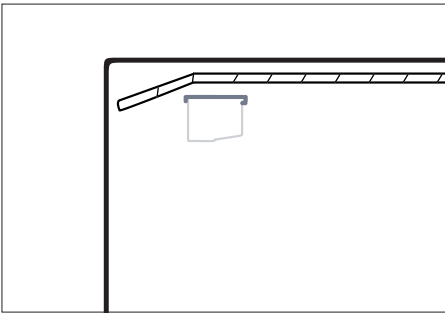
4.4 INSTALLING BLUESEAL FOR ROLL-UP/SHUTTER DOORS

1 Determine the direction of the **air inlet** **B**



It is recommended for vehicles with shutter doors, to let the BlueSeal Original air curtain take in inside air, for example, the air inlet **B** facing the inside of the cargo space.

2 Determine the position of the **mounting bracket** **A**



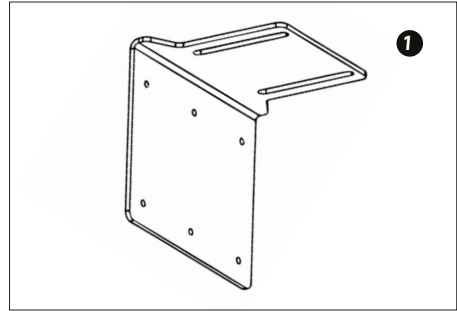
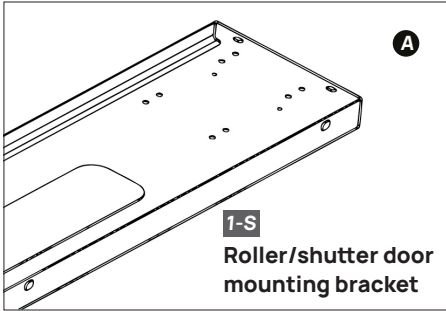
- The air curtain should hang just under the shutter door.
- The gap between the top of the air curtain and the shutter door panels should be as small as possible.
- Make sure you allow room for the shutter door to close, the air curtain can be installed as close as possible to the aperture.

NOTICE

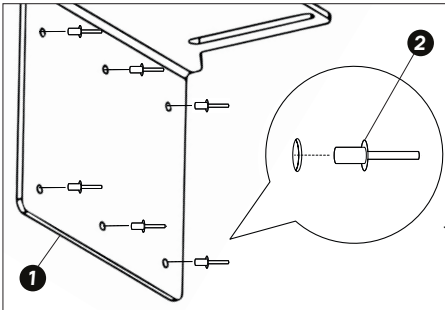
Any space to the rear of the curtain's position is not protected by the airflow.

3 Attach the mounting bracket **A** (1-S) and the air curtain

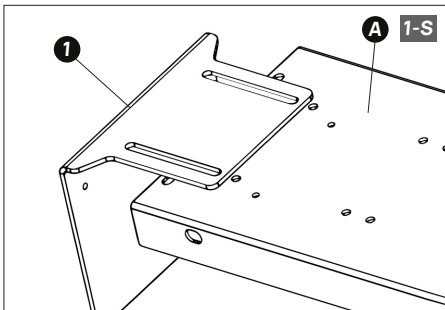
A. USE THE INCLUDED MOUNTING BRACKET (1-S) **A AND SIDE MOUNTS **1** FOR ROLL-UP/SHUTTER DOORS.**



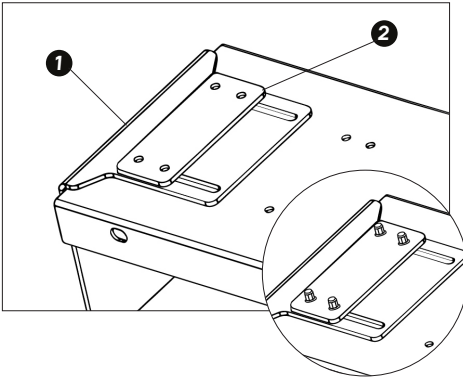
B. ATTACH THE SIDE MOUNTS **1 TO THE WALL WITH POP RIVETS **2** AND GLUE.**



C. ATTACH THE MOUNTING BRACKET **A (1-S) TO THE SIDE MOUNTS WITH THE INCLUDED NUTS AND MOUNTING BOLTS.**

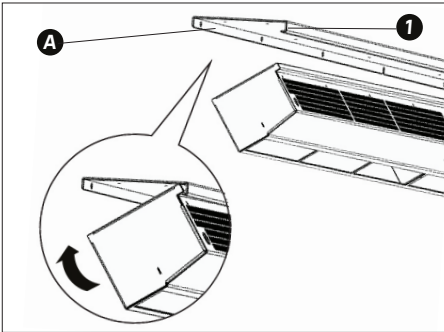


- i. Place the mounting bracket **A** (1-S) under the side mounts **1**

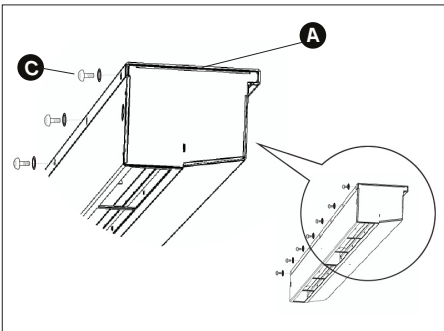


- ii. Place the flat cap **2** on top of the side mounts **1**
- iii. Attach the mounting bracket and the flat cap to the side mounts with the nuts and mounting bolts. Ensure that mounting bolts are threaded upwards so that nuts are affixed over the flat cap.

4 Place the air curtain in the U-profile **1** of the mounting bracket **A** and tilt the air curtain into position



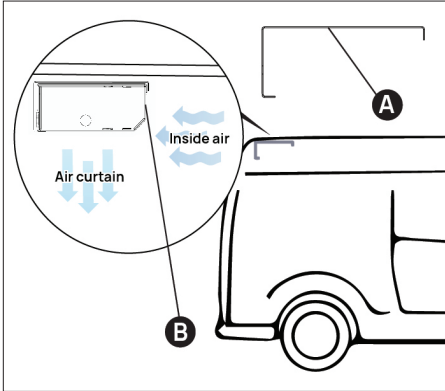
5 Attach the air curtain to the mounting bracket **A** with the included flat washers and mounting bolts **C**



4.5 INSTALLING BLUESEAL COMPACT IN A PANEL VAN

1 Determine the direction of the air inlet **B**

A. AIR INLET **B** FACING *INSIDE*



For rear doors and side doors, when no air-blocking obstacles are within 10 " of the air inlet.

B. AIR INLET **B** FACING *OUTSIDE*

For rear doors and side doors, when an evaporator unit is within 10 " from the air inlet.

NOTICE

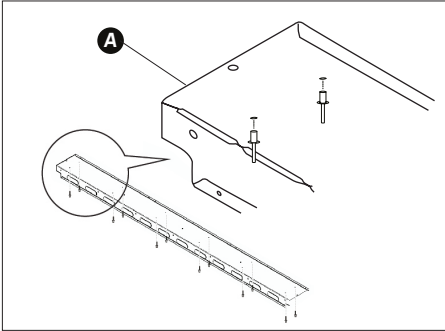
When an evaporator unit is placed close to the air inlet **B** (< 10 "), the air supply may be insufficient. In that case, the direction of the air inlet should be opposite, so that it takes in ambient air from outside the vehicle.

NOTICE

When in doubt about installing the air inlet facing outside or inside, please contact your BlueSeal salesperson.

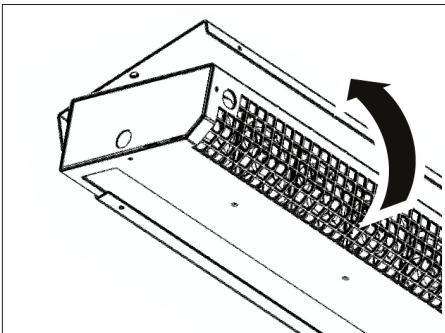
2 Determine the position of the **mounting bracket** **A** **1-C**

3 Attach the **mounting bracket** **A** **1-C** and the **air curtain**



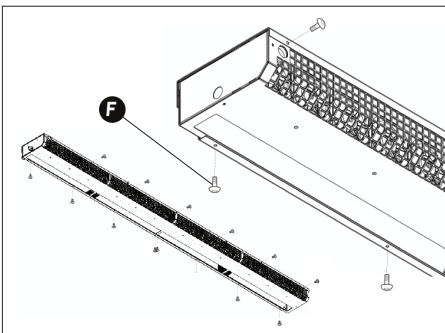
a. Attach the **mounting bracket** **A** (1-C) with glue and pop rivets to the ceiling of the vehicle.

b. Remove the protective film from the **air curtain**.



c. Place the **air curtain** in the **mounting bracket** **A** (1-C).

d. Temporarily attach the **air curtain** to the **mounting bracket** **A** (1-C) with plastic rivets to hold it in place.



d. Attach the air curtain with self-drilling screws **F** to secure the air curtain in place.

4.6 INSTALLING BLUESEAL COMPACT IN OTHER VEHICLES

4.6.1 INSTALLING BLUESEAL COMPACT IN OTHER VEHICLES FOR REAR DOORS

1. Determine the direction of the **air inlet** **B** and the **mounting bracket** **A** (1-C) - See 4.2 *INSTALLING BLUESEAL ORIGINAL FOR REAR DOORS* - step 1.
2. Determine the position of the **mounting bracket** **A** (1-C)
See 4.2 *INSTALLING BLUESEAL ORIGINAL FOR REAR DOORS* - step 2.
3. Attach the **mounting bracket** **A** (1-C) and the **air curtain**
See 4.5 *INSTALLING BLUESEAL COMPACT* - step 3.

NOTICE

Make sure to position the mounting bracket correctly with regard to the air inlet direction.

4.6.2 INSTALLING BLUESEAL COMPACT IN OTHER VEHICLES FOR SIDE DOORS

1. Determine the direction of the **air inlet** **B** and the **mounting bracket** **A** (1-C) - See 4.3 *INSTALLING BLUESEAL ORIGINAL FOR SIDE DOORS* - step 1.
2. Determine the position of the **mounting bracket** **A** (1-C)
See 4.3 *INSTALLING BLUESEAL ORIGINAL FOR SIDE DOORS* - step 2.
3. Attach the **mounting bracket** **A** (1-C) and the **air curtain**
See 4.5 *INSTALLING BLUESEAL COMPACT* - step 3.

NOTICE

Make sure to position the mounting bracket correctly with regard to the air inlet direction.

4.7 CONNECT AIR CURTAIN TO POWER SOURCE

NOTICE

All units are supplied with 40” of power cable (11 AWG) as standard. To connect the air curtain the remaining distance to your vehicle power source, we recommend the following specifications.

4.7.1 REQUIRED CABLE SIZES FOR THE INSTALLATION

WARNING

- THE TABLE SHOWS THE RECOMMENDED CABLE SIZE TO CONNECT AN 95.7 ” LONG AIR CURTAIN. THE RECOMMENDED CABLE THICKNESS DECREASES LINEARLY WITH DECREASING AIR CURTAIN LENGTH.

Cable length between power supply and BlueSeal air curtain	Minimum cable size (area)	
	For a 24 V BlueSeal air curtain (AWG)	For a 12 V BlueSeal air curtain (AWG)
5 m	19	13
7.5 m	17	11
10 m	16	11
15 m	14	11
20 m	13	11

4.7.2 CONNECTING THE AIR CURTAIN TO A POWER SOURCE

WARNING

- GET APPROVAL FROM YOUR POWER SOURCE (BATTERY OR OTHER) SUPPLIER FOR USE WITH THE AIR CURTAIN LOAD BEFORE CONNECTING.
- MAKE SURE TO CONNECT THE WIRES CORRECTLY TO THE POWER SOURCE. IN THE CASE OF BLUESEAL – BROWN CABLES ARE ‘POSITIVE’ AND BLUE CABLES ARE ‘NEGATIVE’.
- THE WIRES IN YOUR POWER CABLES MAY USE A DIFFERENT COLOR CODING SYSTEM, NATIVE TO YOUR LOCATION/COUNTRY. THE AIR CURTAIN HAS POLARITY PROTECTION TO PREVENT DAMAGE TO THE DEVICE IF THE WIRES ARE INCORRECTLY INSTALLED, BUT THE AIR CURTAIN WILL NOT WORK IN THAT CASE.

- IT IS IMPORTANT THAT THE AIR CURTAIN SWITCHES ON IMMEDIATELY WHEN THE DOORS OR TAILGATE ARE OPENED. THE AIR CURTAIN SHALL SWITCHED OFF WHEN THE DOORS ARE CLOSED.
- IN ORDER TO PREVENT THE BATTERY FROM BEING DRAINED, IT IS RECOMMENDED THAT YOU CONNECT A TIME RELAY OR BATTERY GUARD IN THE ELECTRIC CIRCUIT.
- IF AN ADDITIONAL SWITCH IS INSTALLED, IT IS RECOMMENDED TO USE A MAGNETIC SWITCH ONLY. MECHANICAL SWITCHES MAY NOT WORK PROPERLY BELOW 32 DEGREES FAHRENHEIT.
- IT IS MANDATORY TO USE AN AUTOMOTIVE FUSE BASED ON THE SPECIFICATION OF THE AIR CURTAIN USED. TO DETERMINE THE SPECIFICATION OF YOUR FUSE, CONSULT YOUR ELECTRICIAN OR REFER TO THE NATIONAL ELECTRICAL CODE (NEC). A COMMON SIZE FOR THE FUSE IS AT LEAST 135% OF THE STEADY CURRENT.
- MAKE SURE THAT THE DEVICE CAN BE DISCONNECTED FROM THE POWER SUPPLY AFTER INSTALLATION. THE DISCONNECTION MAY BE ACHIEVED BY HAVING THE PLUG ACCESSIBLE OR BY INCORPORATING A SWITCH IN THE FIXED WIRING IN ACCORDANCE WITH THE WIRING RULES.
- MAKE SURE YOU USE THE CORRECT CABLE SIZE ACCORDING TO THE TABLE IN 4.7.1 REQUIRED CABLE SIZES FOR THE INSTALLATION TO LIMIT THE VOLTAGE LOSS.
- CHOOSE THE ROUTING OF CABLES CAREFULLY AND MAKE SURE THERE IS NO RISK OF DAMAGE, FOR EXAMPLE, CAUSED BY HEAVY LOOSE OBJECTS THAT MAY SUDDENLY MOVE OR SHARP EDGES. IT IS THE RESPONSIBILITY OF THE INSTALLER TO PROVIDE CONDUIT AS REQUIRED FOR WIRING.
- ROUTE CABLES IN SUCH A WAY THAT THEY CANNOT BE STRETCHED, SQUASHED, OR KINKED, AND THAT NO ONE CAN TRIP OVER THEM.
- UPON REQUEST AN INSTALLATION ASSISTANCE KIT WITH A TIME RELAY AND MAGNETIC SWITCH CAN BE ORDERED.
- UPON REQUEST BRIGHTEC CAN OFFER ADVICE ON THE INSTALLATION COMPONENTS NEEDED FOR YOUR SITUATION.
- INSTALLATION CAN BE MADE SIMPLER WITH BRIGHTEC'S PROPRIETARY BLUECONTROL MODULE. THE INTEGRATED BLUECONTROL MODULE MAKES BLUESEAL AIR CURTAINS 'PLUG & PLAY'. FOR MORE INFORMATION PLEASE VISIT [HTTPS://BRIGHTEC.NL/BLUECONTROL/](https://brightec.nl/bluecontrol/). INFORMATION ABOUT BLUECONTROL CAN ALSO BE REQUESTED VIA [INFO@BRIGHTEC.NL](mailto:info@brightec.nl).

4.7.3 CONNECTING THE AIR CURTAIN WITHOUT BLUECONTROL TO A POWER SOURCE

Connect the **connection cable** **D** of the air curtain to a power source of 24 V (or 12 V, depending on the air curtain model) in such a way that the air curtain switches on as soon as (one of) the doors (is) are opened. For example:

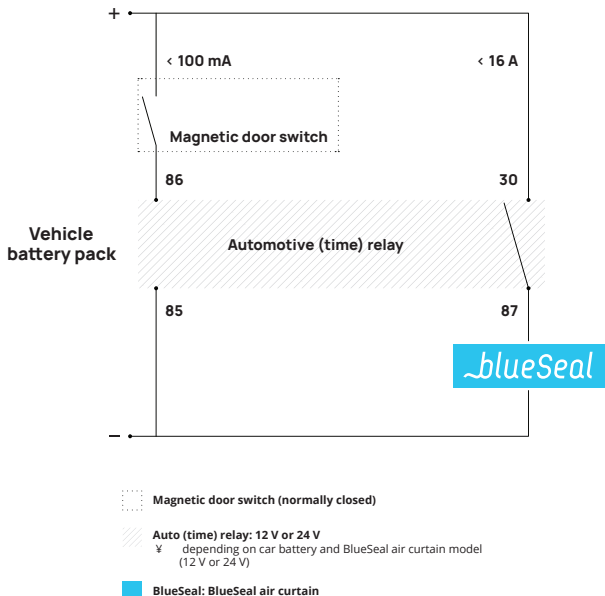
- a. Connect the air curtain to the battery of the vehicle, with a (time) relay, a magnetic door switch in between that triggers the air curtain to switch ON when the doors are opened.

NOTICE

When the door switch is intended to operate in cold conditions, make sure it is a magnetic switch.

NOTICE

It is mandatory to use an automotive fuse based on the specification of the air curtain used. To determine the specification of your fuse, consult your electrician or refer to the National Electrical Code (NEC). A common size for the fuse is at least 135% of the steady current.



4.7.4 CONNECTING THE AIR CURTAIN WITH BLUECONTROL TO A POWER SOURCE

NOTICE

Refer to 5.3 - *Pin-out diagram of the BlueControl module* for the position of the different connections on the BlueControl module.

BlueControl is an integrated module that makes BlueSeal air curtains truly 'plug & play'. With BlueControl, BlueSeal air curtains can be connected directly to the car battery (or another power source), without the use of additional components.

NOTICE

It is mandatory to use an automotive fuse based on the specification of the air curtain used. To determine the specification of your fuse, consult your electrician or refer to the National Electrical Code (NEC). A common size for the fuse is at least 135% of the steady current.

The following sensors are available for the BlueControl module:

■ **Integrated sensor:**

Light sensor – a light sensor is integrated into BlueControl. When the doors of the vehicle are opened, the light sensor detects an increase in light intensity (coming from outside light or from the LED lights in the vehicle) and BlueControl is triggered to switch the air curtain on. When unloading in the dark, the light sensor is triggered by LED lights in the vehicle or by other outside light sources.

■ **Optional sensors:**

Magnetic switch – an external magnetic switch can be connected to BlueControl. The magnetic switch triggers BlueControl to switch the BlueSeal air curtain on when the door of the vehicle is opened.

Infrared sensor – an external infrared sensor can be connected to BlueControl. The infrared sensor faces the doors. When the door is opened, BlueControl is triggered to switch the air curtain on.

TO CONNECT A BLUESEAL AIR CURTAIN WITH BLUECONTROL TO A POWER SOURCE:

1. Connect the + **Bat** terminal of the BlueControl module directly to the + **terminal** of the power source. In practice this means connecting the brown wire in the connection cable (D) to the + **terminal** of the power source.
2. Connect the - **Bat** terminal on the BlueControl module directly to the - **terminal** of the power source. In practice this means connecting the blue wire in the connection cable (D) to the - **terminal** of the power source.

NOTICE

No (time) relay is necessary.

3. Install the optional (magnetic) door switch or optional infrared sensor and connect it to the BlueControl module. Refer to 5.3 - *Pin-out diagram of the BlueControl module* for the position of the different connections on the BlueControl module.

NOTICE

When the door switch is intended to operate in cold conditions, make sure it is a magnetic switch. The infrared sensor should be installed in such a way that it faces the doors.

4.8 OPTIONAL BLUESMART MODULE

⚠ WARNING

DO NOT USE OTHER SPEED CONTROLLERS THAN THE BLUESMART MODULE OF BRIGHTEC TO CONTROL THE AIRSPEED.

The integrated BlueControl module can be extended with a companion module: BlueSmart. The combination of BlueControl and BlueSmart makes it possible to control the airflow of the BlueSeal air curtain based on the real-time values of the indoor and outdoor temperatures, and the height of the vehicle. Algorithms based on theory and experiments are pre-programmed in the BlueSmart module to adjust the airflow.

5 USE OF THE BLUECONTROL MODULE

NOTICE

Only applies to the versions of the BlueSeal air curtain that have an integrated BlueControl module.

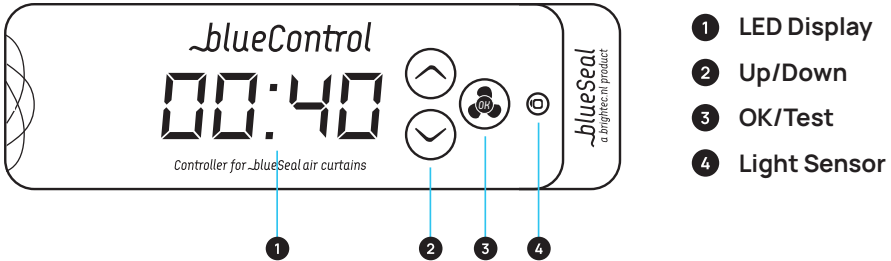
NOTICE

BlueControl (and optional BlueSmart module) are installed at the point of manufacture and as such, no installation instructions are provided.

Technical support

Should you have any further queries regarding the operation of the BlueControl module, please feel free to get in touch at info@brightec.nl or call Brightec on + 31 (0)20 210 1254 where a member of our team will be happy to help in any way possible.

5.1 OVERVIEW OF THE BLUECONTROL MODULE



5.2 USING THE BLUECONTROL MODULE

NOTICE

- BlueSeal air curtains need to switch on immediately when any doors are opened.
- In menu [04], only the light sensor and magnetic switch options are shown.

The following functions are available in the BlueControl module:

- **Timer function** – makes it possible to set a limit for the time that the air curtain is ON to prevent draining the vehicle battery
- **Time after function** - makes it possible to continue the air curtain for a set amount of time after the doors are closed

- **Battery guard** – switches the BlueSeal OFF when the battery voltage drops below a designated level (set by the user)
- LED display that alerts drivers of the time doors are open
- **Direct reading of the supplied input voltage** – the display shows the supplied power to verify that the device is connected properly and receiving appropriate voltage from battery
- Integrated light sensor to detect door openings
- External magnetic switch to detect door openings (optional, for use with BlueControl). 2 x magnetic switches can be connected to BlueControl.
- Infrared sensor to detect door openings (optional, for use with BlueControl). 2 x infrared sensors can be connected to BlueControl.

5.2.1 TESTING THE FUNCTIONS

1. Make sure that BlueControl is not in a menu.
2. Press **OK** one time to start the test function.
 - The air curtain is ON for five seconds.
 - The LED display shows the input voltage.
3. Press **OK** two times.
 - The LED display shows the temperature measurements from the sensors.

NOTICE


This is only available on BlueControl modules with temperature sensors.

5.2.2 ACCESSING AND EXITING THE MENU



There are two menus on BlueControl, [04] and [14]:

- Menu [04] has everything that you need to operate BlueControl in your vehicle.
- Menu [14] has all the options to support the BlueSmart module. The functions in menu [14] can be ignored if a BlueSmart module is not installed.

To access the menu:

1. Press the  and  buttons, at the same time, for four seconds.



The BlueControl module asks for a code.

2. Input [04] with the   buttons.

3. Press **OK** to confirm the code.

BlueControl is now in Menu [04]

To exit the menu:

1. Use the   buttons to navigate to [done] (done).

2. Press **OK** to select.

BlueControl will return you to the main menu.



5.2.3 SETTING THE SENSOR TYPE

The sensor type has to be set in BlueControl in order to switch the BlueSeal air curtain ON or OFF based on the correct signal.


When a sensor is triggered, the LED display shows "OFF" for 15 minutes to indicate a door was closed. Followed by one or two blinking red lights (depending on your version of the BlueControl).

To set the sensor type:

1. Access menu [04] (see 5.2.2 - Accessing and exiting the menu).

2. Use the   buttons to navigate to [5nr] (sensor).

3. Press **OK** to select.

4. Use the   buttons to select a sensor from the list.

a. For the integrated light sensor, select [LGH].

b. For the external magnetic switch, select [S-no].

This is for a 'normally closed' door switch.

NOTICE

The option to use an external 'normally open' door switch [S-no] is available in menu [14]. Menu [04] does not have this option.

- c. To switch off all sensors, select [noSS].

BlueControl does not use any input from the sensors and the BlueSeal air curtain switches ON when power is supplied.

NOTICE

Select [noSS] when no sensors are necessary, for example, when the air curtain is connected to the battery pack of a tail lift. The air curtain is on when power is supplied.

5. Press **OK** to confirm the selected sensor.

5.2.4 CALIBRATING THE INTEGRATED LIGHT SENSOR

The integrated light sensor performs well under different lighting scenarios. If you find that the integrated light sensor is not working as intended, it can be recalibrated.

To recalibrate the integrated light sensor:

1. Access menu [M4] (see 5.2.2 - Accessing and exiting the menu).
2. Use the ⏪ ⏩ **buttons** to navigate to [SnSr] (sensor).
3. Press **OK** to select.
4. Use the ⏪ ⏩ **buttons** to navigate to [LGHt] (integrated light sensor)
5. Press **OK** to select.
6. Make sure that all doors are closed (so that it is dark inside the vehicle).

NOTICE

During calibration, do not cover the sensor to simulate darkness.

7. Wait until the LED display shows [cLl b] and press **OK**.
The LED display shows [5LrE].

NOTICE

If you do not want to do the calibration process, press the ⏩ button to exit the calibration menu.

8. While the LED display shows [5LrE], press **OK** to start the calibration process.

NOTICE

The calibration process will take 20 seconds.

9. Wait until the calibration process is completed and the LED display shows [donE].
10. Press **OK** to complete the calibration process.

5.2.5 SETTING THE TIMER FUNCTION

NOTICE The default value of the timer function is 30 minutes.

The timer function [*EFF*] sets a limit for the time that the air curtain is ON to prevent draining the vehicle battery.

To limit the ON time of the BlueSeal air curtain:

1. Access menu [*04*] (see 5.2.2 - Accessing and exiting the menu).
2. Use the ⏪ ⏩ **buttons** to navigate to [*EFF*] (timer function).
3. Press **OK** to select.
4. Use the ⏪ ⏩ **buttons** to increase or decrease the time limit in minutes.
5. When the time limit is set, press **OK** to confirm.

NOTICE

- To disable the timer function, set the time limit to zero and the air curtain does not switch off automatically. This option is available from BlueControl software version 1.5.1 and higher.
- When the timer function has completed its set time, the LED display shows one or two red dots (depending on your version of BlueControl) to indicate the end of its operation.
- To start the air curtain again, trigger the sensor (for example, by opening/closing the doors).

5.2.6 SETTING THE TIME AFTER FUNCTION

NOTICE By default, the timer after function is switched off

The time after function [*AFT*] makes it possible to let the air curtain run for a set amount of minutes after the doors have been closed. The duration can be set by the user.

During this time, the LED display shows [*OFF*], but the air curtain will run for the set amount of minutes before automatically switching off.

This can be a particularly useful feature if the BlueSeal air curtain draws in inside air and you want to create an indoor airflow to homogenise the air temperature in the cargo space.

To set the time after period:

1. Access menu [04] (see 5.2.2 - Accessing and exiting the menu).
2. Use the ⏪ ⏩ **buttons** to navigate to [L A F T] (time after function).
3. Press **OK** to select.
4. Use the ⏪ ⏩ **buttons** to select 'on' or 'off'
5. Press **OK** to confirm.

Example 1: If the time after is set to [10], the air curtain continues to run for 10 minutes after the doors are closed. It will switch off automatically after 10 minutes.

Example 2: If the time after is set to [00] the air curtain will not switch off automatically and it continues to run.

6. If set to 'on', use the buttons to increase or decrease the time in minutes.
7. Press **OK** to confirm.

5.2.7 SETTING THE BATTERY GUARD

NOTICE By default the battery guard is switched off.

When the battery guard [b g r d] is active, it automatically switches the BlueSeal air curtain off when the input voltage drops below a level set by the user. This is to prevent the risk of battery drainage.

Switching the battery guard on or off:

1. Access menu [04] (see 5.2.2 - Accessing and exiting the menu).
2. Use the ⏪ ⏩ **buttons** to navigate to [b g r d] (battery guard).
3. Press **OK** to select.
4. Use the ⏪ ⏩ **buttons** to select 'on' or 'off'
5. Press **OK** to confirm.

Setting the voltage level on the battery guard:

1. Set the battery guard to 'on' (see 5.2.2 - *Switching the battery guard on or off*)
2. Use the ⤴ ⤵ **buttons** to set the voltage level for switching off the air curtain.
3. Press **OK** to confirm.

5.2.8 CHECKING THE SOFTWARE VERSION

1. Access menu [04] (see *Accessing and exiting the menu*).
2. Use the ⤴ ⤵ **buttons** to navigate to [VER 5] (software version).
3. Press **OK** to select.
The LED display shows the current software version that is installed (for example '1.41').
4. Press **OK** to exit and go back to the menu.

5.3 PIN-OUT DIAGRAM OF BLUECONTROL MODULE



NOTICE

If a magnetic switch is connected using a 2 wire connection, ensure that + is connected to VCC and - to SIG1.

6 MAINTENANCE & INSPECTIONS

Frequent inspection and maintenance is important for using the product in a safe and optimal way.

⚠ CAUTION

DO NOT USE CLEANING TISSUES OR CHEMICAL SUBSTANCES WHICH MAY DAMAGE THE SURFACE OF THE PRODUCT.







Task	Frequency
Make sure that the product is well fixed to the ceiling of the vehicle	Daily or as necessary
Check the product for visible damage and rust. Repairs must be done by a qualified and trained person	Every 6 months
Check if the fans are all functioning by looking at the air inlet with the system switched ON. The fans can be seen spinning	Every 6 months

7 TROUBLESHOOTING & REPAIR

WARNING

ALWAYS CONTACT YOUR DEALER WHEN THE PRODUCT IS NOT OPERATING CORRECTLY. DO NOT ATTEMPT TO OPEN, MODIFY OR REPAIR THE PRODUCT YOURSELF. REPAIRS MUST BE DONE BY A QUALIFIED AND TRAINED PERSON. YOU CAN FIND THE SPARE PART LIST IN APPENDIX I.

ONLY USE ORIGINAL SPARE PARTS.

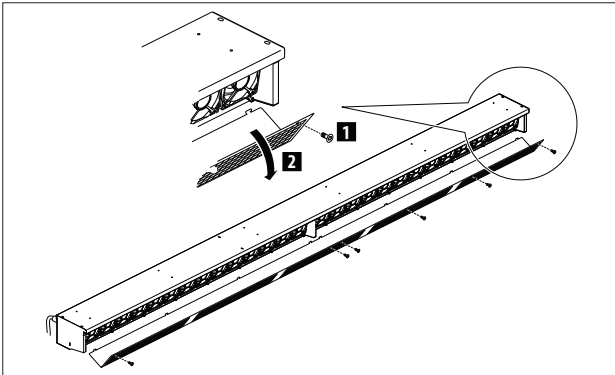
Error	Cause	Solution
Air curtain is not working (none of the fans are working)	No power supply	
	One or more components used to connect the air curtain malfunctions	<ul style="list-style-type: none">  Check if vehicle battery is working  Check the magnetic switch and (time) relay for defects  If the system is connected to a control box of a tail lift: check if the control box is malfunctioning, if fuses are blown etc.  If none of the above solutions work, contact your BlueSeal sales person
One or more fans are not working	Fans are broken	<p>Replace fan. Fans can be ordered at Brightec (spares@brightec.nl). Please refer in the email to the serial number on the label on the air curtain (next to the air outlet).</p> <p>See 7.1 How to replace a fan</p>
	Fans are temporarily not working because of frozen water droplets	<ul style="list-style-type: none">  Check if the evaporator correctly switches off during door openings  In a freezing situation, make sure your evaporator is not blowing air directly onto the air inlet of the air curtain from a close distance (< 5 ft). If it does, deflect the air flow from the evaporator.

7.1 HOW TO REPLACE A FAN

⚠ WARNING

MAKE SURE YOU DISCONNECT THE AIR CURTAIN FROM THE POWER SUPPLY BEFORE REPLACING A FAN.

1. Loosen the Torx screws of the fan lid **1**
2. Remove the fan lid **2**



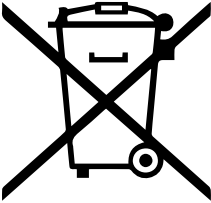
3. Remove the Torx screws of the broken fan.
4. Cut the cables of the broken fan next to the red cable clamp.
6. Attach the cables of the replacement fan to the wiring loom with the cable clamps that came with the replacement fan (red to orange, black to grey).
7. Place the replacement fan in the fan holder and attach it with the two Torx screws (diagonally)
8. Install the fan lid.
9. Attach the fan lid with the Torx screws.

NOTICE

BlueSeal Original is shown in the above illustration. To replace a fan in BlueSeal Compact, please follow the above procedure.

In certain BlueSeal Compact models, replacement of fans is less straightforward. If you are unsure if this applies to your model, please contact Brightec or your dealership, quoting the serial number on the label of your air curtain.

8 DISPOSAL



This symbol on the product, the accessories or packaging indicates that this device must not be treated as unsorted municipal waste, but must be collected separately!

Dispose of the device via a collection point for the recycling of waste electrical and electronic equipment if you live within the EU and in other European countries that operate separate collection systems for waste electrical

and electronic equipment. By disposing of the device in the proper manner, you help to avoid possible hazards in the environment and to public health that could otherwise be caused by improper treatment of waste equipment. The recycling of materials contributes to the conservation of natural resources. Therefore do not dispose of your old electrical and electronic equipment with unsorted municipal waste.

The packaging is made of environmentally friendly materials, which may be disposed of through your local recycling facilities. By disposing of the packaging and packaging waste in the proper manner, you help to avoid possible hazards in the environment and to public health. The symbol on the packaging indicates that the packaging is made of PAP.

9 COMPLIANCE, WARRANTY AND LIABILITY

9.1 COMPLIANCE STATEMENT AND ADVISORY INSTRUCTIONS

Compliance statement (FCC - part 15.19)

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING

FCC Part 15.21 - Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Information to the User (FCC Part 15.105 (b))

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

9.2 WARRANTY AND LIABILITY

FULL TERMS AND CONDITIONS CAN BE FOUND ON THE BRIGHTEC WEBSITE AT [HTTPS://BRIGHTEC.NL/TERMS-AND-CONDITIONS/](https://brightec.nl/terms-and-conditions/)

THE TERMS BELOW MAY BE OVERRULED BY AN AGREEMENT IN PLACE WITH YOUR BLUESEAL AIR CURTAIN DISTRIBUTOR. PLEASE GET IN TOUCH WITH THE SELLING PARTY FOR THEIR APPLICABLE TERMS.

9.2.1 WARRANTY

9.2.1.1 BRIGHTEC guarantees that the delivered goods or parts will be free of defects that are the direct result of faults in materials, manufacture and/or construction for a period of 12 months from delivery. Other communications by or on behalf of BRIGHTEC with regard to the quality, composition, application possibilities, characteristics in the broadest sense of the word, etc. of the delivered Goods and other communications are only qualified as guarantees if they were expressly confirmed by BRIGHTEC in writing in the form of a guarantee.

9.2.1.2 In derogation from the provisions of article 9.2.2.1 the guarantee for goods or parts of goods that BRIGHTEC has purchased from third parties, or has had developed and/or produced by third parties, is limited to the guarantee that BRIGHTEC acquires from these third parties.

9.2.1.3 Reliance on the warranty will only be dealt with by BRIGHTEC if this is submitted in writing to BRIGHTEC within 14 days from the discovery of the defect, or within 14 days after the defect could reasonably have been discovered.

9.2.1.4 All guarantee claims and claims on account of a failure to comply with the Agreement vis-à-vis BRIGHTEC will lapse if:

- the Other Party, without prior permission from BRIGHTEC, personally makes changes or carries out repairs of the delivered goods or has had third parties make or carry out these;
- there is incompetent or improper use;
- the installation or user manual is not strictly followed;
- during the installation parts were used other than the original (supplied extra by) BRIGHTEC parts;
- the defect is the result of causes other than faults in the materials, manufacture and/or construction;
- the Other Party fails in the fulfilment of obligations ensuing from the agreement;

- constructions, materials or working methods prescribed by the Other Party have been applied;
- maintenance has been incorrectly, insufficiently or not at all carried out;
- the defect is the result of usual wear and tear.

9.2.1.5 Minor deviations in measurement, colour, weight or number will not form a ground for reliance on the guarantee and neither form a shortcoming on the part of BRIGHTEC.

9.2.1.6 The costs of repairs of the delivered goods that the Other Party has carried out personally or has had carried out by third parties without the prior permission from BRIGHTEC will never be at the expense of BRIGHTEC.

9.2.1.7 If a reliance on a guarantee is declared to be justified, whether or not by BRIGHTEC, then BRIGHTEC can, at its sole discretion, improve / remedy the relevant part of the delivery or again deliver to the Other Party or send a credit note to the Other Party for the relevant part of the delivery, which is subsequently deemed to have been cancelled. If a complaint is deemed to be justified then the Other Party is not entitled to any form of compensation (for damages) other than indicated in the aforementioned sentence and is not entitled to cancel or terminate the Agreement. BRIGHTEC reserves the right to charge additional costs to the Other Party, e.g. travelling, subsistence and wage expenses and the costs of despatch and assembly (disassembly).

9.2.1.8 If it is established that a complaint is unfounded, all costs that BRIGHTEC must incur due to this will be at the expense of the other party.

9.2.1.9 If BRIGHTEC, for the fulfilment of its guarantee obligations, again delivers goods or parts thereof, the goods or parts to be replaced will become the property of BRIGHTEC at the time of the replacement.

9.2.1.10 Return consignments will be exclusively accepted after prior permission in writing from BRIGHTEC has been obtained. Return consignments will take place at the expense and risk of the Other Party.

9.2.2 LIABILITY

9.2.2.1 If it is established in court or otherwise that BRIGHTEC is liable vis-à-vis the Other Party for damages that are incurred in connection with the Agreement, or on account of an unlawful act or on any other account, then the said liability, including a potential payment obligation on the basis of section 230 and/or section 271 of Book 6 of the Dutch Civil Code, shall always in its totality be limited to the provisions set forth in this article:

- BRIGHTEC shall never be liable for damages that occur on account of the fact that BRIGHTEC departed from incorrect data / files supplied by the Other Party;
- BRIGHTEC shall never be liable for the lost profit, lost income, lost turnover, lost savings, losses due to business and other interruptions incurred by the Other Party;

c. the liability of BRIGHTEC, including a potential payment obligation pursuant to section 230 and/or section 271 of Book 6 of the Dutch Civil Code, vis-à-vis the Other Party shall always be limited to the amount that is, as the occasion arises, paid out pursuant to the liability insurance of BRIGHTEC;

d. if the liability insurance of BRIGHTEC does – for any reason whatsoever – not proceed with payment then it is noted that the liability of BRIGHTEC, including a potential payment obligation pursuant to section 230 and/or section 271 of Book 6 of the Dutch Civil Code, is limited to:

- the net value of the invoice regarding the Goods to which the harmful event is related or, if multiple invoices are related to the harmful event, the net value of the last of this series of invoices sent to the Other Party by BRIGHTEC prior to the moment that the harmful event took place;

- or, if the harmful event is not based on a delivery of Goods or an invoice was not sent for it, the net value of the last invoice sent to the Other Party by BRIGHTEC prior to the moment that the harmful event took place;

e. if the liability insurance of BRIGHTEC does – for any reason whatsoever – not proceed with payment then it is noted that the total liability of BRIGHTEC, including a potential payment obligation pursuant to section 230 and/or section 271 of Book 6 of the Dutch Civil Code, vis-à-vis the Other Party in connection with its imputable failing or late and/or improper performance or on any other account – regardless of the number of harmful events – shall in no instance exceed the net value of the last invoice sent to the Other Party by BRIGHTEC prior to the moment that the harmful event took place, on the condition that the total liability of BRIGHTEC shall never exceed a maximum of € 20,000.00.

These limitations are only not applicable in case of intent or intentional recklessness of BRIGHTEC and/or of managers of BRIGHTEC.

9.2.2.2 All subordinates of BRIGHTEC can on an equal basis as BRIGHTEC rely on the aforementioned provisions vis-à-vis the Other Party and, where required, also vis-à-vis third parties.

Other Party has become familiar with the harmful event or could reasonably have been familiar with the same.

9.2.2.3 The Other Party fully indemnifies and compensates BRIGHTEC and its affiliated companies against and for any and all claims of third parties in connection with damages, losses, costs and expenses of the said third parties that derive from or are related to a shortcoming in the implementation of an Agreement by the Other Party or that other third parties incur or make as a result of a filed claim, instituted proceedings or the threat thereof, also including but expressly not limited to claims as intended in section 185 in conjunction with section 190 of Book 6 of the Dutch Civil Code as well as the amount of the deductible mentioned in the said sections as well as claims on account of infringement of

an intellectual property right in connection with the delivery.

9.2.2.4 If BRIGHTEC is on the said account addressed by third parties then the Other Party is held to assist BRIGHTEC both in and out of court and to forthwith do everything that can in that case be expected of the same.

9.2.3 APPLICABLE LAW, DISPUTES

9.2.3.1 Dutch law exclusively applies to the Agreement and all agreements ensuing therefrom. The United Nations Convention on Contracts for the International sale of Goods (the "Vienna Sales Convention 1980") does not apply.

9.2.3.2 All disputes (including disputes that are only considered to be a dispute as such by one of the parties) that might arise as a result of the Agreement, or agreements ensuing therefrom between parties, will be submitted to the court with competent jurisdiction in the Amsterdam district.

Article 21 Concluding Provisions

9.2.3.3 If and insofar as the agreement consists of the execution of installation and/or mounting work by BRIGHTEC, the General Delivery Conditions for Mechanical and Electrical Installers (Dutch 'ALIB' '92) will exclusively apply to these General Terms and Conditions.

9.2.3.4 The declaration of voidness of one or more provisions of the Agreement, including these General Terms and Conditions, will not affect the binding nature of the other provisions contained in the present agreement. The agreement will be interpreted as if the non-binding provision had been omitted.

9.2.3.5 These General Terms and Conditions were originally drawn up in the Dutch language. In the event of uncertainty or difference of interpretation and/or explanation of a translated version of these General Terms and Conditions, the Dutch text will at all times be decisive.

9.2.3.6 These General Delivery Terms and Conditions were filed after adoption with the Chamber of Commerce in Amsterdam.

Appendix I - Spare Parts

Name	Specifications	Part no.
Fan	24 V fan	23024
	12 V fan	23012



blueSeal[®]

air curtains by *brightec*

TK 57391-11-PL (02/24)