



# Silent

OUR MOST SILENT CLIMATE SEPARATION

# Create the optimum indoor climate and save energy

## AIR CURTAINS FOR DOORS AND ENTRANCES

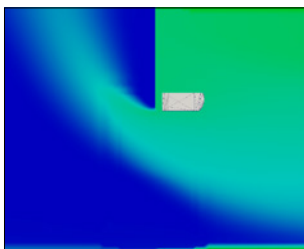
An open door is an inviting entrance for customers and visitors and retailers know this better than anyone. However, an open door also lets in dust, moisture, smells, wind and insects, and you end up with an unnecessarily high energy bill on the door mat. You can solve this problem easily by installing an NHS air curtain. Do you have a specific question about an air curtain in your building? Would you like to talk to an experienced specialist? Please contact us. We will deal with your questions professionally and quickly.

### What is an air curtain?

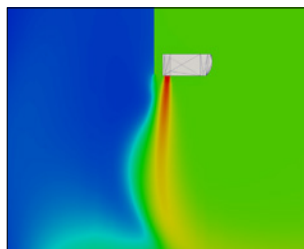
An air curtain is a controlled airflow that reduces the natural air exchange between rooms. An air curtain is situated in a door opening or entrance and keeps rooms with different climates separated when the door is open. For example a cold store of a company or the indoor and outdoor climate of a supermarket, warehouse, bank, hospital or office building.

### Why have an air curtain?

The most important objective of an air curtain is to reduce air exchange to create a controlled, healthy and comfortable climate. In addition, you can use a heating or cooling element to heat or cool air locally.



A large amount of heat is often lost near doors without an air curtain.



The airflow of an air curtain works like an invisible door that keeps the climate of two different rooms separate from each other.

### How does an air curtain work?

A heated airflow stops the colder air from outside. The airflow also heats the very small amount of cold air that manages to penetrate despite the airflow. This produces a comfortable indoor climate and a thermally neutral climate separation without draught. When it is warmer outside than inside? In those situations it works the other way around - with an unheated or cooled airflow, the air curtain makes sure the warm air stays out.

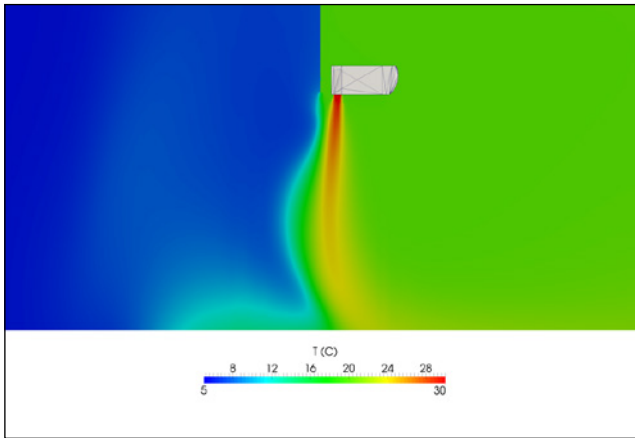
#### Benefits:

- Minimum energy loss and consumption
- 70% to 80% energy savings compared to open door
- Optimum thermal comfort for a pleasant climate for shopping or other purposes
- Improved air quality for visitors and employees
- Healthier environment and less sickness absence because of protection against draught
- Reduced exchange of dust, moisture, smells and fewer insects inside the building
- Warm, refreshing or cooling airflow

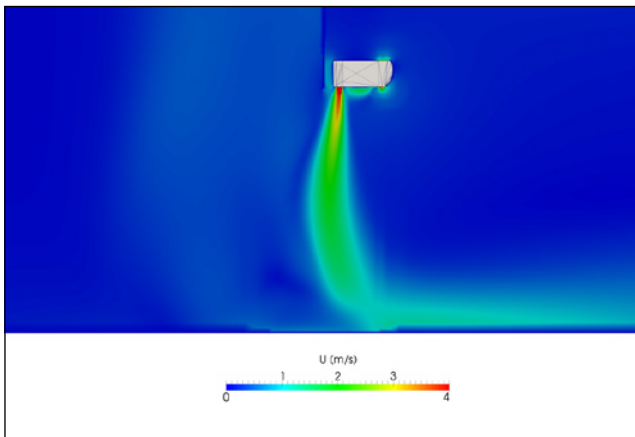
### About NHS Air Curtains

NHS Air Curtains produces and supplies a range of low-maintenance and energy-saving air curtains. With customised work from our own production workshop and a wide range of standard products, we create a specific solution for any situation. You can count on short lead times and rapid delivery, often immediately from stock. If you need to talk to us, your dedicated contact person is almost always available. We're pleased to assist!

# An image of an air curtain



A thermographic image proves the clear separation of warm and cold air.



A thermographic image shows the progress of the air speed in metres per second.

## Why is the right discharge temperature important?

The right discharge temperature produces an efficient and energy-saving climate separation. If the discharge temperature is too high ( $>40^{\circ}\text{C}$ ), the airflow struggles to reach floor level and there is still air exchange. Furthermore, an airflow that is too warm also heats up the entrance too much and that disturbs the indoor climate and wastes energy. A discharge temperature that is too low ( $<28^{\circ}\text{C}$ ) also disrupts effective operation. Together with an insufficiently strong airflow, it produces a temperature at floor level that is too low, causing a draught.

## Extra tips:

- Prevent a discharge temperature that is too high with a discharge-air temperature control. NHS Air Curtains can supply it as an accessory or incorporate it into the air curtain.
- An air curtain works in the best possible way when the effective part of an air curtain, the airflow, has at least the width of the door opening and can be felt right down to floor level. If the airflow does not reach the floor, cold air can enter, whilst warm air escapes outside and that creates a draught.
- Install air curtains flush with the door opening to prevent air exchange and energy loss through the sides.
- Install air curtains exactly above the door opening.  
The shorter the distance to the floor, the less energy required.
- Be sure that the airflow is not interrupted by obstacles, such as an automatic door or a roller door.
- Adjust the discharge angle of the air curtain with the settings of the discharge fin. For example when you need to heat during winter, you tilt the discharge fin slightly outwards. When you cool in summer, you tilt it slightly inwards.
- For optimum low-energy consumption, opt for a semi-automatic or fully automatic control. This uses a few parameters to adjust the operation of an air curtain to changing conditions. For example, consider adjusting the size of the airflow during cold weather or putting the air curtain on stand-by or switching it off when the door is closed.

# Silent

## OUR MOST SILENT CLIMATE SEPARATION

It is so quiet, you forget it's there until you look at your energy bill. That is where an NHS Silent air curtain makes a world of difference. With this silent air curtain you can have your door invitingly open in any season without losing energy. In the meantime your employees and visitors enjoy a comfortable indoor climate and you keep insects, dust, smoke and dirt out.

### Silent air curtains

The name says it all. Silent air curtains are our most silent models. A special impeller means that the advanced EC fans perform in the best possible way at low revs. The entire inside of the unit and the housing of the fans are also coated with a top-quality noise-absorbing foam. This produces a super silent climate separation with a long lifespan and ultra-low energy consumption. Ideal for rooms where peace and quiet are important, such as work and study areas, a lobby or a library.

### Up to 30% in energy savings

The discharge opening is equipped with a special pressure chamber jet system that produces up to 30% energy savings compared to conventional fin discharge systems. This modern system also produces an even, stable airflow. The discharge opening has continuously variable settings from 30 degrees inwards to 30 degrees outwards.

### Ultimate convenience of use

When you purchase an air curtain from our Silent series, you benefit from ultimate convenience of use. The components, such as the front panel, the heating battery\* and the fans, have been developed so that you as user don't have to worry about them. Labour-intensive weekly or monthly maintenance is not necessary.

### Sleek, minimalist design

Our air curtains have a sleek and minimalist design and they can be mounted in plain view. The most common colour is traffic white (RAL9016), but if you prefer another colour, please let us know. The air intake is hidden behind the beautifully designed front panel that - if fitted the other way around - takes in air from below. That makes it possible to fit an air curtain flush against the ceiling. Besides Silent air curtains that are fitted in plain view, we also have models that you can recess or build into a suspended ceiling. You can find those models on page 6 of this brochure.

### For doors in every width and up to 3 metres tall

You can create an effective air curtain for any door width. The four length sizes are easy to combine. Generally we choose horizontal installation, but there are situations where a vertical air curtain is better solution, for really tall doors for example.

### Installation in a flash

Both the horizontal and vertical Silent air curtains are easy to mount. Horizontal air curtains are mounted to the wall with M8 stud fixings or with brackets that can be ordered separately. You can fix the vertical air curtains to the floor or on top of each other with the supplied consoles. In connection with the risk of tilting it is important to anchor the top air curtain to the wall or the ceiling.

### High quality and a five-year guarantee

All NHS air curtains comply with the highest quality standards. When you purchase an air curtain you receive a five-year guarantee.

\* Our DX air curtains have a filter that is easy to clean.





## Heating methods

### Hot water

Air curtains that are heated by hot water have a heat exchanger that is connected to the central-heating network. We equip air curtains with a heating battery as standard, which is suitable for hot water of 60/40°C (W). Air curtains are also available with a heating battery for low temperatures of 45/35°C (LW). For optimum energy savings it is always important to adjust your air curtains properly with your central-heating boiler, city or district heating, heat pump or other sources of sustainable energy. The hot-water air curtains are secured against loosening by metal plates around the connections.

### Direct expansion

Air curtains for direct expansion (DX) are suitable for the refrigerant R410A. These air curtains operate as an evaporator with a stand-alone heat pump or integrated into a VRF climate-control system.

### Ambient

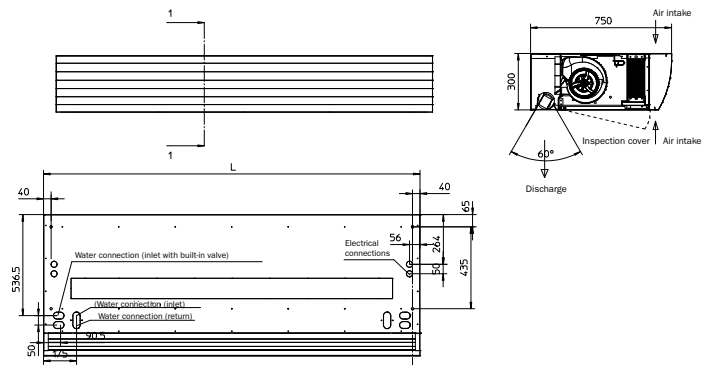
Our air curtains that screen off cold areas such as cold stores do not have a heating battery (A).



# Models

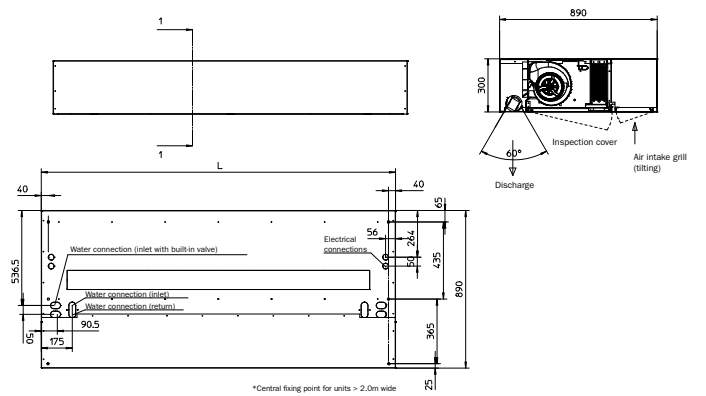
## Silent

Wall or ceiling mounted in plain view with air intake top and bottom.



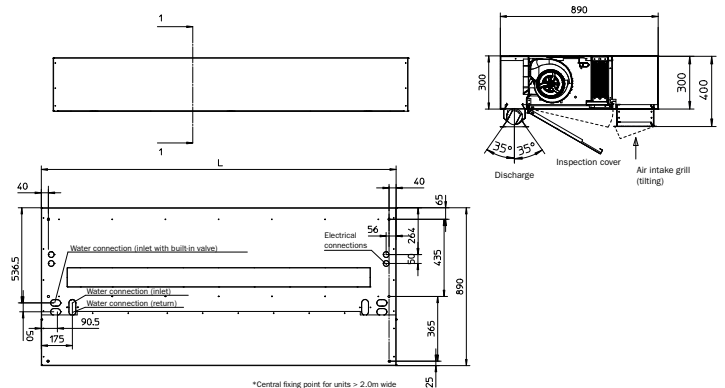
## Silent GVP

For mounting in plain sight or for recessing into a suspended ceiling (GVP), with visible bottom and air intake from below.



## Silent BVP

Built-in above the suspended ceiling (BVP), with just the air intake and discharge opening visible and with air intake from below.



# Control

## Manual operation

With manual operation you select the speed of the airflow. However, there is a chance that your air curtain does not operate properly in line with the conditions at that time. The air that you have heated or cooled may still flow away through doors and entrances.

## Standard functions:

- Five settings for the airflow speed.
- Three settings for the heating capacity of an electric air curtain.
- Summer-winter function (230 V) with control by a magnetic valve or pump.
- You can use one control to control several air curtains. Convenient for large and wide entrances where several air curtains are required.
- Partial or full integration into a building-management system or retail scheme. For example, switch the air curtain on or off through the building-management system or operate it with a 0-10 V signal.



## Automatic or semi-automatic

Do you want to be sure of the correct settings? You prefer not to worry about your air curtain?

NHS Air Curtains has developed an innovative control - automatic or semi-automatic depending on the accessories you choose. It is a complete control system, suitable for all types of air curtains - from hot water and electric to hybrid and unheated. Depending on your choice of air curtain and accessories, different additional functions are available.



## Additional functions (accessories):

- To be used with an outside temperature sensor. On the basis of the outside temperature, the control automatically determines the correct setting. An air curtain is only used when it is really necessary.
- To be connected to a door contact or sensor, which ensures that an air curtain only works when the door is opened or when movement is detected. After an adjustable period of time, it is switched off automatically.
- To be used with an integrated or external room thermostat. A water-heated air curtain requires a magnetic valve for this purpose. With automatic control of the heat supply and the room temperature, ensuring the room temperature remains constant.
- Control with fully integrated control of heat pump and air curtain, in function of the chosen heat pump. This can be in our control or in the control of the heat-pump manufacturer.
- Frost-protection thermostat in case of partial outside air intake to prevent the heating battery from freezing.
- With a timer, the air curtain switches on or off automatically.



# Technical data

## Hot water 60/40 °C (W)

Type	Effective airflow	Heating capacity 60/40 °C	Water-side resistance 60/40 °C	Amount of water	Discharge air temperature	Water connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>1</sup>	kPa	m <sup>3</sup> /h	°C	"	Volt	kW	A	dB(A) <sup>2</sup>	kg
3-100 W	1.950	8,7	2,9	0,4	33,3	3/4	230	0,33	2,60	34-53	66
3-150 W	2.950	14,3	5,8	0,6	34,5	3/4	230	0,50	3,90	35-54	80
3-200 W	4.900	22,9	11,2	1,0	33,9	3/4	230	0,83	6,50	36-55	107
3-250 W	5.850	28,4	13,9	1,2	34,5	3/4	230	0,99	7,80	37-56	148

## Hot water 45/35 °C (LW)

Type	Effective airflow	Heating capacity 45/35 °C	Water-side resistance 45/35 °C	Amount of water	Discharge air temperature	Water connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>1</sup>	kPa	m <sup>3</sup> /h	°C	"	Volt	kW	A	dB(A) <sup>2</sup>	kg
3-100 LW	1.950	8,9	5,8	0,8	33,6	1	230	0,33	2,60	34-53	70
3-150 LW	2.950	14,2	9,4	1,2	34,4	1	230	0,50	3,90	35-54	86
3-200 LW	4.900	22,8	16,3	2,0	33,9	1	230	0,83	6,50	36-55	115
3-250 LW	5.850	28,0	18,6	2,4	34,3	1	230	0,99	7,80	37-56	158

## Direct expansion (R)/only heating

Type	Effective airflow	Heating capacity	Pressure loss	Discharge air temperature	Refrigerant connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>3</sup>	bar	°C	mm <sup>4</sup>	Volt	kW	A	dB(A) <sup>2</sup>	kg
3-100 R	1.950	10,0	0,069	35,3	12/22	230	0,33	2,60	34-53	66
3-150 R	2.950	16,1	0,117	36,3	12/22	230	0,50	3,90	35-54	80
3-200 R	4.900	25,8	0,181	35,7	12/22	230	0,83	6,50	36-55	107
3-250 R	5.850	31,8	0,197	36,2	12/22	230	0,99	7,80	37-56	148

<sup>1</sup> Air intake temperature of 20°C.

<sup>2</sup> Measured at 3m from the side.

<sup>3</sup> Refrigerant R410A, compressed gas temperature 65°C, condensation temperature 48°C, SC 5K.

<sup>4</sup> Upon request, the refrigerant connections are adjusted to the external unit that is to be used.

<sup>5</sup> Based on airflow setting 2. With an air intake temperature of 27 °C, evaporation temperature of 6°C, compressed gas temperature of 48 °C, SH 5K, SC 15 K.

Subject to technical changes.



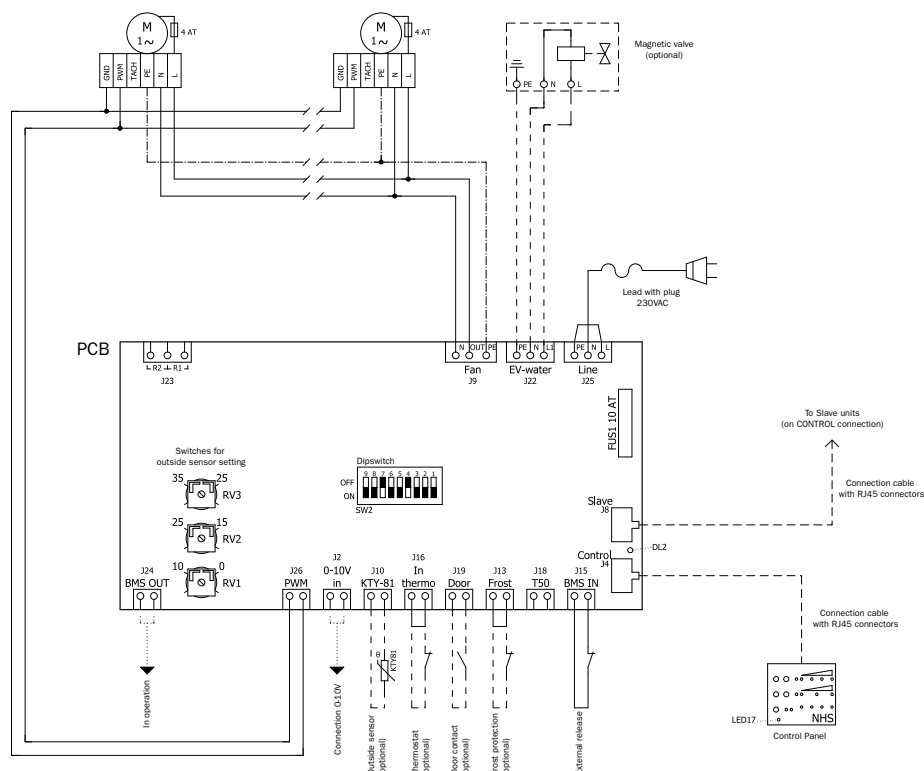
## Direct expansion (RC)/heating and cooling

Type	Effective airflow	Heating capacity	Pressure loss	Discharge air temperature	Cooling capacity	Pressure loss	Discharge air temperature	Refrigerant connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>3</sup>	bar	°C	kW <sup>5</sup>	bar	°C	mm <sup>4</sup>	Volt	kW	A	dB(A) <sup>2</sup>	kg
3-100 RC	1.950	10,0	0,069	35,3	4,1	0,029	13,8	12/22	230	0,33	2,60	34-53	66
3-150 RC	2.950	16,1	0,117	36,3	6,9	0,051	13,2	12/22	230	0,50	3,90	35-54	80
3-200 RC	4.900	25,8	0,181	35,7	11,1	0,077	13,4	12/22	230	0,83	6,50	36-55	107
3-250 RC	5.850	31,8	0,197	36,2	13,8	0,046	13,1	12/22	230	0,99	7,80	37-56	148

## Ambient (A)

Type	Effective airflow	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	Volt	kW	A	dB(A) <sup>2</sup>	kg
3-100 A	1.950	230	0,33	2,60	34-53	56
3-150 A	2.950	230	0,50	3,90	35-54	65
3-200 A	4.900	230	0,83	6,50	36-55	87
3-250 A	5.850	230	0,99	7,80	37-56	123

# Wiring diagram



# Accessories

## Control valves, shut-off valves and magnetic valves



### Thermostatic control valve type CTR with TWHV DN20, built-in

Thermostatic control valve (corner valve) CTR with thermostatic head. To control a constant discharge temperature, fully built-in. Special control valve for maximum flow kvs 5.1.



### Thermo-electric shut-off valve type MV with TWHV DN20, built-in

230 V, current-free closed, fully built-in. For the water cut-off via summer-winter function or to control the water-flow amounts for building-side control. Special control valve for maximum flow DN 20 kvs 5.1.



### Thermostatic control valve type CTR with TWV DN20/25

Thermostatic control valve (two-way valve) CTR with thermostatic head. To control a constant discharge temperature, included separately. Special control valve for maximum flow. Capillary tube length 2 m, DN 20 kvs 5.1, DN 25 kvs 5.1.



### Thermostatic control valve type CTR with DWV DN20/25/32

Thermostatic control valve (three-way valve) CTR with thermostatic head. To control a constant discharge temperature, included separately. Special control valve for maximum flow. Capillary tube length 2 m, DN 20 kvs 3.0, DN 25 kvs 6.27, DN 32 kvs 6.44.



### Thermo-electric shut-off valve type MV with TWV DN20/25

230 V, current-free closed, included separately. For the water cut-off via summer-winter switch or to control the water-flow amounts for building-side control. Special control valve for maximum flow. DN 20 kvs 5.1, DN 25 kvs 5.1.

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## Door contacts



### Door contact MDC

Magnetic switches NO & NC. Screw fitting or fixed with double-sided tape. Dimensions 64 x 15 x 13.8 mm. Temperature range: -20 to 65 °C. Housing ABS, white.



### Door contact RDC

Protection class IP67, end switch with roller lever. Dimensions 31 x 96mm. Temperature range: -25 to 70 °C. Housing cube: plastic.

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## Remote control



### Infra-red remote control

Infra-red remote control for use with the control panel. For the remote control of the air volume and the summer-winter function of an air curtain. Only possible for warm-water air curtains.

## Thermostats



### Outside sensor BS

Sensor range from -55 to 150 °C. Protection class IP65. Housing polyamide, colour white.



### Electromechanical room thermostat RT

Protection class IP30, setting range 5 – 30 °C with bimetal, pure white (comparable RAL 9010). Dimensions: 78.3 x 83.4 x 25.5 mm



### Frost-protection thermostat VBT, built-in

To protect hot-water heating batteries, with one temperature sensor with a length of 6 metres with a potential-free change-over contact, settings from -10 °C to 12 °C. Protection class IP40.

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## Cables

### VBK05

Protected connection cable 5 m with RJ45 connectors to connect the controller to the PCB or to connect a master and a slave air curtain.



### VBK50

Protected connection cable 50 m with RJ45 connectors to connect the controller to the PCB or to connect a master and a slave air curtain.

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## Mountings



### Ceiling mounting PB

Comprising:

- Threaded rod: steel, wire gauge M8, electrogalvanised (1 m).
  - Solid vibration attenuation suspension: steel, wire gauge M8, electrogalvanised, attenuation 20 dB.
- Four required for units of up to 2 m and six for units of up to 3 m.



### Wall mounting MB

Bracket, length 480 mm, profile 38/40, galvanised.

Two required for units of up to 2 m and three for units of up to 3 m.



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## Operating switch



### Operating switch WKS-3

3-pin operating switch in surface mounting, included separately. For building-side installation in the supply pipe to the unit.



**New Heating Solutions BV**

De Dieze 24G, 5684 PT Best, The Netherlands, **T** +31 (0)499 870 027, **E** [info@nhs-luchtgordijnen.nl](mailto:info@nhs-luchtgordijnen.nl)

[www.nhs-luchtgordijnen.nl](http://www.nhs-luchtgordijnen.nl)