



EN Technical documentation

Check us on



DEFENDER 100-200 WHN
DEFENDER 100-200 EHN

DEFENDER 100-200 WHN

DEFENDER 100-200 EHN

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1. INTRODUCTION

1.1. PRECAUTIONS, REQUIREMENTS, RECOMMENDATIONS

Detailed analysis of this documentation, as well as assembly and use of equipment, according to the descriptions contained therein, and following all safety requirements, is the basis for the correct and safe operation of the device. Any other use that contradicts this instruction may cause accidents with serious consequences. Unauthorised personnel should have limited access to the device, while the personnel should be properly trained. The term operational personnel refers to people, who, as the result of completed training, own experience and knowledge of important standards, documentation and provisions, concerning safety and working conditions, have been authorised to carry out necessary work and are able to recognise potential hazards and avoid them. This technical documentation must be delivered together with the device. The documentation contains information concerning all possible configurations of air curtains. Examples of air curtain assembly and installation, as well as activation, use, repair and maintenance. Provided that the device is operated according to the intended use, this documentation contains a sufficient number of instructions, required by the qualified personnel. The documentation should be placed near the device and be readily available to the service team. The manufacturer reserves the right to introduce changes to the instruction, as well as changes to the device that affect its operation, without prior notice. VTS POLSKA Sp. z o.o. shall bear no responsibility for on-going maintenance, inspections, programming of equipment and damage, caused by standstills of equipment related to the waiting for warranty services, all and any damage related to the Client's property, other than the device in question, as well as malfunctions that result from incorrect installation or improper use of the device.

DO NOT COVER

WARNING: To avoid overheating - do not cover the device!

1.2. TRANSPORT

Prior to the installing and taking the device out of the cardboard box, it is required to check whether the cardboard box has not been damaged in any way and/or the adhesive tape (installed at the company) has not been broken off or cut. It is recommended to check whether the device's casing has not been damaged in transport. Should any of the above situation occur, please contact us through telephone or e-mail: Tel. 0 801 080 073, email: vts.pl@vtsgroup.com, fax: (+48) 12 296 50 75. The device should be transported by two people. Use appropriate tools, when transporting the device, so as to avoid the damaging of goods and potential hazard to health.

1.3. INITIAL STEPS TAKEN BEFORE THE INSTALLATION

Record the serial number of the device in the warranty card, prior to the commencement of the installation process. It is required to properly fill-in the warranty card, after the completion of the assembly. Prior to the commencing of any installation or maintenance work, it is required to disconnect power supply and protect it against unintentional activation.

2. STRUCTURE, INTENDED USE, PRINCIPLE OF OPERATION

2.1. INTENDED USE

For the convenience of users as well as different types of installations in commercial and industrial facilities we have designed an air curtain in two different options and three sizes:

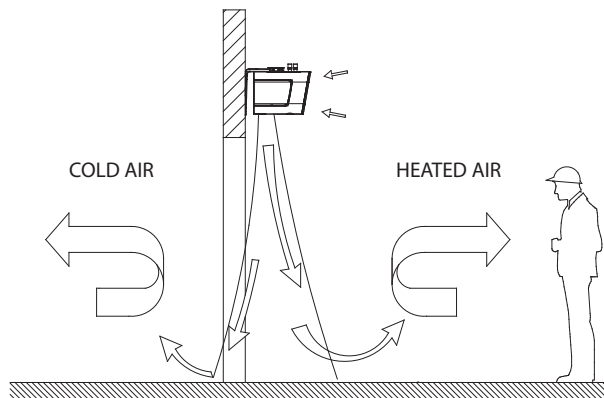
- a DEFENDER 100 WHN curtain 1.0m wide with a water heater (8-11 kW, 1880 m³/h)
- a DEFENDER 100 EHN curtain 1.0m wide with electric heaters (6 kW, 2150 m³/h)
- a DEFENDER 150 WHN curtain 1.5m wide with a water heater (13- 19,5 kW, 3570 m³/h)
- a DEFENDER 150 EHN curtain 1.5m wide with electric heaters (12 kW, 3500 m³/h)
- a DEFENDER 200 WHN curtain 2.0m wide with a water heater (19- 28 kW, 4890 m³/h)
- a DEFENDER 200 EHN curtain 2.0m wide with electric heaters (13,5 kW, 5000 m³/h)

The use of the DEFENDER 100-200 air curtain enables the leaving of the room door open, regardless of weather conditions, thus providing a protective barrier. The curtain also enables a simultaneous keeping of the required heating comfort inside the room/facility. The modern design of the DEFENDER 100-200 air curtain is a result of its wide range of application. The places in which it is possible to install the device include: malls, office buildings, supermarkets, cinema complexes, as well as shops, store-rooms, manufacturing facilities or warehouse rooms. Please notice that the use of an air curtain not only provides a protective barrier, but also it is an additional heat source in the room. **APPLICATION:** warehouse rooms, warehouses, sports facilities, supermarkets, religious buildings, hotels, clinics, pharmacies, hospitals, office buildings, manufacturing facilities. **PRIMARY ADVANTAGES:** protection of climatic conditions in the room, reduction of heating/cooling costs, universal size, ability to work both in vertical and horizontal position; simple, quick and intuitive assembly.

2.2. PRINCIPLE OF OPERATION

DEFENDER 100-200 WHN - heating medium, for example hot heating water, returns heat through a heat exchanger with a wide heat-exchange surface, thus providing high heating output (8-28 kW). A transverse fan (1120-5000 m³/h) sucks in the air in the room, and pumps it through the heat exchanger, back into the room. The jet of warm air is directed downstream at high velocity, thus providing an air barrier.

DEFENDER 100-200 EHN - electric heaters (2000 and 1500W each) heat up, as a result of the flowing of electric current, and return the heat to the air; the air is blown off through the fan, which sucks in the air in the room. A jet of warm air is directed downstream at high velocity, thus providing an air barrier.



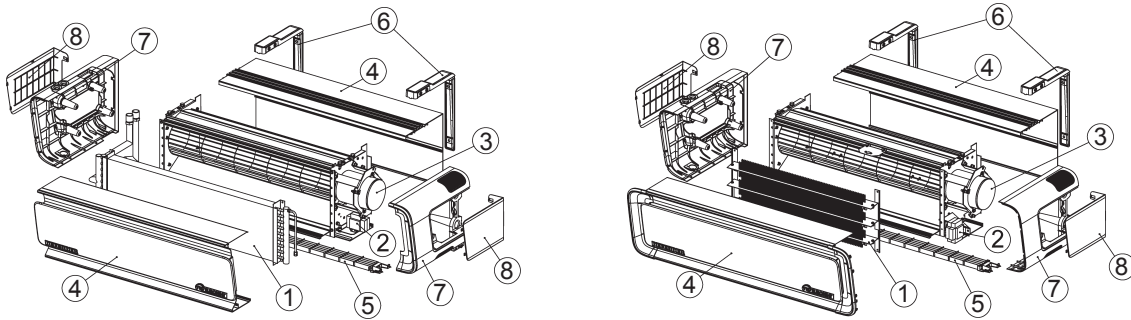
2.3. STRUCTURE (DEFENDERA 100-200 WHN, EHN)

DEFENDER 100-200 WHN – WATER AIR CURTAIN

1. Heat exchanger
2. Control system
3. Transverse fan
4. Casing
5. Outlet grille
6. Assembly jigs
7. Side cover
8. Side cap

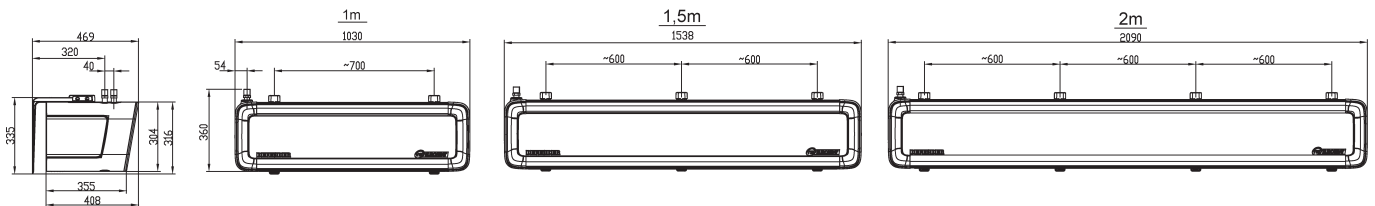
DEFENDER 100-200 EHN – ELECTRIC AIR CURTAIN

1. Electric heaters
2. Control system
3. Transverse fan
4. Casing
5. Outlet grille
6. Assembly jigs
7. Side cover
8. Side cap



- 1. WATER HEATER - HEAT EXCHANGER:** Maximum parameters of the heating agent for the heat exchanger are : 95°C, 1.6MPa. The aluminium and copper construction consists of copper pipes of the coil and aluminium lamellae. The connection collectors (male thread 3/4") are located in the upper part of the casing. The optimum water exchanger has been adjusted to operate in three positions: horizontal and vertical with pins going up or down. Appropriate lead of hydraulic connections makes it possible for the curtain to be assembled directly by the wall as close to the door frame as possible. The air curtain with a water heater generates power from 8 to 28 kW.
ELECTRIC HEATER: it consists of 1, 2 or 3 sets of heater elements in the amount depending on the option (length) of a particular curtain. Each set consists of three heaters generating in total the power of 6 and 4,5 kW, powered with 400 V voltage, connected in a star. Due to such technical solutions the heater is capable of generating the rated power ranging from 6kW (for a 1m wide curtain) to 13,5 kW (for a 2m wide curtain).
- 2. CONTROL SYSTEM:** it is equipped with an outlet on the connection clamp block X0 for DEFENDERA 100-200 WHN and on the X1 block for DEFENDERA 100-200 EHN for connecting an on-wall controller as well as a valve actuator for DEFENDERA 100-200 WHN. The system of DEFENDER EHN is equipped with a safety device in the form of a fuse in the 230 V AC circuit. The algorithm of the system's operation anticipates the function of the fan's delayed switch-off lasting 30 seconds in order to cool the electric heater.
- 3. HORIZONTAL FAN:** the maximum temperature of operation is 90°C, the rated voltage is 230 V/50 Hz. The motor protection level is IP20, F insulation class. The horizontal fan applied in the device with an advanced profile of blades and impeller geometry made of plastic makes it possible to obtain air capacities up to 5000 m³/h. The control of the electric motor as well as thermal protections of the winding has been coupled with the control system which resulted in increasing safety of operation. Due to optimum power of the motor the DEFENDER curtain is energy saving and durable.
- 4. CASING:** Made of high quality plastic material resistant to temperature up to 90°C.
- 5. INSTALLATION HANDLES:** DEFENDER is characterized by simple, quick and aesthetic assembly that can be performed on a wall in both horizontal and vertical position. There are from 2 to 4 installation handles attached (as an option) to the curtain (depending on the option (length)). Connections of electric wires and water channels has been especially designed not to interfere the general aesthetic values of the device. The name DEFENDER includes devices that are 1, 1.5 and 2 m long that, if necessary, can be additionally joined both horizontally and vertically to achieve different air supply options: from the left to the right and the opposite. the reach of the air stream is up to 4.0 m.

2.4. OVERALL DIMENSIONS (DEFENDERA 100-200 WHN, EHN)



3. ASSEMBLY

IMPORTANT!

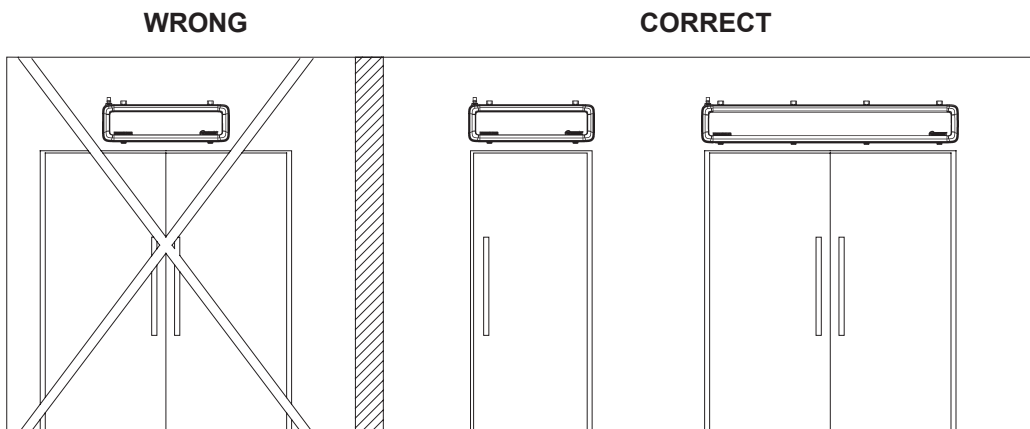
- The place of assembly should be carefully selected, taking into account the occurring of potential loads or vibrations.
- Prior to all installation or maintenance work, disconnect power supply and secure it against unintentional reactivation.
- It is recommended to use filters in the hydraulic system. It is recommended to clean/rinse the system, draining a few litres of water, prior to the connecting of hydraulic conduits (the supply conduits, in particular).

IMPORTANT!

The air is blown out of the curtain at high velocity, along the surface of the opening, thus creating a protective barrier. Air curtains should cover the entire width of the door opening, in order to obtain the maximum performance of the curtain.

IT IS RECOMMENDED TO TAKE INTO ACCOUNT THE FOLLOWING PARAMETERS, WHEN ASSEMBLING THE CURTAIN:

The width of the door frame should be less or equal to the width of the supplied air stream, a single DEFENDER 100-200 unit – its door can be 1, 1.5 or 2m wide.



DEFENDER 100-200 WHN DEFENDER 100-200 EHN

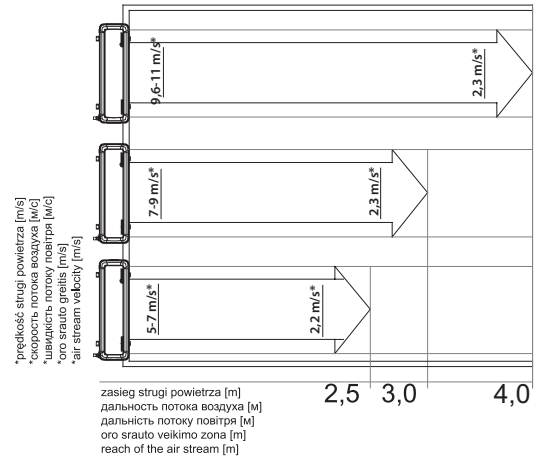
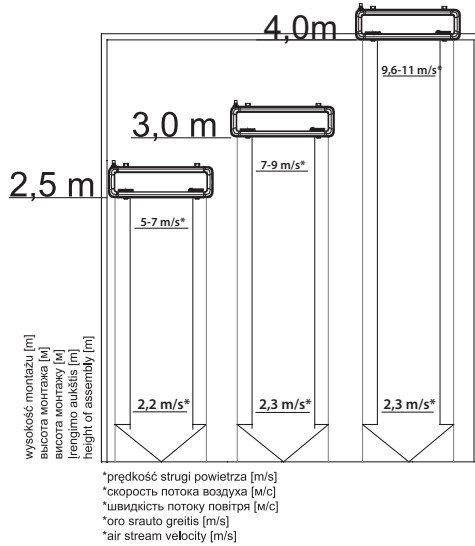
The range of the air jet - assembly height

- horizontal installation

| height of assembly [m] | fan speed |
|------------------------|-----------|
| 2,5 | 1 |
| 3,0 | 2 |
| 4,0 | 3 |

- vertical installation

| width of the door [m] | fan speed |
|-----------------------|-----------|
| 2,5 | 1 |
| 3,0 | 2 |
| 4,0 | 3 |



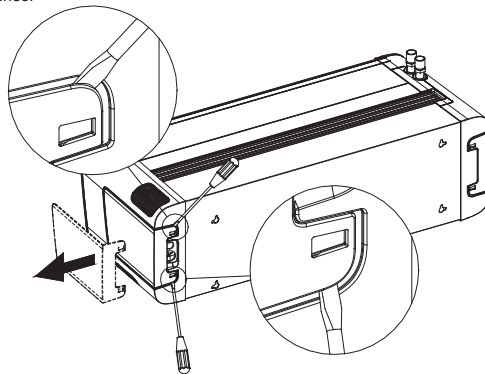
IMPORTANT! The heating output should be adjusted to the temperature inside the room, as well as the strength and direction of the wind outside. The primary criterion for the regulation of the heating power is the temperature inside the room, near the door. Should a room thermostat be used, DEFENDER 100-200 activates the heating mode, depending on the temperature settings.

IMPORTANT! Please consider additional factors that affect device operation.

| Factors that have a negative effect on curtain operation | Factors that have a positive effect on curtain operation |
|--|--|
| doors or windows that are constantly open in the room, thus creating a draft | presence of awning, roofs etc. on the outer side of the door |
| constant and open access to staircases, available through the room, the chimney draft effect | use of revolving doors |

3.1. ASSEMBLY/ DISASSEMBLY OF SIDE COVERS

In order to remove the side cover you should carefully level the catches located on the back wall with the use of a screwdriver and pull it away. Having installed the device and connected it to the electric supply put the cover back by clicking it on the catches.

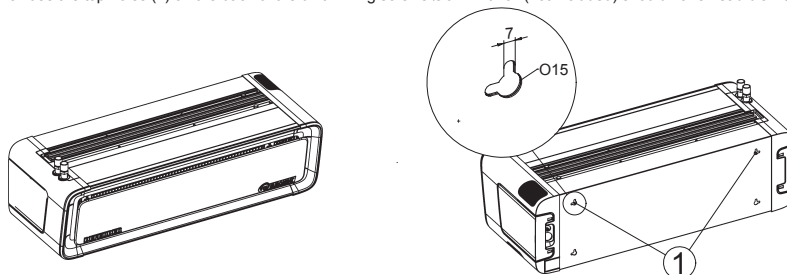


3.2. ASSEMBLY OF DEVICE

The unit can be assembled directly or with using installation handles (available in option) on any base construction providing stable and firm support.

3.2.1. HORIZONTAL ASSEMBLY DIRECTLY ON THE WALL.

For mounting DEFENDER directly to the wall use the top holes (1) on the back of the unit. Fixing screws Ø6 mm thick (not included) should have head diameter of not more than 14mm.



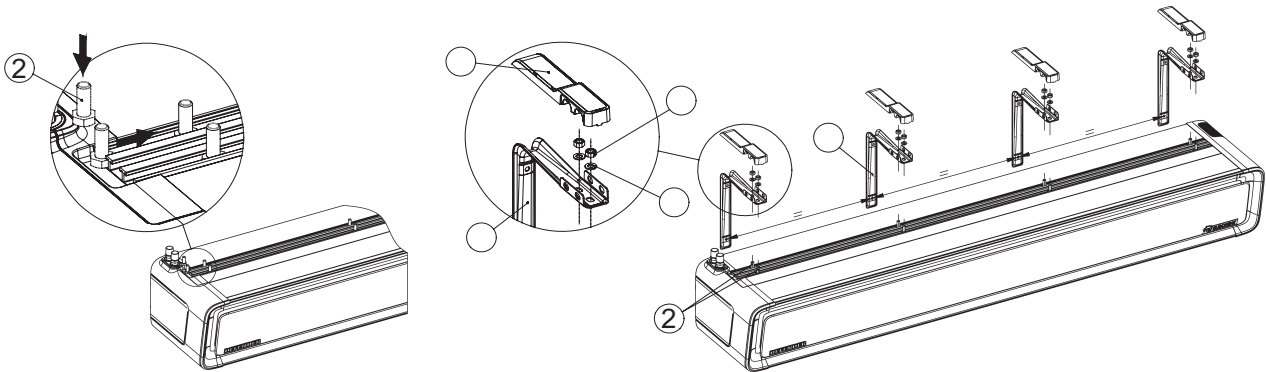
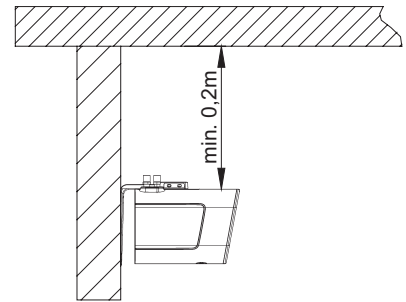
IMPORTANT! The minimum distance between the unit and the ceiling should be 0.3m.

3.2.2. HORIZONTAL ASSEMBLY WITH USING INSTALATION HANDLES.

It is possible to assemble DEFENDER 100-200 do the wall horizontally in two options:

OPTION I: Assembling handles with their arms faced downwards. In this option you should first screw the installation handles to the wall (1) and then at regular intervals (for a 1m curtain it is 2 installation handles every 700mm, for 1.5m – three, 2m - four installation handles every 600mm) so that the handles' arms are levelled. Then slide 2 (DR -1m), 3 (DR-1.5m) or 4 (DR-2m) assembly screws (2) M10x20 in each of the two guide bars. Lift the curtain with the screw faced upwards and assemble them in the handles. Put backing straps (3), tighten the nuts (4) and close the handle's covers (5).

ATTENTION! The minimum distance between the unit and the ceiling should be 0.2 m.

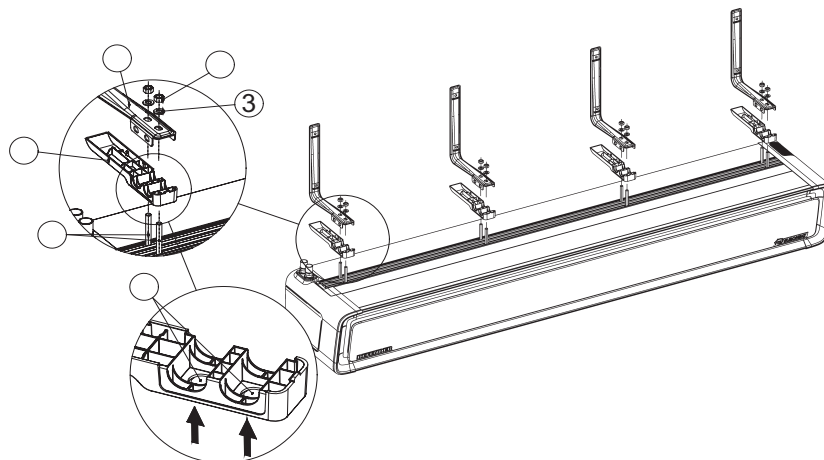


OPTION II: Assembling handles with their arms faced upwards.

The assembly consists in attaching the installation handles to the unit (1) at regular intervals as in OPTION I. In order to do so you should slide 2 (DR -1m), 3 (DR-1.5m) or 4 (DR-2m) assembly screws (2) M10x80 in each of the two guide bars and knock out holes (6) on the outside of covers (5) with the use of a hammer and a screw and then close the handles' covers (1). Put the handles on the screws, put backing straps (3) and tighten the nuts (4).

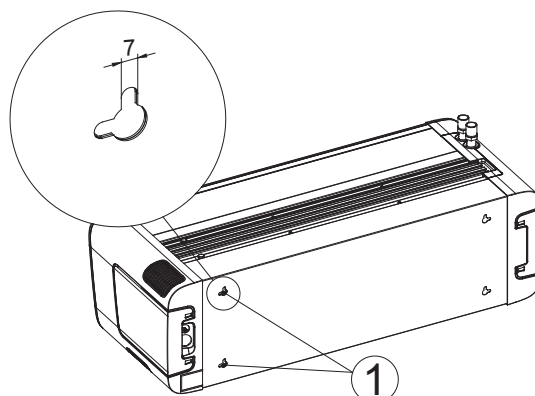
In this assembly option you can first assemble the handles to the curtain and than screw the whole down to a wall.

ATTENTION! The minimum distance between the unit and the ceiling should be 0.2m.



3.2.3. VERTICAL ASSEMBLY DIRECTLY ON THE WALL.

For mounting DEFENDER directly to the wall use the left or right hand side holes (1) (depend on hanging side) on the back of the unit. Fixing screws Ø6 mm thick (not included) should have head diameter of not more than 14mm.



IMPORTANT! In case of vertical assembly the minimal distance between the device and the floor (150mm) for access to the water coil blowdown connection and the cable terminal should be provide.

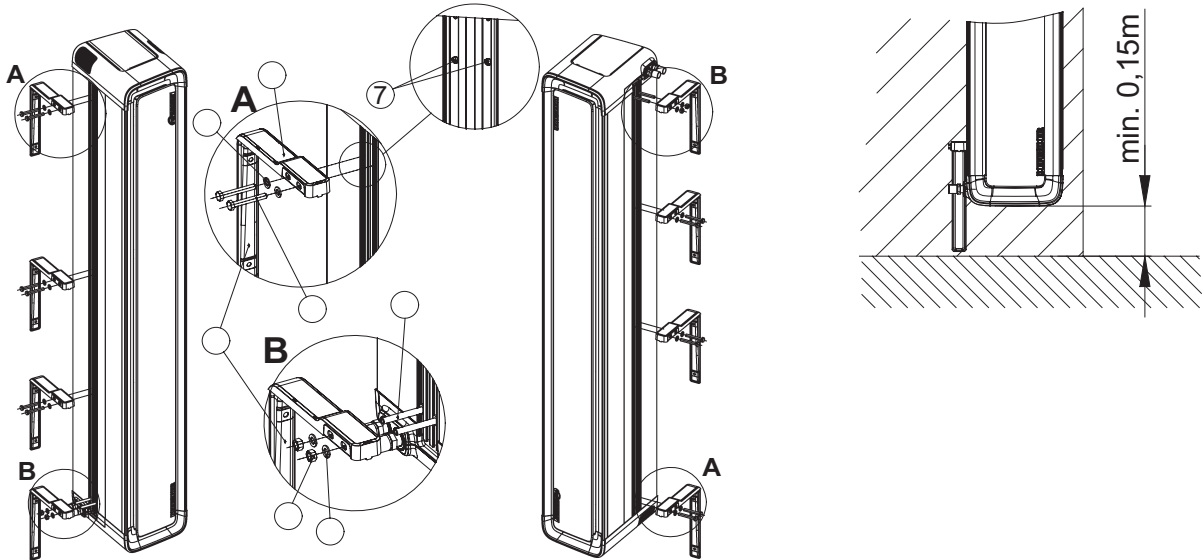
DEFENDER 100-200 WHN DEFENDER 100-200 EHN

3.2.4. VERTICAL ASSEMBLY WITH USING INSTALATION HANDLES.

It is possible to assemble Defender to a wall vertically on both sides of the gate (with the motor on the bottom or on the top). For this option it is not important if you screw the handles down to the unit first and then screw the whole down to the wall or first attach the handles to the wall and then screw the curtain down to the handles.

In the case of vertical assembly you should use the provided screws M10x80 and M8x80. 1, 2, or 3 handles should be attached with the use of screws (2) M8x80, through a backing strap (3) to the threaded sleeve (7) installed in the unit's guide bar (zoom A). The handle on the side of the exchanger's connection pins should be mounted on screws (2') M10x80 slid in guide bars (as in the case of horizontal assembly), put a backing strap (3') and tighten the nut (4) (zoom B).

IMPORTANT: In case of vertical assembly the minimal distance between the device and the floor (150mm) for access to the water coil blowdown connection and the cable terminal should be provide.



IMPORTANT! The device is intended for the operation in dry rooms, eCDlusively. Thus, pay particular attention to the condensation of water vapour on engine elements, since it is not fitted for operating in humid environment.

IMPORTANT! The DEFENDER 100-200 air curtains are not intended for the installation:

- Outdoors;
- In humid rooms;
- In rooms categorised as explosive environments;
- In rooms with very high levels of dustiness;
- In rooms with aggressive atmosphere (due to the presence of copper and aluminium structural elements in the heat exchanger and electric heaters).

IMPORTANT! The DEFENDER 100-200 EH air curtains are not intended for the installation on suspended ceilings.

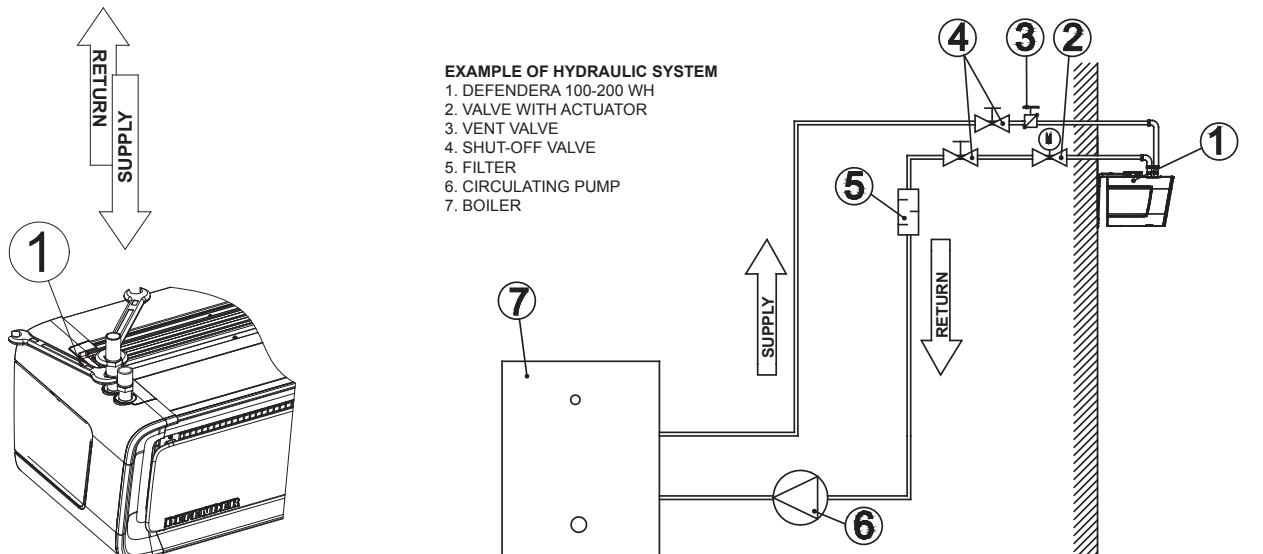
3.3. ASSEMBLY AND INSTALLATION GUIDELINES

CONNECTING OF HEATING MEDIUM

Protect the heat exchanger terminal against the impact of the torque moment 1, when installing a pipeline transporting a heating medium. The weight of installed pipelines should not impose a load on the heater's terminals.

IMPORTANT! Pay particular attention to the leak-tightness of connections, when filling the hydraulic system. Make sure that the water flowing from a leaky connection does not leak to the electric engine (at the vertical assembly)

IMPORTANT! It is recommended to use filters in the hydraulic system. It is recommended to clean/rinse the system, draining a few litres of water, prior to the connecting of hydraulic conduits (the supply conduits, in particular).

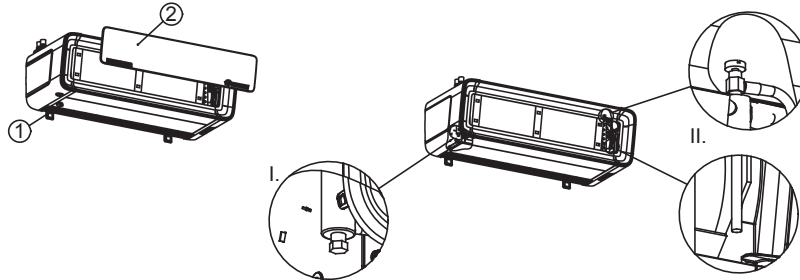


VENTING OF DEVICE/DRAINING OF HEATING MEDIUM

The access to air vents / agent escapes is obtained by means of removing covers / hole plugs 1 and 2 depending on the way of assembling Defender. When using a 13 mm fork spanner or screwdriver you should loose the screw of an appropriate service valve:

- venting: position A and B – service valve II with the flexible pipe, position C – service valve I,
- escape: position A – service valve I, position B – service valve I, position C – service valve II.

| | WORKING POSITION | NUMBER OF SERVICE VALVE | |
|---|---|-------------------------|----------|
| | | I | II |
| A | Horizontal (air blown downstream) | draining | venting |
| B | Vertical (air blown from left to right) | draining | venting |
| C | Vertical (air blown from right to left) | venting | draining |



IMPORTANT! While venting the exchanger you should pay special attention to securing the device against accidental penetration of water into electrical elements.

IMPORTANT! Follow the instruction below, when draining the heating medium:

- Close the shut-off valves before and after the device;
- Close the control valve;
- Unscrew the vent;
- Unscrew the drain;
- Wait until the exchanger has been completely emptied;
- Connect compressed air to the exchanger and blow away the remaining water;
- Close the drain and vent.

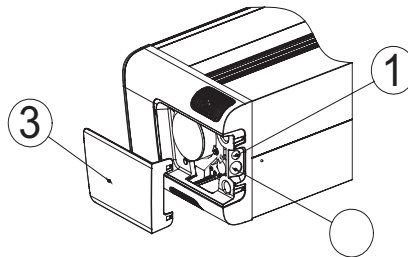
IMPORTANT! Remember to vent the heater, if it has been activated after a prior draining of the heating medium.

IMPORTANT! Pay particular attention to the leak-tightness of connections, when filling the hydraulic system. Make sure that the water flowing from a leaky connection does not leak to the electric engine (at the vertical assembly).

CONNECTING OF POWER SUPPLY

IMPORTANT! The system must be equipped with protective equipment that guarantees the disconnecting of the device on all poles of the power source.

Connection to the electric system must be performed by a duly authorized and qualified person. Wire passes are located on the back side of the curtain: (1) – control wire packing, (2) – power wire packing. The access to the terminal strip is obtained by means of removing the side cover (3) from the motor's side.



Recommended safety devices and wires

| Device | DEFENDER 100-200 WHN | | | DEFENDER 100-200 EHN | | |
|---------------------------------------|--------------------------|------|----|--------------------------|----------------------|----------------------|
| | 1m | 1,5m | 2m | 1m | 1,5m | 2m |
| Overload and short circuit protection | gG 10A | | | gG 16A | gG 20A | gG 25A |
| Differential current protection | IDN=30mA typ AC lub A | | | IDN=30mA typ AC lub A | | |
| | IN=16A | | | IN=40A | | |
| Power wire cross-section | 3x1,5mm ² | | | 5x1,5mm ² | 5x2,5mm ² | 5x4,0mm ² |

IMPORTANT! The specification of cables and protections refers to unbounded arrangement of cables (basic execution of the E installation according to the PN-IEC 60364-5-523 standard). One should always abide by the local laws and recommendations concerning device connection.

DEFENDER 100-200 is equipped with a terminal strip adjusted to an appropriate thickness of wires.

| | |
|-----------------------------|---------------------|
| DEFENDER 100-200 EHN | <p>X0</p> <p>X1</p> |
| DEFENDER 100-200 WHN | <p>X0</p> |

IMPORTANT!

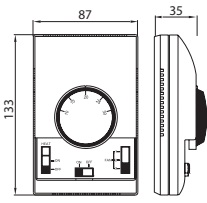
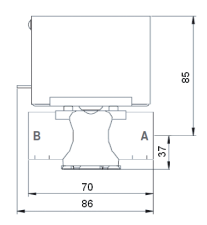
- It is recommended to connect wires to the terminal strip with previously clamped appropriate clip ends.
- Make sure that the space around the place where the air is sucked in by the curtains, as well as around the exhaust grid, is free of any structural elements of the building, which might hamper the flow of air (e.g. suspended ceilings, covering development, ventilating ducts etc.).

4. ELEMENTS OF AUTOMATICS.

Electrical connections can be carried out only by qualified electricians, according to the binding regulations of:

- industrial safety;
- assembly instructions;
- technical documentation for each individual element of automatics.

IMPORTANT! Study the original documentation delivered together with the elements of automatics, prior to the commencing of assembly and connecting of the system.

| MODEL | DIAGRAM | TECHNICAL DATA | COMMENTS |
|-----------------------------|---|---|--|
| WALL-MOUNTED DX CONTROLLER |  | WALL-MOUNTED DX CONTROLLER <ul style="list-style-type: none"> • Supply voltage: 220-240 VAC • Permissible initial current: 6(3A) • Range of regulation: 10-30°C • Accuracy of regulation: +/- 1°C • Level of protection: IP 30 • Assembly method: on plastered walls • Parameters of working environment: from -10 to +50°C | <ul style="list-style-type: none"> • One wall-mounted DX controller can support the maximum of 1 curtain of the WHN, or EHN type. • The maximum length of the conductor, from the curtain to the programming device, is 100 m. • It is recommended to make a connection using a conductor of the min. size 5 x 1 mm² or 6 x 1mm² depend on the option of connection (see the schemes) • The drawings with the elements of automatics contain only visualisations of sample products. • The controller does not constitute an integral part of the curtain. It is an optional device, which may be replaced with any programming device or switch that conforms to the 60335 standard. |
| TWO-WAY VALVE WITH ACTUATOR |  | TWO-WAY VALVE <ul style="list-style-type: none"> • Connection diameter: 3/4" • Operation mode: on/off • Maximum differential pressure 100 kPa • Pressure degree PN 16 • Airflow degree factor kvs: 6.5 m³/h • Maximum heat agent temperature: 93°C • Work environment parameters: 2 ... 40°C VALVE ACTUATOR <ul style="list-style-type: none"> • Power consumption 7 VA • Power supply voltage: 230 V AC +/- 10% • Closing/opening time 5/18s • Item without supply: closed • Type of protection: IP20 • Work environment parameters: 2 ... 40°C | <ul style="list-style-type: none"> • Two-way valve should be installed on the return (outlet) pipeline. • Automation element drawings are only a visualisation of sample products. • Power connection should be done with a cable min. 3 x 0.75 mm². • Automation element drawings are only a visualisation of sample products. |

IMPORTANT! If required, the conductors that belong to additional elements of control automatics (thermostat, door switch, wall-mounted controller) should be installed in separate cable channels, out-of-parallel to the supply conductors.

5. START-UP, OPERATION, MAINTENANCE

5.1. START-UP/PUTTING INTO OPERATION

- Prior to the commencing of any installation or maintenance work, disconnect power supply and secure it against unintentional reactivation.
- It is recommended to use filters in the hydraulic system. It is recommended to clean/rinse the system, draining a few litres of water, prior to the connecting of hydraulic conduits (the supply conduits, in particular).
- It is advised to use vent valves in the highest point of the system.
- It is recommended to install shut-off valves directly after the device, should the disassembly of the device be necessary.
- All protective equipment is to be installed before the pressure increases, according to maximum permissible pressure rating of 1.6MPa.
- Hydraulic connection should be free of any stresses and loads.
- Check the correctness of hydraulic connections (leak-tightness of the vent, collecting pipes, correctness of fittings installation), prior to the initial start-up of the device.
- It is recommended to check the correctness of electrical connections (of automatics, power supply), prior to the initial start-up of the device. It is advised to use an additional, external residual-current protection.

IMPORTANT! All connections should be carried out, according to this technical documentation and the documentation delivered with automation equipment.

5.2. OPERATION AND MAINTENANCE

- It is advised to carefully analyse all the operational and assembly guidelines listed in chapter 3 and 4.
- The casing of the device does not require maintenance.
- The heat exchanger should be cleaned on a regular basis from dust and fat deposit. It is especially recommended to clean the exchanger before the heating season with the use of compressed air from the air intake side (after removing the front panel). You should pay special attention to the exchanger's lamellae which are very delicate.
- Should the lamellas be deformed (bent), straighten them with a special tool.
- The fan's motor does not require any exploitation service, the only service activities that may be necessary concern cleaning the air intakes from dust and fat deposit.
- Disconnect phase voltage, if the device is shut down for longer periods of time.
- The heat exchanger does not have any anti-freezing protections.
- It is recommended to provide a periodical purging of the heat exchanger, preferably using compressed air.
- Should the temperature in the room drop below 0°C, with a simultaneous drop of the heating medium temperature, there is a risk that the heat exchanger might freeze (crack).
- The level of air pollutants should meet the criteria allowable concentrations of pollutants in indoor air, for non-industrial areas, the level of dust concentration up to 0.3 g / m³.
- It is forbidden to use device for the duration of the construction works except for the start-up of the system.
- The equipment must be operated in rooms used throughout the year, and in which there is no condensation (large fluctuations in temperature, especially below the dew point of the moisture content). The device should not be exposed to direct UV rays.
- The device should be operated at the supply water temperature up to 90 °C with working fan.

6. SERVICING

6.1. PROCEDURE IN CASE OF DEFECTS

| DEFENDER 100-200 WHN/EHN | | |
|--|--|---|
| Symptoms | What to check | Description |
| Leakage in the DEFENDER 100-200 WHN heat exchanger | <ul style="list-style-type: none"> Fitting of the heat exchanger terminals, using two keys acting in two opposite directions (apply the keys on each terminal), which protects against the possibility of internal breaking of the collecting pipes. Relation between the leaking and a potential mechanical damage to the exchanger. Leaking of vent valve elements or drain plug. Parameters of the heating medium (pressure and temperature) should not exceed the permissible values. Correctness of the draining of the exchanger. type of agent (it cannot be any aggressive substance Al or Cu active), Circumstances in which leaking occurred (e.g. during the trial/initial start-up of the system; after having drained the heating medium, followed by the filling of the system) and the external ambient temperature at the moment of the defect taking place (freezing hazard to the exchanger). Potentially aggressive atmosphere (air) in the place of work (e.g. high concentration of ammonia in the sewage-treatment plant). | <ul style="list-style-type: none"> Pay particular attention to the possibility of the freezing of the heat exchanger in the winter. 99% of leaks occur during start-up/pressure checks. The rectifying of the defect consists in the pulling back of the vent/drain valve. |
| The fan of the device works too loudly DEFENDER 100-200 WHN, EHN | <ul style="list-style-type: none"> Installation of the device, according to the guidelines in the Operation and Maintenance Documentation (among others, the distance from the ceiling). Correctness of the horizontal alignment of the device. Correctness of electrical connections and qualifications of Parameters of the supply current (among others: voltage, frequency). Incorrect covering of the curtain in the suspended ceiling. Noise in lower speeds (damaged winding). Noise present only in the higher speeds – blocking of the air outlet. Type of other equipment working in the facility (e.g. exhaust fans) – increasing noise may be a result of several pieces of equipment working simultaneously. | <ul style="list-style-type: none"> Minimum distance: 20 cm from the ceiling Louder operation of DEFENDER 100-200 devices may be a result of inappropriate place of assembly : e.g. choking the fan or the acoustic specifics of a room. |
| The fan in the device is not operational DEFENDER 100-200 WHN, EHN | <ul style="list-style-type: none"> Correctness and quality of electrical connections and qualifications of the fitter. Parameters of the supply current (among others: voltage, frequency) on the terminal block of the fan's engine. Operational correctness of other pieces of equipment present in the facility. Correct fitting of the conduits on the engine side – information available from VTS Service Department. Voltage on the PE conductor (if present, it may indicate a breakdown). | <ul style="list-style-type: none"> The electrical connection of the device must be carried out, according to the diagrams found in the Operation and Maintenance Documentation. |
| | <ul style="list-style-type: none"> Damage, incorrect connecting or fitting of a wall-mounted controller, other than the DX control Iler | <ul style="list-style-type: none"> It is recommended to check the device by means of connecting the curtain directly to the power supply and forcing the electric motor's operation by shorting appropriate clips of the device's terminal strip and then the terminal strip in the controller. |
| Damaged casing of the device DEFENDER 100-200 WHN, EHN | <ul style="list-style-type: none"> Circumstances in which the defect occurred: remarks on the bill of lading, inventory issue, condition of cardboard). | <ul style="list-style-type: none"> Should the casing be defective, it is required to present photos of the cardboard and device, as well as photos that confirm the compliance between the serial number on the device and cardboard. If the damage was done in transport, it is necessary to prepare a proper statement by the driver/forwarder that delivered the goods. |
| WALL-MOUNTED DX CONTROLLER does not work/is burnt | <ul style="list-style-type: none"> Correctness and quality of electrical connections (tight clamping of conductors in electric terminals, cross-section and material of electric conductors) and the qualifications of the fitter. Parameters of the supply current (among others: voltage, frequency). Operational correctness of the DEFENDER 100-200 device, when connected directly to the power supply (ignoring the DX controller). Whether the user has not damaged the "hand-wheel", e.g. by rotating it by 360°, or the switch, e.g. by keeping it in the intermediate position. | <ul style="list-style-type: none"> It is recommended to check the device by means of connecting the curtain directly to the power supply and forcing the electric motor's operation by shorting appropriate clips of the device's terminal strip and then the terminal strip in the controller. |
| Actuator does not open the valve | <ul style="list-style-type: none"> Correctness of electrical connections and qualifications of the fitter. Operational correctness of the thermostat (the characteristic "ticking" when switching the device). Parameters of the supply current (among others: voltage). | <ul style="list-style-type: none"> It is of the highest importance to verify whether the actuator reacted to alectrical impulse within 11 seconds. If you observe any damage of the actuator you should make a complaint concerning the damaged element and switch the actuator's operation mode to 'manual' - MAN which will result in mechanical (permanent) opening of the valve. |
| The thermostat in the DX controller does not send any signal to the actuator | <ul style="list-style-type: none"> Correctness of electrical connections and qualifications of the fitter. Operational correctness of the thermostat (the characteristic "ticking" when switching the device). Operational correctness of the actuator. Parameters of the supply current (among others: voltage). Place of thermostat/actuator installation in the room. | <ul style="list-style-type: none"> If the "ticking" sound is not heard, the thermostat has been mechanically damaged and should be subject to the complaint procedure. The thermostat can also be installed in an improper space, which is subject to temperature monitoring. |

EN



It is forbidden to place, dispose of and store worn-out electric and electronic equipment, together with other waste. Dangerous compound contained in electronic and electric equipment have a very adverse impact on plants, micro-organisms, and, most importantly, on humans, as they damage our central and peripheral nervous system, as well as circulatory and internal system. Additionally, they cause serious allergic reactions. Worn-out equipment is to be delivered to a local collection point for used electric equipment, which carries out a selective collection of waste.

REMEMBER!

The user of equipment intended for households, and which has been worn out, is obliged to transfer such equipment to a collecting unit that collects worn-out electric and electronic equipment. The selective collecting and further processing of waste from households contributes to the protection of environment, reduces the penetration of hazardous substances into the atmosphere and surface waters.

6.2. COMPLAINT PROCEDURE

In order to report a problem with the device or elements of automation, please fill in and send the appropriate form (p.74), using one of the three available ways:

1. **E-mail:** vts.pl@vtsgroup.com

2. **Fax:** (+48) 12 296 50 75

3. **Website:** www.vtsgroup.pl/PRODUKTIVTS_Service/formularz_zgloszeniowy

Our service department will contact you immediately.

In the case of damage in transport, send a complaint notification, including the delivery documentation (bill of lading, inventory issue) and photographs showing the defects.

Should you have any questions, please contact us, using this telephone number: 0 801 080 073

IMPORTANT! The complaint procedure shall be initiated when the Service Department has received a correctly filled complaint notification, a copy of the purchase invoice and the Warranty Card, filled by the company that carried out the installation.

7. INDUSTRIAL SAFETY INSTRUCTION

Special instructions concerning safety

IMPORTANT!

- Prior to the commencing of any work related to the device, it is required to disconnect the system, secure it properly and wait, until the fan stops revolving.
- Use stable working platforms and hoists.
- Depending on the temperature of the heating medium, pipes, elements of casing and surfaces of the heat exchanger can be very hot, even after the fan has stopped revolving.
- Sharp edges may be present! Wear gloves, protective shoes and clothing, when transporting the device.
- Strictly observe safety guidelines and industrial safety regulations.
- Loads can be placed only in the previously selected areas on the transporting unit. Protect the edges of the device, when lifting it, using a set of machines. Remember to distribute weight evenly.
- The equipment must be protected against moisture and dirt, and kept in rooms protected against the impact of weather conditions.
- Utilisation of waste: make sure that operating and auxiliary materials, including packaging material and spare parts, are disposed of in a safe, environment friendly manner, according to the binding, local statutory regulations.

8. TECHNICAL DATA

8.1 WATER AIR CURTAIN – DEFENDER 100-200 WHN

- T_z – temperature of water at the inlet to the device
 T_p – temperature of water at the outlet from the device
 T_{p1} – temperature of air at the inlet to the device
 T_{p2} – temperature of air at the outlet from the device
 P_g – heating output of the device
 Q_w – water flow
 Δp – pressure drop in the heat exchanger

| Parametry | DEFENDER 100 WHN | | | | | | | | | | | | | | | |
|---------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 90/70 | | | | 80/60 | | | | 70/50 | | | | 60/40 | | | |
| T_z/T_p [°C] | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 1880 m³/h (speed 3); air velocity at the output: 9,7 m/s; noise level: 69 dB(A)*</i> | | | | | | | | | | | | | | | |
| P_g [kW] | 11,90 | 11,00 | 10,00 | 9,08 | 9,91 | 8,96 | 8,01 | 7,06 | 7,87 | 9,91 | 5,94 | 4,94 | 5,58 | 4,50 | 2,37 | 1,92 |
| T_{p2} [°C] | 23,20 | 27,10 | 30,90 | 34,70 | 20,10 | 24,00 | 27,70 | 31,40 | 17,00 | 20,80 | 24,40 | 28,00 | 13,50 | 17,00 | 18,80 | 23,10 |
| Q_w [m ³ /h] | 0,53 | 0,49 | 0,44 | 0,40 | 0,44 | 0,39 | 0,35 | 0,31 | 0,34 | 0,30 | 0,26 | 0,22 | 0,24 | 0,20 | 0,10 | 0,08 |
| Δp [kPa] | 2,38 | 2,04 | 1,73 | 1,45 | 1,73 | 1,44 | 1,17 | 0,93 | 1,15 | 0,91 | 0,69 | 0,49 | 0,63 | 0,43 | 0,13 | 0,09 |
| | <i>Flow rate of air at 1470 m³/h (speed 2); air velocity at the output: 7,6 m/s; noise level: 58 dB(A)*</i> | | | | | | | | | | | | | | | |
| P_g [kW] | 10,30 | 9,49 | 8,67 | 7,85 | 8,57 | 7,75 | 6,92 | 6,10 | 6,80 | 5,96 | 5,10 | 4,23 | 4,76 | 3,74 | 2,21 | 1,80 |
| T_{p2} [°C] | 25,10 | 28,90 | 32,60 | 36,30 | 21,70 | 25,40 | 29,10 | 32,60 | 18,30 | 21,90 | 25,40 | 28,80 | 14,30 | 17,50 | 19,50 | 23,70 |
| Q_w [m ³ /h] | 0,46 | 0,42 | 0,38 | 0,35 | 0,38 | 0,34 | 0,30 | 0,27 | 0,30 | 0,26 | 0,22 | 0,19 | 0,21 | 0,16 | 0,10 | 0,08 |
| Δp [kPa] | 1,82 | 1,56 | 1,33 | 1,11 | 1,32 | 1,10 | 0,90 | 0,71 | 0,88 | 0,69 | 0,52 | 0,37 | 0,47 | 0,31 | 0,12 | 0,08 |
| | <i>Flow rate of air at 1120 m³/h (speed 1); air velocity at the output: 5,8 m/s; noise level 48 dB(A)*</i> | | | | | | | | | | | | | | | |
| P_g [kW] | 8,74 | 8,04 | 7,34 | 6,65 | 7,26 | 6,56 | 5,86 | 5,15 | 5,75 | 5,02 | 4,28 | 3,50 | 3,92 | 2,41 | 20,03 | 1,66 |
| T_{p2} [°C] | 27,40 | 31,00 | 34,60 | 38,10 | 23,60 | 27,20 | 30,60 | 34,00 | 19,70 | 23,10 | 26,40 | 29,50 | 15,00 | 16,30 | 20,40 | 24,50 |
| Q_w [m ³ /h] | 0,39 | 0,36 | 0,32 | 0,29 | 0,32 | 0,29 | 0,26 | 0,23 | 0,25 | 0,22 | 0,19 | 0,15 | 0,17 | 0,11 | 0,09 | 0,07 |
| Δp [kPa] | 1,35 | 1,16 | 0,98 | 0,82 | 0,98 | 0,81 | 0,66 | 0,52 | 0,65 | 0,51 | 0,38 | 0,26 | 0,33 | 0,14 | 0,10 | 0,07 |

DEFENDER 100-200 WHN

DEFENDER 100-200 EHN

| Parametry | DEFENDER 150 WHN | | | | | | | | | | | | | | | |
|-------------------------------------|--|------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|
| | 90/70 | | | | 80/60 | | | | 70/50 | | | | 60/40 | | | |
| T _z /T _g [°C] | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 |
| T _{p1} [°C] | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 3570 m³/h (speed 3); air velocity at the output: 10,9 m/s; noise level 69 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 23 | 21,3 | 19,6 | 17,8 | 19,5 | 17,8 | 16 | 14,3 | 15,9 | 14,2 | 12,5 | 10,8 | 12,2 | 10,5 | 8,75 | 6,96 |
| T _{p2} [°C] | 23,5 | 27,5 | 31,4 | 35,2 | 20,7 | 24,6 | 28,4 | 32,2 | 17,8 | 21,7 | 25,5 | 29,2 | 14,8 | 18,6 | 22,3 | 25,9 |
| Q _w [m ³ /h] | 1,02 | 0,94 | 0,86 | 0,79 | 0,86 | 0,78 | 0,71 | 0,63 | 0,7 | 0,62 | 0,55 | 0,47 | 0,53 | 0,46 | 0,38 | 0,3 |
| Δp [kPa] | 10,1 | 8,74 | 7,49 | 6,33 | 7,6 | 6,41 | 5,32 | 4,33 | 5,37 | 4,35 | 3,44 | 2,63 | 3,42 | 2,59 | 1,86 | 1,23 |
| | <i>Flow rate of air at 2400 m³/h (speed 2); air velocity at the output: 7,6 m/s; noise level: 57 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 18,2 | 16,8 | 15,5 | 14,1 | 15,4 | 14,1 | 12,7 | 11,3 | 12,6 | 11,3 | 9,89 | 8,52 | 9,7 | 8,3 | 6,9 | 5,45 |
| T _{p2} [°C] | 26,8 | 30,5 | 34,3 | 37,9 | 23,5 | 27,2 | 30,8 | 34,4 | 20,1 | 23,7 | 27,3 | 30,8 | 16,6 | 20,1 | 23,6 | 26,9 |
| Q _w [m ³ /h] | 0,8 | 0,74 | 0,68 | 0,62 | 0,68 | 0,62 | 0,56 | 0,5 | 0,55 | 0,49 | 0,43 | 0,37 | 0,42 | 0,36 | 0,3 | 0,24 |
| Δp [kPa] | 6,57 | 5,69 | 4,87 | 4,12 | 4,96 | 4,18 | 3,47 | 2,83 | 3,51 | 2,85 | 2,25 | 1,72 | 2,24 | 1,69 | 1,21 | 0,79 |
| | <i>Flow rate of air at 1880 m³/h (speed 1); air velocity at the output: 5,7 m/s; noise level 47 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 15,7 | 14,5 | 13,3 | 12,1 | 13,3 | 12,1 | 10,9 | 9,76 | 10,9 | 9,7 | 8,52 | 7,34 | 8,35 | 7,14 | 5,91 | 4,63 |
| T _{p2} [°C] | 28,9 | 32,6 | 36,2 | 39,7 | 25,3 | 28,9 | 32,4 | 35,8 | 21,6 | 25,1 | 28,5 | 31,9 | 8,35 | 21,1 | 24,4 | 27,5 |
| Q _w [m ³ /h] | 0,69 | 0,64 | 0,59 | 0,54 | 0,58 | 0,53 | 0,48 | 0,43 | 0,48 | 0,42 | 0,37 | 0,32 | 0,36 | 0,31 | 0,26 | 0,2 |
| Δp [kPa] | 5 | 4,33 | 3,71 | 3,14 | 3,78 | 3,19 | 2,65 | 2,16 | 2,68 | 2,17 | 1,72 | 1,31 | 1,7 | 1,28 | 0,91 | 0,59 |

| Parametry | DEFENDER 200 WHN | | | | | | | | | | | | | | | |
|-------------------------------------|--|------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|
| | 90/70 | | | | 80/60 | | | | 70/50 | | | | 60/40 | | | |
| T _z /T _g [°C] | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 |
| T _{p1} [°C] | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 4890 m³/h (speed 3); air velocity at the output: 10,4 m/s; noise level 70 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 32,9 | 30,4 | 28 | 25,6 | 28 | 25,6 | 23,2 | 20,8 | 23,1 | 20,7 | 18,3 | 15,9 | 18,1 | 15,7 | 13,3 | 10,9 |
| T _{p2} [°C] | 24,3 | 28,2 | 32,1 | 36 | 21,4 | 25,3 | 29,2 | 32,9 | 18,6 | 22,4 | 26,2 | 29,9 | 15,6 | 19,4 | 23,1 | 26,8 |
| Q _w [m ³ /h] | 1,45 | 1,35 | 1,24 | 1,13 | 1,23 | 1,13 | 1,02 | 0,91 | 1,01 | 0,91 | 0,8 | 0,69 | 0,79 | 0,68 | 0,58 | 0,47 |
| Δp [kPa] | 23,2 | 20,2 | 17,4 | 14,8 | 17,8 | 15,1 | 12,6 | 10,3 | 12,8 | 10,5 | 8,38 | 6,51 | 8,49 | 6,55 | 4,84 | 3,36 |
| | <i>Flow rate of air at 3300 m³/h (speed 2); air velocity at the output: 7,2 m/s; noise level: 62 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 26 | 24,1 | 22,2 | 20,3 | 22,2 | 20,3 | 18,4 | 16,5 | 18,3 | 16,4 | 14,5 | 12,6 | 14,4 | 12,5 | 10,5 | 8,61 |
| T _{p2} [°C] | 27,6 | 31,4 | 35,1 | 38,7 | 24,3 | 28 | 31,6 | 35,2 | 20,9 | 24,6 | 28,1 | 31,6 | 17,5 | 21 | 24,5 | 27,9 |
| Q _w [m ³ /h] | 1,15 | 1,06 | 0,98 | 0,9 | 0,97 | 0,89 | 0,81 | 0,72 | 0,8 | 0,72 | 0,64 | 0,55 | 0,63 | 0,54 | 0,46 | 0,38 |
| Δp [kPa] | 15,2 | 13,2 | 11,3 | 9,64 | 11,6 | 9,87 | 8,25 | 6,78 | 8,4 | 6,88 | 5,5 | 4,28 | 5,58 | 4,31 | 3,19 | 2,21 |
| | <i>Flow rate of air at 2550 m³/h (speed 1); air velocity at the output: 5,5 m/s; noise level 56 dB(A)*</i> | | | | | | | | | | | | | | | |
| P _g [kW] | 22,2 | 20,5 | 18,9 | 17,3 | 18,9 | 17,3 | 15,7 | 14 | 15,7 | 12,2 | 12,4 | 10,8 | 12,3 | 10,6 | 9 | 7,34 |
| T _{p2} [°C] | 30 | 33,6 | 37,1 | 40,6 | 26,3 | 29,9 | 33,3 | 36,8 | 22,6 | 26,1 | 29,5 | 32,9 | 18,8 | 22,2 | 25,5 | 28,8 |
| Q _w [m ³ /h] | 0,98 | 0,91 | 0,83 | 0,76 | 0,83 | 0,76 | 0,69 | 0,62 | 0,68 | 0,61 | 0,54 | 0,47 | 0,54 | 0,46 | 0,39 | 0,32 |
| Δp [kPa] | 11,4 | 9,87 | 8,49 | 7,21 | 8,71 | 7,39 | 6,18 | 5,08 | 6,31 | 4,14 | 4,14 | 3,21 | 4,2 | 3,24 | 2,4 | 1,66 |

EN: * The noise level has been measured within a 3 m distance from the device; reference conditions: semi-open space – wall-mounted device.

8.2 ELECTRIC AIR CURTAIN – DEFENDER 100-200 EHN

T_{p1} – temperature of air at the inlet to the device
 T_{p2} – temperature of air at the outlet from the device
 P_g – heating output of the device

| Parametry | DEFENDER 100 EHN | | | |
|---------------|--|-------------|-------------|-------------|
| T_{p1} [°C] | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 2150 m³/h (speed 3); air velocity at the output: 11 m/s; noise level: 69 dB(A)*</i> | | | |
| P_g [kW] | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** |
| T_{p2} [°C] | 9,5/12,8** | 14,5/17,8** | 19,5/22,8** | 24,5/27,8** |
| | <i>Flow rate of air at 1650 m³/h (speed 2); air velocity at the output: 8,4 m/s; noise level: 64 dB(A)*</i> | | | |
| P_g [kW] | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** |
| T_{p2} [°C] | 10,1/15,3** | 15,1/20,3** | 20,1/25,3** | 25,1/30,3** |
| | <i>Flow rate of air at 1290 m³/h (speed 1); air velocity at the output: 6,7 m/s; noise level 52 dB(A)*</i> | | | |
| P_g [kW] | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** | 3,6/6,0** |
| T_{p2} [°C] | 12,7/18,4** | 17,7/23,4** | 22,7/28,4** | 27,7/33,4** |

| Parametry | DEFENDER 150 EHN | | | |
|---------------|--|-------------|-------------|-------------|
| T_{p1} [°C] | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 3500 m³/h (speed 3); air velocity at the output: 10,6 m/s; noise level 70 dB(A)*</i> | | | |
| P_g [kW] | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** |
| T_{p2} [°C] | 10,6/15,4** | 15,6/20,4** | 20,6/25,4** | 25,6/30,4** |
| | <i>Flow rate of air at 2500 m³/h (speed 2); air velocity at the output: 7,7 m/s; noise level: 64 dB(A)*</i> | | | |
| P_g [kW] | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** |
| T_{p2} [°C] | 12,3/19,9** | 17,3/24,9** | 22,3/29,9** | 27,3/34,9** |
| | <i>Flow rate of air at 1820 m³/h (speed 1); air velocity at the output: 5,6 m/s; noise level 56 dB(A)*</i> | | | |
| P_g [kW] | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** | 7,2/12,0** |
| T_{p2} [°C] | 15,1/24,1** | 20,1/29,1** | 25,1/34,1** | 30,1/39,1** |

DEFENDER 100-200 WHN

DEFENDER 100-200 EHN

| Parametry | DEFENDER 200 EHN | | | |
|----------------------|--|-------------|-------------|-------------|
| T _{p1} [°C] | 5 | 10 | 15 | 20 |
| | <i>Flow rate of air at 5000 m³/h (speed 3); air velocity at the output: 10,6 m/s; noise level 71 dB(A)*</i> | | | |
| P _g [kW] | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** |
| T _{p2} [°C] | 11,7/13,4** | 16,7/18,4** | 21,7/23,4** | 26,7/28,4** |
| | <i>Flow rate of air at 3370 m³/h (speed 2); air velocity at the output: 7,2 m/s; noise level 62 dB(A)*</i> | | | |
| P _g [kW] | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** |
| T _{p2} [°C] | 14,2/17,4** | 19,2/22,4** | 24,2/27,4** | 29,2/32,4** |
| | <i>Flow rate of air at 2500 m³/h (speed 1); air velocity at the output: 5,5 m/s; noise level 54 dB(A)*</i> | | | |
| P _g [kW] | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** | 10,8/13,5** |
| T _{p2} [°C] | 18,1/20,2** | 23,1/25,2** | 28,1/30,2** | 33,1/35,2** |

EN: * The noise level has been measured within a 3 m distance from the device; reference conditions: semi-open space – wall-mounted device.

EN: **heating capacity available in Defenders with serial numbers: EHN100 – start from no. 12/00867, EHN150 – start from no. 12/00820, EHN200 – start from no. 12/00544



| device | | DEFENDER | | | | | |
|---|-----------------|------------|-----------|---------|----------------------------|------------|---------|
| Parametras | unit of measure | 100 WHN | 150 WHN | 200 WHN | 100 EHN | 150 EHN | 200 EHN |
| Maximum width of a single door for one device | [m] | 1 | 1,5 | 2 | 1 | 1,5 | 2 |
| Maximum height of door | [m] | 4,0 | | | | | |
| Heating output range | [kW] | 7,5-10 | 13,5-19,5 | 19-28 | 6,0 | 12,0 | 13,5 |
| Maximum flow rate | [m³/h] | 1880 | 3570 | 4890 | 2150 | 3500 | 5000 |
| Maximum temperature of heating medium | [°C] | 95 | | | - | | |
| Maximum working pressure | [MPa] | 1,6 | | | - | | |
| Water volume | [dm³] | 0,5 | 0,85 | 1,2 | - | | |
| Diameter of stub pipe connectors | ["] | 3/4 | | | - | | |
| Supply voltage | [V/Hz] | 1 ~ 230/50 | | | 1~230/50 3~400/50 | 3 ~ 400/50 | |
| Power of the electric heater | [kW] | - | - | - | 6,0 | 12,0 | 13,5 |
| Rated current of the electric heater | [A] | - | - | - | 26 (~230V) 8,7 (3~400V) | 17,4 | 19,5 |
| Engine power | [kW] | 0,4 | | | | | |

DEFENDER 100-200 WHN

DEFENDER 100-200 EHN

| device | | DEFENDER | | | | | |
|---------------------------|-----------------|-----------|-----------|-----------|---------|---------|---------|
| Parameter | unit of measure | 100 WHN | 150 WHN | 200 WHN | 100 EHN | 150 EHN | 200 EHN |
| Prąd znamionowy silnika | [A] | 2,8 | | | | | |
| Weight with/without water | [kg] | 27,4/26,9 | 37,4/36,6 | 48,4/47,2 | 25,7 | 35,4 | 45,6 |
| Engine IP | [-] | 20 | | | | | |

* Heating output at the opening of the valve, water temperature of 90°C and temperature of inlet air 15°C.

EN: ** Heating output in the heating mode, fan in speed 3 and temperature of inlet air 5°C.

IMPORTANT! The data concerning the working parameters of DEFENDER, related to a different temperature of the heating medium, is available on request.

10. TECHNICAL INFORMATION TO THE REGULATION (EU) NO 327/2011 IMPLEMENTING DIRECTIVE 2009/125/EC

| | DR 100 | DR 150 | DR 200 |
|-----|--|---------------------------------------|--------------------------------------|
| 1. | 26,0% | 26,0% | 26,0% |
| 2. | B | B | B |
| 3. | Total | Total | Total |
| 4. | 21 | 21 | 21 |
| 5. | VSD-No | VSD-No | VSD-No |
| 6. | 2014 | 2014 | 2014 |
| 7. | VTS Plant Sp. z o.o., CRN 0000144190, Poland | | |
| 8. | 1-2-2801-0232 | 1-2-2801-0233 | 1-2-2801-0234 |
| 9. | 0,68kW, 6182m ³ /h, 128Pa | 0,516kW, 4239m ³ /h, 124Pa | 0,68kW, 6182m ³ /h, 128Pa |
| 10. | 1372RPM | 1370RPM | 1372RPM |
| 11. | 1,0 | 1,0 | 1,0 |
| 12. | <p>Disassembly of the machine must be carried out and/or supervised by qualified personnel with appropriate expert knowledge.</p> <p>Contact a certified waste disposal organization in your vicinity. Clarify what is expected in terms of the quality of dismantling the machine and provision of the components.</p> <p>Dismantle the machine using the general procedures commonly used in mechanical engineering.</p> <p>WARNING</p> <p>Machine parts can fall The machine is made up of heavy parts. These parts are liable to fall during dismantling. This can result in death, serious injury, or material damage.</p> <p>Follow the safety rules:</p> <ol style="list-style-type: none"> 1. Disconnect all electrical connections. 2. Prevent reconnection. 3. Make sure that the equipment is at zero voltage. 4. Cover or isolate nearby components that are still live. <p>To energize the system, apply the measures in reverse order.</p> <p>Components:</p> <p>The machines consist for the most part of steel and various proportions of copper, aluminum and plastics (Impeller made of SAN - styrene, acrylonitrile, construction material with 20% glass fiber) and rubber-neoprene (seat of bearings/hub). Metals are generally considered to be unlimitedly recyclable.</p> <p>Sort the components for recycling according to whether they are:</p> <p>Iron and steel, aluminum, non-ferrous metal, e.g. windings (the winding insulation is incinerated during copper recycling), insulating materials, cables and wires, electronic waste (capacitor ect.), plastic parts (impeller, winding cover ect.), rubber parts (neoprene). The same goes for cloths and cleaning substances which have been used while working on the machine.</p> <p>Dispose of the separated components according to local regulations or via a specialist disposal company.</p> | | |
| 13. | <p>Long failure-free operation depends on keeping the product/device/fan within performance limitations described by selection software or maintenance manual.</p> <p>For proper operation, read carefully maintenance manual, with special attention on "installation", "start-up", and "maintenance" chapters.</p> | | |
| 14. | fan casing, internal profiles | | |

DEFENDER 100-200 WHN

DEFENDER 100-200 EHN

EN: **IMPORTANT!** *The drawings with the elements of automatics contain only visualisations of sample products.*
IMPORTANT! *One wall-mounted DX controller can support the maximum of 1 curtain of the WHN or EHN type.*
The maximum length of the conductor, from the curtain to the programming device, is 100 m.

***The device does not contain:** *main switch, fuses and feeder cable*

Prior to the dismantling of any cover, shut down the electric power (at least by disconnecting the main switch). Electrical connection of the thermostat, door switch, valve actuator or control panel is to be carried out before the device is connected to the electric power supply. Any potential changes to the electrical connections between control equipment and control system of the device are to be carried out in the power off mode (disconnect at least the main switch). All electrical connection should be carried out by a qualified person, according to the documentation delivered with the device, as well as the afore-mentioned connection diagrams.

EN

Complaint Form

| | | | | | | |
|---|--|--|--|--|--|--|
| <p>VTS POLSKA Sp. z o.o. Al. Grunwaldzka 472 A 80-309 Gdańsk Polska</p> <p>EN</p> <p>www.vtsgroup.com</p> | | | | | | |
|---|--|--|--|--|--|--|

| |
|---|
| The company submitting the notification: |
| The company that installed the equipment: |
| Date of notification: |
| Type of device: |
| Factory number*: |
| Date of purchase: |
| Date of installation: |
| Place of installation: |
| Detailed description of defect: |
| Contact person: |
| Name and surname: |
| Telephone: |
| E-mail: |

* This field must be filled, if the complaint notification refers to the following equipment: VOLCANO VR1 and VR2 unit, and DEFENDER air curtains.