

UK

# Basic Plate Heat Recovery Unit

Read this manual and save for future reference!

**exodraft**

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**Legend**

The following terms are used in this manual to draw attention to potential risks or to important information about the product:

**DANGER**

Indicates an imminent danger situation that can cause death, serious injury or significant property damage in a worst-case scenario.

**CAUTION**

Indicates an imminent danger situation that can cause injury or property damage in a worst-case scenario.

**COMPLY WITH THE FOLLOWING IN ORDER TO MINIMIZE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY:**

1. Use this unit for its intended purpose.
2. Before maintenance or cleaning, the heat source must be shut off and cooled down. You must ensure that the heat source is not turned back on inadvertently.
3. Installation and wiring must be done by authorized personnel.
4. Follow the guidelines and safety standards of the manufacturer.
5. A safety thermostat (ST110) and/or safety valve must be installed and connected to the burner, ensuring disconnection in case of excessive temperatures. The switch must comply with EN 14597.
6. Accessories are not included in this manual. See the separate manuals for these components.

# 1. Product Information

## 1.1 Function

### Application

exodraft Basic Plate is a compact heat recovery unit for use in exodraft system solutions.

The heat exchanger is a compact module that utilizes the passing heat (air to water).

Basic Plate is used primarily in industrial and commercial plants with long operating hours and high exit temperatures (max 600°C) in flue pipes and chimneys.

Basic Plate is easy and fast to maintain and clean.

Typically, it is used in bakeries, the food processing industry, and in metal processing.

The recovered and stored energy may be used for things like production of utility water, water for heating, cleaning, or process water.

Basic Plate can be used in heated process air and flue gas from gas, electricity, and oil (may require a special alloy for the exchanger) or heated water sources.

Several Basic Plate units can be combined modularly.

All parts affected by flue gas are made of stainless steel EN 1.4404. All exterior parts are made of stainless steel EN 1.4301.

### Limitations

Strictly for indoor installation.

Range of operation: 250-1000 kW (nominal burner power input).

Max. temperature 600°C

Process air or flue gas must be of a nature that does not clog up the exchangers in short time.

## 1.2 Shipping

### Shipping

Basic Plate is shipped strapped to a pallet along with a manual.  
The package may contain loose components.

### Standard packing slip

If other components are also shipped, these will appear as separate items on the packing slip

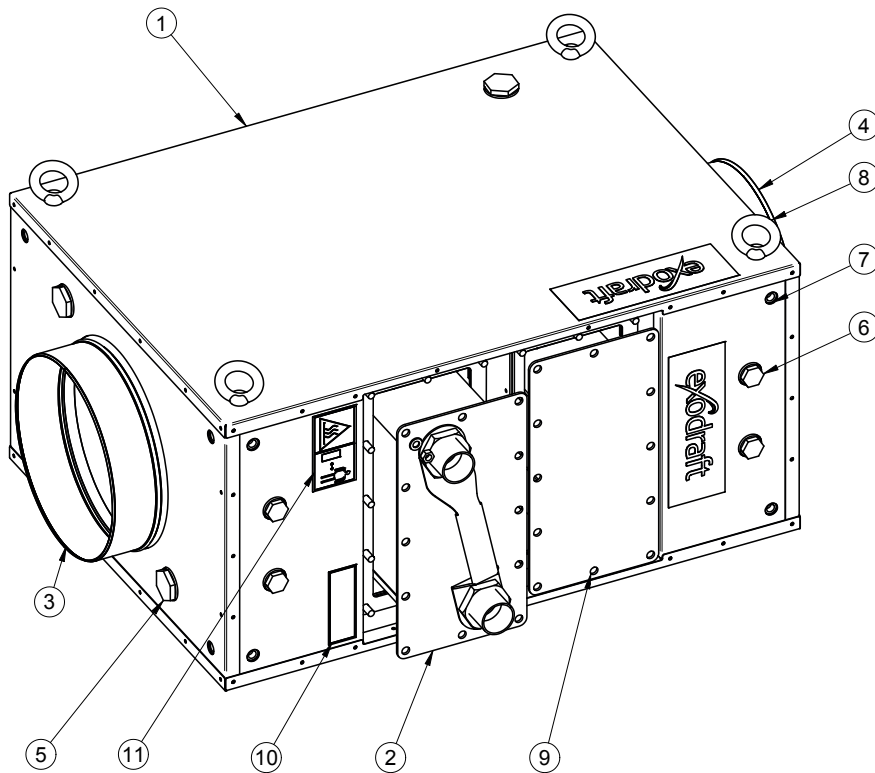
## 1.3 Warranty

**exodraft** products must be installed by qualified personnel. Failure to comply gives **exodraft a/s** the right to declare the product warranty null and void in whole or in part.

**exodraft** reserves the right to make changes to these guidelines without prior notice.

## 1.4 Components

### Standard components



1. Cabinet
2. Heat exchanger
3. Inlet connection
4. Outlet connection
5. 1" drain (all 1" connections are drains)
6. 1/2" measuring point (all 1/2" connections are measuring points)
7. M12 thread for fastening (There is a total of three mounting points in each corner of Basic Plate, each with M12 thread)
8. Lifting eye
9. Cover
10. Nameplate
11. Danger/ Caution sign

### Optional components

PT 1000 temperature transmitter		
BP Model no.	PT 1000 Type	Length
BP250	2400278	300 mm
BP500	2400278	300 mm
BP750	2400310	400 mm
BP1000	2400310	400 mm
BP2000	2400310	400 mm

2400266	Pressure connection for $\varnothing 8/4$ mm hose
2400067	Double cover plate
2400068	Single cover plate
2000335	Silicone hose $\varnothing 8/\varnothing 4$ mm
2400355	ST110 safety thermostat

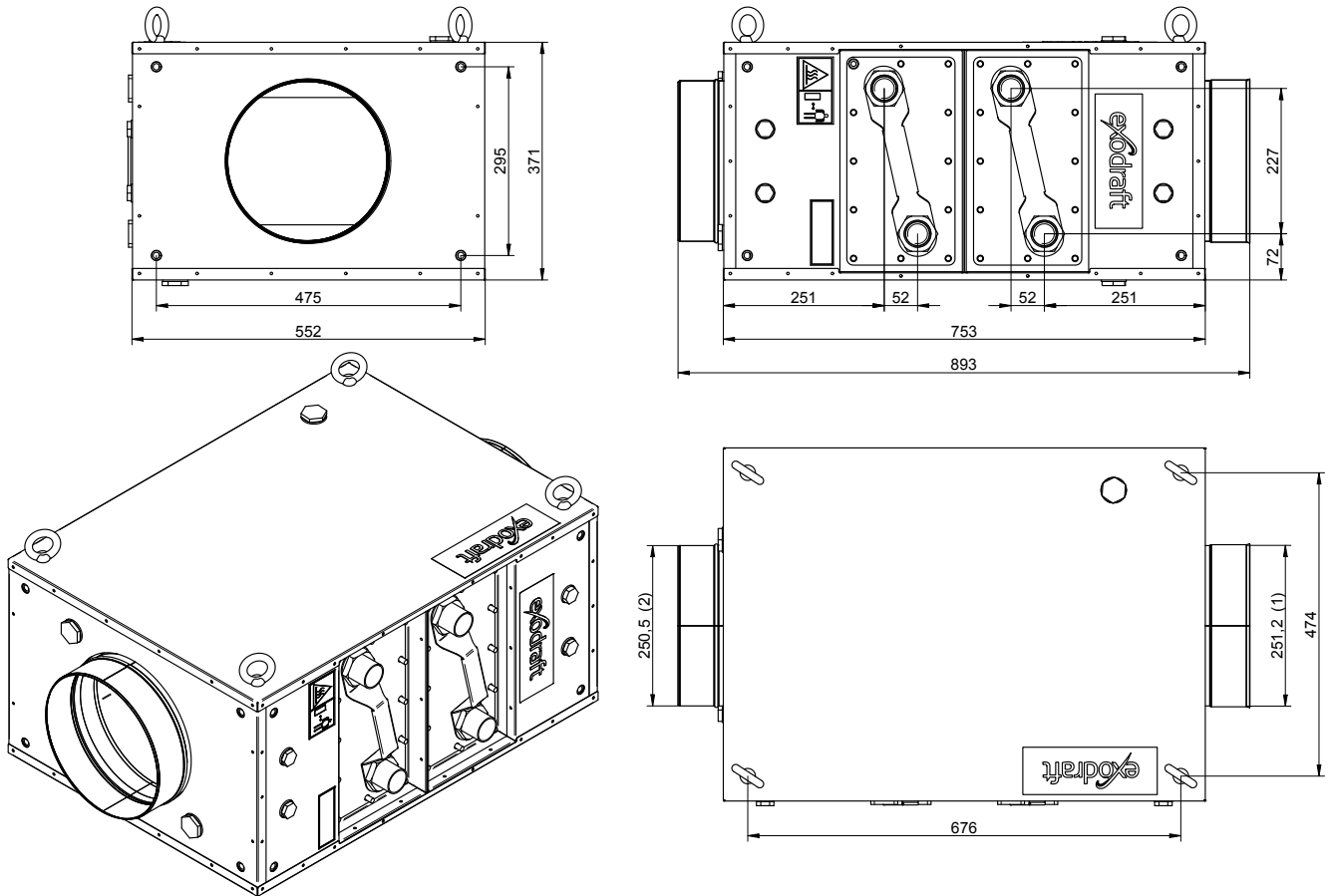
**1.5 Basic Types**

<b>exodraft item number</b>	<b>Type (Basic Plate)</b>	<b>Description</b>	<b>Approximate connection power</b>	<b>Natural gas Nominal flow 250°C λ 1.2</b>
8002300	BP250	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 1 step on air side	250 kW	600 m <sup>3</sup>
8002301	BP250	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 2 steps on air side	250 kW	600 m <sup>3</sup>
8002500	BP500	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 1 step on air side	500 kW	1200 m <sup>3</sup>
8002501	BP500	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 2 steps on air side	500 kW	1200 m <sup>3</sup>
8002600	BP750	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 1 step on air side	750 kW	1700 m <sup>3</sup>
8002601	BP750	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 2 steps on air side	750 kW	1700 m <sup>3</sup>
8002700	BP1000	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 1 step on air side	1000 kW	2300 m <sup>3</sup>
8002701	BP1000	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 2 steps on air side	1000 kW	2300 m <sup>3</sup>
8002800	BP2000	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 1 step on air side	2000 kW	4600 m <sup>3</sup>
8002801	BP2000	Basic housing AIREC exchanger (Plate), Copper brazed Standard pipe connection dimensions Max. 600°C 2 steps on air side	2000 kW	4600 m <sup>3</sup>



## 2. Technical Specifications

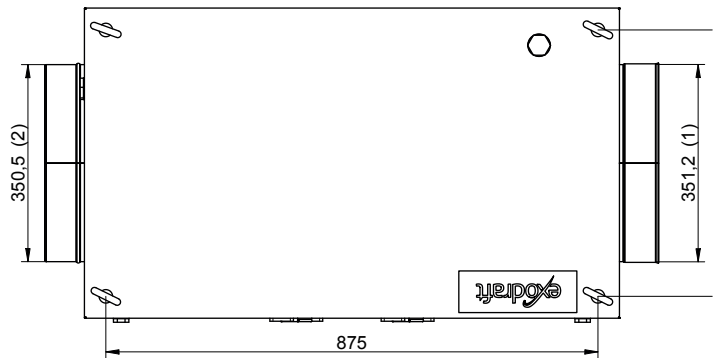
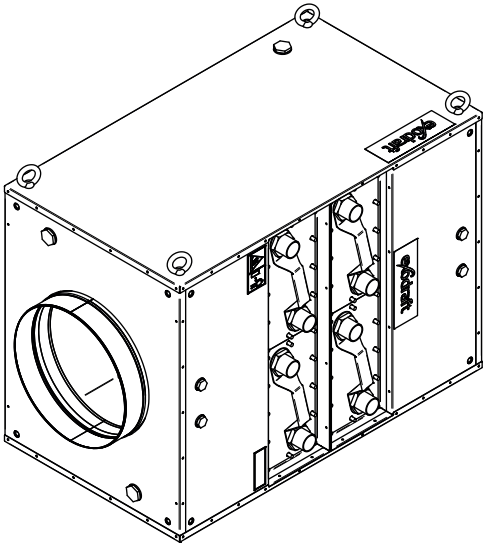
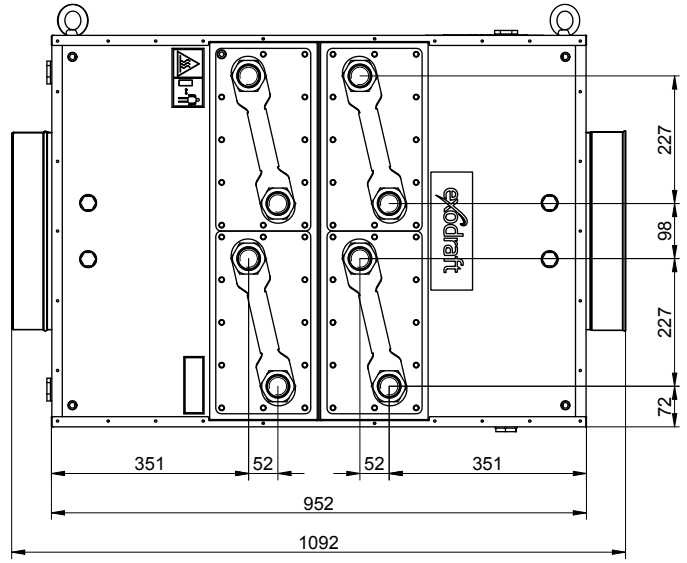
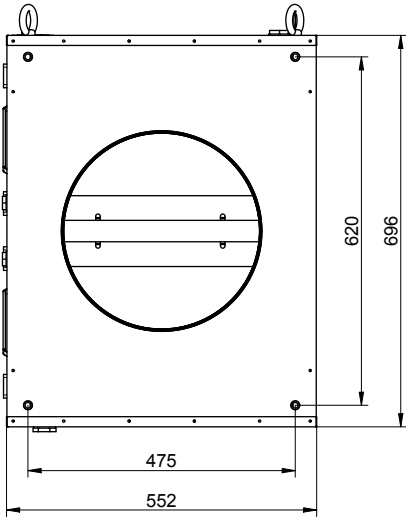
### 2.1 Type BP250



- (1) specifies inside sleeve dimensions
- (2) specifies outside adapter dimensions



## 2.2 Type BP500

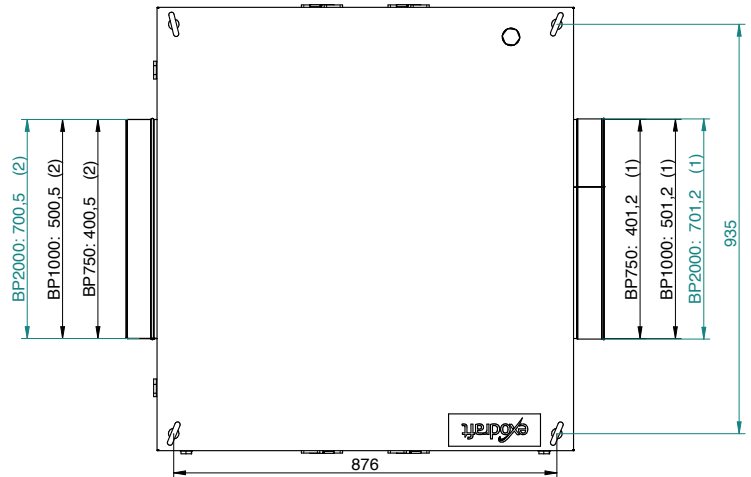
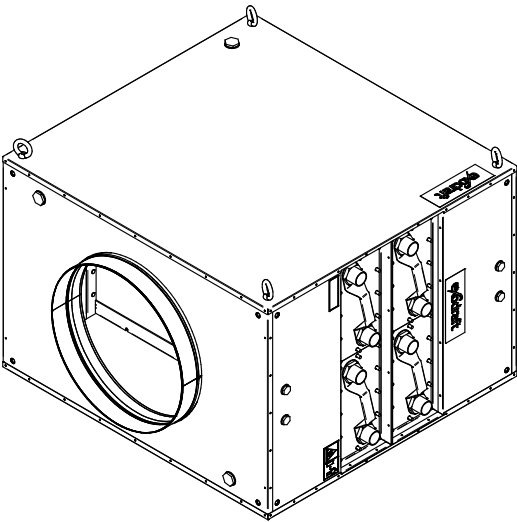
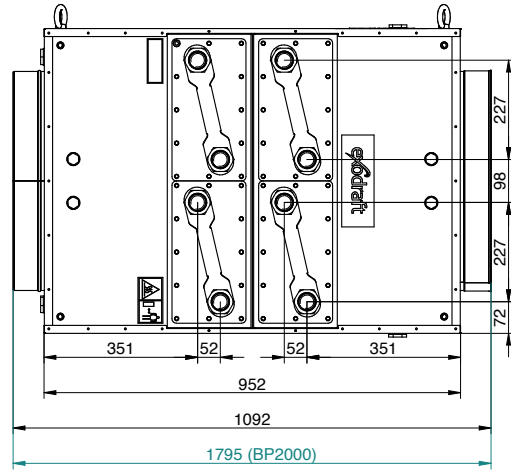
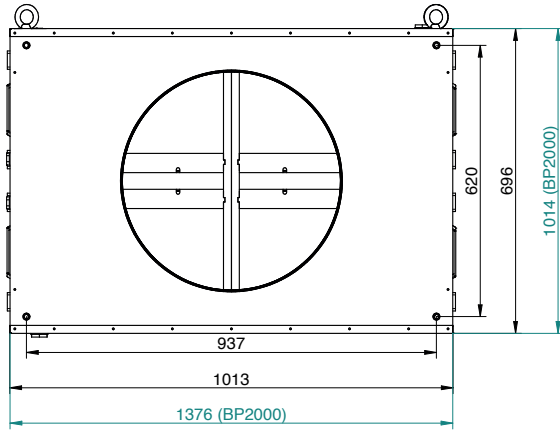


- (1) specifies inside sleeve dimensions
- (2) specifies outside adapter dimensions





### 2.3 Type Basic Plate 750/1000/2000



- (1) specifies inside sleeve dimensions
- (2) specifies outside adapter dimensions

### 3. Mechanical Installtion

#### 3.1 General



**CAUTION**

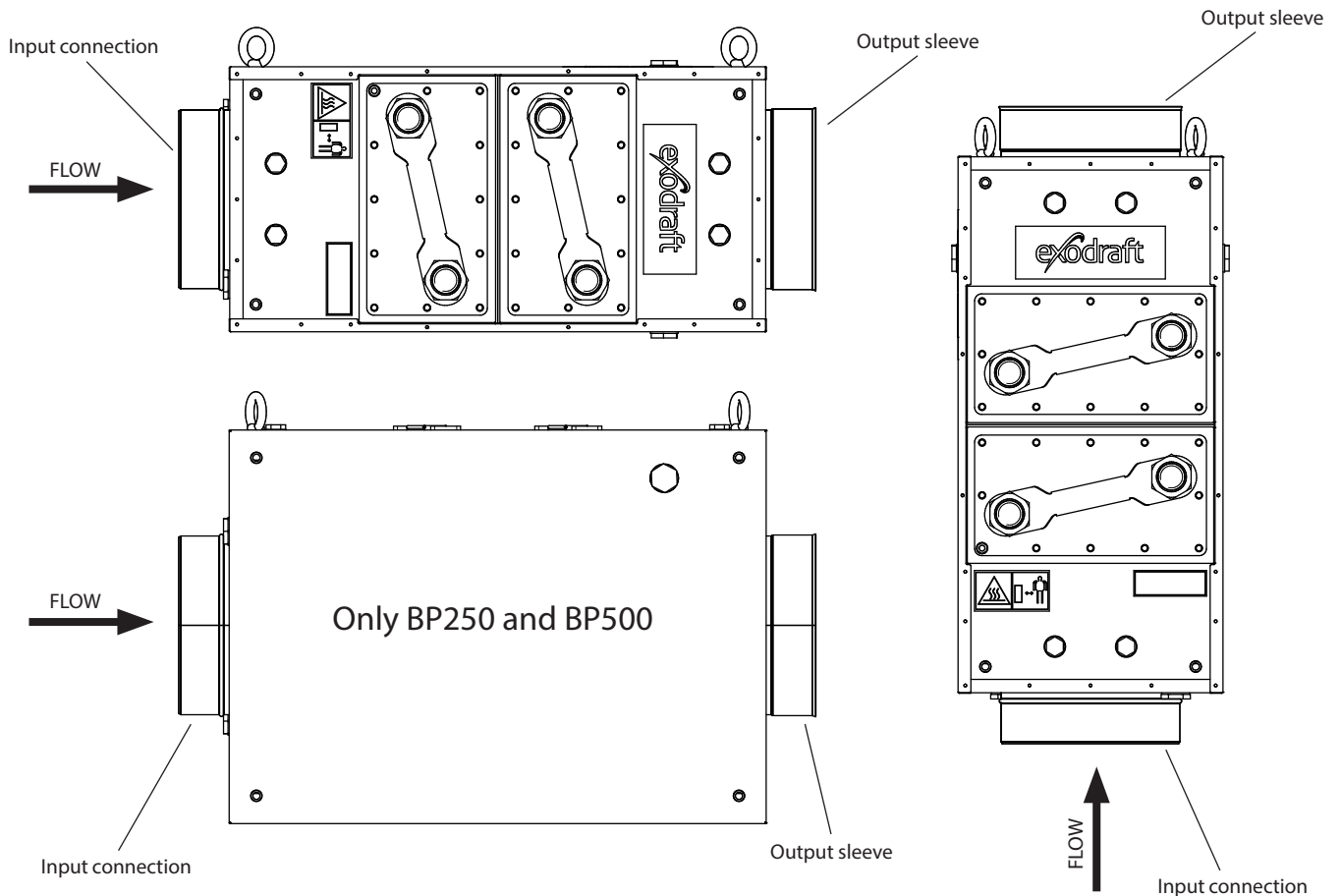
If the exodraft Basic Plate heat recovery unit is not installed, maintained, and/or operated in compliance with the manufacturer’s instructions, conditions may arise which could lead to personal injury or material damage.

Basic Plate must be installed by qualified personnel in compliance with these instructions and all local regulations.

Observe national regulations regarding distance from flammable materials.

#### 3.2 Orientation

Basically, BP250 and BP500 can be oriented in 3 different ways, and BP750, BP1000 and BP2000 in two different ways. When orienting Basic Plate heat recovery units, it is important to consider placement of drain connections as well as options for ventilating the heat exchangers.





### 3.3 Placement

Placement of the Basic Plate heat recovery unit must be considered carefully.

We recommend placing the Basic Plate as close to the heat source as possible. Furthermore, you must allow for hot surfaces on the Basic Plate.



#### DANGER

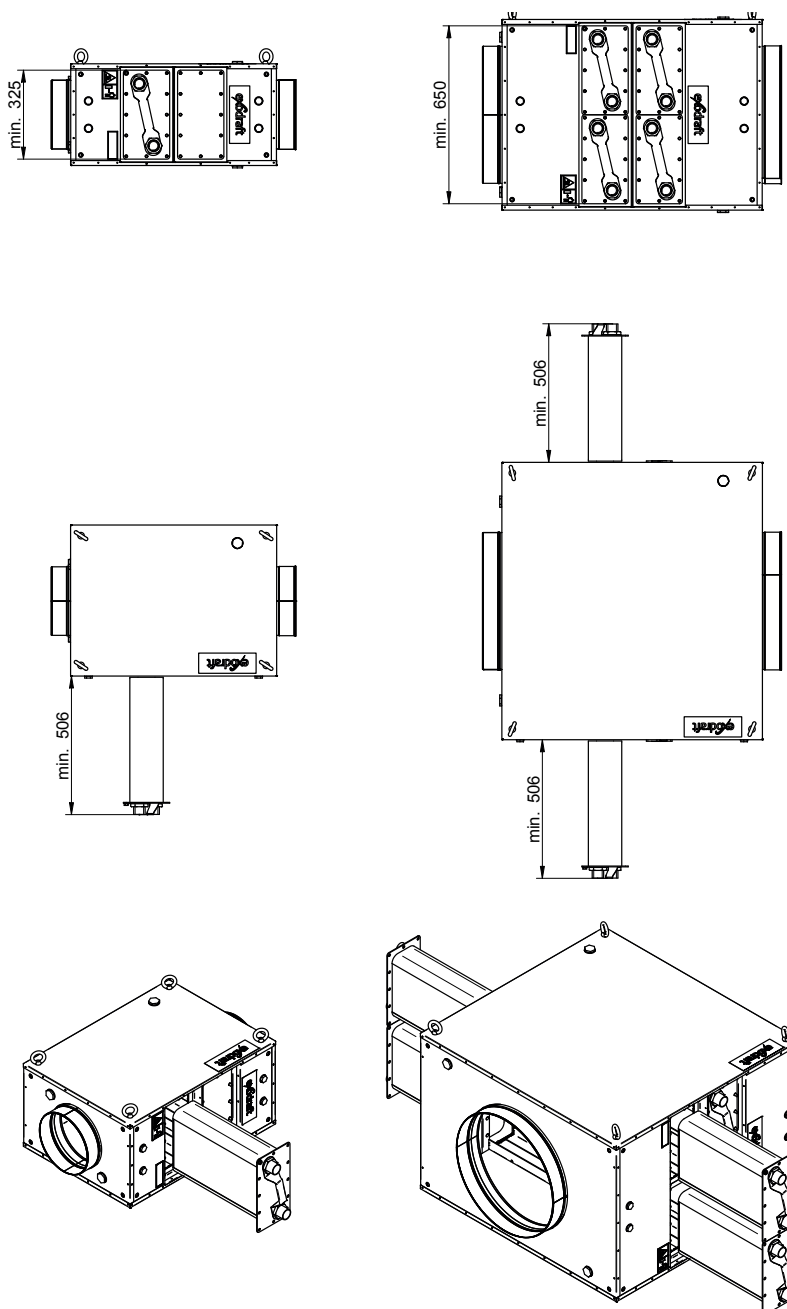
**Observe national regulations regarding distance from flammable materials.**

If Basic Plate is placed where it is easily accessible, it must be shielded to avoid inadvertent touch and any risk of collision.



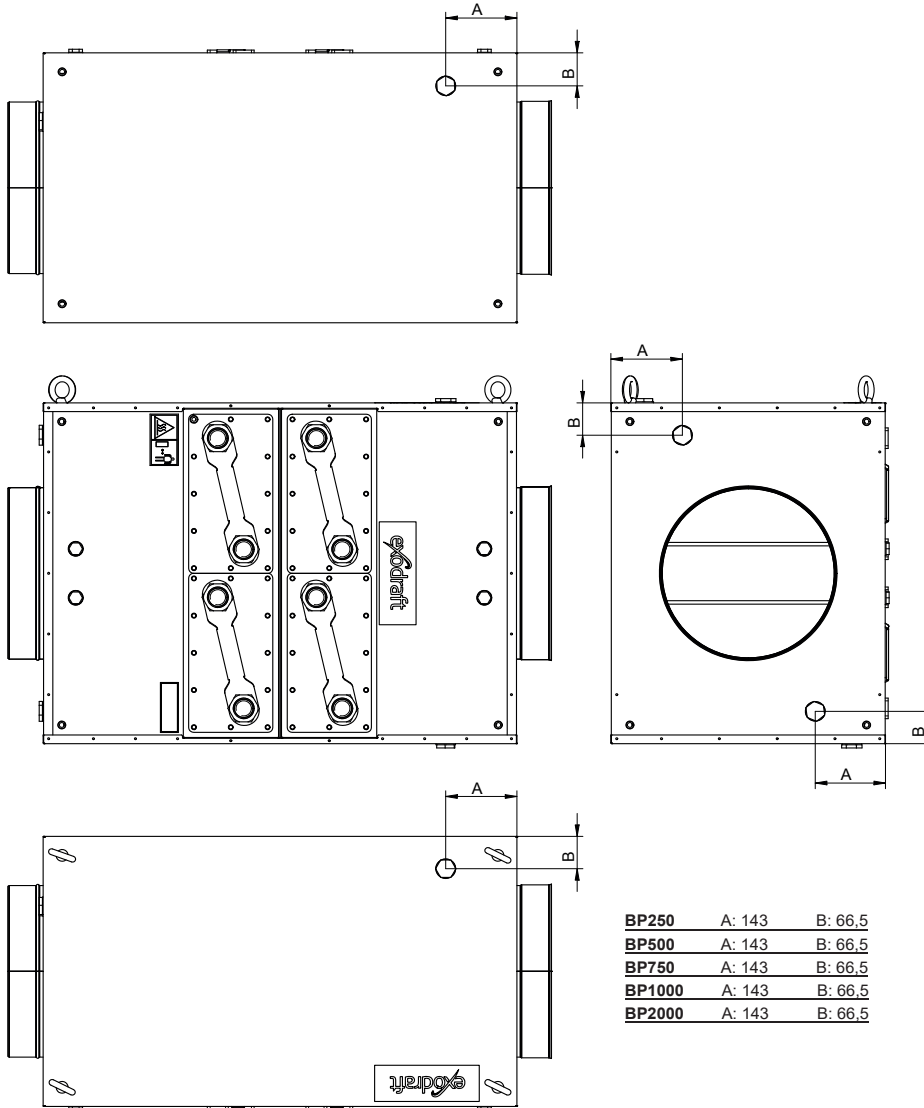
#### CAUTION

**Basic Plate must be installed in a way that accommodates pulling out the exchanger for servicing and maintenance.**



### 3.4 Drain connection

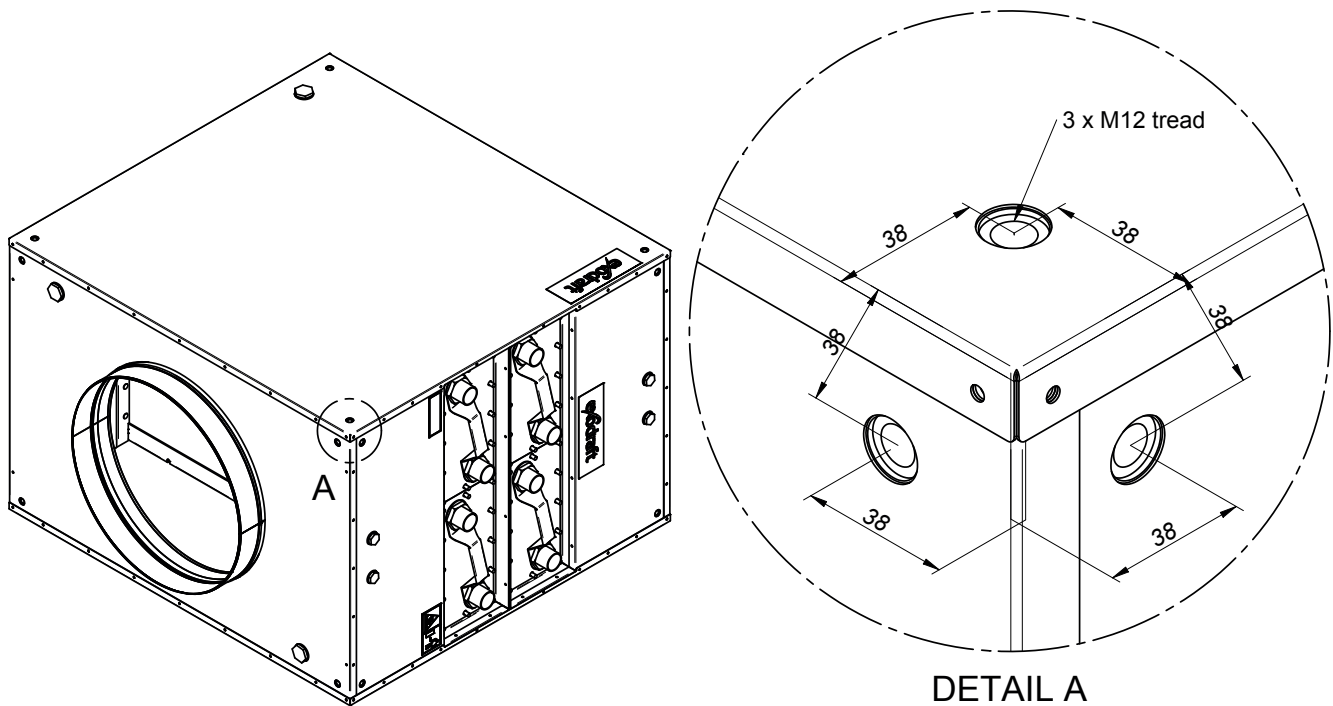
#### Placement of drain holes in Basic Plate



### 3.5 Mounting

The weight must be distributed among at least 4 mounting corners (see section 3.6 – Mounting points). Mounting points are only intended to support the weight of the product itself. Basic Plate is not built to support the weight of any chimney.

 **DANGER**  
Max. load on mounting corner 100kg



exodraft item number	Type (Basic Plate)	Weight incl. heat exchangers [kg]	Number of heat exchangers	Weight each heat exchanger [kg]
8002300	BP250	64	1	17,5
8002301	BP250, 2 steps	80	2	17,5
8002500	BP500	114	2	17,5
8002501	BP500, 2 steps	150	4	17,5
8002600	BP750	190	4	15
8002601	BP750, 2 steps	250	8	15
8002700	BP1000	196	4	17,5
8002701	BP1000, 2 steps	266	8	17,5
8002800	BP2000	550	8	17,5
8002801	BP2000, 2 steps	695	16	17,5

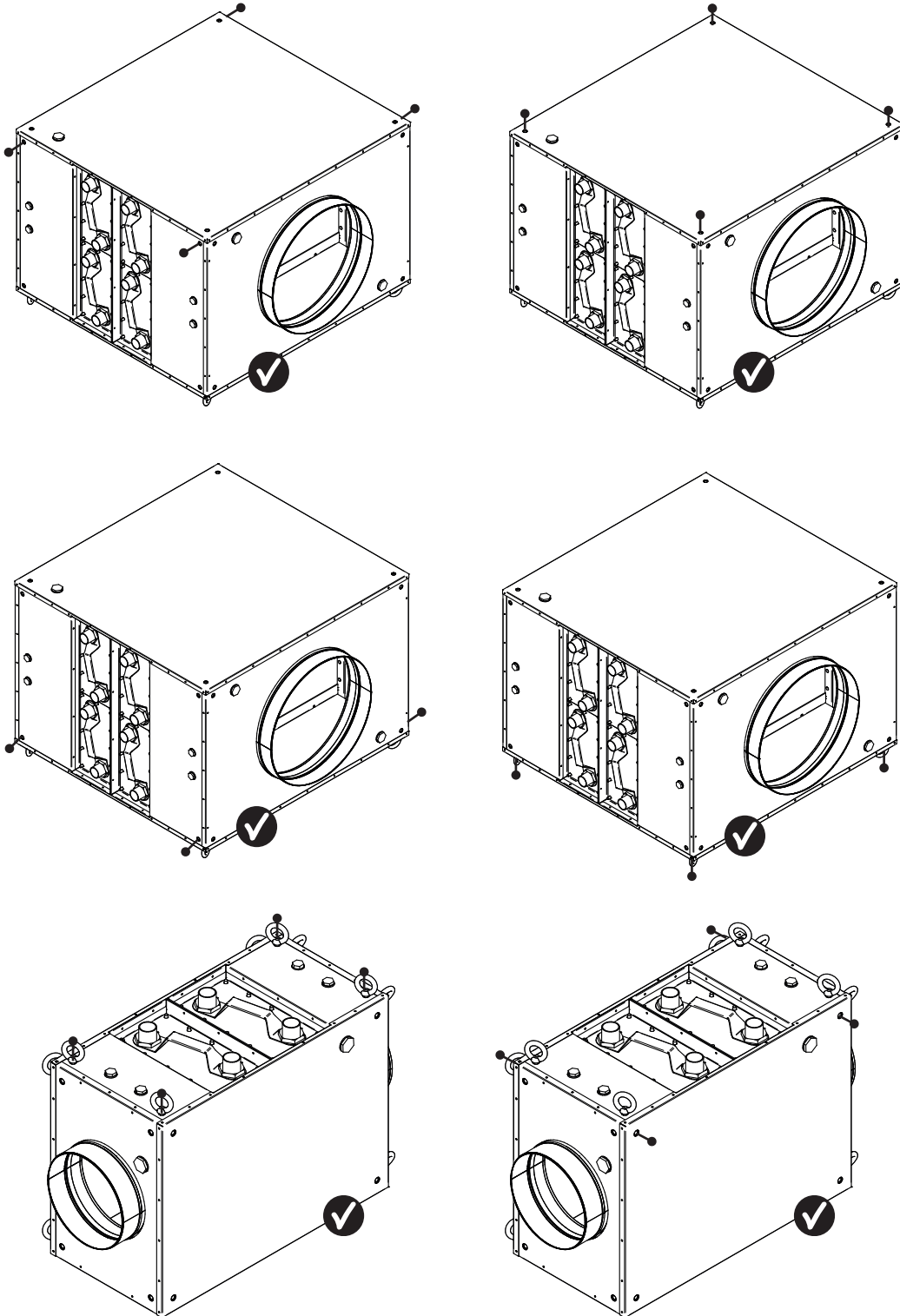
### 3.6 Mounting Points

Basic Plate must be fitted in at least four different corners of the product.

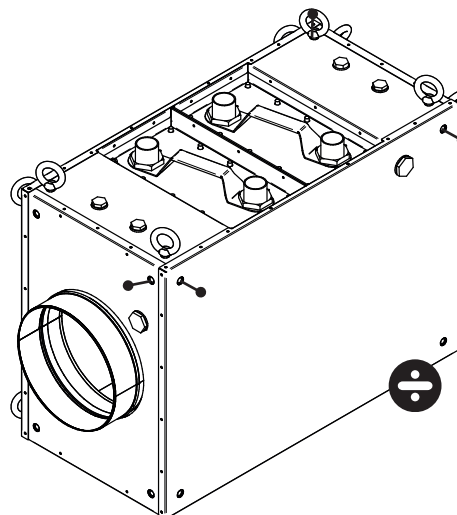
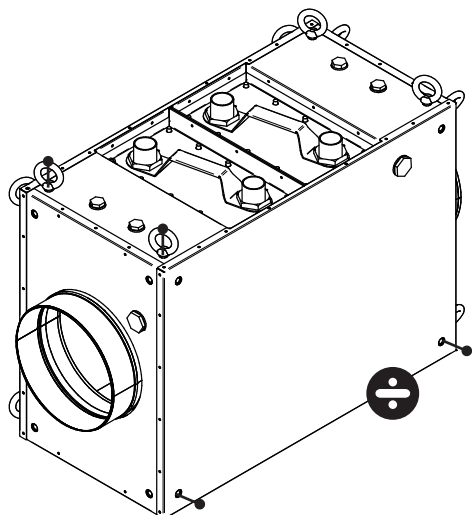
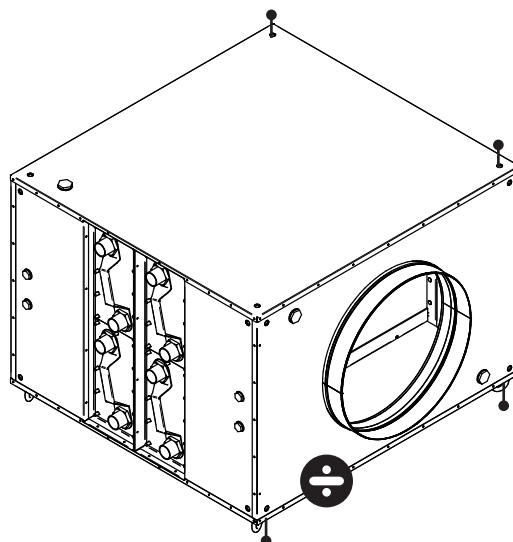
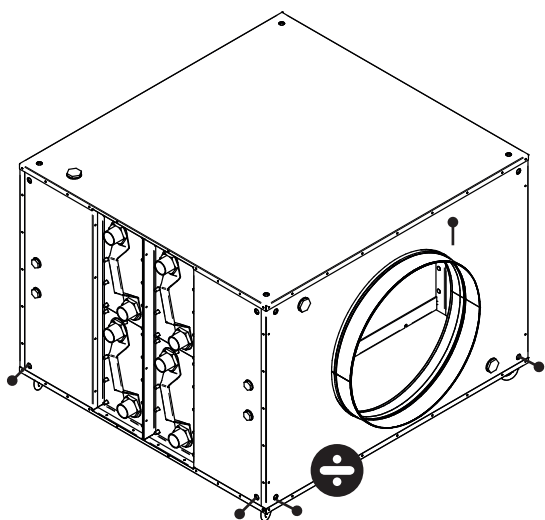
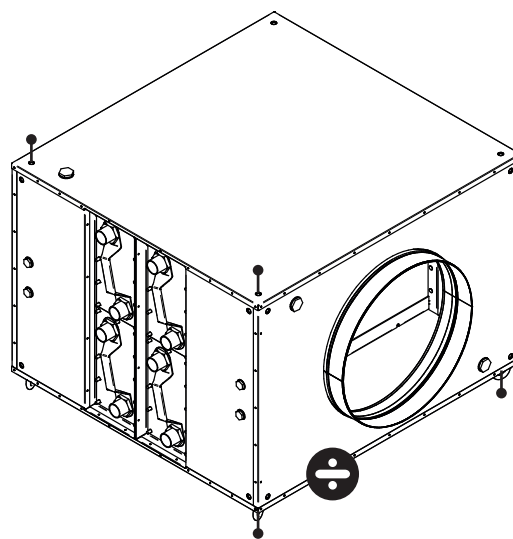
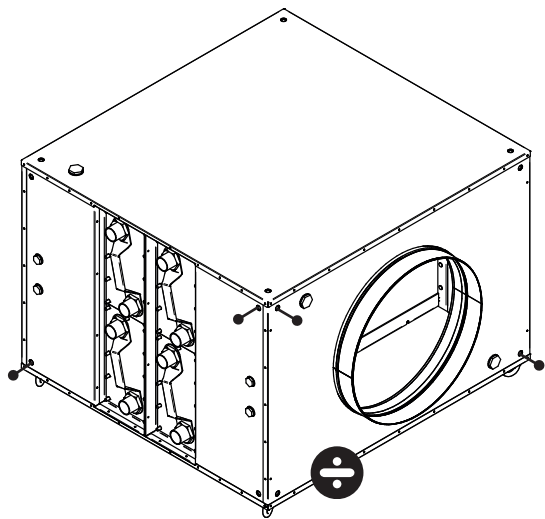
In addition, for safety reasons, it must be ensured that the weight of the product is evenly distributed over all four assembly points.

The following examples of this and next page show different solutions to approved and unauthorized mounting methods:

#### Approved mounting methods



 **Unapproved mounting methods**





### 3.7 Connection

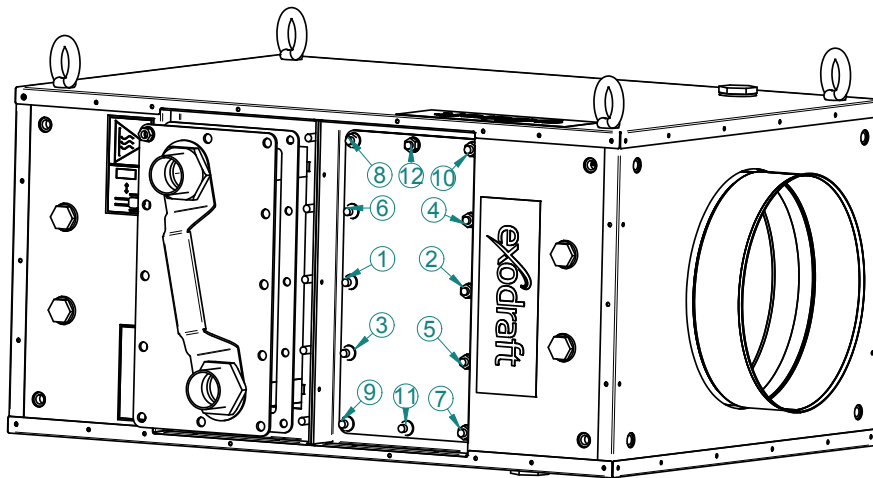
- Connection on heat exchangers is 1 1/4" outside thread
- Connection to drain is 1" inside thread
- Connection to measuring points is 1/2" inside thread

#### CAUTION



**Basic Plate comes with heat exchangers temporarily mounted for shipping. When installing, the included gaskets, nuts, and washers must be fitted. Tightening the exchanger is done as shown on the illustration below. Nuts are tightened crosswise to 20 Nm.**

As a rule, the washer for the heat exchanger can be used only once.



When selecting gasket material, keep in mind that the temperature for drains and measuring points can be the same as the temperature of the flue gas.

We recommend installing a water trap on the drain connection. The water trap should be placed a good distance from the Basic Plate to avoid the water evaporating.



#### DANGER

**The safety thermostat must be fitted on the supply side.**

**Pressure relief valve must be fitted to the water circuit.**

**See recommended system pressure in section 8.**

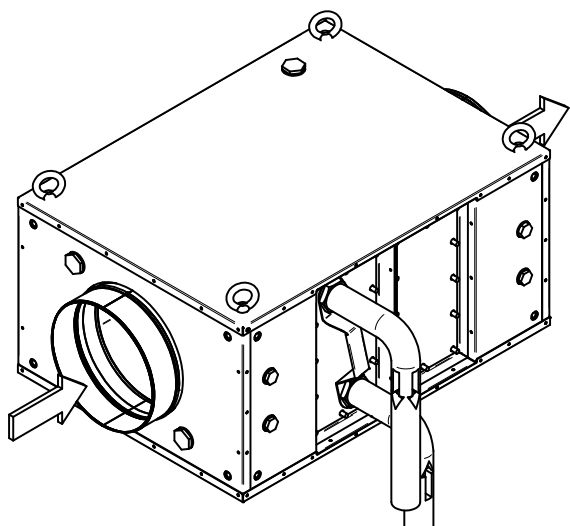


#### CAUTION

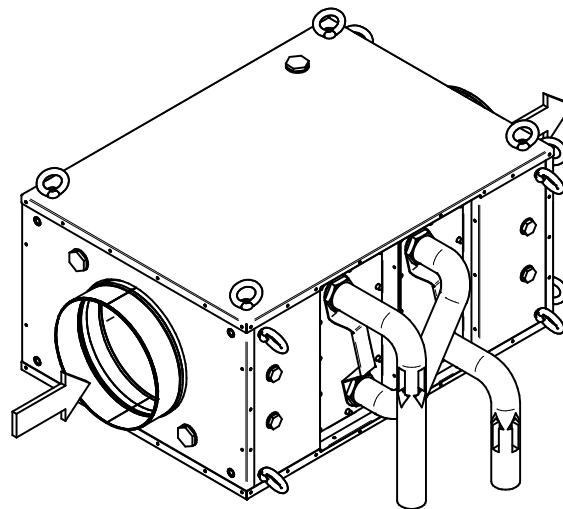
**If the drain is connected to the sewer system, you must ensure that condensate complies with any emission requirements.**



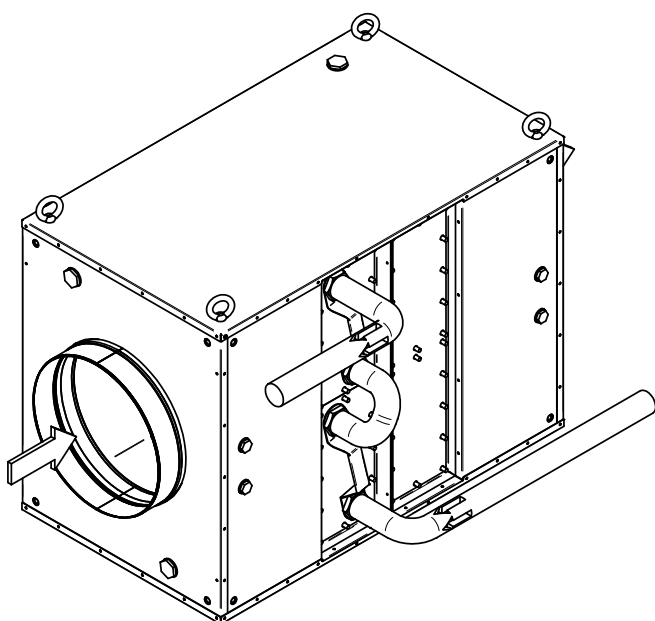
**Water connection for BP250**



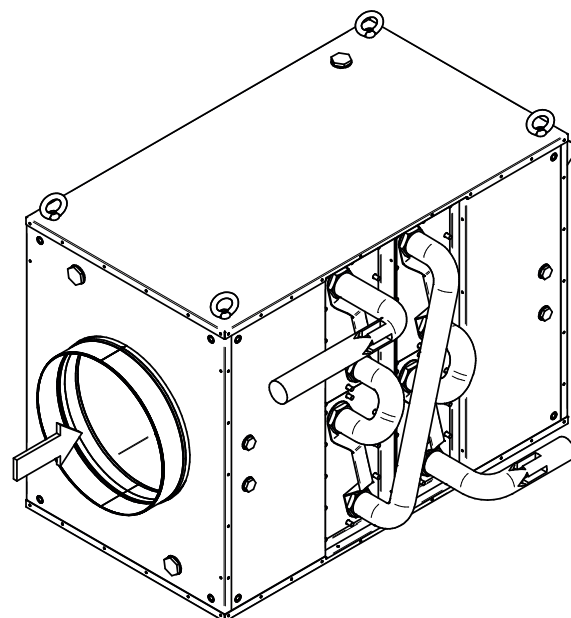
**Water connection for BP250, 2 step**



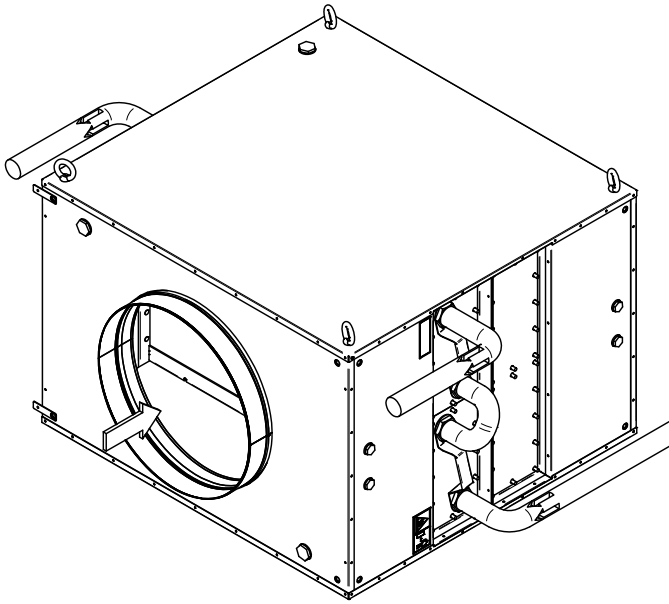
**Water connection for BP500**



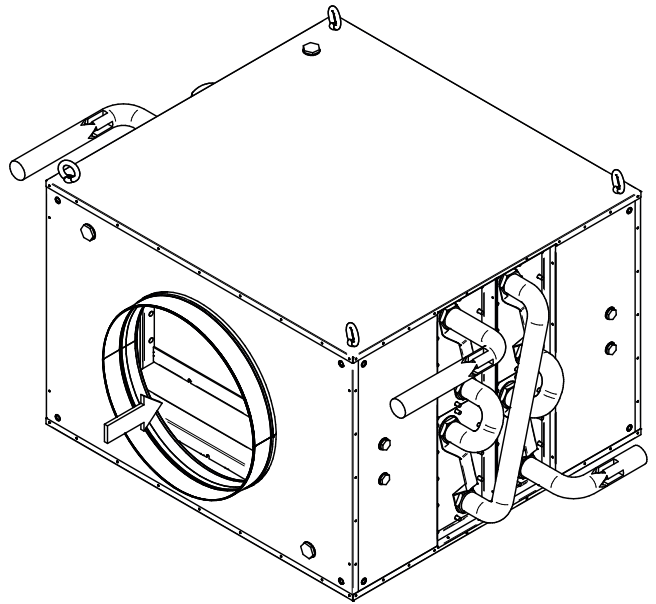
**Water connection for BP500, 2 step**



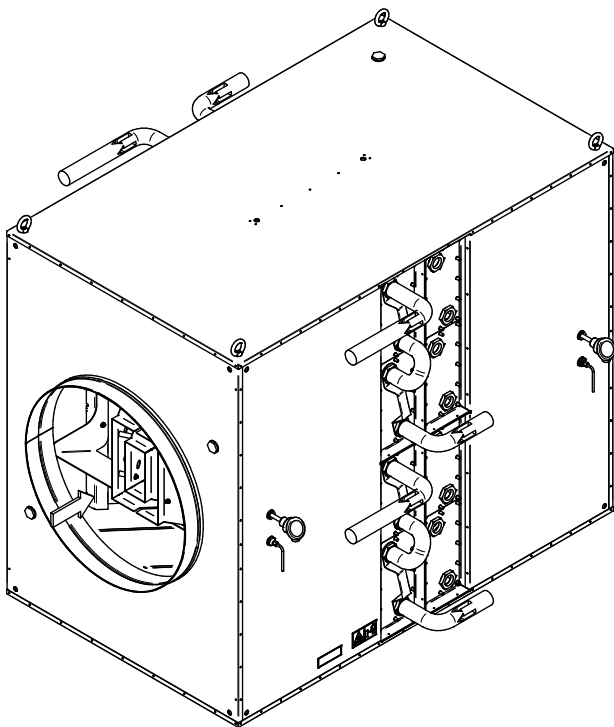
**Water connection for BP750/1000**



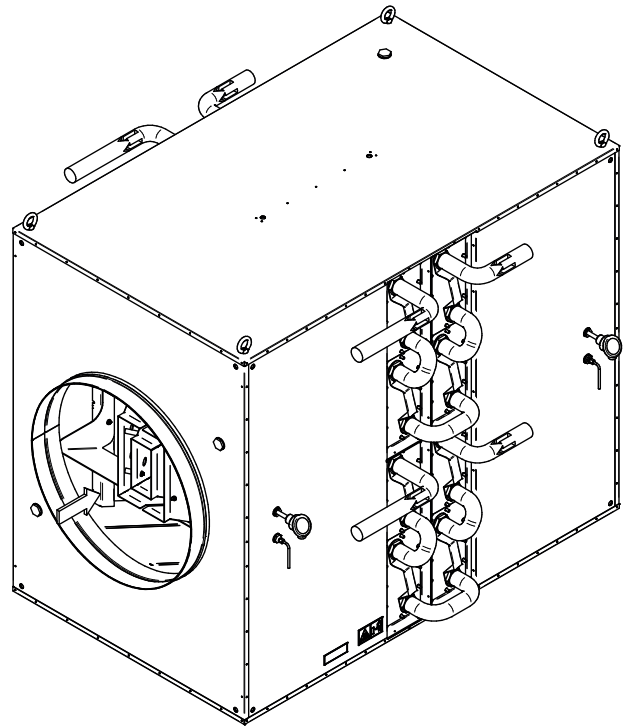
**Water connection for BP750/1000, 2 step**



**Water connection for BP2000**



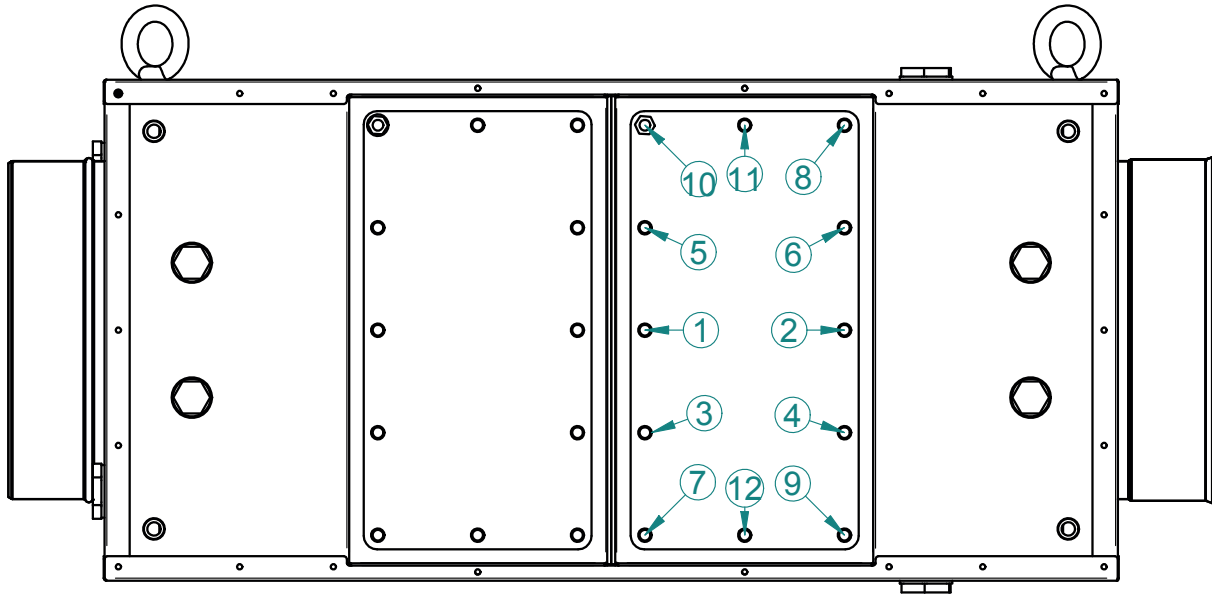
**Water connection for BP2000, 2 step**



### 3.8 Installation without Water Connection

If Basic Plate is installed without water connection, the exchanger must be pulled out and a cover plate installed (if needed see section 1.4 – Optional Components).

Tightening of the exchanger cover plate is done as shown in the illustration. Nuts are tightened crosswise to 20 Nm.



## 4. Electrical Installation

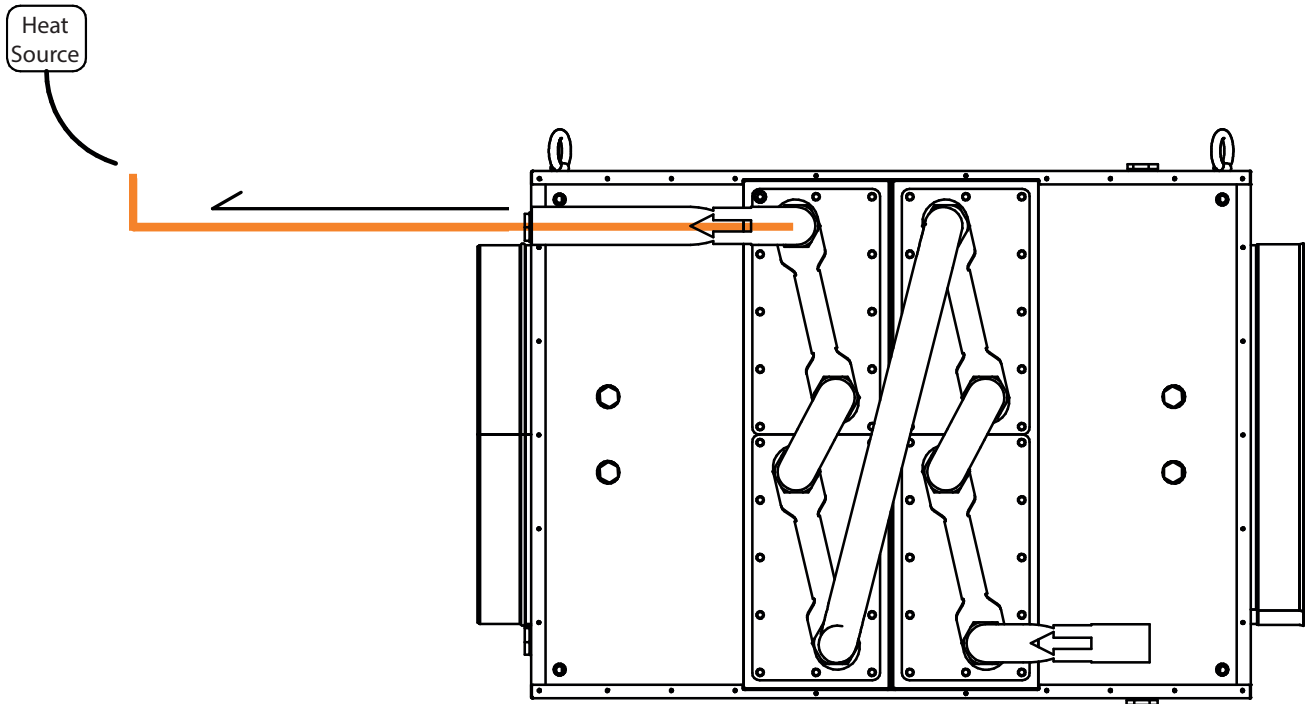
### 4.1 Placement of Safety Thermostat



**CAUTION**

If using safety thermostat ST110, it must be placed away from the heat source, so the ambient temperature of the sensor is as low as possible.

If this is not complied with, the boiler may be disabled inadvertently.





## 5. Operating Conditions

### 5.1 Primary-/Flue Gas Side

- Max. flue gas temperature: 600°C
- Max. working pressure: 5000 Pa
- Min. working pressure: -5000 Pa
- Max. temperature on surface of heat exchanger: 190° (calculated in Opticalc)
- Flue gas quality: check that the flue gas is not corrosive for exchanger (option of other types of exchangers upon request)
- The chemical composition and pH of the condensate shall be checked before disposal

### 5.2 Secondary-/Liquid Side

- Max. working pressure: copper brazed heatexchanger 12 bar<sub>a</sub> / nickel brazed heatexchanger 6 bar<sub>a</sub>.
- Min. working pressure: recommended system pressure 1.5 bar<sub>a</sub>. See recommended system pressure in section 8.
- Max. temperature on surface of heat exchanger: 190° (calculated in opticalc)
- Max. media temperature is dependent on the surface temperature and the used media



## 6. Startup and Configuration

### 6.1 General

The purpose of this **exodraft** Basic Plate heat recovery unit is to recover surplus energy from flue gasses and process air. The unit is environmentally friendly, economical, and compact.

### 6.2 System Startup



#### CAUTION

**Basic Plate should not be put into operation before being properly installed.  
Danger of contact with hot components.**

1. Connect the water and bleed the system
2. If condensation is a possibility, connect the drain to an appropriate outlet
3. Activate the circulation pump (not supplied by **exodraft**) and check that it's running
4. Check that system pressure is consistent with system pressure tables in section 8
5. Do a slow and controlled warmup of the Basic Plate water recovery unit
6. Check joints and connections for any leaking



## 7. Maintenance and Troubleshooting

### 7.1 Maintenance and Cleaning

**CAUTION**

**Basic Plate should be cleaned at regular intervals depending of the level of dirt in the passing air. The unit should be checked for leaks, corrosion, and wear at least once a year.**

To ensure maximum flow through the exchanger cassettes, it is important to clean them. The cleaning interval will depend on how much dirt the unit is exposed to.

### 7.2 Cleaning of Exchanger

1. Drain the water from the exchanger cassettes
2. Detach hose/pipe connections to exchanger
3. Loosen all nuts on the exchanger and pull the exchanger out by the handle
4. When cleaning the exchanger, you can use compressed air, soaking, or pressure washing
5. After cleaning, the exchanger is refitted. (Note that as a rule, the gasket can only be used once)
6. Nuts on the exchanger should be tightened crosswise to 20Nm
7. Reattach hose/pipe connections to exchanger
8. Follow directions in point 5.2 as far as restarting the system

**CAUTION**

**Use gloves and protective glasses when cleaning the exchanger.**

**Note: The exchangers are heavy – see weight table below.**

exodraft item number	Exchanger product number	Number of exchangers	Weight per exchanger
BP250	3200989	1	17,5kg
BP250, 2 steps	3200989	2	17,5 kg
BP500	3200989	2	17,5kg
BP500, 2 steps	3200989	4	17,5 kg
BP750	3200988	4	15 kg
BP750, 2 steps	3200988	8	15 kg
BP1000	3200989	4	17,5 kg
BP1000, 2 steps	3200989	8	17,5 kg
BP2000	3200989	8	17,5 kg
BP2000, 2 steps	3200989	16	17,5 kg

### 7.3 Spare Parts

Spare parts are available for Basic Plate. The table below shows the available parts:

2400282	Heat exchanger gasket
3200988	Exchanger Cross30-C-120-G1.25 Copper brazed
3200989	Exchanger Cross30-C-140-G1.25 Copper brazed
3201014	Exchanger Cross30-N-120-G1.25 Nickel brazed
3200880	Exchanger Cross30-N-140-G1.25 Nickel brazed



## 7.4 Troubleshooting

Problem	Possible cause	Rectification
The supply water temperature is low and the temperature difference between the flue gas intake and exhaust is too small.	<ul style="list-style-type: none"> <li>- There is air in the water system</li> <li>- The circulation pump is not operating correctly</li> <li>- The water flow is too fast</li> <li>- The mixing valve is not operating correctly</li> <li>- The unit is in bypass mode</li> <li>- The water connections have been switched</li> <li>- The exchanger cassette is blocked by debris</li> </ul>	<ul style="list-style-type: none"> <li>- The system needs to be bled</li> <li>- Check the operation of the circulation pump</li> <li>- Check the operation of the circulation pump and mixing loop</li> <li>- Check the operation of the controller</li> <li>- Check the motor voltage and connection</li> <li>- Correctly connect the supply and return sides. (see section 3.7)</li> <li>- Clean the unit and check that the drain is working</li> </ul>
The burner is disabled at low water temperatures	<ul style="list-style-type: none"> <li>- The safety thermostat is disengaging</li> </ul>	<ul style="list-style-type: none"> <li>- Check the operation of the safety thermostat</li> <li>- Check the safety thermostat setting</li> <li>- The system needs to be bled</li> <li>- Check the operation of the circulation pump</li> </ul>
The burner is disabled at high water temperatures	<ul style="list-style-type: none"> <li>- There is air in the water system</li> <li>- The circulation pump is not operating correctly</li> <li>- The mixing valve is not operating correctly</li> <li>- The burner is operating at excessively high power</li> </ul>	<ul style="list-style-type: none"> <li>- The system needs to be bled</li> <li>- Check the operation of the circulation pump</li> <li>- Check the operation of the controller</li> <li>- A larger Basic Plate is needed or the burner power must be reduced</li> </ul>
Poor chimney draft	<ul style="list-style-type: none"> <li>- The exchanger cassette is dirty</li> </ul>	<ul style="list-style-type: none"> <li>- Clean the unit and check that the drain is working</li> </ul>





## 8. System Pressure

System pressure is tested according to these standards:

2014/68/EU Fluid Group: 1 & 2 201, 2006/42/EF and 2014/35/EU

### 8.1 System Pressure BP250 - 1. step

Minimum system pressure [bar <sub>a</sub> ]														
		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	1,5	2	2,5	2,5	
60°C	30	1,5	1,5	2	2,5	3,5	70°C	30	1,5	2	2,5	3,5	4,5	
	40	1,5	2	3	4	5,5		40	1,5	2,5	3	5	7	
	50	1,5	2,5	3,5	6	8		50	2	3	4,5	6,5	10	
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	2		10	1,5	2	2	2	2,5	
	20	1,5	2	2,5	3	3,5		20	2	2,5	3	3,5	4,0	
80°C	30	2	3	4	4,5	5,5	90°C	30	2,5	4	5	5,5	6,5	
	40	2,5	3,5	5	6,5	8		40	3	5	6,5	8	10	
	50	2,5	4,5	6	8,5	12		50	3,5	5,5	8	11	NA	
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	2	2,5	2,5	3	3		10	2	2,5	3	3,5	4,0	
	20	2,5	3,5	4	5	5,0		20	2,5	3,5	4	5	5,0	
100°C	30	3,5	4,5	6	7	8	100°C	30	3,5	4,5	6	7	8	
	40	4	6	8	10	12		40	4	6	8	10	12	
	50	5	7	10	NA	NA		50	5	7	10	NA	NA	

### 8.2 System Pressure BP250 - 2. step

Minimum system pressure [bar <sub>a</sub> ]														
		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	1,5	2	2,5	2,5	
60°C	30	1,5	1,5	1,5	2	2,5	70°C	30	1,5	2	2,5	3,5	3,5	
	40	1,5	2	2	3	4		40	1,5	2,5	3	4	4,5	
	50	1,5	2,5	2,5	3,5	5		50	1,5	3	3,5	4,5	6	
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	2	2	2	
	20	1,5	2	2	2,5	3,0		20	2	2,5	3	3,5	3,5	
80°C	30	2	2,5	3	4	4,5	90°C	30	2,5	3	4	4,5	5,5	
	40	2	3	4	5	6,5		40	3	4	5	6,5	7,5	
	50	2	3,5	4,5	6	8		50	3	4,5	6	8	10	
Water sample temperature	Δt	200	300	400	500	600	Water sample temperature	Δt	200	300	400	500	600	
	10	2	2,5	2,5	3	3		10	2	2,5	3	3,5	4,5	
	20	2,5	3	3,5	4	4,5		20	2,5	3	3,5	4,5	5,5	
100°C	30	3	4	5	6	7	100°C	30	3	4	5	6,5	7,5	
	40	3,5	5	6,5	8	10		40	3,5	5	6,5	8	10	
	50	4	6	8	10	12		50	4	6	8	10	12	



### 8.3 System Pressure BP500 - 1. step

Minimum system pressure [bar <sub>a</sub> ]														
		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	80°C	30	1,5	1,5	1,5	1,5	2	
	40	1,5	1,5	1,5	1,5	2		40	1,5	1,5	2	2	2,5	
	50	1,5	1,5	1,5	2	3		50	1,5	1,5	2	3	3,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	2	2	2	2,5	
80°C	30	1,5	1,5	2	2	2,5	90°C	30	2	2	2,5	3	3	
	40	1,5	2	2,5	3	3,5		40	2	2,5	3	3,5	4	
	50	2	2,5	3	3,5	4,5		50	2	3	4	5	5,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	2	2	2	2		10	1,5	2	2	2	2	
	20	2	2,5	2,5	3	3,0		20	2	2,5	2,5	3	3,5	
100°C	30	2,5	3	3,5	3,5	4	100°C	30	2,5	3	3,5	3,5	4	
	40	2,5	3,5	4	4,5	5		40	2,5	3,5	4	4,5	5	
	50	3	4	5	6	6,5		50	3	4	5	6	6,5	

### 8.4 System Pressure BP500 - 2. step

Minimum system pressure [bar <sub>a</sub> ]														
		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	1,5	
	40	1,5	1,5	1,5	1,5	1,5		40	1,5	1,5	1,5	2	2	
	50	1,5	1,5	1,5	1,5	2		50	1,5	1,5	1,5	2	2,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	2	2	2,0	
80°C	30	1,5	1,5	1,5	2	2	90°C	30	1,5	2	2,5	2,5	3	
	40	1,5	2	2	2,5	3		40	2	2,5	3	3	3,5	
	50	1,5	2	2,5	3	3,5		50	2	2,5	3	3,5	4	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	2	2	2	2		10	1,5	2	2	2	2	
	20	2	2,5	2,5	2,5	3,0		20	2	2,5	2,5	3	3,5	
100°C	30	2	2,5	3	3,5	3,5	100°C	30	2	2,5	3	3,5	3,5	
	40	2,5	3	3,5	4,5	5		40	2,5	3	3,5	4,5	5	
	50	2,5	3,5	4	5	5,5		50	2,5	3,5	4	5	5,5	

## 8.5 System Pressure BP750 - 1. step

Minimum system pressure [bar <sub>a</sub> ]													
		Exhaust temperature [°C]							Exhaust temperature [°C]				
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	80°C	30	1,5	1,5	1,5	1,5	2
	40	1,5	1,5	1,5	1,5	2		40	1,5	1,5	2	2	2,5
	50	1,5	1,5	1,5	2	3		50	1,5	1,5	2,5	3	3,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	2	2	2	2,5
80°C	30	1,5	1,5	2	2	2,5	90°C	30	2	2	2,5	3	3
	40	1,5	2	2,5	3	3,5		40	2	2,5	3	3,5	4
	50	2	2,5	3	3,5	4,5		50	2,5	3	4	5	5,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	2	2	2		2		10	1,5	2	2
	20	2	2,5	2,5	3	3,0		20	2	2,5	2,5	3	3,0
100°C	30	2,5	3	3,5	3,5	4	100°C	30	2,5	3	3,5	3,5	4
	40	2,5	3,5	4	4,5	5		40	2,5	3,5	4	4,5	5
	50	3	4	5	6	6,5		50	3	4	5	6	6,5

## 8.6 System Pressure BP750 - 2. step

Minimum system pressure [bar <sub>a</sub> ]													
		Exhaust temperature [°C]							Exhaust temperature [°C]				
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	1,5
	40	1,5	1,5	1,5	1,5	1,5		40	1,5	1,5	1,5	2	2
	50	1,5	1,5	1,5	1,5	2		50	1,5	1,5	1,5	2	2,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	1,5	2	2	2,0
80°C	30	1,5	1,5	1,5	2	2	90°C	30	1,5	2	2,5	2,5	3
	40	1,5	2	2	2,5	3		40	2	2,5	3	3	3,5
	50	1,5	2	2,5	3	3,5		50	2	2,5	3	3,5	4,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	2	2	2		2		10	1,5	2	2
	20	2	2,5	2,5	2,5	3,0		20	2	2,5	2,5	3	3,0
100°C	30	2	2,5	3	3,5	3,5	100°C	30	2	2,5	3	3,5	3,5
	40	2,5	3	3,5	4,5	5		40	2,5	3	3,5	4,5	5
	50	2,5	3,5	4	5	5,5		50	2,5	3,5	4	5	5,5



### 8.7 System Pressure BP1000 - 1. step

Minimum system pressure [bar <sub>a</sub> ]													
		Exhaust temperature [°C]							Exhaust temperature [°C]				
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	2
	40	1,5	1,5	1,5	1,5	2		40	1,5	1,5	2	2	2,5
	50	1,5	1,5	1,5	2	3		50	1,5	1,5	2,5	3	3,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	2	2	2	2,5
80°C	30	1,5	1,5	2	2	2,5	90°C	30	2	2	2,5	3	3
	40	1,5	2	2,5	3	3,5		40	2	2,5	3	3,5	4
	50	2	2,5	3	3,5	4,5		50	2	3	4	5	5,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	2	2	2		2		10	1,5	2	2
	20	2	2,5	2,5	3	3,0		20	2	2,5	2,5	3	3,0
100°C	30	2,5	3	3,5	3,5	4	100°C	30	2,5	3	3,5	3,5	4
	40	2,5	3,5	4	4,5	5		40	2,5	3,5	4	4,5	5
	50	3	4	5	6	6,5		50	3	4	5	6	6,5

### 8.8 System Pressure BP1000 - 2. step

Minimum system pressure [bar <sub>a</sub> ]													
		Exhaust temperature [°C]							Exhaust temperature [°C]				
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	1,5
	40	1,5	1,5	1,5	1,5	1,5		40	1,5	1,5	1,5	2	2
	50	1,5	1,5	1,5	1,5	2		50	1,5	1,5	1,5	2	2,5
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	1,5	1,5	1,5		1,5		10	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	1,5	2	2	2,0
80°C	30	1,5	1,5	1,5	2	2	90°C	30	1,5	2	2,5	2,5	2,5
	40	1,5	2	2	2,5	3		40	2	2,5	3	3	3,5
	50	1,5	2	2,5	3	3,5		50	2	2,5	3	3,5	4
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600
		10	1,5	2	2	2		2		10	1,5	2	2
	20	2	2,5	2,5	2,5	2,5		20	2	2,5	2,5	2,5	2,5
100°C	30	2	2,5	3	3,5	4	100°C	30	2	2,5	3	3,5	4
	40	2,5	3	3,5	4,5	5		40	2,5	3	3,5	4,5	5
	50	2,5	3,5	4	5	5,5		50	2,5	3,5	4	5	5,5

### 8.9 System Pressure BP2000 - 1. step

		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	2	
	40	1,5	1,5	1,5	1,5	2		40	1,5	1,5	2	2	2,5	
	50	1,5	1,5	1,5	2	3		50	1,5	1,5	2,5	3	3,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	2	2	2	2,5	
80°C	30	1,5	1,5	2	2	2,5	90°C	30	2	2	2,5	3	3	
	40	1,5	2	2,5	3	3,5		40	2	2,5	3	3,5	4	
	50	2	2,5	3	3,5	4,5		50	2	3	4	5	5,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	2	2	2	2		10	1,5	2	2	2	2,5	
	20	2	2,5	2,5	3	3,0		20	2	2,5	2,5	3	3,5	
100°C	30	2,5	3	3,5	3,5	4	100°C	30	2,5	3	3,5	3,5	4	
	40	2,5	3,5	4	4,5	5		40	2,5	3,5	4	4,5	5	
	50	3	4	5	6	6,5		50	3	4	5	6	6,5	

### 8.10 System Pressure BP2000 - 2. step

Minimum system pressure [bar <sub>a</sub> ]														
		Exhaust temperature [°C]							Exhaust temperature [°C]					
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	1,5
	20	1,5	1,5	1,5	1,5	1,5		20	1,5	1,5	1,5	1,5	1,5	1,5
60°C	30	1,5	1,5	1,5	1,5	1,5	70°C	30	1,5	1,5	1,5	1,5	1,5	
	40	1,5	1,5	1,5	1,5	1,5		40	1,5	1,5	1,5	2	2	
	50	1,5	1,5	1,5	1,5	2		50	1,5	1,5	1,5	2	2,5	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	1,5	1,5	1,5	1,5		10	1,5	1,5	1,5	1,5	1,5	
	20	1,5	1,5	1,5	1,5	2,0		20	1,5	1,5	2	2	2,0	
80°C	30	1,5	1,5	1,5	2	2	90°C	30	1,5	2	2,5	2,5	2,5	
	40	1,5	2	2	2,5	3		40	2	2,5	3	3	3,5	
	50	1,5	2	2,5	3	3,5		50	2	2,5	3	3,5	4	
Water sample temperature	$\Delta t$	200	300	400	500	600	Water sample temperature	$\Delta t$	200	300	400	500	600	
	10	1,5	2	2	2	2		10	1,5	2	2	2	2,5	
	20	2	2,5	2,5	2,5	2,5		20	2	2,5	2,5	2,5	3	
100°C	30	2	2,5	3	3,5	4	100°C	30	2	2,5	3	3,5	4	
	40	2,5	3	3,5	4,5	5		40	2,5	3	3,5	4,5	5	
	50	2,5	3,5	4	5	5,5		50	2,5	3,5	4	5	5,5	



## 9. Declaration of Conformity

<b>DK: EU-Overensstemmelseserklæring</b> <b>GB: Declaration of Conformity</b> <b>DE: EU-Konformitätserklärung</b> <b>FR: Déclaration de conformité de l'Union Européenne</b> <b>NO: EU-Samsvarserklæring</b> <b>PL: EU Deklaracja zgodności</b>	<b>NL: EU-Conformiteits verklaring</b> <b>SE: EU-Överensstämmelsedeklaration</b> <b>FI: EU-Vaatimustenmukaisuusvakuutus</b> <b>IS: ESS-Samræmisstaðfesting</b> <b>IT: Dichiarazione di Conformità Unione Europea</b>
<b>exodraft a/s</b> <b>Industrivej 10</b> <b>DK-5550 Langeskov</b>	
<ul style="list-style-type: none"> <li>- Erklærer på eget ansvar, at følgende produkter:</li> <li>- Hereby declares that the following products:</li> <li>- Erklärt hierdurch auf eigene Verantwortung, daß folgende Produkte:</li> <li>- Déclare, sous sa propre responsabilité, que les produits suivants:</li> <li>- Erklærer på eget ansvar at følgende produkter:</li> <li>- Niniejszym oświadczam, że następujące produkty:</li> </ul>	<ul style="list-style-type: none"> <li>- Veklaart dat onderstaande producten:</li> <li>- Deklarerar på eget ansvar, att följande produkter:</li> <li>- Vastaa siltä, että seuraava tuote:</li> <li>- Staðfesti à eigin àbyrgð, að eftirfarandi vörur:</li> <li>- Dichiaro con la presente che i seguenti prodotti:</li> </ul>
<b>BP- / 250 / 500 / 750 / 1000 / 2000</b> <b>exodraft varnummer: 8002XXX</b>	
<ul style="list-style-type: none"> <li>- Som er omfattet af denne erklæring, er i overensstemmelse med følgende standarder:</li> <li>- Were manufactured in conformity with the provisions of the following standards:</li> <li>- Die von dieser Erklärung umfaßt sind, den folgenden Normen:</li> <li>- Auxquels s'applique cette déclaration sont en conformité avec les normes ci-contre:</li> <li>- Som er omfattet av denne erklæring, er i samsvar med følgende standarder:</li> <li>- Zostały wyprodukowane zgodnie z warunkami określonymi w następujących normach:</li> </ul>	<ul style="list-style-type: none"> <li>- Zijn vervaardigd in overeenstemming met de voorschriften uit de hieronder genoemde normen en standaards:</li> <li>- Som omfattas av denna deklaration, överensstämmer med följande standarder:</li> <li>- Jota tämä selvitys koskee, on seuraavien standardien mukainen:</li> <li>- Sem eru meðtalin i staðfestingu Pessari, eru i fullu samræmi við eftirtalda staðla:</li> <li>- Sono stati fabbricati in conformità con le norme degli standard seguenti:</li> </ul>
<ul style="list-style-type: none"> <li>- Maskindirektivet:</li> <li>- The Machinery Directive:</li> <li>- Richtlinie Maschinen:</li> <li>- Directive Machines:</li> <li>- Maskindirektivet:</li> <li>- Dyrektywę maszynową:</li> </ul>	<ul style="list-style-type: none"> <li>- De machinerichtlijn:</li> <li>- Maskindirektivet</li> <li>- Konedirektiivi:</li> <li>- Vèlaeftirlitið:</li> <li>- Direttiva Macchinari:</li> </ul>
<b>2006/42/EF/-EEC/-EWG/-CEE</b>	
<p>Odense, 01.06.2017</p> <p>-Adm. direktør -Managing Director</p> <p>Jørgen Andersen</p> 	<ul style="list-style-type: none"> <li>- Algemeen directeur</li> <li>- Geschäftsführender Direktor</li> <li>- Président Directeur Général</li> <li>- Verkställande direktör</li> <li>- Toimitusjohtaja</li> <li>- Framkvemdastjóri</li> <li>- Direttore Generale</li> </ul>





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