OPERATIONAL AND INSTALLATION MANUAL

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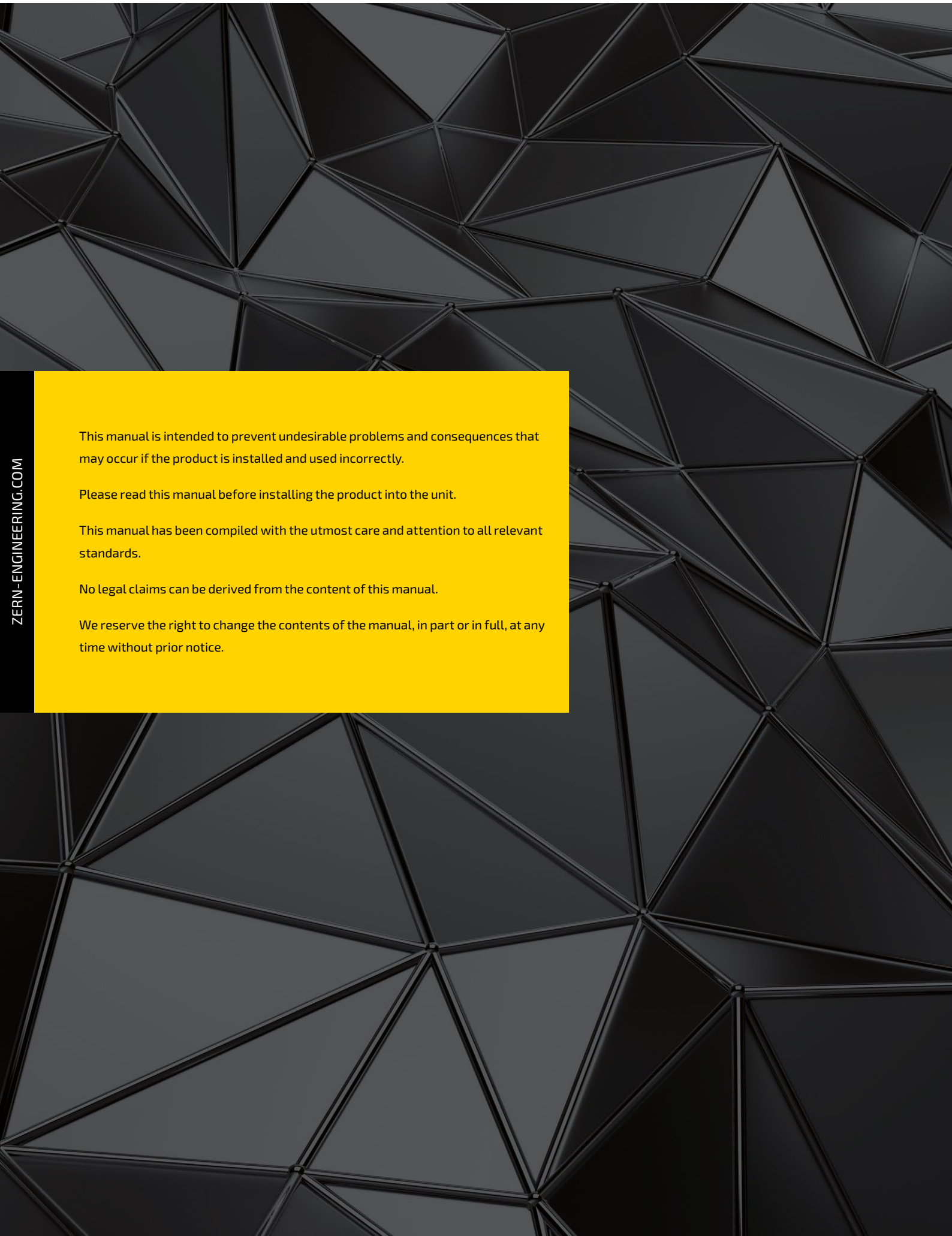

This manual is intended to prevent undesirable problems and consequences that may occur if the product is installed and used incorrectly.

Please read this manual before installing the product into the unit.

This manual has been compiled with the utmost care and attention to all relevant standards.

No legal claims can be derived from the content of this manual.

We reserve the right to change the contents of the manual, in part or in full, at any time without prior notice.

CONTENTS

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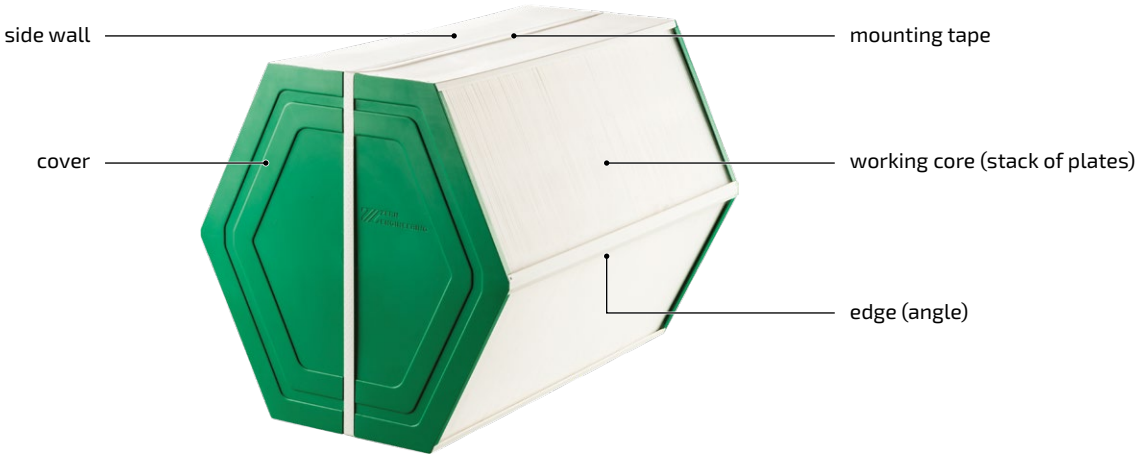
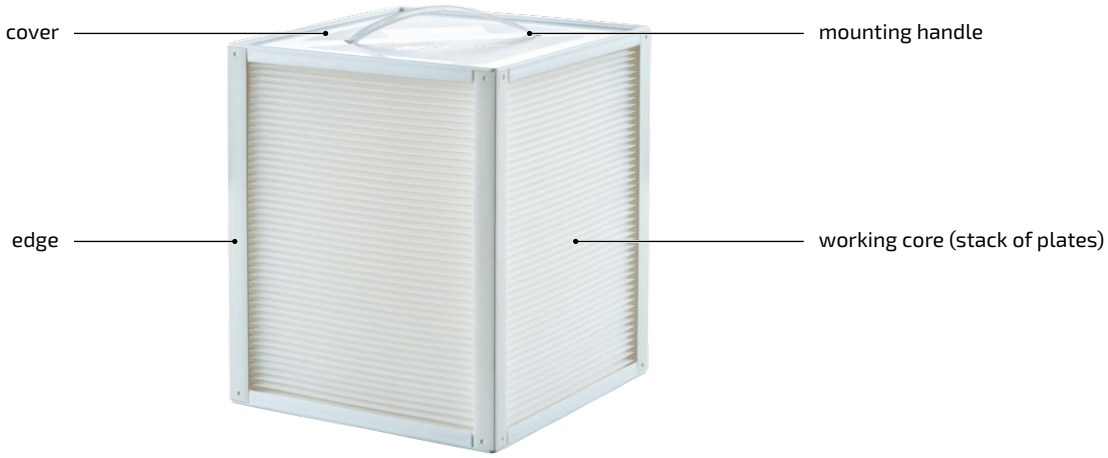
APPLICATION

- The heat exchangers are used in air handling units as elements that enable efficient use of the extract air energy generated for heating or cooling, thereby optimising ventilation. In this way the heat exchanger reduces energy consumption for both heating and cooling.
- The heat exchanger efficiency is proportional to the intake air temperature.

DESCRIPTION AND MAIN ELEMENTS OF THE HEAT EXCHANGER



Counter-flow plate heat exchanger HU-EX6 366

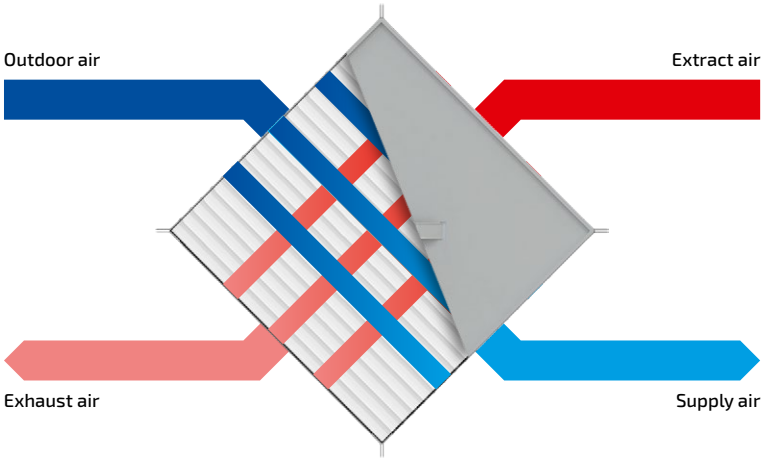


Cross-flow plate heat exchanger Hp-EX4 200

- All elements of the heat exchanger: the cover, side walls, edges as well as the working core (stack of plates) are made of polystyrene (PS). In case of enthalpy heat exchangers, a special membrane serves as the base of the working core.
- Also, a handle or mounting tape is used for easy assembly/disassembly.
- The sealing and connection of all elements of the casing is done with a special hot melt adhesive based on synthetic polymers and ultrasonic soldering.

- The supply and extract air flows move according to the counter-flow or cross-flow principle (depending on the type of heat exchanger) between the thin plates of the stack, which transmit the heat energy.
- The supply and exhaust air flows are separated by the walls of the stack plates, so they do not mix with each other.

Counter-flow heat exchanger airflow pattern



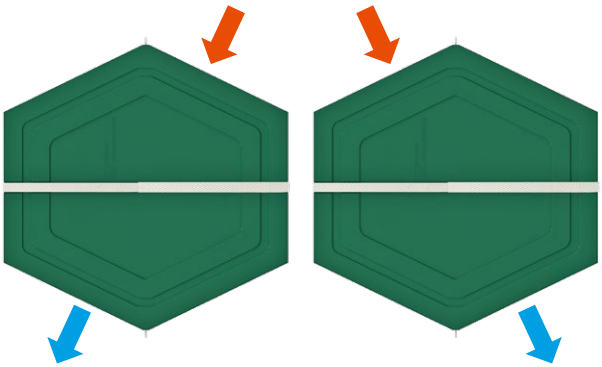
Cross-flow heat exchanger airflow pattern

- **Annex A** is a list of the models covered by this manual.

OPTIONS FOR INSTALLING THE HEAT EXCHANGER IN THE UNIT

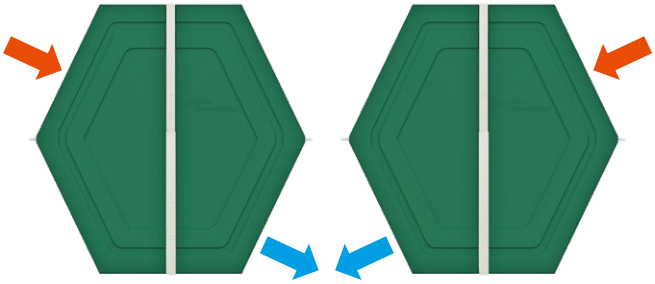
Option 1 – Edgewise

- The edgewise positioning of the heat exchanger in the unit is the best option in terms of condensate removal, which will be removed by gravity.
  IMPORTANT: ensure that the direction of the air flow is from top to bottom to allow free drainage of the condensate. The direction of air flow to the right or left does not matter.



Option 2 – Sidewise

- Locating the heat exchanger sidewise in the unit is the most popular option in use.
- In terms of condensate removal, this location is less favourable than the edgewise one, as condensate can accumulate in the cavity.
  IMPORTANT: ensure that the direction of the air flow is from top to bottom. The direction of air flow to the right or left does not matter.



Option 3 – Horizontally

- It is also possible to mount the heat exchanger horizontally, but it is worth considering that the condensate cannot be removed by gravity (it will collect and settle on the plates).
  IMPORTANT: the air can be supplied both from the left or right side.

The heat exchanger must be fixed securely around the entire perimeter to prevent damage during operation. Mounting and removal must be carried out using a mounting handle or mounting tape.

Annex B is an example of heat exchanger installation and removal from the unit.

OPERATING CONDITIONS

The HU/HS/HC/HD/ECD/EC/E series heat exchangers are designed to operate under standard conditions (non-corrosive environment): houses, offices, working premises.

The following guidelines must be observed during operation:

- Operating conditions:

	PS: HU/HS/HC/HD/Hp	Membrane: ECD/EC/E
Operating temperature [°C]	-25...+50*	-25...+50*
Relative humidity [%]	0...100	0...100
Maximum flow balance ratio [%]	±50	±50
Maximum recommended flow rate [m/s]	3	3
Maximum pressure drop [Pa]	400	300
Maximum pressure difference [Pa]	600	400

* When the dew point is reached, the moisture in the air starts condensing on the walls of the plates in the duct with the warmer air. Due to the accumulation of condensation on the plates the flow capacity of the duct is reduced. At -3 °C the moisture in the air starts to freeze, which causes the efficiency of the heat exchanger to drop to zero. It is necessary to prevent the condensate from freezing by using forced preheating of the intake cold air.

- Avoid direct UV rays.
- Avoid exposing the product to aggressive environments: acids, abrasives, etc.
- Avoid exposure to high temperatures and fire.
- Avoid heavy mechanical impacts on the product.
- Do not apply force or mechanical stress to the core plates.
- Do not toss or drop the product.
- Do not twist or crush the product.
- To remove/mount and move the product, carefully use the mounting tape.
- Do not use any lubricants during installation/dismantling of the product.

MAINTENANCE AND CLEANING

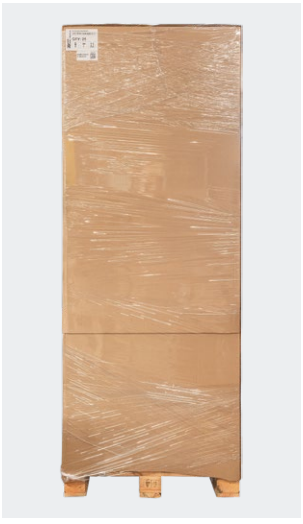
- If the heat exchanger becomes clogged or dirty, it can be cleaned.
- Please refer to our cleaning instructions for detailed information on cleaning the heat exchanger.

PACKAGING AND DELIVERY

- The heat exchangers are stacked side by side on a pallet in several layers, covered with a corrugated box, which is then taped and wrapped in film, for safe transport. This is a stackable type of packaging.
- The finished pallet is supplied with special stickers with information about the order and instructions on the basics of handling and storage.





STORAGE

When storing the products in the warehouse, follow the recommendations below:

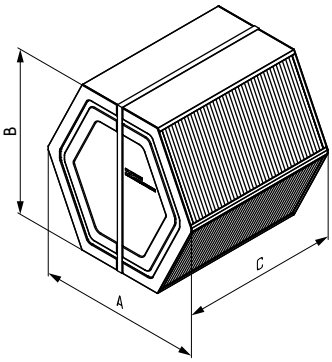
- Storage temperature: from 5 °C to 25 °C.
- Do not expose to direct UV rays.
- Storage in a dry and dust-free place.
- Keep a distance of at least 1 m from any source of heat.
- Do not store near solvents and other chemicals that might not be inert to the stored products.
- Do not allow other pallets or other objects to be loaded on top of the box as the products are not designed to resist mechanical stress.
- When moving, ensure that the products and the box are secured.
- Unpack the product with care to avoid any damage.
- Do not turn or store the pallet with the heat exchangers more than 5° from the vertical axis (plane).

Annex A

LIST OF THE MODELS COVERED BY THIS MANUAL

COUNTER-FLOW PLATE HEAT EXCHANGERS

Series	Model	Dimensions [mm]			X: casing modification
		B	A*	C	
HU/HS/HD-EX6	172	172	397	100–600	1/1.1/3/3.1
	230	230	455		1/1.1/2/2.1/3/3.1
	232	232	461		1/1.1/2/2.1/3/3.1
	271	271	496		1/1.1/3/3.1
	312	312	537		1/1.1/3/3.1
	366	366	366		2/2.1
	450	450	270		1/1.1/3/3.1
HU/HC-EX6	394	394	619	100–600	3/4
	477	477	700		3/4
	533	533	758		3/4
Combi HU/HC-EX6	815	815	1040	100–600	3/4
	959	959	1182		3/4
	1089	1089	1314		3/4
ECD/EC-EX6	172	172	397	100–600	5/5.1
	230	230	455		1/1.1/3/3.1
	232	232	461		2/2.1
	366	366	366		2/2.1



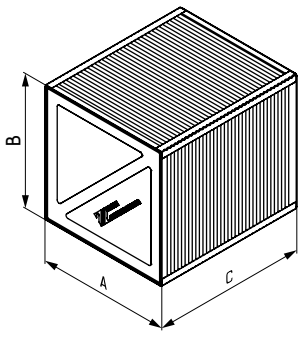
Combi/HU/HS/HC/HD/ECD/E-EX6 - B/C-x

Combi/HU/HS/HC/HD/ECD/E-EX6: commercial series
B: height [mm]
C: depth [mm]
x: casing modification:
- **1:** aluzinc;
- **1.1:** aluzinc with T-profile;
- **2:** plastic;
- **2.1:** plastic with T-profile;
- **3:** aluminium;
- **3.1:** aluminium with T-profile;
- **4:** aluminium epoxy coated;
- **5:** stainless steel;
- **5.1:** stainless steel with T-profile.

***A:** width [mm]: not indicated in the heat exchanger name.

CROSS-FLOW PLATE HEAT EXCHANGERS

Series	Model	Dimensions [mm]				X: casing modification
		B	A*	C	h	
Hp-EX4	200	200	200	100 - 800	2.4	2/2.1
	250	250	250		2.7	2/2.1
	300	300	300		3.0	2/2.1
E-EX4	200	200	200	100 - 400	2.7/4.5	1
	250	250	250			1
	300	300	300			1



Hp/E-EX4 B/C/h-x

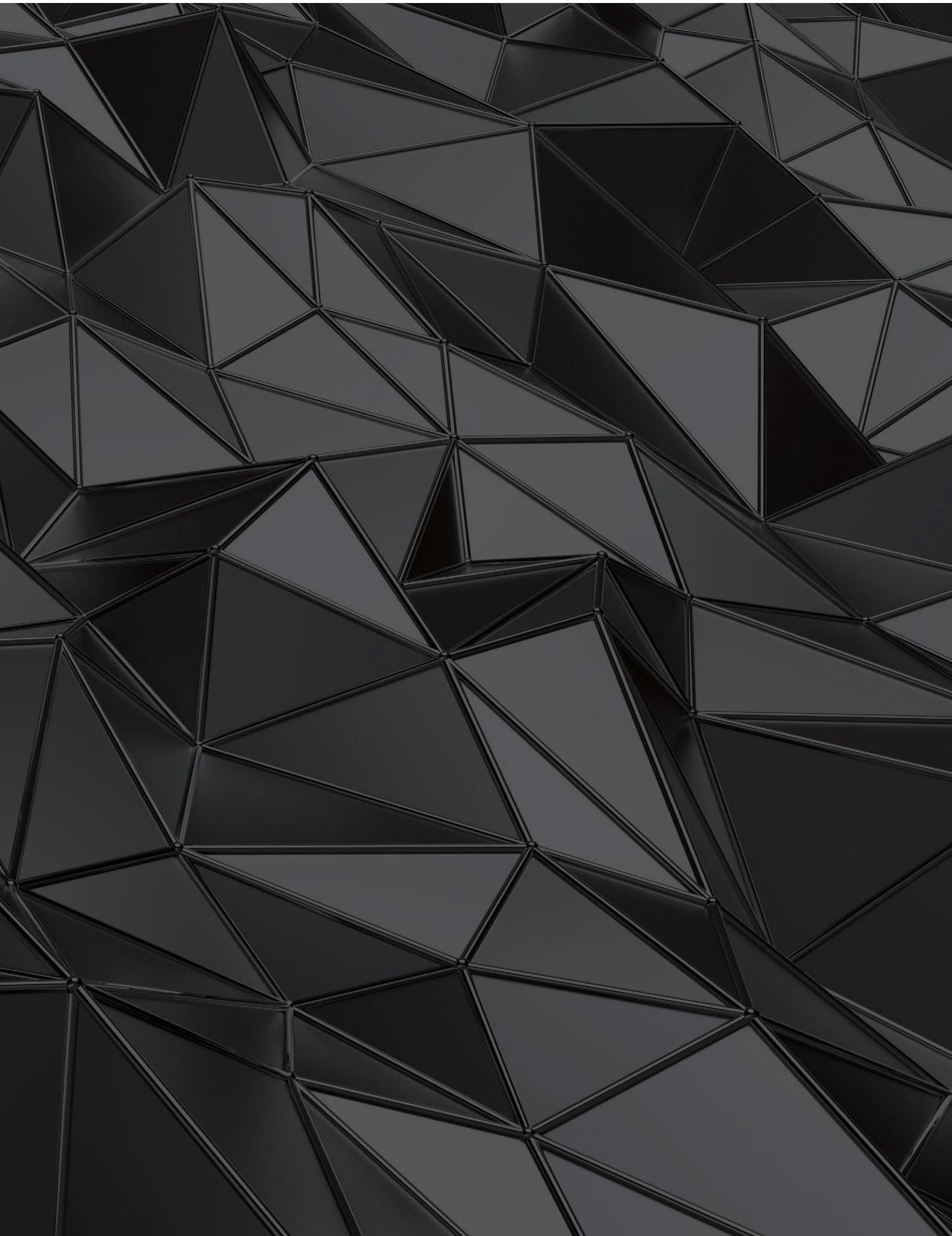
Hp/E-EX4: commercial series
B: height [mm]
C: depth [mm]
h: distance between plates, [mm]
x: casing modification:
- **1:** aluzinc;
- **2:** plastic;
- **2.1:** plastic with Y-profile;

***A:** width [mm]: not indicated in the heat exchanger name.

Annex B

EXAMPLE OF HEAT EXCHANGER INSTALLATION AND REMOVAL FROM THE UNIT

- Align the heat exchanger to the mounting surface and gently push it straight into the unit.
- Make sure that nothing obstructs the heat exchanger when installed inside the unit (no resistance from the unit, nothing is damaged, no abnormal noises) and continue pushing the heat exchanger until it goes no further and is in its operation position.
- Visually check the fit of the heat exchanger when it is installed in the unit. Check for any play, possible unwanted vibrations during operation and any mechanical damage to the stack and the entire heat exchanger that may have occurred during the final installation phase.
- To remove the heat exchanger, repeat the procedure in reverse order.



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