

ZUMIKRON® SERIES

The fine dust particle separators

ORIGINAL OPERATING INSTRUCTIONS



KW
a brand of the
Raab Gruppe 

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1 Overview



Fig. 1: Zumikron Outdoor DW and Outdoor Top

2 INFORMATION ON THE OPERATING INSTRUCTIONS

2 Information on the operating instructions

2.1 General information

Product

Designation	Information
Machine designation	Particle separator
Model/type	Zumikron
year of construction	from 2020

Tab. 1: Product information

Manufacturer

Designation	Information
Company	Kutzner + Weber GmbH
Street, no.	Frauenstraße 32
Postcode City	82216 Maisach
Telephone	+49 (0) 8141/957-0
Fax	+49 (0) 8141/957-500
E-Mail	info@kutzner-weber.de
Internet	www.kutzner-weber.de

Tab. 2: Manufacturer information

Authorised documentation representative

Designation	Information
Name	Kutzner + Weber GmbH
Street, no.	Frauenstraße 32
Postcode City	82216 Maisach
Telephone	+49 (0) 8141/957-0
Fax	+49 (0) 8141/957-500

Tab. 3: Authorised documentation representative

2.2 Operating instructions

The operating instructions provide important information for the safe and efficient handling of the Zumikron particle separator. It is an integral part of the Zumikron particle separator and must be kept in the immediate vicinity at all times for the personnel working on it.

The prerequisite for safe working on the Zumikron particle separator is compliance with all specified safety information and instructions. Personnel must therefore have carefully read and understood these operating instructions before starting any work.

In addition, the local accident prevention regulations and general safety regulations applicable at the place of use of the Zumikron particle separator must be observed. The illustrations in these instructions are for Outdoor understanding and may differ from the actual design of the Zumikron particle separator. No claims can be derived from this.



NOTE!

the operating instructions are located on the system.

2.3 Symbols, abbreviations, terms

Symbols, abbreviations and technical terms used in this document have the following meaning:

→	see at
►	List
–	List
1	Position number
1.	Step
OI	Operating Instructions
Oh	Operating hours
LTD	Lifting and transportation device
incl.	including, included
MD, EC Machinery Directive	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC – Machinery Directive –
min.	minimum
max.	maximum
MCR	Measuring, control and regulation unit
PLr	required performance level, determines the necessary protection level of safety-related control functions
PL	actual performance level, characterizes the ability of safety-related parts of control units to perform the assigned safety function under foreseeable conditions with sufficient reliability
PPE	Personal protective equipment
SF	Safety function
acc.	acceptable (acceptable value)
	Observe the operating instructions! Please read the operating instructions before starting any work!
<i>Cursive text</i>	explanation of situation
<input checked="" type="checkbox"/>	accurate
<input type="checkbox"/>	not accurate

2 INFORMATION ON THE OPERATING INSTRUCTIONS

2.4 Explanation of symbols

Warnings and safety instructions

Warnings and safety instructions in this manual are marked with a pictogram and additionally highlighted by a grey block.

Warnings and safety instructions that point out fundamental hazards are additionally introduced with signal words that express the extent of the damage. They are structured as follows:

SIGNAL WORD!

Cause of hazard.

Consequences in case of ignoring the hazard.

– Instructions on how to avoid the hazard.

Warnings and safety instructions embedded in individual steps that describe an immediate hazard or cause of material damage directly related to the activity are structured as follows:



Type and source of hazard to people!
– How to prevent the hazard.



Type and cause of potential material damage!
– Damage prevention requirements.

- ▶ All warnings and safety instructions must be observed!
- ▶ Always act cautiously during work to avoid accidents, personal injury and material damage!

Meaning of pictograms in connection with signal words:



HAZARD!

... signals an immediate hazard that will result in death or severe injury if not avoided.



WARNING!

... signals a possible hazardous situation that may result in death or severe injury if not avoided.



CAUTION!

... signals a possible hazardous situation that may result in minor injury if not avoided.



ATTENTION!

... signals a possible hazardous situation that may result in material damage if not avoided.

Tips and recommendations



NOTE!

... highlights tips and recommendations as well as information for an efficient and trouble-free operation.

Specific safety instructions

The following pictograms are used in connection with safety instructions to highlight specific hazards:



... highlights hazards due to electric currents.

There is a risk of severe or fatal injury if the safety instructions are not observed.



... highlights crush hazards.

There is a risk of severe injury caused by moving parts if the safety instructions are not observed.



... highlights hazards due to hot surfaces.

Ignoring the safety instructions can result in burns and severe skin injuries due to heat.



... highlights hazards due to electromagnetic radiation.

Individuals with active and passive physical aids (e.g., pacemakers and/or implants) may only work on the system after having consulted a physician and obtained work permission from a physician.



... highlights hazards due to fire, smoking or hot items in areas with a high possibility of fire and explosions.

Ignoring the safety instructions can result in severe injury or death due to flammable materials catching fire or the ignition of explosive dusts, gasses, vapours, or mists.



... highlights hazards due to hazardous substances with a high possibility of fire or explosions in work areas or storage facilities.

Ignoring the safety instructions can result in severe injury or death due to flammable materials catching fire or the ignition of explosive dusts, gasses, vapours, or mists.



... highlights hazards due to harmful or irritating substances in work areas and storage facilities.

Ignoring the safety instructions can result in injuries with permanent damage to health, allergies or mucosal irritation due to contact with harmful substances.

2 INFORMATION ON THE OI

2.5 Limitation of liability

All information and instructions given in this manual have been compiled under consideration of applicable standards and regulations, the best available technology as well as our many years of insight and experience.

The manufacturer is not liable for any damage caused by:

- ▶ ignoring the manual
- ▶ improper use
- ▶ employing untrained and uninstructed staff
- ▶ unauthorized modifications
- ▶ technical changes
- ▶ use of unauthorized spare parts

The actual scope of delivery may differ from the descriptions and illustrations presented in this manual if special designs are ordered, additional order options are requested or due to the latest technical changes.

The liabilities agreed upon in the delivery contract, the General Terms and Conditions as well as the delivery conditions of the manufacturer and the legal regulations at the time of the conclusion of the contract apply.

We reserve the right to make technical changes within the scope of improving performance characteristics and further development.

Warranty

The manufacturer warrants the functionality of the applied process technology and the specified performance parameters. The warranty period begins with the defect-free handover and lasts for 2 years.

Wear parts

Wear parts are all components that, when used as intended, come into direct contact with the material to be filtered. These components are excepted from warranty and defect claims insofar as they are subject to normal operational wear and tear.

Warranty conditions

The warranty conditions are included in the General Terms and Conditions of the manufacturer. The casing must not be opened, otherwise the warranty expires.

2.6 Customer service

Our customer service is available for technical advice. Information on your local contact can be requested by phone and is available via fax, e-mail and on the internet any time. Furthermore, our team is always interested in receiving new information and in learning about your experiences resulting from the operation, since these insights may be valuable for improving our products.

2.7 Declaration of incorporation

The design and construction of the Zumikron particle separator corresponds with the Outdoor safety and health requirements of the EC Machinery Directive including the amendments applicable at the time of the declaration. The declaration of incorporation is included in the contract documents.

2.8 Copyright

This document is protected by copyright.

Handing over the manual to unauthorized third parties, duplicating it in any way, even in extracts, as well as using and/or conveying the contents is not allowed without the manufacturer's written consent.

Contraventions shall result in an obligation to provide compensation for damages. The right to further claims remains reserved.

2.9 Standards and directives

All standards and directives were observed during the manufacturing process. Applicable laws, directives, occupational safety regulations, and standards must be followed during installation and operation.

3 SAFETY

3 Safety

This chapter provides an overview of important safety aspects to protect operating personnel from possible dangers and to ensure safe and trouble-free operation.

Failure to observe the specified guidelines, warnings and safety instructions may result in considerable hazards.

3.1 Intended use

The Zumikron particle separator has been designed and built for private and industrial use and exclusively for the intended use described here:

The Zumikron particle separator is intended exclusively for the following use in private and industrial areas:

The Zumikron particle separator is used to clean dust-laden flue gases for untreated, lumpy wood and wood pellets in single-room combustion systems with a nominal heat output of up to 14.9 kW.

Permissible fuels are:

- natural pieces of wood (e.g. wooden logs and wood chips)
- compressed wood (pellets or wood briquettes)

The device must not be used in areas with explosion hazards.

Zumikron is certified under no. Z-7.4-3545 at Deutsches Institut für Bautechnik (DIBt).



NOTE!

Other types of biogenic fuel must be approved separately by the manufacturer



CAUTION!

Hazard due to improper use!

Using the Zumikron particle separator in any way that differs from the intended use can cause dangerous situations.

- The Zumikron particle separator must only be used as intended in accordance with the specifications in this document, particularly in compliance with the limits of use specified in the technical data.
- Refrain from using the Zumikron particle separator in any other way.
- Reconstruction, retrofitting or modification of the design or of individual components with the aim of changing the range of use or the usability of the Zumikron particle separator is not permitted.

- ▶ The manufacturer assumes no liability for any damage caused by improper use.
- ▶ Only the operator is liable for all damage caused by improper use.

3.2 Foreseeable misuse



WARNING!

Risk of injury due to misuse!

Misuse of the Zumikron particle separator may lead to dangerous situations for individuals and cause serious damage to material.

- Avoid any misuse of the Zumikron particle separator.

3.3 Responsibilities

3.3.1 Responsibilities of the operator

Operator

The operator is any natural or legal person that uses the Zumikron particle separator or allows third parties to use it and who is responsible for the safety of the user, the staff or third parties during operation.

Duties of the operator

The Zumikron particle separator is used in private areas.

Therefore, the operator of the Zumikron particle separator must follow legal obligations for occupational safety.

In addition to the warnings and safety instructions in this manual, it is necessary to follow the applicable regulations of the Zumikron particle separator for safety, accident prevention and environmental protection in the operational area.

Specifically, the operator must:

- ▶ learn about the applicable work safety regulations.
- ▶ conduct a risk assessment to detect additional potential hazards caused by the specific operational conditions at the place of use of the Zumikron particle separator.
- ▶ implement the necessary behavioural code for operating the Zumikron particle separator at the place of use in the working instructions.
- ▶ check on a regular basis during the entire period of use of the Zumikron particle separator whether the working instructions set up by him/her comply with the current status of the regulations.
- ▶ if necessary, adjust the working instructions to any new regulations, standards and operational conditions.
- ▶ clearly and unambiguously define the responsibilities concerning the installation, operation, maintenance and cleaning of the Zumikron particle separator.
- ▶ ensure that all employees who deal with the Zumikron particle separator have read and understood the operating instructions. Furthermore, the operator must train the staff in regular intervals in the handling of the Zumikron particle separator and inform them about possible hazards.
- ▶ provide the staff that works with the Zumikron particle separator with the mandatory and recommended protective equipment and ensure that it is always used as required.
- ▶ ensure necessary open spaces and sufficient lighting for safe working conditions as well as tidiness and cleanliness at the installation site of the Zumikron particle separator and its surroundings at all times.

Furthermore, the operator must make sure that the Zumikron particle separator

- ▶ is always in perfect working order.
- ▶ is maintained according to the stated maintenance intervals.

3.3.2 Responsibilities of the staff

The Zumikron particle separator is in private and commercial use. Therefore, the staff must follow legal obligations for occupational safety.

In addition to the warnings and safety instructions in this manual, it is necessary to follow the applicable regulations for safety, accident prevention and environmental protection in the operational area.

Specifically, the staff must:

- ▶ learn about the applicable work safety regulations.
- ▶ follow the behavioural code given in the working instructions for the operation at the place of use.
- ▶ properly follow the assigned responsibilities for operation, maintenance and cleaning.
- ▶ have fully read and understood the operating instructions before starting any work.
- ▶ use mandatory and recommended protective equipment

Furthermore, every employee, within his/her scope of responsibility, must make sure that the Zumikron particle separator

- ▶ is always in perfect working order.
- ▶ is maintained according to the stated maintenance intervals.

3.4 Staff requirements

Any activities on the Zumikron particle separator may only be carried out by individuals who are able to perform their work properly and reliably and who meet the requirements designated for their work.

- ▶ Individuals with active and passive physical aids (e.g., pacemakers and/or implants) must not work on the device. Exceptions to this can only be granted after medical consultation and with the official permission from a physician.
- ▶ People whose responsiveness is impaired, e.g. due to drugs, alcohol or medication, must not work on the device.
- ▶ When hiring staff, always adhere to local age-specific and job-related regulations.

3.4.1 Qualification requirements

Qualification



WARNING!

Risk of injury due to inadequate qualification!

Improper work methods may cause considerable damage to people and property

- Only craftspeople with the necessary training, know-how and experience may work on the device.

Assembly and installation

The Zumikron particle separator must only be transported, assembled, installed and maintained by trained and instructed specialists who have been thoroughly and verifiably informed by the operator about the possible hazards and tasks assigned to them.

Any work on the Zumikron particle separator may only be carried out by trained specialist personnel.

3 SAFETY

3.4.4 Unauthorized individuals



WARNING!

Risk of injury for unauthorized people!

Unauthorized individuals are not aware of the hazards in the working area of the device and can seriously injure themselves and others

- Unauthorized individuals must not enter the working area of the device.
- In case of doubt, approach the person in question and direct him/her away from the working area of the machine.
- Pause any work while there are unauthorized individuals in the working area.

An unauthorized person is any person who

- ▶ has not read these operating instructions or has not read them completely, or has not clearly understood them.
- ▶ does not meet the necessary qualification requirements for working in the area
- ▶ has not received instructions for his/her tasks from the operator or a representative and/or has not been authorized to work there.

3.5 Personal protective equipment

Wear for all activities



Industrial protective clothing

Tight fitting work clothing with low tearing strength, with tight sleeves and no parts sticking out, predominantly to prevent getting caught on moving machine parts Do not wear rings, necklaces or other jewellery.



Safety boots

To protect feet from injury caused by falling parts and to prevent slipping and falling on slippery ground.

Wear for special activities

Some activities require specific safety gear.

The respective sections of this manual point them out explicitly.



Safety goggles

To protect the eyes, e.g. from condensate.



Industrial safety helmet

To prevent head injuries caused by falling or flying parts or materials.

3.6 Residual risks

A risk assessment has been conducted for the Zumikron particle separator. The hazards detected in the process were eliminated as far as possible, and identified risks were reduced. Nevertheless, the Zumikron particle separator poses residual risks which are described in the following section.

- ▶ Please follow the warnings and safety instructions detailed in the procedure guidelines in this manual to prevent potential health risks and dangerous situations.

3.6.1 Risks due to mechanical hazards

Crushing points on moving components



WARNING!

Crushing hazard

Body parts may be crushed by moving parts during assembly/installation!

- Avoid hazard area during assembly/installation.
- Always pay special attention to crushing zones during installation, maintenance and troubleshooting.
- Wear protective equipment to prevent crushing while working at hazard areas.

Lifting and transportation



WARNING!

Risk of injury during lifting and transportation!

Falling loads or parts can injure people.

- Make sure the used lifting and transportation devices as well as sling gear, holders and safety devices are in perfect working order and with sufficient load-bearing capacity.
- Make sure that the load is properly safeguarded and that the holding and securing devices work reliably before lifting and transporting anything
- Only qualified and authorized people should be charged with lifting and transportation.
- Never stand underneath suspended load.
- Wear safety helmet during lifting and transportation.

Falling, falling parts



WARNING!

Falling hazard!

When working on components in elevated positions, unsecured people may fall or be injured by falling objects.

- When working on components high above the ground, always use a stable ladder or a portable hoisting platform with a railing.
- When high above the ground, safeguard all people, tools, auxiliary material, spare parts, and loose items against falling.
- Prevent unauthorized people from entering the working area.
- Wear personal protective equipment in the working area.

Sharp edges and pointy corners



CAUTION!

Risk of injury at edges and corners!

Sharp edges and pointy corners may cause abrasions, scratches and cuts.

- Always proceed with caution when working near sharp edges and pointy corners.
- Wear industrial protective clothing and protective gloves

Dirt, scattered items



CAUTION!

Risk of tripping due to dirt and clutter!

Dirt and scattered items on the ground are a slip and tripping hazard and can cause serious injury

- Always keep the working area tidy and clean.
- Remove unused tools and items

3.6.2 Risks due to electric hazards

3 SAFETY

Electric current



HAZARD!

Mortal danger due to electric current!

Touching live parts and wires can lead to death. Damage to the insulation or individual parts can be life-threatening.

- Before starting any work on electronics, disconnect the electric system from the mains. Check to make sure the system is voltage-free!
- Before maintenance, cleaning or repair work, switch off the electrical power supply and secure it against being switched on again.
- If the insulation is damaged, immediately turn off the power supply and have it repaired.
- Do not bypass or deactivate the fuse.
- When replacing defective fuses, always make sure to use the correct amperage.
- Keep wetness and moisture away from live parts and wires.
- Any work on the electrical system may only be carried out by qualified electricians.

Electrically charged components



HAZARD!

Mortal danger due to electrically charged components!

The electrodes of the charging unit carry a voltage of up to 21,000 V during operation. Touching live parts can be life-threatening.

- Before starting any work on the electrodes, turn off the electrical system and disconnect it from the mains. Check to make sure the system is voltage-free!
- Wait at least 5 minutes before opening it to allow residual voltage to dissipate.
- Any work on the electrical system may only be carried out by qualified electricians.

Electromagnetic radiation (EMC)



HAZARD!

Mortal danger due to electromagnetic radiation (EMC)!

Electrodes of the charging unit generate a voltage up to 21,000V during operation and build up a strong electro magnetic field. Touching live parts can be life-threatening.

- Individuals with pacemakers may only work on the system after having consulted a physician and obtained work permission from a physician.
- Wait at least 5 minutes before opening it to allow residual voltage to dissipate.
- Any work on the electrical system may only be carried out by qualified electricians.

3.6.3 Risks due to thermal hazards

Hot flue gasses and dusts



WARNING!

Risk of burns due to hot flue gasses and dusts!

Flue gasses reach temperatures of up to > 400 °C during operation and cause burns when touching the skin.

- Before working on the Zumikron particle separator, measure its temperature and allow it to cool down to below +50 °C if necessary.
- Store dusts in a fireproof container for at least one week before moving them further.

Hot surfaces



CAUTION!

Risk of burns due to hot surfaces!

Contact with hot components may cause burns.

- Always wear industrial protective clothing and protective gloves when working near hot components
- Allow all hot components to cool down to below +50 °C before handling them.

3.6.4 Risks due to materials and substances

Condensate, flue gasses and dusts



WARNING!

Risk of poisoning when handling condensate, flue gasses and dusts!

Leaking condensates, flue gasses and dusts may cause poisoning or skin irritation. Condensates, flue gasses and dusts may contain materials that are hazardous to health and the environment.

- Follow safety instructions.
- Do not spill or spray the materials.
- Do not eat, drink or smoke while working.
- Avoid contact with skin and eyes.
- Store dusts in a fireproof container for at least one week before moving them further.
- Follow environmental regulations for disposal.

Preventive measures

- ▶ Avoid inhaling and contact with skin and eyes
 - Apply suitable skin protection emulsion before working on containers, pipes and utilities.
 - Wear protective gloves made of plastic during work; wear safety goggles with lateral protection when working with oils.
 - Wash thoroughly and use skin care lotion before taking a break and after work.

3 SAFETY

3.6.5 Risks due to neglecting ergonomic principles

Unhealthy posture, particular exertion



CAUTION!

Health risks due to unhealthy posture!

Lifting heavy components the wrong way and an unnatural posture while working may cause health issues.

- Heavy components should always be lifted by several people.
- While working on low-lying components, always crouch down, do not bend down.
- Use kneepads for kneeling and a cushion for sitting.
- While working on high-lying components, always maintain an upright, straight posture.
- Always use tools that are in perfect working order and suitable for a safe execution for all tasks

3.6.6 Risks due to the operational environment

Illegible labelling



CAUTION!

Risk of injury due to illegible symbols!

Stickers and signs that have become illegible no-longer sufficiently highlight danger areas and cannot indicate potential hazards.

- Always keep pictograms, warnings, safety and operation information in good, legible condition.
- Immediately renew damaged or illegible pictograms, inscriptions, signs or sticker.

3.7 Spare parts, supply and use



WARNING!

Risk of injury due to wrong spare parts!

Faulty spare parts can considerably reduce safety and cause damage, malfunctions and complete breakdown
– Only use original spare parts.

Original spare parts can be purchased from licensed dealers or directly from the manufacturer.



NOTE!

Before installing any spare parts, read the enclosed operation and installation instructions and follow the information and guidelines given therein.

3.8 Fire safety

The following measures reduce the risk of fires. Everybody working in the danger area must make sure that these instructions are followed:

- ▶ Always keep the Zumikron particle separator clean. Remove all process residue, waste, dirt, empty containers, oily and other flammable rags, etc. once work is done.
- ▶ Turn off the furnace before doing any work and wait for it to burn out and cool down.
- ▶ Do not store any empty or full packaging or loose materials in gaps or at parts and components.
- ▶ Immediately fix any leaks on closed casings, devices, channels, wires, and seals.
- ▶ Regularly check if electric installations are in perfect condition. Faulty installations and devices must be repaired or replaced immediately by a specialist electrician.
- ▶ Store dust in a fireproof container for at least a week before doing anything else with it.
- ▶ In case of a soot fire, immediately take the following measures:
 - Call the fire department.
 - Turn off the Zumikron particle separator, turn off the firing system, disconnect from mains if possible.
 - Let the Zumikron particle separator and the firing system cool down.
 - Supervise the entire flue gas system until there is no more fire hazard.
 - Have an expert examine the Zumikron particle separator .
 - Before restarting the combustion, check the Zumikron particle separator for any deposits or damage and have it cleaned or repaired as needed.

The operator must ensure the following fire safety requirements for a safe operation:

Measure	Designation/value	Necessary conditions
Ambient temperature	approx. -20 to +50 °C	Maintain average ambient temperature by keeping the permitted limit values→ Technical data
Minimum distance separator cartridge		The minimum distance between the separator cartridge and flammable components is 40 cm.
Type of ventilation	technical	The ventilation of the work area around the source of release must be ensured with a technical exchange of ambient air (e.g. ventilation of oven interior).

Tab. 6: Fire safety, necessary technical safety measures by operator

3.9 Safety devices



WARNING!

Danger to life due to defective or bypassed safety devices!

Non-functioning, bridged or disabled safety devices do not protect against hazards and can lead to serious injury or death.

- Before starting work, always check that all safety devices are correctly installed and functional.
- Never disable safety devices.
- Ensure that the safety devices are always freely accessible.

The following safety devices are installed:



NOTE!

Location of the safety devices „Design and function“.

Emergency stop device

An emergency stop is triggered by switching off the ON/OFF rocker switch. before switching on again after an emergency stop, the causes of the emergency stop must be eliminated and the system switched on again at the ON/OFF rocker switch.



WARNING!

Danger to life due to uncontrolled restarting!

WARNUNG!

Uncontrolled restarting can lead to serious injury or death!

- Before restarting, ensure that the cause of the emergency stop has been eliminated and that all safety devices are properly installed and functional.
- Only unlock the emergency stop device when there is no danger to persons.



Fig. 2: Emergency stop = ON/OFF rocker switch

3.10 Securing against restarting



WARNING!

Risk of injury due to unauthorised restarting!

When working on components, assemblies or individual parts, people at the danger points can be injured if the power supply is switched on without authorisation.

- Always follow the instructions for securing against restarting in the instructions in this manual.
- Before carrying out any work on components, assemblies or individual parts, follow the procedure described below for securing against restarting.

Secure the system against being switched on again:

1. Switch off the system.
2. Switch the ON/OFF rocker switch to the „0/Off“ position („OFF“)
3. Attach a warning sign to the control unit and state the name of the person responsible, who is authorised to switch the system back on on the warning sign (→ Fig. 3).

Switch off the system to prevent it from being switched on again:

1. Ensure that no person is present at danger points or in the danger zone of the system.
2. Remove the warning sign
3. Enable ON/OFF rocker switch

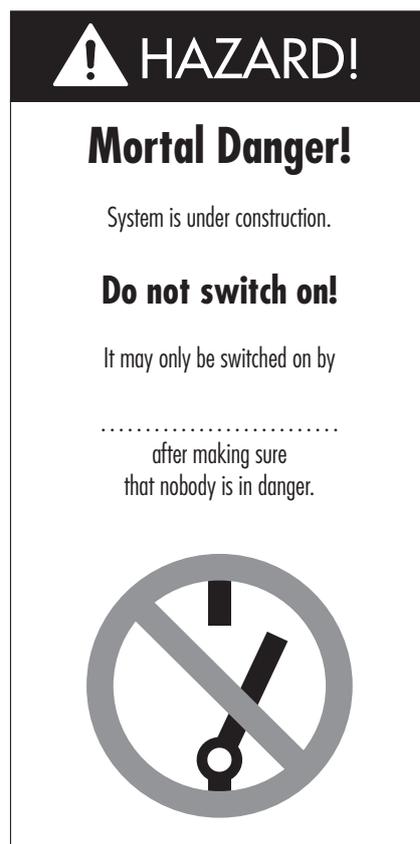


Fig. 3: Example of a warning sign to prevent reactivation

3 SAFETY

3.10.1 Measurement technology

The following measuring equipment can be installed:

Measuring openings

A measuring opening of at least 50 x 50 mm (depending on the measuring device used) can be installed in the flue gas system at a distance of at least 0.5 m (measured from the tip of the electrode) in the separator section. The maintenance openings may only be opened when the system is completely shut down and the power supply is switched off and secured against being switched back on.



NOTE!

Outdoor pipe sections or the vertical part of the flue gas system (chimney) can be included in the separation distance. The measurement can also take place in a cleaning opening, for example, in compliance with VDI 4207.

Dust measurement

If a dust measurement is carried out after the Zumikron particle separator, the following points must be observed, otherwise the separation performance may be impaired or the measurement result may be falsified:

- The safety requirements have been met.
- Cleaning has been carried out in accordance with the intervals and procedure specified in the Maintenance chapter.
- Only measuring devices suitable for this purpose may be used.
- Measuring probes may only be placed in the flue gas pipe immediately before the measurement, as otherwise considerable quantities of fine dust may be deposited on the probe due to charging before the measurement. These are then extracted during sampling and distort the result.

3.11 Signage

The following symbols and signs are located on the system to draw attention to possible hazards and important information:

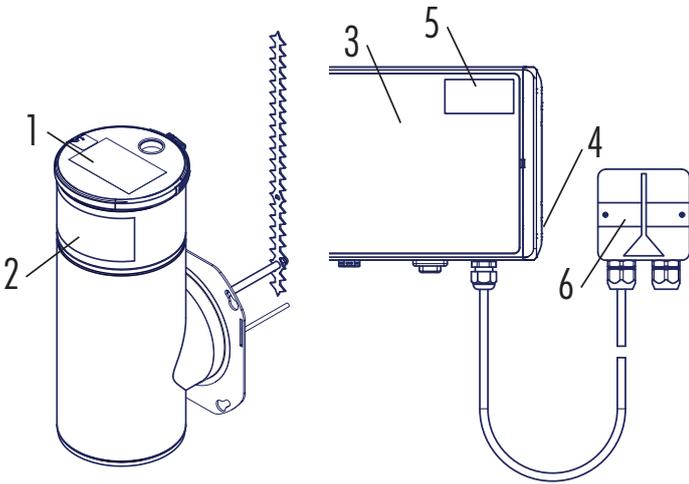


Fig. 4: Zumikron Outdoor signage

- | | |
|-----------------------------|--|
| 1 Ü symbol | 5 Hazard sticker |
| 2 Warning sticker | 6 Power connection terminal box (inside) |
| 3 Main sticker control unit | |
| 4 Control unit type plate | |

3 SAFETY

Pos.	Label	Quantity	Meaning
1	 <p>Staubabscheider Zumikron KW-RA Lackmau Z-7.4-3545</p> <p>!</p> <p>D Einbauichtung, Montageanleitung und Erdung beachten! GB Observe installation direction, installation instructions and earthing! F Respecter le sens de montage, les instructions de montage et la mise à la terre !</p> <p>www.kutzner-weber.de 2120131</p>	1	ATTENTION! Observe the installation direction, installation instructions and earthing!
2	 <p>Caution! Vorsicht Hochspannung! ZUMIKRON ⚠ Vor dem Öffnen Netzspannung abschalten. Min. 5 min warten bis Spannung abgebaut. ⚠ Before opening switch off main current. Wait at least 5 minutes until voltage has dissipated. ⚠ Avant l'ouverture couper la tension de réseau. ⚠ Attendre au moins 5 minutes que la tension se soit dissipée.</p> <p>Caution! Achtung! ⚠ Maximale Abgasstemperatur 400 °C. Metalloberfläche kann heiß sein. ⚠ Maximum exhaust gas temperature 400 °C. Metal surface can be hot. ⚠ Température maximale des gaz d'échappement 400 °C. ⚠ La surface métallique peut être chaude.</p> <p>2122736</p>	1	DANGER! High voltage! Danger to life from electric current! Touching live parts can lead to death. Damage to the insulation or individual components can be fatal. WARNING! Risk of burns on hot surfaces. Max. flue gas temperature is 400 °C.
3	 <p>★★★★★</p> <p>GREEN DOT</p> <p>Standby Hochspannung Fehler</p>	1	Main sticker control unit
4	 <p>KW Kutzner + Weber GmbH Frauenstraße 32 D-82216 Maisach</p> <p>Modell: Zumikron Steuerung Seriennummer: 010000 Versorgung: 230 VAC 50 Hz Schutzart: IP 65 Max. Leistungsaufnahme: 12 W (0,15 A)</p> <p>LED 1 grün Standby LED 2 grün Aufbau Hochspannung LED 2 grün Hochspannung</p> <p>LED 3 rot Überschlag LED 3 rot Fehler</p> <p>CE</p>	1	Control unit type plate
5	 <p>Vor Öffnen des Gehäuses Netzstecker ziehen!</p> <p>2119651</p>	2	GEFAHR! Vor Öffnen des Gehäuses Netzstecker ziehen.
6	 <p>KW Abgasanlage mit Staubfilter Zumikron</p> <p>DIBt-Zulassungs-Nr. Z-7.4-3545</p> <p>Geignet für: - Einfach- / Mehrfachbelegung - Brennstoff unbehandeltes naturreisendes stückiges Holz (z. B. Scheitholz und Hackenschnitzel) sowie Holzpresslinge (Pellets oder Briketts) - Feuerstätte mit geschlossenem Feuerraum - Einzelraumfeuerungsanlagen bis 14,9 kW - Nennwärmeleistung - Unterdruckbetrieb - Abgasstemperatur maximal T400 - auf sonnenabgewandter Gebäudeseite montieren</p> <p>Wartungsarbeiten: Vor Wartungsarbeiten/Reinigung des Staubfilter muss dieser stromlos geschaltet werden! Vor Ausbau des Staubfilters aus dem Abgasrohr Wartezeit von min. 5 min zum sicheren Spannungsabbau einhalten! Die Betriebsanweisung ist zu beachten!</p> <p>www.kutzner-weber.de 2120133</p>	2	Information sign (for self-assembly in the lower visible area and at the mouth)
7	 <p>230 VAC / 50 Hz</p> <p>L L (br) N N (bl) PE PE (gnge)</p>	1	Power connection Terminal box

Tab. 7: Signage

3 SAFETY

Illegible signage



CAUTION!

Risk of injury due to illegible symbols!

Labels and signs that have become unclear no longer make danger areas sufficiently recognisable and cannot indicate possible risks of injury.

- Always keep pictograms, safety, warning and operating instructions in a clearly legible condition.
- Replace damaged or unrecognisable pictograms, labels, signs or stickers immediately.

3.13 Environmental protection



CAUTION!

Environmental damage due to incorrect handling of hazardous substances!

Incorrect or negligent use of hazardous substances can lead to serious environmental pollution.

- Carefully remove any escaping condensate.
- Always dispose of all hazardous substances in accordance with local regulations; if necessary, commission a specialised company.

3.12 Behaviour in the event of danger and accidents

Preventive measures

- ▶ Always be prepared for accidents and fire.
- ▶ Keep first aid equipment (first aid kit, blankets, etc.) and fire extinguishers to hand.
- ▶ Familiarise staff with the accident reporting, first aid and rescue equipment.
- ▶ Keep access routes clear for rescue vehicles.

Act correctly in the event of an emergency

- ▶ Immediately initiate an emergency stop.
- ▶ Initiate first aid measures.
- ▶ Rescue affected persons from the danger zone.
- ▶ Inform the person responsible at the scene.
- ▶ In the event of serious injuries, alert the doctor and/or fire brigade.
- ▶ Keep access routes clear for rescue vehicles.

4 Transport



NOTE!

Transport, installation and initial commissioning are to be carried out exclusively by authorized employees of the manufacturer or individuals authorized by the manufacturer. If necessary, the operation and maintenance staff of the operator may participate under supervision of these representatives and following the instructions given below.



ATTENTION!

Property damage due to incorrect lifting and transport!

Improperly attached loads, inadequate transport locks and poor positioning of components may cause severe damage to the system.

- All lifting and transport procedures must generally be carried out in strict compliance with the transport drawings and the manufacturer's instructions contained therein!

4.1 Safety instructions for transport



WARNING!

Mortal danger due to falling load!

Falling loads or parts can kill people.

- Never stand under suspended loads.
- Stay out of the swing range of lifting equipment while it is in use.
- Always wear a safety helmet in areas where cranes are used



WARNING!

Risk of injury due to swinging transport goods!

Transport goods with an off-centre load may swing out far when lifted and severely injure nearby people

- Keep a safe distance from the swing range of the lifting equipment when lifting goods.
- Observe transport instructions and symbols on transport goods.
- Always wear a safety helmet in areas where cranes are used



ATTENTION!

Damage due to improper transportation!

Improper transportation may cause severe damage to the transport goods and nearby items.

- Always proceed with the utmost care when loading and unloading and transporting goods on the premises.
- Follow the instructions and symbols on the packaging.
- Do not remove transport locks before assembly.

Staff

- ▶ Transport work that is not performed with the aid of lifting or hauling equipment that requires mandatory supervision may be carried out by instructed personnel authorized by the operator.
- ▶ Transport work that is performed with the aid of lifting or hauling equipment that requires mandatory supervision may only be carried out by instructed specialist personnel that has been approved for handling such equipment and that has been authorized by the operator.

Personal protective equipment

- ▶ Always wear the following for any transport:
 - Industrial protective clothing
 - Protective gloves
 - Antislip safety boots
- ▶ For any transport involving lifting and hauling equipment such as pulleys, cranes, forklifts etc. also wear:
 - Industrial safety helmet

4.2 Transport inspection

Check the condition of the transport goods for completeness and damage immediately upon receipt of the delivery.

In case of visible transport damage:

- ▶ Do not accept delivery or only accept it conditionally
- ▶ Record the extent of the damage on the transport documentation as well as on the delivery note of the carrier.
- ▶ File a customer complaint.



NOTE!

Immediately file a complaint for any damage upon receipt of the transport goods!

Damages caused by transport can only be claimed within the effective complaint period.

4.3 Transport symbols

Depending on the content, there are symbols on the outside of the transport goods, which must be observed during transport and storage.



NOTE!

If you intend to transport the goods again at a later point, keep the original packaging for reuse!

- ▶ Keep the original packaging at least until the warranty expires and use it for potential returns.
- ▶ Before disposing of the packaging, record type, size, shape and filling material as well as the symbols on the transport goods.
- ▶ For further transport at a later time, you may order the original packaging from the manufacturer or make a suitable transport packaging based on the original packaging. It is essential to clearly label the transport goods with the required symbols and markings.

Meaning of transport symbols

The following transport symbols can be found on the transport goods:



Top

The arrows mark the top of the transport goods. They must always point up to prevent damage to the contents.



Fragile

Marks transport goods with fragile or delicate contents.

- ▶ Handle transport goods carefully, do not drop or thrust.



Protect from moisture

- ▶ Protect transport goods from moisture and keep it dry.

4 TRANSPORT

4.4 Transport and storage

Handling the packaging

The transport goods are packed safely and in an environmentally friendly manner for the expected transport conditions. The packaging protects the components from damage and corrosions until assembly.

- ▶ Do not remove packaging and transport locks before assembly.
- ▶ Follow local regulations for disposing of packaging material.



ATTENTION!

Environmental damage due to improper disposal!

Packaging materials are valuable resources and can be reused or recycled sensibly.

- Always dispose of packaging materials in an eco-friendly way.
- Follow local regulations, hire an expert firm if necessary.

5 Zumikron Outdoor

5.1 Technical data Zumikron Outdoor

5.1.1 Dimensioned drawing

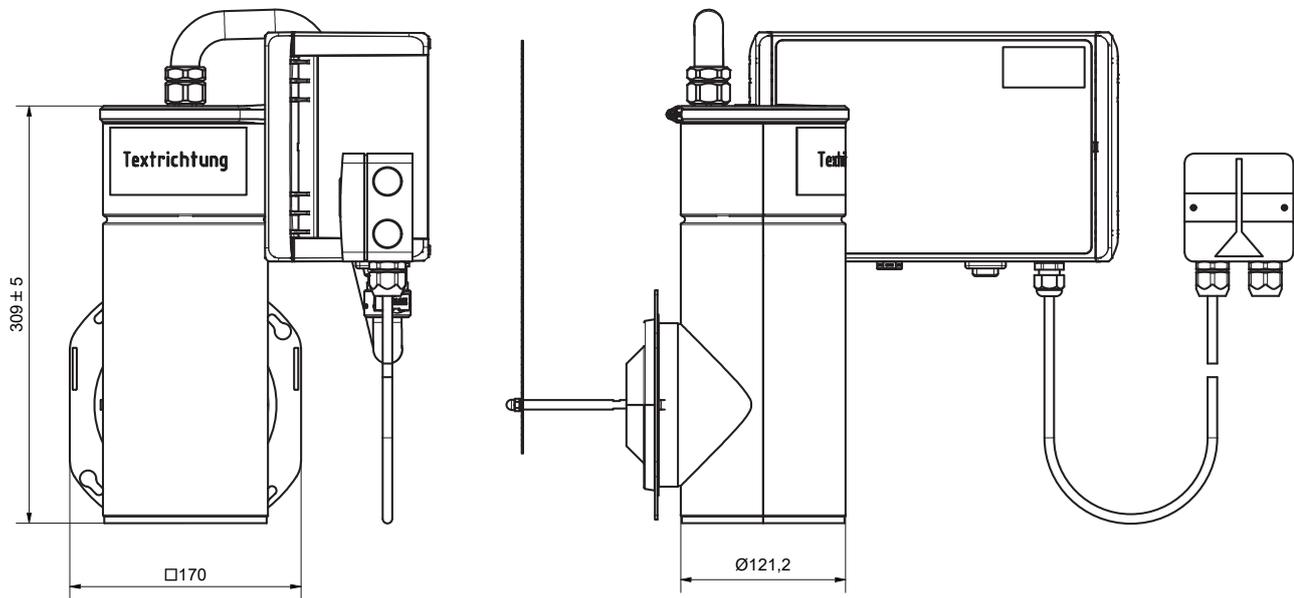


Fig. 5: Dimensions view 1 Control unit and Zumikron Outdoor particle separator (rear and side view)

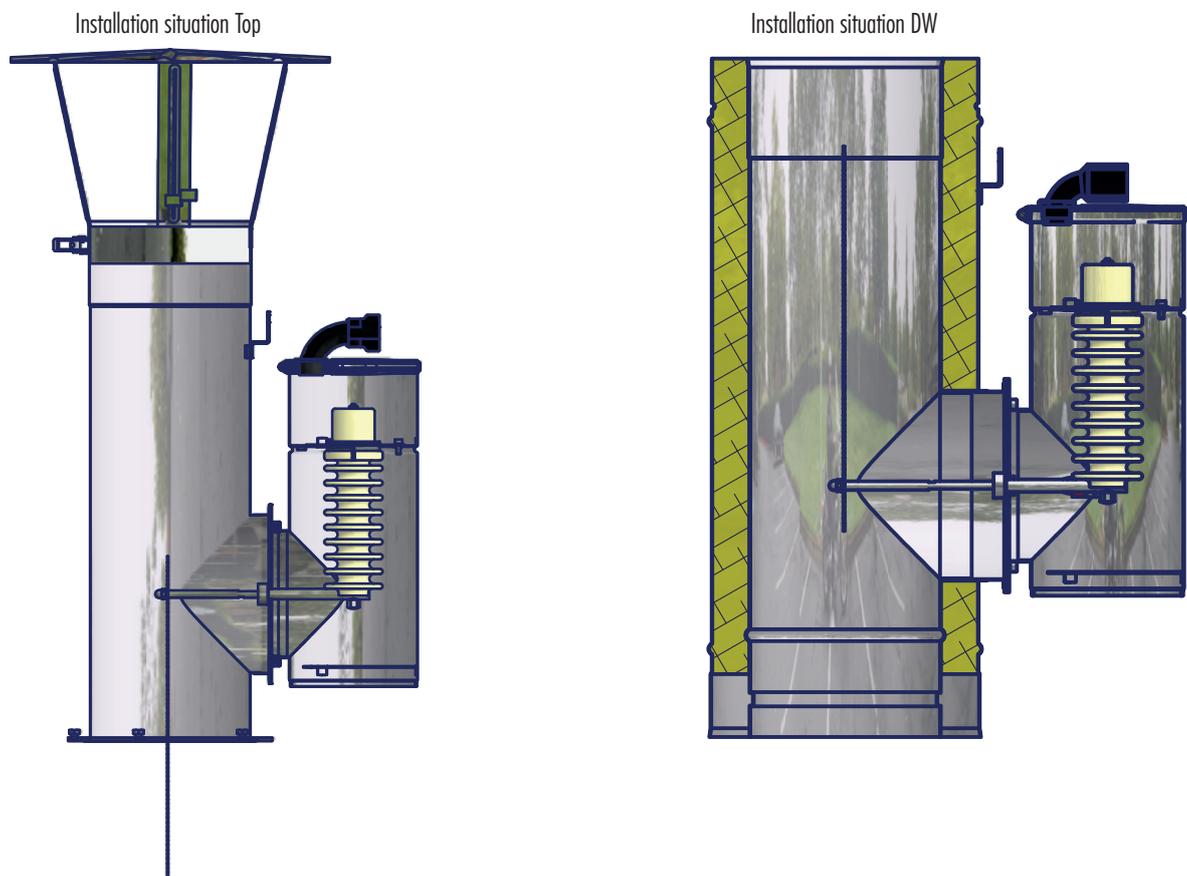
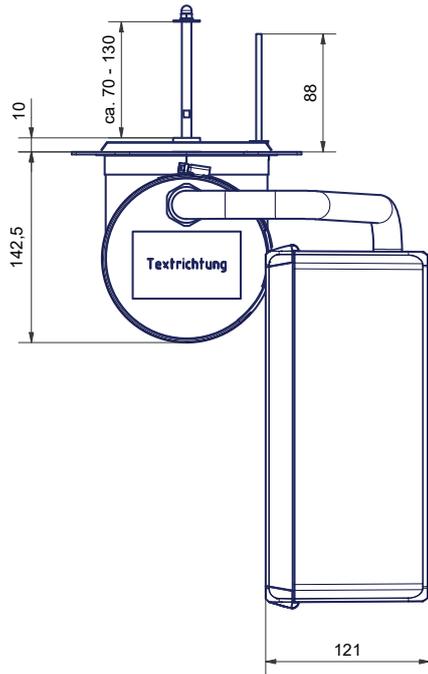


Fig. 6: View 2 Zumikron Outdoor particle separator (side view)

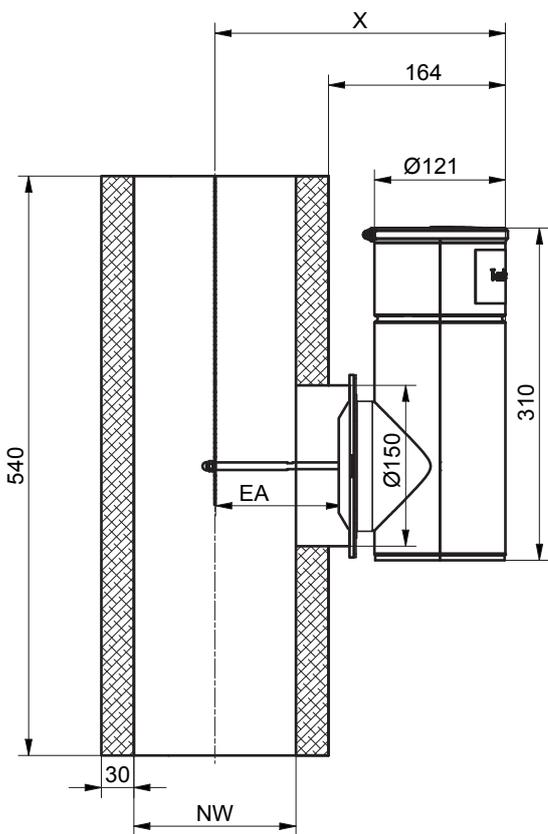
5 ZUMIKRON OUTDOOR



Dimensions of nominal width and electrode distance

The distance between the electrode and the chimney walls must be determined separately in each case. It must be ensured that the electrode is centred in the flue gas duct if possible. Only then can the separator function properly (when installing in larger diameters, observe the maximum extension length of the electrode).

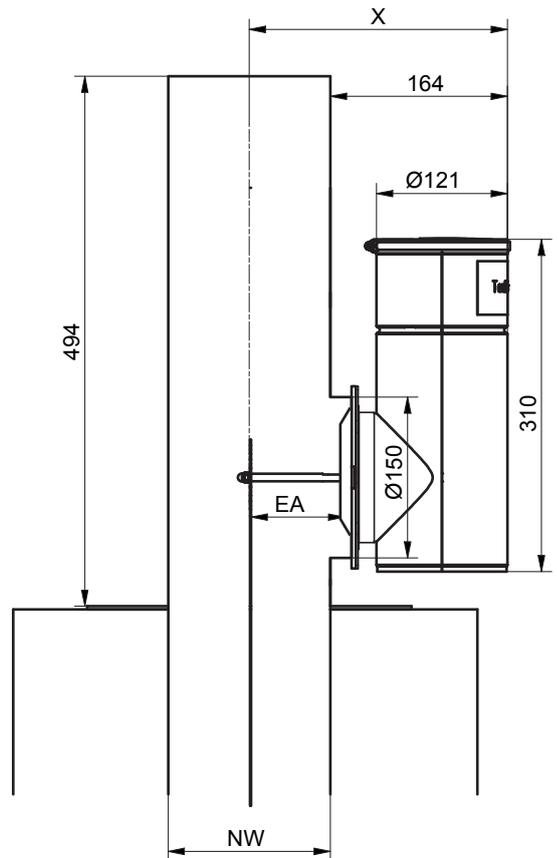
Fig. 7: Dimensions view 3 Zumikron Outdoor particle separator (top view)



Einbau DW-FU

NW [mm]	EA [mm]	X [mm]
150	115	269
180	130	284
200	130	294

EA [70mm - 130mm]



Einbau top

NW [mm]	EA [mm]	X [mm]
150	85	239
180	100	254
200	110	264
250	130	289

EA [70mm - 130mm]

Fig. 8: Dimension sheet for Zumikron Outdoor control unit and particle separator: cable harness = approx. 3 m

5 ZUMIKRON OUTDOOR

5.1.2 General information

Overall dimensions of Zumikron Outdoor particle separator

Specification particle separator	Value	Unit
Width	140	mm
Height	310	mm
Depth	Ø 121	mm
Adjustable electrode	EA 70–130	mm

Tab. 8: Overall dimensions of Zumikron Outdoor particle separator

Overall dimensions of the Zumikron Outdoor control unit

Specification control unit	Value	Unit
Width	271	mm
Height	170	mm
Depth	90	mm

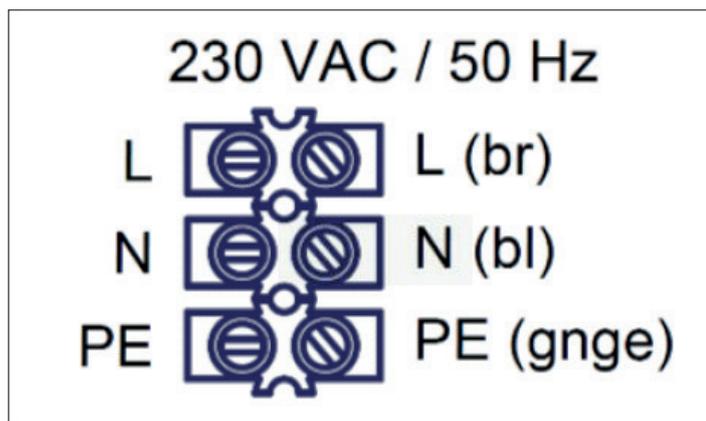
Tab. 9: Overall dimensions of the Zumikron Outdoor particle separator control unit

5.1.3 Connected loads

Electrical connection

Specification	Value	Unit
High voltage	modulating up to 21	kV
Supply voltage	230/1 ~/50	VAC/Ph/Hz
Permissible voltage tolerance	± 5	%
Power consumption/standby	12/2	W
Protection class	IP 65	
Connection via 230 V earthed plug	230	V

Tab. 10: Electrical connected loads Zumikron Outdoor



5.1.4 Technical values

Specification	Value	Unit
Material of flue gas conducting parts	1.4571/1.4404	
Separation efficiency	up to 90	%
Flue gas system diameter	130–250	mm
Max. Flue gas temperature/class EN 1856-1	400/T400	°C
Resistance coefficient ^{1.)}	negligible	ζ
Length of mains connection cable	Assembly on site	
Length of connecting cable Separator insert/control unit	3,0	m
Operating mode	D	t (dry)

1.) for the chimney calculation according to EN 13384, take into account the reduced cross-section, see also dimensioning

Tab. 11: Technical values Zumikron Outdoor

5.1.5 Performance values

Heating time, max. temperature

Specification particle separator	Value	Unit
Switch-on temperature (above threshold value 5 °C/min.)	approx. 45	°C
Max. Flue gas temperature	400	°C

Tab. 12: Performance values: Throughput capacity

5.1.6 Operating conditions

Working area

Specification	Value	Unit
Ambient temperature range	-20 to +50	°C
Operating temperature (on separator insert)	400	°C
Relative humidity, maximum	95	%

Tab. 13: Betriebsbedingungen, Arbeitsbereich

Specification	Value	Unit
Uninterrupted operation, max.	Suitable for continuous operation	
Switch-on pause	Not required	
Maintenance intervals, min.	→ Maintenance schedule	
service life, max.	10*	years

* product monitoring results in a significantly longer service life with regular maintenance (compliance with inspection intervals)

Tab. 14: Permissible operating times and service life

5 ZUMIKRON OUTDOOR

5.2 Structure and function of the Zumikron Outdoor

5.2.1 Module overview



Fig. 9: Overview

1 Zumikron Outdoor DW

2 Zumikron Outdoor Top

- 1 Ionisation area
- 2 Flue gas
- 3 Sawtooth electrode
- 4 Temperature sensor
- 5 High-voltage cable
- 6 Insulator
- 7 Length-adjustable electrode holder
- 8 Displacement lock



NOTE!

The separator insert is identical for all cross-sections. The position of the electrode can be adapted to the different pipe diameters (→ chapter Assembly and installation). The separator insert is always flanged to the T-piece. These are available in cross-sections from 130 to 250 mm.

Control module

The control module contains the high-voltage cascade and the control electronics. The mains connection is made via a mains cable with terminal box.



Fig. 11: Control module assembly and operating unit

- 1 Pressure equalisation element
- 2 Status LED
- 3 ON/OFF rocker switch
- 4 Mains cable
- 5 Supply line to separator insert

5.2.2 Description of the assemblies and components

T-piece

The T-piece is used to integrate the Zumikron Outdoor into the flue gas pipe. When mounted on the T-piece, the Zumikron Outdoor is fixed to the T-piece using a bayonet catch and screws.

Separator cartridge

The separator insert is mounted on the side of the flue pipe, with the sawtooth electrode protruding into the flue gas flow and generating an electric field.

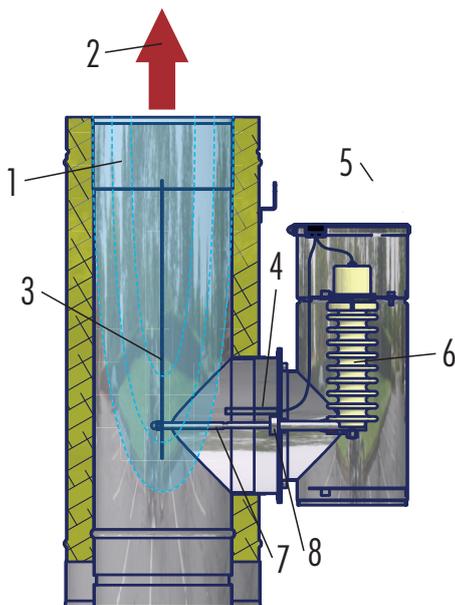


Fig. 10: Assembly overview of separator insert (installed in T-piece DW)

5 ZUMIKRON OUTDOOR

Control and display element

Label	Meaning
	Mains switch (bottom right) for switching the appliance on and off
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <input type="radio"/> Standby <input type="radio"/> Hochspannung <input type="radio"/> Fehler </div>	LED 1 green ___ Standby LED 2 green --- High voltage build-up LED 2 green ___ High voltage LED 3 red --- Flashover LED 3 red ___ Error

Tab. 15: Operating and display element

5.2.3 Functional description

The principle of electrostatic particle separation is based on the following processes:

- Generation of charge carriers
- Charging of the particles
- Separation of the particles by electrostatic forces

A temperature sensor detects whether hot flue gases are present. The Zumikron particle separator is automatically activated from standby mode when the switch-on temperature is reached.

An electrical field is generated around an electrode by applying an electrical voltage to the electrode. The high field strength causes a corona discharge at the tips of the electrode. This creates charge carriers (ions) that charge the molecules in the flue gas. When the gas ions collide with the particles in the flue gas flow, the dust particles are finally charged.

Due to the electrical charge of the particles, they are now deflected towards the pipe wall by the electrical field. Once there, they are deposited and transfer their charge back to the pipe. During deposition, the particles combine with each other and fine dust becomes coarse dust. Over time, a corresponding layer of deposits forms, which must be cleaned regularly.

The Zumikron particle separator thus reduces the emission of fine dust by up to 90 %.

The electrode and the pipe sections of the flue gas system are separated by an insulator, which allows the electrical potential required for particle separation to build up.

The closed design of the separator insert ensures that the particle separator can be operated independently of the ambient air.

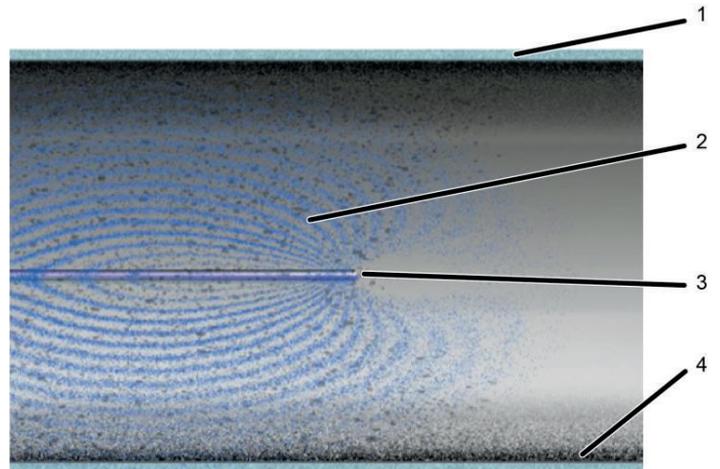


Fig. 12: Electrostatic particle separation function

- | | |
|------------------|------------------|
| 1 Pipe wall | 3 Electrode |
| 2 Electric field | 4 Separated dust |

5.3 Assembly and installation Zumikron Outdoor



NOTE!

Transport, installation and initial commissioning may only be carried out by authorised employees of the manufacturer or persons authorised by the manufacturer.

5.3.1 Safety instructions for assembly, installation and commissioning



WARNING!

Danger due to incorrect assembly, installation and commissioning!

Assembly, installation work and initial commissioning require trained specialist personnel with extensive experience. Installation errors can lead to life-threatening situations.

- Have all assembly, installation and initial commissioning work carried out exclusively by trained specialists, e.g. chimney sweeps.
- Always commission the manufacturer with the necessary work, even in the event of subsequent relocation, reinstallation and recommissioning.
- Refrain from any unauthorised relocation, installation and/or recommissioning.

After assembly, complete installation and initial commissioning by trained specialist personnel, the device is handed over to the operator.

After this, the operator is authorised to operate the appliance as intended in compliance with all the information in this manual.



NOTE!

All safety instructions contained in these operating instructions must be observed.

5.3.2 Installation approval

Dimensioning, verification of chimney function



CAUTION! Before installation in flue gas systems, especially outside the installation room, the approval of the responsible district chimney sweep must be obtained. If necessary, a chimney calculation is required as part of the combustion engineering design (→ chapter 6.3.3).

5.3.3 Before installation

The following conditions must be met before assembly, installation and commissioning.

Electrical system



DANGER!

Danger to life due to lack of earthing!

The charging unit's electrodes carry a voltage of up to 21,000 V during operation. Touching live parts can be fatal.

- Before starting operation, ensure that all parts of the system are adequately earthed.
- Any work on the electrical system may only be carried out by qualified electricians.

Ambient conditions, requirements for systems with Zumikron Outdoor particle separator

The Zumikron Outdoor particle separator can be used for natural, lumpy wood and pressed wood in single-room combustion systems with a nominal heat output of up to 14.9 kW. The electrode length is 306 mm.

Permitted fuels are:

Natural, lumpy wood (e.g. logs and wood chips) as well as pressed wood (pellets or wood briquettes). Other biogenic fuels must be approved separately by the manufacturer.

The firing system must be tested and approved in accordance with the requirements of the applicable EN standards and the respective country-specific specifications (Low Voltage Directive, electrical safety, EMC).

Installation site

The ambient temperature of the Zumikron Outdoor particle separator must not exceed 50 °C and must not fall below -20 °C. It must be possible to maintain the distances from walls or combustible materials required for safe operation and maintenance.

The minimum distance between the separator insert and combustible components is 40 cm.

Other regulations concerning the firing or flue gas system remain unaffected.

If necessary, appropriate fire protection insulation must be fitted and no flammable materials may be stored in the vicinity of the Zumikron Outdoor particle separator.

It must be possible to dismantle the separator insert for cleaning purposes! The freedom of movement to the rear, transverse to the flue gas pipe axis, must be 15 cm up to Ø 180 mm and 20 cm for Ø 180 mm to 250 mm. The separator insert must be freely accessible for cleaning.

The Zumikron Outdoor particle separator requires a 230 V/50 Hz type F socket.

The Zumikron Outdoor particle separator may only be installed outdoors.

Flue gas system

The Zumikron Outdoor particle separator may only be used in negative pressure flue gas systems of tightness class N1.

After the installation location of the separator insert, there must be at least a 0.5 m long separator section, measured from the tip of the electrode, for attaching a measuring opening. The separator pipe downstream of the particle separator can be made of metallic or Outdoor materials. All parts of the flue gas system (also vertical or inclined) up to the chimney outlet can be considered.

Before and after the separator insert, there should be a straight pipe section at least 1 times the pipe diameter in length. Long straight pipe sections, especially after the separator insert, favour the separation performance.

Flue gas conditions and flue gas composition

The Zumikron Outdoor particle separator is designed for normal dust-laden flue gases from biomass combustion systems, maximum flue gas temperature 400 °C (T400).

Dry operation of the flue gas system up to the firing connection is a prerequisite; brief dew point undershoots, e.g. during start-up, are permitted. The flue gas must fulfil the requirements of VDI Guideline 2035 Sheet 3.

This applies in particular to

- Hydrogen chloride content
- Humidity level
- Chloride-containing particles

It must not contain any condensable tar-like components! It must not contain any components that lead to pitting in stainless steel.

Flue gas dampers, secondary air devices and other components

Secondary air devices (draught regulator/ flue gas flaps) should be installed between the firing system and the Zumikron Outdoor particle separator if possible, as the charged particles can also be deposited on the secondary air device and impair its function.

Draft restrictors, flue gas dampers or other regulating components must be at least twice the length of the pipe diameter upstream of the separator. A minimum distance of 50 cm must be maintained downstream of the separator.

Flue gas connections

The Zumikron particle separator is intended to be installed as a Zumikron Outdoor Top outlet variant or as a Zumikron Outdoor DW in a DW exhaust system. T-pieces in nominal widths of 150, 160 (only DW), 180 and 200 mm are available for this purpose.

Power connections

On site depending on the situation.

Fastening

The separator insert is connected to the flue gas pipe via the flange connection. The flue gas pipe must be sufficiently strong and must be supported if necessary. The control unit can be mounted on a neighbouring wall or a holding device provided by the customer.

5.3.4 Installation



WARNING!

Danger due to incorrect installation!

Installation work requires trained specialist personnel with extensive experience. Installation errors can lead to life-threatening situations.

- All installation work must be carried out exclusively by the manufacturer's employees or trained specialist personnel authorised by the manufacturer.
- Observe the health and safety regulations, use PPE.



DANGER!

Danger to life due to electric current!

Lightning strikes or a voltage flashover from power lines can be life-threatening.

- In the event of an impending thunderstorm, stop working outdoors immediately and leave the work area at least 100 m away from the machine. Do not resume work until at least one hour after the thunderstorm has passed.
- When working near power lines, keep a safe distance of at least 5 m from the power lines.



NOTE!

Opening the control unit, bell or disconnecting the connection between the bell and control unit will invalidate the warranty/guarantee.

5.3.4.1 Single-wall T-piece installation (EW)

Hot flue gases and dust



WARNING!

Risk of burns from hot flue gases and dust!

Before working on the flue gas system, switch off the firing system and wait for complete burn-out and cooling. There is a risk of burns and suffocation. Flue gases can reach temperatures of $> 400\text{ }^{\circ}\text{C}$ during operation and can cause burns on contact with the skin.

- Switch off the firing system before carrying out any work and wait until the firing system has completely burnt out and cooled down.
- Before working on the Zumikron particle separator, measure its temperature and allow it to cool down to below $+50\text{ }^{\circ}\text{C}$ if necessary.
- Ensure adequate ventilation during work.
- Store dust in a fireproof container for at least one week before transporting it further.

Hot surfaces



CAUTION!

Risk of burns from hot surfaces!

Contact with hot components can cause burns.

- Wear protective clothing and gloves when working in the vicinity of hot components.
- Allow hot components to cool to below $+50\text{ }^{\circ}\text{C}$ before carrying out any work.

Installation must be carried out in the order described below. Instructions can be found on the homepage at www.kutzner-weber.de. A 230 V/50 Hz power connection must be provided.

T-piece with screw-on adapter

If the Zumikron Outdoor is installed on an existing brick chimney, a connection is made between the T-piece and the chimney using a screw-on adapter.

1. Place the mounting plate (optionally available) centred over the opening of the inner pipe of the chimney and mark the dowel holes.
2. Drill holes for approved dowels with a diameter of 10 mm and insert the dowels.
3. create a soft, tight support between the mounting plate and the chimney cover (e.g. temperature-resistant silicone, Outdoor fibre tape, etc.) to ensure a level support, prevent the ingress of rainwater and prevent the intake of false air.
4. Mount the T-piece on the mounting plate and then fasten the complete unit using the previously drilled holes and stainless steel screws.
5. The T-piece must be tightly connected to the flue gas-carrying inner pipe (for multi-shell flue gas systems).
6. The linear expansion of the flue gas system must be observed. Please refer to the manufacturer's documentation. If necessary, appropriate measures must be taken in accordance with the manufacturer's specifications and the local conditions. Due to the large number of systems, it is not possible to provide a generally applicable solution here.
7. The outlet for the rear ventilation of the flue gas system (if present) must remain free. Appropriate measures must be taken depending on the local conditions. Due to the large number of systems, it is not possible to provide a generally applicable solution here.
8. The screw connection must ensure a stable and windproof fastening. The chimney cover must be firmly connected to the chimney shaft or have the necessary dead weight to hold the T-piece in a windproof position (if necessary, connect the cover separately to the chimney shaft statically).
9. the rain bonnet must be attached to the chimney mouth
10. the static proof must be provided by the customer.

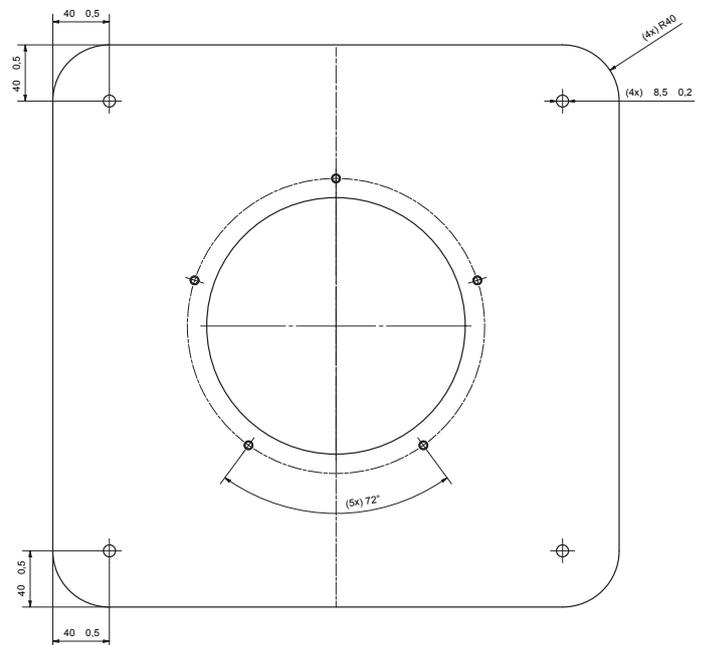


Fig. 13: Dimensions of screw-on adapter

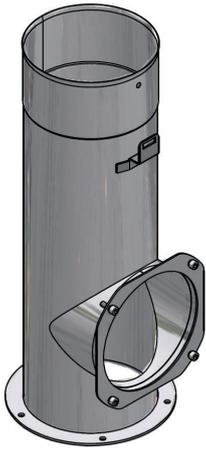


Fig. 14: T-piece

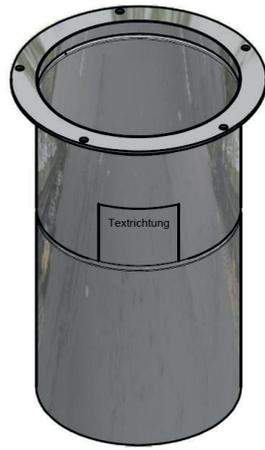


Fig. 15: Slide-in adapter for mounting on existing flue gas systems

T-piece with plug-in adapter

Attachment to a chimney cap or a stainless steel flue gas system using a plug-in adapter

1. For this purpose, the plug-in adapter ... (Ø adapter insertion pipe = nominal diameter -2 mm) can be ordered (optional).
2. Screw the adapter onto the T-piece and then insert the entire assembly into the chimney.
3. The fastening depends on the connection criteria of the respective manufacturer of the flue gas system. (For Raab chimneys, a suitable clamping band is supplied with the plug-in adapter. The adapter may have to be shortened).
4. The static proof must be provided by the customer.

5.3.4.2 Installation of double-walled T-piece (DW)

T-piece DW

To install the double-walled T-piece, either a part of the existing flue gas system can be replaced or the T-piece can be fitted to the upper end of the flue gas system.

For the integration of the T-piece into stainless steel chimneys that are not made by Raab, a T-piece customised to the manufacturer can be produced.



Fig. 16: Double-walled T-piece

5.3.4.3 Installation of particle separator

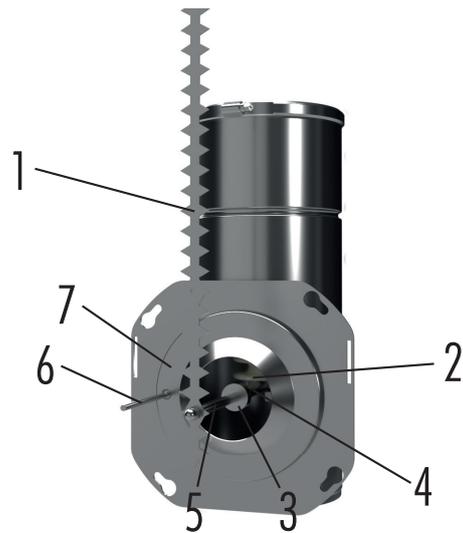


Fig. 17: Electrode (1), Outdoor insulator (2), displacement lock (3), electrode holder (4), holding rod (5), thermocouple (6), flow cone (7)

The Zumikron Outdoor can only be installed in vertical flue gas pipes, with the cable gland (cover) pointing upwards.

Fitting the sawtooth electrode/thermal sensor



NOTE!

It is recommended to mount the electrode so that the longer side points towards the chimney. For optimum inlet and outlet distances of the separator, the existing flue gas pipe must be taken into account! Exception Top to increase the separation distance.



WARNING!

Risk of injury from sharp components!

The saw tooth electrode is sharp-edged, sharp parts can cause serious injuries. Exercise particular caution when carrying out any work – Wear protective gloves for all work.

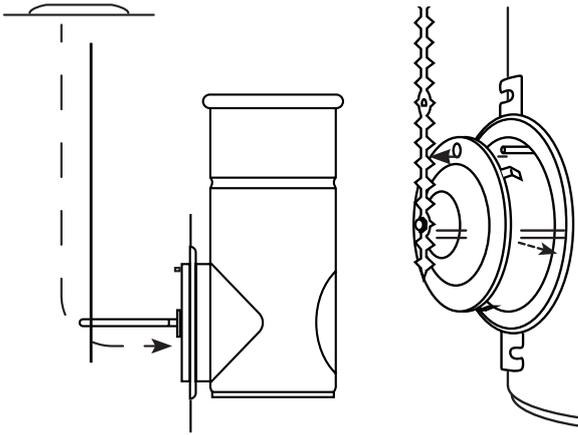
For initial installation, the electrode (1) together with the retaining rod (5) must be pushed into the electrode holder (4). If necessary, the sliding lock (3) (grub screw) must be loosened and/or turned round (electrode installation direction). The sawtooth electrode is usually pre-assembled (SW 8).

Tools required	Size
Spanner	SW 8
Allen spanner	2,5

To set the appropriate distance to the pipe wall, loosen the sliding lock (3) on the electrode holder (4) using a size 2.5 Allen key and extend the electrode (1) to the desired distance (Tab. 19). Then retighten the sliding lock (3) (grub screw).

Carefully slide the flow cone over the electrode. Align it so that the small hole is above the thermocouple and the 3 retaining springs are in contact with the inner edge of the separator opening. Now press the flow cone evenly into the separator opening with both hands. Then make sure that the thermal sensor protrudes through the small hole.

5 ZUMIKRON OUTDOOR

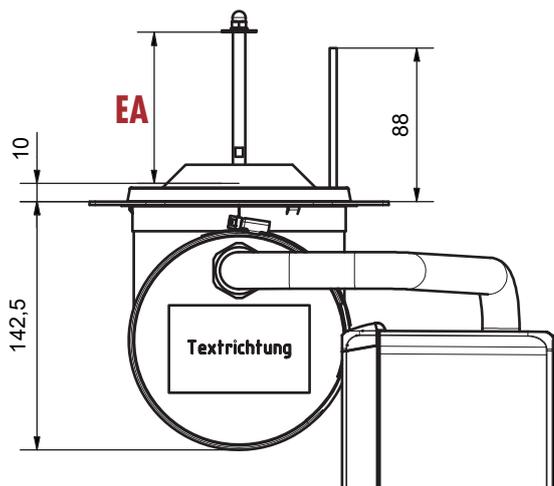


During further installation, ensure that the electrode (1) is not damaged (e. g. by kinking). If the electrode (1) is nevertheless kinked, in most cases the electrode (1) can be carefully bent back using pliers. Take care not to strain the Outdoor insulator (2). Fit the thermal sensor (6) to the housing with approx. 18 Nm.

Dimensions nominal width and electrode distance

NW [mm] Nominal width	EA [mm] Electrode distance
150 EW	85
150 DW 30 iso	115
180 EW	100
180 DW 30 iso	130
200 EW	110
200 DW 30 iso	140
250 EW	135
230 DW 30 iso	165

Note: Only applies when using original T-pieces top EW and T-piece DW



Mounting the control module

Drill four holes on a side facing away from the sun using the enclosed template. Insert the appropriate plugs and screws and hang the control module so that the ON/OFF rocker switch is on the lower side.

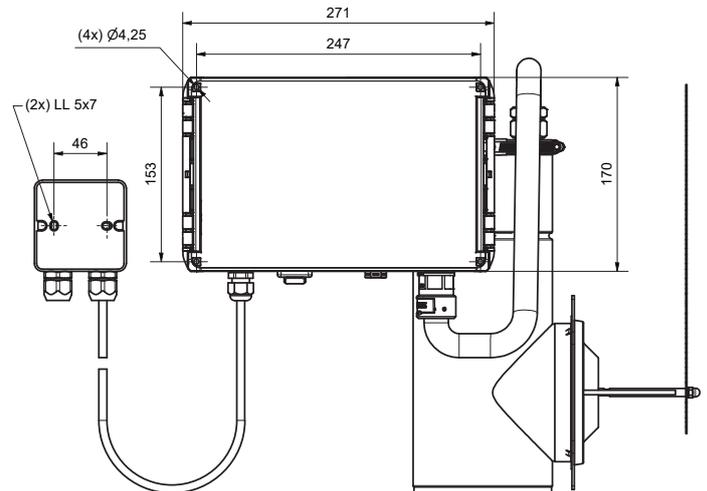


ATTENTION!

Use suitable cable ducts for cable routing to avoid tripping hazards. The cable must be laid rigidly! The control module must be installed on a side of the chimney facing away from the sun. Do not attach the cable to hot or flue gas-carrying parts; ensure sufficient fire protection clearance.

Tools required	Size
Spanner	10/7, 13
Screwdriver	

The control module can also be installed inside the house. The prerequisite for this is that the separator insert can be routed to the outside through an opening. Opening the separator insert is not permitted.



Fitting the separator insert

Once all the previous assembly steps have been carried out, the separator insert is placed on the T-piece:

1. Remove the cleaning cover (if fitted) from the T-piece
2. Align the separator insert as described (see 6.3.4.3)
3. Now carefully insert the electrode by first inserting the longer electrode side into the opening at an angle until the electrode holder is against the opening.
4. Now turn the separator insert so that the other electrode side is immersed in the opening. Now push the separator insert into the T-piece as far as it will go and centre it with the attached screws. Make sure that the electrode and the temperature sensor are not bent or twisted.
5. Turn the separator insert to the stop until it is straight and tighten the hexagon socket screws.

5 ZUMIKRON OUTDOOR

5.4 Commissioning Zumikron Outdoor

5.4.1 Before initial commissioning

The following conditions must be met before initial commissioning:

Mains connection

230 VAC 50 Hz

Earthing

The entire flue gas system must be sufficiently earthed!

Precautions for condensate drainage



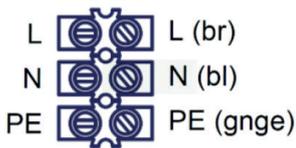
ATTENTION!

Continuous condensate formation must be avoided, for example by increasing the temperature. The connecting pipe between the Zumikron Outdoor, boiler and chimney can be insulated to prevent condensate from returning from the chimney/connecting pipe to the Zumikron Outdoor by means of an appropriate gradient or equipment.

Electrical connection

The electrical connection of the control unit must be carried out as described.

230 VAC / 50 Hz



Dimensioning, verification of chimney function

Before the Zumikron Outdoor particle separator is installed, the technical combustion dimensioning of the firing system must be checked by the responsible district chimney sweep.

The flow resistance without dust loading is negligible; the combustion engineering dimensioning must be carried out in the area of the particle separator with a maximum possible dust loading thickness of 10 mm, i.e. with a pipe diameter reduced by 20 mm compared to the initial diameter.

The flue gas system must be designed to be dry in the area of the separator section. Short-term dew point undershoots are possible, e.g. when starting up the system.

5.4.2 Initial commissioning

The entire flue gas and combustion system with Zumikron Outdoor particle separator must be tightly connected and approved ready for operation. If necessary, carry out a leak test in accordance with DIN EN 1443.

The installation must have been carried out correctly in accordance with chapter 6.3 and all the requirements specified there must be met.

- Only switch on the Zumikron Outdoor particle separator when the system is cold. To do this, plug in the mains plug and switch on the Zumikron Outdoor particle separator at the ON/OFF rocker switch on the control unit. This now automatically switches to standby mode (LED flashes green), the Zumikron particle separator is now ready for operation
- Now start up the fireplace. After reaching the switch-on temperature, the high voltage is built up, after a few moments the operating voltage is reached, the LED lights up green continuously (normal operation).

- If flashovers occur during the heating-up phase (slight cracking in the area of the electrode), this may be due to moisture. As soon as the flue gas temperature is high enough, there should be no more permanent flashovers.
- If the control unit does not switch to normal operation or signals a fault immediately or some time after switching on (red flashing), check the separator insert (→ chapter 6.3.4).

5.5 Operation Zumikron Outdoor

5.5.1 Safety instructions for operation



WARNING!

Risk of injury due to improper operation!

Improper operation can lead to serious injuries.

- Operation may only be carried out after reading the operating instructions and by trained personnel authorised by the operator.
- Before carrying out any work, ensure that the safety devices are correctly installed and functioning properly.
- Never override safety devices.
- Always ensure that the work area is kept tidy! Materials not intended for use, materials lying around and objects and tools that are not required are sources of accidents.

Hot flue gases and dust



WARNING!

Risk of burns from hot flue gases and dust!

Before working on the flue gas system, switch off the firing system and wait for complete burn-out and cooling. There is a risk of burns and suffocation. Flue gases can reach temperatures of > 400 °C during operation and can cause burns on contact with the skin.

- Switch off the firing system before carrying out any work and wait until the firing system has completely burnt out and cooled down.
- Before working on the Zumikron particle separator, measure its temperature and allow it to cool down to below +50 °C if necessary.
- Ensure adequate ventilation during work.
- Store dust in a fireproof container for at least one week before transporting it further.

Hot surfaces



CAUTION!

Risk of burns from hot surfaces!

Contact with hot components can cause burns.

- Wear protective clothing and gloves when working in the vicinity of hot components.
- Allow hot components to cool to below +50 °C before carrying out any work.



WARNING!

Risk of injury from escaping condensate!

Condensate can contain substances that are hazardous to the environment and health. Avoid skin contact with the condensate and wear splash protection goggles. Also observe the locally applicable environmental regulations.

- Use chemical-resistant protective gloves for all work.

5 ZUMIKRON OUTDOOR

5.5.2 Operation of particle separator

Personnel

- ▶ User

Personal protective equipment

- ▶ Protective work clothing
- ▶ Safety goggles
- ▶ Safety gloves

5.5.2.1 Switching on

To switch on the Zumikron Outdoor particle separator (→ Fig. 36):

1. Switch the ON/OFF rocker switch of the control unit to „I“. The Zumikron Outdoor particle separator is in operation.



Fig. 18: Switching on the control unit

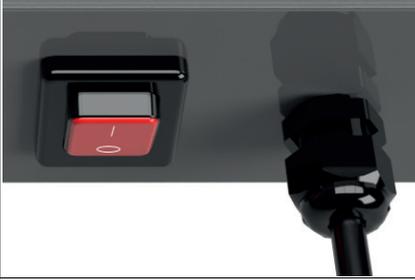
5.5.2.2 Switching off

To switch off the Zumikron Outdoor particle separator (→ Fig. 37):

1. Switch the ON/OFF rocker switch of the control unit to „0“. The Zumikron Outdoor particle separator is out of function.
2. Wait 5 minutes for the voltage to drop after switching off.



Fig. 19: Switching off the control unit

Pos.	Type	Figure	Meaning
1	Control "I/O" ON/OFF rocker switch		ON/OFF rocker switch (bottom right) for switching the device on and off
2	Illuminated LED	<div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: auto;"> <ul style="list-style-type: none"> ○ Standby ○ Hochspannung ○ Fehler </div>	LED 1 green — Standby LED 2 green ---- High voltage set-up LED 2 green — High voltage LED 3 red ---- Flashover LED 3 red — Error
3	Connection: High-voltage supply, earthing cable, thermocouple		Connection of the high-voltage supply, the earthing cable and the thermocouple (cannot be opened). Used for connection to the separator insert.

Tab. 16: Operation

5.5.3 Shutting down in an emergency

In dangerous situations, stop the system as quickly as possible and switch off the power supply.

Shutting down in an emergency In the event of danger:

1. Immediately switch the ON/OFF rocker switch „I On/O Off“ to „O Off“ and disconnect the mains plug.
2. Inform the person responsible at the scene.
3. If necessary, alert the doctor and fire brigade.
4. Rescue injured persons, initiate first aid measures.
5. Switch off the ON/OFF rocker switch and secure it against being switched on again.
6. Keep access routes clear for rescue vehicles.

After the rescue measures

1. If necessary, inform the relevant authorities.
2. Assign specialised personnel to rectify the fault.



Danger to life from switching on again!

- Before switching on again, ensure that no persons are in danger.

3. Thoroughly check the technical condition of the system before recommissioning and ensure that all safety devices are properly installed and functional again.

6 Maintenance

6.1 Safety Instructions Maintenance



WARNING!

Risk of injury due to improper maintenance!

Improper maintenance can cause severe injuries.

- Maintenance work may only be carried out by trained specialist personnel authorized by the operator.
- Make sure there is enough assembly space before you start.
- Always keep the work area tidy and clean! Scattered items, components, work pieces and tools lying around as well as cleaning equipment are sources of accidents.
- If components have been replaced, check correct assembly of spare parts. Mount all fastening elements properly. Observe screw tightening torques.
- Before recommissioning make sure that all protective devices are correctly installed and functional.
- Before restarting, make sure that nobody is in the danger area.



WARNING!

Risk of injury due to unauthorized restart!

When working on individual components, individuals may be injured if the power supply is switched on unexpectedly.

- Before working on individual components, switch off the power supply and secure against being switched on again.



HAZARD!

Mortal danger due to electric current and electrically charged components!

The electrodes of the charging unit carry a voltage of up to 21,000 V during operation. Touching live parts and wires can lead to death. Damage to the insulation or individual parts can be life-threatening.

- Before opening, switch off the device and disconnect the plug from the mains. Wait at least 5 minutes before opening it to allow residual voltage to dissipate.
- Before maintenance or repair work, switch off the electrical system and secure it against being switched on again.
- Keep moisture away from electrical components.



WARNING!

Falling hazard!

When working in elevated positions, unsecured people may fall or be injured by falling objects.

- When working, use a ladder or a platform with railing.
- Secure individuals and objects against falling.
- Prevent unauthorized people from entering the working area.
- Wear personal protective equipment in the working area.



WARNING!

Risk of injury due to wrong spare parts!

Faulty spare parts can considerably reduce safety and cause damage, malfunctions and complete breakdown

- As a general rule, only use original spare parts.

6 MAINTENANCE



WARNING!

Risk of burns due to hot flue gasses and dusts!

Before working on the flue gas system, turn off the furnace and wait for it to burn out and cool down completely. Risk of burns and suffocation. Flue gasses reach temperatures of up to $> 400\text{ °C}$ during operation and cause burns when touching the skin.

- Before starting any work, turn off the furnace and wait for the firing system to burn out and cool down completely.
- Before working on the Zumikron particle separator, measure its temperature and allow it to cool down to below $+50\text{ °C}$ if necessary.
- Ensure adequate ventilation during work.
- Store dusts in a fireproof container for at least one week before moving them further.



CAUTION!

Risk of injury at edges and corners!

Sharp edges and pointy corners may cause abrasions, scratches and cuts.

- Always proceed with caution when working near sharp edges and pointy corners.
- Wear protective gloves.



CAUTION!

Health risks due to unhealthy posture!

Lifting heavy components the wrong way and an unnatural posture while working may cause health issues.

- Heavy components should always be lifted by several people.
- While working on low-lying components, always crouch down, do not bend down.
- Use kneepads for kneeling and a cushion for sitting.
- While working on high-lying components, always maintain an upright, straight posture.
- Always use tools that are in perfect working order and suitable for a safe execution for all tasks



CAUTION!

Risk of burns due to hot surfaces!

Contact with hot components may cause burns.

- Wear industrial protective clothing and protective gloves when carrying out maintenance and repair work near hot components.
- Allow hot components to cool down to ambient temperature before starting work.



ATTENTION!

Environmental damage due to incorrect handling of hazardous materials!

Using hazardous materials incorrectly or carelessly may cause severe environmental damage.

- Always follow local regulations for disposing of any hazardous materials, hire specialists if necessary.

6.2 Maintenance work

Staff

- ▶ Instructed specialist personnel authorized by the operator

Personal protective equipment

- ▶ Industrial protective clothing
- ▶ Dust mask
- ▶ Solid protective gloves when working on components, chemical-resistant protective gloves when handling hazardous substances
- ▶ Antislip safety boots
- ▶ Safety goggles

6.2.1 Inspection and maintenance schedule

The following table lists regularly required inspection work. The interval required for the individual steps must be determined by the operator in relation to the local conditions, however at least once a year.

No.	Modules	Tasks	Interval [year]
1	Entire installation	Visual inspection for damage	at least 1 x
2	Electrical connections	Check plug-connections and pipes for damage	at least 1 x
3	Charging unit interior (in particular electrode and isolator)	Check for dirt/clean, visual inspection for corrosion, damage	at least 1 x
4	Connection flue gas system	Check tightness and position	at least 1 x
5	Fastening	Check for stability and damage	at least 1 x
6	Supply line cable	Check correct position and check for damage	at least 1 x
7	Control unit	Visual inspection of the control unit for damage	at least 1 x

Tab. 17: Inspection schedule



ATTENTION!

Functional damage due to non-compliance with the maintenance and cleaning intervals!

If maintenance and cleaning are neglected, flashovers may occur in the area of the separator cartridge. As a result, the separation performance can be significantly impaired.



NOTE!

Before the flue gas system is cleaned for the first time, the responsible chimney sweep must be notified that an Zumikron particle separator has been installed in the flue gas system and informed about the safety instructions concerning its handling.

The following table lists regularly required maintenance and cleaning work. The separator cartridge and the flue gas system have to be cleaned from the dust deposits on a regular basis.

The interval depends on the firing system and the operating time.

Interval	Fuel/Firing system	Maintenance task	Staff
quarterly	occasional wood firing	– clean deposits on separator cartridge around isolator and electrode (→ below)	Operator/specialist personnel
monthly	daily wood firing	– alignment of electrode, in centre of flue gas pipe and parallel to flue gas flow	Operator/specialist personnel
monthly (during heating period)	boiler unit	– check distance between electrode and T-piece, metal parts of the pipe or thermal sensor	Operator/specialist personnel
annually	all fuels	– check seal for damage and correct position	Operator/specialist personnel

Tab. 18: Maintenance and cleaning schedule

Cleaning the separator insert

Carry out cleaning as follows:

1. Switch off the system and secure it against being switched on again.
2. Remove the separator insert from the flue gas pipe and replace the dummy cover
3. Remove soiling properly. Carry out mechanical cleaning with a suitable tool (e.g. brush or similar). Carefully remove the deposits on the separator insert, especially the electrode and the insulator, using a suitable ash vacuum cleaner or a soft brush.
 - Do not use cleaning agents containing chlorine.
 - Glossy soot or similar deposits can also be removed with a commercially available cleaner for furnace discs.
 - Check that the electrode is firmly seated and align if necessary.
 - Pick up and dispose of soot particles.
 - Dispose of cleaning cloths and processing residues in an environmentally friendly manner in accordance with applicable local regulations.
4. Replace the separator insert on the flue gas pipe, making sure that the electrode is not pinched, kinked or twisted when installing the separator insert.
5. After cleaning, check that all previously opened covers and safety devices have been properly closed again and are functional.
6. Reconnect the mains plug and switch on the appliance. The appliance is in standby mode.

Dust disposal



NOTE!

The collected dust can usually be disposed of with household waste in normal household quantities. The locally applicable regulations must be observed.



NOTE!

You can continue to operate the wood-burning stove even if a fault is indicated. In this case, the fine dust is not separated or only to a reduced extent.

7 DECOMMISSIONING

7 Decommissioning

7.1 Temporary shutdown

If the Zumikron is shutdown only temporarily, it is sufficient to take the following measures:

- ▶ Switch off the Zumikron.
- ▶ Pull the mains plug from the socket.

7.2 Final decommissioning, disposal

For final decommissioning, the Zumikron must be removed from the flue gas system.

- ▶ Switch off the firing system
- ▶ Wait until all flue gas-carrying parts have cooled down.
- ▶ Loosen the wing nuts at the flue gas pipe insert.
- ▶ Turn the separator cartridge counterclockwise.
- ▶ Tightly close the opening with a cleaning lid.
- ▶ Remove the control unit.

Please observe the corresponding local laws and regulations when disposing of the Zumikron.



The device must not be disposed of alongside household waste. This product is labelled according to the European Directive 2012/19/EU and the German Electrical and Electronic Equipment Act (ElektroG) regarding the treatment of waste electrical and electronic equipment. The directive defines the EU-wide requirements for the return and recycling of old appliances. For returning your old device, please use the return and collection systems available to you.

8 MALFUNCTIONS

8 Malfunctions

8.1 Safety instructions for troubleshooting

8.1.1 Safety requirements



WARNING!

Risk of injury due to improper troubleshooting!

- Improper actions during troubleshooting can cause severe injury.
- Repair work may only be carried out by trained specialist personnel authorized by the operator.
 - Only work on the system when it is shut down.
 - Before performing any work, switch off energy supply and secure system against restarting.
 - Make sure there is enough assembly space before you start.
 - Always keep the work area tidy and clean! Scattered items, components, work pieces and tools lying around as well as cleaning equipment are sources of accidents.
 - If components have been replaced, check correct assembly of spare parts. Mount all fastening elements properly. Observe screw tightening torques.
 - Before recommissioning make sure that all protective devices are correctly installed and functional.
 - Before restarting, make sure that nobody is in the danger area.



WARNING!

Risk of injury due to unauthorized restart!

- When working on individual components, individuals may be injured if the power supply is switched on unexpectedly.
- Before working on individual components, switch off the power supply and secure against being switched on again.



HAZARD!

Mortal danger due to electric current!

- Touching live parts and wires can lead to death. Damage to the insulation or individual parts can be life-threatening.
- Before maintenance or repair work, switch off the electrical system and secure it against being switched on again.
 - Keep moisture away from electrical components.



WARNING!

Risk of crushing due to closely placed components!

- The compact design may lead to fingers being crushed while performing maintenance and repair work on individual components.
- Be very careful while performing maintenance and repair work on closely placed components.
 - Wear solid protective gloves during work.



CAUTION!

Risk of burns due to hot surfaces!

- Contact with hot components may cause burns.
- Wear industrial protective clothing and protective gloves when carrying out maintenance and repair work near hot components.
 - Allow hot components to cool down to ambient temperature before starting work.

8 MALFUNCTIONS



WARNING!

Falling hazard!

When working in elevated positions, unsecured people may fall or be injured by falling objects.

- When working, use a ladder or a platform with railing.
- Secure individuals and objects against falling.
- Prevent unauthorized people from entering the working area.
- Wear personal protective equipment in the working area.



WARNING!

Risk of injury due to hazardous materials!

Hazardous materials contain harmful substances and can cause poisoning, chemical burns or skin irritations.

- Note safety data sheet of manufacturer.
- Avoid spilling and vaporization
- Do not eat, drink or smoke while working.
- Avoid contact with skin and eyes.



WARNING!

Risk of injury due to wrong spare parts!

Faulty spare parts can considerably reduce safety and cause damage, malfunctions and complete breakdown

- As a general rule, only use original spare parts.



CAUTION!

Risk of injury at edges and corners!

Sharp edges and pointy corners may cause abrasions, scratches and cuts.

- Always proceed with caution when working near sharp edges and pointy corners.
- Wear protective gloves.



CAUTION!

Health risks due to unhealthy posture!

Lifting heavy components the wrong way and an unnatural posture while working may cause health issues.

- Heavy components should always be lifted by several people.
- While working on low-lying components, always crouch down, do not bend down.
- Use kneepads for kneeling and a cushion for sitting.
- While working on high-lying components, always maintain an upright, straight posture.
- Always use tools that are in perfect working order and suitable for a safe execution for all tasks

8.1.2 Handling malfunctions

If the Zumikron is malfunctioning, please see table 24 for information on how to handle the malfunction.

In case of a malfunction, the firing system can still be used. Fine dusts are separated only to a reduced extent or not at all.

8.1.3 Troubleshooting

- ▶ Only people who have extensive training concerning the design and function of the system should be hired for troubleshooting.
- ▶ People who are not sufficiently familiar with the system, modules and individual parts must not, under any circumstances, be entrusted with troubleshooting.
- ▶ In case of questions about troubleshooting or in the event of uncertainties regarding the correct procedure, always consult the manufacturer before starting work (address: → page 5).
- ▶ Please see the appendix for a detailed explanation of the LED blink code.

Staff

- ▶ Operator

Personal protective equipment

- ▶ Industrial protective clothing
- ▶ Solid protective gloves when working on components, chemical-resistant protective gloves when handling hazardous substances
- ▶ Antislip safety boots
- ▶ Safety goggles with lateral protection when working with pressurized components or near pressurized systems
- ▶ Industrial safety helmet or hardhat

8.1.4 Recommissioning after malfunction

After troubleshooting or repair work:

1. Reset emergency stop.
2. Confirm error message or malfunction on control unit
3. Make sure that nobody is in the danger area.
4. Restart following the instructions given in chapter "Operation".

8 MALFUNCTIONS

8.2 Malfunction table

Malfunction	Possible cause	Troubleshooting	Staff
Audible discharges or loud crackling around the separator cartridge	Discharges due to humid flue gasses	These can occur during the heat-up phase and disappear again once higher flue gas temperatures have been reached. No action necessary.	Operator
	Separator cartridge extremely dirty, cleaning intervals too long	Clean separator cartridge	
	Electrode not in centre of flue gas pipe	Adjust electrode to correct position	
LED permanently green	Temperature no-longer falls below on/off value	Turn system off and on again, contact manufacturer if problem continues	Operator
LED permanently orange	Limited operation with reduced separation	Cleaning required	Operator
LED is blinking red	Please see appendix for meaning of blink codes. If the error persists, the Zumikron must be sent in for repairs.	Confirm error message with push-button. If the error persists, check the separator cartridge and clean it if necessary.	Operator

Tab. 20: Malfunction table

8.3 Malfunction protocol

The system runs trouble-free when used as intended, and when regularly and properly maintained.

- ▶ If a malfunction occurs anyway, log type and cause of the problem as well as the measures taken to solve the issue to prevent the malfunction from happening again.
- ▶ Use the following table of malfunctions as a template and copy it.
- ▶ Send a copy of the malfunction protocol to the manufacturer for analysis.
- ▶ Save malfunction protocol.

Malfunction protocol no.:

Installation no.:

Date	Type of malfunction	Cause of malfunction	Measures taken for trouble-shooting	Name of person in charge

Tab. 21: Malfunction protocol

8.3.1 Repairs

With the exception of replacing the electrode and/or seal, no repairs can be done on site.

In case of technical problems, please consult the department for applications engineering at Kutzner + Weber.

9 Appendix

9.1 Commissioning protocol – Declaration of compliance

Name and address of the object

Individual steps for commissioning	Yes	No
Flue gas system operational according to calculations / negative-pressure operation/max. exhaust mass flow and temperature		
Adequate safety distance to flammable components		
Zumikron checked for stability / tightness		
Accessibility of Zumikron: Separator cartridge and control unit		
Chimney sweep informed about changes to/construction of firing system		
Operator instructed about device function and documentation handed over		
Operator informed about terms of service		
System heated up		
Particle separator put into operation		
Zumikron transferred to operator		
Operator informed about type approval, certification and DIN 18160-1:2021-07		
Operator informed about operating instructions/installation instructions and corresponding chapters		

Notes:

Customer	Installation company
Place, Date	Place, Date
Name in block letters	Name in block letters
Signature	Signature

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