Operating instructions

Cold fogger

AUTOMATIC (S)

- with automatic switch-off -

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Read the operating instructions before starting any work!

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Conversions:

No conversions and changes are allowed due to safety reasons. This will invalidate the operating licence of the device.

1 General information

You have opted to buy a cold fogger from our company. We congratulate you on your decision, because you have chosen a cost-effective, extremely rapid and highly effective method. We wish you success in using our device. Please get in touch with PFALZ TEC should you encounter any problems, we will gladly assist you with any concerns you may have.

1.1 About the operating instructions

These operating instructions provide important information for handling the device. Compliance with all safety instructions and handling instructions is a prerequisite for safe operation. In addition, we expressly draw attention to compliance with the generally valid health and safety regulations.
All persons who work with the device must have read and understood the operating instructions before starting work.
This device may only be operated by trained specialist personnel.

The operating instructions are part of the product and must be kept accessible to personnel at all times.
The supplier documentation is part of the operating instructions and must be kept with them and observed.

1.2 Liability and warranty

The device is guaranteed subject to compliance with these operating instructions. The guarantee will generally cease to exist if the user violates the procedures described here.
The manufacturer shall assume no liability for damages due to:

- Non-compliance with the operating instructions
- Improper use
- Use of unqualified and untrained personnel
- Unauthorised modifications and changes to the device

The actual scope of delivery may differ from the explanations and presentations in this document due to the latest technical changes.

1.3 Symbol explanation

Warning notices
Warning notices in this manual are indicated by symbols and panels in different colours. Signal words indicate the extent of the hazard.
It is essential to observe the instructions and act cautiously to avoid accidents, personal injury and damage to property.

Potentially dangerous situation!

... indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

► Avoid the source of danger!

⚠ CAUTION

Potentially dangerous situation!

... indicates a potentially hazardous situation which, if not avoided, may result in minor or slight injury.

► Avoid the hazardous situation!

NOTE

Potentially damaging situation!

... indicates a potentially hazardous situation which can lead to damage to property and the environment if it is not avoided.

► Avoid the hazardous situation!

Tips
A tip consists of a pictogram, the signal word “Tip” and text.

	**Tip** Upon receipt of the device, immediately check the scope of delivery for completeness, identity and intactness. Any defects must be reported to the supplier or dealer immediately after inspection.

2 Safety

Failure to comply with the handling instructions and safety instructions contained in this manual can result in significant hazards and damage.
This chapter provides an overview of all important safety aspects for the optimum protection of personnel and safe handling of the device.

2.1 Proper use

The device is used exclusively for the following purposes:

- Disinfection
- Air humidification
- Plant protection
- Pest control
- Dust binding

Danger due to misuse!

Any use of the device beyond its intended purpose and/or otherwise may lead to hazardous situations.

► The device is not suitable for outdoor use!

2.2 Conditions of use

For the safe and proper use of the device in rooms including tents and installations, the following points must be observed:

- The room to be fogged must be sealed off so that the fog cannot escape undesirably and lead to damages.
- The room must have sufficient ventilation.
- Technical equipment that may be attacked by the fog, such as control technology, lighting or heating technology, must be protected by secure covers.
- Additional ventilation for even distribution of the fog is necessary above a certain room size.
- The fixtures and fittings in the room must be laid out in such a way, that the fog stream can flow unhindered into the room over 3 to 5 m. Otherwise unwanted highly concentrated deposits may occur.
- Always operate the device in frost-free conditions.

2.3 Agents

Do not use or mix any other or different agents than those listed below.

Only the following agents or substances can be atomised:

- Disinfectants
- Water for air humidification and dust suppression
- Odour eliminators
- Means of promoting animal health
- Pesticides
- Auxiliary material for fog to improve fog quality
- Plant protection products
- Plant care products such as leaf shines
- Plant fortifiers such as leaf fertilizer
- Acid and solvent-containing liquids only with special Viton version

No general chemical resistance can be ensured for substance mixtures despite the high quality standards. Pfalz Tec does not accept any warranty claims for agents that have not been approved in advance in writing. Application solutions should only be mixed in external containers. If this is done in the system container, then the water portion must always be filled first. Pumps as a moving part are subject to a warranty of 6 months.

There are special models for different acids and solvents.

Agent consistency
The agents can have very different properties, they can be water soluble/insoluble powders, can be liquid or oily. The agents are prepared with a small amount of water and auxiliary fog materials to form a fog infusion. The infusion of the substances must not contain any solids above 0.3 mm. The information provided by the agent manufacturers must be observed and they should be contacted if anything remains unclear. Consultation with the manufacturer is especially necessary in the case of disinfectants containing acids due to low dilution. It is always worthwhile carrying out a test fogging before a large-scale application.

2.4 Responsibilities

The operator is responsible for complying with health and safety and proper use of the fogger. All users and staff must be adequately trained in all aspects of fogging. This must be documented in writing. Always keep the operating instructions of the device at the ready.

2.5 Personnel requirements

Danger of injury if not sufficiently qualified!

Improper handling can lead to considerable personal injury and damage to property.

► Only qualified personnel or trained and instructed personnel may work with the device!

► Keep unqualified personnel away from the danger areas!

- **Instructed person**
  has been instructed by the manager of the establishment on the tasks assigned to him/her and possible dangers arising from improper behaviour.
- **Qualified personnel**
  is, due to his/her professional training, knowledge and experience as well as knowledge of the relevant regulations, in a position to carry out the work entrusted to him/her and to recognise any potential hazards independently.

2.6 Personal protective equipment

When working with the device, personal protective equipment must be worn in accordance with the agent manufacturer's requirements in order to minimise health risks. Please observe the application and safety data sheets of the agent to be atomised.
Please note that: Atomised substances penetrate the lungs through the airways faster than in any other form without the use of sufficient personal protective equipment. Disregarding personal protective measures (gas mask, protective overalls, gloves) when entering areas where the fogger is used, for example, can damage health - even if fog is no longer visible!

2.7 General safety information

- All employees and temporary staff must be instructed on record about the safety conditions that have to be observed.
- The cold fogger can only be used in a technically flawless condition.
- If damage is found before or during operation, stop using the system immediately. All measures must be taken to prevent further damage to systems and equipment or damage to plants and animals, the environment and persons.
- The sockets used for supplying electric power must be in a perfect and inspected condition. The rated voltage must match that of the device, it must be able to supply at least 10 A of current. According to DIN VDE 0100-410:2007 section 411.3.3, the device must be connected to a socket protected by an ELCB (Earth Leakage Circuit-Breaker).
- All parts of the building, technical equipment, storage goods and the like found in the room to be treated must be checked to see whether they are compatible with regards to the agent that will be used!
- Modern disinfectants often contain acids. The general provisions about handling acids must be observed. The compatibility of the acids with the materials used in the device must also be checked.
- The applicable Technical Rules for Hazardous Substances (TRGS), valid occupational safety guidelines and the Hazardous Substances Ordinance must also be observed.
- The permitted ambient temperature for the device must not be any less than 8°C.
- Standing in front of the fogger when it is in operation is prohibited.
- You must only enter the area that is undergoing treatment (through to when ventilation is complete) with the personal protective equipment that is suitable for the fogging agent used. The highest protection of the airways is of paramount importance! Just because fog is no longer visible does not mean that the threat of danger has gone.
- Substances hazardous to the environment must be stored safely until they are used and disposed of in an environmentally friendly manner in accordance with the applicable regulations.
- It must be ensured that no authorized access can be obtained into the area that is treated.

2.8 Fundamental dangers

Observe the safety instructions listed here and the warnings in the following chapters of this manual in order to avoid health hazards, dangerous situations and damage to property.

Dangers when using agents

Risk of injury from flammable components!

The use of unsuitable agents or mixtures can lead to fire or explosion.

► Do not use agents which contain flammable components or which may form flammable mixtures if fogged.

Risk of injury from toxic substances!

The use of aggressive or toxic substances can cause severe poisoning and serious injury in the event of eye or skin contact.

► Do not use any chemically aggressive or toxic substances such as solvents or paints.

► Always wear the protective clothing described in these instructions!

⚠WARNING

Risk of injury from flammable substances

The improper use of agents that can be classified as hazardous substances may lead to damages caused by explosions.

► Do not fog flammable substances (liquids and dusts), otherwise there is a risk of explosion!

NOTE

Damage to property through the use of unauthorised agents

Unauthorised agents containing acids, bases or solvents can damage the device, other existing products and surfaces and, in some cases, the system.

► Only use agents described in the safety chapter as “Applicable agents” for fogging!

NOTE

Damage to property due to mixing of unauthorised agents!

Unpredictable chemical reactions can occur when mixing unauthorised agents, which can damage the device, other existing products and surfaces and, in some cases, the system.

► Do not mix any unauthorised agents!

Dangers when handling the device

⚠ CAUTION

Potentially dangerous situation!

During fogging, the rooms are supplied with air, which must escape somewhere in a controlled manner.
Openings within the area to be treated that are not considered may lead to undesirable wetting and thus damages to equipment, persons or the environment - even in other rooms or outdoors.

► Ensure that the supplied air can escape in a controlled manner!

► Take air leakage into account in all health and safety considerations!

NOTE

Damage to property from fog!

Failure to comply with the work steps described here can lead to unforeseen fog leakage and thus to damage to property. Any objects, articles or fixtures found in the room may be attacked if sufficient protection is not in place.

► Follow the steps described in this manual!

► Sufficiently protect fixtures or, if necessary, system components by attaching protective covers!

NOTE

Damage to property due to improper handling!

If any objects, articles or fixtures are applied with fog at a distance that is deemed too close, then this can lead to highly concentrated deposits with subsequent damage.

► When fogging, maintain sufficient distance to existing objects, articles or fixtures!

Dangers when handling compressed air

⚠WARNING

Damage to property due to improper handling of compressed air!

Defective lines and hoses can cause serious accidents

► Check the connections and lines for tightness and seating

► Replace defective lines and hoses

3 Assembly and function

3.1 Brief description

The cold fogging method of PFALZ TEC is based on the atomisation of liquid agents into the finest droplets, which form a dense and homogeneous fog, depending on the agents used, which remains stable and effective for very long periods.

The device must be connected to a compressed air supply so that fog can be produced, with the respective requirement depending on the operational performance of the nozzle.

3.2 Description of modules

The cold foggers of the AUTOMATIC S series consist of the following basic modules:

- Carrying frame with rail for fixing the nozzle head
- Nozzle head (see section 3.4)
- Container with wide filling opening and extraction fitting
- Compressed air connection with compressed air filter and pressure regulator

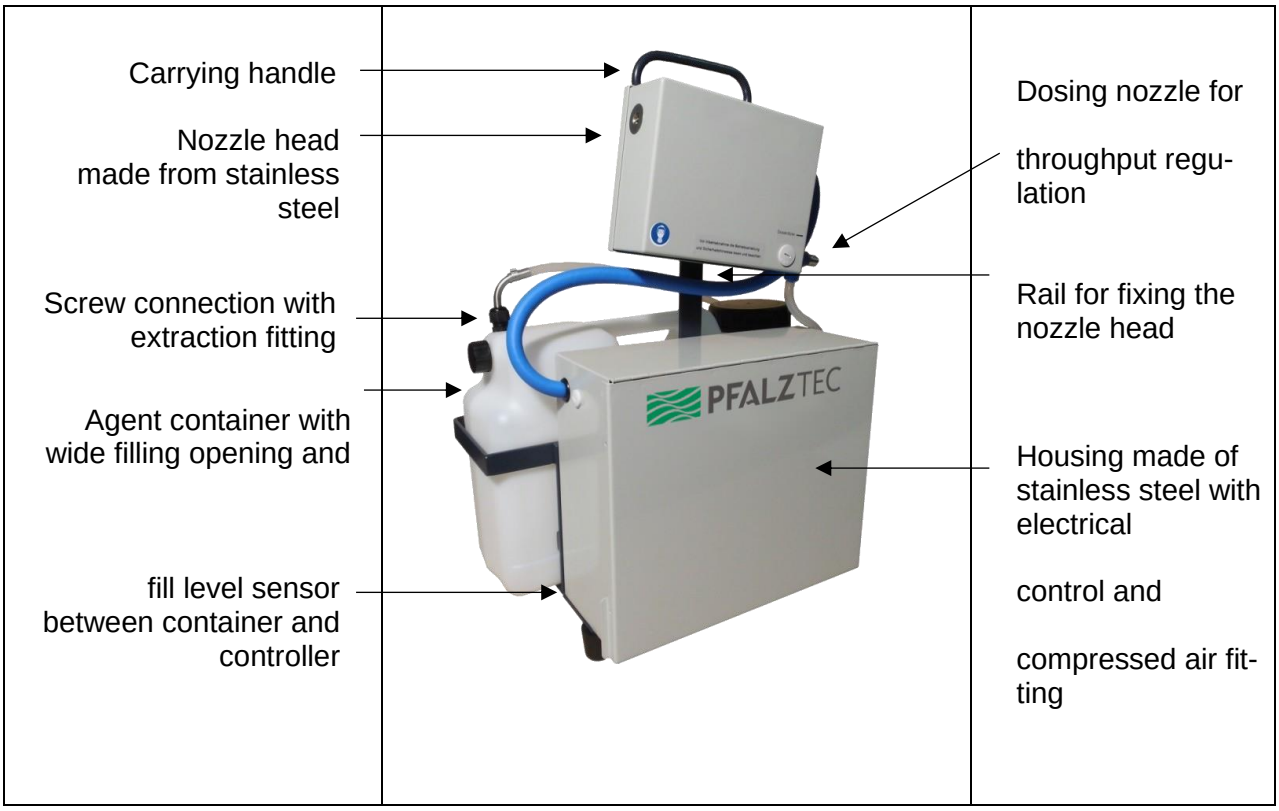

Fig.1: Overview of the cold fogger, image shows AUTOMATIC W06

3.3 Performance parameters of the devices

Device type	Room sizes[1]	Compressed air requirement		Operating range
		at 3 bar	at 6 bar	
S-B10.W03	up to 500 m³	100 l/min	200 l/min	2 - 6 bar
S-B10.W06	up to 2000 m³	400 l/min	800 l/min	3 - 6 bar

[1] Depending on the geometry of the room.

Notes on the versions

Type	Container	Nozzle type	Flow rate regulation at the nozzle head	Explanation
S				Small device with automatic switch-off
	B10			10 litre container
	B20			20 litre container
		W03		Fog nozzle, 0.03 l/min (up to 0.2 l/min for disinfection[2])
		W06		Fog nozzle, 0.06 l/min (up to 0.4 l/min for disinfection[2])
			DN	Dosing nozzle for defined agent flow rate (exchangeable)

[2] Depending on the fog properties of the agents and additives used.
Modifications that serve technical advancement are reserved.

Water flow rate when using different dosing nozzles (nozzle insert 30/40/50)
Flow rate in litres per hour (L/h)

Nozzle/insert	W03/30					W03/40					W03/50				
Dosing nozzle	**7**	**8**	**10**	**12**	**15**	**7**	**8**	**10**	**12**	**15**	**7**	**8**	**10**	**12**	**15**
Flow rate[3] at 1.5 bar	2.22	2.88	4.68	5.32	5.78	2.34	3.12	4.84	5.56	6.00	2.44	3.22	5.06	5.76	6.48
Flow rate[3] at 3 bar	2.40	3.04	4.80	5.54	6.30	2.80	3.66	5.44	6.15	6.87	2.92	3.84	5.68	6.52	7.24

Nozzle	W06										
Dosing nozzle	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**15**	**20**	**25**	**30**
Flow rate[3] at 3 bar	2.93	3.64	3.76	4.75	6.60	8.28	8.40	11.74	16.39	18.90	19.28
Flow rate[3] at 6 bar		4.50				9.40					

[3] Details refer to measurements with water at a suction height of 20cm, depending on climatic factors and material properties.

3.4 Nozzle assembly and flow regulation

Fig. 2: Nozzle head W06 (left) and nozzle head W03 (right)

- ***Dosing nozzle*** on the nozzle head: It specifies a certain flow rate through a defined bore. Various sizes are available. Simply changing the dosing nozzle by unscrewing it can change the flow rate, which makes the application very safe to use.

Fig. 3 (bottom): Dosing nozzle (circled)

  - ➢ Low flow rate = finest droplets = long stability of the fog in the air
  - ➢ Large flow rate = larger droplets = quick settling of the fog

3.5 Compressed air control

1 Compressed air filter with automatic drainage, blue hose dispenses liquid during operation

2 Pressure regulator with manometer 0-10 bar for compressed air (observe nominal pressure of nozzle - see nameplate)

3 Solenoid valve for automatic shut-off when the container is empty

3.6 Optional accessories

- Start time delay for starting the application at a predetermined time
- Special version: Fogger ready for operation in a powerless state
- Air re-suspension for agent container
- Automatic water refill for agent container, e.g. for air humidification
- Additional agent containers, sizes upon request

3.7 Container

Container 10 ltr. or **20 ltr.** (Replacement part)
The fill level is visible from the outside.
The fill level is measured with a calibrated scale.

Dimensions (L/W/H)	10 ltr: 425 x 120 x 266 mm.
	20 ltr.: 425 x 240 x 266 mm
Cap	DIN 96 and 3⁄4” internal thread

Fig. 5: Container with scale

Container 10 ltr. or **20 ltr. with automatic water backflow** (optional)

Container as described above
In addition:
- GEKA coupling for hose connection from the water line
- Float switch in the container for automatic filling

Fig. 6: Container with water back-flow

3.8 Compressor for compressed air supply

Commercial compressed air units or compressors can be used to supply the cold fogger with compressed air. Pfalz Tec offers compressors that are designed for the cold fogger.

Fig. 7: Piston compressor for the supply of several W06 nozzles

Fig. 8: Compressor SAP 90A to supply a W03 nozzle

Cross sections for compressed air lines

The hose properties also play a significant role alongside the compressor performance when ensuring the necessary device pressure.
The longer the hose, the larger the hose diameter must be in order to keep pressure losses to a minimum.

Nozzle	Hose length up to 8 m	Hose length 9 - 100 m
W03	10 mm	12 mm
W06	½"	¾"
W12	½"	1"

	Tip
	Ensure sufficient cross sections for the compressed air line and concealed pressure regulators or control valves. These can lead to a reduction in the effective amount of compressed air at the nozzle.

	Tip
	Ensure a clean air supply. The compressor must not be set up in the room to be fogged.

4 Installation

- **Personnel**: Qualified personnel
- **Safety equipment**: Protective gloves, safety shoes, etc. according to the requirements of the agent manufacturer

4.1 Setting parameters on the fogger

4.1.1 Calibration of the agent flow rate at the nozzle head (see section 3.4)

The agent flow rate has a significant influence on the fineness of the fog. The setting is made via the dosing nozzle.

- *Dosing nozzle* on the nozzle head: It specifies a certain flow rate through a defined bore. Various sizes are available. Simply changing the dosing nozzle can change the flow rate.

Please note: Fog will no longer be discharged if the compressed air supply is too low.

4.1.2 Settings on the pressure regulator

1. Pull the black rotary handle downwards.
2. To adjust pressure according to nozzle requirement, turn rotary handle
3. To secure the rotary handle, push the rotary handle up again.

5 Commissioning and operation

5.1 Safety instructions for commissioning

Risk of injury through the use of unsuitable agents!

Mixing unsuitable agents can cause serious injury or damage to property.

► Only use agents according to the information in this operating manual!

5.2 Administering the agent

- **Personnel**: Instructed personnel
- **Safety equipment**: Protective clothing, protective mask with safety goggles or full mask, protective gloves, safety shoes according to the requirements of the agent manufacturer

When administering the agents, observe the following:

- The agent is primarily administered in accordance with the specifications of the manufacturer. Experiences from other applications can be transferred in part.
- The infusion intended for the room is atomised in one process.
- When using fogging additives, it should be checked as to whether these are compatible with the agent used.
- Mixing is carried out directly before application without any intermediate storage

Particular attention should be paid to the thinning of acidic agents. Certain conditions must be observed or it may be the case that mixing is not possible. Observe the work steps when filling as well as any possible chemical or thermal reactions. **Please observe the agent manufacturer's instructions.**

5.3 Operation

- **Personnel**: Instructed personnel
- **Safety equipment**: Protective clothing, protective mask with safety goggles or full mask, protective gloves, safety shoes

1. Provide the compressed air supply (mobile compressor or stationary unit) in accordance with the requirements of the device (see Chap. 3.8)
2. Place the device on the ground and always apply the fog in a free, empty space, not on or over animals / plants / technical equipment.
3. Set up the device such that the nozzle fogs slightly upwards and the suction rod in the container rests at the lowest point.
4. Determine the distance between the compressor and the fogger and lay out the hose ready with the corresponding required diameter.
5. Fill the container.
6. Establish the power supply.
7. Check the functions of the relay, make the necessary settings if necessary (see Chap. 5.3.1)
8. Plug in the compressed air hose to the coupling of the device and then establish connection to the compressed air supply. Device will begin to fog. Exception: Start time delay production option.

Please note:

- Always only use the purest of liquids, that do not contain any lumps, flakes or grains
- If the container is empty, the device switches off after the preset after-run time.

5.3.1 After-run time for residual draining - preset -

← **After-run time for residual draining 1 to 10 min** (Delivery = 4 min)
Time from which the liquid drops below the measuring limit of the sensor until the container is finally empty, should take 1-6 minutes,
→ on **the upper knob** set to **.1 to .6 = 1 to 6 min**.

← **DO NOT ADJUST ANYTHING**

Explanation of LEDs on the relay

Green LED (U/t) lights up when voltage is applied and flashes during the after-run time
Yellow LED lights up when the container is full

5.3.2 Countdown Timer (manufacturing option)

Button functions

[**PROG**]	Selection of the setting mode and individual formats
[**+**]	In the setting mode: Increase the flashing point
[**+**]	In the setting mode: Decrease the flashing point
[**RESET**]	Reset to timer start time
[**START/STOP**]	Start and stop the timer

Setting the timer time

Briefly press the [**PROG**] button.
The hour point flashes in the timer display.
Set the hour format to the desired value using the [**+**] or [**-**] buttons.
If the [**+**] or [**-**] buttons are pressed continuously, the flashing format changes up or down.
When the [**PROG**] button is pressed again, the format for the minutes flashes as previously described.
When the [**PROG**] button is pressed again, the second format flashes.
When the [**PROG**] button is pressed again, the timer changes back into the timer mode.
Please note: When the output is active, the [**PROG**] button is deactivated and the setting mode cannot be selected.

Starting and stopping the countdown timer

Start the timer using the **[START/STOP]** button, the output relay of the timer is activated and the indicator in the display counts down at one second intervals.
The **[START/STOP]** button stops the run time, the relay is deactivated and the time in the display is paused.
The **[START/STOP]** input has the same function as the **[START/STOP]** button.
When 00:00 00. is reached, 2 signal tones sound, the relay is deactivated and the display returns to the set value.
Please note: If the timer is switched to a time of 00:00 00 with the **[START/STOP]** button, the bell symbol flashes in the display and the relay remains active until the **[START/STOP]** button is pressed again.

Resetting the countdown timer

Once the run time is stopped with the **[START/STOP]** button, the [**RESET**] button is used to reset the timer to the set time.

Press all 3 buttons on the timer at the same time for around 4 seconds.

Data retention in case of power failure

In the event of a power failure, the sequence is stopped and the active relay drops out. Display -:--.
After restoration, the last timer time before the power failure is displayed, the timer must be restarted.

6 Cleaning and maintenance

- **Personnel**: Qualified personnel
- **Safety equipment**: Protective clothing, protective mask with safety goggles, protective gloves, safety shoes

The **cold fogger** must be cleaned with water after each use. The nozzle is rinsed with water by a short fogging process. In the case of blockages, a compressed air jet can be directed at the nozzle.

The dosing nozzle for flow rate regulation must be checked regularly for contamination.

The filter water separator in the device must be checked regularly. Depending on the application period and the contamination level of the compressed air and compressed air connections, it must be changed after 1-2 years. Pfalz Tec supplies all the original replacement parts.

A maintenance contract with Pfalz Tec is recommended.

Maintenance of the **compressor** must be carried out according to the manufacturer's instructions. Maintenance work can be undertaken by Pfalz Tec.

7 Troubleshooting with faults

The table shown below gives an overview of possible errors / problems when operating the device and the possible solutions thereof.
Contact your dealer if you cannot find the error by yourself.

	Error / problem	**Solution**
Fogger		
Device does not fog	There is no power	Establish connection
	No compressed air	Establish connection
	Viscosity of the agent too high	Dilute agent with water if possible
	Nozzle iced up	Observe outdoor temperature: >8°C
Device does not switch on	There is no power	Check the sockets and connections for the compressor and fogger
	The agent container is empty	Fill the container
	Agent container is not seated correctly in the frame	Check the position of the agent container in the frame and correct if necessary
	For 20 litre containers: Container inserted upside down	The container scale must be visible on the outside - correct direction
	Agent not suitable for sensor used	Sensor is parametrised with water - new parametrisation of the sensor may be necessary
	Relay misaligned	Set according to parametrisation instructions (consult Pfalz Tec)
Device does not switch off automatically	Agent container is contaminated by deposits from the agent on the inside	Clean the agent container
	After-run time for residual draining is still active	After-run residual draining is set to 10 min. at the factory, only then does the device switch off - check time
Compressed air		
There is not enough compressed air on the fogger / system	Compressor/pressure line supply quantity too low to be effective	Comparison of the air consumption of the nozzle head with the performance capability of the compressor / pressure line
	Compressed air distributor has too small of a diameter	Check compressed air distributor, replace if necessary
	Too many (angle)valves in the line, resulting in pressure losses	Reduce the number of valves / lay a new line
	Incorrect rotational direction of the compressor	Check rotational direction on the compressor and correct if necessary
	Pressure regulator in line or device is set too low	Check the setting of the pressure regulator and correct if necessary
	Filter water separator contaminated	Clean/replace filter

	Hose diameter too small for its length (pressure losses)	Look up causes for pressure losses in Chap. 3.8 of the operating manual, adjust the hose diameter to the necessary length and compressed air consumption of the fogger
	Kink in the hose	Check hose, correct if necessary
	Leakage in the pressure line	Check pressure line, repair if necessary

8 Dismantling and disposal

After the end of its service life, the cold fogger and its components must be dismantled and disposed of.

8.1 Dismantling

Dismantle assemblies and components in compliance with applicable local environmental regulations.

8.2 Disposal

If no **return or disposal agreement** has been reached, dismantled components are to be recycled after proper dismantling.

NOTE

Damage to the environment due to improper disposal!

Improper disposal can pose a risk to the environment.

► Dispose of dismantled components properly!

► If in doubt, contact your local authority or a specialist waste disposal company for information on environmentally sound disposal!

EC Declaration of Conformity

Within the scope of

- the EC Machinery Directive 2006/42/EC, Annex II A, as well as its amending Directive 2009/125/EC
- the Low Voltage Directive 2006/125/EC and
- the EMC Directive 2004/108/EC

we declare that the product

AUTOMATIC Cold Fogger (Type S)

meets the aforementioned relevant provisions.

The following harmonised standards have been applied:

- EN 12100-1 (2004) Safety of machinery. Terminology
- EN 12100-2 (2004) Safety of machinery. Technical principles
- EN ISO 13857 (2008) Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs.
- EN 60204-1 (2007) Safety of machinery – Electrical equipment
- EN 61000-6-1 (2007) Electromagnetic compatibility (EMC). Generic standards. Interference immunity
- EN 61000-6-3 (2007) Electromagnetic compatibility (EMC). Generic standards. Emitted interference

German language operating instructions are available.

Any constructional changes which impact on the technical data stated in operating instructions and the designated use, i.e. which significantly modify the installation, render this declaration null and void!

Heinz Gerke,
Managing Director
Markersdorf, 04/08/2020